

short wave magazine

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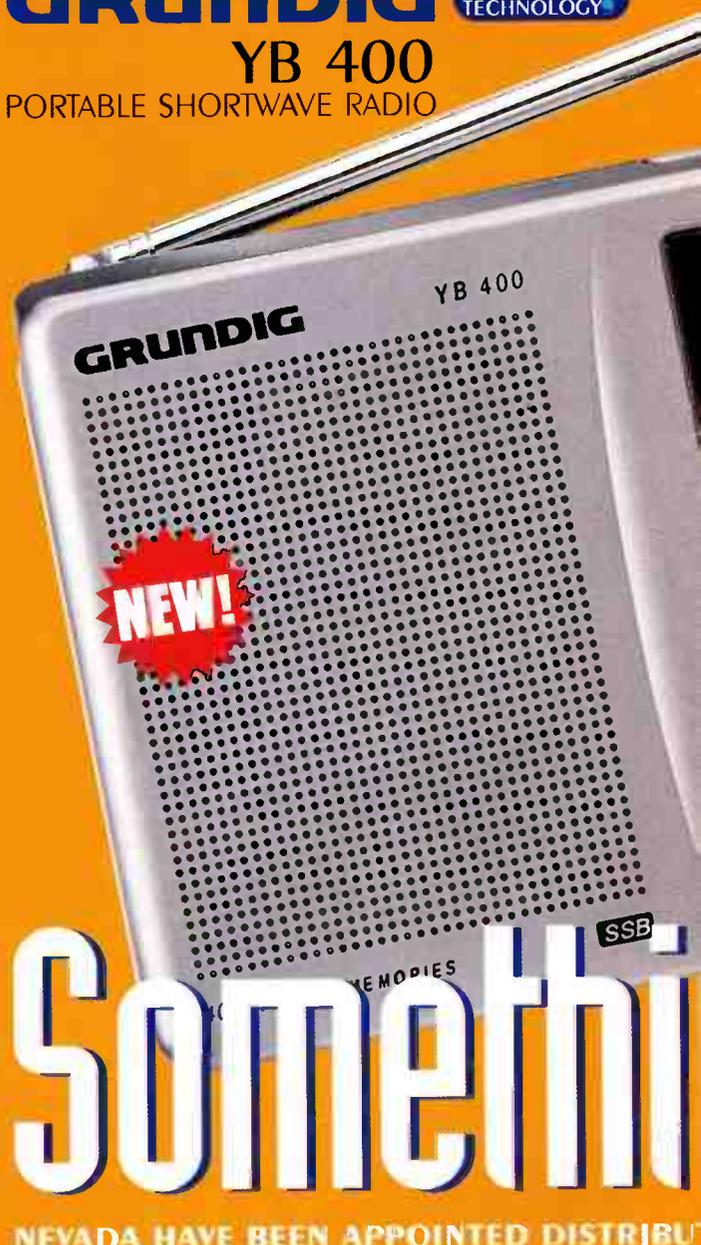
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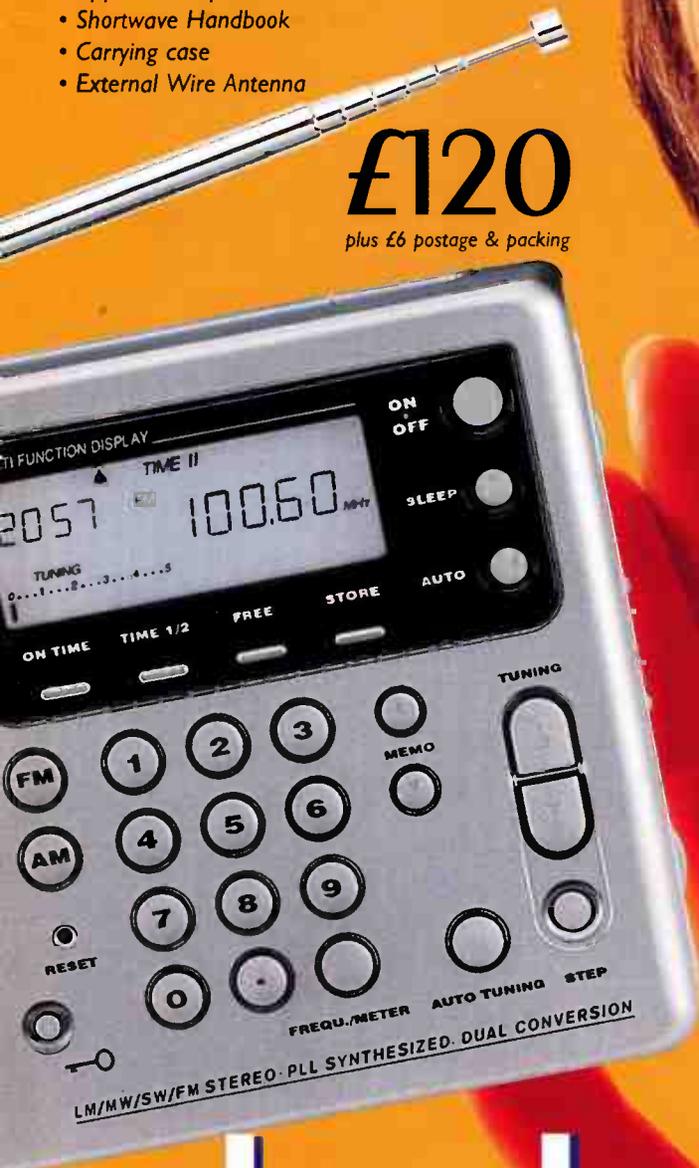
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Short wave m

Features

Decode Special

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Peter Bond, eager to get his hands on the new AR-108, puts it through its paces. Was he impressed? Turn to page 37 to find out.

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John Wilson G3PCY continues with his trip down memory lane with a look at an Icom classic, the R-71.



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Magazine

47 PRIMARY DATA THE TIMESTEP WAY

Whilst examining Timestep's PDUS solution, **Lawrence Harris** looks at the type of images transmitted by METEOSAT, the hardware and software required to receive and view them, the costs involved and the future.



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Don't Forget – you can join the *SWM* Readers' E-mail list by sending a message to swm_readers-on@pwpublishing.ltd.uk

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Subscriptions

Subscriptions are available at £33 per annum to UK addresses, £40 in Europe and £44 (Airsaver), £50 (Airmail) overseas. Subscription copies are despatched by accelerated Surface Post outside Europe. Airmail rates for overseas subscriptions can be quoted on request. Joint subscriptions to both *Short Wave Magazine* and *Practical Wireless* are available at £55 (UK) £68 (Europe) and £74 (rest of world), £85 (airmail).

Components For SWM Projects

In general all components used in constructing SWM projects are available from a variety of component suppliers. Where special, or difficult to obtain, components are specified, a supplier will be quoted in the article. The printed circuit boards for SWM projects are available from the SWM PCB Service, **Badger Boards, 12 Hazelhurst Road, Castle Bromwich, Birmingham B36 0BH, Tel: 0121-681 4168.** A small catalogue containing components, projects and p.c.b.s is available, free, to anyone sending **Roy or Sue Martin** an s.s.a.e.

Photocopies & Back Issues

We have a selection of back issues, covering the past three years of SWM. If you are looking for an article or review that you missed first time around, we can help. If we don't have the whole issue we can always supply a photocopy of the article. Back issues for SWM are £2.99 each and photocopies are £2 per article. Binders are also available (each binder takes one volume) for £6.50 plus £1 P&P for one binder, £2 P&P for two or more, UK or overseas. Prices include VAT where appropriate. A complete review listing for SWM/PW is also available from the Editorial Offices for £1 inc P&P.

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Technical Help

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

ed's comments



As I write this piece I am enjoying a two week break with my two young children. We are all anticipating with excitement, the eclipse of tomorrow. I am very fortunate, as living on the south Dorset coast enables us, without travelling, to experience a near totality viewing, just so long as the weather permits. Tomorrow morning we will be busily preparing the pin-hole projector so that we can both view and photograph the event without damaging our sight!

I had been planning to travel to south Devon to experience a 100% eclipse, but due to last minute events, those plans have been changed. From the weather forecast it seems that those in the '100% band' may not get to see much at all. So much for the visual aspects, it will be very interesting to listen to the reduction in solar noise across the spectrum and to also observe changes in propagation modes. I have just been informed that NASA is soliciting information on radio propagation during the eclipse, you can see more by visiting

http://science.nasa.gov/newhome/headlines/ast04aug99_1.htm to see the NASA web page on this topic. Also, the Rutherford Appleton Laboratory are keen to collect DX logs, see URL <http://www.wdc.rl.ac.uk/ionosondes/eclipse/PUST.html>

I too will be very interested in any of your radio observations during this rather infrequent phenomenon.

Old And New

It is an acknowledged human trait to reminisce and claim that times gone by are superior to the present day. Well that's as maybe, I'm not entirely convinced myself. However, one thing that is certain, as you'll discover by reading JW's regular slot in this very

magazine, is that there are some very useful older receivers out there that should most certainly not be cast aside. This month John takes a detailed look at the utility listeners old faithful, the Icom R-71.

If you are new to this hobby or just too young to remember this radio and its peers when they were current, then you must not miss John's fresh look at these classics.

Don't think though that this in anyway means that current new radios should be overlooked, there are some terrific receivers to be had new, my own preference would be to have both current and classic present in the shack. After all, one receiver just ain't enough.

SWM Readers' List

The list has been a bit quiet of late, there are many of you just itching to post but seem to be of the opinion that what you have to say may be 'off topic'. Let me say quite categorically, just as long as your question, statement, info or message relates to radio communication in some way or another then the SWM list is a valid forum.

The lack of recent list 'traffic' has led to the all too common 'Test' posts. All list members please refrain from wasting bandwidth in this way. If you have reason to think there is a problem, then it's me that you need to mail. There are one or two people that seem to want to make reality fit their version of the world, specifically that the list server has eaten specific messages. Well, although, a recent weekend saw a loss of out going connectivity, no messages were lost. Every message received by the server was relayed to **all** those who were subscribed at the time.

Winners

As promised, the NRD-345/ALA 1530 competition was drawn on the 3rd of August. The lucky winner of the h.f. station is: **AB Ireland** of Hampshire. There are two runners-up, **David Benfield** of Northants and **John Smith** of Bristol who both collect a six month subscription to SWM. We will be contacting you all soon to arrange presentation of your prizes. Well done and thanks to everyone who entered. Keep your eye on this page for a future announcement regarding an easier way to enter SWM competitions.

Happy listening and enjoy what's left of the Summer.

vy 73

Kevin Nice

Dear Sir

Carl Morgensen's letter (*SWM* July 1999) certainly brought painful memories of lightening back. In 1981 I read an article concerning electrical charges on conductors in free space and naturally reasoned that this phenomena could be demonstrated by the use of an electroscope.

I extricated the nearest empty Coffee Jar from the dustbin and built a metal leaf electroscope inside it. I waited until the weekend when nature was good enough to provide a thunderous looking cloud nearby. I connected one end of my antenna, which entered the house via the back door, to the electroscope and held the assembly in my hand. I was instantly rewarded with the sight of the metal leaves diverging. I was so pleased with this that I drew my wife's attention to it. As she walked forward to see this movement of the leaves, I was aware of one tremendous crackle and flashing lights.

When I became aware of my circumstances I saw that the electroscope was no more and that I had been thrown across the kitchen with the force of the discharge. The feeder was laying against the kitchen wall and sparks were running along it.

I learnt a lesson that day. Never mess about with lightening and always fit an arrestor. (I use a spark plug set into a chunk of copper central heating pipe. The screw top connects to the antenna). The arrestor will not save the equipment, but it could save you! As a result of what happened, I will not use any outdoor antenna during the likelihood of a lightening storm and I disconnect if one creeps up.

I do have frame antennas available for use in this eventuality, however. Regards.

Paul Beaumont G7VAK
London

Dear Sir

Having just read the latest *SWM*, I thought I would communicate my delight in John Wilson's article on the R-1000 by Kenwood. JW's style and content really brings the subject alive for those of us who appreciate the design aspects of a receiver, are very interested in such r.f. designs, but know hardly anything about it, save for rough ideas picked up from old radio books and some basic GCSE textbooks on electricity!

I've always thought of the R-1000 as a receiver pretty much the same as the early Panasonic r.f. series or Sony ICF-6700 from the 70s - not that I've heard any of them - but I would imagine them being more m.w. a.m. broadcast radios than communications receivers, but JW's review was quite a revelation for me in the way he can highlight the technical design points in a clear and enjoyable manner without being either too simplistic or too technical so any s.w.l. or amateur could immediately understand the salient points.

I've read all of the receiver reviews JW has done, since I think the Drake SW2, not long really, but I've also had back issues with other reviews, and I could read them all day. Then of course there are all the other topics covered in *SWM* that are very interesting, the decode and s.s.b. utilities, WXSAT, airband, then there are the articles by Joe Carr, which are much in the same vein as a JW review, but on different areas, such as antennas and radio science, etc.

I had a good laugh and had to write this letter after reading the letter from Anon in the latest issue, seems he threw quite a tantrum, but in the process, apart from being 100% misinformed, which is quite obvious as the rant went on, he came across as totally obnoxious by becoming personal. What are his qualifications? Who cares really, but he sees himself as being a reader who knows more than the 'columnists', then he mentions common sense, that's good!

As a final piece of cheek, he also mentions 'inine drive' whilst spouting it himself. I wonder what Mr Anon would have made of the job of reviewing the R-1000, he obviously wouldn't know where to begin. I applaud your balance of editorial control, but printing letters like this is like trying to start a conversation with a heavy breather who has just rung your 'phone, it just feeds their problem. I hope Anon now goes away quietly, back to, perhaps, other magazines of the type he mentioned, i.e. cooking, etc.

I think you are right about the noise problem I mentioned in my last letter being TV line timebase, and any hints would be well received, not just by myself I would guess. I use a JPS ANC-4 phasing device, which is magic on virtually all noise sources, except the very i.f. hum and harmonics of the 15.6kHz TV timebase 'transmitter' - perhaps this is why they require a licence after all!

In appreciation of a great publication.

signed (but illegible)
Dover

Dear Sir

The first paragraph in the 'ShackWare' Mailbag July's *SWM*, concerning Anthony's Johnson's problem with beginning decoding with his Amiga computer is one I had to deal with.

To make some progress he should write to Priory Software of Hungerford, Berks., who write for the Amiga, to see if their programmes will suit his A500. I have two of them on my A600 and am a satisfied customer. He should also buy a copy of Philip C. Mitchell's *FAX, Satellite and RTTY Weather Reports*, available from *SWM*'s Book Store and Interproducts of Perth who advertise in *SWM*. I could not manage without my copy.

The really difficult problem is what instrument is available to convert the audio tones from the receiver to signals for the Amiga's serial port. I have the ERA Microreader MkII, version 4.2, the last I believe, a 12-16V supply is needed. It has been off the market a year or two now. I know of no other converter. I ordered my 'reader from the 'Lynch Mob', it arrived from 'Nevada Communications', so it could be a good idea to write to them to see if they still have one or two in stock.

If Anthony should have to be content with a refurbished Microreader, he must ensure the operating instructions come with it, 'cos the single knob control needs a bit of sweat to get the hang of. There are two pre-set controls at the back, accessed through small holes, which need a small screwdriver to adjust, which should also come with the Microreader. One is for adjusting the gain of the 'reader, the other for adjusting its screen contrast.

The 25-way serial connector of my A600 is wired as a PC, pin 3-signal, pin 7-earth, pins 4-5 are linked also, pin 6 to 20. The record-out socket of my HF-225, about 350mV will not drive the 'reader, so the external speaker socket is used.

London generates a lot of interference. An electric railway, 20 minute service, runs by not a hundred metres from my back bedroom 'shack'. So, ahead of my HF-225, I have a home-made pre-selector for the a.m. bands to stop some of the interference getting through to the receiver and 'reader.

With interference still in mind, I keep the instrument's gain and the receiver's volume to the minimum consistent with adequate decoding, increasing volume with a weak signal. Accurate tuning of the receiver is required which, when achieved, should be put in a memory. The time spent settling the adjustments, outlined above, allows the Microreader to perform much above my expectations. Only strong interference causes blips.

Priory Software can be reached at: **7 The Priory, 137 Hungerford Road, Hungerford, Berks RG17 0AP.**

Best wishes to Editor and colleagues.

P. Townsend
London

Dear Kevin

As a regular reader of *SWM* for over 25 years I would like to comment on the anonymous letter published in July's issue.

Anon is clearly happy to write derogatory comments without actually offering any evidence to support those comments. He (or she) seems aghast at the concept of connecting a scanner to a TV aerial but surely any lump of metal up high is better than none?

Anon then states that you "employ amateur columnists who know little of their subject". What evidence, dear Anon, do you have to back up this claim? I am a regular reader of *SWM*, have held an amateur licence since 1975 and find very little in *SWM*'s columns with which to disagree. I find that the columns are usually well-written by dedicated people who know their chosen subject well.

The final claim by Anon is that you, Mr Editor, know little about the hobby. Once again, Anon offers no evidence in support of this claim. I, in turn, find no credibility in Anon's claim. *SWM* is a well-presented magazine which I respect and enjoy.

Personally, I am always willing to put my name to anything I write. I can only believe that the writer of the letter chose to be anonymous because he or she lacked the courage of his convictions. Anon clearly feels qualified enough to judge the contents of *SWM* and its columnists so why doesn't Anon present you with some quality articles to publish?

Ian Brothwell G4SAN
Nottingham

Dear Sir

As a long time reader of *SWM*, I found John Wilson's comments with regards to dealers in the radio trade interesting. Essentially I agree with his findings that the cheapest is not always the best, what happens if something goes wrong, etc.

In the last two years I have added a number of pieces of equipment to my monitoring station. I have found an excellent service from David Brown at the Northern Shortwave Centre in Carlisle. David G4KFN spent a long time as a distinguished branch manager at Lowe Electronics before starting his own business.

In my opinion, he has all the essentials that the s.w.l. requires from a dealer; good new and used stocks, plenty of helpful advice, on-site repair facilities and reasonable prices. His company is most definitely not in the business of 'shifting boxes'.

Such is the complexity of the equipment we use in our chosen hobby, we do need dealers who show competency in the field of radio and promote their after sales service, these qualities above all others will give us, 'The Customer', the confidence in making our purchases with them.

Thank goodness for the smaller dealers, but how long will they last in such a fiercely contested, and sometimes unfair, marketplace. My advice to your readers is to think before making such a considerable investment in any equipment, shop around, ask if the dealer can provide support for your new acquisitions.

Nike McGuire
Merseyside

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

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

TOP
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Rally & Boot Sale

The **Andover Amateur Radio Club** are holding their Annual Radio Rally and Boot Sale at Middle Wallop Airfield, Nr. Andover, Hants. on **September 5th**. Talk-in on S22. Tables and further information available from **Jim G4NWJ** on (01980) 610594, E-mail: liz@countrypursuit.freemove.co.uk

AirNav 3.0 Distributors

We mentioned in August's Communique pages that Flightdeck were appointed the sole UK distributor of *AirNav 3.0*, however, we are informed that this is not the case, as **Simon Collings** is also an appointed UK distributor of this software. Contact Simon at **46 St. Michaels Road, Cheltenham, Gloucestershire GL51 5RR, Tel/FAX: (01242) 514429**, E-mail: simon.collings@cableinet.co.uk or check out his web site at: <http://wkweb4.cableinet.co.uk/simon.collings>

RAE Courses

A 26 week RAE course starts at **South Notts College, Greythorn Drive, West Bridgford, Nottingham**, on Wednesday 15th September 1999. Class times are: 1830 till 2100 and the course tutor is **Alan Lake G4DVW**. More information on **0115-938 2509** or E-mail: radkit@compuserve.com

Ray Oliver G3NDS is again running an RAE course at **Newbury Technical College** beginning Thursday 9 September, 1900 to 2100, course no: 99018A and a Morse Code for Amateurs course (RSGB 5/12w.p.m.) starting Tuesday 4 January 2000, between 1900 to 2030, course no: 99208B.

Also run by Ray is an RAE course at **Swindon Technical College**, commencing Monday 20 September 1999, between 1900 to 2100, course no: UFF30S.

In addition, he is also running two practical electronics courses at Newbury College that might be of interest to those wishing to gain skills in constructing and testing their own equipment. Find out more about these two additional courses, and the RAE courses mentioned above, by contacting Ray direct on **(01672) 870892** (combined telephone and FAX number).

Agreement With Grundig

Nevada are pleased to announce the recent signing of a UK Distribution Agreement with Grundig for their range of portable and short wave radios. Grundig were impressed with the independent specialist dealer network that Nevada have created over the past 30 years.

Commenting on Nevada's appointment, John Norton, Grundig's Director of Sales, said "We are just about to launch an exciting range of short wave and portable radios. Nevada will ensure these are readily available through their independent dealer network".

The first short wave portable radio to be introduced is the Grundig YB400 covering 140kHz to 30MHz and 87.5 to 108MHz v.h.f. With s.s.b. a.m. and f.m. receive capability, it is sure to be popular, selling for just £120.

More information from Nevada at **189 London Road, North End, Portsmouth PO2 9AE, Tel: (023) 92 662145, FAX: (023) 92 690626**.



Pictured left to right: John Norton, Grundig Sales Director, Debbie Stansfield, Grundig Regional Account Manager and Mike Devereux, Nevada Managing Director following the signing of their distribution agreement with the new Grundig YB400 portable short wave radio.

The Day That Gibraltar Lost Its Telly!

Roger Bunney

One of our readers living in Gibraltar - George - tells of April 27th, the day when much of the populated 'Rock' lost the ch.E6 TV service from the GBC studio in Barrack Road. **Fig.1** shows the general view of the docks with a large cruise ship tied up on the outside of North



Mole, the normal location for visiting cruise ships - it being a deep draught berth.

On this unfortunate day a large liner arrives and finds the outer Mole already occupied with another cruise ship, so new arrival opts for an **inner** Mole berth facing South. The GBC ch.E6



Comprehensive Site

The web-site **dxbands.com** is designed for amateurs throughout the world, giving the opportunity to find up to the moment amateur radio news, details on DXpeditions, contests and page upon page of amateur radio links. The site also includes a unique 'dx-diary', which, month by month, lists DXpeditions, large and small, the world over. The style shows the start and finish dates of each event, together with details, QSL manager and other information.

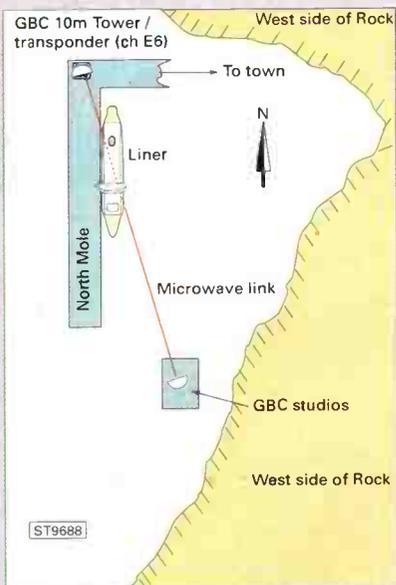
Updated each day with the latest amateur radio news, **dxbands.com** is destined to become an important online resource. Web users can find the site at <http://www.dxbands.com>

Twin Town Activity

Since 1985 there have been regular sked contacts between amateurs in the twin towns Weston-super-Mare and Hildesheim in Germany, but this year a special activity period is being arranged by

Club Meets

Members of the **Hoddesdon Radio Club** meet on alternate Tuesdays at the Conservative Club, Rye Road, Hoddesdon, Herts from 2000. Further details from **Don G3JNJ** on **0181-292 3678**.



transmitter mast and microlink dish is sited at North Mole, just visible on the right hand side. The photo shows the same cruise liner later in May in the outer Mole facing North.

The April 27th mooring (South facing) put the liner's rear superstructure between the GBC studio and the North Mole transmitter (seen arrowed). The result was a complete blockage of the microwave link and the

locals lost their Band 3 TV signal for 12 hours until the cruise ship sailed away! This happened once before which resulted in a higher mast being installed - obviously not high enough.

Figure 2 shows the general bridge superstructure with GBC mast to right hand side just past the crane and Fig. 3 shows the North Mole GBC transmitting mast. The Philips PM5534 test card is used outside of programme times.

George has kindly supplied photographs showing the present Medium Wave transmitting antenna - 1458 AM - Fig. 4 and the new antenna now being installed with a higher mast and higher powered transmitter, see Fig. 5.



the **Weston-super-Mare Radio Society** and the **German Amateur Radio Club** in Hildesheim. Although this is intended to encourage further contacts between stations in North Somerset District and Hildesheim, the activity and issue of diplomas is not restricted only to club members.

Any amateur operator or short wave listener is welcome to take part and may achieve eligibility for an attractive diploma, which, after validation, will be signed by the Chairmen of the two clubs and the Mayors of the two towns. The activity period will be from 14 to 28th October.

Anyone interested in receiving diploma issue conditions and proposed preferred frequencies is invited to send a stamped, self addressed envelope with their request to **G4ZUX** or **G3YOL**, both QTHR.

The Weston-super-Mare Radio Society was founded in 1923 and now meets regularly, usually on the 1st and 3rd Monday of each month, in the function room at the Woodspring High Street,

Worle. Visitors with an interest in amateur radio are always welcome. For further general information, telephone the Secretary **Graham G8WAR** on (01934) 415700.

Exclusive UK Distributor

Jeff Stanton at **Waters & Stanton PLC** has been in touch with the Newsdesk to advise that they have just been appointed exclusive UK distributor for the Dutch based NASA brand of short wave receivers and antennas. The first product to be available will be the NASA HF 4E short wave receiver, based on the highly successful AKD Target receiver, but with many additional features.

W&S say the HF 4E is priced competitively at £199. Also, further products are soon to be added to the range. Further details available from Waters & Stanton PLC at **22 Main Road, Hockley, Essex SS5 4QS**, Tel: (01702) 206835/204965.

Send your news to Zoe Shortland at the Editorial Offices

rallies

Attention Please!

Would you like to have your Rally publicised? If so, all you have to do is put together as much information as possible about the Rally, i.e. date, location, times, who to contact, etc. and send it to the Editorial Offices.

August 29: The Milton Keynes ARS Annual Rally & Car Boot Sale is to be held at the Bletchley Park Museum, Wilton Ave, Bletchley, Milton Keynes. Open from 0800 for traders, 0900 for buyers. Museum open with tours. Morse test on demand (bring two passport size photos). Talk-in on S22. Contact **Dave G3ZPA** on (01908) 501310.

August 29: The Torbay ARS are holding their annual rally at Churston Grammar School near Brixham. A wide variety of traders will be present and food and refreshments will be available. Doors open at 1000. Further details from **Peter G4VTO** Tel: (01803) 864528.

August 29: The Coleraine and District ARS will hold its annual Radio Rally in the Bohill Hotel, Cloyfin Rd, Coleraine, Northern Ireland. Full catering facilities available in Hotel. Why not stay overnight and visit the famous Causeway Coast? Doors open midday. All enquiries to **G18LTB** on (01265) 52393 or **G17TMQ** on (01265) 822502.

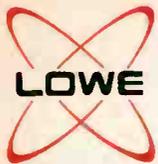
August 30: The Huntingdonshire Amateur Radio Rally are holding their rally at the Ernulf Community School, St. Neots, Cambridgeshire (near Tesco Superstore on the A428). Doors open 1000 till 1400 and admission is just £1. Hot and cold refreshments will be available. Features hall and car boot sale on handstanding. Talk-in on S22. **David Leech G7DIU** on (01480) 431333 (between 0900 and 2100).

September 5: The Bristol Radio & Computer Rally is to be held at the Brunel Centre, Temple Meads Station, Bristol. Doors open 1030 till 1600 (disabled entry from 1015). Admission is just £1, accompanied children under 12 free. Features include 150+ tables, large Bring & Buy, under £30 Bring & Buy, refreshments, on-site parking £3.50, also NCP £1 opposite, ATV demonstration and a raffle. Details from **Muriel Baker G4YZR**, Rally Manager, on (01275) 834282 (24hr answerphone).

September 5: The Andover Amateur Radio Club are holding their Annual Radio Rally and Boot Sale at Middle Wallop Airfield, Nr. Andover, Hants. Talk-in on S22. Tables and further information available from **Jim G4NWJ** on (01980) 610594. E-mail: **liz@countrypursuit.freeserve.co.uk**

September 11: The Reddish Rally is to be held at 1000 at St Mary's Parish Hall, Reddish, Stockport. More information from **G4ILA** on 0161-477 6702.

Continued on page 11...



LOWE ELECTRONICS

LOWE BOOKSHOP



Air Traffic Control Today £8.99
 Air Traffic Control Today and Tomorrow £8.99
 Airband Radio Handbook 6th Ed £7.99
 Air Traffic Control £10.95
 Airwaves '99 £9.95
 Calling Shanwick £10.95
 Callsign '99 £8.95
 Fax, Satellite and RTTY Weather Reports by Philip Mitchell £11.50
 Ferrell's Confidential Frequency Guide £19.95
 Flight Routings 1999 £7.95
 Monitoring the War in Kosovo £5.00
 More Out of Thin Air £6.95
 North Atlantic Flight Communications £16.50
 Passport to World Band Radio '99 £14.99
 Pooley's Flight Guide '98 £7.00
 Receiving Antenna Handbook £17.50
 Scanners 3 £9.95



Scanning the Maritime Bands 2nd Ed £9.75
 Short Wave Propagation Handbook £15.95
 Shortwave Listening Guidebook - Harry Helms £16.95
 Shortwave Maritime Communications £14.50
 Shortwave Radio Listening for Beginners - Anita McCormick £10.95
 UK Scanning Directory 6th Ed £18.50
 UK Scanning Frequency Chart £3.00
 Underground Frequency List £14.95
 Understanding ACARS £9.95
 Weather Radio - Tony Curtis £14.95
 Weather Reports from Radio Sources by Philip Mitchell £7.50
 World Airline Fleet and Select Directory £16.00
 World Radio and TV Handbook 1999 £19.95
 Worldwide Aeronautical Communications Frequency Guide £19.95

Pooley's Flight Guide '98



Last year's Pooleys now available for all aviation enthusiasts. Airport runway maps and loads of frequencies and other really useful data inside. Quantities are limited this year so get yours now before we run out!
 Just £5.00 plus £3.00 p&sp.

OPEN DAY 1999

11th September, 1999

10.00am – 4.00pm, approx

THE ORIGINAL OPEN DAY

A great day out for the dedicated radio enthusiast at the UK's leading radio retailer.

MATLOCK AND DISTRICT'S SUPERB LOCAL ATTRACTIONS MAKE IT A GREAT DAY FOR THE WHOLE FAMILY TO ENJOY.

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- ★ Massive reductions
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- ★ Plus loads more we'll know next month



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All catalogue requests to Matlock address or fax please or by email to info@lowe.co.uk.
 NB Carriage extra on most items
 Orders also to Matlock address or fax or email to orders@lowe.co.uk
 Check or website at for latest product information www.lowe.co.uk

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 Tel 01629 580800

Bristol
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GPS Receivers



If you walk, sail, ride or drive, there's a Garmin GPS just for you! As a Garmin main distributor, you'll find a complete range of GPS receivers and accessories to suit your outdoor activities, including some of our own custom-made items like our world-famous low-cost magnetic mount GPS antenna!

GPS receivers from **£149.00**

Icom PCR100 & PCR1000



Icom PCR100 & PCR1000
For those of you that like to combine scanning and computing, these two Icom receivers are for you!

The PCR100 offers 100kHz to 1300MHz with AM, FM and WFM reception, it covers all popular broadcast and communications channels, including TV sound. There is a choice of operating screens

including a multi-function control panel, with handscope, memory list and scan controller screens just some of the options. There are multiple scanning functions too as you would expect and the software can store multiple files of 1000 memory channels giving unlimited choice

The original PCR1000 offers a similar specification but adds SSB reception and IF shift so is able to monitor the many utility stations to be found in the short-wave bands. An option DSP processor can also be added for improved performance.

Prices from **£199.00** for PCR-100 & from **£299.00** for PCR-1000.



Short Wave Accessories



AT2000, Short wave listener's ATU £99.95
CTUS, Short wave listener's ATU £60.00

RF Systems - World leading antenna for the very best in short wave reception.



AA1, Antenna adaptor for portable receivers £11.00
AA150, Active antenna £148.00
AA150M, Marine active antenna £97.00
AA2, Antenna adaptor for portable receivers £31.00
DX10, Active antenna £125.00
DX1PRO, High quality active antenna £295.00
EMJ, Portable SW antenna £49.00
MINIWINCOM, Indoor window antenna £33.00
MLB, Magnetic Longwire Balun £33.00
MLBANK1, MLB Antenna kit; 12.5m £54.00
MLBANK2, MLB Antenna kit; 20m £60.00
MTA, Magnetic Transfer Antenna, Vertical antenna for short-wave use £125.00
SP1, Antenna splitter / combiner £48.00
SP2S, Antenna splitter / combiner with precision attenuator and medium wave filter £95.00
SP3S, Antenna splitter / combiner £69.95
T2FD, Tilted Terminated Folded Dipole; Low noise RX antenna; 3 - 35MHz £135.00



Scanner Accessories



AOR
ABF125, Band 2 interference filter £28.50

Lowce
LEP300, High quality ear piece £9.95
FC1001, 10 to 2.8 frequency counter £59.95
LA801, Scanner antenna 25-2000MHz £12.95
LA881, Scanner antenna 25-2000MHz Enhanced gain £19.95
LA8C, Civil Airband ground plane antenna £29.95
LABM, Military airband antenna £39.95
LAC1, Window mount for BNC antennas £14.95
LSA1300, Wide range discorne antenna; 25 - 1300MHz £59.95
TW535, Telescopic whip antenna £8.95
WBANT, Wideband mini-mag mount antenna for scanners £19.95



AIRMASTER 2000, Software decoder for ACARS £89.95
NEXCEL, Pack of 4 NiMH rechargeable batteries 1.35Ah £8.00
NEXCH, Special charger for NEXCEL batteries £9.95

SSC
BIA3, Table top stand for handheld scanners £14.95
NF943, Tunable notch filter £29.95
PSU101, Scanner PSU & base stand £34.95
SW2, Short Wave antenna for scanners £14.95

Watson
QS200, Mobile mounting bracket for handheld radios £10.00
WSCT, Universal carry case £19.95



ICOM R75E



Icom's latest receiver combines analogue

and digital technology to bring you a receiver with excellent performance at an excellent price. With expanded frequency coverage from 30kHz right up to 60MHz: it will truly expand your listening horizons.

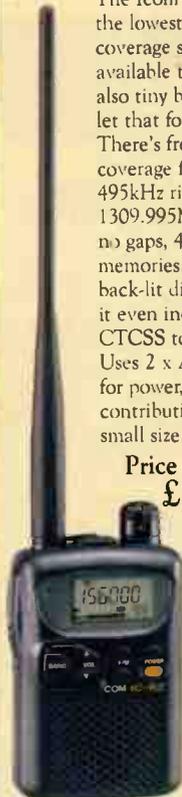
On the technical side, it features a high stability receiver circuit and better than 100dB dynamic range. Synchronous AM detection, twin passband tuning and optional IF filters help to reduce distortion and interference and at the audio stages, an optional Digital Signal Processor unit adds noise reduction and notch filtering. Operation is easy with several tuning step sizes and direct frequency entry complementing the tuning dial and FM is provided as standard. For those who need them, there are 101 memory channels that can also be named and optional computer control will extend many of the functions. The May 99 Short Wave Mag said it all - "little I could not resolve, even in poor conditions" ... "remarkably easy to programme" ... "I can't praise it too highly" ... Need we say more?

R75E from **£699.00**

ICOM IC-R2

The Icom IC-R2 is the lowest priced full coverage scanner available today. It's also tiny but don't let that fool you! There's frequency coverage from 495kHz right up to 1309.995MHz with no gaps, 400 memories, clear back-lit display and it even includes a CTCSS tone scan. Uses 2 x AA cells for power, contributing to the small size.

Price **£139.00**



Yupiteru MVT7100

Still our best selling scanner and no doubt about it! Okay so it may lack computer control but that's hardly a problem when 99% of the time you'll probably be in a situation where it's hardly practical to lug around even the lightest of palm tops. Let your fingers do the walking over the back-lit keyboard to access the 503kHz to 1650MHz range with 1000 memories,

am/fm/wfm and ssb reception and it is so easy to use! (Carr. £10.00).

£199.00



GREAT SECOND HAND BARGAINS!

Why not look at our great range of pre-owned scanners and receivers? We often have current product available at well below RRP so you make a great saving and with our full workshop inspection and warranty prior to sale, you'll have no worries either!

Ask for free second hand list.

ADVANCE NOTICE! BRISTOL OPEN DAY

Saturday 11th December
Staff from major suppliers in attendance
Special Offers, Free Prize Draw,
Amazing Bargains

Make a note in your diary now!

Radio Solutions '99

The famous inventor of the clockwork radio, **Trevor Bayliss**, will give the keynote speech 'Batteries Not Included' at the Radio Solutions '99 Conference on October 20th. Radio Solutions is the annual exhibition and conference of the Low Power Radio Association (LPRA), to be held this year at the National Motorcycle Museum, Birmingham.

Low power radio refers licence-free devices operating for the most part below 500mW, at frequencies allocated for the purpose by governments. It has no connection with the use of clockwork as a substitute for batteries in broadcast radio receivers, but because of the common areas of interest, Mr Bayliss's presence at Radio Solutions is expected to draw a large audience.

Formally established as a trade association in the UK in 1990, the LPRA now has 157 members of which 35 are based outside the UK. Overseas membership is growing rapidly and the LPRA's ruling body now includes representatives from Belgium and Germany.

Midwinter's Drama

Shakespeare will be on the air next winter in celebration of the new millennium. South London's community radio - **SOLO.NET** - are handing over the microphone during their inaugural broadcast to Sutton Performing Arts Network for a 90 minute amateur production of *A Midsummer Night's Dream*.

Keith Lancing of the Charles Cryer Studio Theatre in Carshalton High Street, who is directing the production, told us "We relish the chance to deliver our greatest playwright into people's homes. The cast of 27 includes members of the Theatre's active community arts groups, age from 13 to 70. None are professional, but I expect the production to be of a standard we'll all be proud of".

SOLO.NET's Project Manager Alan Fossey added "We are very committed to this. Midsummer Night will contribute to our demonstration of the breadth and depth of community radio and we are delighted to offer the Charles Cryer Theatre and SPAN publicity for their remarkable Shakespeare season which opens in February.

