

*The*  
**SHORT WAVE**  
*Magazine*  
**SWM**

# & Scanning Scene

TETRA Reluctance? - Page 63



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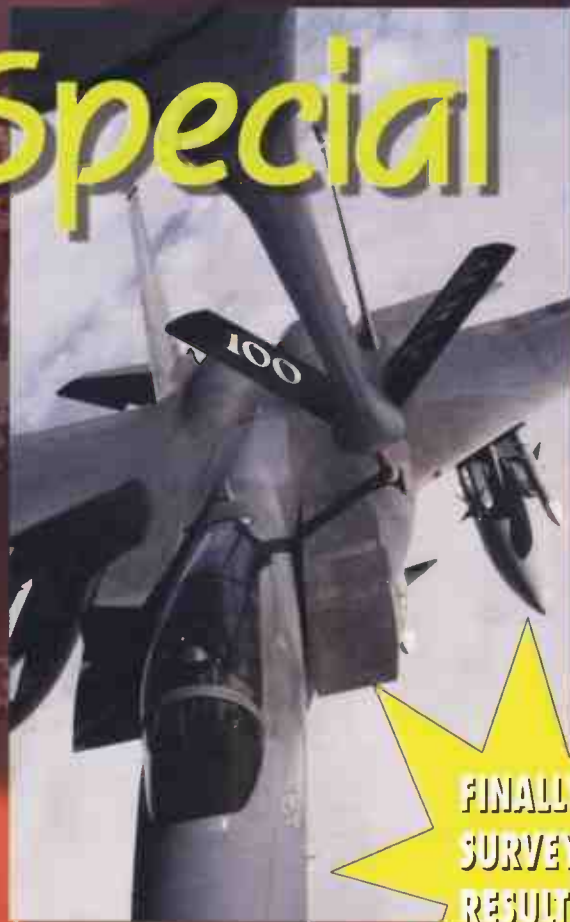
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This has to be  
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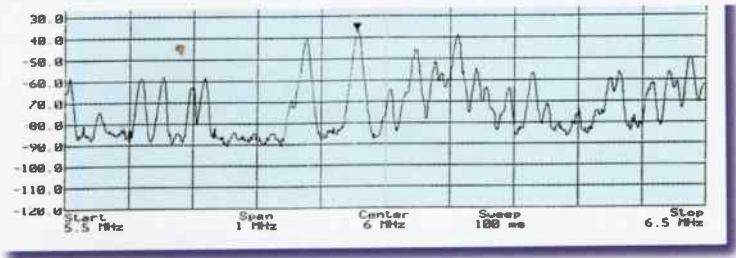
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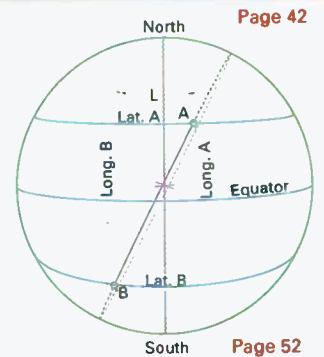
John Wilson takes up reader issues raised in recent months by his no prisoners approach to receiver and accessory evaluation.

### 51 ENTER THE BLACK BOX!

Roger Bunney takes a look at the Maplin Active TV Antenna Amplifier.

### 52 RADIO BEARINGS ON EARTH

Calculating Radio Antenna Bearings. The late Joe Carr K4IPV navigates us through the use of some trigonometry to determine beam headings of distant stations.



### 55 MY LINE IN WORLD WAR TWO

Larry Coalston G7TDJ started out working for the BOAC as a 'Radio Improver', but where did he end up? Read this fascinating account of his younger years.

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Join the **SWM** Readers' E-mail Forum - send an E-mail to  
[swm\\_readers-subscribe@yahoo.com](mailto:swm_readers-subscribe@yahoo.com)



## airband special

### 23 SID STAR - WHO'S HE?

Pilot's need SIDs and STARs. Godfrey Manning, our regular 'Airband' contributor, explains what these instrument navigation procedures are, and includes a list of helpful abbreviations too.



### 26 AIRBAND - THE COLUMN

When you buy your first airways chart, you'd be forgiven for thinking that a trip around Spaghetti junction would be an easier navigational proposition! Don't fear though - Godfrey Manning explains the 'hidden pattern'. Also this month, more frequency and operational news.



### 30 MILAIR - THE COLUMN

Peter Bond has an update on Mildenhall, information about a rationalisation of the UK air defence system, along with some interesting propagation reports received back in February.

### 31 USAF FIGHTER DEPLOYMENTS & FERRY FLIGHTS

When fighter aircraft have to travel long distances during deployments or ferry flights, especially over the Atlantic or Pacific Ocean, enroute air-to-air refuelling will be a requirement. This can involve a number of refuelling tankers each with up to six receivers flying in a formation. Keith Elgin GI7SOB explains all.



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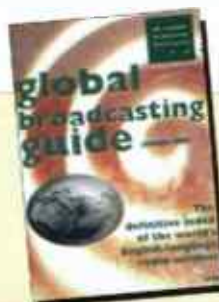
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### Components For SWM Projects

In general all components used in constructing SWM projects are available from a variety of component suppliers. Where special, or difficult to obtain, components are specified, a supplier will be quoted in the article. The printed circuit boards for SWM projects are available from the SWM PCB Service. **KANGA PRODUCTS, Sandford Works, Cobden Street, Long Eaton, Nottingham NG10 1BL. Tel: 0115 - 967 0918. Fax: 0870 - 056 8608.**

### Photocopies & Back Issues

We have a selection of back issues covering the past three years of SWM. If you are looking for an article or review that you missed first time around, we can help. If we don't have the whole issue we can always supply a photocopy of the article. Back issues for SWM are £3.25 each and photocopies are £2.25 per article. Binders are also available (each binder takes one volume) for £5.50 plus £1.50 P&P for one binder, £2 P&P for two or more. UK or overseas. Prices include VAT where appropriate.

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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

## The Survey Results

As I mentioned last month, and you can't have missed the flash on the cover, the survey results are published on page 56 of this issue. They make fascinating reading. In spite of the poor level of response and hence rather small sample size, compared to the total SWM readership, let alone the UK's total population of hobby radio owners which statistically makes the results of limited use. There are some very interesting details which emerge. For instance, there are several very rare radios that have shown up.

Also, we seem to have had an effect with JW's look back at some of the classics of yesteryear, as the following comment at the end of a long list of very capable gear illustrates, "Oh, and one RCA ARBB, receiver, currently being restored by a member of the historical radio society. I bought it after reading JW's excellent review in SWM".

I guess that the poor level of entry reflects a couple of issues that discouraged readers from volunteering the information I requested. Reading several of the lists I did receive, there was a definite desire on the senders part to remain anonymous. For instance one said "Various other bits & bobs, but that's the main kit. **Anonymous, please, if my wife knew what I spent - curtains!**".

There must be many a spouse that doesn't quite realise the breadth and value of the equipment residing in the family home! Please don't worry on that count, anyone writing to this magazine will remain anonymous if that's what you request - I quite understand. After all, not everyone has an understanding partner where hobbies are concerned.

Then there's the lack of incentive to make a list and send it into us for inclusion. I had hoped that the publication of the results would have been



enough to motivate you all, maybe not.

I have decided that we will make the survey an annual event, the next one will be held later this year, with a structured entry form and a prize draw to raise the interest level above apathy.

Also, I'll investigate the possibility of having a web based form that can be filled in on the SWM web site.

## Web Site

This month sees the beginning of a links page on the SWM web site [www.pwpublishing.ltd.uk/swm](http://www.pwpublishing.ltd.uk/swm) just click the bottom button to visit. I welcome any suggestions of other links

you'd like to see added. I look forward to the growth of this page. Next month we'll be introducing a web version of the web watch panels that you can find in the various features and regular columns in SWM. This is so you don't have to type the URLs we feature, instead as you read your favourite tome of up-to-date information, you can visit the site and click a link instead.



## Subscribe

Sorry, but in last month's 'Ed's Comment' I mislead you. Fortunately, Mike Jones from Wrexham E-mailed me and alerted me to my mistake. Mike having tried various derivatives of the SWM\_readers subscription address couldn't fathom a solution and got in touch. The correct way to join the SWM readers electronic forum, which, by the way, currently has its highest membership ever, is to send an E-mail to [swm\\_readers-subscribe@yahoo.com](mailto:swm_readers-subscribe@yahoo.com)

*WV 73 Kevin*

## Sincere thanks to all who responded...

My thanks to the following readers who replied to my request for station details. Without your help this first reader equipment survey (page 56) wouldn't have been possible.

A Glassey  
AG Robertson, Australia  
Adrian O'Leary  
Aidan Morley  
AJ Budd  
Alan - Shotton  
Albert Moore  
Alistair Dunlop  
Andy  
Andy Howlett  
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Ron Pearce  
Roy Smart  
Roy Whittaker  
S Hubbard  
Sheridan Earl Russell  
Sinclair  
Steve Rawdon, N. Zealand  
Ted Kimber  
Tom Smyth  
Tony - GBJAI  
Tony Barrett

**Dear Sir**

As the owner of a Sangean ATS-909, I'm very pleased with all aspects of the receiver, but would like to connect an external speaker to help with the clarity of the received signals, particularly on the crowded 80m amateur band.

However, the output point for headphones seemed to be of a very low voltage, resulting in my having to turn the volume up almost full to gain a reasonable level with most of the external speakers I've tried. Can any of your readers advise me on a suitable external speaker for the receiver and where I can obtain one? I can be contacted via [leighton@trelewis28.freemove.co.uk](mailto:leighton@trelewis28.freemove.co.uk)

P.S. I didn't get my SWM sticker with the February issue, any chance of sending me one as I'd like to advertise such a great magazine.

**Leighton Smart GWOLB/GW-20049  
Mid Glamorgan**

*I think you'll find that most portable radio headphone outputs are designed for impedances of 100-200Ω. The use of 4-8Ω handsets or loudspeaker will result in a reduced output level - Ed.*

**Dear Sir**

I am writing this letter regarding Barry Cant's article in the 'QSL' column. I totally agree that the CB bands are what you make them, but I also think that the CB era has been and gone, and the only ones left are just decent breakers. It's got few newcomers, the younger generation who are interested in radio as a whole and those who are interested in holding amateur radio licenses, and it has got the younger generation constantly abusing these bands, but as Barry said, it's what you make it.

Unfortunately, I don't belong to a DX group, but if anyone knows of one in my area, I'd like to hear from you. Nice work Barry on the sponsored modulation.

**Scott Murray (aged 16)  
West Glamorgan**

**Dear Sir**

I am a complete newcomer to the Wonderful World of radio and a first-time reader of your magazine. I find your articles very interesting, even though most of the technical terminology is beyond me at the moment.

I am trying to learn other languages such as Spanish and Italian. However, barring the local Italian restaurant's menu, on this island there is a complete lack of exposure to the tongues of our world-wide cousins.

I have come to the conclusion that I need a radio system. I am therefore about to make my first purchase of a suitable, portable system, but I am becoming more and more baffled by all the systems available.

To complicate matters, I would also like to be able to pick up local stations such as commercial radio stations, f.m., m.w., l.w., s.w., airbands, etc., basically as many as possible without 'gaps'. I would like to be able to link the system up to a PC if possible to record the sound and control frequency selection and to name stations, etc. Do I need a simple s.w. radio, a scanner, a satellite radio?

It seems that everywhere I look, the MVT-7100 seems to be recommended. Would this do what I need? What does the EU suffix stand for? What more do the MVT-7300, or MVT-9000 models do? I would rather pay a little extra for an unrestricted system, rather than a pigeon-

Short Wave Magazine, April 2001

holed system such as 'only for US market' which you find so often is the case on other electronic equipment such as Video Cameras with DV-in capabilities.

I would need to be able to take the receiver with me to many countries around the world. Also, is there any chance of a future issue of your magazine comparing all the hand-held scanners available on the market? How about a regular newbie section?

P.S. Could someone tell me in the Torbay area where I can learn to be an Amateur Radio operator. I have contacted my local colleges, but they no longer run evening classes! Sad but true.

P.P.S. Please can you mount a copy of your PROMA Scanning Scene CD-ROM on a forthcoming issue of your excellent magazine.

**O. Widdicombe  
Torbay**

*Look out for our forthcoming beginners' series which will get you 'up to speed' with the fundamentals. Regarding an RAE course, I suggest you make contact with your local amateur radio club. The Torbay ARS meet on Fridays at the Highweek Family & Social Club, Highweek, Newton Abbot, Devon, web: [www.tars.org.uk](http://www.tars.org.uk) or telephone: (01803) 556425 - Ed.*

**Dear Sir**

I have just brought a DJ-X10 scanner and this scanner is a lot more complicated than my last scanner, a Netsat PRO-46. As I am a beginner, I was hoping you could tell me of any books that will help me with all the different bands. All the different letters mean nothing to me at the moment, e.g. v.f.o., l.s.b., u.s.b. and c.w., etc., so if you could point me in the right direction, I would be grateful.

Could you also tell me where I could get hold of flight paths on paper poster form if possible. I see the Flight path section in SWM and I only have a dreamcast and would not be able to download the programs.

I have just started to get really interested in scanning and have only just started to buy magazines. I know this is going to sound like a 'kissing butt' comment, but your magazine is by far the best I have seen so far, so keep up the good work!

**Graham Havill  
Kent**

*Next month we will be beginning a regular glossary of acronyms. You should obtain a copy of the Airband Factsheet, see page 26 for details of airways. - Ed.*

**Dear Sir**

With regards to the letter from J. Duckworth and Michael O'Beirne in the January 2001 SWM bemoaning the over complexity of some modern receivers, I would like to make the following points.

In respect of the 'young computer buffs' who allegedly find the operation of the 'black box' equipment easy, I am a thirty something IT professional working for a major blue-chip company, I also have a background in broadcasting. I purchased an AOR AR8000 scanning receiver about two years ago - it has had very little use, as I find it too difficult to operate. I also own an Alinco DJ-G5T dual 2m/70cm hand-held. I am unable to fathom any

of its more esoteric functions, as these require multiple key shifts which I cannot remember for more than a day or two.

It occurs to me that many manufacturers try to jam as many 'functions' (which mostly never seem to get used) into a new piece of equipment, whilst ignoring the functionality - that is the intuitive ease of use. Obviously a long list of 'innovations' looks good in an advertisement, but it is not much help if few users can work out how to access them. Don't misunderstand me, I'm not one of the 'only read the manual one stage before calling the fire brigade' types!

I wonder what other readers think? One of the reasons I purchased a JRC NRD-345 h.f. receiver about three years ago, instead of the apparently slightly superior AOR AR7030 was that I could not drive the AOR - which in my opinion does not look like a 'real' radio anyway, for all of its clever design.

Have others noticed the number of AOR AR7030s on the second-hand market? Several radio dealers have confided to me that the high turnover of used '7030s is primarily because users find it really awkward to operate. The 'one button per function' philosophy of JRC seems more sensible, in my opinion.

I am involved in the design of user interfaces for bespoke software packages, my job is to ensure that the software is easy for an inexperienced person to understand with little preparation. The operation of these programs is often highly sophisticated, yet the 'front-end' can be made very simple. I think that it is about time certain 'black box' manufacturers followed suit.

P.S. Anyone want an AOR AR8000 - only a few hours use - with purchase receipt and a pile of unused accessories?

**Hugh Neal M1CXN  
Kent**

*I find that with most keypad controlled equipment, you only become comfortable with their operation, when you 'click' with the designer's thought process. There is an incredible transformation from confusion to total familiarity and comfort with the way a system works. The only shortfall with this process is there are some equipment that takes a long time to become familiar with. As for your AR8000, I love mine...maybe I do need a second? - Ed.*



**Dear Sir**

I have since the age of 10 been fascinated by all aspects of radio (my interest first being aroused under the bed covers with a small m.w./l.w. transistor radio which to my delight would receive stations such as VoA and VOR, etc.), however I digress.

I bought my first 'true' receiver in 1992 - a Sony SW55 - a fine radio, with numerous possibilities. Firstly I used it for broadcast, then moved onto s.s.b. transmissions, voice and data, but I was concerned that this was only a limited radio and I needed something more.

Well, next I took a drive down to 'the'



London emporium where I felt I should buy a Lowe HF-150 (your review seemed to fit my needs), however, after talking sometime with the salesman, it was decided that a Yaesu FRG-100(B) would be better suited to my needs. So, trading in my base scanner SW55, I took delivery of a new receiver with a Datong FL3 and MLB.

Wow, I thought, now I'll be able to hear all those signals I could just perceive in the noise. Well, to be honest, things were a bit better, and having over the years experimented with various bits of wire for antennas.

Well, since the easiest thing for me to alter was the antenna, that is where I directed my energies, various contraptions were erected in the garden, often to the annoyance of the rest of the family, but my comment to that was always 'it's under test and won't be there for long', well, they only usually lasted for a year before some other idea was gleaned from the many antenna books available.

Well, to get more to the point, about two or three years ago I thought I'd treat myself for Christmas to a 'Rolls Royce' receiver and bought from Javation a AOR AR7030 Plus with a couple of additional filters more suited to data. Well, things improved no end with more signals being available to me, but still I hasten

to add not to the quality I thought. (You hear these chaps on 80m who seem to be able to work the world and hear the other side of the conversation with little more than a bit of wet string).

For a while I let this ride, but then came the development of PSK31. So, in October I thought I'd see what I could hear, well, I was amazed with the mode, however, I still seemed to suffer the usual difficulty in picking out some of the weaker signals. Yes, the east coast of America was coming in very nicely with 100% copy and so was Europe, but there were signals I still couldn't get too, however much I changed the filters, tweaked at the passband, played with the tone, notch filter and other things, I still couldn't quite get what I wanted.

Then I remembered all the reviews I have read in *SWM* and *PW* and thought what does this r.f. control really do, well, I twiddled and prodded at the various settings and to my surprise, things became clearer. Now, I must admit that my previous forays into r.f. gain only made me conclude all I was doing was reducing the overall signal strength and little would be accomplished by this. However, as the more seasoned s.w.l.s and operators know, it actually does work, and work well!

My plea to *SWM* is that as a font of knowledge and maybe like the editor of *PW* does his 'Radio Basics' column, would it not be of use to the newbies and not so newbies to devote a little space to cover the possible methods of driving your receiver 'properly' to get the very best out of it. I know that all parts are important such as the matching, the antenna and other bits, but if more people know how to 'drive' properly, the more enjoyment and fun they would have.

In essence, it has taken me 25 years since those evenings under the covers to realise that I don't know anywhere near as much as I thought and that there is always more you can learn. I know this would have become more apparent if I had joined a club or had more contact with the experienced, but like me, there are probably a lot more s.w.l.s that rely on books and the snippets we can glean from magazines such as *SWM* and *PW*.

Time for me to get off my soapbox and close by congratulating *SWM* and your sister publication *PW* on their valued and professional work - keep up the good work.

**Phil Simpson**  
E. Yorkshire

*Phil, the series is coming! - Ed.*

#### Dear Sir

A long letter I know, but I keep hearing that you are keen to promote this hobby and I need to get this off my chest!

I remember thinking, about a year ago, that I would like a scanner, as it could be fun to hear local radio traffic, so I went to Tandys and bought myself a reduced price PRO-63 handheld. I knew nothing about radio waves, bits of radios, or what any of the technical terms meant, however, I had spent time in the Police Force and knew that our HQ had two different channels, one that covered half of the country, and the other covering the other half. Also, local divisional stations had a personal radio scheme that operated on a different frequency and officers could speak to each other, without going through 'Force' radio.

I had heard about v.h.f., a.m., f.m., u.h.f., CB and '27megs' (whatever they are) for radio control models, but what it all meant, I had no idea.

I read the instruction book, and after switching the thing on and fiddling with it for a few hours, I knew even less about it all than when I started.

What is ATT, why do I need to press Delay, what is WX? So many questions and no answers. The up and down buttons just make the display go silly and what the hell do I need a PRI button for? According to the book, this is for entering my favourite frequency into. (I know this is a number, now), but, I don't know any frequencies!

More annoying hours of listening to hissing, buzzing and squelchy noises, hang on, there is a button marked squelch, perhaps if I twiddle it, the noises go - bingo! - but do I have to do this on every frequency, all the time, every time? What a pain!

Read instruction book again, to find out about other buttons marked LOC and MEM, etc. At least I know now how to use the infernal thing, but what about these 'frequencies'. I wasn't getting anything out of it except a load of gobbledegook from aircraft, not what I want at all. After reading your magazine for a few

months, things start to drop into place, but still lots more questions that need answers.

Ask someone who should know, my mate's brother-in-law, David, (calls himself G-BHIJKLMNOP or something, he's bound to know). "David, why can I only hear one side of a conversation?" Ah ha - followed by a raucous laughing fit, says David, and gives me a whole load of technobabble, ending up with the only word I can remember - Duplexing. Good, what the hell is that? Too big a subject, he says, and my visit is ended with an important call from a Russian person that spoke the same language as David, but it was all completely Greek to me. David's final quick words were, "get an antenna, bye".

Trip to local CB shop, they know about antennas. "What frequencies do you want to cover?" asks the man. "I don't know" says I. "I don't know any frequencies". How about a book on them then, only £20. Best £20 I've ever spent, once I'd worked out how to use it and put up with the various comments from my wife and friends about reading this mini 'phone book! At least I now have some numbers to enter into my machine, and what do you know, I have become a scannist or am I a POCSAGER, maybe its cooler to be a DXer, I don't know yet.

Now its decision time, where do I want to go with this new complicated hobby? If you think I am going to spend many cold winter evenings in a cold shed, sorry, shack, out the pot of the garden, think again. I have just moved house and my wife works a lot in the evenings, so if we convert one of the bedrooms into a 'shack/office' we can at least be 'together', even if I do have to use headphones. We even call this room The Shack! I've got my computer, and have decided to go for a computer based scanner, Icom PCR1000. I've got a rotator, poles, stand-off brackets, discone and log periodic antenna to erect, when I can afford it.

I have an ambition that I want to achieve with my radio gear, but no way am I telling anyone what it is, because I don't want to hear, "Oh, you should have asked, you just...". It might be something unusual that I can share

with other Novices, like the antenna that some fellow invented years ago, and it is now known by his callsign. You see, I am getting somewhere, I know it can be done (my ambition, that is), I just don't know yet how to do it!

Antenna spotting is a by product of this hobby, although when I point out Yagi or active loop to my wife, she does not seem very impressed! The other day we followed a vehicle with a Texas Bugcatcher on it. My wife wasn't as excited as I was.

And another thing, I entered a frequency into my scanner that *SWM* published, (127.440 big store owners heavies) and actually heard a conversation! My whoop of delight, when I heard it, frightened my wife and the cat! Is there an I-SPY book?

I still have a myriad of questions, although I am gaining knowledge from the likes of your magazine. But please can your remember types like me when the necessary technical info is printed, we need just a little more help than the guys that did their teething on valves, etc., because I don't think I will ever know that I prefer one component to another because 'its low forward gain is around 8dB' (what is all that about?).

I can keep you posted of my progress if you can stand it, but at least I haven't given up yet. I've even stuck the free sticker in my car window, much to the amusement of my friends.

**Peter Howells NYCT3 Wrcs**  
I am even taking the exam to become a GMDSS assessor!

*All sounds pretty 'normal' to me Peter. As with any hobby, things are always slow 'till you get to grips with the basics. Perseverance is the way, as you've already discovered. As I've already mentioned on this page, we will be launching a beginners series shortly. Also, there will be a guide to common terms and acronyms next month. I'll keep an eye out for the sticker next time I'm in your area - Ed.*





# Communiqué

## Testing Tools



Wavetek Meterman has introduced a line of more than 60 versatile, easy-to-use test and measurement products designed for shop, tool-bench, boat, home or pocket. Wavetek tools belong anywhere electronic and electrical technicians and engineers, service technicians and the home handyman are installing, building, troubleshooting, servicing or maintaining electrical power and lighting, environmental controls, automotive, small appliances or home electronics. Meterman tools are available at Test & Measurement and Test Tool distributors world-wide.

The Meterman line includes everything from rugged digital multimeters to basic and speciality testers for lighting, electrical and electronics testing. Clamp-on ammeters offer precise electrical readings, while component testers and speciality test tools are the right match for electronics troubleshooting.

Wavetek Meterman provides the combination of affordable value with the ability to make accurate measurements in the most rugged of environments. Meterman tools feature large displays, extra fusing, safety test leads, Digi-Glo™ backlighting, live voltage safety testers, wrong input user warning beepers, a complete line of accessories and patented new T-shape designs to fit your hand.

Wavetek Meterman offers a selection from low-cost basic testers to high performance auto-rangers and true heavy-duty multimeters. Meterman tools are the result of extensive research. Each Meterman tool has been designed to provide the price, features and ease of use professionals want. Whether for a service business or for spare time working in a shop, Meterman offers the right tool for the job.

### Monitor, Decode & Process

The W41PC MkII is the latest version of a PC plug-in ISA card and software system offering all the necessary functions to analyse, decode and process digital systems in the h.f./v.h.f./u.h.f. and s.h.f. bands. Manufactured in Switzerland by Wavecom, it is available in the UK from **Sight Systems Limited**, the Worthing-based manufacturer of industrial computer systems.

The W41PC MkII provides government bodies, telecommunications authorities and military, civilian

units and hobbyists with a powerful signals intelligence gathering system for radio communications, data comms, FAX, telephone, mobile and pager signals in a variety of world alphabets. The system may be configured for stationary monitoring of just one transmission with a single system or can range to a fully automated broadband monitoring system using a network of co-operating systems.

More than 100 code analysis modes are currently implemented for all important demodulation methods and a variety of international alphabets (e.g. Cyrillic, Arabic, Hebrew, etc.) are included in the standard package. Options to decode additional modes are available to authorised official bodies, as is the software source code and a complete development environment. This allows the customer to realise his own decoding modes or to adapt the user interface to specific requirements.

The W41PC MkII is a full 32-bit Microsoft Windows application offering a familiar operating environment. This provides the added bonus of being able to use any Windows compliant printer or graphics package. Multiwindow display of different signals simultaneously or to display different characteristics of the same signal is an important user benefit.

Sight Systems Ltd. can be contacted at **Woods Way, Worthing, West Sussex BN12 4QY, Tel: (01903) 2420012, FAX: (01903) 504494, E-mail: sales@sightsystems.co.uk** or visit their web site at [www.sightsystems.co.uk](http://www.sightsystems.co.uk)



### New PMR-446

New from Nevada is the **Alingo DJ-446**

heavy duty hand-held PMR-446

transceiver packed with features that make it the ideal choice for business, professional and reliable leisure use. High quality design and construction ensure the best possible performance and reliability. Outstanding audio clarity and receiver specifications ensure maximum range. The DJ-446 is factory programmed with all eight p.m.r. channels. Each channel has 39 CTCSS tones, giving an effective 312 usable channel modes. For more information about this radio, contact Nevada direct at **Unit One, Fitzherbert Spur, Farlington, Portsmouth PO6 1TT, Tel: 0239-231 3090, FAX: 0239-231 3091, web site: <http://www.nevada.co.uk>**

### 'Bill' Orr

Amateur Radio legend William I. 'Bill' Orr W6SAI, of Menlo Park, California, died in his sleep January 24. He was 81.