More information from **Keith Lancing** on **0181-170 4960** or **Alan Fossey** on **0181-646 1533**.

Interactive Ordering

Maplin Electronics have recently announced the launch of its fully interactive Internet ordering system **www.maplin.co.uk**. The new system is an extension of its greatly used paper based CD-ROM catalogue.

The site is hosted on a secure server and provides order authorisation which is flexible and reliable with personalised reference numbers. The reference number system treats customers as individuals and facilitates order tracking by sending an update E-mail immediately.

Nigel Fawcett, IT Director at Maplin Electronics remarked "This site encapsulates a brilliantly simple concept that addresses all the major concerns of speed, resilience and security, while at the same time capitalising on our existing investment in core commercial application software".

The unique attributes of the site come as a direct result of customer feedback. Maplin Electronics' talked to its customers and prioritised their key requirements. An on-line browseable catalogue and comprehensive search options, coupled with the technical data and product information the customer has grown to expect.

All of these features had to be built into the system, whilst providing stock availability and

secure ordering. Maplin Electronics believe that the launch of the new site is only the first stage of their total E-commerce development.



Two More Stores!

Opened recently are two more **Maplin Electronics** Stores. One is located at **52-54 High Holborn, London WC1V 6RL**, and the other is at **Unit 1-4, The Smyth's Building, Jervis Street, Dublin 1**. The new stores will provide local shoppers with an accessible range of electronic products, coupled with the opportunity to experience the latest high tech products.

Leicester Show

The **28th Leicester Amateur Radio Show** will once again be held at Donington Park, Castle Donington, in north west Leicestershire, adjacent to East Midlands Airport, on **24/25th September 1999** from 0930 till 1700 each day. The show will feature 150 stands of Amateur Radio, Computer and Electronics and related equipment. There will be a clubland area featuring both local and national clubs and societies, including the RSGB, Radio Communication, *Radio Today*, *Practical*

Wireless, *Short Wave Magazine* and other radio magazines will be in attendance.

There will be a large Bring & Buy as well as an outdoor Flea Market, Morse tests on demand, QSL corner, demonstration h.f. station and talk-in station, as well as a rig testing service and special event stations. There will be raffles, prize draws and a free programme containing full details of all the stands and the convention.

The venue is all on one level and access for disabled visitors is very easy as there is parking right outside the main entrance. The main parking area is large and free. There is a range of catering facilities also on site, including a snack bar, licensed

Mains Transformer

A new addition to Isoplethics range of valve type transformers, the MT-2 miniature mains transformer is designed specifically for compact mains power supplies ('battery eliminators') for radios using 1.4 and 2V battery valves and includes provision for grid bias.

The MT-2 transformer is of chassis-mounting clamp construction, and is fully varnish impregnated. It measures 44 x 46 x 37mm, excluding mounting lugs, and weighs 190g. The MT-2 also comes complete with Isoplethics detailed *Application Note No. 10* giving full performance details and outline of a typical power supply design.

Available by post only, the MT-2 costs £12.90 in the UK and EU, including standard rate post and UK VAT, from **Isoplethics, 13 Greenway Close, North Walsham, Norfolk NR28 0DE, Tel: (01692) 403230**.



bar, restaurant and cafeteria.

Further information is available on **www.lars.org.uk** Other enquiries about the event, including prices, etc., to **Geoff Dover G4AFJ** on **(01455) 823344**, FAX: **(01455) 828723** or E-mail: **g4afj@argonnet.co.uk**

Blackwood Rally

The **Blackwood Radio Computer & Electronics Rally** is to be held at the Newport Centre, Newport, South Wales, on **17th October 1999**. Doors open at 1030/1100 and the entrance fee is just £1. There will be a Bring & Buy, talk-in, car parks, trade stands, special interest groups, licensed bar, catering, disabled facilities and family attractions.

Located in the centre of Newport, Gwent, immediately adjoining free open air car parking (Sundays) and the bus station, a quarter of a mile from the railway station, and one mile from junctions 25A, 26 and 28 on the M4 and 15 minutes from the Second Severn Crossing, providing easy access from the motorway network.

With the Centre's swimming pool, leisure bar, catering facilities and adjoining shopping area, not to mention many other local places of interest, it is a great day out for all the family. The organiser's, Blackwood Amateur Radio Society, are confident that the new venue will re-establish the event as a major amateur radio event in Wales.

Further information from **Stuart Instone GW0NPL** on **(01495) 243824** or **(07970) 777756** or E-mail: **fireham@aol.com**

New Product

New from **Aerial Techniques** is the CDM-630 - Universal Video Format Converter. Features include: Input auto detecting, allows you to convert any video systems into any other video system (French SECAM L excluded), SMT Technology ensures high reliability and durability, built-in time base correction function for signal synchronisation, 4M bits field memory, built-in automatic gain control function ensures 1Vp-p output signal (input level can range from 0.5Vp-p to 2Vp-p).



The unit will also automatically send out a colour bar picture when there is no video signal present on the input, and it is able to digitally decode and encode. The CDM-630 is super compact as palm size and easy to carry. Its humanistic design makes it easy to operate also.

Find out more about this new product from Aerial Techniques direct at **11 Kent Road, Parkstone, Poole, Dorset BH12 2EH, Tel: (01202) 738232** or **FAX: (01202) 716951**.

WACRAL Conference

Lindors Country House at Lydney in Gloucestershire is the historic setting for the 1999 Annual Conference of the **World Association of**

Send your news to Zoë Shortland at the Editorial Offices

Colours Of Life

FEBA India now has programmes broadcast on All India Radio's medium wave stations. Although Indian Government broadcasting regulations mean that overtly Christian content cannot be aired on national radio, a lot can still be achieved by Christian broadcasters.

FEBA India launched *Colours of Life* in Hindi in January on the medium wave station of All India Radio in Delhi. It is aired on Sunday nights from 2100 and it was an instant hit. They were expecting letter response only from the Delhi region, but were amazed when listeners wrote from Bihar, Uttar Pradesh, Rajasthan, Haryana and Himachal Pradesh. In fact, more than 35 districts in various states. Find out more about FEBA on the web at **www.feba.org.uk**

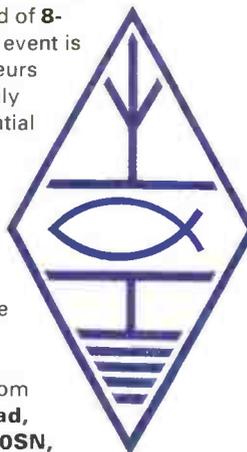


A drama recording for Colours of Life. The production team is Anurag Joab, Anita Masih, Vinita Kumar and Rev Prakesh Kaley.

Radio Amateurs and Listeners.

Scheduled for the weekend of **8-10th October 1999**, this event is open to all Christian amateurs and their families, on a daily basis or for the full residential period.

Conference organiser **Geoff Peterson G4EZU** has arranged a full programme of Christian and radio lectures, events and fellowship, time on the air and the now traditional weekend 'Construction Contest'. Further details from Geoff at **124 Darnley Road, Gravesend, Kent DA11 0SN, Tel/FAX: (01474) 533686**, E-mail: **geoff.peterson@zetnet.co.uk**



New Hesing Collection

The *SWM* Newsdesk has recently heard from **Savoy Hill Publications** who have always offered an in-depth coverage of Vintage Radio, TV and Audio Service Manuals. Data on Test Equipment had always been their weakness and it has been difficult for collectors and enthusiasts to locate this data.

Savoy Hill Publications have always had a good selection of test equipment data as observation of their current Test Equipment Data Catalogue illustrates, but now with the purchase of the 'Hesing Collection', it's considered to be the best single boost to their library in 15 years. The years covered are 1920s to the 1970s.

There will be a new and updated catalogue, but it will take some time to prepare. In the meantime, Savoy Hill Publications are prepared to quote by return on any manual! Find out more by contacting them direct at **50 Meddon Street, Bideford, The Little White Town, N. Devon EX39 2EQ, Tel: (01237) 424280, FAX: (01237) 424280**, E-mail: **savoy.hill@virgin.net** or check out their web site at **http://freespace.virgin.net/tudor.gwilliam-rees**

rallies

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

The Editorial Staff of *SWM* cannot be held responsible for information on Rallies, as this is supplied by the organisers and is published in good faith as a service to readers.

If you have any queries about a particular event, please contact the organisers direct.

Editor

September 12: The Lincoln Hamfest will take place at the Lincolnshire Showground on the A15, five miles north of Lincoln. There will be extensive free parking and overnight facilities for tents and caravans by previous arrangement. There will also be a licensed bar, catering on the day, trade stands, flea market, Bring & Buy, car boot sale and Morse tests. Talk-in on 2m. Other 'non radio' attractions. Admission is £2 per person (under 14s free). **Bob G3VRD** on **(01522) 533325**.

***September 25/26:** The Leicester Amateur Radio Show will be held at the Castle Donington International Exhibition Centre at Donington Park, Castle Donington, Leicestershire. The hall itself is purpose built and features a floor area approximately one third larger than the two Granby Halls combined, and the car parking is unlimited and free. More details from **Geoff Dover G4AFJ** on **(01455) 823344, FAX: (01455) 828273**

October 3: The Great Lumley Amateur Radio & Electronics Society are holding their rally at the Great Lumley Community Centre, Front Street, Great Lumley, near Chester Street. Doors open 1100 (1030 for disabled visitors). There is free parking and easy access, with good, inexpensive food and drink. There will be radio, electronics, computer, satellite and component stalls, plus a Bring & Buy in two sections - junk and good buys. Admission is just £1, free of charge for under 14s if accompanied by an adult. Talk-in. More information on **0191-384 2803** or **(01228) 401201** or from the Rally Organiser **Nancy Bone, 49 South Street, Durham City DH1 4QP**.

October 17: The Portland Amateur Radio Rally is to be held at The Royal Manor School in Weston Road on Portland from 1000 - 1500. Admission is just £1 (including luck programmes). There will be traders, live demonstration of WX satellite images, craft stalls, refreshments and a talk-in. **Mrs Chris Haddon, 1 Victoria Place, Easton, Portland, Dorset DT5 2AA**, E-mail: **mal@malheddon.freeserve.co.uk**

October 17 The Blackwood Radio, Computer & Electronics Rally is to be held at the Newport Centre, South Wales, one mile from junction 27 on the M4. Opens at 1030/1100 and the entrance fee is £1. There will be a Bring & Buy, Talk-in, Trade stands, special interest groups, a licensed bar, catering, disabled facilities and family attractions. Located in the centre of Newport and immediately adjoining a free open air car parking (Sundays) and the bus station, quarter of a mile from the railway station, one mile from junctions 25A, 26 and 28 of the M4 and 15 minutes from the Second Severn Crossing providing easy access. Further information can be obtained from **Stuart Instone GW0NPL** on **(01495) 243824/(07970) 777756** or E-mail: **FIREHAM@AOL.COM**

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



LM&S

Since the early days of radio (wireless!) listeners have enjoyed searching the broadcast bands. In addition to listening to the programmes, they have derived a great deal of pleasure (even a thrill) from picking up a direct transmission from a distant short wave station. Sending detailed reception reports to the stations and receiving their verification (QSL) added to their enjoyment.

The use of s.w. relay stations to improve reception has not detracted from those pleasures because the relays are often located in distant or unusual places. However, the omission of station locations and details of the relays in use in many of the latest broadcast schedules is a serious set-back for the s.w.l. Furthermore, the reluctance by many broadcasters to verify reports is very disappointing.

Long Wave Reports

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

The short lived propagational improvements that occur in this band over transatlantic paths to E.Canada during mid-summer nights have once again been observed by **Alan Roberts** in Quebec. On June 16th he received R.Monte Carlo via Roumoules, France (1400kW) on **216kHz** (SINPO 34333 at 0258UTC); R.France-Inter via Allouis (2000kW) on **162kHz** with news (34344 at 0303UTC); also R.Diff TV Marocaine via Azilal, Morocco (800kW) on **207** (23322 at 0355). The 24th also proved favourable, when he logged Atlantic 252 in Clarkestown, Eire (500/100kW) on **252kHz** as 33433 at 0245; also Europe 1 via Saarlouis (2000kW) on **183** as 33333 at 0250.

Medium Wave Reports

There were no reports of m.w. transatlantic reception at night during June but the sky waves from some of the many stations in the Middle East, Africa, Europe and Scandinavia reached the UK - see chart.

Another trip to Scotland kept **Brian Keyte** (Gt.Bookham) busy for two weeks during June. Whenever possible he searched the m.w. band by using a roadside fence as an antenna for his AOR AR7030 receiver. He says "I was pleased to log several local radio stations in SE.England from up by Ullapool. Some were in the evening with the Sun still shining (it set around 2220BST up there!) though must have been nearly dark down here".

Short Wave Reports

At present only R.France International is using the **25MHz (11m)** band on a regular basis. Their transmissions are beamed towards E/C.Africa on **25.820** (Fr 0900-1300). Unfortunately no reports have arrived here to indicate how well they are being received in the intended area. They have been monitored in E.Canada by Alan Roberts (Quebec) and he found reception generally very poor except for two days when they came

'thumping in'. He logged them on July 5 as a potent 43544 at 1200UTC.

Their transmissions have also been received in some areas of the UK. They were rated 34433 at 0903 by **Rhoderick Illman** in Oxted; 55344 at 0906 by **Richard Reynolds** in Guildford; 25322 at 0930 by **Eddie McKeown** in Newry; 15242 at 0942 by **Fred Pallant** in Storrington; SIO 211 at 1115 by **Philip Rambaut** in Macclesfield; 25533 at 1120 by **Simon Hockenhuil** in E.Bristol; 34443 at 1225 by **Robert Connolly** in Kilkeel.

Some listeners have been searching this band on a daily basis in the hope of picking up test transmissions from broadcasters who are considering using this band during the winter period. So far they have found no trace of such activity although a few unmodulated carriers have been detected.

Many broadcasters are now taking advantage of the conditions prevailing in the **21MHz (13m)** band. Their transmissions are beamed to selected areas but they often reach the UK. During the morning R.Australia via Shepparton on **21.725** (Eng to Pacific areas 0600?-0858) was rated 33333 at 0735 by **Stan Evans** in Herstmonceux; RAI Rome **21.520** (It to Africa 0600-1300) 35433 at 0908 by **Fred Wilmshurst** in Northampton; Voice of Turkey **21.715** (Tur to W.Asia, Australia 0600?-1100?) 33444 at 0915 in Oxted; BSKSA Saudi Arabia **21.495** (Ar [Holy Quran] to SE.Asia 0900-1200) 44243 at 1020 in Newry; R.Ukraine Int **21.520** (Eng to Australia 1100-1200) 43333 at 1120 by **Sheila Hughes** in Morden; VOA via Sao Tome? **21.705** (Eng to Africa 1100-?) SIO 322 at 1125 in Macclesfield; Swiss R.Int via Sottens? **21.770** (Eng, Ger, Fr, It to SE.Asia, Far East 1100-1330) 45544 at 1127 by **Darren Beasley** in Bridgwater; R.Sweden, Stockholm **21.810** (Eng to N.America 1130-1200) 55555 at 1130 by **Tom Winzor** in Plymouth.

In the early afternoon Channel Africa via Meyerton, S.Africa **21.530** (Eng to Africa 1300-1455? Sat/Sun) was noted as SIO 322 at 1300 by **Tom Smyth** in Co.Fermanagh; UAER, Dubai **21.605** (Eng to Eur 1330-1350) as 43334 at 1330 by **Gerald Guest** in Dudley; HCJB Quito, Ecuador **21.455** (Eng [u.s.b. + p.c.] to N/S.America 1200-1600) 33333 at 1425 by **David Hall** in Morpeth; BBC via Ascension Is **21.660** (Eng to Africa 1100-1700) 25532 at 1430 by **David Edwardson** in Wallsend; DW via Wertachtal **21.705** (Ar to M.East 1300-1600) 44454 at 1440 by **Robert Hughes** in Liverpool; BBC via Cyprus **21.470** (Eng to Africa 1400-1700) 34443 at 1450 in Kilkeel.

Later, R.Prague, Czech Rep **21.745** (Eng to N.America 1700-1730) was rated 34433 at 1710 by **Vic Prier** in Colyton; Voz Christiana, Chile **21.500** (Sp to N.America 1100-2100?) 32232 at 2000 by **Robert Beason** in Nottingham; R.Netherlands via Bonaire, Ned.Antilles **21.590** (Eng, Du to Africa 1830-2025) 25432 at 2020 in E.Bristol; HCJB Quito, Ecuador **21.470** (Russ?, Fr, Ger, Sp to Eur 1830-2200?) 43333 at 2030 by **Bernard Curtis** in Stalbridge; R.Australia via Shepparton? **21.740** (Eng to ? 2100-0200?) 24222 at 2129 by **Vera Brindley** in Woodhall Spa; Voz Christiana, Chile **21.550** (Sp to N.America 1800?-?) 33333 at 2205 by **Thomas Williams** in Truro.

A few broadcasters are active in the **18MHz (15m)** band. They include R.Sweden on **18.960** (Sw to ? 1030-1100, Eng to N.America 1130-1200), clearly heard at 1150 by **Conway Longworth-Dames** in Brixham; R.Norway Int **18.950** (Norw to Asia 1200-1230) & R.Denmark via R.Norway **18.950** (Da to Asia 1230-1300), rated 45544 at 1240 in Northampton; R.Denmark via R.Norway **18.950** (Da to N.America? 1430-1500) 35543 at 1435 in Wallsend; Christian Science BC via WSHB Cypress Creek **18.915** (Fr, Eng to E/C.Africa 1600-?) 33333 at 2040 in Stalbridge.

The propagation conditions in the **17MHz (16m)** band are steadily improving and many broadcasts now reach our shores during the day. Those received during the morning include R.Australia via Shepparton **17.750** (Eng to Asia 0600-1000?), rated 35533 at 0605 in E.Bristol; BBC via Nakhon Sawan, Thailand **17.790** (Eng to Asia 0300-0900) 35533 at 0610 in Wallsend;

Long Wave Chart

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

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

Listeners:-

- (A) Simon Hockenhuil, E Bristol
- (B) Sheila Hughes, Morden.
- (C) Eddie McKeown, Newry
- (D) George Millmore, Wootton, IoW.
- (E) Fred Pallant, Storrington.
- (F) Alan Roberts, Quebec, Canada.
- (G) Tom Smyth, Co.Fermanagh.
- (H) Ernie Strong, Ramsey, Cambs.
- (I) Norman Thompson, Dadby.
- (J) Fred Wilmshurst, Northampton.

R.Romania Int **17.745** (Eng to F.East? 0700-0800) 55544 at 0705 in Northampton; Swiss R.Int via ? **17.685** (Fr, It, Eng, Ger to Africa 0600-0830) 34343 at 0730 in Woodhall Spa; KWHR World Harvest R via Hawaii **17.780** (Eng to ?) 32222 at 0745 in Morpeth; R.Kuwait **17.885** (Ar to Far East 0900-1505) 33333 at 0908 in Oxted; AIR via Delhi? **17.387** (Eng to Pacific areas 1000-1100) 34333 at 1014 by **Tony Hall** in Freshwater Bay, IoW; R.Pakistan, Islamabad **17.835** (Eng to Eur 1100-1120) 43343 at 1106 in Newry; Africa No.1, Gabon **17.630** (Fr to W.Africa 0700-1600) heard at 1130 in Brixham; R.Bulgaria, Sofia **17.500** (Eng to Eur 1100-1200) SIO 433 at 1145 in Macclesfield.

Early in the afternoon R.Japan via Rampisham, UK **17.695** (Jap, Eng to ? 1300-1500) was rated 55555 at 1335 in Stalbridge; R.Sweden, Stockholm **17.505** (Eng to Australia, SE.Asia 1330-1400) 44433 at 1355 in Bridgwater; Israel R, Jerusalem **17.535** (Eng to Eur, N.America 1400-1430) 42333 at 1400 by **Clare Pinder** in Appleby; R.Canada Int via Sackville **17.895** (Fr to Eur, Africa Mon-Sat 1400-1500) 34443 at 1450 in Killeel.

Later, VOA via Morocco **17.895** (Eng to Africa 1600-1900) was 45444 at 1820 in Liverpool; Israel R, Jerusalem **17.545** (Heb [Home Sce rly] to W.Eur, N.America) 55555 at 1821 in Nottingham; R.Nederlands via Bonaire, Ned Antilles **17.605** (Eng to Africa 1730-2025) 25232 at 1844 in Storrington; BBC via Antigua, W.Indies **17.840** (Eng to C/N.America 1700-1900) 23322 at 1850 in Colyton; RCI via Sackville **17.820** (Fr, Eng to Eur, Africa 1900-2200) 44444 at 2000 in Dudley; R.New Zealand on **17.675** (Eng to Pacific areas 1958-0458) 34333 at 2004 in Guildford; BBC via Ascension Is **17.830** (Eng to Africa 0700-2100) 55444 at 2020 in Herstmonceux; HCJB Quito, Ecuador **17.660** (Eng to Eur 1900-2200) 43333 at 2037 in Plymouth; WHRI via Maine, USA **17.650** (Eng to Eur, M.East, Africa 1600-0000?) SIO 444 at 2200 in Co.Fermanagh; Voz Christiana, Chile **17.680** (Sp to N.America 2030-?) 44444 at 2200 in Truro; WYFR Okeechobee, USA **17.845** (Eng to Eur, Africa 2100-2300) 44333 at 2205 in Morden.

There is still plenty to interest the listener in the **15MHz (19m)** band. Noted before noon were R.For Peace Int, Costa Rica **15.050** (Eng to ?), rated 44444 at 0605 in Morpeth; BBC via Kranji, Singapore **15.360** (Eng to Asia 0500-1015) 25542 at 0701 in Wallsend; R.Australia via Shepparton on **15.415** (Eng to Asia 0100-0400, 0600-0900) 54444 at 0714 in Plymouth; R.Kuwait **15.110** (Eng to SE.Asia 0500-0800) 34433 at 0745 in Guildford; Swiss R.Int via ? **15.545** (Fr, It, Eng Ger to Africa 0600-0830) heard at 0745 in Brixham; VOA via Thailand? **15.240** (Eng to Asia? 1000?-?) SIO 222 at 1000 in Co.Fermanagh; R.Diff.TV Marocaine, Tanger **15.345** (Ar to M.East 0900?-2200?) 33434 at 1015 by **Norman Thompson** in Oadby; Swiss R.Int via ? **15.315** (Ger, Fr, It, Eng to Eur 1000-1230) 44444 at 1026 in Freshwater Bay; R.Bulgaria **15.700** (Eng to W.Eur 1100-1200) 55555 at 1100 in Morden; R.Pakistan, Islamabad **15.530** (Eng to Eur 1105-1120) 24222 at 1109 in Newry; BBC via Antigua **15.220** (Eng to C.America 1100-1400) 35333 at 1140 in Northampton.

During the afternoon RFI via Allouis? **15.195** (Eng to Eur, Africa 1200-1300) was 32232 at 1250 in Liverpool; R.Romania Int **15.390** (Eng to Eur 1300-1356) 54444 at 1315 in Herstmonceux; RCI via Sines, Portugal **15.325** (Eng, Fr to Eur, M.East, Africa 1330-1500) 44444 at 1330 in Truro; VOIRI Tehran, Iran **15.084** (Home Sce relay) 44434 at 1600 in Colyton; UAER, Dubai **15.395** (Eng to Eur 1600-1640) 22442 at 1601 in Bridgwater; R.Japan via Moyabi, Gabon **15.355** (Eng to Africa 1700-1800) 33223 at 1700 in Dudley.

Later, R.Romania Int **15.380** (Eng to Eur 1700-1800) was 44444 at 1753 in Woodhall Spa; Africa No.1, Gabon **15.475** (Fr to W.Africa 1700-1900) 33353 at 1840 in Storrington; R.Budapest, Hungary **15.235** (Eng to N.America 2000-2100) 43444 at 2000 in Nottingham; RCI via Sackville **15.325** (Fr, Eng to Eur, Africa 1900-2200) 44434 at 2100 in Stalbridge; R.Taipei Int via WYFR **15.600** (Eng to Eur 2200-2300) 44344 at 2200 in Appleby; BBC via Ascension Is **15.400** (Eng to Africa 0800-1130, 1500-2300) 55534 at 2240 in E.Bristol; BBC via Kranji, Singapore **15.360** (Eng to Asia 0000-0320) 34433 at 0020 in Killeel.

In the **13MHz (22m)** band DW via Wertachtal? **13.790** (Eng to M.East? 0600-0650) was 32323 at 0600 in Nottingham;

DW via Wertachtal **13.780** (Ger to S.Eur 0600-1800?) 44454 at 0635 in Liverpool; SRI via Sottens **13.685** (Eng, It, Ger, Fr to Australasia 0830-1030) 55455 at 0830 in Newry; R.Austria Int via Moosbrunn **13.730** (Ger to Eur) 44434 at 0949 in Oxted; R.Prague, Czech Rep. **13.580** (Sp, Fr to W.Eur? 1400-1455) 54444 at 1412 in Plymouth; Croatian R, Zargreb **13.830** (Cr, Eng to N.America 1230-2100) 44444 at 1500 in Killeel; VOA via Selebi-Phikwe, Botswana **13.710** (Eng to Africa 1600-2130?) 35333 at 1650 in E.Bristol; R.Vlaanderen Int, Belgium **13.670** (Eng to Eur, N.Africa, M.East 1730-1800) 32332 at 1730 in Morden; R.Jordan via Karanah **13.630** (Ar to M.East, E.Africa 1700-2100) 34322 at 1745 in Colyton; V of Turkey, Ankara **13.695** (Eng to Eur 1830-1918) 54333 at 1830 in Appleby; AIR via Bangalore **13.780** (Eng to NW.Africa 1745-1945) 44533 at 1932 in Northampton; Swiss R.Int via Fr.Guiana? **13.770** (It, Ar, Eng, Ger, Fr to S.Africa 2000-2130) 44444 at 2000 in Dudley; R.Damascus, Syria **13.610** (Eng to Eur 2005-2105), heard at 2010 in Brixham; Vatican R, Italy **13.765** (Fr to Africa 2030-2100) 44444 at 2030 in Truro; V of Vietnam, Hanoi **13.740** (Eng to Eur 2030-2100) 54433 at 2035 in Herstmonceux; RCI via Sackville, Canada **13.650** (Fr, Eng to Eur, Africa 1900-2200) 55444 at 2107 in Freshwater Bay, IoW; Christian Science SWB via WSHB Cyprus Creek, USA **13.770** (Eng to Eur 2100-?)



Continued
on page 15.

Local Radio Chart

Freq (kHz)	Station	ILR BBC	e.m.r.p (kW)	Listener	Freq (kHz)	Station	ILR BBC	e.m.r.p (kW)	Listener
1170	1170AM,High Wycombe		0.25	I	1242	Capital G Maidstone		0.32	E
1251	C.G Amber,Bury StEd		0.76	A,D,G,H*	1260	Marcher G, Wrexham		0.64	D
1260	SabrasSnd,Leicester		0.29	D,G,I	1260	R.York	B	0.50	A
1278	CI Gold 1278 W.York		0.43	A,G	1296	Radio Xt, Birmingham		5.00	A,D,E,G,H*,I
1305	Premier via ?		0.50	D,E,G,I	1305	Premier, Enfield		0.50	D
1305	Premier, Enfield		0.50	D	1305	Touch AM, Newport		0.20	C,E
1323	Capital G, Southwick		0.50	E	1323	SomersetSnd,Bristol	B	0.63	A,D,G*
1332	Premier, Battersea		1.00	E,F*	1332	Premier, Battersea		1.00	E,F*
1332	CI Gold 1332,Pt'bo		0.60	A,D,G,H*,I	1332	Wiltshire Sound	B	0.30	E
1332	Wiltshire Sound	B	0.30	E	1359	CI Gold 1359, C'try		0.27	D,G,I
1359	R.Solent	B	0.85	E,G	1359	R.Solent	B	0.85	E,G
1359	Touch AM, Cardiff		0.20	C	1368	R.Lincolnshire	B	2.00	G,I
1368	R.Lincolnshire	B	2.00	G,I	1368	Southern Counties R	B	0.50	E,H*
1368	Southern Counties R	B	0.50	E,H*	1368	Wiltshire Sound	B	0.10	E
1377	Asian Sd, Rochdale		0.10	A,D	1377	Asian Sd, Rochdale		0.10	A,D
1413	R.Gloucester via ?	B	?	D,G,I	1413	R.Gloucester via ?	B	?	D,G,I
1413	Premier via ?		0.50	D,E,F*,G	1413	Premier via ?		0.50	D,E,F*,G
1413	Yks Dales R, Skipton		0.10	A,D	1431	The Breeze, Southend		0.35	D,G
1431	The Breeze, Southend		0.35	D,G	1431	CI.Gold, Reading		0.14	D,E,I
1431	CI.Gold, Reading		0.14	D,E,I	1449	R.Peterboro/Cambs	B	0.15	A,D,E,G,I
1449	R.Peterboro/Cambs	B	0.15	A,D,E,G,I	1458	R.Cumbria	B	0.50	A,E
1458	R.Cumbria	B	0.50	A,E	1458	R.Devon & Dorset	B	2.00	A,E
1458	R.Devon & Dorset	B	2.00	A,E	1458	1458 Lite AM Manch'		5.00	D,F
1458	1458 Lite AM Manch'		5.00	D,F	1458	R.Newcastle	B	2.00	D
1458	R.Newcastle	B	2.00	D	1458	Sunrise, London		50.00	E,G,H*,I
1458	Sunrise, London		50.00	E,G,H*,I	1458	Asian Netwk Langley	B	5.00	G,I
1458	Asian Netwk Langley	B	5.00	G,I	1476	CountySnd Guildford		0.50	C*,D,E,G,I
1476	CountySnd Guildford		0.50	C*,D,E,G,I	1485	CI.Gold, Newbury		1.00	C,G,I
1485	CI.Gold, Newbury		1.00	C,G,I	1485	R.Humberside (Hull)	B	1.00	A,G
1485	R.Humberside (Hull)	B	1.00	A,G	1485	R.Merseyside	B	1.20	A,D,E
1485	R.Merseyside	B	1.20	A,D,E	1485	Southern Counties R	B	1.00	E
1485	Southern Counties R	B	1.00	E	1503	R.Stoke-on-Trent	B	1.00	A,D,E,G,I
1503	R.Stoke-on-Trent	B	1.00	A,D,E,G,I	1521	Farne 1521, Reigate		0.64	D,E,G,I
1521	Farne 1521, Reigate		0.64	D,E,G,I	1530	R.Essex, Southend	B	0.15	E,G
1530	R.Essex, Southend	B	0.15	E,G	1530	CI.Gold W.Yorks		0.74	A,D,F*,G
1530	CI.Gold W.Yorks		0.74	A,D,F*,G	1530	CI.Gold Worcester		0.52	D,E,I
1530	CI.Gold Worcester		0.52	D,E,I	1548	R.Bristol	B	5.00	E
1548	R.Bristol	B	5.00	E	1548	Capital G, London		97.50	A,E,G,I
1548	Capital G, London		97.50	A,E,G,I	1548	Magic AM, Sheffield		0.74	F
1548	Magic AM, Sheffield		0.74	F	1548	Forth AM, Edinburgh		2.20	D
1548	Forth AM, Edinburgh		2.20	D	1557	R.Lancashire	B	0.25	A,D
1557	R.Lancashire	B	0.25	A,D	1557	CI.Gold 1557,N.hant		0.76	D,G,I
1557	CI.Gold 1557,N.hant		0.76	D,G,I	1557	Capital G, So'ton		0.50	E
1557	Capital G, So'ton		0.50	E	1584	London Turkish R		0.20	E,G
1584	London Turkish R		0.20	E,G	1584	R.Nottingham	B	1.00	G
1584	R.Nottingham	B	1.00	G	1584	R.Shropshire	B	0.50	A,E
1584	R.Shropshire	B	0.50	A,E	1584	Thy, Perth		0.21	D
1584	Thy, Perth		0.21	D	1602	R.Kent	B	0.25	D,E,G
1602	R.Kent	B	0.25	D,E,G					

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

Listeners:-

- (A) Robert Connolly, Killeel.
- (B) Francis Hearne, N.Bristol.
- (C) Simon Hockenhill, E.Bristol.
- (D) Brian Keyte, while near Ullapool.
- (E) George Millmore, Wootton, IoW.
- (F) Tom Smyth, Co.Fermanagh.
- (G) Ernie Strong, Ramsey, Cambs.
- (H) Norman Thompson, Oadby.
- (I) Fred Wilmshurst, Northampton.
- (J) Tom Winzor, Plymouth.

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OPENS SATURDAY SEPTEMBER 11th, 1999

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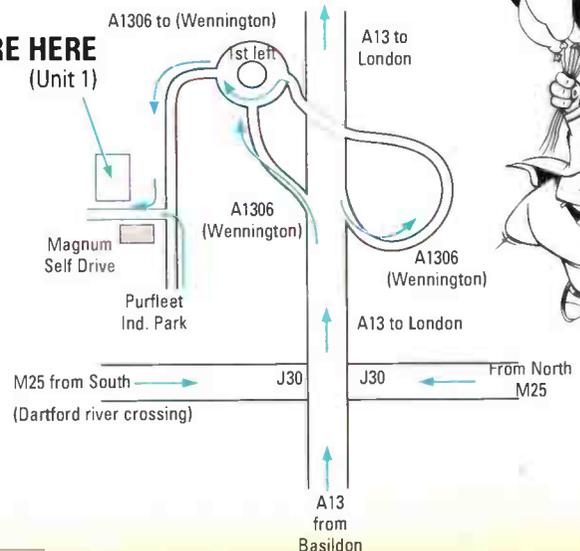
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**OUR WEST MIDLANDS BRANCH IS
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44444 at 2254 in Bridgwater.

Good reception from many areas has been noted in the **11MHz (25m)** band. Before noon HCJB Quito, Ecuador **11.730** (Eng to Eur 0700-0900) was 44444 at 0810 in Morden; R.France Int via Allouis? **11.670** (Fr to Africa 0700-1130) 43333 at 0815 in Stalbridge; BBC via Skelton & Woofferton, UK **12.095** (Eng to Eur, N/W.Africa 0600-2000) SIO 333 at 0900 in Co.Fermanagh; R.Korea via Sackville, Canada **11.715** (Eng to E.USA 1030-1100) 24323 at 1030 in Appleby; R.Norway Int **11.605** (Norw to Eur, America 1100-1130) SIO 555 at 1120 in Macclesfield.

During the afternoon R.Jordan via Al Karanah **11.690** (Eng to W.Eur, E.USA 1100-1730) was 43433 at 1215 in Herstonceux; AIR via Bangalore **11.585** (Sind to Pakistan 1230-1500) 44444 at 1450 in Morpeth; FEBC Philippines **11.995** (Eng to SE.Asia 1400-1600) 23332 at 1500 in Kilkeel; R.Australia via Shepparton 11.660 (Various to Asia 1430?-1700) 35553 at 1550 in Wallsend; V of Vietnam, Hanoi **12.070** (Eng to Eur 1700-1730) 44544 at 1717 in Bridgwater.

Later, Israel R, Jerusalem **11.585** (Heb [Home Svce relay]

to Eur, N.America) was 44444 at 1815 in Colyton, R.New Zealand Int **11.695** (Eng 1851-1950) 25443 at 1854 in Guildford; V of Mediterranean, Malta via Russia **12.060** (Eng to Eur 1900-2000) 45444 at 1900 in Newry; R.Bulgaria, Sofia **11.720** (Eng to Eur 1900-2000) 54444 at 1930 in Plymouth; BBC via Ascension Is **12.095** (Eng to S.America 2000-0200) 44344 at 2000 in Dudley; R.Damascus, Syria **12.085** (Fr, Eng to Eur 1905-2105), heard at 2010 in Brixham; R.Nederlands via Flevo **11.655** (Eng to Africa 1730-2025) 32233 at 2015 in Nottingham; RCI via Skelton, UK **11.690** (Eng to Eur 2000-2130) 55455 at 2025 in Liverpool; Egyptian R, Abis **12.050** (Ar [Home Svce relay] to Eur, N.America 0200-0000) 44333 at 2025 in Oxted; RAI Int, Rome **11.880** (Eng to Eur? 2025-2045) 43543 at 2030 in E.Bristol; R.Kuwait via Kabd **11.990** (Eng to Eur, N.America 1800-2100) SIO 333 at 2053 by **Francis Hearne** in N.Bristol; R.Australia via Shepparton **11.880** (Eng to Pacific areas 1700?-2200?) 34333 at 2127 in Woodhall Spa; AIR via Bangalore **11.620** (Eng, Hin to Eur 1745-2230) 54444 at 2130 in Freshwater Bay, IoW; R.Romania Int, Bucharest **11.830** (Eng to Eur, USA 2300-2356) 55544 at 2310 in Northampton.



Medium Wave Chart

Freq (kHz)	Station	Country	Power (kW)	Listener	Freq (kHz)	Station	Country	Power (kW)	Listener
531	Berg	Germany	20	D*	837	Nancy	France	200	F*
531	RNE5 via ?	Spain	?	E	837	CDPE via ?	Spain	?	D*,E*,G*
531	Beromunster	Switzerland	500	G	846	Rome	Italy	1200	A*,D*,E*,G*
540	Wavre	Belgium	150/50	B,D*,E,G,H	855	Berlin	Germany	100	D*
540	Sidi Bennour	Morocco	600	D*	855	RNE1 via ?	Spain	?	D*,E*,G*,H*
549	Les Trembles	Algeria	600	A*,B*,E*,G	864	Santah	Egypt	500	D*,E*,G*
549	Thurnau (DLF)	Germany	200	B*,D*,E,H*	864	Paris	France	300	A,E,G,H
558	Espoo	Finland	50	D*,G*	864	Socuellamos(RNE1)	Spain	?	G*
558	RNE5 via ?	Spain	?	D*,E*,G*	873	Frankfurt(AFN)	Germany	150	A*,D*,E*
567	Tullamore(RTE1)	Eire	500	A*,B,C,E,F,G,H,I	873	Zaragoza(SER)	Spain	20	D*,E*
576	Muhlacker(SDR)	Germany	500	A*,D*,G	873	Enniskillen(R.U)	UK	1	C,F
576	Riga	Latvia	500	E*,G*	882	CDPE via ?	Spain	?	D*,E*
576	Barcelona(RNE5)	Spain	50	G*	882	Washford(BBCWales)	UK	100	A*,C,E,F,G,H
585	Drf Wien	Austria	600	E*	891	Algiers	Algeria	600/300	A,B*,D*,F*,G*
585	Paris(FIP)	France	8	B,E,G	900	Milan	Italy	600	A*,D*,G*
585	Madrid(RNE1)	Spain	200	A*,D*,E*,G*,H*	900	CDPE via ?	Spain	?	D*,G*
585	Dumfries(BBCScot)	UK	2	D*,C	909	B'mans Pk(BBCS)	UK	140	E,F,G,H
594	Frankfurt(HR)	Germany	1000/400	A*,D*,E*,G,H*	918	Domzale	Slovenia	600/100	B*,D*,E*,G*
594	Dujda-1	Morocco	100	G*	918	Madrid(R.Int)	Spain	20	D*,E*,G*
594	Muge	Portugal	100	G*	927	Wolvertem	Belgium	300	E,G,H
603	Lyon	France	300	E*	927	Nitra	Slovakia	50	D*
603	Sevilla(RNE5)	Spain	50	A*,D*,E*,G*	936	Bremen	Germany	100	D*,E*
603	Newcastle(BBC)	UK	2	A*,C,D*,G	936	RNE5 via ?	Spain	?	G*
612	Athlone(RTE2)	Eire	100	A*,C,D*,E,F,G,H	945	Toulouse	France	300	G*
612	RNE1 via ?	Spain	10	G*	954	Brno (CRo2)	Czech Rep.	200	E*
621	Wavre	Belgium	80	D*,E,G,H	954	Madrid(CJ)	Spain	20	D*,E*,G*
621	RNE1 via ?	Spain	10	G*	963	Pori	Finland	600	D*,E*,G*,H*
621	Barcelona(DCR)	Spain	50	D*,E*	972	Hamburg(NDR)	Germany	300	D*,E*,G*,H*
630	Vigra	Norway	100	D*,E*	981	Alger	Algeria	600/300	A,B*,E*,G*,H*
630	Tunis-Djedeida	Tunisia	600	D*,E*	981	Megara	Greece	200	G*
639	Praha(Liblice)	Czech	1500	D*,E*	990	Berlin	Germany	300	D*,E*,G*
639	RNE1 via ?	Spain	?	D*,E*	990	R Bilbao(SER)	Spain	10	D*,F*
648	Drfordness(BBC)	UK	500	D*,C,E,G,H	990	Redmoss(BBC)	UK	1	C
648	Kharkiv	Ukraine	150	G*	990	Tywyn(BBC)	UK	1	C
657	Madrid(RNE5)	Spain	20	D*,E*,G*	999	Schwerin (RIAS)	Germany	20	D*
657	Wrexham(BBCWales)	UK	2	C,D*,F*,G,H	999	Madrid(CDPE)	Spain	50	G*,H*
666	Messkirch(Rohrd(SWF)	Germany	150	D*	1008	SER via ?	Canaries/Spain	?	G*
666	Sikunai(R.Vilnius)	Lithuania	500	D*,G*	1008	Flevo(Hilv-5)	Holland	400	E,G,H
666	Lisboa	Portugal	135	G*	1017	Rheinsender(SWF)	Germany	600	D*,E*,G*
675	Marseille	France	600	D*	1017	RNE5 via ?	Spain	?	D*,G*
675	Lopic(R10 Gold)	Holland	120	A,B,D*,E,G	1035	Tallinn	Estonia	500	E*,G*
684	Sevilla(RNE1)	Spain	500	A*,D*,E*,G*,H*	1035	Milan	Italy	50	G*
693	Droitwich(BBC)	UK	150	E,F,G,H	1035	Lisbon(Prog3)	Portugal	120	A*
693	Startpoint(BBC)	UK	50	A	1044	Dresden(MDR)	Germany	20	D*,G*
702	Yerevan	Armenia	100	G*	1044	S.Sebastian(SER)	Spain	10	E*,G*
702	Flensburg(NDR)	Germany	5	D*	1053	Talk R.UK via ?	UK	?	A,E,F,G,H,I
702	TWR via Monte Carlo	Monaco	300	E*,G	1062	Kalundborg	Denmark	250	G,H*
711	Rennes 1	France	300	A,D*,E,G,H	1062	R.Uno via ?	Italy	?	D*,G*
711	Laayoune	Morocco	600	E*,G	1071	R.France via ?	France	?	E*
720	Langenberg	Germany	200	G*	1071	Bilbao(EI)	Spain	5	D*,G*,H*
720	Lisnagarvey(BBC4)	N.Ireland	10	A*,C,F	1071	Talk Radio UK via ?	UK	?	G,H
720	Lots Rd,Ldny(BBC4)	UK	0.5	E,G,H	1080	SER via ?	Spain	?	G*
729	Cork(RTE1)	Eire	10	A,D*,F,G	1089	Talk Radio UK via ?	UK	?	F,E,G,H
729	RNE1 via ?	Spain	?	D*,E*,H*	1098	Nitra(Jarok)	Slovakia	1500	A*,D*,E*,H*
738	Paris	France	4	E	1098	RNE5 via ?	Spain	?	G*
738	Barcelona(RNE1)	Spain	500	D*,E*,G*	1107	AFN via ?	Germany	10	A*
747	Flevo(Hilv2)	Holland	400	A,D*,E,G,H	1107	RNE5 via ?	Spain	?	G*
756	Braunschweig(DLF)	Germany	800/200	D*,E*,G*	1107	Talk R.UK via ?	UK	?	E,F,G,H
756	Bilbao(EI)	Spain	5	D*	1125	La Louviere	Belgium	20	D*,E*,H*
765	Sottens	Switzerland	500	B*,D*,E*	1125	Deanovec	Croatia	100	A*
774	Enniskillen(BBC)	N.Ireland	1	C,D*,F	1125	RNE5 via ?	Spain	?	E*,G*
774	RNE1 via ?	Spain	?	D*,E*,H*	1125	Llandrindod Wells	UK	1	C
783	Leipzig(MDR)	Germany	100	D*,E*	1134	CDPE via ?	Spain	2	E*,G*
792	Limoges	France	300	E*	1134	Zadar(Croatian R)	Yugoslavia	600/1200	A*,D*,E*,H*
792	Lingen(NDR)	Germany	5	D*	1143	AFN via ?	Germany	1	D*
792	Sevilla(SER)	Spain	20	B*,E*	1143	CDPE via ?	Spain	2	E*,G*
792	Londonderry(BBC)	UK	1	F	1152	RNE5 via ?	Spain	10	D*
801	Munichen-Ismaning	Germany	300	D*,E*	1161	Am-Salah	Algeria	5	E*
801	RNE1 via ?	Spain	?	D*	1179	SER via ?	Spain	?	G*
810	Volgograd	Russia	150	E*,G*	1179	Solvseborg	Sweden	600	D*,E*,H*
810	Madrid(SER)	Spain	20	E*,G*	1188	Kuurne	Belgium	5	E*,G
810	Westerglen(BBCScot)	UK	100	C,E*,F,G*,H*	1188	Reichenbach(MDR)	Germany	5	D*
819	Batra	Egypt	450	G*	1197	Munich(VDA)	Germany	300	D*
819	Toulouse	France	50	D*	1197	Virgin via ?	UK	?	E,F,G,H
819	S.Sebastian(EI)	Spain	5	G*	1206	Bordeaux	France	100	D*
828	Rotterdam	Holland	20	D*	1215	Virgin via ?	UK	?	E,F,G,H
828	Barcelona(SER)	Spain	50	D*	1224	Lelystad	Holland	50	D*,G
					1224	CDPE via ?	Spain	?	G*

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

Listeners:

- (A) Simon Hockenhill, E.Bristol.
- (B) Sheila Hughes, Morden.
- (C) Brian Keyte, while near Ullapool.
- (D) Eddie McKeown, Newry.
- (E) George Milmore, Wootton IoW.
- (F) Tom Smyth, Co.Fermanagh.
- (G) Ernie Strong, Ramsey, Cambs.
- (H) Fred Wilmshurst, Northampton.
- (I) Tom Winzor, Plymouth.

Tropical Bands Chart

Freq (MHz)	Station	Country	UTC	DXer	Freq (MHz)	Station	Country	UTC	DXer	Freq (MHz)	Station	Country	UTC	DXer
3.200	TWR Manzini	Swaziland	0300	C,G	4.835	ABC-Alice Springs	Australia	2131	K	5.045	R.Cultura do Para	Brazil	0015	B
3.210	REE via Costa Rica	Costa Rica	0100	G	4.835	R.Tezulutlan, Coban	Guatemala	0325	B,C	5.047	R.Togo, Lome	Togo	2042	D,H,K,M
3.240	TWR Shona	Swaziland	0324	G	4.845	RTM Bamako	Mali	2028	D,E,F,G,H,K,M	5.050	R.Tanzania	Tanzania	2037	G,H
3.255	BBC via Meyerton	S.Africa	0325	C,G,H,J,K	4.845	ORTM Nouakchott	Mauritania	2020	B,H,K	5.055	RFO Cayenne(Matoury)	French Guiana	0336	G
3.270	Namibian BC,Windhoek	Namibia	2110	J	4.850	R.Yaounde	Cameroon	2010	E,G,H,K,M	5.060	PBS Xinjiang, Urumqi	China	0020	B
3.290	Namibian BC,Windhoek	Namibia	2015	B,C,H	4.850	CNR 1	China	2125	J	5.075	Caracol Bogota	Colombia	2320	B,G,K
3.300	R.Cultural	Guatemala	0120	B	4.860	AIR Delhi	India	1905	K	5.100	R.Liberia, Totota	Liberia	2038	H
3.306	ZBC Prog 2	Zimbabwe	1915	G,H,K	4.870	Voz del Upano	Ecuador	0010	B					
3.320	SABC (RSG) Meyerton	S.Africa	2014	B,G,H,K	4.885	R.Difusora Acreana	Brazil	0005	B					
3.335	CBS Taipei	Taiwan	2019	H,K	4.890	RIF Paris	via Gabon	0359	G					
3.345	AIR Jaipur	India	0110	B	4.910	Tennant Creek	Australia	2132	K					
3.356	R.Botswana	Gabaron	2018	G,H	4.915	R.Anhanguera	Brazil	0115	B					
3.365	GBC R-2	Ghana	2106	B,D,G,H,J,K	4.915	GBC-1, Accra	Ghana	2000	B,D,E,G,H,K,M					
3.395	RRI Tanjung Karang	Indonesia	0055	B	4.915	KBC Cent.Sce Nairobi	Kenya	1906	H					
3.915	BBC via Kranji	Singapore	2100	B,D,G,J,K,M	4.920	R.Quito, Quito	Ecuador	0514	K					
3.955	BBC via Skelton	England	2045	E,G,L,M	4.925	R.Nacional, Bata	Eq.Guinea	2239	K					
3.970	R.Korea via Skelton	England	2107	D,G	4.930	R.Internacional	Honduras	0330	C					
3.975	R.Budapest	Hungary	2135	E,G,J,M	4.935	KBC Gen.Sce Nairobi	Kenya	1919	H					
3.985	Nexus, Milan	Italy	2108	E,G,J	4.950	VOA via Sao Tome	Sao Tome	1922	E,G,H,I,K					
3.995	DW via Julich	Germany	2149	B,E,G,M	4.955	R.Nac. de Colombia	Colombia	0333	G					
4.005	Vatican R.	Italy	2118	D,J	4.960	VOA via Sao Tome	Sao Tome	0300	G					
4.760	AIR Port Blair	India	2330	B	4.965	Christian Voice	Zambia	2031	G,H,K					
4.765	R.Rural, Santarem	Brazil	0000	B	4.975	R.Uganda, Kampala	Uganda	2030	E,G,H,K,M					
4.770	FRNC Kaduna	Nigeria	1954	G,H,K,M	4.980	Ecos del Torbes	Venezuela	0332	B,C,G,M					
4.775	TWR Manzini	Swaziland	0350	G	4.985	R.Brazil Central	Brazil	2235	B,K,M					
4.777	R.Gabon, Libreville	Gabon	2233	G	5.009	R.TV Malagasy	Madagascar	1918	H					
4.783	RTM Bamako	Mali	2004	B,F,K	5.010	R.Garoua	Cameroon	2012	H					
4.790	Azad Kashmir R.	Pakistan	2234	G	5.020	La V du Sahel, Niamey	Niger	2106	K					
4.800	LNBS Maseru	Lesotho	2122	G,K	5.025	ABC Katherine	Australia	2133	K					
4.815	R.diff TV Burkina	Ouagadougou	2028	B,H,K	5.025	R.Parakou	Benin	2148	K					
4.820	R.Botswana, Gaborone	Botswana	2021	E,G,H,K	5.025	R.Rebelde, Habana	Cuba	0335	B,C,G,K					
4.822	R.Mauritania	Mauritius	2312	K	5.025	R.Uganda, Kampala	Uganda	2033	H,K					
4.828	ZBC R-4	Zimbabwe	1930	H,K	5.030	AWR Latin America	Costa Rica	0035	B					
4.830	R.Tachira	Venezuela	0330	A,B,C,G	5.035	R.Educacao Rural	Brazil	0010	B					

DXers:-

- (A) Robert Beason, Nottingham.
 (B) Robert Connolly, Kilkeel.
 (C) David Hall, Morpeth.
 (D) Simon Hockenhill, E.Bristol.
 (E) Rhoderick Illman, Oxted.
 (F) Conway Longworth-Dames, Brixham.
 (G) Eddie McKeown, Newry.
 (H) Fred Pallant, Storrington.
 (I) Clare Pinder, while in Appleby.
 (J) Vic Prier, Colyton.
 (K) Richard Reynolds, Guildford.
 (L) Tom Smyth, Co.Fermanagh.
 (M) Fred Wilmshurst, Northampton.

Broadcasts from many areas may also be received in the **9MHz (31m)** band. Noted during the morning were WYFR Okeechobee, USA **9.985** (Eng to Eur, Africa 0400-0800), rated 54444 at 0515 in Plymouth; R.Havana, Cuba **9.820** (Eng to N.America 0100?-0700) 32222 at 0530 in Appleby; BBC via Skelton & Woofferton, UK **9.410** (Eng to Eur, N/C.Africa 0300-2200) heard at 0640 in Brixham; R.New Zealand Int **9.700** (Eng to Pacific areas 0706-1015) was SIO 322 at 0800 in Macclesfield & 32223 at 0845 in Stalbridge; R.Mediterranee Int, Morocco **9.575** (Ar, Fr to N.Africa, S.Eur 0500-0100) 44344 at 0900 in Oxted; R.Vilnius, Lithuania **9.710** (Eng to Eur 0930-1000) SIO 333 at 0930 in Co.Fermanagh.

After mid-day BBC via Kranji, Singapore **9.740** (Eng to S.Asia? 1100-2200) was 25532 at 1450 in Wallsend; V of Russia **9.710** (Eng [WS]) 43433 at 1719 in E.Bristol; R.Vlaanderen Int, Belgium **9.925** (Eng to Eur, M.East 1730-1800) 44344 at 1730 in Newry; R.Jordan via Karanah **9.830** (Ar to W.Eur 1700-2100) 44434 at 1810 in Colyton; R.Nederlands via Flevo **9.895** (Eng to Africa 1830-2025) 55555 at 1910 in Liverpool; VOA via Morocco? **9.760** (Eng to Eur, M.East, N.Africa 1700-2200) 45444 at 2005 in Freshwater Bay, IoW; VOIRI Tehran, Iran **9.022** (Ger, Fr, Eng to Eur 1730-2030) 55544 at 2020 in Northampton; R.Thailand via Udon Thani **9.680** (Eng to Eur 2030-2045) 33333 at 2030 in Truro; R.Bulgaria **9.400** (Fr, Eng to Eur 2000-2200) 33323 at 2058 in Nottingham; R.Australia via Shepparton **9.500** (Eng to Asia, Pacific 1430?-2130) 44444 at 2125 in Woodhall Spa; China R.Int via ? **9.535** (Eng to Eur 2000-2200?) 53443 at 2130 in Herstmonceux; AIR via Bangalore **9.950** (Eng to Eur 2045-2230) 34334 at 2150 in Oadby; R.Cairo, Egypt **9.990** (Various to Eur 1900-2200?) SIO 333 at 2153 in N.Bristol; R.Nederlands via Bonaire, Ned.Antilles **9.845** (Eng to N.America 2330-0125) 44444 at 2330 in Morden; V of Greece, Athens **9.425** (Gr, Eng to Australia 2100-2250) 45333 at 2241 in Bridgwater; Swiss R.Int via Sottens? **9.885** (Ger, Eng, Sp, Fr, It to C/N.America 0030-0600) 44444 at 0040 in Kilkeel.

Some broadcasters use the **7MHz (41m)** band to reach listeners in Europe. They include WYFR via Okeechobee, USA **7.355** (Eng 0600-0800, also to Africa), rated 44444 at 0605 in Stalbridge; R.Japan via Woofferton, UK **7.230** (Jap, Eng 0500-0700) 43433 at 0615 in Herstmonceux; AWR via Forli, Italy **7.230** (Eng 0930-1000 Sun) 33222 at 0930 in Appleby; R.Polonia (Polish R), Warsaw **7.285** (Eng 1200-1300) 34333 at 1240 in Morden; R.Polonia (Polish R), Warsaw **7.285** (Eng 1700-1800), heard at 1710 in Brixham; Sudwestfunk via Rohrdorf **7.265** (Ger 24hrs) 45444 at 1825 in Northampton; R.Slovakia Int **7.345** (Eng 1830-1857) 54554 at 1836 in Bridgwater; R.Thailand via Udon Thani **7.210** (Eng 1900-1958) 44434 at 1925 in E.Bristol; Vatican R, Italy **7.250** (Fr, Eng 1930-

2010) 33333 at 1955 in Truro; RCI via Skelton, UK **7.235** (Fr, Eng 1900-2200) 34334 at 2130 in Oadby; V of Turkey **7.190** (Eng 2200-2345?) 44344 at 2200 in Nottingham; AIR via Bangalore **7.410** (Hi, Eng 1745-2230) SIO 333 at 2208 in N.Bristol; WHRI via Maine, USA **7.395** (Eng 0000-0300) 33333 at 0030 in Morpeth.

Whilst beaming to other areas R.For Peace Int, Costa Rica **7.385** (Eng 0100-1200) was 44444 at 0445 in Plymouth; BBC via Skelton, UK **7.145** (Eng to C.America? 0600-0805) SIO 444 at 0700 in Co.Fermanagh; R.Nederlands via Madagascar **7.120** (Eng to S/E.W.Africa 1730-2025) 34233 at 1846 in Newry; V of Turkey **7.170** (Eng to Asia? 2030-2130) 34433 at 2036 in Woodhall Spa; VOA via Botswana **7.415** (Eng to Africa 1800-2230?) 43333 at 2154 in Oxted; KTBN via Salt Lake City **7.510** (Eng to N.America 0000-1600) 33333 at 0005 in Kilkeel.

Some of the many broadcasts to Europe in the **6MHz (49m)** band come from the BBC via Rampisham & Skelton, UK **6.195** (Eng 0300-0700, 1500-1700, 1800-2200), rated 55544 at 0605 in Northampton; R.Japan via Skelton, UK **5.975** (Eng 0600-0700) 55545 at 0610 in Stalbridge; R.Austria Int via Moosbrunn **6.155** (Various) 24222 at 0757 in Woodhall Spa; DW via Julich? **6.140** (Eng Service) 22222 at 0910 in Truro; Bayerischer Rundfunk, Germany **6.085** (Ger 24hrs) 34433 at 0944 in Oxted; R.Nederlands via Julich **6.045** (Eng 1030-1225) 44544 at 1120 in Herstmonceux; R.Prague, Czech Rep. **5.930** (Eng 1700-1727) 33443 at 1700 in Colyton; R.Polonia (Polish R), Warsaw **6.000** (Eng 1700-1800) 43333 at 1730 in Morden; R.Sweden via Horby **6.065** (Eng 1730-1800) 54554 at 1737 in Bridgwater; R.Vlaanderen Int, Brussels **5.910** (Eng 1730-1756) 35444 at 1754 in E.Bristol; R.Finland via Pori **6.135** (Eng 1900-1930) 43333 at 1900 in Appleby; RCI via Rampisham, UK **5.995** (Fr, Eng 1900-2100) heard at 2020 in Brixham; China R.Int via Russia? **6.950** (Ger, Eng 1900-2157) 22222 at 2046 in Plymouth; R.Yugoslavia, Belgrade **6.185** (Eng 2100-2125) 23333 at 2100 in Nottingham; R.Sweden via Horby **6.065** (Eng 2130-2200) SIO 333 at 2131 in N.Bristol.

Noted to other areas were VOA via Botswana? **6.035** (Eng to Africa 1800-2230), rated SIO 444 at 2200 in Co.Fermanagh; R.Nederlands via Bonaire, Ned.Antilles **6.165** (Eng to N.America 2330-0128) 43443 at 0005 in Kilkeel; WEWN Birmingham, USA **5.825** (Eng to N.America 2200-0900?) 44444 at 0347 in Morpeth; REE via Noblejas? **6.055** (Eng to America 0500-0600 Sat/Sun) 54555 at 0500 in Newry; R.Taipei via WYFR **5.950** (Eng, Chin to N.America 0200-0600) 42433 at 0531 in Guildford; WHRI South Bend, USA **5.745** (Eng to N.America 0400?-1000) 21122 at 0710 in Liverpool.



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Bandscan Australia

This time I have news of a range of communications matters including spectrum auctions, telecommunications, international broadcasting, talkback radio and digital radio in Sydney. In addition, I have some reception reports, a couple of Internet sites and more on the troubled New South Wales government radio network.

Narrowcasting Services

The government is concerned that holders of lower power open narrowcasting licences (LPONs) are stockpiling them. It says that large numbers of the more than 1500 LPON licences issued are not operational and that such hoarding of spectrum space restricts the choice and diversity of radio services offered in each licence area. The minister responsible, Senator Richard Alston, has announced that he will direct the Australian Communications Authority (ACA) to address this issue as a matter of urgency. He suggests that it may be appropriate to set a deadline for the use of each licence. I guess that begs the question why the original licence terms did not include such a deadline.

More Spectrum Auctions

Following the recent sale of 45MHz of the 1.8GHz band which raised SA137 million (approximately £58 million) the government has announced that it will sell a further 30MHz of paired spectrum in that band. It is expected that this spectrum will be used for new digital mobile telephone networks and wireless local loop services. This spectrum is currently used to provide microwave fixed point to point communications links. The government believes that this will provide another opportunity for new players to enter Australia's telecommunications market.

Telephone Carriers

Meanwhile the 30th telecommunications carrier licence has been issued in Australia. By way of comparison, there were only three carriers in June 1997. I have no idea how Australia with a population of only 18 million people can manage to support thirty telephone companies; no doubt there will be a shakeout in the future that will reduce the numbers somewhat. For those who are interested, the full list of carriers is at

<http://www.aca.gov.au/licence/carrier/carriers.htm>

Sale Of Telstra

The government has finally managed to get its legislation to sell a further 16.6% of the once national telecommunications carrier Telstra passed through the parliament. This will mean that a total of 49.9% of Telstra will be in private hands and put the government in the position to play the political games necessary to sell the remaining portion from public ownership. To achieve this legislative success, the government has had to promise a large number of sweeteners to various sectional interests throughout the community. These have included a grab bag of funding promises in the communications area including the promise of SA120 million (£50 million) for the government's Television Fund. This five year fund will extend Special Broadcasting Service (SBS) television coverage to areas with over 10,000 population; fix over 200 television reception black spots; provide SA10 million (£4 million) towards a second terrestrial commercial television signal to broadcast self-help communities in remote areas of Australia and provide SA2 million (£850,000) to establish a New Media Unit at SBS. The New Media Unit will mean SBS can make its language programs available on the Internet and to widen its multimedia presence.

International Broadcasting

Following the closure of the Radio Australia (RA) Cox Peninsula transmission facilities there has been considerable speculation that a foreign broadcaster may be able to use these facilities to broadcast into Asia. BBC World Service, the Voice of America and Deutsche Welle are among contenders reported to be seeking a foothold in this region. In this context, the government has discovered that the current legislative framework gives it no control over content. To achieve this

control which it sees is in Australia's strategic interests, the government needs to amend legislation so that new international broadcasters need to obtain not only transmitter licences from the ACA but also content licences from the Australian Broadcasting Authority (ABA). The changes will not affect Radio Australia. Meanwhile, people wanting independence from Indonesia for East Timor have indicated they would like to set up a radio station in Darwin to transmit pro-independence information into East Timor. The group believes that it is not safe to set up such facilities in East Timor and is hoping the Australian government will approve an appropriate licence.

Talkback Radio

Sydney a.m. radio station 2UE and one of its popular talkback program hosts have come under public scrutiny following the allegation that large sums of money had been paid by major banks to secure favourable on-air comments about the banking system. The allegations were made in an ABC television program dedicated to media scrutiny and have led to the institution of seven separate enquiries. Of these investigations, one instituted by the Department of Public Prosecutions could lead to an extortion charge if the department decides the evidence supports it. Meantime, 2UE management have acted to hose down the situation and prevent further criticism. 2UE management have banned the talkback host and other on-air broadcasters from promoting products and organisations other than in paid advertisements. The station's chairman has said that on-air broadcasters will in future need specific permission to make favourable comments about commercial organisation and that this permission will only be granted if the station is satisfied that the reference is accurate, fair and newsworthy. Other revelations in this affair show that other industry groups also pay for positive on-air comments. Meantime the Deputy Prime Minister and trade minister Tim Fischer has sounded off about the same talkback host for inhibiting the growth in free trade agendas. Mr Fischer believes that talkback hosts promote scare campaigns which play into the hands of those seeking protectionist outcomes.

Australian Content

The quota for Australian music content on pop radio stations has been increased from 20% to 25% and of the Australian content 25% must be less than 12 months old; this of course means that only six new Australian songs will be played in every 100 put to air but the new quota has been well received by local artists. These standards have been developed by the Australian Recording Industry Association and the Federation of Australian Radio Broadcasters in part with a view to giving new talent a boost. This move has not been universally welcomed however. Some commercial stations are saying that they may find it hard to find suitable new Australian music to fill the quota. Others have noted that the standards do not stipulate the time of day that new acts should be played, leaving the way open for radio stations to circumvent the spirit of the standards if not the intent. And following the playing on air on a Sydney f.m. radio station of live copulation from a brothel, there have been new restrictions imposed on sexually explicit language on air.

Digital Radio

Major Sydney radio stations have joined together to broadcast a trial of five channels of digital music, news and sport. The consortium called Digital Radio 2000 will broadcast on the L-band using the yet to be officially adopted Eureka 147 system from five transmission towers to ensure that the entire Sydney region receives coverage. One concern of the consortium however is the current price of digital sets which cost in the vicinity of SA2,000 (£850) for a hi-fi and SA1,000 (£420) for a car stereo. One option in the short term appears to be the use of PC card receivers which cost about SA140 (£60). In the longer term, set prices are expected to fall to those prevailing in the UK, reported here as the same as PC card receivers. Mind you, one other report I have seen puts an in-car system at around SA3,000 (£1,250) in the UK. At this latter figure take up of this technology would be just a little bit slow. The trial is expected to run for two years and the widespread introduction of digital radio is expected to cost the industry in excess of SA200 million (£85 million).



Reception Reports

David Hall from Northumberland has written saying he resumed short wave listening two years ago after a break since the early 1950s. Forty five years ago his receiver was an Eddystone 640; now he uses a range of equipment including an AOR AR7030, an Icom RB500 scanner and a Bearcat table top scanner. He feeds this equipment from a 14m long wire strung in his garden and an a.t.u. David also has a 27m antenna in the loft. He writes that he has heard RA and Radio New Zealand, RA each afternoon from 1500 to 1600UTC on 11.660MHz; at 1940 on 9.500MHz; and at 0330 on 17.750MHz. In addition he says that he lived in Australia in the period 1963 to 1975, spending time working for the Australian Broadcasting Corporation's (ABC) Gore Hill television studios in Sydney. Also **Martyn Gardiner** has been in touch again with news and reception reports. On one evening he reports clearly picking up RA on a portable radio with in-built telescopic antenna on 9.500MHz at 2100. On another occasion clear reception needed u.s.b., bandpass control, no a.g.c. and low r.f. gain on his Drake R8E and long wire antenna to eliminate interference on 9.500MHz earlier in the evening at 2000. Martyn says that he has had less success in the mornings. At that time he has pulled in an almost inaudible RA signal on 21.725MHz but had more success with 17.750MHz at 0700.

Other News

Radio Australia has revamped its world news web site. It can be found at <http://www.abc.net.au/r/newsdaily/> RA now sees Internet content as part of its core activities and is planning to bring news of events in Indonesia to wider audiences via that medium. *SWM* readers can find this content at <http://www.abc.net.au/news/indonesia>. The four current Sydney commercial f.m. radio stations are reported to be upset that the ABA is planning to auction a new Sydney f.m. licence this year and a further licence in three years time. Some industry players believe that the industry will become non viable if new entrants are allowed; others keen to have part of the action broadcasting to the more than three million people in the area have no such concerns. One possible new entrant is DMG Radio owned by the UK companies Daily Mail and General Trust. Press reports indicate that the ABA is divided on the issue but the SA50 million (£21 million) revenue expected per licence may prove irresistible to the government.

The New South Wales officer in charge of police communications has been replaced as serious technical problems have pushed back by six months a new digital radio system crucial to the 2000 Sydney Olympics Games security. The technical problems relate to computerised dispatch consoles and the computerised interface between incoming telephone calls and outgoing radio signals.

I welcome any news and comments. In particular I am interested in any s.w.l. information on Australian stations heard by *SWM* readers so I can chase up more details and interesting snippets from this end. My address is PO Box 3307, Manuka, ACT 2603, Australia. For personal replies please send two IRCs.

LOG PERIODIC MLP32

Freq. Range 100-1300MHz
Length 1420mm

Wide Band 16 Element directional beam which gives a maximum of 11-13Db Gain Forward and 15Db Gain Front to Back Ratio. Complete with mounting hardware. *(The Ultimate Receiving Antenna - a must for the Dedicated Listener.)*

£79.95
ADD £6.00 P&P

WEATHER SATELLITE ANTENNA

TURNSTILE 137

Freq. 137.5 MHz
Length 1000mm
This Antenna is designed for external use to receive weather satellite signals. Complete with mounting hardware.

(Simple and easy to install a must for the enthusiast who has it all.)

£39.95
ADD £6.00 P&P

TRI SCAN III

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

(Ideal for Desk Top Use.)

£34.95
ADD £6.00 P&P

MWA-H.F. WIRE ANTENNA

Freq. Range 1.1-30MHz Length 60 Metres
Internal or external use. The long wire is known to be one of the best antennas for shortwave (HF) receiving. Comes complete with con box and dog bones, wire etc. *(A must for the short wave listener.)*

£29.95
ADD £6.00 P&P



MICRO MAG MTS42

Freq. Range 25-2.1 ghz
Length 225mm
High Performance Super Magnetic Mount Antenna comes with Two Interchangeable Whips. 73mm 700-2.1 GHz 225mm 25-1300MHz Complete with high specification coax and BNC plug. *(The Ultimate small Magmount Antenna.)*

£27.95
ADD £5.00 P&P



SUPER SCAN STICK

Freq. Range 0-2000MHz
Length 1000mm
It will receive all frequencies at all levels unlike a mono band antenna.

It has 4 capacitor loaded coils inside the vertical element to give maximum sensitivity to even the weakest of signals. *(Ideal for the New Beginner and the Experienced Listener alike.)*

£49.95
ADD £6.00 P&P

SUPER SCAN STICK II

Freq. Range 0-2000 MHz.
Length 1500 mm.
This is designed for external use. It will receive all frequencies. at all levels unlike a mono band antenna. It has 8 capacitor loaded coils inside the vertical element to give maximum sensitivity to even the weakest of signals plus there is an extra 3db gain over the standard super scan stick. *(For the expert who wants that extra sensitivity)*

MULTISCAN STICK

Freq. Range Receive - 0-2000 MHz.
Transmit 144 - 146 MHz gain 2.5 Dbd 430 - 440 MHz gain 4.5 Dbd
Length 1000 mm.
Although marginally compromising sensitivity the multi scan stick has within its transmitting capabilities plus gain makes it an excellent antenna for the amateur and expert alike. Comes complete with mounting hardware and brackets. *(Ideal for the amateurs ham radio - user.)*

MULTI SCAN STICK II

Freq. Range Receive (0-2000MHz)
Transmit (144-146 MHz) Gain 4.00Dbd (420-430 MHz) Gain 6.00Dbd Length 1500mm
Same as Super Scan Stick but with extra gain, makes it an even better antenna for the amateur and expert alike. *(Ideal for the Ham Radio user)*

G. SCAN II

Freq. Range 25-2000 MHz.
Length 620 mm.
Magnetic mount Mobile Scanner Antenna. 2 vertical loaded coils for good sensitivity complete with magnetic mount and 4mts of coax, terminated with BNC plug. *(Good for when you are driving about)*

£19.95
ADD £6.00 P&P

SWP 2000

FREQ. 25 - 2000 MHz. Length 515mm.
Multiband good sensitivity for its small size. Fitted with two suction cups for ease of fitting to any smooth surface (i.e. inside of car window) comes with 5 metres of mini coax and BNC connector. *(Good for the car user who doesn't want an external antenna.)*

£29.95
ADD £6.00 P&P

SWP HF30

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

£39.95
ADD £6.00 P&P

SUPER DISCONE

Freq. Range 25-2000MHz
Length 1380mm
Internal or External use (A Tri-Plane Antenna). The angle of the ground planes are specially designed to give maximum receiving performance within the discone design. The Super Discone gives up to 3Db Gain over a standard conventional discone. Comes complete with mounting hardware and brackets. *(Ideal for the Experienced Enthusiast.)*

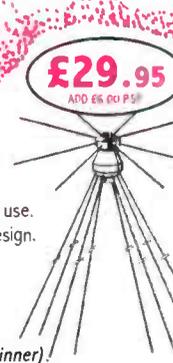
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DISCONE

Freq. Range 70-700MHz
Length 920mm
Internal or External use. (Classic Antenna Design). Comes complete with mounting hardware and brackets. *(Ideal for the Beginner.)*

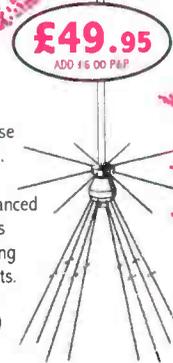
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HF DISCONE

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

£49.95
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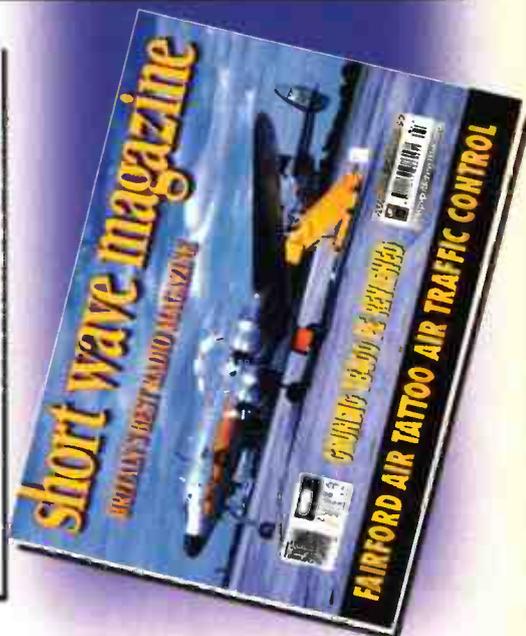
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UNPARALLELED SHEER

The 'mature' AR7030, four years of production and still evolving

As reported in the June 1999 Short Wave Magazine, a new production run of the AR7030 has been completed and is shipping. The AR7030 has retained the same design but has 'evolved' in certain areas. The latest production features **alternative click encoders** which provide a smoother and more consistent quality feel and a **new-style liquid crystal display** with higher contrast and a wider viewing angle.



Now in its 4th year of production, the AR7030 has established itself as the popular performance trendsetting short wave receiver representing the new 'benchmark' in excellence. There have been many new entries by competitors since the launch of the AR7030, some feature DSP but none can match the **sheer performance excellence** of the AR7030. Don't take our word for it, have a look at the many technical reviews and compare the technical results. Go on, compare it to others!

Internationally and independently recognised as being in 'a class of its own'. The balance between high performance and value for money is excellent.

Awarded receiver of the year 1996/97 by WRTH and consistently awarded 5 stars by WRTH and Passport to World Band Radio in every edition with Passport nominating it as the Editor's choice.

AR7030 £799 AR7030 PLUS £949

AR8000

All mode hand portable receiver 500kHz to 1900MHz. Dot matrix display, a real trendsetter. Computer / reaction tune port and many features.

AR8000 £299



ARD2



ARD2 portable ACARS & NAVTEX decoder & display unit, can be operated from internal batteries or external d.c. supply. An RS232 port expands capabilities, **free supporting software** from the AOR internet web site.

ARD2 £295



The **AR200** has been the first hand portable wide band all mode production unit to arrive on the market place with the new airband channel step of 8.33kHz correctly implemented. Add to this memory bank re-sizing, extensive step adjust capabilities to trace unusual band plans, an editable (via PC) meaningful auto mode bandplan, **free internet download** PC Windows software, optional SLOT CARDS and you have just the tip of the iceberg. The facilities offered by the AR200 are stunning... take the 'step-adjust' feature for example. If you have a frequency of say 151.010 MHz and wish to step in 15 kHz increments, most receivers would simply assume 151.000 MHz then step 151.015, 151.030 etc. However, the AR200 may be programmed to step in the desired manner of 151.010, 151.025, 151.040, 151.055 MHz etc.

Other real life examples would be the 27.60125 MHz CB frequency implemented in 10 kHz steps, no problem... also the 900 MHz band which implements 25 kHz steps but a 12.5 kHz offset. Add to this the foresight of 8.33 kHz airband steps and you have a very flexible unit!

AR200 £399

Shown here with optional slot cards



Innovation and forward thinking

BEER PERFORMANCE

Every bit the high performer, new production now shipping...



When making critical measurements, the frequency coherence is very important whether a single or multiple unit is employed. Just like optical telescopes, the output from several receivers may be ADDED together to provide greater performance, however their frequencies must be absolutely coherent. This involves the use of a single reference for all oscillators employed throughout the receiver. Several receivers may then be connected to a single external frequency standard safe in the knowledge that their outputs will be coherent.