An ARRL member, Orr was best known for his numerous amateur radio books and reference works, many aimed at beginners. His titles include *The Radio Handbook*, *The Beam Antenna Handbook*, *The Quad Antenna Handbook*, *The VHF-UHF Manual* and *The W6SAI HF Antenna Handbook*, some written in collaboration with Stu Cowan W2LX.

Licensed in 1934 at age 15 as W2HCE in New York, Orr graduated in electrical engineering from the University of California in the early 1940s. In his younger years, Orr was a well-known DXer and DXCC Honour Roll member. He also was involved in DXpeditions to various exotic locations, including St Pierre and Miquelon and Monaco, among other locales.

From the 1940s through the 1980s, Orr was a frequent contributor to QST, writing about tube-type amplifiers, Project OSCAR, and other topics. Orr constructed some of the amplifiers once used at ARRL Maxm Memorial Station W1AW.

For many years Orr worked with tube manufacturer EIMAC. Orr's application notes for EIMAC products were favourite reading within the amateur community. In later years, Orr penned columns for Ham Radio Magazine and, more recently, for CQ.

In 1996, Orr was named the Dayton Hamvention Technical Excellence award winner. Chip Margelli K7JA, of Yaesu, said Orr's readers always could build his projects knowing that Orr had tested them in the field first to be sure they worked.

Long-time friend Willard "Tiff" Tiffany W6GNX, said Orr had a knack for making technical topics easy to follow and understand. He remembered Orr as "a friendly, helpful guy who wrote from the heart because he enjoyed doing it".

Another friend, Marv Gonsior W6FR, says, "Orr had a great sense of humor, a lot of wit about him". Orr owned a condominium in Maui, Hawaii, and operated from there two or three times a year as KH6ADR.

Orr's wife, Sunny, died about five years ago, and he lived alone. He is survived by four daughters and a son.



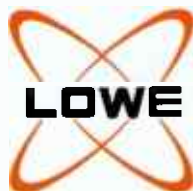
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# Communic

## W&S @ Lowe

**Waters & Stanton PLC** are pleased to announce that as from the beginning of February, they will have a showroom and retail counter at the premises of **Lowe Electronics Ltd.** in Matlock, Derbyshire.



The new showroom will be fully operational at the beginning of February and will be known as **W&S @ Lowe**. For those who have not visited Lowe Electronics before, the address is **W&S @ Lowe**, Chesterfield Road, Matlock, Derbyshire and the telephone

number is **(01629) 582380**. Waters & Stanton mail order and web ordering service will continue to be handled at their main premises in Hockley.

## Holiday BCL Contest 2001

The aim of this broadcast contest is to listen to as many countries of Asia and Oceania.

- \* Date: From 1 June to 30 September 2001
- \* Only one radio station per country
- \* This contest is open to s.w.l., broadcast listeners from all around the world
- \* Frequencies: 3.200MHz to 25.820MHz in a.m.
- \* Only log broadcasting official stations (no pirates, clandestines, CB or amateur stations)
- \* Points: one for each country

Send your log before 31 October 2001 to: **Franck Parisot, PO Box 6, 92173 Vanves Cedex, France - Europe**, E-mail: [frankparisot@hotmail.com](mailto:frankparisot@hotmail.com) or visit the website at [www.chez.com/swlcontest](http://www.chez.com/swlcontest)

The sponsor - the 'Club Amitie Radio' - will offer a *WRTH 2001* or a subscription to *A L'ecoute du Monde* to the winner. (Club Amitie Radio BP 56 Creteil Cedex 94002, France, Europe, E-mail: [amitieradio@francemail.com](mailto:amitieradio@francemail.com))

### Example Of Log

Date	Time (UTC)	Freq	Station	Country	Lang.	SIO
1/6	1100	5930	CRI	China	English	555

### List of Valid Country's (47)

Afghanistan - Saudia Arabia - Armenia - Australia - Azerbaidjan - Bangladesh - Cambodia - China - Cyprus - North Korea - South Korea - United Arabi Emirates - Egypt - Georgia - Guam - Hawai - India - Indonesia - Iran - Irak - Israel - Japan - Jordania - Kazakhstan - Kuwait - Laos - Lebanon - Libya - Malaysia - Mongolia - New Zealand - Northern Marianas - Oman - Uzbekistan - Palau - Pakistan - Philippines - Qatar - Singapore - Sri Lanka - Syria - Tadjikistan - Thailand - Taiwan - Turkey - Turkmenistan - Vietnam

## Design & Install

**HCJB World Radio** engineers again have demonstrated that they can design and build high-tech equipment that is much less expensive and comparable to anything on the market. Engineers are installing a 10m (33 foot) satellite dish antenna at the ministry's broadcast compound in Quito, Ecuador, that will receive syndicated Christian radio programs from North America for airing world-wide via short wave. Installation will be completed in about a week.

"By designing and building the antenna ourselves, we are saving thousands of dollars," says engineer Doug Weber. He adds that the satellite dish will reduce the mission's operating costs and simplify

the delivery of radio programs produced in the US. In the past, tapes, CDs and digital recordings had to be sent through the mail system.

Alex Saks, acting general manager of Radio Station HCJB, says the dish had to be large enough to pick up signals from a satellite aimed primarily at North America. "One of the project's challenges was receiving the signals without blocking out the sun from the entire compound!" He adds that the dish will "facilitate and ensure continued broadcasting of quality Christian programs and teaching to people in parts of the world still not being reached with the gospel in any other way".

Engineer David Russell, now serving at the HCJB

World Radio Engineering Centre in Elkhart, Ind., submitted a recommendation and preliminary design for the 10m dish. Engineers Steve Sutherland and Germn Jaramillo at the ministry's international transmitter site in Pifo then examined many antennas and gathered information on what would constitute a sound mechanical design.

"With such a massive construction, decisions on how to support the reflector and maintain its intended parabolic curve were critical," Russell says. "From my perspective, this was by far the biggest feat in the antenna project".

The Pifo staff, led by engineer Gonzalo Carvajal, also received help from civil engineer Emily Cheung in Quito who dealt with issues such as the equipment's ability to withstand strong winds. Performance testing will begin soon after installation under the direction of engineers Marlin Brubaker and Milton Pumisacho.

To view photos click on <http://www.hcjb.org/>



## Manchester Meeting

The next get-together for radio hobbyists/DXers, organised by the **British DX Club**, will be on Saturday 31st March 2001, starting at 1600. The British DX Club caters for the broadcast side of the hobby, with interests including international broadcasting, short wave, tropical bands, QSL cards, f.m., m.w., l.w., local radio, RSLs and pirates. Most attending this meeting will be BDXC members, but anyone interested in radio may attend, regardless of membership.

The meeting will take place from 1600 in the Wetherspoons Pub in Piccadilly Gardens, Manchester City Centre, by the bus and Metrolink station and a short walk from Piccadilly mainline train station. Then, from about 1800, everyone will head off into Manchester's famous Chinatown for a meal, with 'radio chat' throughout the evening. Further information from **Tom Read** via E-mail: [tommyread@hotmail.com](mailto:tommyread@hotmail.com) or telephone on **(01625) 612916**.



'Bat' - the mascot of the WSM Amateur Radio Society, built in 1891 and the subject of the first successful experiments in radio control in 1904.



**Windermere Steamboat Museum**

The WSM-ARS - The Amateur Radio Society based at the museum - are organising a

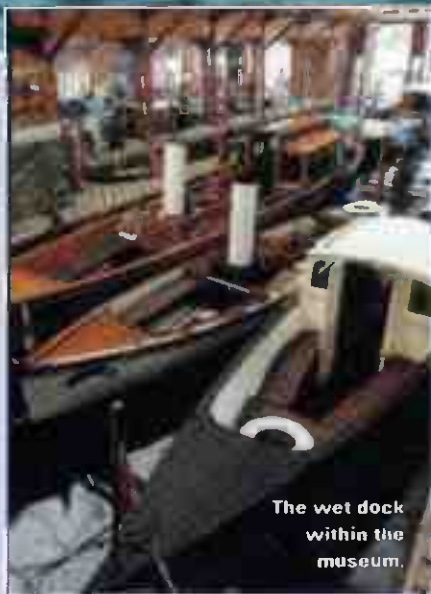
special event - held over the weekend **9-10th June 2001** - to celebrate the Museum's early connections with mobile radio. You may know that in 1904 the steam launch *Bat* was steamed around the north end of the lake under radio control from the shore, the only person aboard being the 'stoker'. Very little is now known about this set of trials, but *Bat* remains preserved in the Museum. Today she shows no signs of huge battery installations, (or the erection of the 1904 equivalent of a Tenna mast).

The mobile radio theme of the event will be displayed on the Sunday and in addition to all the usual museum attractions, there is to be a display by all sorts of people from this area, who actively use radio on a day-to-day basis. This will be a unique opportunity to meet your local Police, Fire Service, Mountain Rescue Teams, the RAF, the TA and the Windermere Lake Wardens, etc.

Latest news is that the Cumbria Fire & Rescue Service have said they will send their mobile comms vehicle/command post, and that Icom have agreed to sponsor the event by sending some PMR446 sets so that everyone can have some 'hands on' experience with mobile radio.

The Model Steamboat Club will be steaming around the boating pool and *Bat* will be on the lake and probably equipped with an amateur radio station. The WSM-ARS will be activating their permanent special callsign **GB2WSM** throughout the weekend and will be hoping for a lot of contacts, particularly with stations world-wide, with the prefixes WSM, BAT and WSC (Windermere Steamboat Centre).

With its lakeshore position, easy on-site parking, tea room and picnic facilities, this venue is an ideal location for this special family day. More information from **Peter Truelove** on (01539) 446863 or E-mail: **petert@freeuk.com** or call the Windermere Steamboat Centre on (01539) 445565.



The wet dock within the museum.

**World DX Club**

International Broadcast stations will go onto their summer schedules on March 25th. **World DX Club** publishes a 12 page pamphlet listing times and frequencies of English broadcasts in country order which is constantly updated so that the information is always as up-to-date as possible when you order. Information for the new broadcasting season will be published by mid-April, copies of the pamphlet are available for 50p or two IRC's from **Arthur Ward, 17 Mospur Drive, Northampton NN2 6LY**.

The Reading International Radio Group was formed in 1976 and has been meeting regularly since then discussing all types of broadcast listening and DX. Meetings are held at the Abbey Room, Reading Central Library from 1430-1630 and all are welcome. Dates of future meetings are March 31st, May 19th and June 30th. For further information contact **Mike Barraclough** on (01462) 643899, E-mail **mikewb@dircon.co.uk** or check the groups website **http://www.radarc.org/internationalradio/group.htm**

**The 2001 EMA Aviation Enthusiasts Day - 1st April 2001**

This popular annual event will again be held in the check-in hall and departures concourse at East Midlands Airport. A wide selection of stalls will be present featuring aviation books and memorabilia, spotting optics, computer based logging programmes and databases, airband radios and scanners and much more.

Admission is **free** and parking will be just £1 between 1000 and 1700 (follow signs). Pleasure flights will be available on the Eastern Airways Jetstream 312 - book early to avoid disappointment on the day. For more details contact **Steve Gensler** at the Hobby Shop on (01332) 852915.

rallies



**April 21/22:** The London Amateur Radio & Computer Show will take place at Alexandra Palace, Wood Green, London N22 - please note the change of venue! Further details on (01923) 893929.

**April 22:** The 17th Yeovil QRP Convention takes place today at the Digby Hall, Sherborne, Dorset. Doors open at 1000. There will be traders, construction challenge contest, talks, QRP forum, Morse tests, catering, free parking and invalid facilities. Talk-in on S22. Further details from **D. Bowden M1WOB** on (01935) 414452.

**April 22:** The Harrogate Radio Computer and Electronics Rally will be held at the Harrogate Ladies College today. For more information contact **Gerald Brady GOUFI** on (01765) 640229 or E-mail: **g0ufi@qsl.net**

**CLUB CORNER**

Members of the **Hoddesdon Radio Club** have many short wave listeners in their membership and welcome other readers of *SWM* to their meetings, which take place at The Conservative Club, Rye Road, Hoddesdon, Herts, on alternative Tuesdays from 2000. On April 10th, there is a talk on the history of kites and an Open Forum will be held on April 24th. More information from **Don** on 0208-292 3678.

The **Bangor & District Amateur Radio Society** meet on the first Wednesday of every month in 'The Stables', Groomsport, County Down at 2000. On Wednesday 4 April 2001, at 2000, the society are holding their Annual Constructors Contest. Take along something you've built and win a prize! There will also be a talk on construction by **Crawford G10EZO**. This should be an interesting evening and as always, visitors and new members are all very welcome. More information from **Mike G14XSF** on 0284-277 2383 or check out the club's web site at **http://welcome.to/bdars**

Meetings take place at the Ossett Community Centre, Prospect Road, Ossett, W. Yorks, for the **Wakefield & District Radio Society** on Tuesdays at 2000. Further details from **John G7JTH** on (01924) 251822 or check out their web site at **http://www.sandalmagna.demon.co.uk/wdrs/**

The **Colchester Radio Amateurs** are holding their 33rd Annual Radio & Computer Rally at St Helena School, Shepan Road, Colchester, Essex, on Sunday 29th July 2001 from 1000 'till 1600. This large rally will include a large hall for indoor traders, large outside area for **big Boot Sale**, refreshments and bar, free parking, disabled access and parking plus a **Bring & Buy**. More information from **Richard G7BIV** on (01376) 571239 (evenings) or E-mail: **http://www.richard.c.hudson@bt.com**



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■ Martin Peters, c/o SWM EDITORIAL OFFICES, ARROWSMITH COURT, STATION APPROACH, BROADSTONE, DORSET BH18 8PW.

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# Bandscan Europe

In an amazing U-turn, BSkyB now claim not to want ITV to join them on the Astra 2 platform. A little history - up to this point, BSkyB have been desperate to attract ITV. This would not only boost dish sales, but also act as a spoiler, intended to scupper the success of terrestrial rival, OnDigital. Carlton and Granada, joint owners of OnDigital have been, not surprisingly, reluctant to sign up to Sky.

The problem for ITV is that in homes where satellite is taken digitally, viewers are happy to watch whatever Sky, and the other broadcasters, have to offer. This includes the BBC and channels 4 and 5. Consequently, ITV's audience has significantly dwindled to the point where they have been forced into a grudging dialogue with Sky - allegedly.

Sky have been 'reassessing the benefits' of playing host to ITV and now think that denying them access to the platform will hurt ITV more than it will hurt Sky. Confused? You should be.

Astra 2D recently co-located with the rest of the constellation at 28.2°E. Word on the street was that the BBC channels would transfer to the new craft. With a footprint more tightly focused on the UK, certain rights issues no longer apply and rumours were rife that these prime channels would cease their soft-scrambling, negating the requirement for a dedicated Sky set top box. Well, I asked the question of my spies at BBC Engineering and they replied with an emphatic "No!"



## WorldSpace Fan

I joined the happy tribe of WorldSpace listeners with the purchase of the Hitachi KH-WS1 portable receiver. These are currently being sold for under £100 by a number of distributors around the UK.

With it, you can tune in to the 40 or so stations, downlinked from Afristar at 21°E. Choose from a selection of broadcasts which includes major players from Europe such as BBC English, RFI French, the English and German bouquets offered by World Radio Network, to local radio stations from Lebanon, South Africa, Benin and more besides. It's a fascinating mix, some of it in stereo, and I'm definitely a fan. The Hitachi also provides for reception of v.h.f. f.m., medium wave and short wave frequencies, see SWM October 2000 for details.



## Latest News

As predicted in the last 'Bandscan Europe', RTS TV from Serbia returned to Eutelsat at 13°E. You can catch them - and Radio Belgrade - on 12.188GHz vertical in digital format. Interestingly, they're dual-illuminating from Eutelsat 2 F4 at 28.5°E on 11.188GHz horizontal, also in digital. Although pretty much collocated with the Astra 2 craft, you will not be able to view this with your Sky system owing to reduced signal strength, compared with Astra, and different technical parameters of the digital stream - ones that a standard Sky box can not unravel.

The launch MusicMann 279, long wave radio from the Isle of Man, took another blow in January when planning permission for the antenna was turned down on the basis of visual impact.

This is the latest in a long run of delays and hurdles that the station has had to endure. The project's founder, Paul Rusling, vowed that, despite this setback, the fight continues, and pointed out that all other aspects of

possible rejection - interference to other services, an adverse affect of the local ecology and, curiously, sound - had all been thrown out by the planning committee.

On a more upbeat note, the long wave station planning to radiate from twin masts off the Dutch coast has finally been given clearance to broadcast on 171kHz. 171 The Lounge plan, pending 11th hour challenges, to broadcast an easy listening mix to the UK from the 2MW facility by this time next year.

Concerns from detractors include interference to shipping and the possibility of birds being trapped in the masts' 10km or so of supporting guy wires. Research has been carried out and both are thought not to be a problem. As added protection, the project is to include a system that will warn birds of the structure's presence - a very large sign, presumably.

Digital AM passed a major milestone recently when the International Telecommunications Union (ITU) formally recommended the technical standards as submitted by the Digital Radio Mondiale consortium. This standard has now been accepted as the way to go for a world-wide, digital a.m. transmission system. Final ratification is expected some time in April.

Recent tests carried out in Europe proved, beyond expectations, that the DRM's transmissions standard provided clear, interference-free reception with quality on a par with mono f.m. radio.

If you have Internet access judge for yourself by checking into [www.drm.org/system/globoutputreq.htm](http://www.drm.org/system/globoutputreq.htm) where you will find off-air recordings sourced from both traditional and digital a.m. transmissions. Pilot transmissions are slated for next year with the official rollout expected in 2003.

## There's Trouble

There's been 'trouble at mill', to put it mildly, over in Prague where, at Czech TV, the choice of the recently installed head, Jiri Hodac, has caused uproar. It was believed that Hodac's appointment was party political and that news output would no longer be impartial. First the editorial staff walked out, then, most of the remainder.

For a time, two versions of the station were being broadcast, the terrestrial service, controlled by Hodac and his new management team, and the satellite and cable service, as run by the striking staff. On December 27th the management channel was replaced by a caption whilst the rebel workers' service remained on the air.

Public opinion is behind the staff and a mass rally in Prague city centre attracted tens of thousands of supporters. On January 11th Hodac resigned, on the grounds of ill health. Normal service, for now, has been resumed.



## A Single Body

To these shores where, late last year, Culture Secretary, Chris Smith, announced the formation of Ofcom (Office of Communications) a single body, regulating the UK's broadcasting and telecommunications industries.

The legislation bound up with this move will somewhat relax the constraints currently put upon TV and radio broadcasters and, taken to its conclusion, raise the possibility of a single ITV company.

Consolidation within the radio industry is also expected with a wave of deals set to go through in the near future. This would all be well and good if niche stations, once bought up, were allowed to pander to their loyal audiences. More often than not, once the big boys (GWR, Emap, Chrysalis, etc.) get their claws in, new acquisitions all too often become just another 'better music mix' station with all the blandness that necessarily follows.

What else happened? Well, on the DAB front, where the power consumption of receivers has long been a concern, a new digital chipset that delivers 10 hours of service from a rechargeable battery has just been announced. Unfortunately, the press release does not say whether the aforementioned battery is of 'triple A' size or 'helicopter starting' proportions.

## Closing Down

Meanwhile, Holland has brought to an end, its pilot DAB service by closing down its transmission facilities, citing government reluctance to assign frequencies for regular DAB broadcasts. Holland is now the only European country not to host regular broadcasts in the DAB format.

Have a pleasant spring.



■ BRIAN ODDY G3FEJ, THREE CORNERS, MERRYFIELD WAY, STORRINGTON, WEST SUSSEX RH20 4NS



# LM&S

If you enjoy searching the broadcast bands and use 'LM&S' as a guide, then do bear in mind that some broadcasters may alter their short wave transmission schedules in March, May, September and/or November to compensate for seasonal changes in propagation.

The s.w. data herein is based upon actual reception during January, consequently the schedule changes on March 25 may render some of the entries no longer applicable when this issue arrives on the news stands. If you encounter any changes, please post the details to me at the above address.

Please note that I have no access to the Internet.

## Long Wave Reports

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

Unusual conditions were observed in this band during January. In Newry **Eddie McKeown** found that some of the stations he can only receive after dark were audible during daylight. Just before dusk he heard Rikisutvarpid (RUV) in Reykjavik via their 300kW outlet at Gufuskalar, W.Iceland on 189kHz. He rated the transmission 2422 at 1542UTC.

Just after midnight on the 21st **Simon Hockenhill** (E.Bristol) picked up a broadcast from RUV in Reykjavik via their 100kW outlet at Eidar, E.Iceland on 207kHz, which he logged as SINPO 23442 at 0005UTC; also via Gufuskalar, W.Iceland on 189 (SINPO 25443 at 0015UTC). During the late afternoon of that day **Ernie Strong** (Ramsey, Cambs) heard RUV via Gufuskalar on 189 at 1630UTC (SINPO 23442).

Above average conditions were observed during the evening of the 31st by **Fred Pallant** (Storrington). Whilst searching the band from 2100 until 2120UTC he noticed that co-channel interference existed between Bechar, Algeria and DLF via Donebach, Germany on 153kHz; also between Azilal, Morocco and DLF via Munich, Germany on 207kHz.

## Medium Wave Reports

During some nights in January the propagation conditions were slightly favourable for m.w. transatlantic DXing and the broadcasts from a few stations in E.Canada and E.USA reached our shores. At 0005UTC on the 15th **Harry Richards** (Barton-upon-Humber) heard some adverts and sports news on 1510kHz, which he feels sure came from WNRB in Boston, MA.

Unfortunately, he did not hear the station ident. At best the transmission peaked SINPO 23232.

A very welcome first report came from **Sean Gilbert** in Milton Keynes. He searched the band most nights for transatlantic DX and has heard CJYQ in St.John's, NF on 930kHz with a clear ident on three occasions since the beginning of December. A few nights before he compiled his report on January 24th he heard the Caribbean Beacon, Anguilla on 690kHz.

Following the comments by **Mike Stonebridge** (St.Isidore, Canada) on m.w. transatlantic reception in the opposite direction (LM&S, SWM January 2001) it has been suggested by **Bernard Curtis** (Stalbridge), **Geriart Gill** (Llanfairfechan) and **Richard Reynolds** (Guildford) that the transmission which Mike picked up on 1386kHz probably came from the powerful Russian station at Bolshakovo.

After the Voice of Russia in English has ended, the station is hired each night by an Essex based organisation known as LBH Radio to broadcast their programme in English, which is intended to serve the Gay Community. Recently this has commenced at 2100UTC and

has continued well into the early hours of the morning.

The listeners who searched the band after dark for the sky waves from m.w. stations in the Middle East, N.Africa, Europe and Scandinavia compiled some interesting logs - see chart. Commenting upon the new VOA service to central Europe from Munich on 1197kHz. **Simon Hockenhill** says "In Bristol the signal far outweighs the Virgin signal from Gloucester even before local dark".

The quest for distant local radio stations was undertaken by **Brian Keyte** from his home in Gt.Bookham during January and he compiled an interesting list - see chart. He says "The main changes I noticed was that all Classic Gold stations, except for Classic Gold 954/1530 (Hereford and Worcester), are now 'Classic Gold Digital' in all announcements. The original name is still often added, rather as an afterthought (e.g. Classic Gold Digital WABC, etc.). My local 'Breeze' on 1521kHz, not previously a 'Classic Gold', has joined the same group as 'Classic Gold Digital (Breeze)!' The other 'Breeze' in Essex (1359 & 1431kHz) has not changed. The Classic Gold Digital programme is really digital on the Sky Digital satellite channel 919".

## Short Wave Reports

At present only two broadcasters are known to be active in the 25MHz (11m) band - Deutsche Welle (DW) on 25.740 (Ger to S/SE Asia 0800?-1600?) and R.France International (RFI) on 25.820 (Fr to E/C.Africa 0900-1300). The introduction of new broadcast schedules on March 25 may alter this situation but details of the changes were unknown when this article was being prepared during early February.

The SINPO ratings noted by listeners in the UK for DW were 35232 at 0905 in Newry; 45534 at 0927 by **Vic Prier** in Colyton; 35433 at 0930 in Stalbridge; 25442 at 0937 in Storrington; 55544 at 1026 in Guildford; 25542 at 1102 by **David Edwardson** in Wallsend; 35343 at 1110 by **Fred Wilmshurst** in Northampton; 34422 [with echo] at 1140 by **Rhoderick Illman** in Oxted; 25522 at 1355 in E.Bristol.

Those for RFI were rated 25222 at 0906 in Newry; 35433 at 0925 in Stalbridge; 25443 at 0939 in Storrington; 45523 at 0942 in Colyton; 55544 at 1023 in Guildford; 25522 at 1050 in E.Bristol; 35543 at 1105 in Wallsend; 35433 at 1125 in Northampton; 34433 at 1143 in Oxted.

Quite a different situation exists in the 21MHz (13m) band and many broadcasts from stations in several continents reach our shores during the day. The most distant originate from R.Australia, although they are intended for other areas. During the early morning their broadcast to Pacific areas via Shepparton may be received on 21.725 (Eng 0200-0900). In Colyton, Devon their transmission was rated SINPO 24432 at 0832. It has also been reaching Cyprus, where it was noted as 24552 at 0555 by **John Parry** in Lamaca. At 0900 they change frequency to 21.820, also their beam heading to Asia (Eng 0900-1400). In Wallsend it was rated 23532 at 0910, but sometimes reception improves later. At 1115 it was rated 33443 by **David Hall** in Morpeth.

Some of the other broadcasts that may be heard here during the morning originate from DW via Nauen? 21.780 (Ger to Africa 0600-1000), rated 24322 at 0735 by **Peter Pollard** in Rugby; R.Pakistan 21.465 (Eng, Ur to Eur) 44333 at 0800 by **Sheila Hughes** in Morden; R.Prague, Czech Rep 21.745 (Eng to E.Africa, S.Asia 1000-1030) 55555 at 1005 by **Stan Evans** in Herstmonceux; R.Japan via ? 21.765 (Eng to ?) 24122 at 1020 in Newry; R.Ext.España via Noblejas 21.570 (Sp to S.America 1000?-1700) 45544 at 1035 in Northampton; UAER, Dubai 21.605 (Eng to Eur 1030-1055) 22222 at 1035 by **Thomas Williams** in Truro; VOIRI Tehran 21.470 (Eng to Australia 1100-1230) 34443 at 1110 by **Michael Casey** in Manchester; Swiss R.Int via Sottens 21.770 (Eng, Ger, Fr, It to Asia 1100-1330) 24332 at 1158 in Oxted.