The AR5000C now provides this commercially required capability. The "C" version may be provided to order in either the standard AR5000 format or with two of the +3 additions of AFC and NB.

If you are a commercial operator with this application in mind, please request the separate specification leaflet for the AR5000C. **£P.O.A.**

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

The enhanced AR5000+3 has been **awarded 4-stars** by **Passport to World Band Radio'99**.

"Front-end selectivity, image rejection, IF rejection, weak-signal sensitivity, AGC threshold and frequency stability all superior".

"Unlike virtually every other receiver we have tested over the past 21 years, the frequency readout is unfailingly accurate to the nearest Hertz. This should make the AR5000+3 of exceptional interest to broadcast engineers".

Voted **best wide band receiver** by the readers of the German "Funk" magazine.

Chris Lorek HRT...

"Throughout the wide frequency range, the receiver was adequately sensitive, especially so at the upper end, with good overall strong signal handling characteristics."

AR5000+3

- ✓ Wide frequency coverage 10 kHz - 2600 MHz
- ✓ All mode reception: USB, LSB, CW, AM, Synchronous AM, NFM, WFM with automode tuning (any mode and bandwidth on any frequency is possible)
- ✓ Automatic Frequency Control
- ✓ Noise blanker
- ✓ High stability TCXO reference, 1 Hz NCO tuning
- ✓ 1,000 memories, 10 memory banks, 20 search banks, 5 VFOs (all twice!), alpha tag, EEPROM chip storage
- ✓ Multiple IF bandwidth 3 kHz, 6 kHz, 15 kHz, 30 kHz, 110 kHz, 220 kHz with an option position for 500 Hz CW. (30 kHz is ideal for WEFAX).
- ✓ High sensitivity and excellent strong signal handling assisted by a preselected front end from 500 kHz - 1 GHz
- ✓ Extensive RS232 control list
- ✓ SDU ready with IF output for spectrum display unit

AR5000 £1345 AR5000+3 £1574

Setting new standards, SDU5500 Spectrum Display Unit

The SDU5500 is an 'all new' Spectrum Display Unit and a worthy successor to the SDU5000 (which offered practical and cost effective monitoring). Coupled to the AR5000 receiver, it provides a spectrum display of 10 MHz bandwidth anywhere between 10 kHz and 2600 MHz.

Already pressed into commercial usage by the government, the professionalism of the unit has truly been grasped. The SDU5500 has a high resolution monochrome (white/blue) LCD with improved status read-out on the top-half of the display with a spin wheel tuner controlling the marker position, similar to a dedicated high-priced spectrum analyser.

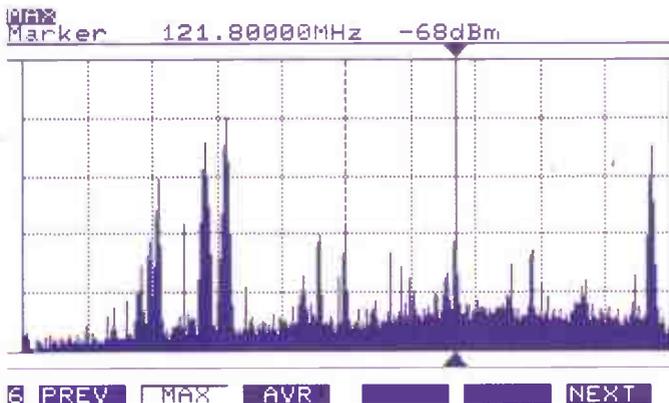
Receiver

```
AR5000 IC-R8500
AR5000 IC-R9000
IC-R7100 Other
```

The SDU5500 supports a number of AOR and ICOM receivers, see above. In addition, the SDU5500 may be used with other receivers which offer a 10.7 MHz I.F. output with suitably wide bandwidth, please refer to the colour leaflet for details.

Various enhancements have been implemented over the earlier SDU to provide even greater functionality and professionalism.

```
CF : 120.50000MHz SPAN : 7500kHz
RRBW : 30kHz GAIN : H:
PRX : AR5000
PDIR : Reverse PLOT : Paint
STEP : 25.00kHz MODE : AM
ATT : OFF OP.MODE : STRES
```



Free internet download software is close to completion for the PC Windows operating system and will become available from our web site <<http://www.demon.co.uk/aor>>

SDU-5500 £799



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

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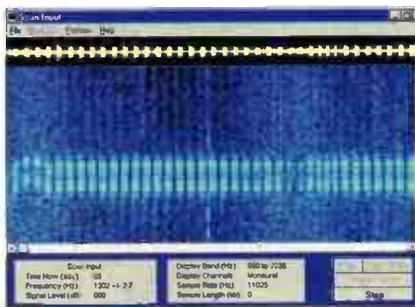
Decode

Tones?

Following-on from a few reader's enquiries, I thought it would be interesting to take a look at the tones used for radio data systems, along with some of the standards that you will find used in the business. Let's start by explaining just what I mean when I say tones. In this context, I mean the audio tones that you hear when you're tuned-in to a data signal. It generally sounds rather like a warbling sound on the slower speed RTTY signals rising to more of a rushing sound with the higher speed modes.

So why do we use tones at all? If we go back to the early days of remote communication links, life all started with early versions Morse type telegraphy being sent over wires. These systems used very basic signalling, i.e. the current was either present or not. The slightly more advanced systems used current reversals to indicate the state of the signal, which was a rather more reliable technique.

However, it was not long before speech based communications systems began appearing, which



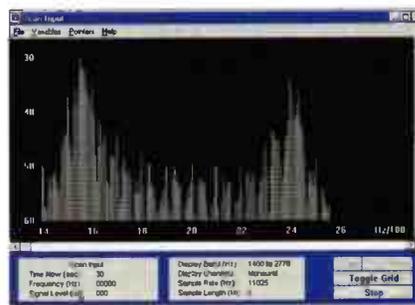
Spectrogram of a RTTY Signal.

really set the communications revolution alight. As you can imagine, much scientific work went into deciding what was the optimum range of frequencies for communications quality speech. Whilst it would have been nice to have the entire 20Hz to 20kHz range available for speech, experiments have shown that speech remains perfectly

intelligible with much narrower ranges.

After much testing and debate, the standard to emerge was the frequency range from 300 to 3400Hz for communications speech. As a result of this early work, all the communications systems, both landline and radio, were designed to support this relatively narrow range of frequencies. This standard has survived right through to the current day with only slight modification.

When fully automatic printing telegraphs started to appear, there was great enthusiasm to link sites together over ever greater



Bargraph display of a RTTY signal.

Advanced Utility Frequency Listing

All those of you with sophisticated decoding systems will no doubt find this comprehensive frequency list really handy. All the frequencies listed have been monitored in the UK during 1999. All frequencies are in MHz and the mode information includes the speed, signal inversion and the shift. This should make setting your decoder dead easy. My thanks go to Day Watson for his diligence in compiling this list.

MHz	Station	Mode/Speed /Inversion/Shift	Time Heard (UTC)	MHz	Station	Mode/Speed /Inversion/Shift	Time Heard (UTC)
1.4627	FT de France [RFL]	ARQ/E3//192/E/400	0935	8.703	Arkhangelsk Radio (UCE)	3SC//50/R/170	1125
2.7682	UNID.	ARQ/E//48/E/170	2045	8.709	UNID	ARQ/RS//228/-/170	1617
4.832	FF UNID	ARQ/E//184.6/E/400	2019	9.104	MFA Bucharest [V5G]	FEC/ROU//164.5/R/400	1809
4.962	MFA Warsaw [SNN299]	ARQ/POL//100/I/250	1525	9.1235	FF UNID ?LOC	ARQ/E//184.6/E/400	1954
5.16	Niamey Air (5UA) ?	ARQ/342//96/I/400	2230	9.259	MFA Paris [RFGW]	FEC/A//192/E/400	0858
5.2215	Cotonou Air (TYE)	ARQ/342//96/I/400	1858	9.295	MFA Rome	ARQ/RS//240/E/-	0844
5.247	FF UNID ?	ARQ/E//72/E/400	1349	9.3635	FF Versailles [RFXCCS]?	ARQ/E//184.6/E/400	1410
5.284	GAG ?LOC	ARQ/E//85.7/E/170	1755	9.9837	FF Paris	ARQ/E3//100/E/400	1940
5.301	UNID	ARQ/E//72/I/400	1823	10.1037	FF UNID ?	ARQ/E3//192/E/370	0734
5.781	GAF ?LOC	ARQ/E//85.7/E/170	1803	10.1325	FF UNID	ARQ/E//184.6/E/400	1622
6.312	GMDSS Alert Channel	DSC//100/E/170	1437	10.1625	IN Baghdad (YIL71)	ARABIC//75/N/400	1350
6.8301	PETRA Amman	ARABIC//50/N/400	1610	10.1777	FF Paris	ARQ/E3//192/E/380	0842
6.852	MFA Bucharest [V5G]	FEC/ROU//164.5/R/400	1803	10.2813	FF Cayenne (RFLIG) ?	ARQ/E3//192/I/400	1039
6.929	UNID	ARQ/E//192/E/170	1009	10.314	MFA Warsaw [SSN299]	ARQ/POL//100/E/300	0643
6.9302	UNID	ARQ/E3//192/E/340	1143	10.493	MFA Bucharest [V5G]	FEC/ROU//164.5/R/400	1144
7.4567	FF Dakar [RFTJ]	ARQ/E3//192/E/400	0751	10.4937	FF Port Bouet [RFTJ] ?	ARQ/E3//48/E/400	0710
7.5857	FF Dzaoudzi [RFTVIT]	ARQ/E3//192/380	1848	10.626	FF Naqouora [RFXL]	ARQ/E//184.5/N/340	1204
7.634	UNID	ARQ/E//72/E/400	2222	10.659	UNID ?	ARQ/RS//240/E/-	1215
7.716	FF Ajaccio	ARQ/E//192/E/400	1951	10.659	Italian Emb Tripoli	ARQ/RS//240/E/-	1443
7.803	FF ? LOC	ARQ/E//72/E/400	2007	10.659	MFA Rome	ARQ/RS//240/E/-	1455
7.8316	Antananarivo Air (5ST)	ARQ/E3//48/I/400	2030	10.822	UNID	FEC/A//144/E/400	0759
8.027	MFA Bucharest [V5G] ?	FEC/ROU//164.5/R/400	0525	10.822	UNID	ARQ/E//144/I/400	0749
8.029	Roumanian DIPLO ?	FEC/ROU//164.5/R/400	0548	10.9177	FF Dakar [RFTJ]	ARQ/E3//48/E/400	2346
8.105	FF Paris ?	ARQ/E//184.5/E/400	1925	10.955	UNID.	ARQ/E//48/E/850	1902
8.123	UNID	ARQ/RS//228/E/170	1054	10.9917	FF Sarejevo [RFFVAY]	ARQ/342//200/E/400	1650
8.4145	GMDSS Alert Channel	DSC//100/E/170	0109	11.05	French Emb Belgrade [G8T]	FEC/A//192/E/400	1215
8.586	Izmail Radio (USO)	3SC//50/R/170	0909	11.054	Polish Emb ? LOC	ARQ/POL//100/E/250	0853
				11.08	Sana Damascus	ARABIC//50/N/400	1430
				11.1105	FF Ft de France [RFL]	ARQ/E3//192/E/370	0901
				11.1735	MFA Paris [RFGW]	FEC/A//192/E/400	0933
				11.4199	MFA Copenhagen (OZU25) ?	TWINPLEX//100/-/	1122
				11.428	Roumanian Emb ? LOC	FEC/ROU//218.3/R/400	0638
				11.5274	Algerian Customs Algiers	COQ/8//26.6/-/	1129
				11.5277	Algerian Customs Algiers	PACTOR//100/-/200	1304
				11.5417	FF Ft de France [RFL]	ARQ/E3//96/E/370	1151
				12.141	FF UNID	ARQ/E//184.6/E/200	1946
				12.7595	MFA Rome	ARQ/RS//240/E/-	1522
				13.0155	UNID.	ARQ/RS//228/E/170	1557

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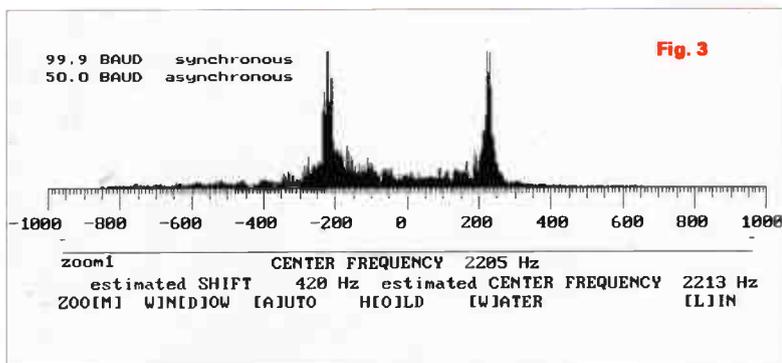


Fig. 3

elements within that same channel. (ARQ-E is a good example of a common keying system using mixed polarity).

Three Step Process

Now that you have a better understanding of the bit and how it can be constructed, we can move on to the good stuff: breaking out the bits that have been received by your decoder. To successfully

'share' commutator time. This works by shortening the element length of both the channels. A one-channel teleprinter with a 5ms element length and a six bit cycle like the one in Fig. 1, will require a commutator that has a 30ms cycle. Using TDM, you can place two single-channel teleprinters having six bits each, in that same 30ms commutator, by shortening the length of the elements from 5ms to 2.5ms. The main thing to remember about a TDM system is that the cycle length stays the same; only the element length is shortened (see Fig. 2). A common TDM found on h.f. is ARQ-M2.

Polarity: The polarity of a signal describes the electrical charge given to its elements (bits). The term mark usually describes a positive or energised element ('1'), while the term space normally describes a negative or non-energised element ('0').

Normal polarity (erect polarity): A system using normal polarity keys energised elements as a mark and non-energised elements as a space.

Reverse polarity (inverted polarity): A system using reverse polarity keys energised elements as a space and non-energised elements as a mark.

Three Terms Associated With Polarity

Single polarity: As long as all of the elements of a teleprinter system are keyed with the same polarity, either normal or reverse, the system will have single polarity (most common type of polarity seen).

Double polarity: In a double-polarity system, the elements in some channels have the opposite polarity to the elements in the remaining channels of that system (this is exclusive to TDM type systems like ARQ-M2).

Mixed polarity: In mixed polarity, the elements within a single channel are opposite to other

get good bits, you must follow a simple three Step process:

Step 1: Tune your signal to within ± 5 Hz of its true frequency and obtain the baudspeed (see Fig. 3).

Step 2: Determine the number of bits per codeword (codeword length). This can be an extremely tricky step because you will need to determine the actual value from the measured value, (see Fig. 4). This will become relevant later in the article. For now, be aware that several h.f. keying systems will not just 'tell you' what their actual codeword length is (this is especially true for signals like ARQE, ARQE3 and POLARQ that use Character Repetition Cycles for error correction). Code-3/30

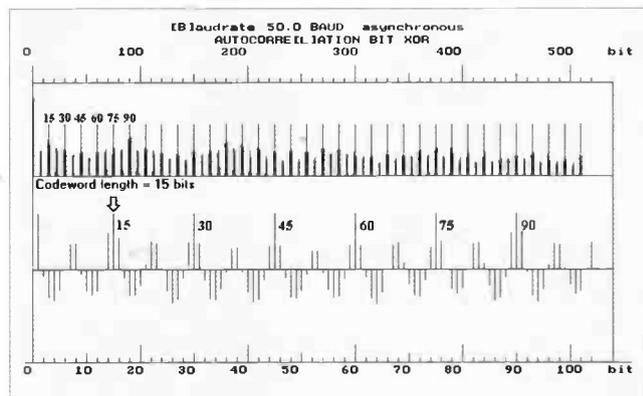


Fig. 4

users must ensure the correct baudspeed is input into the Correlation Bit Module.

Step 3: Verify the codeword length and determine the element/cycle lengths (in milliseconds). Please refer to Fig. 5 when reading the next part.

Required Measurements

The presentation in Fig. 5 comes from the Code-3/30's Speed-Bit Analysis module. When starting this module, you must enter the baudspeed from Step 1 and the codeword length from Step 2. You should get a screen similar to the one in Fig. 5 if you have properly observed (and entered) the required measurements. **Note:** if the baudspeed is off by as little as a 100th of a baud, you may observe some drift of the presentation to the right (baudspeed is too high) or left (baudspeed is too low). After compensating for any drift, you will be ready to proceed.

So, what exactly does Fig. 5 show? Well, first off it confirms the number of bits/block (the codeword length) and how long it took to transmit each bit and each codeword (element/cycle length).

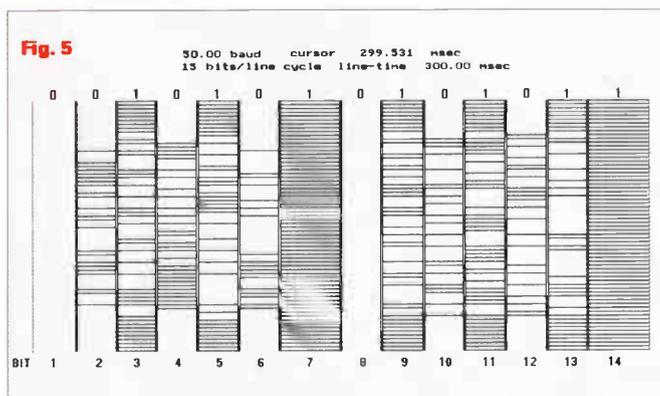


Fig. 5

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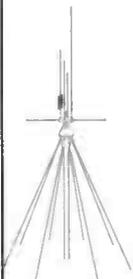


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Trident TRX-100XLT Tested

Faris Raouf, our Scanning columnist, gives the Trident TRX-100XLT hand-held scanner the once over.

If you are anything like me, you'll associate the word Trident with a rather sophisticated sub-surface weapons delivery system. But Trident is also the brand name you'll find on the case of a new compact Japanese-made hand-held scanner that's recently made its way to the UK. And judging by what this offers, it is a brand name you're likely to hear quite a lot more of in the future too.

I always find that its best to start a review with some sort of comment about where the product in question fits into the grand scheme of things, and who it is aimed at. Unfortunately, trying to do so with the Trident TRX-100XLT (who thinks up these names? I'll stick to plain old 'Trident' from now on) is a little tricky. You see, its £199.95 price tag would seem to put it firmly in the middle of the scanner market, competing against the likes of the venerable Yupiteru MVT-7100. But if you look closely at the Trident's specifications (see the specifications box at the end of the review), you'll see that in fact it isn't really a direct competitor to the Yupi, as it lacks an s.s.b. receive mode.

On the other hand, it offers a wider frequency coverage than the Yupi does (2kHz to 2.2GHz), and has three features not found on any other scanner in this price range - an RS-232 computer interface, a bandscope and a built-in audio inversion decoder. In other words, although this scanner would seem to be a Yupi-competitor in terms of price, it is just a tad less of a general-purpose receiver and just a tad more of a signal interception tool than the '7100.

What You Get

But enough generalisations - let's have a look at what exactly you get for your money. It all starts very promisingly, the box containing a mains power supply, three NiCad batteries to power the scanner, one of those really cheap mono earphone contraptions, a 12V cigar lighter adapter, a small rubber duck antenna, a manual and, of course, the Trident scanner itself.

In terms of external build quality and styling, the Trident is beyond reproach. As you can see from the pictures, it is finished in a very fetching matt silver plastic, which makes it look more like a normal broadcast radio receiver than a scanner. And from the specifications, you'll also see that this is a very compact scanner, not that much bigger than the cigarette packet everything even slightly small seems to get compared to these days. What you can't see from pictures or specification, though, is the fact that it nestles into your hand (or at least my hand) perfectly, and there's none of that cheap and nasty look or feel you get with some lower-cost scanners.

Unfortunately, the feeling that this is a well-made, precision instrument evaporates once you open the supplied manual. Basically, it looks as though someone

has done a rush job of translating this from its original Japanese, photocopied the results a few times just to make sure the text looks as ragged as possible, then sent the end result to the printers for duplication. It has to be said, though, that rush job or not, the illustrations included in the manual are clear, and although sometimes somewhat quirky in nature, most of the manual's text is actually understandable, something that cannot be said of the manuals of certain other scanners.

Talking of the Yupiteru MVT-9000 (yes, this is the scanner whose manual may seem to be written in English, but in fact would make more sense if it were written in Outer Mongolian using a Kanjii font), you should never really judge a scanner by its manual, as the MVT-9000 scanner itself is an excellent device. So, I decided to give the Trident the benefit of the doubt at this point, and went on with my investigations.

Where The Action Is

The scanner's front panel is where just about all the action is - there is a two-line l.c.d. screen here, plus the majority of the scanner's buttons, and a small speaker grille thrown in for good measure. On the left hand edge of the scanner, you'll find its 12V power input socket and two buttons, one marked FUNC and the other SQL MONI.

There's absolutely nothing on the right hand or bottom edges of the scanner, while the rear panel is where you'll find the flap hiding the Trident's battery compartment, and the top panel is where you'll find its BNC antenna socket, a 3.5in earphone socket that doubles as the unit's RS-232 interface and two concentric rotary controls.

The inner one of these two concentric controls is digital in nature, having no end stops and twenty detent positions per revolution. This is used to decrement or increment settings, or move up and down through frequencies or memory locations. The outer concentric control is a conventional, smoothly rotating analogue potentiometer. This does have end stops, and functions simply as the scanner's volume control.

Button Layout

The layout of the numeric buttons on the front panel doesn't follow the usual telephone keypad-like arrangement of three rows of three numbers followed by the 0 key just underneath. Instead, you'll find just two rows of five numbers, immediately underneath the l.c.d. panel. Just underneath these keys are twelve additional buttons, including two up/down arrow keys used, amongst other things, to increment or decrement settings if you don't want to use the rotary control.

Most of the other keys are used to directly access the scanner's various functions. All but four of the keys, numerics included, also have a secondary function labelled in black just below them. These functions are accessed by pressing the FUNC button on the side or the receiver before pressing the appropriate key.



The manual explains how all this works, and for the most part everything is very logical, with frequently used functions available directly using a single key press, such as receive mode and step size, and those more infrequently used being available through two key presses (FUNC, then the appropriate key).

Observation Test

I'll go on to describe the most important functions on offer in a moment. But first its time for an observation test - did anyone notice that I've not yet said anything about a squelch control? If you did, then you are more observant than I was when I initially looked at this scanner, as I didn't notice the fact that **there is no dedicated squelch control on this scanner** for some considerable time. This doesn't mean you can't alter the scanner's squelch level setting at all, mind you. Quite the opposite - all you have to do is press the FUNC button, then the SQL MONI button, then use the rotary increment decrement dial, or the two up/down arrow buttons on the main control panel, to adjust the squelch setting.

The thing is, though, quite apart from the fact that it is a royal nuisance not to have a dedicated control for squelch, you also only have 17 levels to play with - 00 to 16 - rather than the infinite levels a normal analogue squelch control would give. What's more, I found that for the most part I had to leave the setting on 01 or 02, otherwise the squelch never opened, or stayed open continuously.

Incidentally, the SQL MONI button's main function is to hold open the squelch should you want to hear a weak transmission in the middle of scanning or searching. This is far from being a unique feature, but unlike the similar controls found on other scanners, the one on the Trident is latching. So all you have to do is press it once to open the squelch all the way and keep it that way. When you want to continue, all you have to do is press the button again. Brilliant.

Basic Searching

On to some of the functions of the scanner now. We'll start with the most basic - searching. This is a very easy process. All you have to do is press the button marked MAN, then enter the frequency you want to listen to. Press MAN again, and the scanner starts to scan through frequencies from the original frequency.

The scanning step is determined by the frequency step settings currently in use. This can be altered by simply hitting the front panel STP key, and then using the digital rotary control or the up/down arrow buttons to alter the setting. Once you've found the setting you want, the final step is to hit the front panel key marked ENT. You'll find a list of the steps on offer at the end of

the review, but its worth noting here that, unfortunately, no 8.33kHz Airband step is on offer.

Just about all other functions the scanner provides are altered in the same way, though obviously the button or buttons you need to hit in order to access them are different in each case. To alter the receive mode of the scanner, for example, you need to press the MOD button. The options here consist of a.m., f.m., w.f.m. and Auto. The first three settings are self-evident, while the fourth basically sets the mode automatically for you, the Trident having a pre-programmed band plan to work from.

On the whole, the Auto mode seemed pretty accurate during my tests, and I was glad to find it on a scanner in this price range. On the other hand, the way the mode, whether automatically or manually set, is displayed on the scanner's l.c.d. panel is disgraceful. Basically, although it can display f.m. and w.f.m. clearly, when in a.m. mode, the display adds a small but obviously separate line next to the 'F' in f.m. to make it look a little like a.m., but not a lot. In fact, for a while I thought the scanner has a special new mode I'd never heard of, F1 M.

Display Problems

I have to say that there are other problems with the display too. The most important of these revolve around the fact that there are only six numeric characters available to display the selected frequency, with the decimal point being permanently fixed right in the middle. Additional characters or custom segments have been added on either side to alleviate this problem, but the results look a mess.

If you want to listen at 1000MHz, for example, you press 1 followed by three 0s and the ENT key. So far so good, but if you look at the screen, you'll see /000.000, the slash at the front supposedly being a 1. The slash is in fact part of a % sign l.c.d. segment, and believe it or not, because of the crudity of the on-screen representation of the % sign, this is actually used to represent the number 2 when fully activated. Screw your eyes almost shut and look at a % symbol and you'll just about be able to figure out how this could possibly work. The on-screen representation of 2000MHz, then, is %000.000. Hmm....

Memory Functions

But yet again I've digressed. I was talking about the Trident's main functions. Well, in addition to simply searching from a given frequency, the scanner also has ten pairs of pre-set but user-alterable band edge memories. Between these and the main search function, you should have no trouble finding some frequencies worth listening to.

Continued on page 36...



NEVADA the shortwave

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"Compact and bijou Mostin"

My thanks to **Nevada Communications, 189 London Road, North End, Portsmouth, Hants PO2 9AE, Tel: (01705) 662145, FAX: (01705) 690626** for loaning me the review sample.

Also an advantage here is the Trident's bandscope function. This turns the part of the l.c.d. normally reserved for displaying signal level into a basic but serviceable bandscope, with the current signal strength of the frequency being listened to shown by the height of middle bar, and those of four frequencies on either side of the current frequency shown by eight other bars, four on either side of the centre bar.

How often the scope's display is updated can be altered between once every second to once every ten seconds. Each time the scope display is updated, the centre frequency is muted, but that's par for the course. Incidentally, the sampling interval of the bandscope is normally the same as the current search step. When the bandscope is activated when searching through memory locations, however, the frequencies stored in the four memory locations on side of selected frequency are sampled instead.

Talking of memory locations, there are 100 of these in all, arranged in 10 banks of 100 channels each, so you won't run out of memories in a hurry. Storing a frequency in a channel is a very simple process, and once you have stored a few, you can scan through them at the touch of a single button. You can normally scan through only one memory bank at a time, the bank to be scanned through being selected simply by pressing one of the ten numeric keys.

You can link some or all the banks together if need be, however, and temporarily lock out any of the 1000 memories at any time. Other features worth noting are the inclusion of a priority memory location, a built-in 10dB attenuator, and a special turbo scanning mode that increases scanning speed from 30 channels of frequencies per second to 50, though at the expense of signal

sampling time. But, on top of all this, there's the feature I bet you've all been wanting to hear about - the audio inversion decoder.

I can't go into details about how this scrambling method works - I don't have the room. I can say that it is actually a very, very simple scrambling method, easily defeated, and hardly ever used in the UK. Having said that, I did hear some inverted speech signals when I was in Wales last Christmas, and was infuriated not to be able to understand what was being said, even with my 'state-of-the-art' AR8200. If only I'd had a Trident then (or the optional descrambler card for my AR8200). So, although this isn't the most useful feature in the whole world to have, it may prevent insanity for some users.

RS-232 Port

The final feature I want to talk about before going on to describe how I got along with the Trident in real life is its RS-232 port. In theory, this allows you to control the Trident from a personal computer, a very useful facility for any scanner to boast about. Unfortunately, you will need a special and optional computer cable, one end of which plugs into the scanner's earphone socket, in order to gain control of the scanner. That's not unusual, but I'm afraid I rather suspect that none of the main scanner control packages, including the likes of Trunker, will support the Trident for some considerable time to come, though I understand that a dedicated Trident package is available.

In Use

I'm afraid first impressions of the Trident in use were disappointing. I have to admit at this point that I've not played with any of the other compact scanners on the market, yet, such as the Icom IC-RZ, so I can't comment on how well the Trident compares to any of these. Compared to my Yupi, though, not to mention my AR8200, the Trident fairs quite poorly. The fact is that in terms of sensitivity and selectivity, this scanner doesn't score highly. I was so surprised at its distinct lack of sensitivity that I suspected a fault with its antenna, but replacing it with a much better Watson SuperGainer didn't help much.

I was even more disappointed with the Trident's selectivity, as harmonics from only moderately strong local signals tended to pop up all over the place so strongly that, if I hadn't known better, I'd have mistaken them for the actual transmission signal itself. And, of course, wrestling with the non-dedicated squelch control system throughout my tests didn't help much either.

Having said all that, you won't have any trouble picking up much in the way of local transmissions with the Trident, and the bandscope can be very helpful for tracking illusive signals. And, of course, the audio inversion decoder will help you listen to things scanners ten times as expensive as the Trident simply cannot decode.

Bottom Line

There's no doubt in my mind that, considering its price, the Trident stumbles quite a bit when it comes to its basic reception capabilities and the quality of its display. But, at the same time, it does have a number of positive qualities considering its price too, such as its bandscope, small size, latching squelch monitor button, computer interface and, of course, its audio inversion decoder. It took me a while to decide on this, but I think overall the positive and negative aspects just cancel each other out.

The bottom line is that if you want any of the special facilities the Trident gives you for the price, you'd not be wasting your money buying one. On the other hand, if none of its special features are of interest to you, you'd be better off buying a scanner with better-designed r.f. circuitry, such as the good old Yupiteru MVT-7100.

Manufacturer's Specifications

Frequency coverage:	100kHz - 2200MHz (continuous)	
Receive modes:	n.f.m., w.f.m., a.m.	
Sensitivity:	0.5 - 2MHz	n.f.m. 1.5µV @ 12dB SINAD a.m. 2.5µV @ 10dB S/N w.f.m. N/A
	2 - 1500MHz	n.f.m. 1.0µV @ 12dB SINAD a.m. 1.5µV @ 10dB S/N w.f.m. 2.0µV @ 20dB S/N
	1500 - 2000MHz	n.f.m. 2.5µV @ 12dB SINAD a.m. N/A w.f.m./ N/A
Frequency increments:	(a.m. and n.f.m.), 1, 2, 3, 5, 6.25, 9, 10, 12.5, 25, 30, 50 and 100kHz	
Frequency increments:	(w.f.m.) 12.5, 30, 50, 100, 200, 250 and 500kHz	
Memory:	Use memory: 1000 channels (10 banks of 100 channels) Scan edge memory: 10 pairs Frequency lockout memories: 50 Channel lockout memories: 1000	
Scanning Speed:	30 channels per second (normal) or 50 channels per second (turbo)	
Antenna input:	50Ω unbalanced BNC	
Dimensions:	62 x 116 x 29 (w x d x h mm)	

SWM

Good Things Come In Small Packages?

Regular readers of *Short Wave Magazine* will have seen my recent review of two budget hand-held airband radios. Whilst taking into consideration their position at the bottom end of the market, my verdict was that they were still less than impressive. It was therefore with some trepidation that I received another small hand-held radio to review, this set was just one step up the price ladder with a target price of just under £70. The radio in question is from a company whose equipment I have not used before and is the Maycom AR-108. (Doesn't another company use the designator AR for their products? - still I suppose it does stand for Airband Radio). Was I disappointed once again? Read on to find out, the outcome may surprise you!

First Impressions

When you open the box the first thing that strikes you is the size of the radio - it's tiny. The main body of the radio measures just 58mm wide by 85mm tall, 98mm with the top control knob. Screw on the compact antenna and it stands just 188mm tall. I immediately liked the look and the feel of the AR-108, despite its small size it feels very solid and its case is manufactured out of a good quality dark grey-green plastic material.

Well then the big question, can you put the necessary electronics for a reasonably sensitive receiver inside such a small £70 package? As some companies, in my opinion, have failed to do that with radios costing four times as much, the answer to that question was most likely to be **no!** So having already formed a biased opinion in my own mind, I carried on with the review, dubious of the outcome.

Controls & Specs

There is a dual purpose top control knob for on/off and volume plus a squelch control. The front panel has just seven buttons, plus two others on the left side of the set. My immediate thought was that as there were no numeric keys for direct entry of frequencies, storing memories would be a real chore, but the AR-108 has a way around that - more later.

It was obvious from the markings on the set that most of the front keys were dual purpose, thereby having secondary functions which could be accessed by pressing more than one key. This immediately prompted me to actually read the manual first, rather than start randomly pressing buttons as is more traditional.

The dual function buttons are as follows: Down (Left), Up (Right), Memory Read (Memory Write), Scan (Dual Watch), Channel Step (Key Lock), Back light and Beep On/Off.

The radio operates on two bands, the air band on 108.0 - 136.975MHz (a.m.) and a v.h.f. band from 136.0 - 180MHz, (f.m.). Local transmissions on a.m. within the v.h.f. band are audible, but it was obvious that this band is set up for f.m. reception, (a.m. and f.m. are not selectable).

I was pleasantly surprised to find the v.h.f. band covered



such a wide range, especially as it included the marine band, which I listen to fairly regularly. Each of the two bands has 99 memory channels available giving a total of 198, (non interchangeable).

The digital display is quite clear, although some items are rather small and anyone with poor eyesight may have trouble reading them. The digits of the frequency display were 4mm tall, which is about as small as you would want them to be.

The liquid crystal display contains all the usual information such as frequency, channel number and the current status/mode the set is operating in. There is also a signal strength indicator which lit up from 1 to 10 segments, whilst it was a good guideline, it wasn't particularly accurate.

There is also a four segment battery status indicator which I found most useful and is a facility that many more hand-helds

should incorporate. On the connector front there are two sockets, one for an external 12V power source and the other for headphones. The AR-108 comes with a belt clip, carry cord and an antenna.

Data Entry

Frequencies can be entered in two modes, either as the current active frequency or into a memory channel. The required band is first selected by pressing the A/WR button which toggles between the 'Airband' and 'v.h.f.' band. The first of the dual function keys now come into action, they are the up and down arrows which also operate as right and left arrows whilst pressing the function key.

Frequency entry is made by a system that is reminiscent of that used on the old Signal R-535. By using the arrow keys with the function key you can move along the numbers in the frequency readout till you highlight the required digit then use the up/down keys to select the required number. Repeat the process until the desired frequency is selected and then press the monitor button to enter the frequency.

It sounds complicated but it is actually quite simple. After a bit of practice, I could enter a six digit frequency in about ten seconds.

Peter Bond,
keen to get
his hands on
the new
AR-108, puts
it through its
paces. Was he
impressed?
Read on and
find out.





Scanning

To enter a frequency into a memory channel, press MR to select memory mode, (MR and the channel number appears in the readout), use the up down arrows to select the channel number and then you follow the same procedure as above. Add as many memory channels as you require and whilst still in Memory Mode (MR), just press the SC button to start the scan.

My own timings indicate a scan speed of about eight channels per second. Once a memory is stored, there is the usual feature allowing you to SKIP one or more memory channels during a scan. There is also a PASS facility which allows you to skip a frequency but only during the next scan.

The scan delay was a little annoying as it can only be set from one to 30 seconds from the start of a signal being received. This meant that if you had set it for 10 seconds and the two way conversation extended beyond that period, then the remaining part of the conversation would be clipped.

Alternatively, if you set it for a longer period, say 20 seconds, then each time you had a short transmission the radio would remain on that frequency for the full 20 seconds. I much prefer the type of delay setting where a variable time delay can be added to the end of a modulated signal.

The AR-108's heritage on show! Note the 'mic' legend on the dust cover.

Searching

There is no facility for searching for a frequency between pre-set limits, for example, the marine band on 156.0 to 163.0MHz, there is just a basic search from a start frequency. You enter a frequency and then press SC and the search will start using the pre-set increments, pressing the up/down arrows changes the direction of the search.

The search increments are set by pressing the ST button whilst not in memory mode, the increment can be set to any of the following: kHz, 10, 12.5, 15, 25kHz

and 1MHz. Used with the function button, the ST button acts as a key lock which locks all the buttons except the function and monitor.

Dual Watch

One other facility available is the Dual Watch. This allows you to enter any two frequencies, (as A and B), which are then monitored by the radio alternatively. If a signal is on the B channel, it will monitor the A channel every three seconds, (similar to a priority channel). The A frequency is given priority and will override a signal on the B frequency if both are active, the A and B frequencies can be swapped if required.

Other facilities on the AR-108 allow you to back-light the digital readout for four seconds, turn the key beep on and off and enter 'Power Save' mode to help extend battery life.

On Air

I think I have already overshot my target number of words for the article (*oh no! there's no stopping him - Ed.*), but to be quite honest, I think this radio deserves a bit of extra praise. Very simply, I was most impressed when I fully expected to be disappointed. The received audio from such a tiny speaker was actually quite good, giving clear speech with a minimum of background noise.

In general, the v.h.f. airband performance was good, the set appeared to be quite sensitive pulling in airband signals from aircraft above flight level 310 well over 320km away. Signals from local amateurs, emergency services, p.m.r. and numerous channels on the marine band were also heard loud and clear, (bearing in mind that my location is not far from the sea).

The selectivity/filtering also appeared good with very little cross band interference noted during the review period. Like all radios, during a search the AR-108 stopped on a variety of spuriously generated signals, but compared with some other radios, it was quite acceptable. Even when I had it sitting on the dashboard of my Land Rover, (which is not the quietest of vehicles, both on the road and electrically), I could hear local marine and airband signals with a minimal of interference.

Bottom Line

The AR-108 is a neat, well constructed little radio. It exceeded all my expectations and I am prepared to stick my neck out and state that in my opinion, on some bands, (including the v.h.f. airband), it outperformed other hand-held radios costing more than three times the price.