Later, UAER, Dubai on 21.605 (Eng to Eur 1330-1350) was rated 43443 at 1330 by **Tom Winzor** in Plymouth; BSKSA Riyadh, Saudi Arabia 21.705 (Ar to W.Europe 0600-1500) 54444 at 1450 by **Robert Hughes** in Liverpool; RAI Rome 21.520 (It [sport] to E.Africa 1345-1700 Sun) 55545 at 1527 in E.Bristol; RAI Rome 21.535 (It [sport] to S.America 1345-1700 Sun) 35533 at 1528 in E.Bristol; WYFR Kdoechobee, USA 21.455 (Eng, Fr, Ger to Eur 1600-2100?) 44444 at 1610 by **Vera Brindley** in Woodhall Spa;

### Long Wave Chart

Freq (kHz)	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	E*,F*,H
153	Donebach DLF	Germany	500	B,C,D,E*,F
153	Bist	Romania	1200	F*
162	Alfauit	France	2000	B,C,D,E*,F,H
171	Nador Mod1	Morocco	2000	A*,F*
171	Bolshakovo etc	Russia	1200	S*,F*,H
177	Oranienburg	Germany	500	B,C,D,E*,H
183	Swerbit	Germany	2000	B,C,D,E*,H
189	Gufuskalar	W.Iceland	300	A*,F*
189	Gufuskalar RUC	W.Iceland	500	B,C,D,E*,H
207	Munich DLF	Germany	500	A*,C,D,E*,F
207	Estel	E.Iceland	100	A*
207	Azilal	Morocco	800	A*,E*,F*
216	Almancos RMC	S.France	1400	B,C,D,E*,F,H
232	Priskaj B-3	Finland	1	B*,C,D*,H
234	Brecovan	Luxembourg	2000	C,D,E*,F,H
243	Kalundborg	Denmark	300	A,B,C,D,E*,F,H
257	Antenne 2B2	France	500	C,D,E*,F,H
261	Berg H Noord	Germany	85	D,E*,H
261	Radio Moscow	Russia	2500	B*
270	Topolna	Czech Rep	500	B*,C,D,E*,F*,H*
279	Sesnyoy	Russia	500	A*,B*,C,D,E*,F*,H*

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) Eddie McKeown, Newry
- (D) George Millmore, Wootton, IOW.
- (E) Fred Pallant, Storrington
- (F) Ernie Strong, Ramsey, Cambs.
- (G) Bruce Watt, W.London.
- (H) Fred Wilmshurst, Northampton
- (I) Tom Winzor, Plymouth.



## Tropical Bands Chart

Freq (MHz)	Station	Country	UTC	DXer	Freq (MHz)	Station	Country	UTC	DXer
4.890	R Port Moresby	Pap N Guinea	2049	I, J	4.890	R Port Moresby	Pap N Guinea	2049	I, J
4.895	AIR Kunming	India	1548	M	4.895	AIR Kunming	India	1548	M
4.895	Pakistan BC	Pakistan	1635	I	4.895	Pakistan BC	Pakistan	1635	I
4.910	Hainan 2 V of Strait	China	2154	M	4.910	Hainan 2 V of Strait	China	2154	M
4.905	Anhangera	Brazil	0500	E	4.905	Anhangera	Brazil	0500	E
4.910	Tennant Creek	Australia	2132	I, M	4.910	Tennant Creek	Australia	2132	I, M
4.910	AIR Jaipur	India	1632	A, I, M	4.910	AIR Jaipur	India	1632	A, I, M
4.915	R Anhangera	Brazil	0601	M	4.915	R Anhangera	Brazil	0601	M
4.915	R Jucora, Macapa	Brazil	0333	E	4.915	R Jucora, Macapa	Brazil	0333	E
4.915	GBC-1, Accra	Ghana	2119	A, L, M	4.915	GBC-1, Accra	Ghana	2119	A, L, M
4.915	KBC 2000, Sio Nwirobi	Kenya	0435	F, M	4.915	KBC 2000, Sio Nwirobi	Kenya	0435	F, M
4.920	R Quito Quito	Ecuador	0739	M	4.920	R Quito Quito	Ecuador	0739	M
4.920	AIR Chennai	India	1635	I	4.920	AIR Chennai	India	1635	I
4.930	R Intemacromat	Honduras	0245	E, M	4.930	R Intemacromat	Honduras	0245	E, M
4.930	AIR Shrija	India	1557	I	4.930	AIR Shrija	India	1557	I
4.935	KBC Gen Sec Nwirobi	Kenya	2058	I, M	4.935	KBC Gen Sec Nwirobi	Kenya	2058	I, M
4.940	AIR Guwahati	India	1638	I	4.940	AIR Guwahati	India	1638	I
4.950	AIR Srinagar	India	1559	I	4.950	AIR Srinagar	India	1559	I
4.950	VDA via Sao Tome	Sao Tome	2050	H, I, M	4.950	VDA via Sao Tome	Sao Tome	2050	H, I, M
4.950	VDA via San Tome	Sao Tome	0549	M	4.950	VDA via San Tome	Sao Tome	0549	M
4.975	R Uganda, Kampala	Uganda	2052	E, I, M	4.975	R Uganda, Kampala	Uganda	2052	E, I, M
4.980	Ecoss del Torbas	Venezuela	0248	A, E, F, M	4.980	Ecoss del Torbas	Venezuela	0248	A, E, F, M
4.985	R Brazil Central	Brazil	0629	M	4.985	R Brazil Central	Brazil	0629	M
4.990	Hunan, Chongsha	China	1559	M	4.990	Hunan, Chongsha	China	1559	M
4.990	AIR Int Service	India	1624	I, M	4.990	AIR Int Service	India	1624	I, M
4.990	FRCN Lagos	Nigeria	0553	M	4.990	FRCN Lagos	Nigeria	0553	M
4.990	R Ancash, Huaraz	Peru	0647	M	4.990	R Ancash, Huaraz	Peru	0647	M
5.005	R Nacional, Bata	Eq Guinea	2026	E	5.005	R Nacional, Bata	Eq Guinea	2026	E
5.005	R Nepal, Kathmandu	Nepal	051	M	5.005	R Nepal, Kathmandu	Nepal	051	M
5.009	R TV Malagasy	Madagascar	1645	I	5.009	R TV Malagasy	Madagascar	1645	I
5.010	R Girona	Cameroon	1656	M	5.010	R Girona	Cameroon	1656	M
5.010	Guangxi 2, Nanning	China	2132	I, M	5.010	Guangxi 2, Nanning	China	2132	I, M
5.010	AIR Thiruvananthapuram	India	0027	A, I	5.010	AIR Thiruvananthapuram	India	0027	A, I
5.020	La V de Sola Niamey	Niger	2052	D, E, H, I, L, M	5.020	La V de Sola Niamey	Niger	2052	D, E, H, I, L, M
5.025	R Rankau	Berlin	2121	I, M	5.025	R Rankau	Berlin	2121	I, M
5.025	R Pinar del Rio, Habana	Cuba	0833	E, M	5.025	R Pinar del Rio, Habana	Cuba	0833	E, M
5.030	AWR Latin America	Costa Rica	0808	E	5.030	AWR Latin America	Costa Rica	0808	E
5.035	R Ananimita	Brazil	0722	M	5.035	R Ananimita	Brazil	0722	M
5.035	R Bangui	C.Africa	0515	E, M	5.035	R Bangui	C.Africa	0515	E, M
5.047	P. Togo, Lome	Togo	2053	E, H, I, L, M	5.047	P. Togo, Lome	Togo	2053	E, H, I, L, M
5.050	Hainan 1 V of Strait	China	2114	I, M	5.050	Hainan 1 V of Strait	China	2114	I, M
5.050	P Tanzania	Tanzania	1840	M	5.050	P Tanzania	Tanzania	1840	M
5.055	Faro del Caribe	Costa Rica	0559	M	5.055	Faro del Caribe	Costa Rica	0559	M
5.055	PFO Cayenne, Matoucy	French Guiana	0639	M	5.055	PFO Cayenne, Matoucy	French Guiana	0639	M
5.060	PBS Xinjiang, Urumqi	China	1607	I, M	5.060	PBS Xinjiang, Urumqi	China	1607	I, M
5.320	CNR 1	China	2106	D	5.320	CNR 1	China	2106	D

- DXers:
- (A) Michael Casey, NE Manchester
  - (B) Bernardo Curtis, Stalbridge
  - (C) Stan Evans, Herstroncoeux
  - (D) Bill Griffith, W London
  - (E) David Hall, Morpeth
  - (F) Simon Hockenhill, E Bristol
  - (G) Robert Hughes, Liverpool
  - (H) Sheila Hughes, Morpeth
  - (I) Fred Pallant, Storrington
  - (J) John Pain, Lameca, Cyprus
  - (K) Clare Pinder, Wiltshire, Appleby
  - (L) Vic Pratt, Colyton
  - (M) Richard Reynolds, Guildford
  - (N) Tom Wenzor, Plymouth

WYFR via Kkeechobee, USA 21.525 (Eng, Fr to Eur, Africa 1600-1900) 33333 at 1610 in Stalbridge.

A few broadcasters are using the narrow 18MHz (15m) band to reach listeners in selected target areas. They include R.Sweden on 18.960 (Eng to N.America 1230-1300), rated 55555 at 1248 in Plymouth; R.Sweden, Stockholm on 18.960 (Eng, Sw to N.America 1330-1430) 55555 at 1334 in Newry & 25422 at 1431 in E.Bristol; Christian Science BC via WSHB Cypress Creek 18.910 (Fr, Eng to E.C.Africa 1600-2000) 54444 at 1615 in Stalbridge & 35343 at 1710 in Northampton; WYFR Kkeechobee, USA 18.980 (Eng to Africa, Eur 1600-2200?) 34423 at 1747 in Colyton & 25322 at 1932 in Rugby.

In contrast, the level of activity in the 17MHz (16m) band is quite high during the day. During the early morning good reception of R.Australia's broadcast to Asia via Shepparton on 17.750 (Eng 0000-0500, 0600-1100) has been reported by listeners in the UK. In Herstroncoeux it was a potent 44444 at 0830.

Also mentioned in the reports were Israel R. Jerusalem 17.535 (Heb [Home svce relay] to N.America), rated 45434 at 0915 in Colyton; R.Bulgaria, Sofia 17.500 (Eng to Eur 1200-1300) 54444 at 1250 in Plymouth; R.Canada Int via Sackville 17.710 (Eng to America 1300-1400) 44333 at 1300 in Morden; R.Finland via Pori 17.660 (Eng to W.Eur, N.America 1330 1400) 34434 at 1330 by Gerald Guest in Dudley; R.Sweden 17.505 (Eng to Australia 1430-1500) 44444 at 1430 in Truro; DW via Rwanda 17.795 (Ger to E.Africa?, M.East?) 44554 at 1455 in Larnaca, Cyprus; DW via Antigua, W.Indies 17.765 (Ger to S.America 1400-1700) 32122 at 1505 in Liverpool; VOA via Morocco 17.895 (Eng to Africa 1600-1800) 55545 at 1615 in Stalbridge; BBC via Sackville, Canada 17.840 (Eng to W.America 1700-1900?) 44344 at 1741 in Woodhall Spa; Channel Africa via Meyerton 17.870 (Eng to W.Africa 1800-1830?) 45344 at 1800 in Newry; WHRI via Maine, USA 17.650 (Eng to Eur, M.East, Africa 1600?-2200) 34333 at 1944 in Rugby; R.Netherlands via Bonaire, Ned.Antilles 17.605 (Eng to C.W.Africa 1830-2030, Dut 2030-2125) 45544 at 2005 in Northampton; HCJB Quito, Ecuador 17.660 (Eng to Eur 1900-2200) 35433 at 2022 in E.Bristol.

R.N Zealand's broadcasts to Pacific areas in the 15MHz (19m) band have been attracting the attention of listeners in the UK during the early morning. Their 100kW

## 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
1260	Sabras/Sol, Leicester	I	0.28	E, G	1260	Sabras/Sol, Leicester	I	0.28	E, G
1278	C. Galy 1278 W York	I	0.43	F	1278	C. Galy 1278 W York	I	0.43	F
1295	Radio X, Birmingham	I	5.00	A, D, E, F, G	1295	Radio X, Birmingham	I	5.00	A, D, E, F, G
1305	Premier via ?	I	0.50	D, E, F, G	1305	Premier via ?	I	0.50	D, E, F, G
1305	Touch AM, Newport	I	0.20	E	1305	Touch AM, Newport	I	0.20	E
1323	Capital C, Southwick	I	0.50	B, D, E, G	1323	Capital C, Southwick	I	0.50	B, D, E, G
1323	Southampton, Bristol	B	0.63	D	1323	Southampton, Bristol	B	0.63	D
1332	Premier, Bathurst	I	1.00	D, E	1332	Premier, Bathurst	I	1.00	D, E
1337	C. Galy 1337, P. to	I	0.60	D, F, G	1337	C. Galy 1337, P. to	I	0.60	D, F, G
1337	Wiltshire Sound	B	0.30	D, I	1337	Wiltshire Sound	B	0.30	D, I
1359	Berlin, Gaimalard	I	0.28	0	1359	Berlin, Gaimalard	I	0.28	0
1359	C. Galy 1359, City	I	0.27	D, E, G	1359	C. Galy 1359, City	I	0.27	D, E, G
1359	R. Selent, Bourne	B	0.85	E, G	1359	R. Selent, Bourne	B	0.85	E, G
1368	R. L. Pool, H.	B	2.00	F, G	1368	R. L. Pool, H.	B	2.00	F, G
1388	Southern Counties R	B	3.00	D, E	1388	Southern Counties R	B	3.00	D, E
1368	Wiltshire Sound	B	0.10	E	1368	Wiltshire Sound	B	0.10	E
1413	R. Gloucester via ?	B	?	G	1413	R. Gloucester via ?	B	?	G
1413	Premier via ?	I	0.50	D, E, F	1413	Premier via ?	I	0.50	D, E, F
1413	Fresh AM, Skipton	I	0.10	F	1413	Fresh AM, Skipton	I	0.10	F
1431	B. G. G. G. G.	I	0.35	B, D, E, F	1431	B. G. G. G. G.	I	0.35	B, D, E, F
1431	C. Galy, P. to	I	0.14	D, E, G	1431	C. Galy, P. to	I	0.14	D, E, G
1449	R. Peterborough, Cambs	B	0.15	D, E, F, G	1449	R. Peterborough, Cambs	B	0.15	D, E, F, G
1458	Sunrise, London	I	50.00	D, E, F, G	1458	Sunrise, London	I	50.00	D, E, F, G
1458	Atlas Network, Langley	B	5.00	D, E, G	1458	Atlas Network, Langley	B	5.00	D, E, G
1485	C. Galy, W. York	I	1.00	D, G	1485	C. Galy, W. York	I	1.00	D, G
1485	R. Humberside (HU)	B	1.00	F	1485	R. Humberside (HU)	B	1.00	F
1485	R. Merseyside	B	1.20	E	1485	R. Merseyside	B	1.20	E
1485	Southern Counties R	B	1.00	D, E	1485	Southern Counties R	B	1.00	D, E
1503	R. S. A. G. G.	B	1.00	B, C, D, E, G	1503	R. S. A. G. G.	B	1.00	B, C, D, E, G
1521	Box 2, P. to	I	0.64	B, D, E, G	1521	Box 2, P. to	I	0.64	B, D, E, G
1530	R. E. G. G. G.	B	0.15	D, E, F	1530	R. E. G. G. G.	B	0.15	D, E, F
1530	C. Galy, P. to	I	0.52	E, G	1530	C. Galy, P. to	I	0.52	E, G
1548	R. Bristol	B	5.00	E	1548	R. Bristol	B	5.00	E
1548	Capita G, London	I	97.50	C, D, E, F	1548	Capita G, London	I	97.50	C, D, E, F
1550	C. Galy A2, N. Hunt	I	0.76	B, D, F, G	1550	C. Galy A2, N. Hunt	I	0.76	B, D, F, G
1557	Capita G, Soton	I	0.50	D, E	1557	Capita G, Soton	I	0.50	D, E
1566	Country, Snd. Guildford	I	0.50	C, D, F	1566	Country, Snd. Guildford	I	0.50	C, D, F
1584	Lender, T. to	I	0.20	D, E	1584	Lender, T. to	I	0.20	D, E
1584	R. Nottingham	B	1.00	B, D, G	1584	R. Nottingham	B	1.00	B, D, G
1584	R. Shropshire	B	0.50	0	1584	R. Shropshire	B	0.50	0
1602	R. Kent	B	0.25	D, E, F, G	1602	R. Kent	B	0.25	D, E, F, 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, Morpeth
- (C) Rhodrick Hillman, Oxford
- (D) Brian Knight, Bookham
- (E) George Millmore, Wootton Bassett
- (F) Eric Strong, Blunham, Cambs
- (G) Fred Wimshead, Northampton
- (H) Tom Wenzor, Plymouth



£99.95

**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 5Db Gain Front to Back Ratio. Complete with mounting hardware. (The Ultimate Receiving Antenna - a must for the Dedicated Listener.)

**ROTATOR AR-300XL**

Rotation Torque-222Kg  
Vertical Load-45Kg  
Mast Size - 28-44mm  
Control Box-230v AC  
Cable-3 core  
Direct Compass Bearings (Ideal for Light to Medium Beams, i.e. LOG PERIODIC above.)

£49.95

**6" STAND OFF BRACKET**

Complete with 'U' Bolts

£6.00

**9" STAND OFF BRACKET**

Complete with 'U' Bolts

£9.00

**MD37 SKY WIRE (LONG WIRE BALUN KIT)**

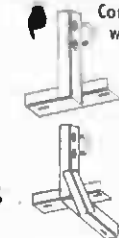
25 METRES OF ENAMELLED WIRE & INSULATOR

FOR USE ON WITH RECEIVER 0 - 40 Mhz. ALL MODE NO ATU REQUIRED 2" 5" POINTS GREATER SIGNAL THAN OTHER BALUNS MATCHES ANY LONG WIRE TO 50 OHMS



**T&K BRACKETS**

Complete with 'U' Bolts



£29.95

**5' SWAGED POLES**

Heavy Duty Ali (1.2mm wall)  
SINGLE 1 1/4" ..... £6.00  
SET OF FOUR 1 1/4" ..... £19.95  
SINGLE 1 1/2" ..... £9.00  
SET OF FOUR 1 1/2" ..... £29.95

**CONNECTORS**

PL259/9 ..... 0.75 each  
PL259/6 ..... 0.75 each  
PL259/7 for mini 8 1.00 each  
BNC (Screw Type) 8 1.00 each  
BNC (Solder Type) 8 1.00 each  
N TYPE for N58 ..... 2.50 each  
N TYPE for RF213 ..... 2.50 each  
SO239 to BNC ..... 1.50 each  
PL259 to BNC ..... 2.00 each  
N TYPE to SO239 ..... 3.00 each

**CABLE**

RG213 MILITARY 0.85 per mtr.  
MINI RF8 ..... 0.85 per mtr.  
RG58 STANDARD 0.35 per mtr.  
RG58 MILITARY 0.60 per mtr.

**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

£39.95

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



**SUPER SCANAIR BASE (Airband)**

(Stainless Steel)  
Freq. Range Receive 117-140MHz  
Transmit 117-140MHz  
Length 825mm  
Connector-N TYPE

This is a transmitting & receiving antenna designed for the aircraft frequency range. (For the control tower & aircraft listener.)

£29.95

**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

**SUPER SCAN STICK II**

Freq. Range 0-2000 MHz.  
Length 1500mm.

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)

**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)

£39.95

**MULTISCAN STICK**

Freq. Range Receive - 0-2000 MHz.  
Transmit 144 - 146 MHz

gain 2.5 Dbd  
420 - 430 MHz gain 4.5 Dbd  
Length 1000 mm.  
Although marginally compromising sensitivity the multi scan stick has with 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.)

£89.95

**IVX 2000**

Freq. Range Receive - 0-2000 MHz.  
Transmit 50 - 52 MHz

gain 2.00Dbd  
144 - 146 MHz gain 4.00 Dbh  
420 - 430 MHz gain 6.00 Dbd  
Length 2.5 m.  
For external use but at a price can be used in the loft. It has been finely tuned to make this antenna the best there is. It has stainless steel radials and hardware. (THE BEST)



**MWA HF Wire Antenna Mk11**

Freq 0.05MHz-40MHz Adjustable comes with 25 metres of H/Grade flexweave antenna wire. 10 metres of military spec RG58 coax cable feeder, insulated guy rope, dog bone & choke balun. All Mods No A.T.U. required. Super Duper Short Wave Antenna.

£59.95

**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

**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

**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



**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.)

£39.95

**ROYAL DISCONE 2000**

(Stainless Steel)

Freq. Range Receive 25-2000MHz  
Transmit 50-52MHz

144-146MHz 430-440MHz 900-986MHz  
1240-1325MHz

Length 1540mm  
Connector-N TYPE The Ultimate Discone Design.

4.5DB GAIN OVER STANDARD DISCONE! Highly sensitive, with an amazing range of transmitting frequencies, comes complete with mounting hardware & brackets. (The Best There is).

£49.95



**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.)

£39.95



**MRW-100**

(Super Gainer) (Rubber Duck) Wideband extra sensitive Dedicated VHF/UHF all mode Length 400mm PP £2.00

£19.95

**MRW-40 (Rubber Duck)**

Dedicated for Civil & Military Airband VHF/UHF RX & TX Capabilities Length 215mm PP £2.00

£19.95

**MRP-2000 (Pre-amplifier)**

Freq Range 25-2000 Mhz 9-15v input (Battery not included) 14 db Gain. Complete with lead and BNC connectors.

£49.95

**MRP-125 (Pre-amplifier)**

Freq Range 118-137 Mhz 9-15v input (Battery not included) 14 db Gain Complete with lead and BNC connectors.

£44.95

**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)

£24.95

**UK SCANNING DIRECTORY**

7th edition

£19.50

**CIVIL AND MILITARY RECEPTION AIRS**



ADD £6 P&P PER ORDER







(22m) band. Mentioned in the reports were VOA via Tinian Is, Pacific **13.615** (Eng to ? 0800?-1000?), rated 44333 at 0843 in Morpeth; R.Canada Int via Sackville **13.655** (Eng to N.America 1300-1400) 33323 at 1300 in Appleby; R.Austria Int via Moosbrunn **13.730** (Various to Eur, Africa) 33333 at 1435 in Truro; Croatian R, Zargreb **13.830** (Eng, Cr to Eur, N.America) 54444 at 1516 in Plymouth; R.Norway Int **13.800** (Norw to M.East 1500-1529) 54555 at 1525 in Liverpool; WWCR Nashville, USA **13.845** (Eng to Africa 1400-0100) 44444 at 1617 in Woodhall Spa & 44444 at 2230 in Freshwater Bay, IoW; WHRI via Noblesville, USA **13.760** (Eng to E.U.S.A, Eur 1600-2000?) 43333 at 1740 in Morden; Swiss R.Int via Julich, Germany **13.790** (It, Ar, Eng, Fr to Nr East, Africa 1630-1815) 42322 at 1744 in Newry.

Later, VOA via Selebi-Phikwe, Botswana **13.710** (Eng to Africa 1600-1700, 1800-2230) was 44444 at 1845 in Rugby & 25333 at 2008 in E.Bristol; R.Nederlands via Flevo **13.700** (Eng to Africa 1830-2025) 44423 at 1847 in Colyton; R.Havana Cuba **13.750** (Eng to Eur 2030-2130 [best on u.s.b.]) 33323 at 2100 in Stalbridge; R.Canada Int via Sackville? **13.650** (Fr, Eng to Eur, Africa 2000-2200) 35343 at 2135 in Northampton; WEWN Vandiver, USA **13.615** (Eng to N.America 2000?-0000) 24432 at 2247 in Oxted.

Broadcasts from far away places often reach the UK in the **11MHz (25m)** band. However, those from R.Australia can usually be received more clearly in other bands. Their transmission to E.Asia via Shepparton on **11.880** (Eng 0900-1100) was rated 22222 at 1030 in Truro. Later, they change frequency to **11.660** (Eng to Asia 1330?-1700), rated 35543 at 1528 in Wallsend.

Other occupants of this band include R.Prague, Czech Rep **11.600** (Eng to Eur 0800-0830), rated 55555 at 0825 in Herstmonceux; BBC via Woofferton, UK **12.095** (Eng to Eur, N/E.Africa 0600-1700) 44444 at 0930 in Morden; R.Prague, Czech Rep **11.640** (Eng to N.Eur 1130-1157) 45544 at 1145 in Northampton; R.Romania Int, Bucharest **11.940** (Ger, Eng to Eur 1200-1356) 32232 at 1240 in Liverpool; R.Jordan via Al Karanah **11.690** (Eng to W.Eur, E.U.S.A 1330?-1530?) 44444 at 1355 in Freshwater Bay, IoW; China R.Int via ? **11.675** (Eng to Africa 1400-1500) 43344 at 1400 in Dudley; WWCR Nashville, USA **12.160** (Eng to N.America, Eur 1400-2200) 44434 at 1621 in Woodhall Spa; AWR via Agat, Guam **11.980** (Eng to S.Asia 1600-1700) 35444 at 1658 in Manchester; Israel R, Jerusalem **11.605** (Eng to Eur, N.America 1700-1730) 33333 at 1700 in Appleby; R.Japan via Sri Lanka? **11.970** (Eng to M.East? N.Africa? 1700-1800) 43444 at 1725 in W.London; AIR via Bangalore **11.620** (Eng to Eur 1745-1945) 42433 at 1802 in Colyton; R.Canada Int via Skelton? **11.720** (Eng to Eur, Africa 1800-1900) 44344 at 1814 in Newry; VOA via Botswana **12.080** (Fr to Africa 1830?-2030) 34444 at 2007 in Storrington; R.Damascus, Syria **12.085** (Eng to Eur 2005-2105) 33333 at 2011 in Plymouth; WEWN Vandiver, USA **11.875** (Eng to N.America 2000-?) 43334 at 2120 in Stalbridge; BBC via Kranji, Singapore **11.955** (Eng to Asia? 2200-0000) 44333 at 2259 in Oxted; BBC via Ascension Is **12.095** (Eng to S.America 2100-0300) 25332 at 0000 in E.Bristol.

Received before noon in the **9MHz (31m)** band were R.Bandeirantes, Sao Paulo, Brazil **9.645** (24hrs), rated 25343 at 0622 in Guildford; HCJB Quito, Ecuador **9.780** (Eng to Eur 0700-0900) 54444 at 0700 in Appleby; R.Finland via Pori **9.510** (Eng to W.Eur, Australia 0730-0800) 55555 at 0750 in Herstmonceux; R.Vilnius, Lithuania **9.710** (Eng to Eur 0930-1000) 44444 at 0930 in Newry; Swiss R.Int via Julich, Germany **9.535** (Eng, Ger, Fr, It to SW.Eur 1100-1330) 33333 at 1100 in Truro; R.Nederlands via Wertachtal **9.855** (Eng to Eur 1130-1325) 54444 at 1131 in Plymouth.

After mid-day R.Australia via Shepparton **9.475** (Eng to Asia 1330-1858) was 33223 at 1340 in Stalbridge; R.Veritas Asia, Philippines **9.580** (Hin 1330-1355) 45554 at 1350 in Larnaca, Cyprus; VOA via Philippines **9.760** (Special Eng to Asia 1500-1600) 34333 at 1555 in Woodhall Spa; Voice of Vietnam, Hanoi **9.730** (Eng to Eur 1600-1630) 24442 at 1620 in Manchester; R.Pyongyang, Korea **9.335** (Sp, Eng to Eur 1800-2000) was 34433 at 1800 in Colyton; R.Thailand via Udon Thani **9.535** (Eng to Eur 1900-2000) 54444 at 1930 in Liverpool; VOA via Kavala? **9.760** (Eng to M.East 1700-2100) SIO 333 at 1932 by Francis Heame in N.Bristol; American Forces Network (AFN) via Sicily on **10.940** (Eng [u.s.b.] 24hrs?) 33333 at 1945 in Morpeth; VOIRI Tehran, Iran **9.022** (Eng to W.Eur 1930-2030) 32223 at 2000 in Dudley; R.Ext.Espana (REE), Spain **9.595** (Eng 2000-2100) 44444 at 2015 in Morden; V of Armenia, Yerevan **9.965** (Fr, Eng to Eur, N.America 1940-2100) 54554 at 2020 in W.London; R.Australia via Shepparton **9.500** (Eng to Asia? 2000-?) 34443 at 2000 in Storrington & 44444 at 2030 in Rugby; R.Cairo, Egypt **9.990** (Eng to Eur 2115-2245) 45544 at 2140 in E.Bristol; R.Taipei Int via WYFR Okeechobee, USA **9.355** (Eng to Eur 2200-2300) 45544 at 2213 in

## LIST OF EQUIPMENT USED - LM&S for S February, #March, \*April 2001.

- S\* Vera Brindley, Woodhall Spa: Roberts R-867 or Sangean ATS-8034 + r.w.
- S\* Michael Casey, Manchester: Roberts RC28 + Howes CTUS a.t.u. + MFJ DSP Filter + 50m loop in loft
- S\* Robert Connolly, Kilskeer: JRC NR0-325 + Temweave DSP3 - filter + Catlog AD-370 or Sangean ATS-8034
- S\* Bernard Curtis, Stalbridge: Realistic DX-400 + rod or r.w. in loft
- S\* David Edwards, Wallsend: The R-600 + 20m long trap dipole.
- S\* Stan Evans, Herstmonceux: Kenwood R-2000 + Bakum + 11m wire in loft
- S\* Sean Gilbert, Milton Keynes: Rascal RA17 or Icon IC-745 + BP34 + 50inch Loop with FET Pre-amp
- S\* Bill Griffith, W.London: JRC NR0-335 + 20m wire.
- S\* Gerald Guest, Dudley: Roberts RC28B - r.w.
- S\* David Hall, Morpeth: ADR AR7000 - Global AT-2000 - 13m wire
- S\* Tony Hall, Freshwater Bay, IoW: Yaesu FRG-7 + 13m wire or RF845
- S\* Francis Heame, N.Bristol: Sharp WD7370 + r.w.
- S\* Simon Hockenfull, E.Bristol: Roberts R876 or AKD HF3 - 10m wire
- S\* Robert Hughes, Liverpool: ADR AR7000 - 15m indoor wire or Drake RBE - RF Systems WTA on roof
- S\* Sheila Hughes, Morden: Sony ICF-7600DS - loop Parasonic DR48 - 10m inverted L
- S\* Rhoderick Hman, Gated, Kenwood R-5000 - r.w. or AN-1, Sony ICF-7600DS
- S\* Brian Keyte, Gt. Bookham, ADR AR7000 + loop or a.t.u. - r.w.
- S\* Brian Keyte, while at Watton Warren: ADR AR7000 - loop.
- S\* Eddie McKeown, Newry: Grundig Yacht Boy 400 or Sangean ATS-818.
- S\* Eddie McKeown, while in Prague: Not stated.
- S\* George Millmore, Woodton IoW: Rascal RA17L - vlf. converter - loop or Sangean ATS818-ACS
- S\* Fred Palant, Storrington: Trio R-2000 - Howes CTUS a.t.u. + r.w.
- S\* John Parry, Larnaca, Cyprus: Realistic DX-354 or Yaesu FT-757 or Realistic DX-400 + r.w.
- S\* Clare Pinder, while in Appleby: JRC NR0-325 - a.t.u. + r.w. or Sony ICF-SW155
- S\* Peter Polars, Rugby: Sony ICF-2001C - r.w.
- S\* Vic Prior, Clayton Rediffon RES11N + a.t.u. + r.w. or loop in loft
- S\* Richard Reynolds, Guildford: Sangean ATS-803A - a.t.u. + 10m T1 antenna or 60m loaded dipole or 11m dipole (all in loft) or loop.
- S\* Harry Richards, Barton-Uson-Humber: Grundig Setelit 700 - AD-270 or r.w. or Grundig Yacht Boy 400 or Matsui MR4099
- S\* Tom Smyth, Co.Ferranagh, Sangean ATS-803A or Morphy Richards R191
- S\* Eric Strong, Remsey (Cambs): Yaesu FRG-6600 or AKD HF3 - Watson Baton or Cakit a.t.u. - 30m wire
- S\* Phil Townsend, London: Lowe HF 225 + pre selector + r.w. or loop
- S\* Martin Verner, St Austell: Yaesu FRG-7700 + FRF-7700 + 30m wire or Sangean ATS-818 + Global AT-100 + 20m wire.
- S\* Bruce Watt, W.London: Roberts R757
- S\* Thomas Williams, Truro: Grundig Yacht Boy 206 or Sharp 5454 - r.w.
- S\* Fred Winshurst, Northampton: Icon IC-700 + Global AT-1000 + r.w. in loft
- S\* Tom Winzor, Plymouth: Kenwood R-2000 or Yaesu FRG-100 - Dating active antenna

Northampton.

In the congested **7MHz (41m)** band some of the broadcasts are intended for listeners in Europe. They include the Christian Science BC via WSHB Cypress Creek, USA **7.535** (Eng, Ger 0400?-1000?), rated 54444 at 0931 in Plymouth; Voice of Vietnam via Russia? **7.440** (Eng 1800-1830) 44444 at 1800 in Morden; R.Slovakia Int **7.345** (Eng 1930-1957) 55555 at 1830 in Rugby; R.Norway Int **7.485** (Norw 1900-1930) 55545 at 1917 in Colyton; Voice of Turkey **7.125** (Eng 1930-2030) 43333 at 1930 in Appleby; R.Bulgaria, Sofia **7.500** (Eng 2000-2100) 45544 at 2015 in Northampton; Voice of the Mediterranean, Malta via Russia **7.440** (Eng 2000-2100) 22222 at 2030 in Truro; AIR via Bangalore **7.410** (Eng, Hin 1745-2230) 32333 at 2105 in Stalbridge; Voice of Russia **7.300** (Eng [WS]) SIO 444 at 2114 in N.Bristol; China R.Int via Skelton? UK **7.170** (Eng 2200-2300) 44344 at 2211 in Newry; R.Bulgaria, Sofia **7.200** (Eng 2200-2300) 54444 at 2213 in Freshwater Bay, IoW; R.Bulgaria, Sofia **7.500** (Eng 2200-2300) 54555 at 2250 in Liverpool.

Amongst those noted to other areas were the Voice of Nigeria, Ikorodu **7.255** (Eng to W.Africa), rated 54544 at 0529 in Guildford & 34443 at 2050 in Storrington; China National R, **7.345** (Chin [CNR-1] 2000-2300) 31222 at 2025 in W.London; World Harvest Radio (WHRI) via Maine, USA **7.580** (Eng to N.America) 45343 at 0017 in Newry; VOA via Kavala **7.200** (Eng 0100-0300) 45544 at 0135 in E.Bristol.

Many of the broadcasts in the **6MHz (49m)** band are for listeners in Europe. Some originate from Bayerischer Rundfunk, Germany **6.085** (Ger 24hrs), rated 45544 at 1712 in Colyton; R.Polonia (Polish R.) Warsaw **5.995** (Eng 1800-1900) 43333 at 1830 in Morden; Swiss R.Int via Vatican State, Italy **6.165** (Ger, It, Fr, Eng 1830-2030) 54555 at 1905 in Liverpool; R.Slovakia Int **5.915** (Eng 1930-2000) SIO 333 at 1956 in N.Bristol; R.Sweden **6.065** (Eng) 33333 at 2037 in Truro; R.Prague, Czech Rep. **5.930** (Eng 2100-2127) 44444 at 2100 in Dudley; R.Canada Int via Skelton, UK **5.995** (Eng 2100-2130? Sun) 45343 at 2130 in Northampton; R.Taipei via Skelton? **5.810** (Eng 2200-2300) 33233 at 2200 in Appleby; Vatican R, Rome **5.880** (It) 34333 at 2200 in Rugby; R.Budapest, Hungary **6.025** (Eng 2000-2230) 43343 at 2206 in Newry.

Noted to other areas were R.Diff.TV Mali via Bamako **5.995** (Nat. Radio 0600-0000) logged as 55444 at 0715 in Guildford; WEWN Birmingham, USA **5.825** (Eng to N.America 2200?-1400?) 33333 at 0925 in Plymouth; China National R. **6.750** (Chin [CNR-1] 2000-0100) 44444 at 2015 in W.London; BBC via ? **5.875** (Ind 2200-2300) 42442 at 2209 in Oxted; WHRI South Bend, USA **5.745** (Eng to N.America 2100?-1000) 54435 at 2322 in Stalbridge; BBC via Sackville, Canada **6.175** (Eng to USA 2200-0500) 43433 at 0125 in E.Bristol; R.Havana, Cuba **6.000** (Eng to N.America 0100-0500) 33333 at 0257 in Morpeth.

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

Signal Strength	
5	excellent
4	good
3	fair
2	poor
1	barely audible
Interference	
5	nil
4	slight
3	moderate
2	severe
1	extreme
Noise	
5	nil
4	slight
3	moderate
2	severe
1	extreme
Propagation Disturbance	
5	nil
4	slight
3	moderate
2	severe
1	extreme
Overall Merit	
5	excellent
4	good
3	fair
2	poor
1	unusable



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Prof quality base antenna for AIRBAND. (Civil & military). With SO-239 fitting (1.7m long). Gain 4.5/7dB.

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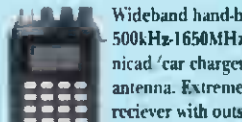


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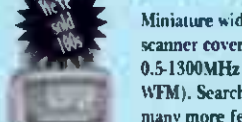


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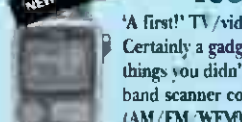


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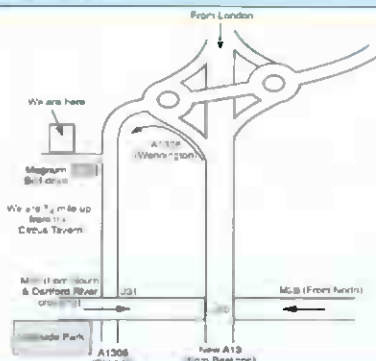
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# Off The Record



I recently received an E-mail from **Mary Payne** who runs what would at first appear to be a very strange outfit called the 'Knees Club'. The story about the club's connection between the pirate ship Radio London and the joint halfway down one's leg is slightly obscure, particularly to those that never heard the station.

Mary has been in contact with some of the original crew who served during the war on the minesweeper USS *Density* and saw extensive action in the Pacific Ocean. It seems that many of the ex-US Naval personnel, who had been attending annual reunions since 1960, were quite unaware of the second career their ship had as a floating radio station.

The USS *Density* was launched during February 1944 and later took part in the invasion of Okinawa and strikes against the Japanese homeland, after which the ship was awarded three battle stars for WW2 service. After a period in reserve, the ship was finally decommissioned in 1947 and eventually sold to a Greek shipping company and renamed *Manoula*.

In August 1964 the ship had its name changed once again, this time to the *Galaxy* as that had been one of the names considered for the new marine radio station. However, it was later decided to come on air as Radio London and test broadcasts started towards the end of December 1964.

Radio London closed down on 14 August 1967 and the MV *Galaxy* was towed to a dock near Hamburg in Germany where it remained abandoned. Partly due to unpaid harbour charges, the vessel was moved to Keil in Northern Germany. There were several unsuccessful attempts to buy and restore the radio ship, but sadly no agreement was ever reached and the *Galaxy* gradually sank into the mud by some old submarine pens.

The ship made her final journey, lifted by a giant crane and taken to a nearby ship breakers yard during August 1986. This was a sad end for the vessel that provided so much entertainment from 'The mast with the most'.

For more information of forthcoming Radio London activities try a seemingly obvious website [www.radiolondon.co.uk](http://www.radiolondon.co.uk) Plans include a 'Big L' RSL from Clacton Pier, Essex, this summer, 28 days from 4th August on 1134kHz - more on this page very soon.

## Sealand Calling

The proposed DXpedition that was supposed to take place from Roughs Tower - also known as Sealand, at the beginning of December - did not take place. News received here suggested that the event had been postponed.

The Radiocommunications Agency did publish a stern warning to British amateur radio operators saying that any radio contact with unauthorised callsigns, particularly from Sealand, would be unlawful. I did contact Sealand (not by radio!) but by E-mail via their [www.havenco.com](http://www.havenco.com) website to enquire if they, as part of their Internet business, would be running a web radio station on behalf of the Sealand Government. Their reply was that there were no plans for this, but customers could use their offshore servers for this kind of activity if they wished.

## Open Forum

The Radiocommunications Agency have fairly recently been holding open forum meetings for amateur radio and also CB operators. I received two invitations, one for each mode for a venue in Edinburgh. I am unsure how many of these meetings they have, but for me in South East England the prospect of travelling over 600km each way was not exactly inviting. Among the new proposals is a Foundation Licence for novice amateurs with v.h.f. up to 25W and a new callsign book for CB users.

You may be well aware of the government's intention to merge all the radio, television and communications regulatory bodies into a single body called 'Ofcom'. Older readers will remember when a single authority existed once before and was simply called the GPO.

## Digital Satellites

Radio Caroline has found that they are losing listeners as people upgrade their TV systems from analogue to digital. Caroline has extended its programming, but are at present only on the old analogue transponder. The station seemed not to have warned listeners that they are not yet available on the new digital system. Ideally Radio Caroline would like to break away from this TV technology and become portable once again, possibly using a direct broadcast satellite like WorldSpace.

A change in programme policy means that are now playing more pop music rather than their traditional rock and I am informed that they are now carrying the Pepsi Top 40 chart show each Sunday between 1700 and 1900. With the imminent closure of this analogue service, possibly as soon as 31st March, the future of Radio Caroline's satellite service is very much in doubt.

To be fair, there was only the BBC, amateur radio and the General Post Office in those days. At least we may get away from the confusion of having two radio regulators with the same initials, Radio Authority and Radiocommunications Agency.

## Programmes From Overseas

Since the beginning of the year, the German language station Mega Radio is being aired by Radio Luxembourg on 1440kHz during the day in place of The Oldies Sender. At present, the oldies are still being broadcast during the evenings, however, reports suggest that from 2300 a new English Service will eventually occupy the frequency. The return of a new UK service on the old '208 metres' 1440kHz during the late evenings has been topic for speculation for over a year.

The two long wave projects appear to be going ahead despite my initial pessimism. The Delta 171 - a Dutch consortium - have now taken the UK's Wireless Group as partners and intend to broadcast as 'The Lounge 171' with an easy listening format from antenna towers mounted at sea off the coast of Holland. The Wireless Group have a number of commercial radio stations and is headed by **Kelvin MacKenzie**, a former editor of *The Sun* newspaper.

**Paul Rustling** of the Isle of Man Broadcasting Company 'Musicmann 279' has informed me that their long awaited planning permission for their antenna site has now unfortunately been refused on environmental grounds. He is confident the problems will eventually be solved and that his new crossed field antenna will be situated elsewhere on the Isle of Man.

As a last resort, they have actually considered placing the antenna aboard a ship, like the MV *Communicator* in Holland. The format for this proposed station has not officially been revealed, however, at one point **Roger (Twiggy) Day** was part of a proposed line-up that perhaps suggests a fun loving station for the over 40s.

Norway is now to continue with l.w. broadcasting after a considerable struggle to reactivate their 216kHz frequency. The original transmitter had been built in 1954 and I believe was closed in 1995 by the government operator NRK when the lease for the site and probably the life of the equipment was coming to an end. According to **Bernt Erfjord** the l.w. frequency allocation to Norway is for 1200kW on 216kHz.

**Svenn Martinssen** and **Paul Rustling** have, over the years, managed to persuade the Norwegian Government to authorise another user for this channel. There appear to be two interested groups. The first is Northern Star International who would put a transmitter towards the very south of Norway to attract an international audience and the other is a station for Tamils in Norway, who would place their transmitter just outside Oslo. A decision is expected during the summer with a possibility of the successful broadcaster coming on air early next year.

Radio Northsea International is scheduled to make a return in the shape of another RSL from the Lightship No 18 from Harwich, Essex, from 28th May - the usual frequency is 1175kHz. Sea Containers Ltd. sold Lightship 18 to a trust that hopes to preserve the ship as a radio museum. Station Manager for this event will be **Colin Lamb** who replaces **Paul Graham** who now works for another station.

## Listener's Choice

**Steve Thomas** of South East London has sent me a list showing a dozen of his recent short wave pirate radio catches. You too can send me a short list of your pirate listening for future inclusion in this page

- 1) Boomerang
- 2) Mi Amigo
- 3) Mike Radio
- 4) Blackbeard
- 5) Pamela
- 6) Nova
- 7) Marabu
- 8) Borderhunter
- 9) Laser Hot Hits
- 10) Ozone
- 11) Level 48
- 12) Radio Free London

## Bob Tomalski

It has been very sad to hear of recent death of technical radio journalist of Bob Tomalski. He regularly appeared on Radio Netherlands, GLR, LBC and Capital Radio as well as Sky TV News. Bob started his distinguished career as 'Roger Tate' on several London pirates. He died of a heart attack on Saturday 13th January, he was 47.

## Coming up

The next 'Off The Record' will be in June and I will be looking at how new communications technology pioneered in the aircraft industry will be benefiting hospital patients in all large NHS hospitals very soon.







As you see on the chart, I'm not going away from Midhurst, but in fact towards it, but on that same imaginary line. My cockpit instrument shows the reciprocal course, 180° different, that is 247° to be exact.

The cockpit instrument has a moving line in a window and also a dial on which to select the required track. I set 247° on the dial and then steer the aircraft so as to keep the moving line centred in the display. This means that I'm flying the aircraft along the required imaginary line towards the beacon. The moving-line instrument is called a Horizontal Situation Indicator.

From the turning point, it's a quick 12nm to the Midhurst beacon and, on overflying it, a slight right turn is called for. I'm now steering away on the MID R261 line (R means radial, a precise term for the imaginary line that I'm following). So I alter course from 247° to 261° (as referenced to a magnetic compass) which is only  $261 - 247 = 14°$  to the right. In the cabin, you'll just notice this turn if you pay close attention. If conditions are just right, the shadow of the fuselage on the wing will alter position as the aircraft banks.

Another 28nm brings us to Southampton v.o.r. where the procedure ends, but our flight plan takes us over The Needles, turning left to head south along airway UN866.

## STARS

We're going to leave our gallant crew at that relatively relaxing moment when they're established on the upper airways. I've found time for a nibble of some chocolate and Chris has started pestering the cabin attendant for cups of tea. If you're unsure what to send us at Christmas, chocolate bars and tea bags will do.

Another of the same company's flights is arriving at London Heathrow from Liverpool via airway A1. The flight plan takes it over the Honiley v.o.r. at Flight Level 140 (shows as 14000ft on an altimeter set to standard pressure 1013hPa). London Airways (131.125MHz) then instructs the flight to continue

according to the Bovingdon BNN 1A STAR (Fig. 2).

Just like the SID, this is another procedure involving navigation by instruments and beacons. This time, though, the procedure ends at a defined point close to the destination airport. From there, the radar controller will vector the aircraft for landing.

The Bovingdon v.o.r. beacon is the end-point of this procedure and the chart shows the three runways at Heathrow to be south of the beacon and close to the London v.o.r. The flight we're following passes Honiley on a track of 144° magnetic (following the beacon's radial line) and has 40nm to run until overflying the Westcott n.d.b. The two racetrack shapes at Westcott are en-route holding patterns, hopefully little used.

On passing Westcott (remember that the needle of the Radio Magnetic Indicator, tuned to 335kHz, turns a half-circle) the aircraft turns left to track the 301° Bovingdon v.o.r. radial. Now, once again, we have the situation that the flight is going towards the beacon along an imaginary radial line. The magnetic course will be the reciprocal,  $301 - 180 = 121°$  in fact. Only 17nm later, the beacon is overflown.

Flight is in three dimensions and I haven't mentioned



Chris and Godfrey ready to take off!

altitude. By the time the aircraft is within 25nm of Bovingdon (as shown on the d.m.e.) the aircraft should not be above FL150 (that's 15000ft on an altimeter set to standard pressure). This is listed in the Descent Planning column of the boxed table at the bottom of Fig. 2.

There's even more to think about. A line of little stars is drawn through the Westcott beacon on the chart, marked SLP. This is the Speed Limit Point, passing which the aircraft must not exceed 250kt. This helps the controller co-ordinate the flight with other traffic, assures that descents cause a steady, known, change in height over time, and avoids a fast aircraft straying too far off track during a turn. Like speed

limits on the road, these restrictions are there for a good reason!

Arriving at Bovingdon, there's another race-track hold that is often used to 'stack' incoming flights, each following the same path, but at their own exclusively-assigned level (1000ft separation between each layer in the stack). When clear, the radar controller (No.1 Director 119.725MHz) will bring the aircraft off the stack and, when landing in a westerly direction, the aircraft will first fly south-east over my Museum!

## Abbreviations

AIP	Aeronautical Information Publication
CAA	Civil Aviation Authority
CD-ROM	Compact Disc - Read Only Memory
DC-	Douglas Commercial
d.m.e.	distance measuring equipment
FL	Flight level
ft	feet
hPa	hectopascals
ICAO	International Civil Aviation Organisation
kHz	kilohertz
kt	knots
MHz	megahertz
n.d.b.	non-directional beacon
nm	nautical miles
QNH	altimeter pressure setting, reads height above sea level
v.o.r.	very high frequency omni-directional radio range

## An Offer

How would you like to see the various instruments described in this article? They are all to be found in my Museum. To arrange an appointment to visit, drop me a line stating your evening telephone number and I'll call you back - details at the head of page 26.

For this article, I've described the conventional mechanical instruments that are still in widespread use and are of the type seen in my Museum. Most modern airliners simulate an image of these instruments on cathode ray tube display monitors, but the information shown is still read in the same way and means just the same.

Recent aircraft don't always need to actually receive beacons. The locations of the beacons are programmed in to the on-board Flight Management Computer. Also in the aircraft is an Inertial Reference System that works out the current position by measuring acceleration and time. Once found only in spacecraft destined for the Moon, this technique has become common in civil airliners. Technology makes progress but only provides new ways of doing the same old things.





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■ GODFREY MANNING G4GLM, C/O THE GODFREY MANNING AIRCRAFT MUSEUM, 63 THE DRIVE, EDGWARE, MIDDLESEX HA8 8PS

# Airband

As an author, it's hard for me to know at what level of difficulty I should set my Christmas Quiz. The photograph in the January issue was of G-NACA, a Norman NAC-2 *Freelance*. That's the same name as in Britten-Norman (now Pilatus) *Islander*.

The only entry was from **Michael Hill** (Brackley) who wondered if it was a high-wing Cessna. The folding wings, intended to save on hangarage, gave the clue that it wasn't. The wing struts on Cessnas make such a design impossible. So, no winner this year, but Michael gets his name in bold type as a shining example to all: at least he tried.

So, what do you think about competitions? Are they so routine and mundane that you're no longer interested? Are they something that only other people win? Was the question so simple that you didn't bother answering, as you knew that there would be plenty of other entries? Was it so difficult that you all knew

that you stood no chance? Would you rather submit an answer to a written question, instead of identifying a picture? I'd like to know, and the threat is, unless you tell me, I'll keep on boring you with unwanted competitions every year!



**Bölkow Junior.**  
Christine Mlynsek

## Information Sources

Let me make you two offers! The 8.33kHz channels in the civil v.h.f. airband are on awkward frequencies, so controllers 'round' the value to the nearest easily-spoken number. This is done according to an officially-agreed pattern.



**Schempp-Hirth.**  
Christine Mlynsek

If you want to know a frequency/channel pairing, you can write in. If you have access to a computer, send me a floppy disk (3.5in preferred to 5.25in) pre-formatted for the IBM PC along with pre-paid self-addressed return mailing facilities. I'll send you my look-up table which is now in two forms: a hypertext site to

be read by a web browser and .pdf to be read by the widely-available Adobe Acrobat reader. Note that some word processing packages will display the .htm version as well. For those of you with web access, look at [www.pwpublishing.ltd.uk/swm/frequencyinfo/channel833.html](http://www.pwpublishing.ltd.uk/swm/frequencyinfo/channel833.html)

You can also get my *Airband Factsheet* which is free - but not from me! Send the Editor (at the Broadstone office) an envelope, pre-paid and self-addressed, to hold two A4 pages.

Why might you want this? I list suppliers of aeronautical information (such as airways charts) who sell to the general public by mail order. One of the products available is the *AIP* from the CAA. This shows great detail about UK airways, aerodromes, frequencies, etc., and is the official source from which all other information is derived. On paper, it's expensive, but computer users can benefit from the much more cost-effective CD-ROM version. If you don't want to subscribe for a year (13 editions) then there's the offer of a relatively cheap individual trial copy.

Another computer facility on offer from the CAA is *UK Aerodrome Index*, a database of historic and extant aerodromes. At £15 plus VAT and postage for the 1.44MB floppy disc, you would need to be a keen historian to consider it. Sold through Westward

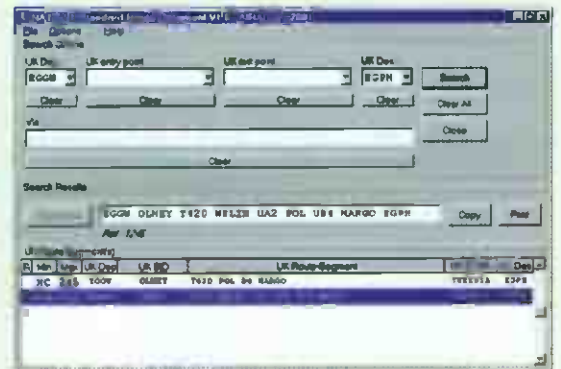
Documedia Ltd. whose address, as ever, is on the above-mentioned *Airband Factsheet*. Thanks to **Martin Sutton** (CAA) for pointing this out.