There were a couple of little moans, but on a set of this size and price, I can't really argue the points too strongly. For me to be really impressed by a radio, it first and foremost has to perform well, but if it can then do it within the context of the tiny size and a £70 price tag, then it has to be a winner. It really is a little gem of a radio!

And Finally

A plea to Maycom and my wish-list. If you can produce a new set of similar quality, including the u.h.f. airband, keypad frequency entry, a thousand memory channels in 50 banks of 20 and a variable scan delay system, I will be first in the queue. In fact, to let you into a little secret, I was so impressed with the AR-108 I have asked the Editor if I can buy the radio now this review is completed - need I say anymore!

My thanks to **Nevada Communications, 189 London Road, North End, Portsmouth, Hants PO2 9AE, Tel: (01705) 662145, FAX: (01705) 690626** for the loan of the AR-108 for review. **SWM**



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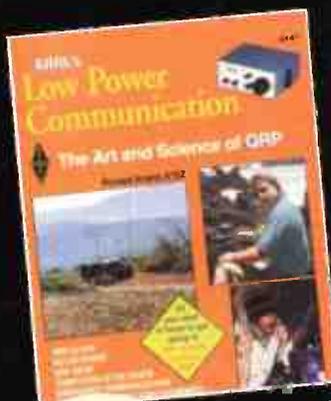
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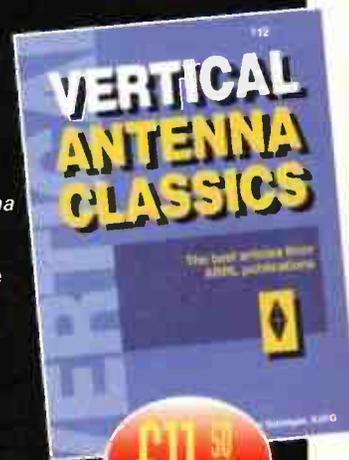
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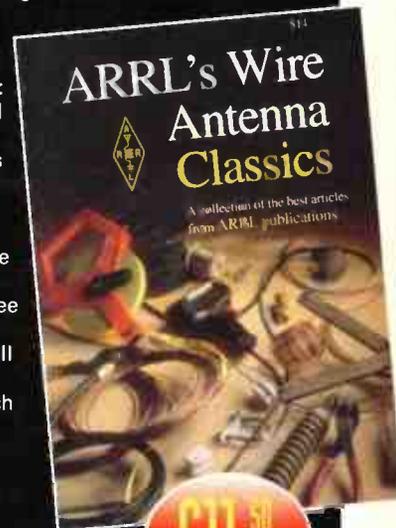
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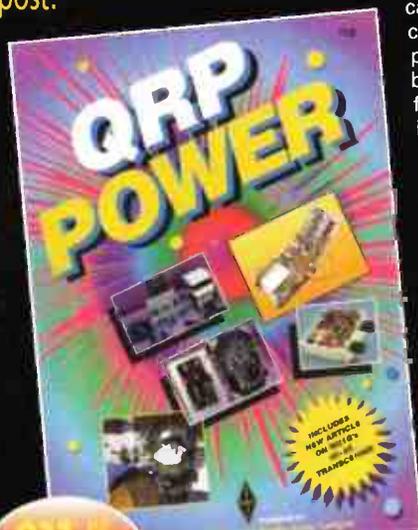
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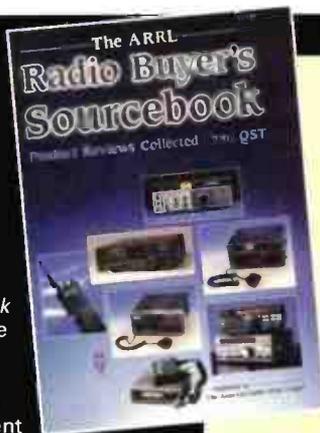
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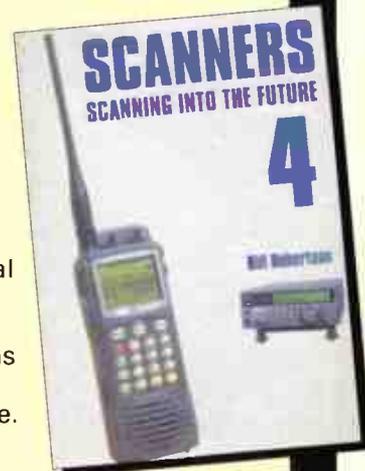


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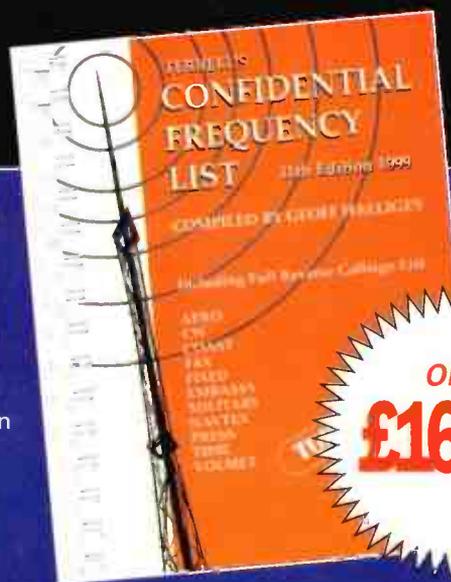
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Mast diameter	30-50mm can be fitted
Dimensions	ARA40 115cm total length with glassfibre whip. Antenna tube 40mm x 140mm ARA40 TEL 125cm total length with telescopic whip extended. 45cm minimum length. Antenna tube 40mm x 140mm Ideal for portable radio

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ARA 60

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Output impedance	50-75 ohm coaxial
Connector to Rx	PL type delivered as standard. Other standards can be fitted upon request
Gain	10dB +/-0.2dBs
Intercept Point	+50dBm IP 3rd order (10MHz/12V)
DC power supply	11.5-13 volt DC at 80mA typ. (230V/12V DC stabilised mains adaptor is supplied with the antenna)
Mast diameter	30-50mm can be fitted
Dimensions	115cm total length. Antenna tube 50mm x 160mm Ideal for base stations

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Technical performance

Frequency range	50-2000MHz
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Noise figure	1.5-2dB -1000MHz 1.8-2.5dB -1500MHz 2.5-4dB -2000MHz +35dB typical
3rd order IP	50-75 ohms coaxial
Output impedance	50-75 ohms coaxial
Connector standards	N type connector at the antenna. BNC male connector to the receiver
Power supply	12V DC at 160mA DC. Power supply for 230V AC is delivered comes with the antenna
Dimensions	Length 450mm Diameter 90mm
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Old Lessons, often repeated for the beginner

John Wilson continues with his trip down memory lane with a look at an Icom classic, the R-71.

I have a feeling that I released the brake on a giant locomotive and I'm being pushed along at ever increasing speed. The reader feedback from my first articles on elderly, but rather nice second-hand receivers has been very favourable, with more than one person writing to say that being new to the listening hobby at the age of thirty something, it's not possible to remember the R-1000 and others of the same period because the reader was ten years old at the time, makes me feel positively ancient.

I do recall being sneered at in the 1960s as 'One of those new G3 plus three' callsigns, whereas now, as G3PCY, the same callsign marks me as an elderly gent. Well, at least I hope I am a gentleman (most of the time). However, as there are more receivers around on the second-hand market than Trio/Kenwood, the Editor thought that I should continue tripping down memory lane and cast my mind back to other makers, such as Icom and Yaesu, and I begin with an Icom classic, the R-71.

Renewed My Acquaintance

Thanks to the generosity of Lowe Electronics who loaned me a very nice second-hand example of the R-71, together with the operation and service manuals, I have had a very pleasant time renewing my acquaintance with a fine receiver and can

quite understand why so many users had such a high regard for this particular model. Icom made a good marketing move at the time by introducing

two receivers with identical appearances; the IC-R71 and (a little later) the IC-R7000, which was reviewed in *SWM* July '99 issue.

At the time of introduction, it was everyone's dream to have both receivers sitting together giving coverage from 100kHz to 1000MHz. I know that the published spec. for the IC-R7000 said that it had coverage to 2000MHz but read Andrew Howlett's review for an explanation of how this was achieved. The only drawback to wanting both receivers was the combined price, but now with R-71s being advertised at £400 to £500 second-hand, price being dependent upon the range of accessories supplied, the dream is not beyond reach.

For Your Money

What do you get for £500? A very nice h.f. receiver, covering 100kHz to 30MHz, fully synthesised, digital readout, multi-mode, with memory facilities and a series of optional features to enhance the basic receiver. Being

In My Experience

mains powered, the receiver was intended for home station use, although for someone who can read circuit information, it is clear that operation from a nominal 13.8V d.c. input is possible by taking out a jumper connector on the regulator board and feeding d.c. directly to the main 12V line.

I assume that Icom provided this feature in the original design because removing the connector leaves the reverse polarity protection in circuit - a useful thing to have if you are fumbling around with a car battery. There were different models of the R-71 for markets around the world, and although most of them had a mains transformer with two 117V a.c. windings which could be strapped (internally) to give nominal 234V a.c. operation for the UK, the German model (IC-R71 D) had a single 220V a.c. transformer primary which made the receiver run rather hot when connected to UK mains. Worth checking which one it is before buying!!

Even with its built-in power supply the R-71 weighs in at an easy to carry 7.5kg, and its size of 111mm(H) x 286mm(W) x 276mm(D) makes it fit easily on an operating table. The styling was absolutely Icom quasi-military of the period and is still attractive today because the layout is designed for ease of use by human beings, all the controls having space around them for clumsy fingers.

The panel is dominated by the main tuning dial which, when the lift-up foot is used, places it at exactly the right height for use. Above the dial is the main tuning display which carries all the usual receiver information in addition to the frequency readout. Icom chose to use the Trio style gas discharge green display, but I'm certain that the tubes are not interchangeable between manufacturers.

Decimal points in the frequency readout are fixed, and the final digit reads to 100Hz although the synthesiser tuning step is 10Hz. This makes the receiver tune in smooth steps, and of course there is an automatic speed-up when the tuning dial is rotated more quickly. For rapid moves a 'Band' push button changes the steps to 1MHz so it takes only a few seconds to whizz across the entire tuning range, and there is 'roll over' at the top and bottom extremes which makes life very easy indeed.

For not so rapid excursions, a 'TS' button changes the tuning increments to 1kHz, so it's impossible not to be able to find a tuning rate to suit your needs. A huge advantage is given by the fact that the R-71 has a built-in keypad and even though frequency entry is in serial form with the digits scrolling across the main display, you soon get the hang of it and can go direct to whatever frequency you want in seconds.

Being fully synthesised makes provision of memory channels much easier, and Icom provided 32 in the R-71, each storing frequency and mode. Memory selection is by a little rotary encoder knob to the right of the main tuning dial, and I enjoyed listening to a station on the main v.f.o. and then touching the VFO/MEM button and giving a quick flick across the h.f. air traffic control frequencies from memory.



"Everyone's dream to have both receivers sitting together giving coverage from 100kHz to 1000MHz"

You can scan the memories as well, with a good selection of facilities which allow you to scan by mode, scan between two frequencies and so on. Provision of an all mode squelch control makes scanning for signals greater than a preset level equally easy. Someone thought about this.

Operating Features

All the necessary operating features of a good h.f. receiver are provided, with a proper r.f. gain control, selectable a.g.c. times, an excellent noise blanker which removed the noise from my wife's electric cattle fence from 20dB over 59 to zero - quite impressive, selectable modes including f.m. (although that is an option) and even an offset carrier injection to cater for RTTY.

Icom included an excellent notch filter operating in the i.f. chain and a pass band tuning system which is not exactly the same, nor indeed as effective as that used in receivers like the R-820 or even the earlier Collins 75 series. If you take an earlier analogy of mine and consider the receiver i.f. section and its filtering as a window with a pair of curtains which you can draw across, the Icom PBT facility operates as though you are drawing the right hand curtain across the window with clockwise rotation of the PBT control, and drawing the left hand curtain across with counter clockwise rotation.

Yes, you can eliminate interfering signals at either side of the i.f., but this is achieved by narrowing the overall i.f. bandwidth asymmetrically. In the original Collins PBT system (and in the Trio receivers) the pass band width remained constant, and the whole filter was moved across and around the incoming signal.

Nevertheless, the R-71 system works really well in practice, and sorting out weak signals on 20m was quite easy to do with a simple tweak at the PBT control.

Filter Choices

Filtering by i.f. is carried out at 9MHz and 455kHz and the Icom crystal filters are well known for their excellent characteristics. The standard R-71 came fitted with a 2.3kHz filter for s.s.b./c.w. (narrow) and a 2.8kHz for s.s.b./c.w. (wide) at 9MHz, with an option slot available for 500Hz or 250Hz c.w. filters. The 9MHz filters were backed up by a 2.8kHz ceramic filter at 455kHz, and a.m. filtering was at 455kHz with a nominal 6kHz filter, although a.m. (narrow) used the 2.8kHz bandwidth.

If you really wanted the bees' knees of s.s.b. filtering, you could fit a 455kHz crystal filter with almost vertical sides to the passband, and this was simply amazing, albeit a touch expensive. If the f.m. option was fitted, the standard bandwidth was 15kHz which is probably a bit wide for CB listening, but it's an easy job to change the filter for a narrower one if you wish (and assuming that you know how to pick up a soldering iron by the cold end).

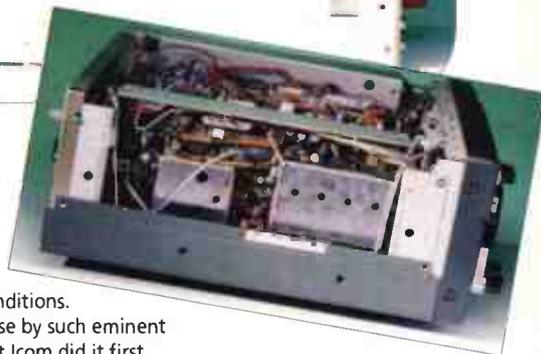
All in all, the filter choices were well thought out, but the influence of Mr. Inoue himself (who I remember well from my early days handling the IC-700R) is clearly still there as a keen amateur radio enthusiast, with great attention being paid to optimising s.s.b. and c.w. reception. For the h.f. utility listener, the R-71 is excellent.

Let's take a stroll through the circuit of this top class receiver; a stroll which is helped if you have both operating and service manuals to hand. Strange that the operating manual contains all the printed circuit board layouts in superb detail, whilst the service manual has measly black and white copies? The front-end of the R-71 is an r.f. engineer's delight with no less than eleven band pass filters to split the 100kHz to 30MHz range into manageable sections.

With so many filters, the performance is not far off that of a tuned preselector, and the R-71 did have a reputation for good out of band rejection as a result. Input tuned circuit protection was provided by two filament lamps in series with the h.f. and i.f. antenna

inputs, and as in the R-1000, if you have a seemingly deaf receiver, it pays to just check these lamps before having suicidal thoughts.

After the filters comes a low gain pre-amplifier using push pull 2SK125s, useful when operating on the very quietest frequencies above 20MHz, and a single step



10dB attenuator. By a clever switch on the front panel, the user can select 'Preamp', straight through operation, or 'attenuate' which allows easy selection of the best operating point for the receiver under all reception conditions.

This is an idea which is still in use by such eminent devices as the AOR AR7030, but Icom did it first.

The first mixer is a double balanced system using another pair of 2SK125s with high level synthesiser injection on the high side of the signal to convert to an i.f. of 70MHz which is then passed through a post mixer amplifier to the main i.f. board. It's interesting that Icom (in common with JRC) chose 70MHz rather than the more usual 45MHz i.f. found in other receivers, but there is one spurious response known as the 'half i.f.' which can occur under strong signal conditions, and placing the 'half i.f.' at 35MHz means that it is outside the normal tuning range of the receiver, whereas the 45MHz 'half i.f.' occurs at 22.5MHz which is, of course, within the receiver tuning range. Small but significant details.

The 70MHz i.f. is immediately converted down to 9MHz in another balanced mixer, this time using a diode bridge package and straight into a balanced noise blanker with its own a.g.c. system and switchable time constants to cope with both narrow and wide noise pulses. Works extremely well, and has front panel adjustment of the blanking level.

As I have already said, the 9MHz crystal filters from Icom were always very good, and s.s.b. reception is a joy on the R-71. Only one option position is provided for fitting extra filtering, and this is normally a 250 or 500Hz c.w. unit. If an option is fitted, it's usually the 500Hz filter, because you have to have extremely delicate fingers to tune a receiver with a 250Hz bandwidth, and it's beyond the needs of most operators. Mind you, the folk at Bletchley Park were using HROs during the war,

"Let's take a stroll through the circuit of this top class receiver"

and if you want a taste of what **real** operating is like, you should try an HRO at the bottom end of 20m with the single crystal filter wound to maximum selectivity at the point of ringing and try to tune the HRO across the signal - that usually separates the sheep from the goats.



Following another stage of post mixer amplification at 9MHz, the i.f. is then down converted to 455kHz, passed through 455kHz filtering and converted straight back up to 9MHz again. Why? Because the convert down/convert up technique using a single tuneable conversion oscillator is the easy way to provide the pass band tuning function. I say 'easy' but without a proper and somewhat lengthy explanation which I will save for another day, it's not that obvious. Suffice to say it is in this stage that the 'curtain across the window' effect is produced, and back in the early days of the R-71 the feature was called 'variable bandwidth' which is a truer description of what the system does.

However, there was a legal action (by the successors to Hallicrafters?) against Icom which prevented them from including the 'VBT' between 1989 and 1991, so some R-71s out there may not have the feature included - check most carefully. The variable bandwidth function was re-introduced around 1992/3, labelled as 'PBT' (Pass Band Tuning). My word; the things you learn about in *Short Wave Magazine*. Just wait until I write my definitive expos of the whole 'trade' structure of the hobby radio market.

Having been converted back to 9MHz, the i.f. is passed through the notch filter, which is a clever device using a 9MHz crystal tuned by a varicap diode followed by a double element ceramic filter. Mentioning the HRO receiver previously brings us right back to the R-71 notch, because the 'single signal' filtering in that lovely 1930s designed receiver is exactly what Icom have used here in the R-71, albeit with a diode tuning element rather than the 'proper' variable capacitor of the HRO. No doubt some smart designer will re-discover the principle in another 50 years and will amaze everyone with his cleverness.

Following two more stages of i.f. amplification at 9MHz, the signal is fed to the a.g.c. detector/time constant switching and to the a.m. and s.s.b./c.w./RTTY detectors. Detection by a.m. uses a simple diode detector which produces a well rounded audio signal without the need for d.s.p. algorithms (my cynicism is showing), whilst the other modes are detected by a very good double balanced mixer i.c., once again providing good audio results via the single chip a.f. power amplifier.

A separate feed before the audio power amplifier is taken through a buffer amplifier to the fixed level 'Record' output. Demodulating s.s.b. carrier signals are generated by two crystal oscillators, with l.s.b./c.w. and RTTY injection using one crystal pulled to the appropriate frequency by diode switches, whilst u.s.b. has its own dedicated crystal with preset capacitor trimming to get the frequency right.

Note here: that the various oscillators are **not** fed to the display electronics which means that when you change modes, the display leaps 3kHz between

u.s.b. and l.s.b. and the receiver changes frequency by the same amount. This means that broadcast listeners cannot tune to an a.m. station and switch sidebands in s.s.b. to use the ECSS method, because

you need to re-tune the receiver by 3kHz between sidebands - odd way to do this isn't it? Which brings me to the synthesiser.

The synthesised local oscillator is twin loop design with the inner loop covering an effective range of 10kHz. You can tell this for yourself when tuning the R-71 because the audio output mutes at every 10kHz transition throughout the tuning range whilst the inner loop rushes back to where it started. The resultant blank spot every 10kHz starts out by being disconcerting, but it's typical of synthesisers of the period and is soon forgotten in use.

The whole receiver architecture is controlled by a CPU which busies itself issuing instructions to everything which will listen to it, the CPU itself receiving its instructions from data held in battery backed RAM. Now here's a point to remember: the contents of the RAM chip which determine what the receiver thinks it should be are preserved by a lithium battery, and if this should expire whilst the receiver is switched off, the R-71 forgets what it supposed to be and can't decide whether it is an R-71 or an R-7000, or whatever.

Loss of identity means a trip back to an Icom service centre for full frontal lobotomy or something similar, so whatever you do, please ensure that your R-71 is fitted with a brand new lithium backup battery when you buy it. The trick apparently is to ensure that the receiver is switched on and running during the time it takes to remove the battery and replace it - you have been warned. If your R-71 suddenly starts wondering 'what is the meaning of life', send it back to Icom UK, not to a psychiatrist.

I said that the display tube is of the green vacuum filled variety like the R-1000, but unlike the R-1000 the frequency display is not derived from a proper counter but from the CPU data bus, so it's not necessarily telling you the truth. The 3kHz shift between u.s.b. and l.s.b. is not measured, but computed, so careful alignment of the various carrier oscillators by competent hands is always needed for exact accuracy. Of course, not using a frequency counter chip means that the tube driver i.c.s should be easier to obtain and cheaper than that used in the R-1000 so it's very much swings and roundabouts when comparing the two methods of display.



Overall Judgement

Overall judgement of the R-71 is that it is a very good h.f. receiver with many features which work really well, and a build construction which has stood the test of time. It's at its best when used as a communications or utilities receiver, and the 32 channel memory system is really easy to use for this purpose.

The receiver is instinctively simple to operate, and the r.f. performance, like most Icom receivers, is very good indeed, with the quality of the 9MHz filters being noteworthy. When buying second-hand it pays to check which of the accessory features have been fitted or included, particularly the infra red remote control unit which allows you to relax at a distance from the receiver and prod about the various bands without needing to turn a knob or push a button.

Extra filters are always useful, and that can easily be checked by using the 'Wide' and 'Narrow' filter select buttons on the panel. There was also a speech synthesiser option but not many people had this fitted. Again check by pushing the 'Speech' button near to the keypad.

I don't recall many problems in service, but I did hear some 'gritty' synthesisers, so check by tuning to a steady carrier in s.s.b. mode and listen for a pure demodulated tone. If there is a gritty wobble to the note, it means that the p.l.l. system is not held properly in phase lock and will require skilled attention to repair.

The keypad can sometimes exhibit a 'stutter' when buttons are pressed, which results in double entries on some digits, but false entries are quickly cleared by a single button press, and regular use often sorts out dirty keypad contacts.

All in all, the IC-R71 was a classic 'communications' receiver with a great deal of performance and operating features, and for a current price of £400 to £500 on the market is still an attractive buy. Do, however, exercise due caution in checking the receiver with hard earned building society savings, and try to get a correct UK model without the 200V mains transformer fitted to the German market units. As always, *Caveat Emptor* my little chickens.

Happy listening!

Primary Data The Timestep Way

It is almost a decade since I reviewed the first production model manufactured by Timestep Weather Satellite Systems of Cambridge, UK, of their Primary Data User Station (PDUS) system designed to receive METEOSAT high resolution images. Since then, several changes have been made to the transmission schedules - good and bad - and to the software.

Background

METEOSAT Primary Data? Let us start at square one. *METEOSAT-7* - see **Fig. 1** - is a weather satellite (WXSAT), currently located near zero longitude in geo-stationary orbit - about 35800km distance from earth. From this vantage point, like most of the other satellites located at this distance, its orbital period matches the earth's rotation period (23 hours and 56 minutes).

Consequently, it appears to hover in the sky above the same place. There are other factors that affect *METEOSAT*'s orbit (for example solar activity and the earth's irregular density), but essentially, *METEOSAT-7* keeps the same view of earth throughout day and night. Periodically the operators fire on-board thrusters to correct the orbit of the satellite - a process called 'ranging'.

METEOSAT's main payload is an imaging system that scans the earth almost continuously, producing a set of high-resolution images every 25 minutes (followed by a five-minute re-trace and stabilisation period). The on-board telescope system can resolve details to 2.5km within the visible-light spectrum - see **Fig. 2** - but in practice, the amount of data obtained at maximum resolution is too great to be transmitted in its current format every scan, so just one such image is transmitted each day - at 1134UTC.

Twice an hour, a full resolution image is transmitted containing just one sector - a portion of the full disc. Full resolution (5km) water vapour and infrared images are also transmitted every 30 minutes. It is these high-resolution image transmissions that are called Primary Data, and a system that can receive and display these is called Primary Data User Station - PDUS.

Although all similar geo-stationary WXSATs transmit Primary Data in the clear, EUMETSAT has encrypted *METEOSAT-7*'s 'home' digital data since the early 1990s. It is therefore essential that people contemplating buying a PDUS system should understand this. Most of the 'home' PDUS images are unreadable without a decryption unit. Of the 'home' images, with few exceptions, only those of the synoptic hours - 0600, 1200, 1800 and 0000UTC are clear.

The highest resolution image (the one transmitted at 1134UTC) appears as a meaningless screen of garbage. The main exceptions to



Fig. 1: The METEOSAT satellite, courtesy EUMETSAT.



Fig. 2: METEOSAT-7 Gulf region at full resolution on 20 January.



Fig. 3: METEOSAT-7 no encryption 25 May 0844UTC.

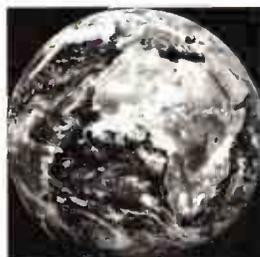


Fig. 4: WEFAX CTOT (whole disc visible-light) on 3 June at 1200UTC for comparison.

encryption are those occasions (such as on 25 May for a few hours) when images are transmitted in the clear due to operational requirements.

In order to decrypt 'home' images, it is necessary to buy a decryption box, interface and software - see 'Decrypting Your

Images'. Without the box, you can still receive unencrypted images originating from *GOES-E*, *GOES-W*, *GMS-5* and (currently) *INDOEX*. This review includes a selection of images originating from these satellites.

The more common form of data transmission from *METEOSAT-7* - WEFAX (see examples shown here) - is derived from Primary Data by degrading the resolution. This facilitates data transmission in a much shorter period. WEFAX decoding systems are correspondingly cheaper (and possibly easier to set up). WEFAX is not discussed here, but my regular column 'Info In Orbit' covers both WEFAX and PDUS reception.

Minimum Equipment Specification

Ten years ago it was necessary to have a high performance computer and a very large (at least 40Mb) hard drive for use with Primary Data equipment. Since then, the nature of the satellite transmissions has remained unchanged (in this context) while computer specifications have improved by an order of magnitude. Performance is therefore likely to be acceptable on all but the oldest and slowest of computers.

An 'AT' PC is the specified minimum, so any processor from a 486 upward is acceptable. The interface card requires a spare 16-bit ISA slot. My latest computer has just one of these - and it is occupied by a CCD imaging interface. For these tests (and for permanent operations) I used a 120MHz Pentium and an Amdahl 100MHz processor.

Data is written to the hard drive in real-time so your drive must have an access speed faster (shorter) than 28ms (milliseconds). In practice, most drives now have speeds in the 10-12ms range so this is most unlikely to be a problem. The program runs under DOS (Disk Operating System), and the animation facility requires a compatible video card, for example an ET4000.

A range of software drivers is

Whilst examining Timestep's PDUS solution, Lawrence Harris looks at the type of images transmitted by *METEOSAT*, the hardware and software required to receive and view them, the costs involved, and the future.



Fig. 5: PDUS dish.

provided, though it could be worth checking to see that your card is included. The default is standard VGA, but you would not want to have to use such a low level of resolution.

PDUS Hardware

A complete system to receive and decode Primary Data from *METEOSAT-7* must include a suitable dish, feed, pre-amp, cable, receiver and software. Each item must be right for the job - so let us clarify these requirements.

Dish

To receive a signal that can be subsequently decoded, we need a dish with a minimum diameter of about 1.6m. This is barely adequate and should be considered the smallest feasible size. The slightly larger size of 1.8m should perform much better. Larger apertures are also better at distinguishing adjacent satellites; on some occasions *METEOSAT-6* may be tested while fairly close to *METEOSAT-7*, causing interference on signals received using dishes that are too small. EUMETSAT specify significantly larger dishes for PDUS reception, but these are likely to be impractical owing to local planning regulations.

Another dish factor is surface accuracy. For use at 1.7GHz, a surface accuracy of several millimetres is acceptable. This means that you can even use 'chicken wire' - probably the cheapest material available for dish construction. Another possible source (other than buying a commercial 'METEOSAT' dish) is to acquire an ex-C-band television dish. C-band is over 3GHz - twice the frequency of 1.7GHz - so such dishes should be excellent for use at this frequency.

You will also require a suitable feed. A *METEOSAT* WEFAX feed is fine (the frequency is identical), but the new focus will

have to be determined after transfer to the new, larger dish. I used a C-band dish (obtained elsewhere) for this review. Timestep can also provide a suitable dish - see Fig. 5 - a 1.8m perforated aluminium dish complete with ground stand.

Pre-amp

If you are going to receive the highest quality images, you need the highest quality components. For this review I used Timestep's Pseudomorphic Hempt pre-amp fitted to the feed horn at the focus of the dish - see Fig. 6. The unit has a quoted gain of 35dB over the 1690-1710MHz band, for a noise figure maximum 0.45dB.

Cable

The Timestep PDUS system includes a 20m length of high-quality, low loss cable and this was fed from the output of the pre-amp, through a prepared 'tunnel' in the back of the house (designed to allow the passage of several cables), into the room where my receiving equipment is operated.

Receiver

This is the centre-piece of the system. It is a small unit using the same chassis as the PROscan a.p.t. receiver. The front panel - see Fig. 7 - includes a signal strength (VU) meter labelled 'carrier' - essential for optimising the position of the dish during the early stages of alignment. Two l.e.d.s are provided - one to indicate power on, the other indicating data lock when *METEOSAT* Primary Data flows. The three switches are for power, frequency change (though only one of these positions will normally be used), and carrier/tune.

The two potentiometers are labelled respectively 'tune' and 'carrier'. The back panel includes one d.c. input (not normally needed), data input (connected using the provided cable from the computer), the antenna connector (to the pre-amp), and five phono-type connectors, one of which (the 'S'-meter) can be used to relay signal amplitude information to the remote dish for alignment purposes. It outputs up to 100µA d.c.,

dependent on accurate dish alignment.

PDUS Decoding Card

This interface occupies an ISA expansion slot and powers the receiver.

Software

Several programs are included with the main decoding program. The test program (*MTEST*) shows every incoming line, and is used for initial alignment and optimising. *PDUSANIM* is the main animation program.

PDAFANIM is for animating European sectors in colour - used with the decryption unit. *SHOW1024* is an image display program; *SETMODE* is for optimising your video card and *SETPRINT* is a printer dump program. The real test of the software is described in this article.

Installation

The hardware - dish, pre-amp, receiver and cabling - should be set up first, and then the software installed. The interface card fits into a 16-bit ISA slot. After powering on the computer and opting for *DOS*, the software can be installed from the floppy disks included with the product. This is a *DOS* program so the computer should be run under *DOS* - not simply run in a *Window's* *DOS* box.

The manual describes the process of setting up and aligning the dish, together with comprehensive



Fig. 6: Pheempt pre-amp for PDUS.

Fig. 7: PDUS receiver - front panel.



Continued on page 50...

Timestep



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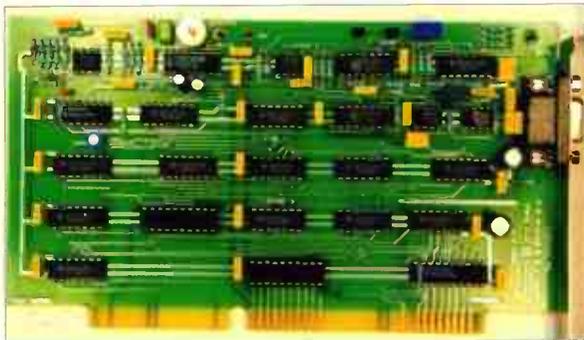


Fig. 8: PDUS interface card.

be done regardless. When the cables are connected and the unit switched on, the receiver is powered.

Many of those using, or planning to use this system may already have WEFAX equipment available. This can be used for initial alignment of the big dish. After the signal has been obtained, the PDUS receiver can be connected and the process of accurate alignment continued.

The MTEST program displays every received line, and therefore produces a distorted perspective (for normal display, images are adjusted to provide an acceptable perspective). For test purposes, a copy of the transmission schedule is almost essential to identify the times when clear images are transmitted.

System 'tweaking' - the process of optimising receiver settings - completes the setting up. After following the notes, you should eventually obtain a signal of

sufficient strength to produce noise free images. The incoming image carries its own display location information, so if the data is corrupt, you may see image data appear in seemingly random positions. This was my first experience during dish alignment.

By the time everything was correctly set, the images were perfect. The main program can then be used. Note that for best results the receiver should have been operated for at least half-an-hour to achieve stability. In normal operation, continuous running of the system seems the most appropriate way to appreciate its value.

Main Software

Users more familiar with the *Windows* operating system may, at first, feel a little 'out-of-the-water' using a *DOS* program. The significant difference is that you cannot run *Windows* programs simultaneously. As mentioned, the program runs on older computers, so the use of a dedicated machine can make sense. Although the program should run on any current machine, I would suggest that an older computer could see a new lease of life when dedicated to PDUS reception.

A summary of the software's facilities should answer most initial queries. The main menu offers 'file', 'section', 'receive', 'display', 'colour', 'options' and 'help' - each having further choices.

'File' is for loading, saving, deleting and directory changing for files already obtained. I found it convenient to create several directories in which to move already received data files, prior to possible data processing.

'Section' is for marking and saving. Marking can be used to identify an area; saving will save the whole image (not just a section) in a standard format. I would prefer this feature to be on the file menu labelled 'saved as' to conform to accepted practice. It produces a full resolution image file in bitmap format. This is the case with all image

instructions on the use of the software. Because I am curious about the hidden technicalities, I would have preferred a more detailed description of the contextual meaning of some of the terms - such as 'tune' - though setting up can still

formats, including foreign ones.

'Receive' has four options - receive, display, autosave and set times: receive starts the routine 'receive image' function, and is active immediately.

'Display' allows channel selection (from visible, infra-red and water vapour - the three possible spectral regions) where applicable.

'Autosave' puts the software into the mode where incoming data is not only displayed, but pre-listed images are saved in raw format. This allows specific images to be saved by entering (setting) their times (via set times) in the database. By this means, a selection of the most interesting images could be obtained over a 24-hour period.

In receive mode, each image is labelled 'tempdata.mpd' in the current directory. In autosave mode, images selected for saving are saved as temp0001.mpd and incremented. They can be subsequently identified by either viewing or by the date/time stamp.

Display is used when image reception is complete. It

enables selection of a specific area of the image for detailed examination - such as zooming. Function keys F9 and F10 allow instant in-out zooming; channel allows switching between spectral images (where appropriate).

The remaining options concern temperature, so they are only applicable to thermal images. Read temperature provides accurate thermal information from the position of the mouse. For it to operate, the whole image must be available because temperature calibration information is included at the beginning of such images. The correct interpretation of this data is important. What you see is what you get!

Clouds have different temperatures than the land below. They are normally colder than land under sunny skies, but they may be warmer than land under winter skies. Temperature slice attributes colour to temperature bands, and is not just 'pretty', it is highly instructive. Areas of similar temperature appear the same colour. Temperature limit settings are adjusted from the Options menu.

Colour: No colour information is transmitted within METEOSAT image formats, but it is not difficult to assign colours to a grey scale. A number of palettes are included that provide a starting point; the various options allow precise colouring of an image by changing the intensity of the primary colours. A bit of practice here and you may find you have skills that you didn't even know about! The equalise option modifies the grey scale to enhance darker areas without bleaching the clouds.

Options: This provides facilities to save files for export to other Timestep programs, including the *Show1024* display program.



Fig. 10: Typical WEFAX format (C02) 27 May 1130UTC showing Britain and Spain.

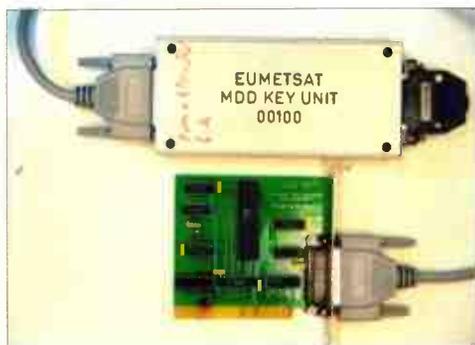


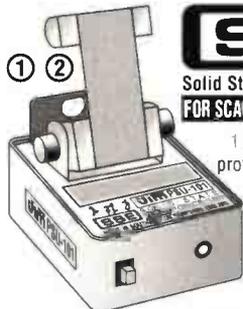
Fig. 9: PDUS key card.



Fig. 11: GOES-E visible-light image 5 May 1855UTC. This format is transmitted every three hours (during daylight) and originates from GOES-8 positioned above the east coast of America. The equivalent infra-red image is transmitted every three hours. Every weather system across America can be seen.



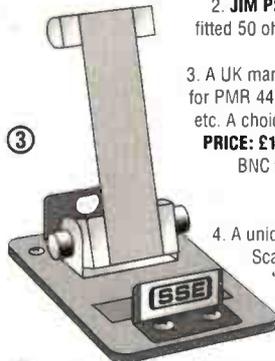
Fig. 12: GOES-W visible-light image 5 May 1957UTC. This format is transmitted every three hours during daylight, and originates from GOES-10 positioned above the west coast of America. The equivalent infra-red image is transmitted every three hours and shows most of the Pacific ocean.



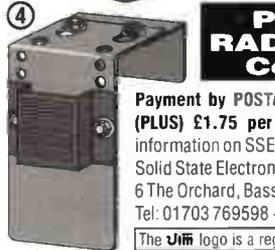
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Autoinvert reverses the grey scale, and grid displays latitude and longitude gridding superimposed over the image. Zoom has two modes: box encloses an area for zooming; point is perhaps better - one mouse-click on the area of interest, and zooming concentrates on that area.

Overall, the menu is easy to remember, once it has been used a few times.

PDUS - How Was It For Me?

It is almost addictive! Despite the lack of consecutive, viewable home-grown images from METEOSAT, the sequence of GOES-E, GOES-W, INDOEX and GMS images helped make this a worthwhile project. After having monitored WEFAX images for some years, I decided to upgrade to PDUS. With minimal hardware changes, one can swap from PDUS to WEFAX (in the absence of a decryption unit), getting the best (literally) of all worlds!