## Standard Routes Document

When you buy your first airways chart, you'd be forgiven for thinking that a trip round Spaghetti Junction would be an easier navigational proposition. There are just so many flights demanding such a large number of routes that a tight web of airways crosses Europe these days. Do not despair, there is actually a hidden pattern!

That pattern is the standard routings that are planned according to origin and destination. For any airways journey, the CAA will tell you which airways they prefer you to fly along. Routes can start at UK aerodromes or entry points from international airspace. Routes end at either a UK aerodrome or the exit point to another state's airspace.

To make it easy, the *AIP* on CD-ROM from the 1/2001 edition actually includes a database of these routes at no extra cost. This database is the *Standard Routes Document*



**Fig. 1: Standard Route Document screen-grab by kind permission CAA (this example not for operational use).**

(*SRD*). Please note, though, that *SRD* can only tell you the preferred route when origin and destination are known. It can't tell you possible origins/destinations when all you know is that an aircraft was flying in a certain direction on a particular airway.

I encountered one difficulty. There is a green 'View' icon next to the instructions for setting up the database. Actually, this icon ought to be labelled 'Install' for it is here that you click to load the database onto your hard disk.

After installation, an icon appears on your main screen and double-clicking this will eventually bring up the screen that I illustrate in **Fig. 1**. The example in the figure is the Gatwick-Edinburgh route (note that ICAO four-letter locators are needed). Get your airways chart out and see for yourself!

The 'Copy' box puts the route text into the clipboard buffer, where it can be pasted into a word processor. Some airways have remarks, clicking on the 'Remarks' box brings these up in a separate window. On closing this window, remark text seems to automatically copy to the clipboard.

Do read the instructions included on the CD-ROM. They're many pages long, but really quick and easy to follow, being heavily illustrated, so full marks for a user's manual from the CAA that sets an example that other commercial software vendors should follow!

Now the enthusiast can have professional flight-planning facilities in their own home! Thanks to the CAA Directorate of Airspace Policy who actively encouraged me to print the above review. **Figure 1** is

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by permission, the illustrated text is an example and not for operational use.

**Frequency & Operational News**

The CAA tells us that the *Red Arrows* are now based back at Scampton, relocating from Cranwell. Restricted Area R313 is where they train over Scampton. Waddington Zone (127.35 and 249.85MHz) will pass activity information (AIC 1/2001).

Major airspace changes are planned in the London area with the future opening of the Swanwick en-route centre in mind (AIC 3/2001). First, a new sector called Terminal Control Capital (sub-divided into Compton 135.8 and VATON 127.95MHz sectors) will account for some middle airspace (generally

FL155-215) over much of southern England. Reference to the maps in the AIC is necessary for a detailed understanding.

Secondly, the existing London Middle and Upper sectors are expanded, the vertical division is about to change to FL305.

Cambridge gets new STAR LOREL 1S. Approaches from the south to Cambridge, Luton and Stansted will follow a narrow

track aligned with Ockham-Brookmans Park so as to steer between other airspace. A hold along this route is established at VATON. That this is close to Heathrow doesn't matter as it's more than 10000ft above it!

Some arrivals to Bournemouth, Farnborough and Southampton might now have to work through the Capital sectors. Write in if you want to ask a question about any specific detail.

**New Centre**

The new Swanwick centre has been under development for some time, so it's encouraging that there are signs of it being commissioned. **David and Mrs. Woods** (Egham) both have aeronautical interests and David's father worked on CAA radio/radar equipment. David has seen an article that explains how training has started at Swanwick with a planned January 2002 entry into full operational service. There is a further report that there are new plans to expand the Prestwick centre.

If you have access, the web site <http://www.nats.co.uk> is a useful source of this sort of information. It is correct that NATS is a limited liability company and is theoretically administered in parallel to the rest of the CAA. Remember that there is a body of opinion that the CAA should not both provide and regulate the same service (air traffic control in this case). NATS was joint-owned by the CAA and military air traffic control.

All letters received up to February 6 have been answered. The next three deadlines (for topical information) are April 9, May 4 and June 11. Replies always appear in this column and it is regretted that no direct correspondence is possible.



**Abbreviations**

AIC	Aeronautical Information Circular
AIP	Aeronautical Information Publication
CAA	Civil Aviation Authority
CD-ROM	Compact Disc - Read Only Memory
FL	Flight Level
ft	Feet
IBM	International Business Machines
ICAO	International Civil Aviation Organisation
kHz	Kilohertz
MB	Megabytes
MHz	Megahertz
NATS	National Air Traffic Services
STAR	Standard Terminal Arrival Route
v.h.f.	very high frequency

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(PRI)
PRI0 NFM
MKR 145.0000
144M HAMBAND
S _ _ _ _ _
  
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ADJ
2UFO NFM 14.0k
U-A 145.2100
U-B 76.1000
S _ _ _ _ _
  
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(DUP)
2UFO NFM 20.0k
U-A 439.9000
U-B 88.0000
  
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(AFC)
2UFO NFM 20.0k
U-A 1295.0000
U-B 88.0000
  
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COPY 2320
LOAD SAVE
ALL-DATA
Next
  
```

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SCAN-GROUP 1
ABCDEFGHIJ
abcdefghij
BANK LINK
  
```

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2UFO AM 25.0k
U-A 123.5000
M-WRITE E25
PROTECT OFF
  
```

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HLD
80.000 ↔ 10M
MKR 80.000
  
```

```

EDIT MEM-CH
MEM LSB 0.05k
029 14.200
BANK/CH SEL
  
```



\*High sensitivity design

# NEW AR8600

MOBILE - BASE - TRANS-PORTABLE

The AR8600 is an extremely versatile **all mode receiver (530kHz - 2040MHz)** which can be used virtually anywhere, mobile, base or trans-portable... powered from an external 12V d.c. power supply, optional d.c. lead from a 12V vehicle or from an optional internally fitted NiCad battery pack. A strong twin metal case with die cast front panel characterises the multi-purpose role. All mode receive capability is provided including Single Side Band with programmable tuning steps down to a resolution of 50Hz with the frequency

established by a highly accurate Temperature Compensated Crystal Oscillator (TCXO). An RS232 port further extends the capabilities with free supporting control software available from the AOR web sites. Although many microprocessor features have been adopted from the trendsetting AR8200 Series-2 hand portable receiver, **the AR8600 RF front-end is an all new (\*high sensitivity) design with a first rate switched attenuator and preselection around VHF to ensure the highest levels of adjacent channel rejection with software spuri cancellation.** In addition to a hinged telescopic whip aerial, the AR8600 is supplied with a **detachable plug in medium wave bar aerial** which locates on the rear chassis of the receiver for localised medium wave monitoring. An additional BNC socket is mounted on the rear chassis so that **10.7MHz i.f. output** may be extracted for use with external spectrum display and vector analyser units such as the AOR SDU5500. The TCXO ensures **high stability with minimal internal spuri** and is usually only seen in top of the range (more expensive) models such as the AR5000 and AR7030.

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

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



# AR8200 SERIES-2

NEVER BEFORE HAS ONE HAND PORTABLE OFFERED SO MUCH

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

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

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

# Outstanding options available for the AR8600

There is no doubt that the AR8600 provides a wide variety of features built-in, however an unrivalled number of optional extras further extends the receivers capabilities...



A choice of FIVE slot cards are available (as used by the AR8200/2), these being:



- VI8200** Voice inverter (analogue) in 157 steps
- CT8200** CTCSS squelch & search
- TE8200** Tone eliminator in 256 steps
- RUB200** Chip based recording unit and playback, 20 seconds approx with continuous loop capability
- EM8200** External extended memory, backup 4,000 memories, 160 search banks (can hold as much data as 4 x AR8600)



Other options include:

- CR5000** tape recording lead
- DC8600** d.c. lead with cigar lighter plug fitted
- BP8600** optional internal NiCad battery pack, provides about 2 hours of operation
- MM8600** Wrap around mobile mount, not intended for under-dash mounting, use for caravan, boat etc.
- MF2.5** Substitute Collins SSB mechanical filter
- MF6** Substitute Collins AM mechanical filter (Note, increases selectivity but reduces audio fidelity due to the narrow bandwidth employed)
- MA500** VHF/UHF whip aerial on magnetic base
- DA3000** 16 element discone
- SA7000** Passive twin element wide band aerial
- LA320** Desktop loop aerial for short wave
- ABF125** VHF airband filter for increased selectivity



\* Workshop fitting recommended for this option.

**FREE supporting PC control software** is also available from the AOR web site (also available on CD-ROM for a nominal charge of £5) <http://www.aoruk.com>

The specific zipped file being [http://www.aoruk.com/software/workshop\\_v2.0.5.zip](http://www.aoruk.com/software/workshop_v2.0.5.zip)



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

## AR5000

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

## AR5000+3 - Sync AM, AFC, NB

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

## 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".*

## World Radio TV Handbook'99.

*Speaking of the AR5000+3 in conclusion... "Compared with the ICOM ICR-8500 it offers considerably more features, better strong-signal handling, wider coverage and decidedly superior filters".*

## 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
- ✓ SOU ready with IF output for spectrum display unit

## SDU5500 - SPECTRUM DISPLAY UNIT

The SDU5500 is a Spectrum Display Unit providing practical and cost effective spectral monitoring for band occupancy and identification of new transmissions. Coupled to the AR5000 receiver, it provides a spectrum display of 10MHz bandwidth anywhere between 10kHz and 2600MHz.



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■ PETER BOND c/o EDITORIAL OFFICES, BROADSTONE

■ E-MAIL: milair@pwpublishing.ltd.uk

## MilAir

I know that the last few months has seen very little weather apart from rain, floods and strong winds, but surely some of you must have had the radio on? Since around mid October, my postbag has been noticeably lacking compared with normal. Drop me a line or an E-mail and tell me what you have heard on the MilAir band.

### RAF Buchan

There is to be a rationalisation of the UK air defence system which will include the reduction of our Control Reporting Centres, (CRCs), from three to two. Buchan is to lose its Control Centre status, but will retain its operating roll as a Radar Surveillance Unit and will become a Control Reporting Point, (presumably reporting to the CRC at Boulmer).

A new computer system is to be introduced before the change of status, which is currently expected to take place in November 2004. After this change, this will leave Boulmer and Neatishead as our two primary Control Centres within the UK ASACS, (Air Surveillance and Control System). With thanks to RAF News.

### Mildenhall

Mildenhall is rarely out of the news in this column and this month is no exception with several items of information. From mid December, a heightened state of security existed at the base for about seven weeks. A perceived threat was identified, apparently because of the attack on a US warship in the Yemen. Consequently, several USAF bases installed this increased security whilst they evaluated the effectiveness of their in-house, Threat Response Operation.

The number of security personnel was increased and extensive patrols were made around the base perimeter. The base was restricted to 'official flights', (mainly KC-135s), whilst other flights were diverted elsewhere. Some of the airfield entrances were blockaded including the enthusiasts parking area, (now re-opened).

The extensive building work started on the north-side of Mildenhall in mid February. In addition to the work I have listed previously in this column, one further item has come to light. A perimeter road is to be constructed around the North and East boundaries of the base, it appears that the planned route will go through the middle of the current enthusiasts car park and this consequently will have to be moved. As yet, a new location for this car park has not been confirmed.

A Precision Approach Radar, (PAR), has been installed at Mildenhall to enable final talkdown for primarily, the KC-135s. It became operational in the early part of the year and is now in use regularly, although one letter I received suggested that it was only a temporary installation.

Controlled from Lakenheath, the following Primary v.h.f. and u.h.f. frequencies have been identified as 132.9 and 264.475. Also confirmed in use have been 311.65 and 367.425 with one correspondent suggesting that 134.55 is the v.h.f. standby, but this has not yet



been confirmed. (Incidentally, 134.55 was used as a Tower frequency at Fairford for RIAT '99). Thanks to: The Aviators, JL, Kev and Steve L.

### Propagation

The lengthy period of high pressure during the first two weeks of February provided some interesting propagation conditions and some unexpected listening. One reader who lives near Redhill in Surrey reported hearing aircraft quite clearly on 277.275, further investigation established that these were University Air Squadron in the circuit at Colerne, a few miles Northeast of Bath!

From home, I could clearly hear the weather on the ATIS at both Lyneham and more surprisingly Brize Norton, which by my calculations is some 230km distant! More impressively, I listened to some Lakenheath F-15s operating in the Welsh Military Training Area, (OTA F) and then followed them via London Military back to Lakenheath where I only lost them as they descended through 6000 feet inbound to Lakenheath! Well over 400km away - I wish conditions were like that all the time! Thanks Bill.

### Corridors

Jamie, who is fairly new to MilAir listening having bought his first radio last November, (a second-hand Yupiteru MVT-7100), asks me what is the Westcott Corridor? UK airspace is crossed by a significant number of Airways, including a number of major airways which cross the country from Southeast to Northwest, (A1, A2, A34, B321, B3, B4, etc.) - thereby, effectively cutting the country in half. To allow military aircraft to cross the busy airways from one side of the country to the other, several Radar Corridors are available to provide an Airways crossing service.

Three primary corridors are available to make the East/West transit. Westcott in the South, Daventry in the middle and Lichfield to the North. Aircraft travelling west along the Westcott corridor can continue into the Swindon Corridor, allowing them to cross the airway G1, and enter airspace in the Southwest of England. At a published Flight Level, military aircraft can transit these corridors through controlled airspace without having to speak to London Control, any necessary liaison being arranged by London Military.

As an example, transits through the Westcott and Swindon Corridors are made at Flight Level 230 and 240. In addition to the four corridors already mentioned, there are four other smaller Radar corridors in other parts of the country which also provide airways crossing. They are located at Leuchars (airway P600), Valley (airway L975), Niton (airway A25) and Scunthorpe (airway L975).

Sticking loosely with the Mildenhall theme, this month's photo shows a Maine Air National Guard KC-135E on the approach to Runway 29 a couple of years ago.

# USAF Fighter Deployments & Ferry Flights

When fighter aircraft have to travel long distances during deployments or ferry flights, especially over large expanses of water such as the Atlantic or Pacific Ocean, enroute air-to-air refuelling will be a requirement. This can involve a number of refuelling tankers each with up to six receivers flying in a formation. Keith Elgin GI7SOB explains all.



The TACC became operational on the 1st April 1992 creating a centralised command and control structure which previously had been operating from a number of locations.

**A 97th AMW KC-135R.**  
(Keith Elgin).

**T**he USAF refers to their deployment or ferry combinations as 'Coronets'. Coronets can be divided into four regions, North, South, West and East. On Coronet North missions typical flights would be from the Contiguous United States (CONUS) to Canada or Alaska or vice versa. Coronet South missions take in South America with two of the most common deployments flying to or from Howard AFB, Panama and Roosevelt Roads, Puerto Rico.

Coronet West missions cross the Pacific Ocean with typical deployments from or to Hickam AFB, Hawaii and US bases in Japan.

Coronet East missions are the ones of interest to UK and European monitors as these cross the Atlantic Ocean flying from or to the UK, mainland Europe or the Middle East. Those that overfly the



UK are usually involved in exercises or rotational detachments, deliveries of new or upgraded aircraft, or, during the airshow season, the arrival/departure of show participants.

## TACC

Planning and directing of USAF tanker and transport aircraft operations around the world is the responsibility of the Tanker Airlift Control Centre (TACC) located at Scott Air Force Base, Illinois, USA.

Two months later, the Military Airlift Command (MAC) and Strategic Airlift Command (SAC) were inactivated and Air Mobility Command (AMC) was activated. Approximately 700 personnel working in nine directorates are available to task, schedule, execute and recover all TACC missions: airlift, air-to-air refuelling, aeromedical and operational support.

Mobility Management has the role of tasking units to support strategic/theatre airlift and tanker requirements. It manages the Joint Airborne/Air Transportation Training (JA/ATT)

**Four F-16Cs of the USAF display team 'The Thunderbirds' off the left wing of a 100th ARW KC-135R.**  
(TSgt Brad Fallin).

and air-to-air refuelling 'Horseblanket' process. Current Operations receives, analyses and identifies air refuelling and special assignment airlift customer requirements.

There was a period of time a few years ago when it was possible to access information from the various directorates within TACC via the Internet. For those interested in aerial refuelling, the 'Horseblanket' web site was like a dream come true as the scheduling details for the following months refuelling operations on a global scale could be viewed.

Continued on page 34...





WATERS & STANTON

FIRST IN RADIO

# WATERS & STANTON

WE WILL MATCH OR BEAT COMPETITIVE PRICES ON GENUINE UK STOCK.



## NRD 345 Communications Receiver



**£399.95**

Plus £7.50 Carr.

The new NRD 345 is one of the best value packages on the market. Covering the range 100kHz to 30MHz, it offers SSB, CW, AM and synchronous AM modes. Includes 4kHz and 2kHz switched IF filters, noise blanker, scanning, pass mode keypad entry, RS 232 port, timer function, 100 memories, low/high impedance antenna switch and more! Requires external 12V supply, (available as extra) 800mA approx.



## S-3878

**World Space Hitachi Satellite Receiver External Antenna**  
Frequency: 1452-1492MHz

Supplied with LNA, 4 element Yagi, mounting bracket and fittings, and 25m of 50 Ohm coaxial cable with 'F' plugs

**£49.95**  
Plus £7.50 Carr.

## Hitachi World Satellite Receiver

This new Hitachi receiver comes complete with mini flip-up dish letting you receive high quality radio broadcast signals from around the world. No more background noise and atmospherics. It also covers the FM VHF broadcast bands, medium wave and the major short wave bands.



**NEW**

**£99.95**  
Plus £7.50 Carr.

## ICOM IC-R3

PICTURE THE DIFFERENCE



**NEW**

- \* Full UK TV coverage
- \* 0.495-2450 MHz
- \* Advanced Lithium battery
- \* ALL DAY battery life
- \* 450 Memories
- \* FM / WFM & AM
- \* 2" TFT colour display
- \* Bandscope & automatic squelch
- \* 8 background colour choices
- \* Size 61 x 120 x 33mm

**Phone**  
Plus £7.50 Carr.

also receives  
23cm  
amateur  
FM-TV

## GRUNDIG Satellit 800 Millennium Receiver

**NEW**



**£549.95**  
Plus £7.50 Carr.

- \* Frequency: 100kHz - 30MHz, 87-108MHz, 118-137MHz
- \* Modes: AM, USB, LSB, FM (AM synchronous, AM air band, FM broadcast)
- \* Tuning: Direct keyboard entry & manual rotary knob tuning
- \* Memories: 70
- \* Separate volume, bass, treble & air squelch controls
- \* Supply: 6 x D cells (Not supplied), 230V mains adaptor included
- \* Size: 535 x 234 x 215mm
- \* Weight: 6.6kg
- \* Supplied Accessories: Headphones, 1/4in to 3.5mm adaptor, Handbook

New for the Millennium is the Satellit 800 Millennium receiver. Designed for ease of use, it has many features normally found on communication receivers. Superb sound through its 4in speaker or headphones. It has a choice of bandwidths 2.3, 4.0 & 6.0kHz, normal AM or synchronous AM modes available as well as airband AM, FM stereo through headphones (supplied) or phono connectors on rear. Large LCD with informative displays, large direct entry keyboard, as well as analogue S meter. The Satellit 800 is ideal for both the newcomer to radio or the experienced SWL and will give years of pleasure.

## IC-R75 Receiver 30kHz - 60MHz

ICOM

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.



**£595**  
Plus £7.50 Carr.

## VR-5000

## AR-8600

Arriving Soon

**Phone**  
Plus £7.50 Carr.

**£719**  
Plus £7.50 Carr.



- Yaesu's exciting new scanner.
- \* 100kHz - 2599MHz
  - \* FM, AM, SSB, CW
  - \* Real-time band scope
  - \* DSP Noise and notch filters
  - \* 2000 Memories
  - \* Optional digital voice recorder
  - \* Large signal display
  - \* Superior HF performance
  - \* Ultra sensitive
  - \* Fully programmable

- AOR's exciting new scanner
- \* 500kHz - 2040MHz
  - \* FM, AM, SSB, CW
  - \* 1000 Memories
  - \* 2000 pass frequencies
  - \* 37ch/sec scan
  - \* 8 33kHz airband steps
  - \* RS232 PC interface fitted
  - \* 10.7MHz IF for SDU5500
  - \* Accepts up to 5 slot-in cards
  - \* Detachable MW bar aerial

## YAESU FRG-100 Receiver 50kHz - 30MHz



**£389**  
Plus £7.50 Carr.

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, PSU and FM board \* BFD reverse for CW \* Twin Clocks, Ask leaflet.

## 0kHz - 32MHz AOR-7030 Receiver

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.



**Phone**

## Fairhaven RD-500VX 20kHz - 1.75GHz



**Phone**  
Plus £7.50 Carr.

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 50,000 memories with 20 Alphanumeric Characters \* Noise Blanker \* Text Search \* Pass Band Tuning \* Stereo CW Reception \* Notch & Peak Filter etc.



**Yupiteru MVT-9000EU MK2**  
100kHz - 1.99GHz

**Latest MK2 Version**

Here's your chance to purchase the latest scanning receiver from Yupiteru at an unbeatable 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 Memos 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.



**Phone**  
Plus £7.50 Carr.

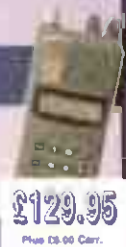
**UBC - 220XLT HANDHELD SCANNER**

Ideal for general listening, this scanner covers all the major bands from 66MHz - 956MHz AM and FM. 200 memories and a very fast scanning speed make this a very attractive buy. You also get the flexible short antenna, AC charger and batteries. Very popular with Airband listeners.

£149.95  
Plus £6.00 Carr.

**UBC - 120XLT HANDHELD SCANNER**

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



£129.95  
Plus £5.00 Carr.

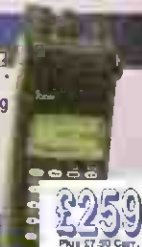
**AOR-8200 Series 2**  
500kHz - 2040MHz

This wide range scanner is fitted with a data port for computer control. Features include USB, LSB, CW, FM, WFM \* Programmable steps \* 1000 memories in 20 banks \* Alphanumeric display \* Built-in AM antenna \* 8.33kHz steps for air band \* Rechargeable ni-cads, AC charger and helical antenna.

**Phone**  
Carr.

**IC-R10E**  
500kHz - 1300MHz

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



£259  
Plus £7.50 Carr.

**IC-R2**  
500kHz - 1300MHz

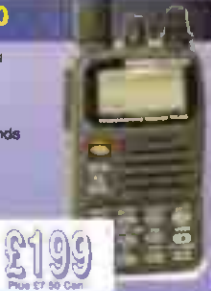
This palm size handy offers great performance. Offers FM, WFM and AM \* Auto squelch \* 400 Memories \* 11 Tuning steps \* CTCSS decode \* Duplex monitoring feature \* PC Programmable \* Built-in attenuator \* Priority watch \* Needs 2 x AA cells (extra). Antenna included.

£149  
Plus £7.50 Carr.

**VR-500**

This lovely little scanner from Yaesu offers superb performance.

- \* 100kHz - 1300MHz
- \* 1000 Memos
- \* 100 Skip channels 10 Search bands
- \* 8 Character alphanumeric display
- \* Band scope Priority monitoring
- \* PC programmable
- \* Smart search feature
- \* Alpha numeric recall
- \* Size 58 x 95 x 24mm 220g



£199  
Plus £7.50 Carr.

**Roberts R-827**

£99.95  
Plus £6.00 Carr.



SAVE £80

FM-STEREO / MW / LW / SW  
PLL DIGITAL WORLD RADIO  
\* AM, FM, FM Stereo SSB & CW  
\* 45 Station presets  
\* Direct keypad tuning  
\* Rotary tuning  
\* BFO for SSB & CW  
\* Selectable wide / narrow AM  
\* FM stereo via earphones  
\* Digital clock  
\* Alarm/timer functions  
\* Complete with AC Adaptor

**Yupiteru MVT-7100EX**  
100kHz - 1.65GHz

Probably the best value for money, it has stood the test of time and is very sensitive. Offers USB, LSB, CW, AM, FM, WFM, \* 1,000 memories \* 500 Pass channels \* 12 Tuning steps \* Fast scan speed \* Rechargeable batteries, AC charger and telescopic antenna.



**Phone**  
Plus £6.00 Carr.

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

Mode:USB, LSB, CW, AM, FM, WFM.  
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  
£295  
Plus £6.00 Carr.

**Yupiteru MVT-7300**

**New Scanner**

£289  
Plus £6.00 Carr.



- \* NFM, WFM, NAM, WAM, USB, LSB, CW
- \* 521kHz - 1320 MHz
- \* 1 000 memory channels
- \* High sensitivity
- \* Signal strength meter
- \* Hold and scanning & searching for a station
- \* Memory function
- \* Telescopic rod antenna
- \* Clock timer function
- \* Variable colour display
- \* Key lock function
- \* Contrast function
- \* 8.33kHz airband spacing
- \* 12V DC/230V AC mains

**WS-Desktop**

For anyone to those who want to improve their scanner performance using an indoor antenna. Covers 25 - 1300MHz and includes coax cable terminated with BNC plug. £49.95

**WS-Mobile Antenn**

Just 0.5m long with magnetic base and BNC plug. Covers 25 - 1300 MHz and is the ideal choice for scanner users. £24.95

**WATSON Capture that Frequency!**  
10MHz - 3GHz  
Hunts down Frequencies



Supplied with telescopic antenna and AC battery charger. If you are within 200 ft or so of the handheld, you should be able to read off the frequency. Note it down and enter it in your scanner. It's that simple and it's pocket sized. £59.95

**SWL DX-1 HF Ant**



Covers 1.5 - 30MHz and is 50m long. With 10m feeder wire back to receiver. An ideal general purpose antenna. £25.95

**Global AT-2000**

Worldwide automatic scanning receiver. Covers 1.5 - 30MHz. Includes 10m feeder wire and BNC plug. Ideal for general purpose use. £39.95



**GARMIN**

**NEW**



£159.95  
Plus £6.00 Carr.

£219.95  
Plus £6.00 Carr.

£309.95  
Plus £6.00 Carr.

Three new GPS receivers from Garmin, the eTrex Venture, Legend and Vista. Like their predecessors they are among the industry's smallest GPS handheld receivers. Each contain a Garmin ARM processor design, new high resolution LCD (288 x 160 pixel, FSTN) and an innovative rocker switch which allows for quick and accurate map panning. The eTrex Venture Legend and Vista offer full-featured navigation capabilities. Position formats include Latitude/Longitude, OSG and MGRS etc. The user interface may be customised for English, French, German, Italian or Spanish languages.

- eTrex Venture** - 1MB memory capacity plus worldwide database of cities.
- eTrex Legend** - 8MB memory capacity plus Atlantic Data Base.
- eTrex Vista** - 8MB memory capacity, Built-in Barometric Altimeter & Electronic Compass and Atlantic Data Base.
- eTrex Legend & Vista** accept information from MapSource Metroguide CD-ROMs, the eTrex Venture from the new MapSource 'Points of Interest' CD-ROM (Available Summer 2001)





**An F-15 Strike Eagle refuels from a KC-135R.**  
(TSgt Brad Fellin).

For short range scheduling there was the 'Tanker Barrel' where mission details for tracks like Flamboro could be found. Unfortunately, security was tightened as more and more monitors were accessing the site and today a valid username and password are required to view any of the material to be found there.

### Colour-Coded Routes

For many years there was a series of military colour-coded routes defined for deployments crossing the Atlantic Ocean. The Gold High routes were especially popular with monitors in the UK, as aircraft using these tracks would have been flying over a large section of the British mainland.

Other Atlantic tracks included the Blue, Brown, Red and Yellow routes. Some of these were well to the south of the UK and, unfortunately for UK monitors, the bulk of the fighter deployments tended to use the more southerly routes, especially when flying to the Middle East.

Around 1995, as the number of Coronets crossing

the Atlantic grew smaller, references to the colour-coded routes came to an end. Missions were then planned on a more suitable track based on the departure and destination airfields and the predicted weather between these points.

### UK Airspace

For diplomatic reasons, deployments of fighter aircraft do not overfly Irish airspace. Formations entering or departing the UK therefore have to fly around Ireland and by doing so allow a greater number of monitors to hear or even see the aircraft.

When flying a northerly route west to east, a formation approaching the UK FIR boundary at 56°N1°W is picked up by the military radar situated on Tiree. Crossing 10°W, control is switched from 'Shanwick' to 'Scottish Military'. If remaining on their ALTREV (Altitude Reservation) the routing will take them over Scotland towards the LUK (56°22'N 02°51'W) TACAN (Tactical Air Navigation beacon). It's then down the east coast of the UK towards QMB (54°07'N 00°06'W).

The location for the break-up of the formation can depend on the destination of the fighters (referred to as 'chicks' while in the cell). For a landing at RAF Lakenheath, the split can happen as soon as radar contact has been established with 'Scottish Military' upon crossing 10°W. In this case rather than continue to fly the ALTREV the fighters will ask for a more direct routing. If granted, this will see them transit down the west coast of the UK joining TACAN route TB5 at MAC (55°25'N 05°39'W) although by departing the ALTREV they lose their priority status.

Those with destinations in Europe tend to split between LUK and QMB continuing south towards the UK FIR boundary at MC16 (52°34'N 02°52'E). The destination for the tankers in most cases is RAF Mildenhall, though occasionally they continue to bases in Germany or Spain.

During northerly departures from the UK, the tankers launch from RAF Mildenhall with the joining point again dependent on the takeoff location of the fighters. Flying from mainland Europe, the join is often initiated between MC16 or CSL (52°44'N 01°21'E) routing via TB7 to LUK then direct 56°N10°W.

Fighters departing RAF Lakenheath can join with the tankers soon after take-off. CGY (53°05'N 00°10'W) or QMB are regular spots. Routing between LUK and 10°W, one of the tankers is tasked with obtaining the Oceanic Clearance from Shanwick, usually on 123.950MHz, but on some occasions 5.616MHz is used.

The clearance should be straightforward as the ALTREV is filed well in advance. With details of the number in the formation, the exact time for crossing 10°W and the altitude block passed, the flight is then cleared in accordance with the ALTREV. If departing via a southerly route, following takeoff from Mildenhall the tankers usually fly direct TR1 for a join at CSL, routing MLD (52°21'N 00°29'E) WD4 (52°10'N 00°12'W) BZN (51°45'N 01°36'W) VLN (51°00'N 02°38'W) LND (50°08'N 05°38'W).

In some cases, the join is not initiated until reaching point VLN. When a specific number of fighters are required at the destination, a couple of air spares may also get airborne, just in case there is a technical problem with any of the aircraft. Twelve

fighters flying in two cells of six aircraft would have one air spare assigned to each.

As soon as the first AR was complete and all was satisfactory, the air spare would depart the ALTREV and drop back to join the second cell. Once their initial AR was complete, both air spares would depart the formation and return to base.

**Callsigns**

For several years from the mid-1980s, keeping track of the tankers involved in Coronet missions was a relatively simple affair.

During that period colours were introduced as callsigns and these indicated the base from which the tanker commenced its flight. By the early 1990s, many of the colours fell into disuse with only 'Gold' being used for eastbound flights and 'Blue' for westbound flights.

Over the past couple of years even this system has been altered, with additional callsigns noted by monitors, including 'Adobe', 'Bobby' and 'Cacti'. On the odd occasion 'Reach' has also been used. This is an AMC callsign more commonly associated with transport aircraft such as C-5s, C-17s and C-141s, etc.

It is also no longer safe to assume that hearing the callsign 'Blue' will indicate a flight heading to CONUS, as these have also been noted flying west to east. The numerical part of the callsign still bears some resemblance to a logical system. A formation with three tankers in the cell may be flying as 'Adobe 31 Flight', the other two tankers being 'Adobe 32/33'.

The next formation, which flies approximately 30 minutes behind, would use 'Adobe 41 Flight'. If a formation was using '91 Flight' and there was another cell 30 minutes in trail, the numerical sequence is initiated from the beginning so this cell would be '01 Flight'.

The tankers don't all fly the full ALTREV route, either. Taking a departure from RAF Mildenhall as an example, it's often one of the based aircraft that is used for the initial AR. They may have given all their fuel away before reaching the Oceanic boundary at 10°W and will be negotiating with 'Scottish Military' to depart the ALTREV before reaching that point.

In some cases, this may not be permitted before 30°W or 40°W, or this could be where a second tanker, if locally based, would also return to Mildenhall, leaving only one tanker to continue across the Atlantic with the formation. This also happens when flying to the UK and is why you can sometimes hear a 'Cacti 73 Flt' but with only one tanker in the cell, the other two having already offloaded their fuel and returned to the USA many hours earlier.

Fighter aircraft use a series of deployment callsigns when flying in a cell. Over the past few years 'Cube', 'Dirca', 'Mazda', 'Retro', 'Slip', 'Trend' and 'Zesty' have been heard. Like the tankers, the fighters also use a logical numbering sequence.

A flight of six fighters may use the callsigns 'Retro



An F/A 18 Hornet on the boom of a KC-135R. (TSgt. Brad Fallin.)

61-66', and a following cell of six fighters would be 'Retro 71-76'. The problem with these deployment callsigns is that it is very difficult to identify which unit is flying in the formation, so hunting for appropriate air-to-air frequencies is made all the harder. However, monitors with Internet access won't find this a major problem as many of the deployments are discussed well in advance in some of the military aircraft enthusiast newsgroups and mailing lists.

**Monitoring Opportunities**

There are a number of h.f. circuits to try when a Coronet mission is being flown. Crossing the Atlantic Ocean, aircraft will have to be in radio contact with the Oceanic Centres such as Gander, Santa Maria or Shanwick. For the more northerly route, **5.616** or **8.864MHz** are a couple of frequencies worth checking out. The frequency **6.622MHz** is another that is occasionally used.

On the USAF Global High Frequency System (GHFS) channels the tankers can often be heard requesting 'phone-patches. These are often to the TACC callsign Hilda East/West. The Command Post at the destination airfield or one of the many Metro (Meteorological) stations for current or expected weather at the destination and diversion airfields can also be heard. **11.175MHz** is always a popular choice, but it may be worth checking the other GHFS frequencies, see **Table 1**.

The KC-135 tanker fleet are currently going through an upgrade program known as 'Pacer Crag'. This is a major overhaul of the cockpit which includes improved Compass, Radar and GPS. As these improvements do away with the requirement for a navigator, Selcall was included to avoid the need to constantly monitor the h.f. radio.

A good time to confirm if the tanker is Selcall-equipped is just prior to them reaching the Oceanic boundary as a Selcall check is usually requested at this stage. When the aircraft reach the 30°W point they have another check with the next agency, either Shanwick or Gander, depending if they are heading east or west.

Pacer Crag-equipped tankers are also ALE (Automatic Link Establishment)-capable and thus may

Continued on page 38...



# NEVADA LARGESTOCKS FAST DELIVERY

## Bearcat

### UBC 3000XLT

Uniden's top of the range scanner has 400 channel near continuous channel coverage from 25 to 1300MHz. New TWIN TURBO search and scan allow high speed scanning or searching to give lightning quick results. The set is packed with new features:



- 25 - 550, 760 - 1300 MHz
- AM/FM/WFM
- 400 memory ch
- TURBO SCAN 100 Ch/Second
- TURBO SEARCH 300 St/Second
- Automatic Freq Storage
- Selectable Attenuator
- Automatic Freq Sorting
- Data Skip
- Delay Key
- Channel Count Key
- Supplied complete with earphone, case, belt clip, charger and rubber duck antenna

NEVADA PRICE- £199.95

### UBC 220XLT

Uniden has built its reputation on reliability, ease of use and quality of reception with its most popular model, the 220XLT. Ideal for Aircraft, Public Service & UHF Communications.



- 66 - 956 MHz (with gaps)
- AM/FM
- 200 memories
- TURBO SCAN 100 Ch/Second
- TURBO SEARCH 300 St/Second
- Data Skip facility
- 10 Priority Channels
- Memory Backup
- Supplied c/w earphone, belt clip, charger and rubber duck antenna

NEVADA PRICE- £149.95

### UBC 120XLT

Perfect for long distance reception of Aircraft, Public Services, Land Mobile and much more! OUTSTANDING VALUE FOR MONEY!

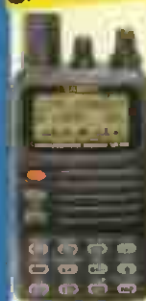


- 66 - 512 MHz (with gaps)
- AM/FM/WFM
- 100 memory channels
- TURBO SCAN 100 Channel/Second
- TURBO SEARCH 300 St/Second
- Data Skip facility
- 10 Priority Channels
- Programmable Search
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## YAESU VR500

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- ULTRA COMPACT RADIO**
- 100kHz - 1300MHz
  - FM, Wide FM, USB, LSB, CW, AM
  - 1091 Memory channels
  - Weight 220g
  - Comes complete with Antenna, carrystrap, Belt clip
  - Optional Charger NC60

- Optional Accessories**
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  - NC-60 AC adaptor
  - CSC-72 Soft case
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- SUPPLIED C/W**
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  - belt clip
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  - LIION battery pack

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**PRICE MATCH**

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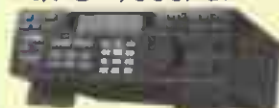
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- Programmable Search

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### UBC 60XLT

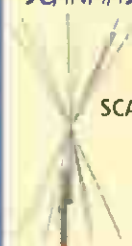


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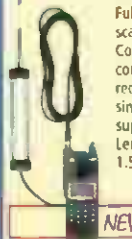


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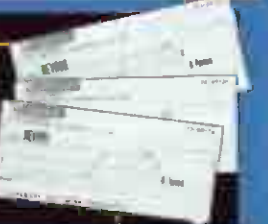
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emergency radios for air-to-air communications, too, the frequencies for which are listed in **Table 5**.

### Keflavik TDY

Approximately every four months the rotational detachment of aircraft assigned for air defence duties at Keflavik, Iceland, are changed. There are usually four to six aircraft involved in the change and these rotational flights are known as the Keflavik Swapover.

The flights to and from the USA are filed under Coronet East missions. Due to the adverse weather conditions often experienced in Iceland, it is not uncommon for the weather to deteriorate while a flight is enroute and in some cases bases in the UK have been used as diversionary airfields. There has to be a minimum of four aircraft based at Keflavik for TDY (Temporary Duty) at any one time, but those units who can afford it will often send six aircraft.

Six aircraft based at Keflavik allows two to be out of the country at any give time and it's not uncommon for them to make a visit to the UK. During these visits, the TDY tanker from Keflavik accompanies the fighters, with the callsign either 'Exxon' or 'Mogas' and the numerical part being 45.

On recent tanker-assisted cross-country flights, the boom frequency noted while refuelling over the UK was either **248.000**, **380.800** or **391.000MHz**. The callsign of the fighters is dependent on which unit is currently on TDY at the time and this goes for their air-to-air frequency as well.

### Information Sources

One of the questions I am regularly asked is "how will I know when a Coronet is likely to occur?". For those of you with Internet access this shouldn't be a problem as there are a number of methods of finding out when they are likely to take place.

As mentioned previously, it's worth joining some of the military aircraft enthusiast newsgroups and mailing lists as relevant discussions can often be read there. It is also worth checking

<http://www.notams.jcs.mil/> on a regular basis because you can access current NOTAM (Notice to Airmen) information using the DoD Internet NOTAM Distribution System (DINS).

Typing EGGX, the ICAO designator for Shanwick ACC, into the Flight Safety NOTAMs box will display a list of current NOTAMs in effect for their airspace. If any ALTREVs have been

**Table 1: GHFS Frequencies in MHz.**

4.724	11.175
6.712	13.200
6.739	15.016
8.992	

**Table 2: USAF ALE Network in MHz.**

3.059	9.057
3.137	11.226
4.721	11.250
5.708	13.215
6.715	15.043
6.721	18.003
7.632	20.631
8.965	23.337
9.025	27.870

**Table 3: USAF Boom Frequencies in MHz.**

236.750	270.400	<b>296.500</b>	340.650
246.000	282.000	296.600	343.100
<b>246.050</b>	286.600	298.100	<b>344.100</b>
246.500	286.600	299.500	345.600
254.600	289.600	299.700	356.800
258.000	293.000	300.300	372.300
266.500	293.100	314.500	378.200
268.200	293.700	316.350	380.550
268.250	<b>294.800</b>	317.100	391.000
<b>268.400</b>	295.400	319.700	396.200

**Table 4: USAF European Airspace Deployment & Ferry Flight Band Plan.**

European Designator	Chick Callsign	Primary Freq (MHz)	Secondary Freq (MHz)	A/A Tacan Receiver/Tanker
Alpha	xx 11 Flt/xx 81 Flt	294.800	307.900	29/92
Bravo	xx 21 Flt/xx 91 Flt	296.500	380.800	30/93
Charlie	xx 31 Flt	298.100	340.650	31/94
Delta	xx 41 Flt	299.700	380.800	32/95
Echo	xx 51 Flt	<b>344.100</b>	340.650	33/96
Foxtrot	xx 61 Flt	268.250	307.900	34/97
Golf	xx 71 Flt	246.050	340.650	35/98

**Table 5: GAF/GNY Emergency Radio.**

MHz	Designator
243.000	Guard
243.400	E01
242.400	E02
242.600	E03
243.600	E04

**Table 6: Airspace Reservation NOTAM.**

AIRSPACE RESERVATION WILL TAKE PLACE AS FOLLOWS. FL250/FL270 55N030W S6N020W S6N010W FROM 1243Z AT 030W TO 1611Z AT 010W. SHANWICK OAC WILL PROVIDE 120NM SEPARATION FROM THIS AIRSPACE RESERVATION. FL250 FL270 20 AUG 12:43 TIL 20 AUG 16:11.

filed they usually appear under Airspace Reservations as the example in **Table 6** shows.

If you don't have access to the Internet, the scanner or h.f. receiver can still provide some advanced warning, especially for westbound missions. AMC operate a bidding system for Coronet and similar missions. The successful bidder will then deploy its aircraft to the departure base one or two days in advance of the mission.

In the case of westbound flights this usually means Mildenhall, and during the positioning flight the aircraft

generally use their assigned Coronet callsign. This is a good clue that something is about to happen.

Other forces are also heard overflying the UK on similar missions. As well as the RAF,

the Italian Air Force, Netherlands Air Force and to a much lesser extent the French Air Force and Turkish Air Force. It's just not possible to

provide similar details for each of these forces in the space of one column, but hopefully this will give you an idea of what to expect.



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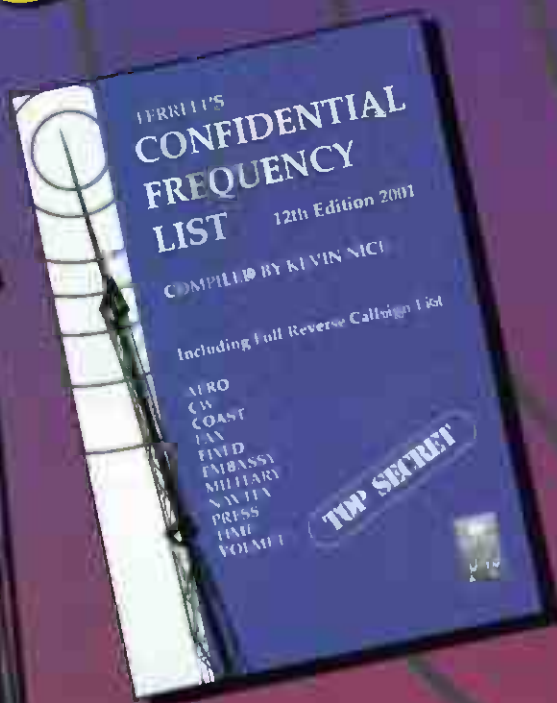
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# JW's Feedback Forum

John Wilson takes up reader issues raised in recent months by his no prisoners approach to receiver and accessory evaluation.

Every review I submit for your approval generates follow-up topics from readers, and recent articles of mine now have several 'tails' which require some feedback from me, so here is a miscellany of loose ends which you may find of interest.

## Labour Of Love

I wrote at the end of my review of the RA17 that I would probably ruffle a few feathers and this has proved to be the case. The most vocal supporter of the RA17 is undoubtedly Michael O'Beirne and he has advocated its cause very effectively. The major point which Michael makes, and with which I totally agree, is that a good RA17 can be very good, but after such a long production run there are receivers around which are showing signs of incipient

electronic arthritis and which need to be viewed with some caution - much the same as the very shiny 40 year old car which may hide dreadful secrets under its bonnet or back axle. Should you succumb to the desire to have an RA17 or any other elderly receiver, please keep in mind that skilled assistance will almost certainly be needed, supported by a battery of quite expensive test equipment and the knowledge of how to use it. Michael and I (and many others like us) take delight in restoration of these elderly beauties just for the feeling of achievement when it

all comes together at the end, but it would be quite impossible to place a commercial value on such restoration, particularly considering Michael's normal rates of pay at the top end of the legal profession, or my position running a UKAS accredited EMC test house. We do it for love of the hobby alone. If you are the same, by all means start collecting and restoring.

Staying with the Racal theme, I have been fortunate to have a second loan of an RA1792 and am even more convinced that this was an

outstanding piece of technology in its time, and a receiver that will show you what real h.f. performance and ergonomic design can mean. However, the stricture regarding support service applies with even more force should you acquire an RA1792 with hidden problems, and you had better be equipped with some digital data analysis capability should there be something amiss in the processor controlled functions.

Fig. 4: The spectrum centred on 6MHz with the 15m wire and un-un.

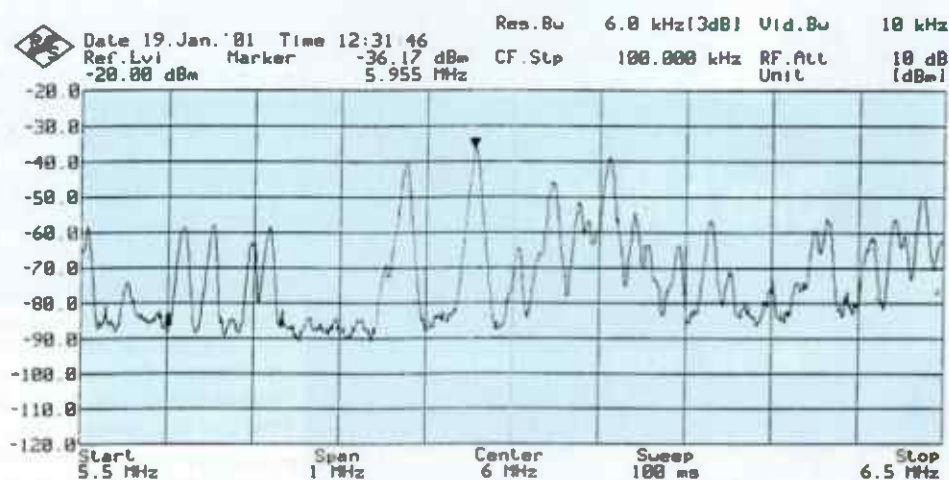
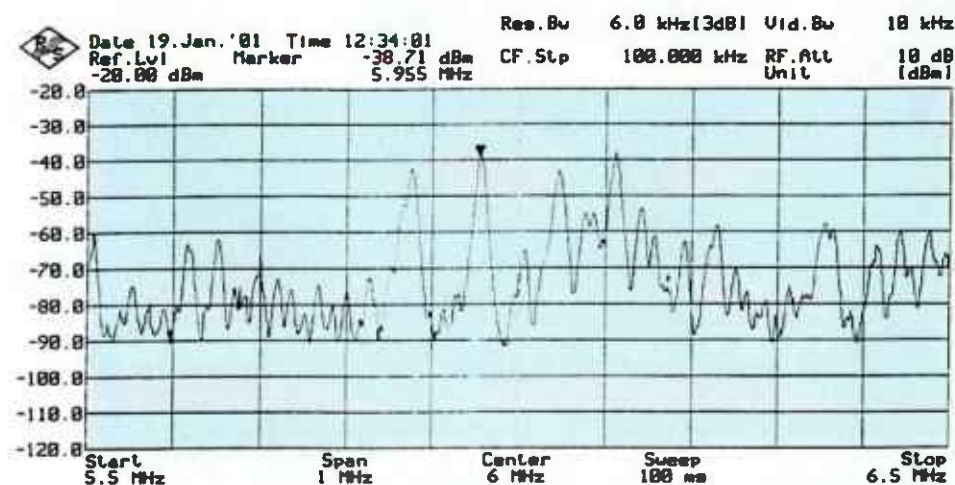


Fig. 6: I regularly listen on 5.616MHz, here's the wire antenna's spectrum...

Bearing in mind the poor results shown by the RA17 a.g.c. system, I took the time to carry out the same tests on the RA1792, and there is a world of difference to report. There are three a.g.c. speeds selectable from the keypad, labelled 'short', 'med.' and 'long', but at first use they are very different. The short and medium decay characteristics are very similar, with a fast(ish) attack time and well controlled restoration of full gain, but when Racal use the term 'long', they mean very long indeed. I was surprised to find when I went to locate my original review of the RA1792 that it was way back in the

**Fig. 5: Three minutes later, the spectrum centred on 6MHz and you can see the similarity in signal levels using the ALA1530 loop.**



previous century (actually September 1998), prior to my using the a.g.c. tests I now carry out as a matter of course, so I thought I should check and see exactly how it compared to other receivers tested more recently.

Look at Fig. 1 and see the RA1792 audio performance using short a.g.c. decay, with near perfect gain control and smooth recovery after about 100ms of delay. However, note the 'spike' at the onset of the input burst which turned out to be the now familiar overload as shown in Fig. 2, the surprise being that the RA1792 behaves just like a classic valve receiver such as the 515-1, rather than producing the usual semiconductor 'click'. Fig. 3 shows the recovery time in the 'med.' a.g.c. setting, with about 200ms delay before the

smooth gain restoration. In the 'long' a.g.c. setting Racal sneakily introduce a proper 'hang' system which keeps gain down for about 1.5s after the incoming signal ends before restoration at the same rate as seen in the 'med' setting. In real on-the-air action this long setting is just perfect for s.s.b. listening and is probably nicer than the Collins 515-1 in this regard, hard though that is for me to confess. Racal certainly redeemed themselves after the disastrous a.g.c. in the RA17.

## Filters!

As a footnote to the 515-1 review in which I mentioned that I was considering fitting a 6kHz Collins mechanical filter in place of the critically coupled i.f. transformers, I later learned from a friend from the

olden days of a Collins enthusiasts web site [www.collinsradio.org/html/archives.html](http://www.collinsradio.org/html/archives.html) where much to my delight I found all the original service bulletins for the 515-1, including one covering the official fitting of that very 6kHz filter with all the mounting and wiring instructions. This removed all my fears of 'unofficial' modification to my pride and joy, and as soon as I get my receiver back from the editor of SWM who has, understandably, taken a liking to it, I will carry out the modification and report to you in a later scribble. I have, incidentally, also received three seriously keen requests to 'let me know' should I ever wish to sell my 515-1. I knew they were uncommon, but actually they seem to be quite rare in private hands and avidly sought after. There were incidentally a few errors in the printed version of the 515-1 review caused by the transition from my E-mailed text to the printed page, the most significant being that all my minus (-) signs were neatly removed thus making a nonsense of the third order intercept point remarks I made. The text should have told you that, "receivers of the era normally had third order intercept points of -20dBm whilst the Collins was much better at -9dBm". As the text read in the article, the 515-1 appeared to have poorer performance than the norm, whereas it was significantly better, in fact outstanding for the time.

## Signal Or Noise?

Needless to say I was using the Wellbrook ALA 1530 active loop antenna with the RA1792, and this coincided with an E-mail from 'PeterSWL' in which Peter says "I think your article (on the Wellbrook loop) was very misleading, how could you say it was better than a 10 metre balun fed wire?". However, Peter did say that he was comparing the ALA 1530 to his normal 23m long wire, but didn't tell me what

**Fig. 7: ...and here's the Wellbrook loop on 5.616MHz.**





# The JRC NRD 545 Deluxe Receiver

Internationally accepted as the benchmark receiver throughout the world, the NRD-545 is still the professional's choice.

## Specifications

- Frequency Range .1 - 29.9999MHz
- Type of reception USB, LSB, CW, RTTY, AM, FM, WFM (When CHE-199 installed)
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- Receiving system Triple superhetrodyne
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## Features

- Digital Signal Processing by One-Chip DSP
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## Special Package Deal

A new NRD-545 with matching Deluxe Speaker NVA-319 & optional VHF/UHF converter CHE-199 allowing coverage on AM/FM/WBFM up to 2000MHz.

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**YAESU VR-500**  
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- 12 volt operation
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**Base version of the ADR8200.**  
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Our dear friend Mr John Wilson gave this superb all band all mode receiver the thumbs up and it's hardly surprising. Icom have actually sold more of this product to HM Governments than enthusiasts. If it's good enough for 'them' it's good enough for you and me.

This is an Ideal radio for a newcomer to short wave that wants something a bit better than a budget radio. Performance is excellent and options include FM100 FM board, Narrow CW filter YF110C, YF110CN (600hz or 250hz) and PC interface IF232C.

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## FINANCE EXAMPLE

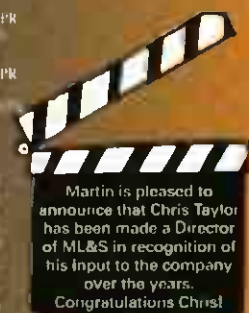
All examples do not include P&P.

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Martin Lynch is pleased to announce that Chris Taylor has been made a Director of ML&S in recognition of his input to the company over the years. Congratulations Chris!