Viewing live images is fine, but you will probably wish to save a few. I receive E-mail updates from the Operational Significant Events team that monitors unusual or severe weather around the world, so I often have a retrospective look at weather features previously identified by this team. Storms in



Fig. 13: INDOEX visible-light image. METEOSAT-5 is taking part in the Indian Ocean Experiment and provides hourly images in three wavebands.

the Indian ocean (INDOEX), and hurricanes in the eastern Pacific (GOES-W) can be followed.

I have had time to test the system thoroughly. My remaining concerns are software video compatibility and the DOS environment. New users should find a suitable video option available from the choice provided. Alternatively, cheap video cards are available.

The second problem, in my view, originates from EUMETSAT! The software was originally written for use under DOS. It has been upgraded, with some of my personal requests included, but it is still a DOS program.

EUMETSAT's decision to encrypt METEOSAT PD has had a savage effect on the market, one consequence of which was to put extreme pressure on the budgets available for research and development. This means that the re-writing of the software to run in the Windows environment is an expensive process for a potential market limited by EUMETSAT's action.

Decrypting Your Images

A decryption unit can be bought from EUMETSAT, together with an interface - see Fig. 9 - from Timestep, to decrypt all METEOSAT 'home' images. The basic unit costs about 700ECU (about £500), and the interface needed to connect this to the

Short Wave Magazine, September 1999



Fig. 14: METEOSAT Primary Ground Station at Fucino in Italy, courtesy EUMETSAT.

computer costs about £150. Experience reported from readers suggests that the process of installing and activating the units is virtually pain-free. However, METEOSAT-7 PDUS will eventually be replaced by MSG-1 - see later.

You can still animate foreign format images, and this is very effective with both GOES infra-red and visible formats - despite the three-hour gaps!

Costs

The following are Timestep's listed prices:

Dish and feed:	£586.33.
Pre-amp:	£283.33.
Cable 20m:	£19.98.
Receiver:	£703.83.
Card, key card and software:	£499.38.
Complete PDUS system:	£1,996.33.

There are benefits of being a RIG member when it comes to buying a PDUS system. Contact Timestep for details.

Alternative Systems

You won't find too many advertisements for Primary Data systems; specialist hobbyist magazines, such as the journal of the Remote Imaging Group (RIG), carry details from just two suppliers - Timestep (of Cambridge, UK) and Orbit Electronic (of Germany).

PDUS - The Future

METEOSAT-7 is the last in the current generation of METEOSAT spacecraft to provide Primary Data and WEFAX. I contacted EUMETSAT to check the latest situation regarding the time scale for planned METEOSAT-7 transmissions: "In line with current planning, the METEOSAT Transitional Programme (the current HRI and WEFAX service) will be continued until at least the end of 2003. This will allow for a significant amount of overlap with METEOSAT Second Generation (MSG) operations. The first MSG satellite is due to be launched in 2000/2001". This is good news; Primary Data is likely to remain with us for at least four years.

MSG-1 will provide the new format High Resolution Information Transmission (HRIT) - albeit encrypted! EUMETSAT publishes satellite operational news, future plans and data policy information on its EUMETSAT web site:

<http://www.eumetsat.de>

My thanks to Dave Cawley of Timestep for prompt responses to queries, and for his visit to my house (during a local vacation) to see the system was operating properly. Thanks also to Ms Sally Wannop of EUMETSAT User Service for clarifying the timetable of future METEOSAT operations, and to EUMETSAT for the use of pictures of METEOSAT and the ground station.

SWM

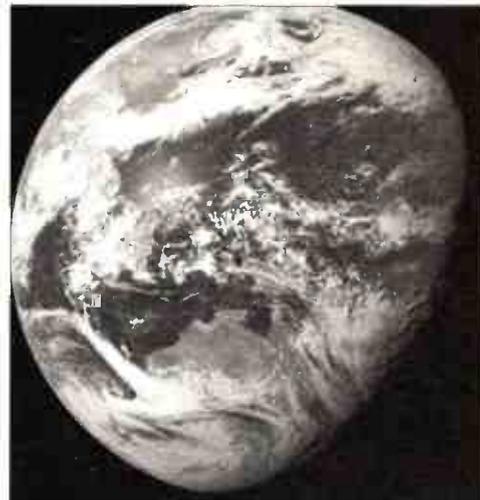


Fig. 15: GMS-5 visible-light image 26 May 0749UTC showing afternoon sunshine in China, and evening sunshine in Australia.

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Amateur Bands

In mid-June **XYL UR5CMM**, her son **UT7CT** and I visited the preserved Welshpool & Llanfair railway. While waiting for the train, Galina and Anton wandered into Llanfair Caereinion village while I got talking to a fellow photographer who turned out to be a licensed amateur. As we talked, the train pulled in, the driver jumped down and said 'I heard you all talking...I've got an amateur licence too!' The train duly pulled out to the sound of a CQ from the engine. This meeting led to the thought that if enough support were forthcoming we might put on a sponsored special event station somewhere along the line.

Already **Rob Mannion G3XFD** of our sister magazine *Practical Wireless* (who is a member of the W & L anyway) has indicated support and wants to be present, so if enough readers indicate they could spare time to come and operate or take on the other chores involved, then I'll see what the W & L management have to say. I think we'd be looking at a date next summer. Comments, offers of support and suggestions please - usual address, as per the title bar.

By the time this reaches you, RAE and NRAE courses will be upon us. **Scott McMurray** is fretting a little about it. So, some words of advice to all who start RAE/NRAE in September. First of all, **preparation**. Complete the course, don't drop out in January when the weather is wet and cold. Take all the handouts, but make your own notes as well, writing it down seems to strengthen the imprint in the mind, and if in doubt, do ask questions. Use the specified books to read and re-read until they are second nature.

Now, the exam. Keep your nerves under control before the exam room doors open. Take pencil sharpener, pens, erasers and calculator - it's plain daft to lose valuable time and distract your mind by a silly thing such as a broken pencil-lead. You must have a 'game plan' to maximise the marks your knowledge can give you. So, after you've filled in your name and address details, etc., read all the questions. Mentally divide them up: (a) the ones you're sure of, (b) the ones you can probably get right, and (c) the ones where you just haven't a clue(!). Now, forget the nerves, get stuck in and deal with all the category (a) questions. If you lose faith in a particular question, push it back to group (b) and carry on.

Next go through the (b) group. Again don't waste much time on any question; if it's that bad, push it down to the (c) grade. Now, you can go through the (c) lot making intelligent guesses, or at worst blind guesses. When you hand the paper in at the end, you should - right or wrong - have ticked a box in answer to **every** question. That'll give you the maximum chance of getting marks - after all, even in the (c)'s pure chance will produce you a few marks, but if you fail to answer questions, you can't gain their marks.

As to the value of thorough preparation, my **XYL UR5CMM** recently took the Driving Test Theory exam at the age of fifty. She nearly drove me up the wall in the months while she prepared, but despite the language problem and an interruption due to a bereavement, she finished off the paper in less than the specified time, and passed with 100% correct answers. If she could do that, so could you!

The Crystal Ball

Mine tells me that **ZD8V** is now active again, mainly 14 and 28MHz sideband. **YB** and **HA** have signed a reciprocal agreement so **Sany HA7VK** at the Embassy in Jakarta will be on as **YB0AVK**. Look out for either **PJ9Q** or **PJ9/W9QQ** between September 16-21, mainly **PSK31** and **RTTY**. **G0GPX** is on Canouan as **J87AB** using sideband only; his address for cards is: **Mike Vincent, Canouan Island PO, St Vincent, Windward Is.**

T30 and **T33** activity is promised between October 19-November 11, signing **T30Y** and **T30CW** from **W. Kiribati**, with a side-trip to **Banaba** as **T33Y** and **T33CW** between October 28 and November 2.

If you're into the Internet, a mailing list is run by **PY2ZX**. Send a message to **swl-dx-subscribe@egroups.com** with the subject and message areas blank.

Reports

Let's make a start with **Colin Dean** in Barnsley; on 7MHz he collected **C33AR, EX8MLE, UN7TX, VK1MJ, ZL2QB, ZS2JL, ZS6HB, 4L1DA, 4L1TS, 4K8J, 9M2IS** and **9N7RM**. A shift to 18MHz collected the scalps of **A41LZ, CO2CM, CY9SS, EL2WW, JA1-6-9, TK/PA3DIO, T77C, UA0QMN, VU2DK, WP4TCD, XV300S, 5X1T, 5Z4GS, 9G1MR** and **9J2AM**.

On 21MHz, we find **A45XM, A92GJ, BV2-4-5-8, CP0ARA, DS2-3-4, DU3NHK, EL2DT, ET3AA, EZ1CJN, FH5CB, FM5DX, HB0/HA4DX, HL1-3-5-0, HS0/K4MRH, KH6/K6RMM, KH6/W7GMH, KH0/JA4RED, KH0/JH2CYU, TZ6VV, UN7/DL4BBU, VK8LN/6, VK8KTC, VQ9GB, VR2MY, XV300S, YC1-4-6-8-9, YN2ATM, ZD7MY, 3V8DJ, 6W1RB, 7Q7JL, 9K2BD, 9M2ZA, 9M6IS** and **9V1JA**.

In Birmingham, **John Collins** has a dipole up at 20m, plus a **DV27 CB** antenna, so he specialises on 7MHz and particularly the wee sma' hours. The list includes **GB2IWM (QSL via G4WEZ), GB0GFS (via G0IKI), GB2VT (via the Bureau), GB0RAF (via G0DAM), GM3VRB/P on IOTA EU123 (QSL direct only), GM3UTQ on IOTA EU008, OZ/DL8UD on EU29, 9A6DCR on EU136, DK0PU/P at the German Ham Radio '99 Convention C33BO, IF9WKH calling CQ, SK6NL/P on EU043, a 'special' signing DA0BUG**.

The **GB2IWM** had a long QSO using **WW2** receivers and was a very interesting one to listen to. A Russian special was **R200AP** celebrating the poet Pushkin's 200th anniversary (cards to **RA1WZ**), and on June 6 John noted **TM6JUN (via F2RO)** a special from Normandy's Juno beach commemorating D-day.

GB2HFD was on from Hatfield Festival while **GB5TI** was on **EU108; 9A6DCR** was noted from **EU-136**, and besides hearing **OZ/DL8UD** again, John noted **LW9DX**, plus lots of the special prefixes from **GW**, including one spelling out his 52-letters-long **QTH** on Anglesey. Incidentally, this name is, I believe, not an 'original' but a 19th-century invention. Finally, **RU9TC** from West Siberia, asking for **QSLs** direct with return postage or **IRCs** preferred, though cards can go via the Bureau.

Now we must turn to the lovely mode - c.w. - and **Ted Trowell** on the Isle of Sheppey. Between them, Ted and Stella keep the big garden under control despite her game leg and Ted's wonky heart valve; and still Ted finds a bit of time for dits and dahs on the bands. For example, on 7MHz **CO2MA**, then on 14MHz **JA3VAP, ZB2EO, HB0/OK2WY, TM5GW, TR8XX**, plus on 18MHz **PY7ZZ**. 21MHz got a pasting, with **JH4UYB, PY2OS, PY1LPS, JY8YB (via DL5MBY), JT1DA, HL1JV, ZB2FK, KZ5D, VQ9VK, W7KSK, PT7SY, 3W7TK, PR7CM, PY2DTV, 5N0MSV, 9V1YC, OH0EA (via OH2KMG), CO8LY (via EA7ADH), FY5YE (via W5SV), A45XR, JN2AMD, JA2ZJW, JA5BJC, E21EJC** and **VR2LC**.

Higher yet, and 24MHz included loggings of **5X1P, ZS6AVP, ZS6DM, ZS5RON, 9J2BO, ZP5KO, 5N3CPR (via SP5CPR), A45XR, AD6C, CY9SS (via VY2SS), TT8DF** and **5V4FA**. Finally on Ten, **3B8GD, PY2OW, PY2EL, FR5BT, 9G1JX** and **KP4TF**.

As usual, **Paul Goodhall** in Oxford sent in a long and useful log; but perhaps more interestingly Paul's son, 12-year-old **Peter**, has been showing interest in the station, learning c.w. and helping out at **G5LO/P** in **NFD**, in particular taking on that awful chore of topping-up the generator, which needed doing every three hours. Visually-impaired Peter might be, but as Paul says, he's not letting that stop him tackling anything. I'm sure we all say 'long may it continue!' - and one hopes Paul and Allison will give him all possible encouragement. Good on yer, Peter!

International Listeners Association

Once again we have the **ILA** magazine to hand - thanks **GW40XB, 1 Jersey Street, Hafod, Swansea SA1 2HF**. **ILA** covers just about all sorts of aspects of short wave listening, down to explaining how antenna tuners work, and what's what about some of the pioneers, as well as the usual columns or reports. Well worth a subscription I reckon.

Finis

That's it for another month. The deadline is as usual to arrive the first of the month, to **Box 4, Newtown, Powys SY16 1ZZ** - and don't forget to let me know about the proposed special event station!

■ FARIS RAOUF c/o EDITORIAL OFFICES, BROADSTONE

■ E-MAIL: scanning@pwpublishing.ltd.uk

Scanning

It may have been a closet Spice Girls fan (see last month's column if you don't know what I'm talking about), but I've never made a secret of the fact that I'm a red-blooded Formula One racing fanatic. Why am I telling you this? Well, the fact is that Formula One is an oasis for scanner users, with everybody from the non-stop queue of helicopters landing and taking off to the on-site catering companies making use of radios. What's more, with so many people around, many with electronic gadgets of one kind or another about their person, you won't stand out like a sore thumb if you bring your scanner along to see what's going on.

VIP Invitations

One of the perks of being a journalist in the computer industry is regular VIP invitations to the British Grand Prix at Silverstone, since the likes of Sun and Fujitsu are big team sponsors. This year was no exception, and as I write this, I'm just back from watching poor Michael being prised from what was left of his car, Damon managing a respectable fifth in the race, and David gaining a well deserved win.

Unfortunately, moments after arriving, my scanner ran out of battery power, and trying to buy AA batteries within the racing circuit proved to be a lost cause, so I can't report on the quality of the list frequencies I was sent by an anonymous reader, see **Table 1**

1. I can't even tell you what you might hear on any of the frequencies either.

What I can say is that, from past experience, there's quite a lot to be heard, though a lot isn't in English (most of the catering staff, for example, are French), and a great deal is encrypted, or at least transmitted digitally. Most pit to car radio circuits unfortunately fall into this latter category for obvious reasons.

Of course, Silverstone isn't the only place that's good for listening. Most motor-racing and other sporting events are good places to go for a listen too, and you don't even have to actually fork out any money to get in, either - you could always just park nearby and have a picnic, though if Silverstone is anything to go by, parking spaces nearby may be impossible to find.

Table 1: Formula 1 Frequencies, all n.f.m. mode, all MHz.

413.2000	456.7250	422.0250
452.0375	450.6125	451.9125
464.1750	454.0875	454.6325
452.6750	456.1250	402.4000

Before I go on to anything else, I must first apologise to all readers who have written or E-mailed to complain about the fact that I dedicated the entire column to how

to install *Trunker* a couple of months back. I know a lot of people reading this column don't care about trunk tracking, but the fact is that based on the number of messages I received, a significant number of you are very interested in the subject, hence my decision to write the '*Trunker Special*'. Anyway, there will be no more on *Trunker* for the foreseeable future, so all you Trunk-haters can breath a sigh of relief.

Digital Network

Now, on to some news. Those fiendishly clever people at RAM have secured yet another client, TNT, who will be using their digital data network for communications on the road. TNT is just the latest in a long line of companies, not to mention numerous police forces, ambulance services and fire services to move from using easily overheard voice communications to digital data networks for routine traffic.

I'm starting to think that it won't be long before the whole world has either gone digital in one way or another, leaving only the lower end of the radio spectrum for scanner users to listen to. Mind you, if using digital data networks like this speeds up response times for the emergency services and helps to save

lives/catch villains, I'm all for it.

But compared to my next news, communications going digital is the least of a scanner users' worries. I've just heard that a web site containing what I can only describe as information of use to scanner users has had to shut down, technically voluntarily, following an official visit to its owner by an RA Regional Inspector, who was not happy about the information the site contained.

Quite frankly, I find it difficult to believe that this sort of thing could ever happen in this country. I'll bring you more details next month if I am able to.

Readers' Letters

Talking about the powers that be, **Richard Howard**, from Northampton asks if the TV licensing authority might think he has a television set if a TV detector van happened to pass by while he was listening to the audio component of a TV transmission on a scanner. Currently, he owns neither a scanner nor a TV. This is a fascinating question, to which I can't even guess at an answer. Can anyone out there help with the legal and technical points regarding this?

Steve Smith from Belfast also needs some help. He's searching for information on how to add a discriminator output to his Icom IC-R7000. I've searched the Internet high and low, and can't find any information, but to no avail. So if anyone out here can help, please let me know and I'll pass the information on to Steve.



AOR Mailing List

Are you an AOR AR8200 owner? If so, you might like to know that there's a mailing list just for you, where fellow owners can pass information between themselves, and get answers to those burning problems or queries your dealer never seems to know how to sort out. I'm told there are currently over 400 users subscribed to the group, including AOR UK! To subscribe to the list, send an E-mail to ar8200-subscribe@onelist.com or visit <http://www.onelist.com/subscribe.cgi/ar8200>

Be Warned!

Finally, I want to remind everybody that listening to any radio transmission you are not licensed to receive is a criminal offence. In plain English, this means that if you are caught listening to something you should not be tuning in to, you risk a fine, confiscation of your equipment, and even imprisonment.



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SCANNERS

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Icom IC-R7000	Several to choose from	£550
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GRE Scanning	Pre-amp	£35
Hancom interface		£20
JRC NVA-88	Speaker	£50
JRC NVA-319	Speaker	£100
Kenwood SP-430	Speaker for the R-5000	£40
Lake TU-1	Receiving ATU	£39
Lake TU-1	Receiving ATU	£49
MFJ-462B	Decoder Ex-display	£110
MFJ-784B	DSP unit	£110
Opto Scout	Ex-display	£225
RF Systems	Rx HF antenna (cost £460)	£259
Seamaster SP-55	Pre-amp	£49
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LEICESTER SHOW SPECIAL

The 28th Leicester Show will be taking place on the 24/25 September 1999 at Donington Park for the second time and PW will be bringing you details of all you need to know.

Don't forget to pack a torch!

REVIEWED!

Richard Newton G0RSN reviews the Alinco DJ-V5 u.h.f./v.h.f. dual-band transceiver.



Rob Mannion G3XFD reviews the Texas Bugcatcher HF Mobile Antenna courtesy of Waters & Stanton PLC.



NEW THREE PART SERIES!

David Butler G4ASR begins his three-part series which he says will "get you going on Microwaves".

BUILD!

A 'Power/SWR Meter' courtesy of Jim Brightman G0JXN!

FEATURES

The October issue sees the first in a three part series on **Microwaves** by PW's very own 'VHF Report' columnist, **David Butler G4ASR!** Also featured in the October issue is an article by **Ray Herbert G2KU** entitled 'A Start With Television From 2LO', an article by **Gordon King G4VFF** (our 'Looking At' author) on 'SWR & Radiation Efficiency', and **Henri Walser** discusses his opinions on the use of 'Morse In The Digital Age' ... and much more.

Plus all your regular favourites, including:

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JMC 99/3

The dates of the final JMC (Joint Maritime Conference) of 1999 have been announced, and details are listed below.

The JMC is a series of military exercises around the shores of the UK, always involving naval forces from a number of NATO countries, which manages to generate a lot of h.f. signals - if you can find them! There are usually three such exercises each year - one each in Spring, early Summer, and early Autumn.

JMC 99/3 will take place between 13th-25th September 1999, and will be combined with two smaller exercises over the same period. There will be a two-phase Combat and Force Integration Training (CFIT) exercise which will encompass two other annual exercises, Northern Light and Green Wader.

Phase 1 of these exercises will take place in Scotland and the north-western approaches, with RAF and NATO fast-jets and maritime patrol aircraft operating from RAF Kinloss, while Phase 2 will take place in south-western England and northern France with the NATO fast-jets and maritime patrol aircraft operating from RAF St. Mawgan in Cornwall.

The principal task of the JMC exercises is to provide training in a multi-threat environment, which includes surface ships, submarines, aircraft and helicopters. All these assets require a lot of co-ordination - most of this is done on v.h.f. and u.h.f., but there are a number of networks set-up on h.f. There are usually two sides to each exercise, and each side has at least one h.f. frequency.

Finding these h.f. networks is always a problem, and it is not until each exercise has started and listeners start to search for activity, that the active frequencies are found. One good place to start is the RAF Architect broadcasts at H+00 and H+30 - during the JMC exercise period the broadcasts carry an additional message after the main broadcasts - this contains the frequency designators for the h.f. frequencies being used by some of the aircraft involved.

You can also find some preliminary information about the JMC exercise in the weeks leading up to the start of the exercise by downloading AIP Supplement information from Internet. If you have the capability to surf the web, try www.ais.org.uk and then look in the section covering AIP Supplements. There is usually a document containing details of the exercise areas. Then, when you do manage to find any h.f. activity, you can tell whereabouts the signals are coming from.

For those of you who have the ability to monitor NAVTEX transmissions, there are navigational warnings broadcast during the exercise, and these also give a good idea of where the action is taking place.

Coastal Changes

On 1 July, HM Coastguard took over responsibility for weather and navigational warning broadcasts from BT coast radio stations. BT handed over some of their working frequencies, including 1.641MHz which is used by Solent CG. The other CG stations broadcasting on m.f. are Clyde (1.883MHz), Yarmouth (1.869MHz), Shetland (1.770MHz), Stornoway (1.743MHz), Falmouth (2.226MHz), Tyne Tees (2.719MHz), Holyhead

(1.880MHz), Aberdeen (2.226MHz), Milford Haven (1.767MHz) and Humber (2.226MHz). The CG also broadcast on v.h.f. channel 10 or 73 following an initial announcement on channel 16, and are also, since 1st July 1999, responsible for handling medical advice radiotelephone link calls previously handled by BT coast stations.

BT is presently rationalising its m.f. facilities to match customer demand, and working towards the planned closure of its m.f. services next year. The situation in August, when engineering work is completed, will be: Land's End Radio, 2.182MHz and working channel W (ship transmit 2.111MHz coast station transmit 2.782MHz); Humber Radio, 2.182MHz and working channel R (2.002/2.684MHz); Stonehaven Radio, 2.182 and working channels I (2.555/1.856MHz), M (3.249/3.617MHz) and K (2.566/1.946MHz); Wick Radio, 2.182 and working channel E (2.525/2.705MHz); Hebrides Radio, 2.182MHz and working channel Z (2.534/1.866MHz); Portpatrick Radio, 2.182 and working channel Y (2.135/1.710MHz). Note that all these stations are remotely-controlled from Stonehaven Radio.



Letters

Rob Knapp from Leeds writes to ask about the military SELCALs mentioned in the May 1999 issue of *SWM*. Rob is compiling his own list of SELCALs, with a view to publishing this by the end of the year. Rob says that he has about 10000 confirmed SELCAL codes (i.e., tie-ups to actual aircraft), and has access to a lot of information that allows him to cross-check flights.

Rob says that he can't get over the shock of my comments about German HU-1 'Huey' helicopters with SELCALs. Well Rob, yes I can confirm that some of them do have SELCAL codes, as I have personally seen four of the helicopters concerned, and read the SELCAL codes from the cockpit panel. They do pop-up occasionally on the German Air Force frequencies (try 5.687MHz), but be prepared for a long wait as they do not fly too often.

After spending several months listening to just this one frequency I found dozens of new (to me) SELCAL codes, but only a few tie-ups to specific aircraft. Another frequency worth listening to is the that used by the French Air Force - try 6.712MHz. Once again, this is not a busy frequency, and you have to listen for quite a long time for even just one SELCAL code - getting aircraft tie-ups is another matter, and I cannot offer any suggestions for this.

Rob says that he has a possible SELCAL tie-up for one of the new RAF C-130J - he heard one of these crossing the Atlantic on its delivery flight. From conversations with Lockheed avionics technicians at the Paris Air Show in June, it seems that Lockheed have a limited number of their own SELCAL codes which they move from one aircraft to another as the need arises.

In the case of the new RAF C-130J, once the aircraft has been delivered to the UK, the SELCAL code is removed from the avionics by simply resetting the black boxes. From other sources, I hear that the new RAF C-130Js will be entering service towards the end of this year, so I would be interested to hear of any new SELCALs heard on Architect frequencies.

The existing RAF Hercules (the C.1 and C.3 variants) has separate callsigns blocks (4000 and 5000 series respectively), so it would seem logical that the new aircraft (the C.4 and C.5 variants) may also get their own callsigns blocks. Only time will tell.

■ JERRY GLENWRIGHT, 23 DOWNLAND AVENUE, SOUTHWICK, WEST SUSSEX BN42 4RF

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ShackWare

Hello, and a warm welcome to 'ShackWare'. And when I say warm, I mean sweltering! My shack is a converted attic with Velux windows. There's plenty of light and masses of sunshine, and given some of the temperatures we've had over the past two or three weeks, it's been more like a greenhouse in here. I've had to have a large fan blowing over some of my more precious equipment.

There's been some great listening too, though, during these warm, dry days. Whenever I notice lines of interference in the TV picture or ghostly images picked up from television stations across the channel (being on the south coast, we get a lot of interference from French TV stations), I whizz off up to the shack and switch on the receivers for some really excellent signals.

But let's get back to the plot. The older PCs, 16-bit machines and even the Mac have held centre stage recently, so this time around I'm going to devote this edition of 'ShackWare' to some hardcore 8-bit stuff!

My Passion

As many long-time 'ShackWare' readers will know, my passion is for Atari's 8-bit home computers - the 800, 800XL, 130XE and so on. These machines feature a 6502 CPU (as did the BBC B, Commodore 64, Oric and many others) and, probably because of their American heritage, a 'real' and high-quality disk-based operating system (though in the UK, many owners probably had cassette-only systems for the first few years), excellent graphics with a switchable independent sprite system, a selection of proprietary I/O ports and plenty of (expensive) peripherals such as printers, plotters, disk drives, light pens and the like.

Many of these items were either unavailable in the UK or very expensive back in the early '80s, but you could dream! There were some excellent technical magazines devoted to the machines too, Page 6 in the UK ('page 6' refers to the sixth block of 256 bytes of RAM in a 6502 processor's memory map which, in an Atari, is available for the user's own machine code routines) and *Analog* and *Antic* imported from the USA.

It was with an Atari 8-bit and a copy of *Antic* that I first decoded a FAX transmission on h.f. To cut a very long story short, after years as a fan of the Atari, I acquired almost complete sets of both *Analog* and *Antic* magazines (I couldn't afford the imported price of £3 an issue back in the early '80s).

Many a glorious afternoon of absorbed reading then followed until I happened upon a copy of *Antic* dating from September 1986 which really caught my fancy - it was devoted to computers and the weather, and featured a detailed description of WEFAX satellite and h.f. services together with plans to make a FAX interface and the software to drive it!

I was hooked immediately and dashed out to Maplin to buy the necessary components. After spending hours typing in the software, many hundreds of machine code instructions all in hex (base 16 numbers) I was all set.

The magazine offered several likely frequencies together with operation times for NOAA stations. One of which, NAM, the US Naval Communications station in Norfolk, Virginia, operated on 4.975 and 8.080MHz 24 hours-a-day, and it was this station that I tuned and began to decode first.

Awful Results

The results, if I'm honest, were truly awful. Pixellated, badly affected by noise, and very low resolution, these first efforts were almost indecipherable. However, I persisted and, gradually, I honed my tuning skills and learned to squeeze the best from the software until finally, I was getting some quite good results.

A huge improvement occurred after I realised that the timing for the software was based on American Atari 8-bits which are clocked for NTSC television with a 60MHz scan rate. UK TVs use a 50MHz rate and UK 8-bits run slightly faster as a result. Timing for the program can be adjusted via a front-end menu so I worked out roughly what it should be and adjusted accordingly. Suddenly, recognisable FAX pictures began to scroll up the screen!

Before we go any further I must tell you that the results are

low resolution when compared with a PC, limited to black and white (i.e. no greyscales), which reduces the effective resolution further, and manual only - you have to set the software to receive when you hear the start of a FAX picture and sync it manually - though this is actually all quite easy.

Why bother then? Because Atari 8-bits can be picked up for pennies at boot sales (my last one cost just 50p), the interface requires just one chip (an XR2211 FSK demodulator) which costs a couple of pounds from Maplin, together with a handful of discreet components and can be constructed on a kitchen table in an hour or two, and you don't even have to type in the software - I can supply it on disk or tape to anyone who sends an s.a.e. and suitably media.

Your results will be like mine: poor, to be perfectly honest, but this is a non-commercial system for those who have an existing Atari 8-bit that they'd like to put to work, or who have very little money to spend, or who simply want to receive a FAX in order to confirm that they've received a particular signal when DXing. For all of these reasons the Atari makes for an excellent set-up. Incidentally, both *Antic* and *Analog* are gradually being digitised and put on the web.

Another Approach

Given the graphical and memory limitations of any 8-bit computer, displaying a FAX on screen is necessarily going to be pretty low resolution. A fact which prompted Technical Software to approach the problem from a slightly different angle when it came to designing decode software for the Sinclair Spectrum.

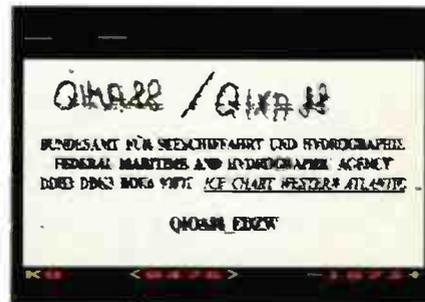
Rather than have the machine make a poor attempt to match its 49152 maximum available pixels against the more than two million pixels of a typical FAX, Technical Software decided to use the Spectrum as a kind of processing unit that would sit between the receiver, a FAX interface proper (actually, little more than a crystal oscillator to provide the accurate timing necessary for automatic reception) and a dot matrix printer. The results are nothing short of spectacular.

Admittedly this system is not as 'clean' as a PC set-up using a sound card and screen display. There are several boxes for which to find space, power and connecting cables, printer paper and the like strewn about your workbench, but it's a small price to pay when compared with the high quality of the results. Full resolution FAX reception is possible and with reliable automatic reception. The software handles satellite reception with ease too and provides a two-bit greyscale which, while not quite as powerful as the 8-bit greyscale of say, *JVFAX*, is perfectly adequate.

Sadly, the Technical Software equipment is no longer available commercially but by placing an ad in *SWM's* 'Trading Post' or rummaging through 'Usenet' newsgroups on the Internet, you should be able to find it at second-hand. Spectrum computers can be found for a pound or two at most at any boot sale - usually with a carrier-bag full of game tapes. If you like playing games fine, but don't pay a premium for something you might not want, press on until you find a bare machine and power supply.

I use a Spectrum +2 which hails from a time after the peak of Sinclair products when they were taken up and manufactured by Amstrad. The machine has 128K or RAM, a 'real' keyboard and a built-in cassette deck which ensures loading software is reasonably reliable. It was given to me by someone who no longer used it. I use an Epson FX80 printer nine-pin dot matrix which cost £2 from a computer fair - similar fairs are held every weekend around the UK.

A very good system then, though Technical Software didn't rest on its laurels. The company produced some truly excellent software for the BBC B micro which handled many data reception modes.



Low resolution, but given the price/performance ratio, the Atari system is excellent!



Technical Software's high-quality FAX reception system for the Spectrum.

And Finally

Unfortunately, 1500 words is about all I can squeeze into one page with a picture or two as well, so you'll have to wait until the next instalment for me to take up the story! I'll also try to catch up on your letters too. Until then, enjoy the summer and good listening.

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- Prize draws & raffles
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Tel/fax: 0701 0701 330.

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Other queries including advance tickets contact

Geoff Dover, G4AFJ, QTHR.

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Info in Orbit

By the time this article appears, the total eclipse of the sun on 11 August will be history. As I write, I have just been asked to leave my telescope at home (!) and take part in a radio and television presentation from Plymouth Hoe for the local BBC. My original plan was to have the weather satellite equipment monitoring METEOSAT-7 WEFAX images of Britain to provide the very latest cloud cover images - hopefully showing no clouds! Of course, I can still leave this running automatically. My 250mm (diameter) telescope can carry a standard or electronic camera with telephoto lens. The plan now is to show Marion how to do this for the eclipse, whilst practising remaining calm should something go wrong in my absence!

This month's column includes a look at some new (free) software for decoding a.p.t. sound wave files from the WXSATs, several summertime images from readers, contact details regarding the quadrifilar helix antenna mentioned last month, and a continuing look at the Primary Data image schedule from METEOSAT.

Solstice Weather

Overnight on 20-21 June, I left my a.p.t. (low resolution imagery from the polar orbiters) equipment to collect images from satellite passes on the solstice. The overnight NOAA-14 infra-red image immediately caught my eye with its 'trail' features - presumably aircraft - criss-crossing the region near southern France - see Fig. 1. Nine hours later, the NOAA-14 visible-light image shows no sign of the feature - see Fig. 2 - neither was it visible on earlier NOAA-15 images.

Once a year we experience the maximum solar illumination of the northern hemisphere, as seen in the METEOSAT-7 image, Fig. 3. The south pole is in darkness for several weeks at this time of year.

OKEAN Launch Imminent

As at mid July the launch of the next OKEAN oceanographic research satellite was about to happen. When it gets into orbit we can anticipate receiving short transmissions of a.p.t. (automatic picture telemetry) on 137.40MHz, in common with the use of this frequency by previous OKEAN satellites. I have not logged any transmissions from OKEAN 1-7 or SICH-1 for several weeks.

I noticed an apparent anomaly in the RESURS 01-N4 a.p.t. transmission at 1010UTC on 10 July, during its south-bound pass over Europe. Ground illumination was as dark as usual during the first few minutes of the pass. Suddenly this changed; land details could be seen without any real-time image enhancement - just like transmissions from the old METEOR 1-30 WXSAT of (was it?) ten years ago. Normal light levels returned a minute or so later. I expect that this anomaly will become increasingly apparent.

SatSignal

Many WXSAT enthusiasts are aware of 'sound-card' decoding programs that became available a couple of years ago - I included two on the CD-ROM recently issued by SWM. A good

quality a.p.t. signal is fed into a sound-card (in a PC) and the programs use the built-in processing capabilities of the card to decode the signal and produce an image. Once it has been set up and carefully adjusted, the program WXSAT can decode all a.p.t. signals.

However, it cannot currently produce a perfectly synchronised METEOR or RESURS image because these transmissions do not have a fixed sub-carrier frequency. The software can be adjusted on an experimental basis to improve the synchronisation, as described in the comprehensive help file included with the program. The program WXSAT can also produce 'wav' sound-files from the WXSATs and has an automatic mode that allows the production of a series of 'wav' files during unattended operation.

Programmer David Taylor has written SatSignal, a program that decodes a.p.t. wav files and produces perfectly synchronised images from all WXSATs. David E-mailed the Internet WXSAT mailing list members when his program was complete and a number of us have been trying it out.

David must be commended for the speed with which he responded to observations of occasional anomalies discovered during the course of testing. He has issued a series of updated versions, together with new versions of his WXTRACK satellite tracking program.

SatSignal determines the type of



Fig. 1: NOAA-14 0453UTC 21 June - solstice (showing trails).



Fig. 2: NOAA-14 1443UTC 21 June - solstice.

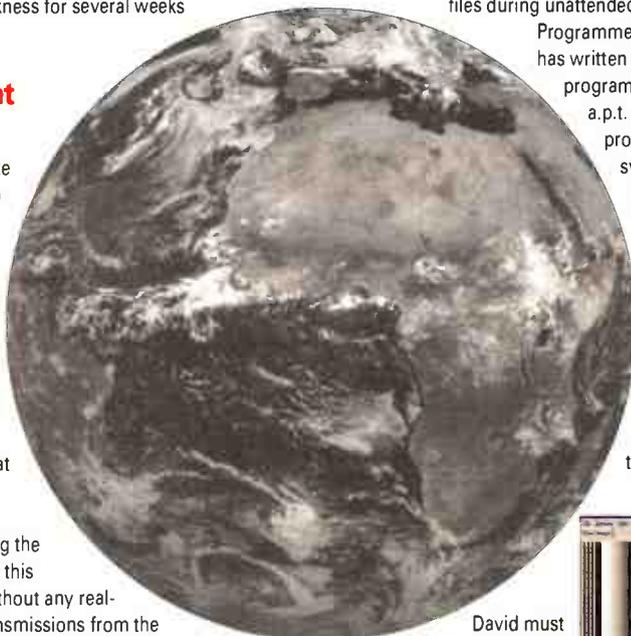


Fig. 3: METEOSAT-7 high resolution image at 1202UTC on 21 June.

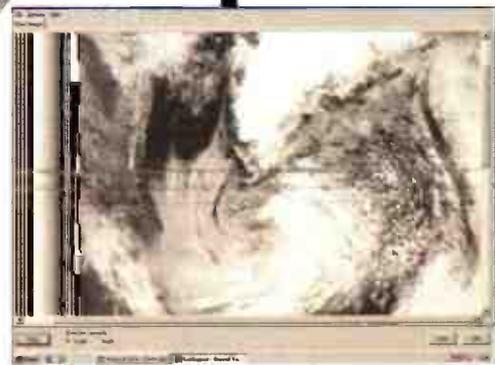
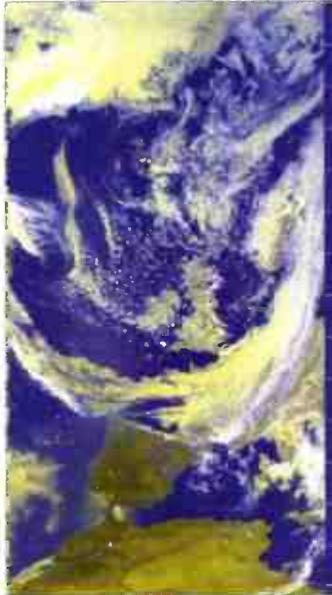


Fig. 4: SatSignal screen showing METEOR 3-5 processed image.



**Fig. 5: NOAA-14
27 April
1455UTC from
Alan Jarvis.**



**Fig. 6: NOAA-14
20 June 1999
1522UTC from
Paul Hayes.**



**Fig. 7: NOAA-146 June from
Mike Jones.**

satellite signal by first analysing the middle few seconds of the wave file. The 2.4kHz sub-carrier tone is demodulated, and the signal (which repeats every 0.5s) is averaged. The WXSATS have different tone frequencies, so this can be used to identify the origin of the signal. The program tries to detect METEOR or RESURS by identifying the position of the greyscale relative to the tone burst. Next it looks for OKEAN (with 42ms of 1200Hz tone), and finally NOAA (with about 10ms of 832Hz tone).