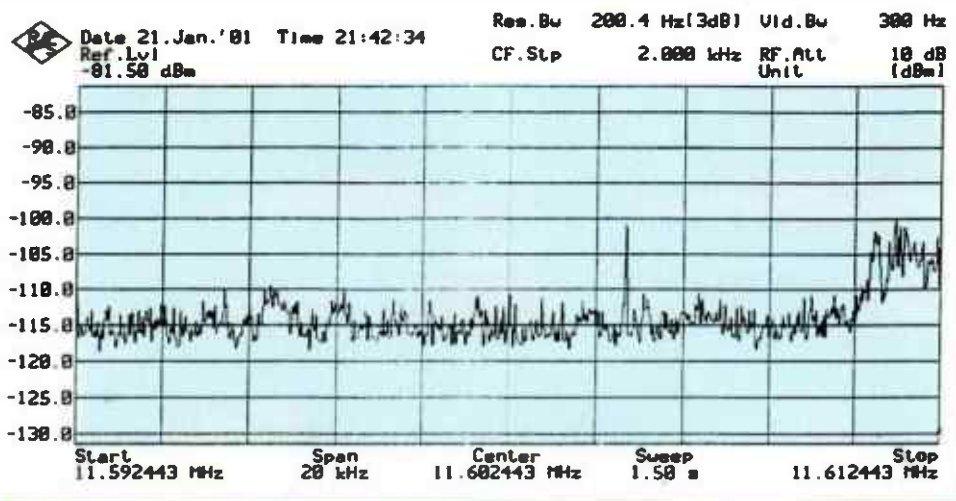
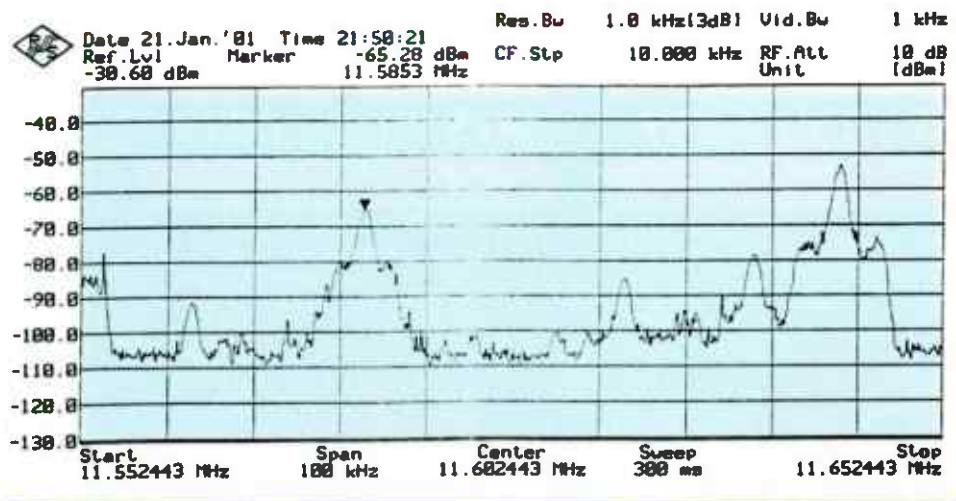




**Fig. 8: Later in the day, I took a look around 11MHz and recorded this plot.**

frequencies he was listening on, nor any details of his receiver and/or any accessories, so it was difficult to give an instant answer. The comments did disturb me somewhat so I erected a new wire some 15m long in a SW to NE direction, connected my usual Martin Lynch balun at the end and started to compare results against the Wellbrook loop sitting at the end of my test bench indoors. I used the RA1792 with its antenna input connected in parallel with my Rohde & Schwarz spectrum analyser so that I could visually and audibly examine the signals to which I was listening and print the results for my (and your) information. I made dozens of measurements over a single day and could fill the rest of this magazine with pretty spectrum plots, but must limit them to just a few, but believe me, the results illustrated are consistent throughout h.f. and m.f. bands.

The plots **Fig. 4** and **Fig. 5**, taken three minutes apart, show the spectrum centred on 6MHz and you can see the similarity in signal levels between the loop and the long wire. The wire gives a 3dB better signal on the marked station, but look at the noise floor and note that between signals the loop noise is at least 3dB lower than the wire, so the signals are cleaner in practice and easier to hear. The same results were obtained with spectra centred on 11 and 15MHz. I regularly listen on 5.616MHz, **Fig. 6** and **Fig. 7** show the loop/wire comparison on that frequency. You can clearly see the u.s.b. signal of Shanwick, but take a close look at the space on each side of Shanwick. The noise level from the loop is at least 5dB lower and there are signals which the loop can hear which are buried in the noise from the wire antenna. Later in the day I took a look around 11MHz and recorded **Fig. 8** and **Fig. 9**, less than five minutes apart. You can see that in this example the Wellbrook loop easily outperformed the long wire, and



once again the lower noise level from the loop is in evidence. Finally to hammer home the noise level argument I tuned to the quiet 20kHz segment at the centre of the last sweeps and the results are shown in **Fig. 10** and **Fig. 11**. Just compare the noise floor of the loop and whip and it is obvious that the loop wins hands down, and in addition to the low noise, the signal at the right hand edge of the sweep stands out above the noise much better in the loop. I rest my case M'Lud.

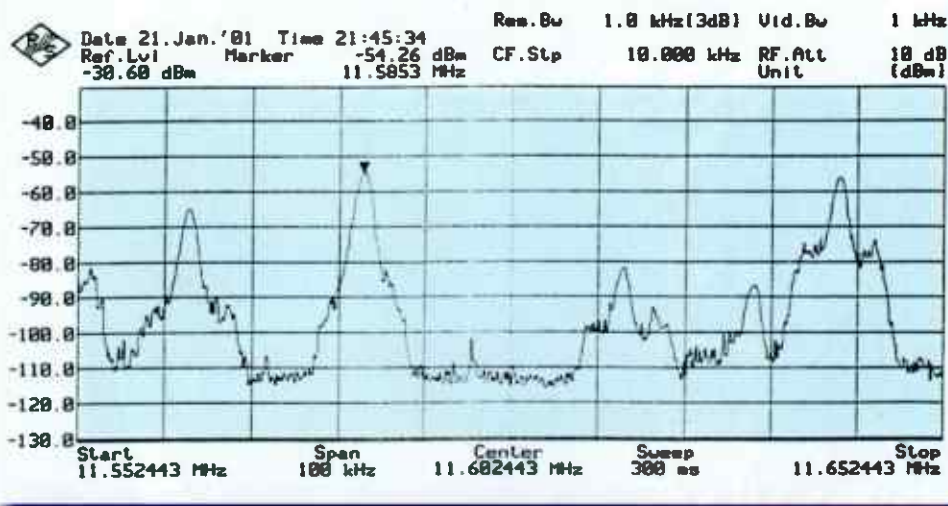
I have no doubt that Peter's long wire will provide an apparently higher signal strength on some frequencies, but the longer the wire, the higher the noise level, and this is not the same as getting a better signal to noise ratio. In

any case, I was comparing the Wellbrook active loop with a typical (at £3500?) active whip, and I only threw in the comment about the loop being better than my 10m wire because that is what I observed. Now I think I have proved the point, and remember that not every listener can string out 23m of wire, whereas almost everyone can fit a one metre loop in the garden, particularly when the loop will perform perfectly when installed close to ground. And yes, I did try the test on my favourite 909kHz where the Wellbrook gave me a signal no less than 20dB higher than the 15m of wire, with similar results on 60kHz. Rugby was crashing in at a wavelength of 5km with an antenna only one metre in diameter.

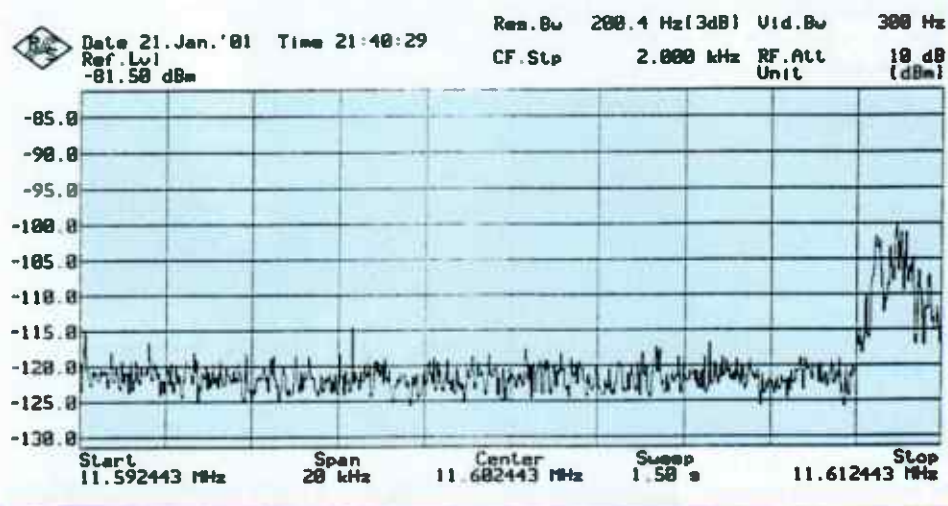
**Fig. 10: Initially to hammer home the noise level argument I tuned to the quiet 20kHz segment at the centre of the last sweeps, this is the wire.**

### Revealing Review

I must also mention that I asked Wellbrook if they could make me a totally screened loop for formal EMC measurements of radiated emissions in the 150kHz to 30MHz range, with a restriction in size to 600mm diameter since that is called for by the test standards for marine equipment, and I'm delighted to report that I now have their loop and it's performing brilliantly inside the r.f. anechoic chamber I use daily for emission measurements. It's



**Fig. 9: Less than five minutes later, you can see that in this example the Wellbrook loop easily out-performed the long wire**



**Fig. 11: The loop results here show that it is obvious that it wins hands down.**

a real pleasure to find such a keen and knowledgeable British company and I wish them well in the future. Sadly, as most of you will have noticed, more and more of the 'old' companies in the hobby radio field are falling by the wayside, but I never expected the announcement that Lowe Electronics had deserted the field in which they had a leading position when I was one of the owners of the company. I worked jolly hard to establish the Lowe range of 'HF' receivers and personally thought it a very defeatist move to sell the designs and

production rights to SMC, who themselves shortly thereafter abandoned the hobby market altogether. Quo Vadis HF-150? Let's all be thankful that a few companies are still persevering and providing good service, as are many of my ex staff who struck out on their own, notably David Brown up there in Cumbria at the Northern Shortwave Centre (01228) 590011 and the chaps at the Shortwave Shop in Christchurch. But it was all a long time ago.

I am writing this before my review of the Rohde & Schwarz EK-07 receiver hits the street and consequently there hasn't been any feedback on that subject. I mentioned a reference to the EK-07 in an article by Willem Bos that was

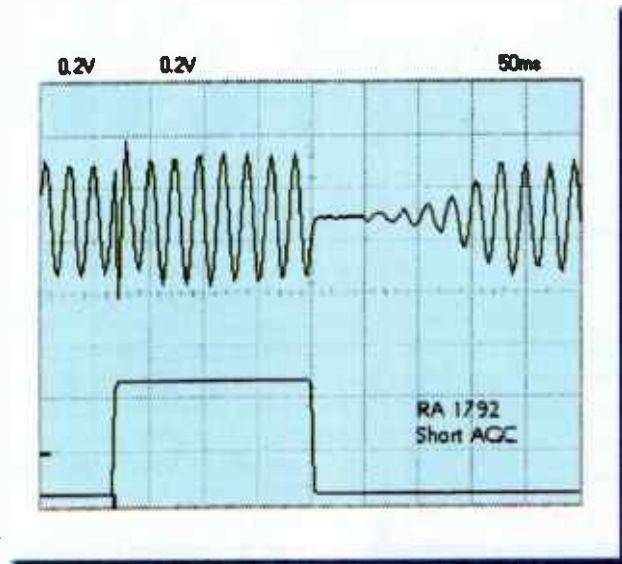
published on the Radio Nederland web site (and there's another shock; the ending of *Media Network* and Jonathan Marks from the airwaves). Back to the web site [www.rnw.nl/realradio/](http://www.rnw.nl/realradio/) where you will find a review by Willem Bos of the Kneisner & Doering KWZ-30 receiver; a review that offers the kind of detail you don't often see because of space limitations in a magazine. Willem's text has to be read many times before one fully understands the nuances it contains, but some points which stood out for me were firstly the acceptance of the value of carrying out third order intercept point measurements at higher levels than the "3dB above the noise floor", which Radio Nederland

so vigorously promoted when they were disputing the measured results for the AR7030. Minds have clearly changed in Holland and we are now all (more or less) in line with our test procedures. Willem chooses to measure third order performance with a test signal frequency spacing of 30kHz rather than the more usual 20kHz, and states this was "to avoid the influence of the crystal filter directly after the first mixer". However, there is well-documented evidence of intermodulation effects caused by filters used in this position and I personally feel happier when I include these effects in my own measurements. It is true nevertheless that the effects occur at very high signal input levels so may not be of great importance in a real listening situation.

The second topic I found revealing was the long explanation and discussion on the use of d.s.p. filtering, not only in the receiver under test but as a general observation. I'm pleased to note that Willem refers to my own description of d.s.p. effects as 'monkey chatter', and goes on to describe how the sound of sideband splatter from a strong a.m. station through a d.s.p. system sounds like a loudspeaker with grit in the voice coil. That's a pretty accurate description, and I get the distinct feeling from this section of the review that Willem is trying his best to present a fair view, but has to express reservations about current d.s.p. performance, and reserves final judgement until the arrival of lower cost 24-bit processors which should (perhaps) improve things.

I strongly recommend that you take a look at Willem's review because it is very good reading, and there is no doubt of his authority on the subject. In case you do not know Willem Bos, he is the owner of RF Systems, the

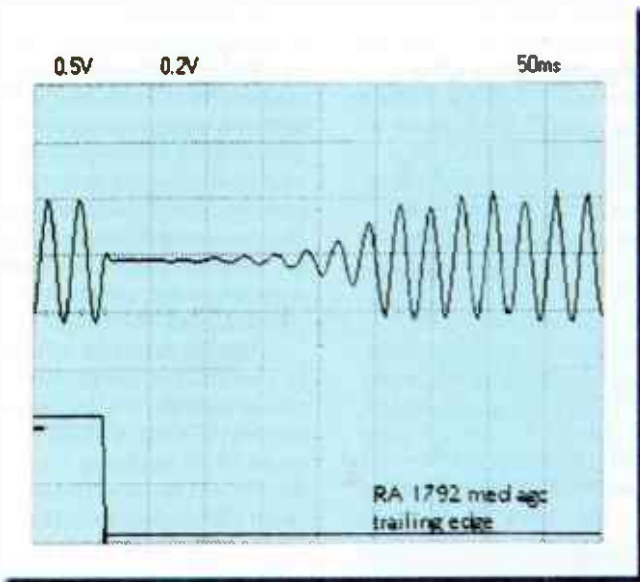




**Fig. 1: The RA1792 audio performance using short a.g.c. decay.**

manufacturer of antenna systems, which is perhaps why he chose one of his own antennas for use in the review even though the makers of the receiver manufacture an antenna of their own. He has also had a long and close professional relationship with Jonathan Marks (Radio Nederland) and his products have always been highly regarded by the *World Radio and TV Handbook*, for which publication he writes most of the equipment reviews. Finally and sadly, the

**Fig. 3: RA1792 recovery time in the 'med.' a.g.c. setting, with about 200ms delay.**



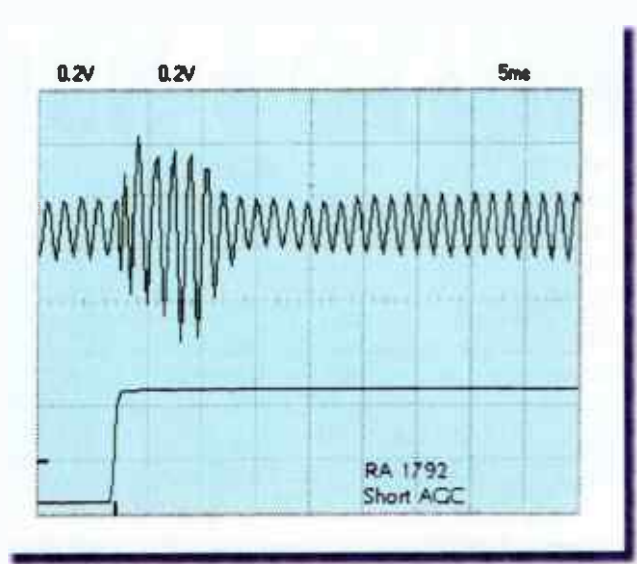
death was announced in January of William (Bill) Hewlett the co-founder of Hewlett Packard with his friend David Packard who died in 1996. The story of Hewlett-Packard is well known among the r.f. engineering fraternity, from their beginnings in a garage to becoming the dominant force in r.f. test equipment and later in computer related products. Strangely enough I first met Bill Lowe in his garage in Matlock in 1964 and ended up as a partner in Lowe Electronics, but that's a story for another day, if anyone is ever interested. I feel almost embarrassed that I used the Hewlett and Packard names somewhat tongue in cheek in my review of the EK-07, but I didn't know at that time that Bill Hewlett was

going to pass away shortly afterwards (I hope it wasn't a result of my review!).

### What's In A Name?

Those of us in the industry were amazed when the newly appointed chief executive officer (c.e.o.) of Hewlett Packard announced that the test equipment division was to be re-named as Agilent Technology, one of those typically fashionable unmemorable names which mean absolutely nothing. 'HP' will always be 'HP' in the test and measurement field and it was always a name meaning confidence and accuracy. Agilent means absolutely nothing, and the inside joke in the industry is that you can only remember it as an anagram of 'G\*N\*T\*L' which is rather rude. Adding further insult to injury occurred when the said c.e.o. appeared in TV advertising standing in front of the original Hewlett-Packard garage which is preserved as a California State historical landmark. Not that HP are alone in this pursuit of meaningless names; the British Post Office has decided to become 'Consignia', the other well known German test equipment company of Wandel & Goltermann has become 'Acterna' which is equally meaningless and instantly forgettable, and which cost Wandel & Goltermann a substantial amount of money paid to the halfwits who thought up the name. The respected name of

**Fig. 2: RA1792 'spike' at the onset of the input burst.**



Andersen Consulting has been changed to 'Accenture': who thinks up these gobbledygook names? What happened to the fashion not so many years ago that dictated that brand names had an asset value and had to be protected at all costs? I looked at the Racal web site to discover that they are now known under the banner of 'Thales' which used to be Thomson CSF who absorbed Racal. 'Thales'? The only Thales I know of is the Greek philosopher who lived from 624 to 546BC. Not exactly an up-to-date image for the 21st Century.

Enough of this rambling. I hope to have made a start on restoring my Collins 75A-1 by the time I next scribble and will let you know of progress. I have also had an intriguing suggestion from Ian Fleming (no, not that Ian Fleming) that I should take a review look at the simple one valve receiver, several of which are available as kits, and which give excellent results. This won't please the anti boat anchor brigade, but it's certainly different. As it happens, I have in my collection a couple of HAC one valve receiver kits which are unopened and therefore unbuilt. I may just be tempted to sacrifice one of these to see how they perform (Editor's permission allowing).

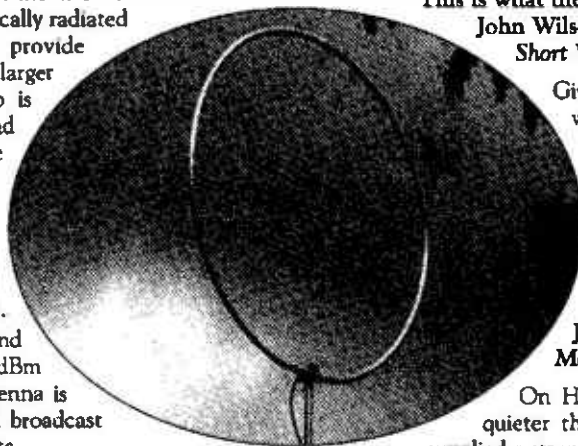
Happy listening **SWM**

# WELLBROOK COMMUNICATIONS

## ALA 1530 LOOP ANTENNA

This active loop sets new standards for the listener. For the first time it is possible to reject locally radiated and mains borne noise and still provide improved sensitivity compared to larger antennas. 1m dia. Aluminium loop is designed for outdoors, even at ground level. The loop has a frequency range from 150kHz to 30MHz and matches directly to the receiver. With 30dB nulls to reduce interference, LW, MW and SW its reception is outstanding. Professional performance is assured for high signal environments with excellent with 2nd and 3rd order intercept points of + 70dBm and + 40dBm respectively. The antenna is currently being used for commercial broadcast and navigation beacon monitoring, etc.

Supplied complete with Antenna Interface and a PSU.



This is what the experts say:-  
John Wilson; November 2000,  
*Short Wave Magazine*

Given the choice between an active whip and an active loop, I would take the loop every time. It is infinitely better than the whip in terms of E-field noise rejection, performs every bit as well if not better than the classic end fed wire, has very useful nulls for rejecting unwanted signals.

Jacques d'Avignon;  
*Monitoring Times*

On HF the Wellbrook loop was not only quieter than my normal wire antenna, but it supplied a stronger and cleaner signal than that supplied by the active short dipole that I had been using for many years.

£119.95 P&P £10.00. Add £20.00 overseas orders.

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Housed in DB-25 the RS-8200 allows computer control of the AR8200 and supports both software and hardware squelch detect.  
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**RS-8200D**  
As above but with a NFM Discriminator output. £49.99

**RS-2700/8000**  
Housed in DB-25 this interface is compatible with both the AR7200 & AR8000. Supplied with a Flat Flexible Cable for use with both these models. Now available for just £34.99.

**JAV-232**  
Not only compatible with the AR8200 but many other receivers also including the AR8000, AR2700, Alinco DJ-X10, Icom IC-R10 and IC-R2 to name a few. When used with the AR8000 or AR8200 the JAV-232 also provides a squelch activated tape recording circuit and audio. The AR8200 connections also provide a FM Discriminator output for DATA decoding. The JAV-232 costs £69.99 but for connection to the AR8200 an optional OS-8200/DIN lead is required at £17.50.

Other interfaces for the Icom IC-R2, IC-R10 Traders TEX-100XII and Alinco DJ-X10 also available.

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## Enter The

# Black Box!

Roger Bunney takes a look at the Maplin Active TV Antenna Amplifier.



**B**lack box reviews in *Short Wave Magazine* usually reveals the latest hi-tech offering in communications costing multi £00s leaving us wondering where does the money come from. This review is perhaps low-tech, very basic, affordable and hopefully useful!

A recent visit to the Maplin emporium in Bevois Valley, Southampton, discovered a blister-package proudly emblazoned 'The Portable UHF Amplifier model 6431' - though more discretely described by Maplin as an 'Active TV Amplifier' and at my sort of price - £6.99 including VAT. Hardly worth making an amplifier with all the effort needed - if it works OK...

The 'active' amplifier - are their passive amplifiers? - is housed in a shaped black plastic box measuring approximately 88mm wide, 38mm high and 55mm deep. The u.h.f. antenna input is via a standard (UK) Belling Lee TV socket - the package includes a stub antenna as shown in the photograph.

Output connection however is less than encouraging using about 1m of ultra thin coaxial resembling screened audio volume control cable and undoubtedly presenting an indifferent impedance match to the TV itself plus throughput dB loss - though a standard TV plug

terminates the cable. A small red l.e.d. atop indicates 'on' status, a side mounted push button on/off switch and a rear 3.5mm input socket for a 3V p.s.u. is thoughtfully provided - fortunately as is revealed later.

### Internal Inspection

An internal inspection reveals little. The amplifier itself is constructed within a metal box - 48mm x 33mm - and within is a well designed and compact two stage pre-amp. PCB stripline, several coils and a 4-pin front-end device (is it a MOSFET, it's marked 415N?) feeds into a 2nd unmarked 3-pin device. Components are all p.c.b. chip mounting with few identification markings. It looked pretty smart - now for the test.

This isn't a John Wilson in-depth, multi test and waveformed impressive review, but a basic Roger Bunney nominal measurement test and does it work OK? The 'tech spec' on the blister pack suggests a u.h.f. TV band coverage of 470-860MHz, a gain of 20dB and noise under 4dB. I immediately wonder if this is a wideband 40-860MHz amp just packaged for the domestic UK market as u.h.f., but actually concealing wider band secrets under the lid making for a useful TVDX, scanner and all pre-amp.

I cannot measure noise, but voltage gain checks were made across the UK u.h.f. TV Band and are:

MHz	Voltage Gain (dB)
460	15
500	15
550	16
600	19.5
700	20.5
800	21.5
860	17

### Essentially UHF

It was clear that stripline bandpass filtering at the input plus other p.c.b. tuned circuits ensured that the package was essentially a u.h.f. only antenna pre-amp and that at each end the gain was falling, a cursory check at 260MHz produced a 6dB insertion loss, so it's not the answer for a cheap scanner pre-amp!

Other comments arise in using the amplifier package - the stub antenna can be forgotten being ineffective and

causing random instability, particularly if in proximity to the output cable. The less said about the output cable the better - my daughter would call it 'skanky'!

A shorter length of v.h.f. 75Ω coaxial cable would improve matters. Lucky too that there's the facility to connect with an external 3V p.s.u. The amp can be powered from 2 x AA cells internally, but the current drawn at 23mA is high. If you're using this pre-amp for domestic or u.h.f. DXing, then a mains p.s.u. is, I feel, essential.

My conclusion, and taking into account the negative points above, is that the amplifier works efficiently and is good value for your £6.99. (Maplin - cat. no. TB07 'Active TV Amplifier' - £6.99 inclusive).

*SWM*





# Radio Bearings

Calculating Radio Antenna Bearings. The late Joe Carr K4IPV, navigates us through the use of some trigonometry to determine beam headings of distant stations.

If you use a directional antenna (especially unidirectional antennas such as the Yagi or quad beam) in your radio work, then it might be nice to know the direction in which to point the darn thing. The trick is to know the great circle bearing between your location and the other station's location. That bearing is calculated from some simple spherical trigonometry using a hand-held calculator or a computer program. Before talking about the maths, however, we need to establish a frame of reference that makes the system work.

## Latitude & Longitude

The need for navigation on the surface of the Earth caused the creation of a grid system to uniquely locate points on the surface of our globe. You can see how this system works by looking at Fig. 1. Longitude lines run from the north pole to the south pole, i.e. from north-to-south. The reference point (longitude zero), called the prime meridian, runs through Greenwich, (Fig. 2). The longitude of the prime meridian is zero degrees. Longitudes west of the prime meridian are given a plus sign (+), while longitudes east of the prime are given a minus (-) sign. If you continue the prime meridian through the poles to the other side of the Earth, it has a longitude of 180°. Thus, the longitude values run from -180° to +180°, with  $\pm 180^\circ$  being the same line.

The observatory at Greenwich is also the point against which relative time is measured.