After this basic analysis is complete, a considerable amount of signal processing is performed to produce one or more full-size images - depending on the satellite. Suitable NOAA wav files (for example a mid-day NOAA-14 pass) will result in a set of four complete image files - visible-light, infra-red, multi-spectral and enhanced channel A. The program includes an interpolation process that results in greatly improved appearance.

The program provides a selection of options including a choice of sampling frequency (around 11025Hz nominal) to match that used by the sound-card. Automatic facilities that can be tried on various sound files include equalisation, gamma correction and a diagnostic screen to help analyse possible problems.

Availability

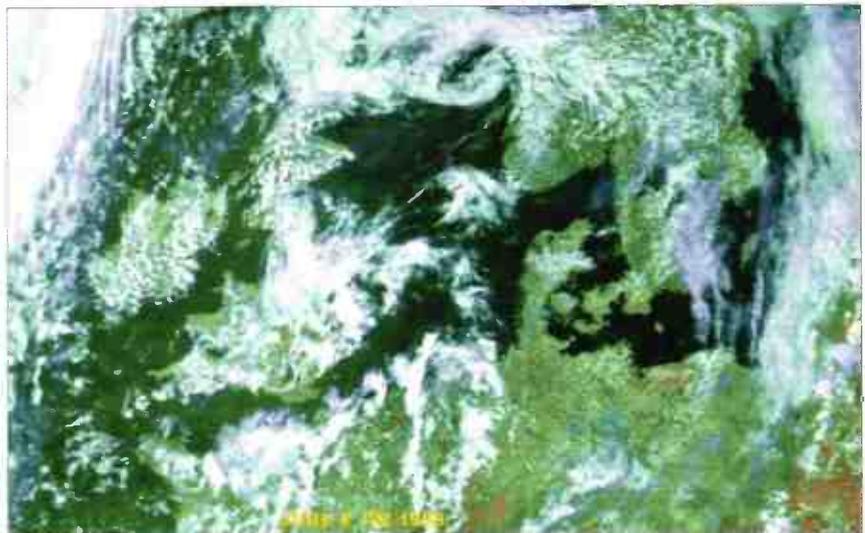
This is the difficult bit! David's program is freely available from his web site at <http://www.davidtaylor.freemove.co.uk/software/wxsat.htm> but it cannot easily be distributed via disk because of the size of the associated programs. Although David's program is nominally about 200kb in zipped (compressed) format, a number of essential additional files and programs are also needed.

Files from Borland's *Delphi 4* runtime library, Intel's signal and image processing libraries add to the program requirements. Perhaps this is a good reason for those not yet registered on the Internet to now do so? Remember that Internet access can be free of charge (other than the cost of the telephone call); a glance at the appropriate information sources can provide lists of several free ISPs.

Readers' Pictures

Several readers have sent some really good WXSAT images across the Internet, and some have used the postal service.

Alan Jarvis sent in **Fig. 5** - an almost clear-sky image



**Fig. 8: NOAA-122 July
1655UTC from Graham Powell.**

of Britain in late April. Alan built a QFH antenna, and this feeds his PROscan WXSAT receiver. This was one of Alan's first 'clear-sky' images of Britain this year.

Paul Hayes sent this multi-spectral image - see **Fig. 6** - received using the Timestep 'i' interface and PROscan receiver, fed using his home-built QFH mounted about 15m above ground level. These 'full pass' images are very effective for illustrating the extent of a full pass from NOAA and similar WXSATS.

Mike Jones of Lezayre (Isle of Man) sent in **Fig. 7**, a NOAA-14 image from 6 June. Mike started his interest two years ago.

Graham Powell uses a PCR1000 fed by crossed dipole, and sent in this artificially coloured NOAA-12 image, see **Fig. 8**.

David Hamilton's main interest was SSTV from the h.f. bands, and long distance TV monitoring. **Figure 9** was David's first attempt at WXSAT monitoring, though I do not know exactly what receiver he used.

To illustrate the amount of detail in RESURS and METEOR images available for enhancing, I selected a typical image just received from *RESURS 01-N4*. 'Zooming' into Spain, I changed the greyscale characteristics to bring out the darker levels. The result - see **Fig. 10** - caught my wife's eye when she passed by the computer to deliver a cup of coffee. Marion spent some time as a meteorologist during her degree studies, and was already familiar with satellite aerial views ten years before I received my first weather picture!

The QFH Antenna

I recently described the home-built quadrifilar helix antenna first brought to my attention by **George Newport**. He had bought it ready-built from **Paul Hayes**, and sent me contact details. Paul kindly provided me with a unit that works well, even when mounted at a low elevation. He had been anticipating that the unit would be offered for sale through the auspices of the Remote Imaging Group, but the approach of summer has delayed the finalising of arrangements, so Paul has given me permission to publish his full contact details.

Write to Paul at: **10 Dettingen Street, Salford, Manchester M6 7LF, Tel/FAX: 0161-736 6397** or E-mail at: **Paul@hayes06.freemove.co.uk**

I am sure that readers can appreciate that I have no financial arrangements with any person or organisation about which I may write. It is always my hope that providing information about the availability of products - such as Paul's antenna - may help those people currently investigating such hardware.

My thanks to Paul for responding positively to all requests. **Kevin Bates** has been updating his web page daily with images taken using Paul's QFH, that can be viewed at: <http://www.kmbates.freemove.co.uk/>

Apollo-9 QFH?

A very observant reader spotted this picture release from NASA showing astronaut **David Scott** in the hatchway of 'Gumdrop' during the testing of a new spacesuit and backpack designed for moonwalking astronauts. This is a picture from the *Apollo-9* mission of 3 to 14 March 1969. Ah, yes. I remember it very well! My reason for including it here? Look very closely at the earth-pointing antenna to the right of David Scott. Is that not a QFH?

For further pictures of this (and all the other Apollo missions) visit the web site at: <http://images.jsc.nasa.gov/iams/html/pao/as9.htm>

METEOSAT Primary Data

Primary Data telemetry received on 1694.5MHz from *METEOSAT-7* is the ultimate in high resolution imagery, and is available on an almost continuous basis. Yes, it is expensive to set up a PD User Station. One question concerns the transmitted images - what is available? This series explains exactly that.

I am using a 'standard issue' PDUS system without any extras. The main 'extra' would be the EUMETSAT decoding box required to decrypt the majority of *METEOSAT-7*'s 'home-grown' images. Fortunately, many high resolution 'foreign' images are included in the transmission schedule.

Previous articles covered the period from midnight to 0258UTC. The repeating sequences of clear images from *METEOSAT-5* (currently called INDOEX) can be recognised. These are transmitted at least once each hour. Storms are regularly observed in the Indian ocean, and reported by the American agency - the Operational Significant Event Imagery Support team. Such storms can be followed throughout the day using PD images.

As is always the case, the images transmitted at 58 minutes to the hour, and 02 minutes after the hour, are the European format combined infra-red and water vapour images, followed by the whole-disc format - both encrypted. At 0314UTC the (unencrypted) WEFAX whole-disc images follow,



Fig. 9: NOAA-14 28 June from David Hamilton.

and then the next set of INDOEX PD images at 0322UTC. INDOEX views the crescent earth at this time, so an early visible-light scan is included. The amount of useful content to such images may be somewhat limited, but I think they look most picturesque.

A short rest for *METEOSAT-7*'s transponder follows, then a sequence of encrypted images, followed by the digital image test format - containing a sequence of grey scales that reveals

any noise present in your picture! The second infra-red image from *GOES-E* - see **Fig. 12** - is transmitted at 0354UTC - part of the three-hourly sequence.

As is often the case, severe weather can be seen approaching the west coast of America, and storms are also seen covering the northern part of south America.

INDOEX transmissions continue at 0356UTC with the infra-red image. The remaining visible-light and water vapour components are not transmitted until later. The routine *METEOSAT* images cross the hour as usual, leading to the remaining INDOEX images at 0416UTC.



Fig. 10: RESURS 01-N4 on 8 July 1047UTC from Plymouth.



Fig. 11: Apollo-9 picture courtesy NASA.

Reader Offer

Kepler Elements - WXSATS, MIR & Shuttle

- 1) If you want a computer disk file containing recent elements for the WXSATS, AMSATS and others of general interest, together with a large file holding elements for thousands of satellites please enclose 50p with a PC-formatted disk and stamped envelope. A print-out is included that identifies NASA catalogue numbers for the WXSATS. The disk file is ideal for automatic updating of tracking software.
- 2) I also send monthly Kepler print-outs to many people. To join the list please send a 'subscription' of £1 (secured, plus four self-addressed, stamped envelopes) for four editions to the address at the head of the column. Transmission frequencies are given for the operating satellites. This data originates from NASA.

Fig. 12: GOES-E infra-red image at 0354UTC.

Frequencies

NOAA-14 transmits a.p.t. on 137.62MHz.
NOAA-12 and *NOAA-15* transmit a.p.t. on 137.50MHz.
METEOR 3-5 uses 137.30MHz.
OKEAN-4 and *SICH-1* use 137.40MHz.
RESURS 01#4 transmits a.p.t. on 137.85MHz.
METEOSAT-7 (geostationary) uses 1691 and 1694.5MHz for WEFAX.
GOES-8 (western horizon) uses 1691MHz for WEFAX.



Propagation Forecasts

How to use the Propagation Charts.

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

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

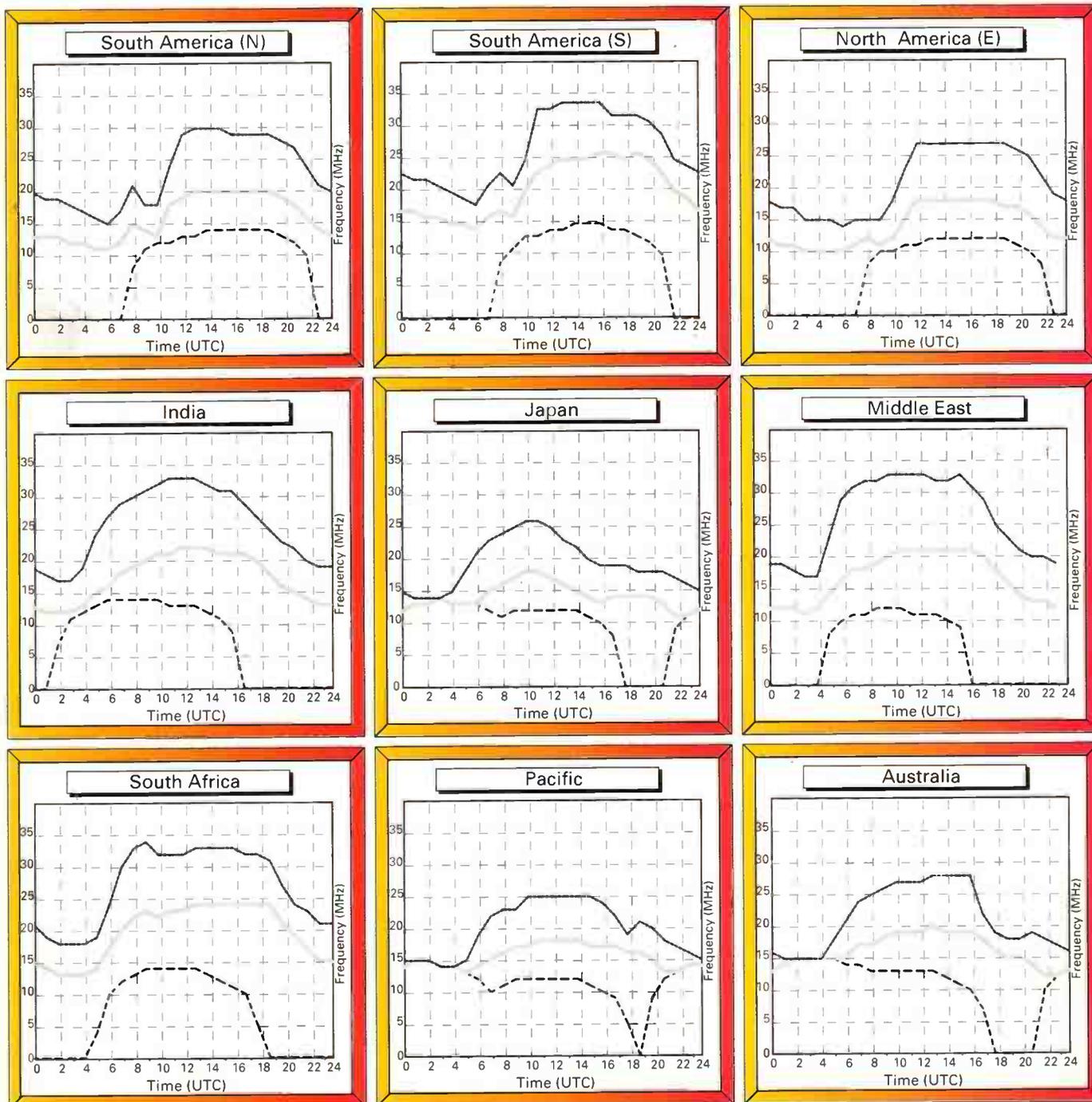
Lastly, the upper dashed line represents the maximum usable frequency (MUF), a 50%

probability of success for the path and time.

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

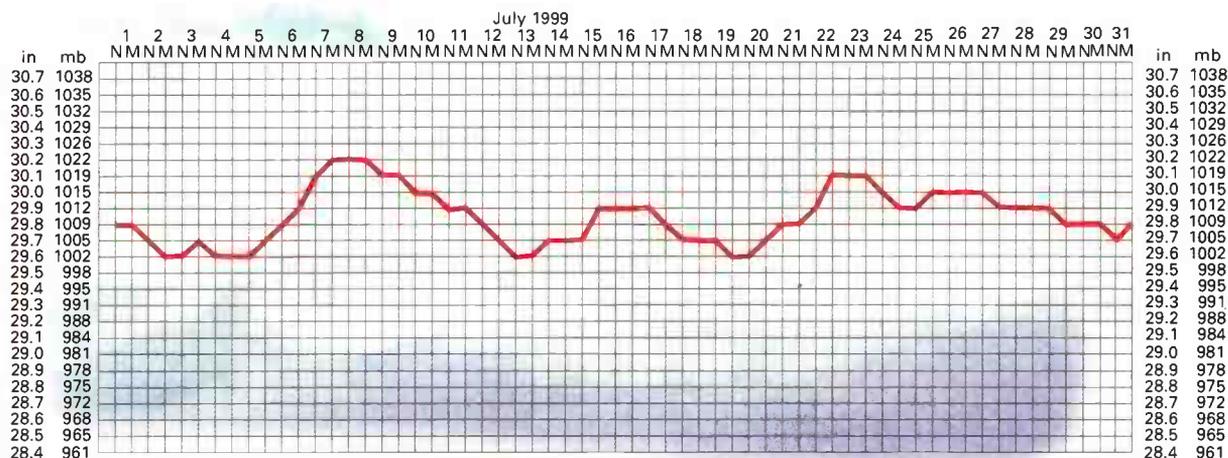
Good luck and happy listening.

September 1999
Circuits to London

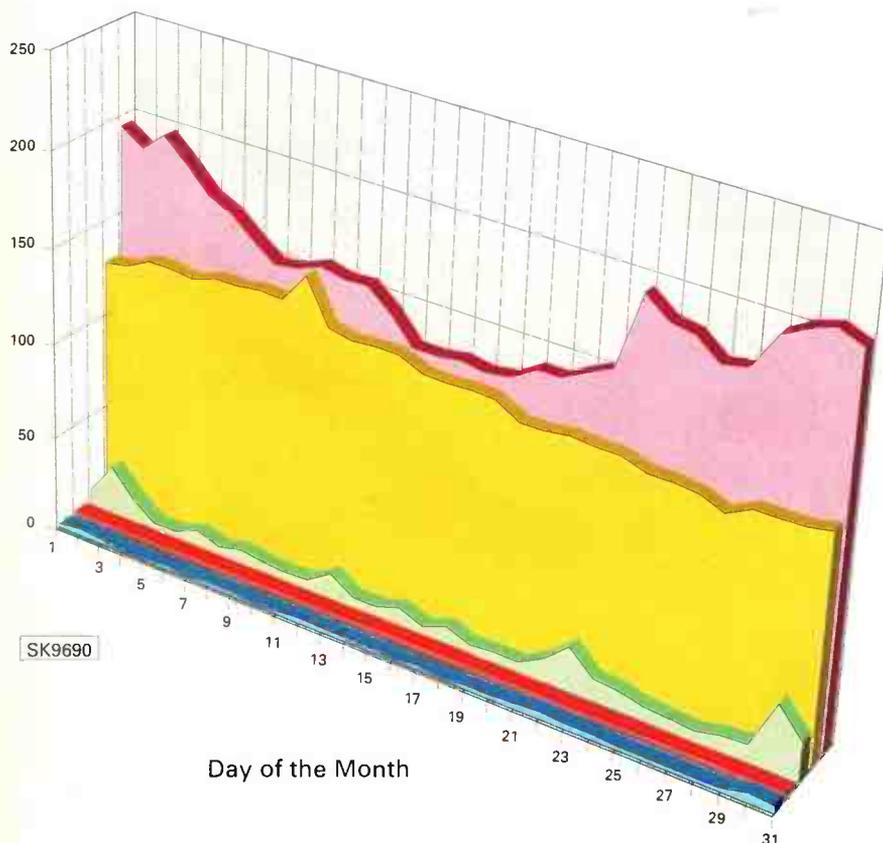


Propagation Extra

Ron Ham's barometric pressure chart, taken at Storrington, W. Sussex, July 1999.



July Data



- 10.7cm Flux
- Eff. Sunspot No.
- K Index
- AP Index
- Log X-Ray

guide to the chart

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

The K and AP indices are measures of geomagnetic activity.

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

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

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

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Carriage £5.50

£179.95

Pair

Just the thing for short range communications at home, work or leisure. Ideal for cycling, fishing, air shows, boating, antenna erection, and many other pursuits.

AOR-5000 Receiver

10kHz - 2.6GHz

£1299



Covering an extremely wide frequency range and offering USB, LSB, CW, AM, FM. It features 1,000 Alphanumeric Memories * 45 Channels per sec Scan Speed * 2,100 programmable Pass Frequencies * DTMF Decoder * RS-232 Port * 1Hz tuning steps * 6 switchable bandwidths * Preamplifier * Duplex monitoring *

ICOM IC-R75 Receiver

30kHz - 60MHz



NEW £629

FREE AC PSU & DSP Unit

The IC-R75 has received rave reviews in the Amateur Radio Press. It's a very serious short wave receiver with coverage right up to the exciting 6m Ham Band. Features include USB, LSB, CW, AM, FM * 101 Memories * Super High Dynamic Range * Synchronous AM detection * Twin Pass band Tuning * Digital Signal Processing * Automatic Notch Filter * 101 Alphanumeric Memories * RF Gain/Squelch * Clock * Numeric keypad * Attenuator * 2-level Pre-Amp * Scanning.

YAESU FRG-100 Receiver

50kHz - 30MHz

Phone For DEAL!



The FRG-100 has stood the test of time. It offers full coverage of the short wave bands plus long wave and medium wave. It features, * USB, LSB, AM, CW,

* 50 memories * 2 stage attenuator * Noise Blanker * Band Scanning * Memory Scanning * Dual Speed AGC * High and low impedance antenna inputs * Programmable steps from 10Hz - 1kHz * Optional Narrow Filters * BFO reverse for CW * Twin Clocks. Ask for leaflet.

AOR-3000A Receiver

100kHz - 2036MHz

£699



The AOR-3000A goes on and on. It offers a wide frequency range at a very competitive price. Features include USB, LSB, CW, AM, FM * Fast 50 channels per sec search, *

GaAsFET RF amplifier * Wide range of tuning steps from 50kHz * RS-232 port * 400 memory channels * Built-in clock * Channel pass feature * Back illumination * Rear whip antenna etc. Ask for leaflet.

Fairhaven RD-500VX

20kHz - 1.75GHz

£799



This very wide range receiver offers a complete listener station in one package. Features

include USB, LSB, CW, AM, FM. Video out * 5Hz step accuracy * Over 13,000 memories with 20 Alphanumeric Characters * Noise Blanker * Text Search * Pass Band Tuning * Stereo CW Reception * Notch & Peak Filter etc.

AOR-7030 Receiver

0kHz - 32MHz

£849



Needing little introduction, this receiver has become a classic of design. Features

USB, LSB, CW, AM, FM, * 100 Memories * Dual VFOs * Resolution to 10Hz * Clock and Timer * Variable Bandwidth * Wide Dynamic Range * Seamless Tuning using Single Loop DDS * Clear LCD Readout * Infrared Remote Controller * AC Power Supply. Send for leaflet.

NASA HF-4E Receiver

30kHz - 30MHz

£199



Exclusive to W & S

Computer Compatible
FREE Software Disk

This new receiver covers 30kHz to 30MHz and is designed for SSB, CW and AM reception. A much improved version of the Target HF-3, it is fitted with 2.6kHz SSB filter, advanced mixer design, backlighted display, active antenna facility, and computer output. Included in the package is a software disk and 12V AC mains adaptor **Optional self-powered active antenna £59.95**

NRD-545 DSP Receiver

100kHz - 30MHz

Phone



The NRD-545 is a high quality short wave receiver, built by one of the finest communications in Japan. DSP filtering is carried out at IF level permitting bandwidth control for 10kHz down to 40Hz!

The same system offers noise and notch filtering. And to store all your favourite frequencies, there are 1,000 memories. Send for leaflet.

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Yupiteru MVT-9000EU
100kHz - 1.99GHz

Special This Month

Here's your chance to purchase the latest scanning receiver from Yupiteru at an unbelievable price. Covering the complete radio spectrum from long wave to UHF, you have a complete station in your pocket. Features include NFM, WFM, NAM, WAM, LSB, USB, CW, * 7 Frequency steps * 1,000 Memories in 20 banks * 500 Pass memories * 10 Priority channels, * Band Scope display * Duplex receive function lets you hear both sides of the conversation * Fast tune function, * Built-in AM antenna * Dual frequency display * Fast keypad entry, * Rechargeable batteries, AC charger and helical antenna.



£269

Yupiteru MVT-3300EU
100kHz - 1.99GHz

The new slimmed down version of the MVT-9000 from Yupiteru offers a high specification at a low price. Features AM, FM * 5 Channel Steps * 200 Memories * 10 Priority Channels * Duplex reception * Descrambler * 100 pass channels * Integral desk stand, low battery warning * 4 x AA cells required. Helical included.



£149

Welz WS-2000 Scanner

SPECIAL



Covers 500kHz - 1300MHz AM & FM. This compact receiver is extremely sensitive and runs from AA cells. Take advantage of the big saving.

£189

Save £60

Yupiteru VT-225
108MHz - 391MHz

The VT-225 is a dedicated AM Civil and Military airband scanner. It offers the ultimate in sensitivity. Features AM, FM * 100 Memories * Programmable Steps * Priority Channel * Pass Function * High Sensitivity * Signal strength meter * Ni-cads, Antenna and AC charger.



£229

MFJ SW & VHF Kits.
or ready built. Great value - great performers



MFJ-8400K £79.95
MFJ-8400W £94.95
MFJ-8100K £69.95
MFJ-8100W £89.95

The MFJ-8100 (left) is a complete short wave receiver with amazing sensitivity covering the short wave bands. The MFJ-8400 (right) covers 2m FM. Both offer great value.

Super Searcher
Auto Tunes Your Receiver

This frequency counter covers 10Hz - 3GHz and has the added ability to auto tune receivers with data ports. It will work with AOR 8200 and IC-R10 models. As soon as it finds a signal it tunes the receiver in a flash. Can also be used as a stand-alone unit. Supplied with ni-cads, charger and antenna.



£99.95

Hunter Frequency Counter
10MHz - 3GHz

Super Value

This is one of our most popular counters - and rightly so at the price! Supplied with rechargeable battery pack, AC charger and telescopic antenna. It has a range of several hundred feet (for handhelds) and sniffs out any local transmission, displaying the exact frequency. You then simply key that frequency into your scanner.

FC-130 Frequency Counter
1MHz - 3GHz

This frequency counter functions in a similar way to the "Hunter" above. However, it offers a wider frequency range down to 1MHz and has a 10 digit display. It also offers a 16 digit bargraph field strength meter. Supplied with ni-cad pack, AC charger and antenna

£79.95

WAB-10
Airband Receiver

This receiver is ideal for the air band enthusiast. It offers proper AM reception of the complete VHF airband and has 10 memory channels. The digital display offers exact, rock-steady tuning. Needs AA cells. Includes VHF FM stereo (using headphones)



£39.95

YB-400LE Yacht Boy
Short Wave Receiver 520kHz - 30MHz

This compact portable offers AM and SSB reception and has 40 memory channels. A large clear LCD plus telescopic antenna make this a desirable portable.



£159.95

Reviewed SWM August 99

ICOM PCR-1000
Computer controlled Receiver
10kHz - 1300MHz

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



LAPTOP COMPATIBLE

£289.95

Improve Reception
Watson Scanning Antennas



These antennas will dramatically improve your reception. They replace the factory supplied models and have BNC fittings.

W-801	Regular Gainer Rubber Duck 21cms long	£12.95
W-901	VHF / UHF Airband Rubber Duck	£19.95
W-881	Super Gainer Rubber Duck 40cms long	£19.95
W-889	Telegainer Telescopic scanner whip	£14.95

Global AT-2000 Rx ATU
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Airband

Many people are worried about the so-called 'Millennium Bug' which is the result of older computers holding the year as only two digits. Personally I doubt if water and electricity supplies will fail on the stroke of midnight and aircraft won't be falling out of the sky. The worst I've come across so far is an old flight management computer where the fourth digit of the date won't fit on one line of the screen and wraps around to the next one - messy but serviceable.

No, I'd worry about a much more real threat, that of interference which could render the h.f. spectrum unusable. I'm prompted to mention this by the letter from **Shaun Read** (Kent) on page 4 of the July *SWM* and also by the man at the Friedrichshafen show who was walking around with a sandwich board. It didn't say "End of world is nigh" but stated that power line data transmission could bring about the end of the world as far as h.f. goes.

Well, Shaun, you're already experiencing the widespread noise that is nearly unstoppable once it gets into the mains wiring. Television timebase interference, etc., is effectively re-transmitted by the wires acting as an antenna. No amount of suppression will do any good, there are too many sources of the noise. You could try one of the noise-cancelling antenna systems available commercially but please remember that success is not guaranteed.

If you're having problems now, think what it will be like if the electricity companies **deliberately** inject h.f. radio signals onto the mains so as to carry Internet type data. The spectrum won't just become unusable locally. The characteristic of h.f. is that a little power goes a long way. That's why aircraft use it for communications over areas such as the North Atlantic.

Personally, I can't even see why time needs to be wasted on public debate. The system is technically feasible, no-one will argue with that. However, the resulting interference to essential communications (such as aircraft) rules out its safe implementation. Above all, there are no benefits to the community. All that would happen is that the electricity companies would grab a slice of a finite cake for their own benefits.

Reader Offer & Information Sources

So far only a dozen readers have taken up my offer (see the July issue). There are still plenty of charts, frequency lists, etc., left but it's first-come, first-served. A reply envelope with £1.20 gets you about 500g weight (a *Supplement* plus an *En-route* chart) but if you provide more postage, I'll see if I can fill your envelope for you. The information is recently out-dated and must **not** be used for actual flight.

Exploiting his computer to obtain aeronautical information is **Len Woolley** (Bude). Internet addresses that he's found are as follows. North Atlantic Organised Track System entry/exit points at the American end are listed under <http://www.aerowinx.com/html/natracks.html> and there are some unofficial weather reports for various airports on <http://calle.com/aviation/airports.cgi> but I have my reservations about this one. As so often happens on the Internet, it comes with a warning not to rely on it! Anyway, VOLMET is so much more fun.

If you want the entire list of United States-registered civil aircraft then look at <http://www.mmac.jccbi.gov/afs/afs700/ardata.html> but note that you'll need the Adobe Acrobat reader and the PKZip file decompression software. These should be available on the Internet but, as always, check anything you download for viruses first! There's a copy of Acrobat reader on the Maplin Electronic Supplies catalogue CD-ROM.

The file is more comprehensive than the usual listings published for hobbyists. In other words, it's big, so expect a couple of hours on the 'phone even if you have a 56kbaud modem (which the Americans now reckon is standard!). As the

fields are comma-delimited, various proprietary (or even home-brewed) software (such as database packages) should be able to read the data.

Len, you sent me something about Canadian 9681 but I'm not sure why. Is it an update to your computerised flight database that you offered to readers a while ago?

Whoops!

In May's 'Airband' **Chris Brenton** (Plymouth) told me about an accident to Dash-8 G-BRYP at his local airport on February 28. You can read all about it in *AAIB Bulletin* 6/99 page 1 (also on the Internet as <http://www.open.gov.uk/aaib/aaibhome.htm>) but it will help if I summarise here. The First Officer was handling despite being relatively inexperienced. The gusty conditions, known to be associated with windshear, were judged to be on the limit of his ability although acceptable. In fact, it is likely that windshear was encountered in the flare, leading to a heavy landing.

The reason that the undercarriage collapsed is intentional. Had it not done so, it would have transmitted the full force up into the wing and caused damage to the fuel tanks. Instead, a weak link broke in overload allowing the impact to bend the undercarriage leg back in a less harmful manner.

Another incident appeared on page 17 of the same bulletin,



involving B.737-200 G-SBEB on August 13 1998. I'm asked about it by **Peter Wade** (Ide Hill), so here's my summary. Cracks in an area of a cargo door were not detected at inspection, even though the area is known to be susceptible to cracking. The door failed suddenly resulting in rapid decompression.

Now here's a lesson for all you passengers worried about safety. You can help yourselves! If an oxygen mask drops in front of you, grab it and breathe from it. It may have a reservoir bag, this conserves oxygen; you can still breathe **even if the bag's empty**. Some oxygen is generated by a chemical reaction and has a hot, faintly burning smell **which is normal**. Even if it's a false alarm, you can't go wrong by donning the mask. Grab your



Abbreviations

AAIB	Air Accidents Investigation Branch
AIP	Aeronautical Information Publication
a.t.i.s.	automatic terminal information service
B.	Boeing
CAA	Civil Aviation Authority
CD-ROM	Compact Disc - Read Only Memory
FL	flight level
g	grams
GASIL	General Aviation Safety Information Leaflet
h.f.	high frequency
MHz	megahertz
MoDem	Modulator/Demodulator
u.h.f.	ultra high frequency
v.h.f.	very high frequency
VOLMET	VOLume METeorological report

De Havilland D.H.60 Cirrus Moth.

Christine Mlynek.

Westland Lysander.

Christine Mlynek.

Airband

Continued from page 73.

mask first - you won't be able to help your fellow passengers if you lose consciousness.

Well, this is what happened to the Captain. Fumbling for his spectacles, he was too slow and lost consciousness. A cabin attendant came off oxygen to help the Captain and, of course, lost consciousness too! Maastricht were also slow to register the situation and allow a descent. Below FL140 the passengers don't need oxygen, it's FL100 for crew.

I'm glad that all ended happily. Both crew members came round without ill effects once the aircraft descended, possibly unaware that they had suffered reduced consciousness.

A reminder of what to do if a flight-crew member is incapacitated: tighten the seatbelt restraints, slide the seat away from the controls, give oxygen, get medical help (check airway, breathing, circulation).

ACARS

Mike Maguire (Bootle) saw an example of what not to do: parade around the perimeter of a military aerodrome with scanners, etc. These miscreants were told where to go by the authorities! Obviously this was in lenient Blighty because in some countries (even some in the EU) they would have been arrested.

Anyway, Mike really wrote to ask about Aircraft Communications Addressing and Reporting System. As far as I can see, there is no ACARS system in the 146 depicted in April (front cover and page 22 onwards). Where such a device is fitted, many transmissions are automatically sent but the crew usually have a facility to enter text as well.

What about encryption? This should be possible by a straightforward firmware (software) change but ACARS messages already look quite cryptic to me! Mike asks what 'digital ACARS' is, my reply is that it's already digital by nature.

Receiver Hardware

A year ago, September 1998, 'MilAir' (page 77) showed some expensive professional antennas from Racal. Two models were described, separate v.h.f. and u.h.f. versions. The price appears mainly to reflect the build quality and weather-resistance rather than any special magic by which these devices pull in signals.

Certainly, **Kevin Hemsley** (Nottingham) reckons the performance of his second-hand example is superior to the Air-44, but remember that the Racal is u.h.f. only, the Air-44 is broadband, the comparison is unfair! For someone like **Ian McDowell** (Peterborough) I'd still suggest that a hobby antenna is more cost-effective if funds are limited.

Frequency & Operational News

According to *GASIL* 3 of 1999 from the CAA, Culdrose operated 121.175MHz as an extra frequency during the eclipse. What isn't stated is whether or not this will become a permanent feature. At Fife, the callsign on 130.45MHz has, logically enough, changed to 'Fife Radio' and Northolt gets a.t.i.s. on 125.125MHz, doubtless to assist civil traffic which doesn't carry u.h.f. but is encouraged to visit.

New holding points are added at BOMBO to LOREL approaches from the west and southwest for Luton and Stansted, introduced by AIP amendments from **Martin Sutton** (CAA).

My charts show RAF Brawdy as present but disused. Peter Wade would like to know some of the station's past and I'm sure there'll be an ex-services reader out there who'll oblige with information that I can summarise here.

Congratulations **Anne Reed 2E1GKY** (Cheltenham) on becoming licensed, hope you'll continue to read *SWM* as well as *PW*! Due to space, I'm holding over four letters that readers sent in when requesting my special offer (see above). All other letters/information received up to July 7 have been included. The next three deadlines (for topical information) are September 7, October 11 and November 8. Replies always appear in this column and it is regretted that no direct correspondence is possible.

DX Television

Signals from the Middle East, USA and possibly Australasia were just some of the dramatic exotics received in Band I throughout June. High m.u.f.s., notably on the 20th and 21st, provided plenty f.m. activity. Towards the end of the month, tropospheric reception in the north of England brought in Norway, Denmark, the Netherlands and Germany, both in Band III and at u.h.f.

World-Wide Reception

At 0735UTC on the 7th, **Tim Bucknall** (Congleton) became aware of a weak video buzz below Channel E2 on his scanner. The frequency was 46.2396MHz which corresponds to the Wagga Wagga outlet in Australia on Channel A0. Between 0749 and 0751 a video buzz was heard on 45.2396MHz (Channel NZ1) which corresponds to the Waikato or Canterbury transmitter in New Zealand. Norwegian signals from Varanger were around at the time. Varanger is located in the far north of Norway, inside the Arctic Circle.

Although F2 reception is not normally encountered outside our winter season, we have to remember that in the Southern Hemisphere now is their winter season with the chance of F2 occurring. What happens, say, if Norwegian E2 signals were being received in Australia on the 7th? Surely Channel A0 signals would also propagate into Norway and maybe into the UK with a little help from Sporadic-E. Remember in the early Eighties how Zimbabwe signals on E2 would be received in the UK during the summer by a combination of TEP (Trans-Equatorial Propagation) and Sporadic-E? Your comments are welcome!

Later, at 1028UTC, **Stephen Michie** (Bristol) heard American radio amateurs on the 6m band discussing contacts in Milan.

Middle East Reception

The 80kW Syrian second network outlet on Channel E2 has been identified by several enthusiasts. **Ian Milton** (Ryton) received it with sound on the 19th and also on E4. Although the 2nd network is supposedly confined to E2, this begs the question about whether the network is also broadcast by the 1st network transmitters at times, as **Peter Chalkley** (Luton) noted it on E3 on the 21st!

The Syrian Channel E2 signal was seen again around mid-morning on the 21st by **Peter Barclay** (Sunderland) and Peter Chalkley. Slightly earlier, **Peter Barber** (Coventry) and Stephen Michie (Bristol) noted a broken ellipse logo in the top-left of the screen on Channel E3. The logo is identical to the new one introduced by Jordan last summer. However, Peter noticed Cyrillic subtitles while Stephen could



Fig. 1: One of the Idents used by the latest digital terrestrial channel, BBC Knowledge. The channel was launched without ceremony on June 1st.



Fig. 2: The PM5534 test card radiated by RT-SH in Albania.

Keep On Writing!

Please send your DXTV and f.m. reception reports, news and information to arrive by the first of the month to:- **Garry Smith, 17 Collingham Gardens, DE22 4FS.** We can also use off air pictures stored as 'j.peg' files on PC disks.

see Slovenia's SLO-1 logo in the top-right of the picture. Could this be a news clip from Slovenia shown by Jordanian TV, although this does not explain the Cyrillic titling?

Reception Reports

Tom Crane (Hawkwell) saw Sweden using an 'SVT-24' logo in the top-right of the picture. This appears to be some form of news programme, presumably to banish the PM5534 test card from our screens for good. Fortunately, the Icelandic test card is still around. **Brian Williams** (Penarth) spotted it for five minutes on the 20th.

Ian Milton queries a 'TV-1' logo on Channels R1 and R3. Presumably this is Latvia's 1st network as the second network identifies itself as TV-2. Peter Barclay logged a 'Tel: iTV' caption on Channel E4 possibly from Iceland on the 21st; it changed to text pages at 1200UTC.

Another mystery was an unidentified home shopping channel on R2 between 1158 and 1245UTC. Peter comments that a *Teletubbies* programme was being shown via Lithuanian TV at 2120 local time on the 23rd. This must be the ultimate in adult entertainment!

Stephen Michie noticed a new Croatian analogue clock on the 7th. He also advises that Portugal (RTP-1) is displaying a slightly modified '1' logo this season.

June Sporadic-E Log

This month's reception reports have been supplied by Peter Barber (Coventry), Peter Barclay (Sunderland), Ian Milton (Ryton), Tom Crane (Hawkwell), Peter Chalkley (Luton), Stephen Michie (Bristol), Simon Hockenhull (Bristol), Vincent Richardson (Dolgarrog), Tim Bucknall (Congleton) and **Martin Dale** (Stockport).

Day Log

- 1 Spain (TVE-1) E2 and E3.
- 2 Norway (NRK-1) E2.
- 4 Italy (RAI UNO) IA and IB; Italy (VIDEO private station) E2; Italy (TVA private station) IA; Portugal (RTP-1) E3.
- 5 Norway (NRK-1) E2; Sweden (SVT-1) E2 and E3.
- 6 Norway E2; Spain E2 and E3.
- 7 Australia A0; New Zealand NZ1; 50MHz activity from the USA; Portugal (RTP-1) E3; Spain E2, E3 and E4; Italy (RAI UNO) IA and IB; Italy (TVA) IA; Italy (VIDEO) E2; Norway E2; Sweden E2; Slovenia (SLO-1) E3; Croatia (HRT) E4; Ukraine (YT-2) R2; Czech Republic (TV NOVA) R2; Hungary (RTL KLUB) R2; Russia (ORT-1) R2; Corsica (Canal Plus) L2; Austria (ORF-1) E2a.
- 8 Italy (RAI UNO) IA; Spain E3 and E4.
- 9 Portugal E3; Spain E2, E3 and E4; Rumania (TVR-1) R2; Norway E3 and E4; Sweden (SVT-1) E2 and E3; Finland (YLE-1) E3; Lithuania (LRT) R2; Ukraine (YT-2) R1; Slovenia (SLO-1) E3; Croatia (HRT) E4; Hungary (RTL KLUB) R2; Hungary (MTV-1) R1; Latvia (TV-2) R1; Czech Republic R1 and R2; Austria (ORF-1) E2a.
- 10 Spain E2 and E3; Italy (RAI UNO) IB; Italy (TVA) IA; Portugal E3; Hungary (MTV-1) R1; Czech Republic R1.
- 11 Spain E4.
- 12 Italy (RAI UNO) IA; Sweden E2; Hungary (MTV-1) R1; Lithuania R2; Denmark (DR-TV) E3.
- 13 Spain E2 and E3; Portugal E3; Denmark E3; Italy (RAI UNO) IA and IB; Italy (TVA) IA; Hungary (MTV-1) R1; Hungary (RTL KLUB) R2; Austria E2a.
- 14 Norway E2 and E3; Spain E3; Portugal E3.
- 15 Italy (RAI UNO) IA and IB; Italy (VIDEO) E2; Italy (TVA) IA; Norway E3.
- 16 Denmark E3.
- 17 Denmark E3.
- 18 Italy (RAI UNO) IA and IB; Italy (VIDEO) E2; Italy (TVA) IA; Spain E2 and E3; Sweden E3; Norway E3; Hungary (RTL KLUB) R2; Croatia E4; Slovenia E3; Hungary (MTV-1) R1; Czech Republic R1 and R2.
- 19 Syria (SYR-2) E2 and E4; Spain E2 and E3; Italy (TVA) IA; Ukraine (YT-1) R2 and R3; Belarus (BT-1) R1 and R2; Lithuania R2; Russia (RTR) R2; Estonia (ETV) R2; Hungary (MTV-1) R1; Slovenia E3; Croatia E4; Norway E2; Sweden E2, E3 and E4; Rumania (TVR-1) R2.
- 20 Denmark E3; Italy (RAI UNO) IA and IB; Italy (TVA) IA; Italy

(VIDEO) E2; Spain E4; Portugal E3; Germany (ARD) E2; Iceland (RUV) E4; Slovenia E3; Croatia E4; Rumania (TVR-2) R2; Rumania (TVR-1) R3; Russia (ORT) R2; Ukraine (YT-1) R2; Lithuania R2; Hungary (MTV-1) R1; Hungary (RTL KLUB) R2; Belarus R2; Unidentified vision buzz on R4 and R5.

- 21 Syria (SYR-2) E2 and E3; Jordan (JTV-1) E3; Slovenia E3; Croatia (HRT) E4; Italy (RAI UNO) IA and IB; Italy (TVA) IA; Ukraine (YT-1) R2; Ukraine (YT-2) R2; Hungary (MTV-1) R1; Hungary (RTL KLUB) R2; Lithuania R2; Czech Republic R2; Spain E2, E3 and E4.
- 22 Italy (RAI UNO) IA and IB; Italy (VIDEO) E2; Italy (TVA) IA; Spain E3 and E4; Portugal E3; France (Canal Plus) L3; Norway E2 and E3; Germany (ARD) E2; Slovenia E3; Croatia E4; Czech Republic R2; Hungary R2; Rumania (TVR-2) R2; Rumania (TVR-1) R3.
- 23 Italy (RAI UNO) IA and IB; Italy (VIDEO) E2; Italy (TVA) IA; France L3; Spain E2 and E3; Sweden E2 and E3; Albania (RTSH) IC; Unidentified signals R4; Slovenia E3; Croatia E4; Hungary R2; Norway E2 and E3; Belarus R1 and R2; Lithuania R2; Estonia R2; Ukraine (YT-2) R2 and R3; Ukraine (YT-1) R2.
- 24 Italy (RAI UNO) IA; Spain E3; Portugal E3; Austria E2a.
- 25 Italy (RAI UNO) IA and IB; Italy (TVA) IA; Italy (VIDEO) E2; Spain E2, E3 and E4; France L3; Corsica L2 and L4; Portugal E3; Norway E3; Hungary (RTL KLUB) R2; Slovenia E3.
- 28 Spain E2 and E4; Portugal E3; Italy (RAI UNO) IA; Austria E2a; Belarus R2; Lithuania R2; Estonia R2.
- 29 Hungary R2; Norway E3.
- 30 Norway E2; Sweden E2.



Fig. 3: The daily Albanian news programme called 'Lajmet'.



Fig. 4: News programme from Libyan TV.

Frequency Changes

The Italian private stations 'Video' and 'TVA' have shifted frequencies slightly. Tom Crane (Hawkwell) and Peter Barber have resolved 'Video' on 47.748MHz and 'TVA' on 54.098MHz which sits almost on top of the sound carrier of French Channel L3. Just to complicate matters, Peter has also identified 'TVA' on 53.755MHz!

MTV-1 Still Active

There have been further sightings of MTV-1 (Hungary) by **Vincent Richardson** (Dolgarrog) and Peter Barclay even though both Channel R1 transmitters were reported to have closed. Maybe only the Budapest outlet has ceased operation?

Band II Activity

High m.u.f.s were encountered on the 20th during the late afternoon with TV Channels R4 and R5 heard on a scanner by Tom Crane (Hawkwell). Band II was alive again the following day with Albania, Russia and the Ukraine identified by Stephen Michie (Bristol). Needless to say, the f.m. band was awash with signals.

Service Information

Estonia: Gösta van der Linden (Netherlands) advises that Estonia is to transfer some stations from 'R' to 'E' channels by September. Tallinn R2 (ETV) 120kW and Ruhnu R5 (ETV) 10W will both move to E2. Poltsamaa R1 ('Kanal 2') 100W will also move but the Band I E-channel is not known at present. PAL colour will be used, presumably with 5.5MHz sound spacing.

Latvia: Latvia is to change from SECAM to PAL but there are no plans to close any Band I transmitters.

Lithuania: SECAM broadcasts will be retained in Lithuania, at least for the time being.



Fig. 5: Breakfast TV programme from TV-2 in Hungary.



Fig. 6: This month's meander down 'Memory Lane'. The logo used in the Sixties by Channel Television.

MilAir

Northern Lights

My regular correspondent from Newquay sends me information regarding an exercise at St. Mawgan in September, (at present there is no sign of it being cancelled!). Exercise 'Northern Lights' is a joint exercise to be split between RAF St. Mawgan and RAF Kinloss. Scheduled to take place between the 13th - 25th September it is a Combat and Force Integration Training Exercise. Phase 1 is to be in Scotland and Phase 2 over Southwest England. The participation at the time of writing is unconfirmed but it is believed that the RAF is to take part with Nimrods, Tornados, Jaguars and Hawks. There is also expected to be aircraft from NATO airarms, The Dutch Air Force is to operate P-3s and possibly some F-16s plus there may also be aircraft from other NATO airarms including France and Germany.

Corsican Lanyard

Martin L. who lives near Stranraer reports on an exercise that took place during May. With the Kosovo crisis in full swing and airshows and exercises being cancelled almost daily he was rather surprised to find his local airspace full of aircraft. After some investigation it turned out to be Exercise 'Corsican Lanyard'. This exercise was apparently meant to take place on the island of Corsica, (hence the name), but was moved to western Scotland due to the problems in the Kosovo. Approximately 20 aircraft took part including Hercules, Chinooks and several 72 Squadron Wessex's. They mainly operated from West Freugh and a disused airfield at Castle Kennedy. As far as Martin could make out it appeared to be some form of airlift exercise with equipment being transported to one of the Scottish Islands - presumably to get in some last minute practice before departing for Kosovo?

Frequencies noted were: West Freugh Tower 337.925/122.55. Approach and Radar 260.025/259.0/130.05. Lyneham Training Wing Air-Air 284.95. Chinook 27 Squadron Air-Air 259.6. Nato Approach Common 123.3. Unfortunately, no callsigns were mentioned in the letter - thanks Martin.

Scout (Again)

Following my comments last month regarding the use of an Optoelectronics Scout to lock in on Military Airband signals, I have since talked to two other enthusiasts who have used it for the same purpose. Both report back that in the right conditions it can receive v.h.f. airband signals up to 600m although this is the exception rather than the rule. The consensus of opinion was that the normal range you would need to be from an aircraft transmitting would be under 250m.

UHF Changes

I still regularly get enquiries from people regarding the possible next mass change round of u.h.f. MilAir frequencies in the UK. Unfortunately, there seems to be one or two people within the airband enthusiasts world who delight in spreading rumours of gloom and despondency regarding this subject. In answer to the questions from Robin L. and anonymous from Grimsby, I know of no plans for this to happen and there are very good reasons for it not to.

For those of you who are relatively new to MilAir listening let me briefly explain. During the times of

tension between East/West in the 70s and 80s, (the Cold War), it was normal practice for Ministry of Defence to have a mass change round of a large percentage of u.h.f. frequencies every five years or so. This not only helped with national security but as radios became more sophisticated it also allowed the gradual introduction of more frequencies utilising two and three decimal places. (Even as late as the mid 80s, Canadian Air Force Hercules' could not work certain frequencies on the Dover Sector on route to Germany as their radios could only receive one decimal place).

These changes did not really affect the average aircraft enthusiast until the advent of u.h.f. airband equipped wideband radios in the mid 80s. The last such mass change was in May 1992 and despite the spreaders of doom predicting a five year change in 1997 it didn't happen. Since then there have been a few minor re-shuffles of u.h.f. frequencies but nothing like the mass changes of the old days. The introduction of 8.33kHz spacing next year may cause some changes to Upper Airspace u.h.f. frequencies, (London and Scottish Military), but I would have thought that it would not be good timing to have a mass change round during this spacing change. I will stick my neck out and tentatively suggest that we have seen the last of the major frequency re-shuffles, if I am wrong, then you will hopefully read about it first in *Short Wave Magazine*.

Low Level

A letter from **QC** in Wales who is relatively new to airband listening, queries the frequency for the Low Level Training Area, LOTA F. Earlier in the year I listed it as 279.25 and this was still current in May, but he has not heard it in use since then, he notes that aircraft have been calling 275.475 when using this area. This is quite normal as it is the London Military Initial Contact Frequency, regularly used by aircraft descending into and climbing out of the area. Has anyone noted a new frequency for LOTA F?

QC also asks if I can identify some frequencies he had heard whilst searching but cannot identify. They are as follows: 243.0 is the u.h.f. Guard Distress Frequency, 249.75, a Mildenhall frequency used as Base Operations at Fairford during the Kosovo crisis, 372.325 Valley Approach, 264.825 London Military. Buy a good airband guide QC, you will find it invaluable to your hobby!

Kosovo Callsigns

Jim from West Drayton has written to ask if we could include in the column a listing of the units and the callsigns used by the NATO squadrons involved with the Kosovo conflict. On the face of it this seemed an interesting idea until I started to compile some of the information available and then realised what a daunting task it would be, my initial estimate is that it would be well over 200 different units using perhaps 500 callsigns. I decided I would not have the time to take on such a task at present, but if any readers have already compiled such a list, (especially including aircraft based outside the UK), if they would like to send it in I will see if I can include parts of it in a future 'MilAir' column.



Hopefully some RIAT 99 photographs next month, but this month a bit of IAT nostalgia. From 1983 at Greenham Common a colourful Canberra B.2 (99+35) of the West German Air Force.



Frequency Disk

Lastly, my thanks go to **Peter H** from Rotherham who sent me a floppy disk which he bought at the York Rally for £1. The contents are selection of different files which include a variety of MilAir frequencies. Some of the information seems quite up-to-date although I did find some obsolete information. As I have been away for much of the past month I let a colleague have a good look at the disk and he reported back that some of the files seem to very closely resemble the contents of well known airband guide! Unfortunately, there is no indication as to the source of the disk should anyone wish to buy one. Do you know the source Peter?



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Maritime Beacons

The absence of potent ground waves from former UK beacons enabled some of the listeners who searched the band at night during April and/or May and/or June to receive the sky waves from distant beacons they had not previously logged.

Two beacons in the Ukraine on **309.5kHz** at M.Khersonesskiy (SW) and M.Tarkhankutskiy (TR) were received for the first time by **Robert Connolly** (Kilkeel) but despite careful listening he was unable to detect three others in that group. A new one for **Fred Wilmshurst** (Northampton) was Senigallia, Italy (SA) on **311.5**, which he heard at 2313 on May 8. At 0100 on May 31 **Ross Workman** (Shoreham-by-Sea) heard for the first time Montedor, Portugal (MR) on **290.0**. He was also pleased to log Punta Carena, Italy (NP) on **289.5**, which he had not heard for a long time. During the night of June 5 **Tom Smyth** picked up for the first time the beacon signal VG from Ile de Vierge, France on **314.0**.

Three beacons along the coast of Spain - Cabo Salou (UD) **288.5**; Torre D Hercules (L) **301.5**; Cabo Palos (PA) **313.0**; also Mahon, Balearics (MH) on **292.0** were received after dark and for the first time by **Peter Pollard** in Rugby. Cabo Figuera, Majorca (FI) on **286.5** was heard at 2219 on June 23 by **Brian Heath** in Stapleton. Over in Belfast, Victor Robb added to his all-time list Cabo de Palos, S.Spain (PA) on **313.0**, which was masked by the co-channel Tory Is beacon (TY) until it was closed. The sky waves from Kolkasrags, Latvia (KL) on **306.5**; Ristna, Estonia (RS) on **307.5**; also three beacons in Spain were received after dark by **Eric Tubman** in Whitstable. In Basingstoke **John Woodcock** received after dark Cabo Machichaco (MA) **284.5** and Cabo Villano (VI) **290.5** on the North coast of Spain. During daylight he picked up the ground waves from Goeree, Holland (GR) on **296.0** and five beacons in France - see chart.

The ground waves from several beacons in Spain were received by **Albert Moore** (Douglas, IoM) during some mornings in April - see chart. He says "My take off to Spain is very good and I have no high ground between my location and the sea which is only one mile away in that direction". The re-activation of the Channel Is beacon at La Corbiere (CB) on **295.5** in mid-April was reported by **Robert Connolly**. However, at the end of June it was found to be inaudible by **George Millmore** when he searched the band from his vantage point in Wootton, IoW. Several beacons along the coast of France were logged by **Phil Townsend** (E.London) but he found reception both poor and noisy.

Changes to the beacons along the coastline of Norway are now under way. In addition to those denoted [C] in the chart, Oksoy (KY) **289.5**, Torungen (TO) **292.0**,

Feistein (FN) **303.5**, Borkfjord (BO) **310.5**, Tennholmen (HO) **312.0** and Hekkingen (HK) **314.0** have now been (or soon will be) closed. In addition to those denoted [D] in the chart, Torsvag (TG) **291.0**, Skomvaer (SK) **299.5**, Vardo (VD) **306.5** and Fruholmen (FH) **309.5**, now (or soon will) radiate DGPS data. The Icelandic beacon at Raufarhofn (RG) **301.0** was scheduled for closure on May 1. Changes were

also due at Reykjanes (RN) **291.9** and Skagata (SM) **304.0**, which now (or soon will) radiate DGPS data.

The up-dated 5th edition of Robert Connolly's inexpensive guide to the LW Marine and Aero radiobeacons is proving to be popular. For more information send an s.a.e. to Robert via me initially.

Long Wave Maritime Radiobeacon Chart

Freq (kHz)	C/S	Station Name	Location	DXer
284.5	MA	Cabo Machichaco	NE Spain	A,B,D,E,F*,G*,K*,L*,M*
284.5	PR	Porkkala	Finland	K*
285.0	NP	Nieuport W Pier	Belgium	A*
286.5	FI	Cala Figuera	Majorca	A*,B*,D,G*,K*
286.5	FT	Cap Ferret Lt	SW France	A,B*,D,F*,G*,K*,L*,M*
287.3	HA	Haifa Lt	Israel	A*
287.5	FR	[D]Faerder Lt	Norway	A*,G*
287.5	IB	I Berlenga	Portugal	A*
287.5	MD	Cabo Mondego	Portugal	A*
288.0	HH	Hoek van Holland	Holland	A*
288.0	KL	[D]Sklinna Lt	Norway	G*
288.5	FI	Cabo Finisterre Lt	N.W Spain	A,D,F*,K*,M*
288.5	UD	Cabo Salou	S.Spain	B*,F*
288.5	YM	Ijmuiden Lt	Holland	A,D,G,K
289.5	NP	Punta Carena	Italy	M*
289.5	SN	Ile de Sein NW Lt	France	A*,D,E,G*,M
290.0	AV	Aveiro	Portugal	A*
290.0	MR	Montedor	Portugal	A*,F*,M*
290.5	VI	Cabo Villano Lt	N Spain	A,B,D,F*,G,H*,J*,K*,L*,M
291.0	SN	Cabo San Sebastian	S Spain	A*,B*,D
291.9	LT	La Isleta	Canaries	A*
291.9	NA	Punta Lantaila	Canaries	A*
292.0	MH	Mahon, Minorca	Balearic Is	A*,F*,G*,K*
293.0	SY	[D]Svinoy Lt	Norway	A*,G*
293.5	RD	Cabo Silleiro Lt	N Spain	A*
294.0	PH	Cap d'Alprech	France	A,B,C,D,E,F*,G*,J*,K*,L,M
294.5	KA	Kaybolovo Lt	Estonia	A*
294.6	ND	Cabo de la Nao	Spain	A*
295.0	DV	Djupvogur	Iceland	A*
295.5	CB	[C]La Corbiere Lt	Jersey C.I.	A,B,G,K,M
295.5	CR	Cap Couronne	France	A*
295.5	JA	[C]Jaroslavec	Poland	A,D,G*,K*
295.5	RE	La Rochelle	France	A*
296.0	GR	Goeree Lt	Holland	B*,J*,K,L
296.0	KN	Skrova Lt	Norway	A*,G*
297.0	FG	Pr de Barfleur Lt	France	A*
297.5	MA	Mantyluoto	Finland	A*
297.5	PS	Cabo Penas Lt	N Spain	A,F*,G*
298.0	GX	Ile de Groux	France	F*,L
298.0	TA	Cabo Gata	S Spain	A*
299.0	AD	Ameland Lt	Holland	A*
299.0	BN	Les Baleines	W.France	A*
299.0	O	Tarifa	S Spain	A*
299.5	SK	[D]Skomvaer Lt	Norway	A*,G*
299.5	VR	[D]Vrvaer Lt	Norway	A*,F*,G*
299.5	VS	Vieste Lt	Italy	A*
300.5	ID	Ilichevsk	Ukraine	A*
300.5	LA	[D]Lista	Norway	A*,B,D,F*,G*,J*,K*
301.0	CA	Pt de Creach	France	A,C,D,E,F*,G*,J*,K,L,M
301.0	ER	Eierland Lt	Holland	A,E
301.5	L	Torre de Hercules	N Spain	A*,D,F*,G*
302.0	RB	Cherbourg Ft W Lt	France	A,B,C,D,E,F*,G*,J*,K,L*,M
303.0	D	Rota	SW Spain	A*,G*

DXers:-

(A)	Robert Connolly, Kilkeel.
(B)	Brian Heath, Stapleton.
(C)	George Millmore, Wootton, IoW.
(D)	Albert Moore, Douglas, IoM.
(E)	Fred Pallant, Storrington.
(F)	Peter Pollard, Rugby.
(G)	Victor Robb, Belfast.
(H)	Tom Smyth, Co.Fermanagh.
(I)	Phillip Townsend, E.London.
(J)	Eric Tubman, Whitstable.
(K)	Fred Wilmshurst, Northampton.
(L)	John Woodcock, Basingstoke.
(M)	Ross Workman, Shoreham-by-Sea.

Freq (kHz)	C/S	Station Name	Location	DXer
303.0	YE	Ile d'Yeu Main Lt	W.France	A*
303.5	BJ	[C]Bjornstund Lt	Norway	A,G*,K*,L*
303.5	A	Llanes Lt	N Spain	A*
303.5	DR	Punta de Llobregat	S.Spain	A*,K*
303.5	VL	Vieland Lt	Holland	A*
304.0	BR	Cap Bear	France	A*
304.5	MY	Cabo Mayor Lt	N Spain	A,B,E*,F*,G,H*,J*,K*,M*
305.7	DA	Dalatung Lt	Iceland	A*,G*,K*
306.5	H	Hel Lt	Poland	A*
306.5	KL	Kolkasrags	Latvia	A*,J*
306.5	UT	[D]Utisira	Norway	A,B,D,F*,G*,K*,M*
307.0	LE	Leba Rear	Poland	A*
307.5	RS	Ristna	Estonia	A*,G*,J*,K*
308.0	AK	Tabie D'Dukacha	Morocco	A*
308.0	PI	Cabo Espichel	Portugal	A*
308.0	RC	Cabo Roca	Portugal	A*
308.0	RO	Roches Douvres Lt	France	A
308.5	NZ	St Nazaire	France	A*
309.5	AL	Algiers	Algeria	A*
309.5	BA	Punta Estaca Bares	N Spain	A,B,D,F*,G*,J*,K*,M*
309.5	MA	[C]Marstein Lt	Norway	A*,G*
309.5	SW	M Khersonesskiy	Ukraine	A*
309.5	TR	M Tarkhankutskiy	Ukraine	A*
310.0	ER	Pt de Ver Lt	N France	A*,B,C,E,I,K,L,M
310.5	AS	Castellon	Spain	A*
310.5	DA	Dametia Mouth	Egypt	A*
310.5	RD	Rozewie	Poland	A*
311.5	SA	Senigallia	Italy	A*,K*
312.0	DE	Oostende	Belgium	A*,G,H*,L*
312.0	SP	Cap Spartel	Morocco	A*
312.5	AK	Akmenrags	Latvia	A*,G*
312.5	BK	Baltiysk	Russia	A*,G*
312.5	BT	Mys Taran Lt	Russia	A*,G*
312.5	CS	Calais Main Lt	France	A,C,I,J,M
312.5	DB	Doobskva Lt	Ukraine	A*
312.5	KA	Klaipeda Rear Lt	Lithuania	A*,G*
312.5	LB	Liepaja	Latvia	A*,G*
312.5	SR	[D]Skardstjara	Iceland	A*
312.5	VS	Cabo Estay Lt	N Spain	F*,G
312.5	WW	Ventspils	Latvia	A*
312.6	KB	Krautsand	Germany	A*
313.0	HA	[D]Halten Lt	Norway	A*,G*,K*
313.0	PA	Cabo de Palos Lt	S Spain	A*,F*,G*,M*
313.0	TY	[D]Tory Is Lt	Co Donegal	H*
314.0	VG	Ile Vierge Lt	France	A,B,C,D,E,F*,G,H*,I,J,K,L,M
314.0	WU	Wustrow Lt	NE Germany	A*
314.5	TL	Punta D Penna	Italy	A*,M*
315.5	ND	Nida	Lithuania	A*
337.0	MY	Myggenaes	Faeroe Is	A*,G,K*,M*
372.0	OZN	Prins Chris's Sund	Greenland	A*,G*,K*
381.0	AB	Akraberg	Faeroe Is	A*,G,K*,M*
404.0	NL	Nolso	Faeroe Is	A*,G,K*

Note:

Entries were compiled during April and/or May and/or June. Entries marked * were logged during darkness. All other entries were logged during daylight or at dawn/dusk. Beacons marked [C] have now been (or soon will be) closed down. Beacons marked [D] now (or soon will) radiate DGPS data.

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

Satellite TV News

The satellite geostationary arc is slowly returning to a more normal state after the ending of the NATO conflict in the Balkans. As a result, news feeds out of that region have dropped considerably with very few having been monitored over the past few weeks. This has enabled a more random dip into the Clarke Belt activity across our southern skies revealing a rich variety of signals, both analogue and digital.

A sudden news check appeared on the BT digital lease frequency 11.550GHz, SR 5632; FEC 3/4 via NSS-K - 21.5°W at 0720, 8th July, showing dramatic unedited pictures of the fire on-board the *Princess Ragnhild*, a ferry en-route to Oslo from Kiel, with 1400 souls on board, though fortunately all were saved. Pictures showed helicopters and local ships in attendance rescuing those on board. The news feed flagged up as 'Teracom' and cut carrier once the news footage ended. The fire broke out in the early hours of the 8th and pictures of the stricken ship were vividly outlined against the rising sun - luckily the seas were calm which led to the safe evacuation of the vessel.

Roy Carman (Dorking) found an Italian analogue feed from the seaside on *Eutelsat W2*, 16°E @ 10.985GHz-H June 20th featuring naked females on several waterborn inflatables - the cameraman spent a long time focused on the splendid view which, according to Roy, included the largest inflatable he's ever seen at around 2.5m wide!

Meanwhile, outside in mid-June Dorking, it was pouring with rain! A few days later we found inflatables at Skegness, this time the GMTV 'UKI-149' SNG unit is having an early morning digital dip at the seaside via NSS-K (11.580GHz-H, SR 5632; FEC 3/4), but the content of the insert is that of safety. The Skegness council have banned the use of the inflatable li-los following the annual loss of life and rescues after a li-lo floated out to sea with a child on board.

The outside broadcast featured a prepared rescue with an inshore lifeboat speeding to the lost children plus beach interviews with lifeguards, council officials, etc. At least the sun was shining. A few days later the same OB unit was inside the *BT Global Challenge* yacht looking over the equipment, but this time GMTV UKI-149 was analogue @ 11.530GHz-H.

Roy Carman suggested checking out *Arabsat-3A* now operational at 26°E and during early July I found very full programme bouquets at 11.767GHz and 12.034GHz-H running SR 27500; FEC 3/4. Across these two frequencies there were TV services from Sharjah; Saudi-1; Kuwait; Libya; Oman; Jordan; ANN; Palestine; Algeria; Future and LBC - both Lebanon; Aljazeera; Yemen; Bahrain; Syria; Dubai; Morocco and a largely religious offering - IQRA. Quality on my 1.2m dish + 0.7dB noise I.n.b. is excellent. Check this satellite out for other new arrivals.

Summer sports of course dominated much of the satellite airwaves. The regular Belgacom analogue lease on *Eutelsat's* 36°E slot - 11.170GHz-H - carried excitement from the British Motor Cycle Grand Prix Sunday morning of July 4th from 0900 onwards into early evening from Donnington Park. A few weeks earlier the same transponder had carried the Italian Motor Cycle Grand Prix

from the Mugello Circuit, also from 0900, so its worth checking out this downlink if you're a bike enthusiast!

Dean Rogers (London SE2) has previously reported extensively on sporting activities across the arc with his 850mm balcony mounted dish. *Eutelsat II-F4* has now been moved from 7° to 10°E after *W3* arrived at the former slot, and checking over the bird at 1720, he found colour bars @ 11.145GHz-V and tuning up noted stadium camera rehearsals at 11.616GHz-V - and both analogue signals. The former resolved into a news footage payout for the Turkish 'Star' network in Ankara, but the 11.616 signal proved more interesting.

The event was the Worldball '99 European Championships for the NFL (National Football League) - Frankfurt v. Barcelona at Dusseldorf. The action was being televised for Fox Sports who in turn had imported their team of American commentators, following the rehearsals, recorded promos, etc. the match was carried in its entirety during the evening.

Other sporting events carried recently have been Wimbledon and the traditional *Tour de France*. A 21.5°W BT digital lease (11.533GHz-H; SR 26000; FEC 3/4) on NSS-K carried many Wimbledon international feeds into various networks throughout Wimbledon Week, flagging as 'Test Channel +'. The colour bars pattern was unusual in that the extreme RH bar returned to peak white (usually it's black) which is a test for blanking. Superimposed on this pattern were details of the next upcoming network insert. 'In the old analogue days' before digital tennis matches were seen on many satellites, now they're more secretive in MPEG and the main European carrier - *Eutelsat* @ 7°E - is one step further removed using MPEG 4:2:2, a standard that as yet is not available on the domestic satellite receiver market. Thus 7°E remains blank! Other international Wimbledon feeds outgoing were reported on *Intelsat 605* @ 27.5°W.

The annual cycling event 'par importance' is of course the *Tour de France*. Over the years the French have perfected coverage of the protracted event enabling fantastic pictures from helicopters and motorbikes following the cyclists. Cyril Willis (Norfolk) watched the Stage 3 *Tour de France* '99 activity on July 6th as the mass of cyclists crocodilled into Nantes in the bright evening sunlight at 1830. Interesting that the American sports concern 'ESPN' were taking the output with captions inlaid on the racing and prepared interviews, uplinked via *Telecom 2C* analogue 12.626GHz-V.

On the same day and about the same time we



Colour bar test cards out of the Balkans via 36° digital.

A reporter feeds back a live insert into a UK night-time bulletin from Pristina. Note the Starbird service id in memory 69, after five seconds this inlay drops out.



Alan and Paul greet colleagues in Master Control, this satellite hookup was out of Brize Norton.



A marginal signal level showing digital threshold breakup (pixellation) on a Balkans feed.



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have another reader's report of the Llangollen Eistedfod being linked by 'SISLink-14 UKI-33' for the HTV Wales evening magazine programme via 36°E (again), 11.676GHz-H analogue. Usual pictures of a traditional country show, a choir singing and various rural crafts.

Remember the Falklands War and the infamous comment 'We counted them out and we counted them all back'? Some 17 years on and 'SISLink 32 UKI-ITN Links' set up its dish at RAF Wittering, the reason being to count back all the Harriers now returning from the Balkans conflict. The aircraft had been stationed in Italy and now several of the squadrons were winding down and flying to their UK homebase, the insert carried on 36°E on June 22nd early evening.

Apart from the royal wedding on June 19th, another important occasion was unfolding in the Sudan. Checking out the 4GHz news feeds on *Arabsat 2B* @ 30.5°E (4.077GHz-RHC) at 1715 onwards there appeared colour bars with 'Sudan TV' inlaid, this in turn followed with footage of Colonel Gadaffi arriving at a dusty venue with various military companions walking freely amongst the local population and appeared to be checking out bomb damage, perhaps on the Sudan-Eritrea border (?). He then clambered on-board a large pick-up type open lorry which set off, fans clinging to the sides and he waving to the crowds eventually arriving at a large arena for a local entertainment.

Orbital News

Following the recent agreement between Eutelsat and SES Astra over the frequency block usage of the 28.2/28.5°E slots, Eutelsat have confirmed a new 24 transponder Ku-band satellite for the 28.5°E slot to launch end 2000. The craft will operate in the 11.20-11.70 and 12.50-12.75GHz segments offering both TV and multimedia capacity.

A new DVB (digital video broadcasting) platform has been agreed within the 13°E *Hot Bird* slot for Belgacom, the Belgian main telecomms carrier. This will provide both digital TV into the home market and provide distribution for corporate and Internet business. Intelsat have confirmed that RTP the Portuguese broadcaster will use capacity on the 605 bird at 27.5°W to provide TV distribution across Africa on an Eastern Hemispheric beam. RTP will transfer the service to the early 2002 launching *Intelsat IX* series satellite also at the 27.5° slot.

Checking the reception log as above, frequent mention is made of the developing 'hot-spot' at 36°E. Eutelsat's new *SESAT* craft will launch late July '99 from Russia's Baikonur Cosmodrome into the 36°E slot and provide greatly extended Ku-band widebeam coverage (47dBW) reaching from the Atlantic shores to mid Asia, the Middle East, North Africa and via an onboard spot beam (49dBW) into the Indian sub-continent. Operating blocks will be 10.95-11.20; 11.45-11.70; 12.50-12.75GHz. *SESAT* will be joined late 1999 by the soon to launch craft - *W4*.

Whereas up to the present satellite launches have always been from a land base, the 'Sea Launch' floating launch pad - actually a converted ocean oil rig - completed its first test launch early Spring and now has contracts for at least 11 satellites from Hughes. The launch pad's recent successful test launch was positioned about 1500 miles South of Hawaii and 250 miles East of Christmas Island and exactly on the Equator, injecting directly into geostationary orbit - a bonus that all other established ground launch sites do not possess - allowing for either less launch fuel or using the same amount of fuel but lifting a heavier load into orbit. Sea Launch favour a 3-stage Russian/USA designed rocket called 'Zenit 3SL' based around the proven Proton design though with extra lift power.

Less happy are the Boeing company with another *Delta-3* rocket failing to orbit and 'taking out' the new *Orion-3* satellite

(that should have slotted over the Pacific Ocean). The second of two *Delta-3* launches and both have failed! We understand that the *Orion-3* craft, which flopped into a low and incorrect orbit, has now been an insurance write-off.

More successful however was a Russian launched 'NIMIQ' DBS satellite out of Baikonur in Kazakhstan late May for the Canadians. This has slotted into 91°W and will provide DBS level TV across Canada coast to coast for at least 12 years from its 32 Ku-band transponders.

BBC World now has an airing via a Russian satellite in the NTV digital/analogue package from its 36°E slot. There are currently about 150000 subscribers to NTV bringing a viewer count for BBC World up to over 42 million.

'E! Entertainment' TV Networks is launching a Hebrew language channel for Israel in a tie-up with local group 'Tel-Ad'. The channel will air via cable and satellite having both international and locally made programming. 'E!' is gradually increasing programming at this time over cable distribution prior to satellite launch. Universal Studios is seeking a licence for a new German feature film satellite channel to launch late '99 in the Kirch digital platform.

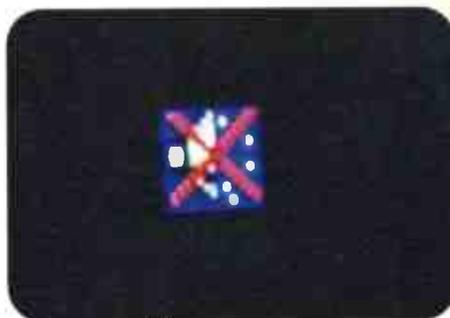
CNN are to create a dedicated 24-hour news channel for Turkey staffed and produced in Istanbul with a backup journalist crew at CNN HQ in Atlanta. 'CNN Turk' is planned to distribute terrestrially though it may well be satellite distributed via Turksat capacity. The Spanish version of CNN, based in Madrid - 'CNN+' - launched January '99.

Canal+ hopes to launch its own news service on November 4th (their 15th birthday) operating round the clock on the 'Canal Satellite' digital platform and rivalling the news channel now offered by 'La Chaine Information' over the Television Par Satellite platform.

'Expo - The Design Channel' is a specialist offering to air via BSkyB from mid Autumn '99 targeting those interested in the arts, design, photography, fashion and related themed subjects that never have main-line programming. Sourcing programming from the major providers + home contracted fare, Expo has proved successful in Europe and Israel and will air on satellite and cable. Expo hopes to appear in the 'States Summer 2000.

Following the news of 36°E expansion, Eutelsat are increasing their presence at the 'Atlantic Gate' slot - 12.5°W slot by placing an order to Alenia Aerospazio for a 20 transponder Ku-band satellite launching early Summer 2000. The new satellite will have beam capacity to cover most of North and South America. North Africa and the Middle East.

Finally the NZ 'SatFACTS' magazine warns that the Korean firm Handan builds the analogue/digital receiver known as the Phoenix 333, the Praxis 9800ADP and the Echostar AD2000IP. The former model is distributed in SE Asia/Pacific Basin, the Praxis in the Middle East and Echostar in Europe. The Saudi Praxis company exported their receiver into the European/UK region and gained encouraging equipment reviews in leading German/UK satellite magazines. Echostar have pressured Handan to cut off supplies totally from Praxis. Any reader therefore considering a UK sourced Praxis should confirm after sales service, software upgrade availability, the Phoenix 333 is still good news for our Asian readers since the model was strictly distributed across the Far East.



Certain of the APTV (Associated Press TV) feeds are encrypted and at such times nothing shows on the digital screen other than a restricted 'X' in the top right hand corner.



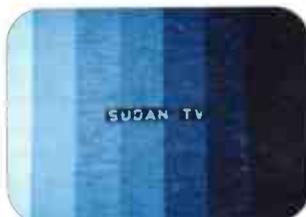
Astra is all digital at 28.2°E, that is except the analogue test card as a rapid dish orientation aid!



Intelsat 27.5°W and the BT Wimbledon digital feeder into Europe. Note the unusual colour bars with the white bar right hand side, this is to assist line blanking measurement.



Colonel Gadaffi is the scarfed figure in the pickup truck (between the left hand side poles) waving to his supporters, note his fans hanging onto the sides of the truck as it drives carefully through the throng.



A C-Band test pattern from Sudan TV.

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PUBLISHED on the fourth Thursday of each month by PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Printed in England by Southernprint (Web Offset), Factory Road, Upton Industrial Estate, Poole, Dorset BH16 5SN. Tel: (01202) 622226. Distributed by Seymour, 86 Newman Street, London W1P 3LD. Tel: 0171-396 8000, Fax: 0171-396 8002. Web: <http://www.seymour.co.uk>. Sole Agents for Australia and New Zealand - Gordon and Gotch (Asia) Ltd.; South Africa - Central News Agency Ltd. Subscriptions INLAND £33, EUROPE £40, REST OF WORLD (Airmail) £44, REST OF WORLD (Airmail) £50 payable to SHORT WAVE MAGAZINE, Subscription Department, PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. SHORT WAVE MAGAZINE is sold subject to the following conditions, namely that it shall not without the written consent of the publishers first having been given, be lent, re-sold, hired out or otherwise disposed of by way of trade at more than the recommended selling price shown on the cover and that it shall not be lent, re-sold, hired out or otherwise disposed of in a mutilated condition or in any unauthorised cover by way of Trade, or affixed to or as part of any publication or advertising, literary or pictorial matter whatsoever.

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