Every 15° change of longitude is equivalent to a one hour difference with the Greenwich time. To the west, subtract one hour for each 15° and to the east add one hour for each 15°. Thus, the time on the east coast of the United States is -5 hours relative to Greenwich time. At one time, we called time along the prime meridian Greenwich mean time (GMT), also called 'Zulu' time to simplify matters for c.w. operators. Latitude lines are measured against the Equator (Fig.

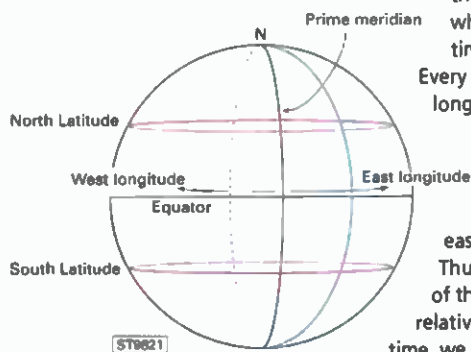


Fig. 1: Latitude and Longitude.

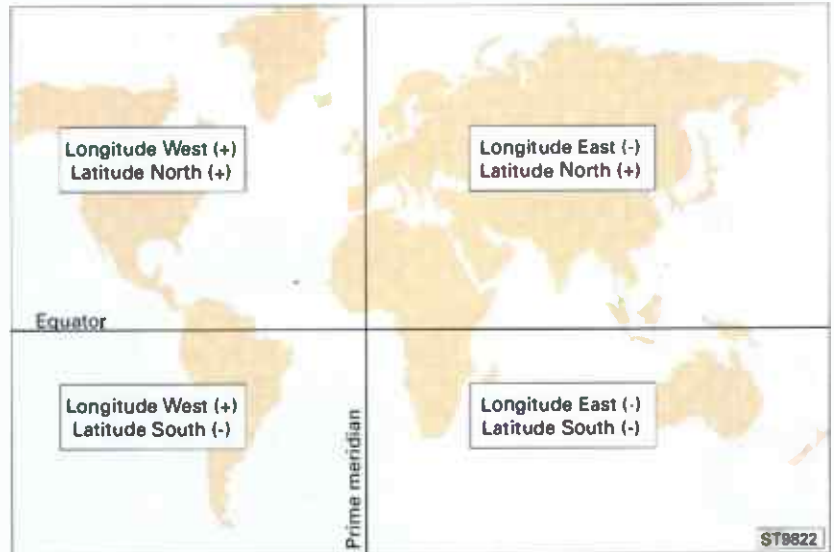


Fig. 2: Positive and negative bearings with respect to the Equator and the Greenwich Meridian.

2), with distances north of the Equator being taken as positive, and distances south of the equator being negative. The Equator is 0° latitude, while the north pole is +90° latitude and the south pole is -90° latitude.



Fig. 3: The shortest path lies on a Great Circle.

Navigators long ago learned that the latitude can be measured by 'shooting' the stars and consulting a special atlas to compare the angle of certain stars with tables that translate to latitude numbers. The longitude measurement, however, is a bit different. For centuries sailors could measure latitude, but had to guess longitude (often with tragic results).

In the early 18th century, the British government offered a large cash prize to anyone who could design a chronometer that could be taken to sea. By keeping the chronometer set accurately to Greenwich mean time, and comparing GMT against local time (i.e. at a time like high noon when the position of the Sun is easy to judge), the longitude could be calculated. If you are interested in this subject, then most decent libraries have books on celestial navigation.

## The Great Circle

The shortest distance between two points is a straight line, right? Nope, not on a globe. On the surface, a globe, a curved line called a great circle path is the shortest distance between two points. This path can

cause some interesting anomalies. For example, I live on a latitude that is close to the latitude of Lisbon, Portugal (in which case, why do they get the good weather?). Given that fact, one might assume that I would point my beam due east, i.e. at a bearing of 90° from true north. If I did that, I might hear Portuguese voices coming over the receiver, but they would be from the west coast of Africa, i.e. close to Angola (a former Portuguese colony).

The basic problem for calculating antenna bearings is illustrated in Fig. 3. Consider two points on a globe: 'A' is your location, while 'B' is the other station's location. The distance 'D' is the great circle path between 'A' and 'B'.

The great circle path length can be expressed in either degrees or distance (e.g. miles, nautical miles or kilometres). To calculate the distance, it is necessary to find the difference in longitude (L) between your longitude (LA) and the other guy's longitude (LB):  $L = LA - LB$ . Keep the signs straight. For example, if your longitude (LA) is 40°, and the other guy's longitude (LB) is -120°, then  $L = 40 - (-120) = 40 + 120 = 160$ . The equation for distance (D) is:

$$\cos D = (\sin A \times \sin B) + (\cos A \times \cos B \times \cos L)$$

Where:

D is the angular great circle distance  
A is your latitude  
B is the other station's latitude.

To find the actual angle, take the arccos of Eq. (1), i.e.

$$D = \arccos(\cos D)$$

In the next equation you will want to use D in angular measure, but later on will want to convert D to miles. To do that neat trick, multiply D in degrees by 69.4. Or, if you prefer metric measures, then  $D \times 111.2$  yields kilometres. This is the approximate distance in statute miles between 'A' and 'B'.

To find the bearing from true north, then work the equation below:

$$C = \arccos \left[ \frac{\sin B - (\sin A \times \cos D)}{(\cos A \times \sin D)} \right]$$

Now, for the rub: This equation won't always give you the right answer unless you make some corrections.

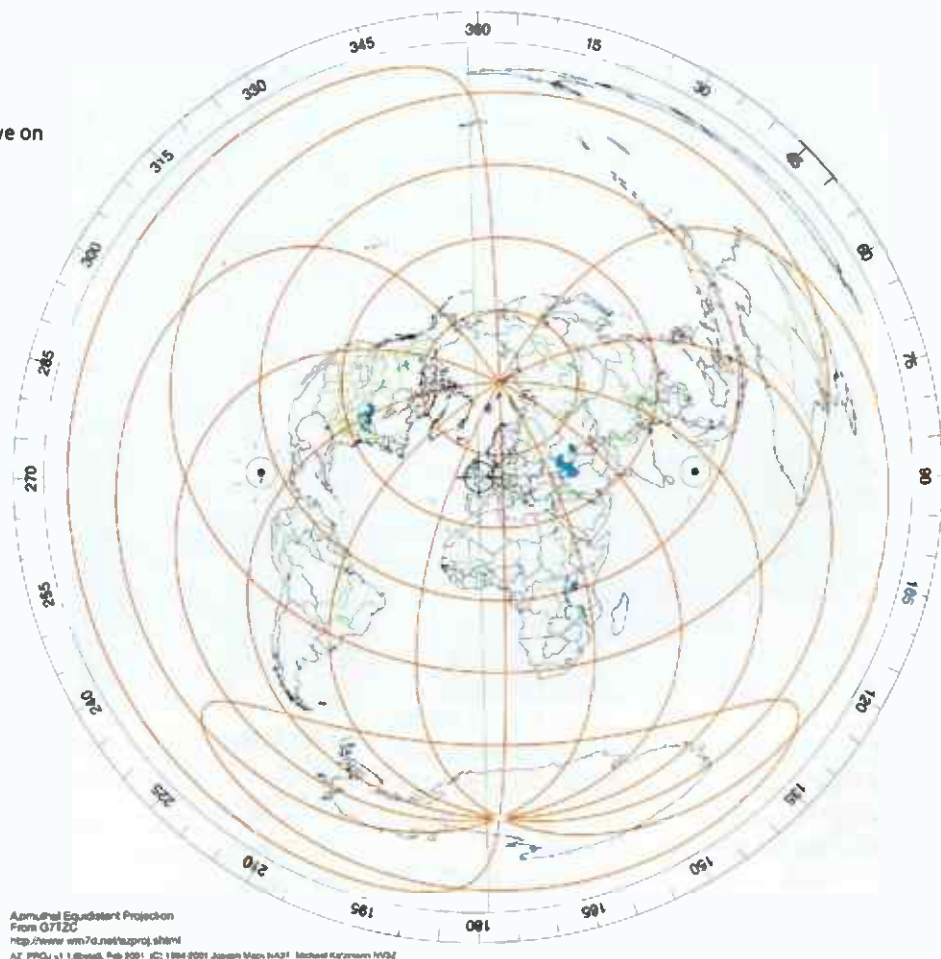
The first problem is the "same longitude error," i.e. when both stations are on the same longitude line. In this case,  $L = LA - LB = 0$ . If  $LAT A > LAT B$ , then  $C = 180$  degrees, but if  $LAT A < LAT B$ , then  $C = 0$  degrees. If  $LAT A = LAT B$ , then what's the point of all these calculations?

The next problem is found when the condition  $-180^\circ \leq L \leq +180^\circ$  is not met, i.e. when the absolute value of L is greater than 180°,  $ABS(L) > 180^\circ$ . In this case, either add or subtract 360 in order to make the value between  $\pm 180^\circ$ :

If  $L > +180$ , then  $L = L - 360$

If  $L < -180$ , then  $L = L + 360$

One problem seen while calculating these values on a computer is the fact that in BASIC, the  $\sin(X)$  and  $\cos(X)$  functions cover different ranges. The  $\sin(X)$  function returns values from 0° to 360°, while the  $\cos(X)$  function returns values only over 0° to 180°. If L is positive, then



Azimuthal Equidistant Projection  
From G7TZC  
<http://www.wm7d.net/azproj.shtml>  
AZ PROJ v1.1 ©1998, Pub 2001 ©2 1994-2001 Joseph Maci, W4JF Michael Kuzmenko W9JZ

the result of Eq.(3), bearing C, is accurate, but if L is negative then the actual value of  $C = 360 - C$ . I ran across this problem when trying to compare the results of calculations from New York, NY (40.43°N, 77°W) to Japan and points in Australia. I had expected some bearings in the northwesterly direction because of the great circle map published in older editions of the ARRL Antenna Book. Oops! After doing a bit more research, I found the error and added the test below to my program:

```
IF L < 0 THEN
L = 360 - L
ELSE L = L
END IF
```

Another problem is seen whenever either station is in a high latitude near either pole ( $\pm 90^\circ$ ), or where both locations are very close together, or where the two locations are antipodal (i.e. on opposite points on the Earth's surface). According to Hall (1973), the best way to handle these problems is to use a different version of Eq.(3) that multiplies by the cosecant of D (i.e.  $\csc(D)$ ), rather than dividing by sine of D (i.e.  $\sin(D)$ ).

**Fig. 4: A Great Circle projection of the world centered on G7TZC. You can generate your own map by visiting <http://www.wm7d.net/azproj.shtml> If you happen to run Linux or other flavour of Unix then you can download the source code to run on your own system.**

## Acknowledgement

My thanks to the ARRL Technical Department for aid in locating Hall's article, as well as other material on the problem of bearing calculations.

## Reference:

Jerry Hall, K1PLP (1973). 'Bearing and Distance Calculations by Sleight of Hand', *QST*, August 1973, pp. 24-26. **SWM**



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Larry Coalston G7TDJ started out working for the BOAC as a 'Radio Improver', but where did he end up?

Read this fascinating account of his younger years.



**Douglas DC-3 Dakota (C-47A), ex US Military, Serial 42-24391 (built circa 1942). F-BEIG seen in 1982, now preserved as LX-DKT.**

In 1941, British Airways and Imperial Airways, two pre-war airline companies, merged to form British Overseas Airways Corporation. I left school in January 1942, and started work for BOAC at Whitchurch Airport on the outskirts of Bristol as a 'Radio Improver', and was paid the wage of a princely sum of 5d plus war bonus of 7/8d per hour, which translates to 2.5p per hour.

Eight Douglas DC-3-C47A military transport Dakotas seconded to BOAC by the RAF operated from London regularly on important routes to neutral European countries, West Africa and India. On returning to the UK, the Dakotas always flew back to London Airport (Heathrow) and then on to Whitchurch for servicing.

The exiled Royal Dutch Airline KLM also operated from Whitchurch. I remember the regular daily 0900 flights to Lisbon by this firm's pre-war Douglas DC2 aeroplanes. My job was to service the Dakotas radio gear to the approved standards of the government Aeronautical Inspection Dept. Inspectors wore an AID badge (and when seen in public were often mistaken for Artificial Insemination Donors!).

### Equipment On Board

The radio equipment fitted on board the Dakotas was:-

- 100W main h.f. transmitter and antenna tuning unit.
- Main h.f. receiver BC348.
- Two 40W Command transmitters and receivers.
- Bendix radio compass with d.f. loop and bearing indicators in the cockpit.
- Long wire electrically operated trailing antenna. Maximum length about 30m (100ft).
- Standard Blind Approach (SBA) plus marker beacon RX and glide path indicator in the cockpit.
- Identification Friend or Foe (IFF) transceiver with internal detonators which could be fired from destruct buttons behind the pilot's (Captain's) seat.

It was important to check the wiring to the Bendix loop antenna when it was replaced after servicing as this could easily end up reversed so that a reciprocal of the true bearing was indicated. I was often requested to work an extra hour in a non too comfortable position under the belly on the plane to correct this fault.

When tuning the main transmitter on high power, some of the cabin lights would glow quite brightly. The aircraft maintenance electricians quite often looked for faults in the electrics and would not accept my explanation that the aircraft wiring was resonant and absorbing radio energy.

### Friend Or Foe

In 1943 my boss obtained Air Ministry authority for me to work on the top secret Identification Friend or Foe radio sets. The IFF set consisted of a transceiver with mechanically coupled variable tuning continually sweeping part of the v.h.f. band.

A pulse received from a ground station was reshaped and re-transmitted. The return coded pulse was selected by the flight Radio Officer each day.

When the IFF was serviced and set up, an authorised AID inspector had to be present in the special security workshop to log the correct shape of the transponder pulse. I also had to check the IFF antenna cable and test the detonator destruct circuits. (Yes, I well remember the loud bang when on one occasion an IFF set was accidentally blown up because the detonator had been left connected!).

### High Tension

The h.t. for the 'on-board' radio equipment was derived from small rotary Fynamotors (d.c. transformers) mounted on each transmitter and receiver. Most maintenance problems with the dynamotors were due to wear of the carbon brushes or the commutator.



**BC348.**



### In Case Of Disaster

A very important radio was strapped onto the emergency inflatable dinghy near the main Dakota exit door. This was a portable transmitter operating on the international distress frequency of 500kHz to be used when the aeroplane ditched or was shot down.

Affectionately known as 'the Gibson Girl' the best way to crank the operating handle was to grip the curved yellow case between the knees. When the handle was turned at the correct speed, the RX automatically transmitted twenty seconds of tone followed by the Morse signal SOS.

Of course, in those days, all radio and electronic equipment operated using 'valves' (or tubes to those in the USA). All apparatus was bulky and generated a great deal of heat.

### Of National Importance

In 1944 I passed a City & Guilds commercial aviation radio examination and was promoted to radio mechanic. The BOAC personnel officer applied to the Ministry of Labour for my deferment from military call up. My job was to quote 'of National Importance'. However, eight months later I received notice to report to REME Telecommunications at Arbotfield for my national service on August 14th, 1945, just one day before official end of the war with Japan.

**SWM**



# SWM Equipment Survey

Kevin Nice brings the long awaited results to survey for which the

**H**ere it is at last, the full results of the recent reader equipment survey. I'm sure you will agree that the details that this poll reveals are very interesting indeed. It's a pity that we only had 79 respondents. Look out for the second *SWM* equipment survey coming soon.

## HF Receiver Manufacturers

Manufacturer	Qty
JRC	27
Sony	20
Eddystone	15
Yaesu	13
Realistic	12
Drake	11
AOR	10
Lowe	10
Sangean	10
Icom	9
Kenwood/Trio	7
Racal	7
Roberts	5
Marconi	4
Grundig	3
Collins	2
AKD	1
Bharat	1
HAC (replica)	1
Harris	1
Heathkit	1
Howes	1
R.F.T Kopenick	1
RCA	1
Redifon	1
Rohde & Schwarz	1
Watkins-Johnson	1



The top h.f. receiver JRC's NRD-545.



The bargain basement DX-394, joint second overall.

## Wideband & Scanner Manufacturers

Manufacturer	Qty
Icom	34
Yupiteru	28
AOR	23
Realistic	21
Yaesu	5
Fairhaven	4
Maycom	4
Uniden	4
Eddystone	2
Sony	2
Steepletone	2
Comtel	1
Norlin	1
Racal	1
Signal	1
Welz	1



Right, MVT-7100 the most popular scanner.

Left, Still going strong the Sangean AT8803A.



AOR's ubiquitous AR820

# Survey Results

data was somewhat difficult to collect.

## Overall Manufacturers

Manufacturer	Qty
Icom	43
AOR	33
Realistic	33
Yupiteru	28
JRC	27
Sony	22
Yaesu	18
Eddystone	17
Drake	11
Lowe	10
Sangean	10
Racal	8
Kenwood/Trio	7
Roberts	5
Fairhaven	4
Marconi	4
Maycom	4
Uniden	4
Grundig	3
Collins	2
Steepletone	2
AKD	1
Bharat	1
Comtel	1
HAC (replica)	1
Harris	1
Heathkit	1
Howes	1
Norlin	1
R.F.T. Kopenick	1
RCA	1
Redifon	1
Rohde & Schwarz	1
Signal	1
Watkins-Johnson	1
Welz	1



Joint overall winner and most popular wideband base station, Icom's computer controlled PCR1000.



## All Models - Receiver Results

Place	Radio	Qty	Place	Radio	Qty
1	Icom PCR1000	10	9	Eddystone EC10	1
1	Yupiteru MVT-7100	10	9	Eddystone EC958/7	1
2	JRC NRD-545	8	9	Eddystone S504	1
2	Realistic DX-394	8	9	Grundig YB400	1
3	JRC NRD-535	7	9	Grundig YB500	1
3	Sangean ATS803A	7	9	Grundig YB700	1
3	AOR AR8200	7	9	MAC 0-V-0	1
3	Icom IC-R8500	7	9	Harris RF590A	1
4	Lowe HF-225	6	9	Heathkit SB-303	1
4	Yaesu FRG-100	6	9	Howes DCRX 54	1
5	Icom IC-R7000	5	9	Icom IC-746	1
5	Realistic PRO-2042	5	9	Icom IC-706 Mk1	1
5	Yupiteru MVT-5000	5	9	Icom IC-736	1
6	ADR AR3030	4	9	Icom IC-R72	1
6	JRC NRD-345	4	9	JRC NRD 93	1
6	ADR AR5000	4	9	JRC NRD-301A	1
6	AOR AR8000	4	9	JRC NCM-515	1
6	Fairhaven RD500	4	9	R-1000	1
6	Icom IC-R7100	4	9	R-600	1
6	Yaesu FRG-9600	4	9	TS-570	1
6	Yupiteru MVT-9000	4	9	TS-830	1
7	AOR AR7030	3	9	Lowe HF-125	1
7	Drake R7	3	9	Marconi Atalanta	1
7	Drake R8	3	9	T14A	1
7	Drake R8E	3	9	R.F.T. Kopenick EKD 511	1
7	Eddystone 940	3	9	Racal RA17	1
7	Icom IC-R75	3	9	Racal RA3701	1
7	JRC NRD-525	3	9	Racal RA6790/GM	1
7	R-5000	3	9	RCA AR88	1
7	Lowe HF-150	3	9	Realistic DX-300	1
7	Realistic DX-302	3	9	Redifon R50M	1
7	Roberts R861	3	9	Rohde & Schwarz EK-07-D2	1
7	Sangean ATS818	3	9	Roberts R101	1
7	Sony SW55	3	9	Roberts RC828	1
7	Sony SW100	3	9	Sony SW07	1
7	Sony ICF-SW7600	3	9	Sony SW77	1
7	Yaesu FRG-8800	3	9	Sony 2000	1
7	AOR AR1000	3	9	Watkins-Johnson HF-1000	1
7	Icom IC-R2	3	9	Yaesu FRG-7	1
7	Maycom AR-108	3	9	Yaesu FRG-7700	1
7	Realistic PRO-2006	3	9	Yaesu FT-847	1
7	Realistic PRO-2045	3	9	Yaesu FT-990	1
7	Yupiteru VT-225	3	9	ADR AR2700	1
8	ADR AR7030 Plus	2	9	ADR AR3000	1
8	Drake R8B	2	9	AOR AR8200 MKII	1
8	Icom IC-R71	2	9	Comtel COM202	1
8	JRC NRD-515	2	9	Comtel COM214	1
8	Marconi CR100	2	9	Eddystone 990R	1
8	Racal RA17L	2	9	Eddystone 1990R/2	1
8	Racal RA1792	2	9	Icom IC-R9000	1
8	Sony 2001D	2	9	Icom IC-T8E	1
8	Sony ICF-SW1000T	2	9	Icom IC-R100	1
8	Sony ICF-SW2001	2	9	Maycom AR-106	1
8	Sony ICF-SW7600G	2	9	Norlin SR2152	1
8	AOR AR5000+3	2	9	Racal RA1795	1
8	Icom IC-R10	2	9	Realistic PRO-63	1
8	Realistic PRO-26	2	9	Realistic PRO-75	1
8	Realistic PRO-43	2	9	Realistic PRO-2005	1
8	Realistic PRO-2004	2	9	Realistic PRO-2021	1
8	UBC 9000 XLT	2	9	Signal R535	1
9	AKD HF3S	1	9	Sony Air-8	1
9	AOR AR1000	1	9	Sony Pro-80	1
9	BC348	1	9	Steepletone MBR7	1
9	Bharat HS412	1	9	Steepletone SAB11	1
9	Collins 51-S series	1	9	UBC220	1
9	Collins R 390A	1	9	Uniden UBC245 Trunk Tracker	1
9	Eddystone 680	1	9	Welz WS 1000	1
9	Eddystone 730/4	1	9	Yaesu VR500	1
9	Eddystone 740	1	9	Yupiteru MVT-7000	1
9	Eddystone 958	1	9	Yupiteru MVT-7200	1
9	Eddystone 1002	1	9	Yupiteru MVT-8000	1
9	Eddystone 1004	1	9	Yupiteru MVT-9000 mkII	1
9	Eddystone 1650/2	1	9	Yupiteru VT-125	1
9	Eddystone 1837/1	1	9	Yupiteru VT-125 II	1
9	Eddystone EA12	1			



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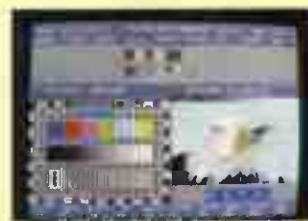
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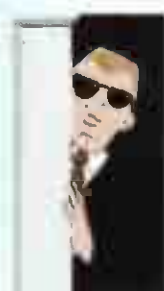


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# SSB Utilities

## C-17 Update

In the June 2000 issue of *Short Wave Magazine* I wrote an article concerning the use of ALE by the USAF (pages 36-38 of that issue), and gave a rundown on the various aircraft types that could be 'heard' on the USAF ALE network. In the article I explained that things may change in the future, and that prediction has now come true.

On page 38 I included a listing of C-17A 'Globemaster III' aircraft, including their tail-numbers and anticipated ALE addresses. I mentioned that the FY 1999 aircraft were just being built and that things may change beyond that. Well, the first half of the 1999 block of aircraft appeared as predicted, but the second half has started to appear with an unexpected series of tail-numbers.

Last year's article said that the FY 1999 aircraft would be '99-0058' to '99-0070' inclusive with ALE addresses '290058' to '290070', but this block of aircraft has been split in two. The first half appeared as expected, as '99-0058' to '99-0064' with ALE addresses '290058' to '290064', while the second half are now known to be '99-0165' to '99-0170' with ALE addresses '290165' to '290170'. By the time that these words are read, all these aircraft will be active and flying the skies, as I have seen reports that the last aircraft (99-0170) was delivered to the USAF just a few days before Christmas 2000.

This change puts in doubt all the remaining C-17A aircraft, those from FY 2000 onwards. Whether they follow the original anticipated pattern, follow-on from the latter half of the FY1999 sequence, or use something entirely new and different, remains to be seen. I have seen one report that says that the next block of aircraft will be '00-0171' to '00-0185', but I think that I will wait until I see them first.

To complicate matters further, the RAF will take delivery of four C-17A aircraft on lease from the USAF during 2001. These aircraft will be used to form a new Squadron at RAF Brize Norton - 99 Squadron - which last flew the Bristol Britannia aircraft until the mid 1970s. In fact, careful

monitoring of the 'usual GHFS frequencies' for C-17A flight will reveal that there are a number of British crew-members flying the aircraft, presumably building-up their hours on the type before the RAF takes delivery. This also means another new set of RAF 'Ascot' callsigns to listen for, probably another set of new Selcall codes, and maybe even the RAF starting to use ALE more.

## Virgin & Architect

In the February 2001 column I mentioned that **Bill Semmens** in Cornwall had heard a Virgin Airlines flight working the RAF 'Architect' service with a medical emergency. I offered some thoughts and ideas as to why the flight would have used 'Architect' rather than Berne Radio or Stockholm Radio.

This prompted a letter from **John Fraser** of Lancashire. He writes to say that he was stationed in Singapore during the very early years of the 1970s, and used to work at 'Singapore Flight Watch' - one of the forerunners of today's 'Architect' network. On one occasion they were contacted by a British Caledonian flight that was stuck in Indonesia with a technical problem, but had been unable to contact their HQ via h.f. due to interference (possibly by the Indonesian authorities).

Once contact had been established between the aircraft and Singapore, the urgent information was passed to British Caledonian HQ in the UK via the h.f. link from Singapore to RAF Upavon. The story ended happily as the technical problem was resolved and the flight was able to continue its journey.

John provides this as evidence that civil airlines using the 'Architect' service is nothing new, but it is not a regular occurrence. John also mentioned that it was not just British airlines who called-in, as on one occasion he can remember being called by an 'eastern bloc' aircraft.

## This Month

I have not really had much opportunity for detailed listening this month as I have been busy preparing articles for a 'SSB Utilities Special' later this year.

I was prompted one evening to listen to the Canadian Forces h.f. network, and spent a few evenings listening to 5.717MHz. This frequency is used by the Canadian Forces SAR service, in a similar fashion to the use of 5.680MHz in the UK and parts of Europe. I was unlucky that I did not hear any SAR traffic, or even any Canadian traffic, but quite by chance I stumbled across an exercise involving a RAF Nimrod, a US Navy P-3C, and a Canadian Forces P-3 aircraft. They were all using NATO tri-graph callsigns, and from contacts on the Internet I was able to confirm which aircraft was using each callsign. The aircraft were operating from RAF St Mawgan towards the end of January, and I believe that their exercise area was somewhere in the south-western approaches.

I have also been listening to the weekly 'Thursday War' frequencies in an effort to learn more about their procedures. Unfortunately, my listening time is severely limited - between 0700 and 0800 each Thursday morning - and all that I have heard so far is a long succession of radio-checks between the various vessels involved. The most active frequency has been 5.206MHz, but at times signals have also been heard on 5.267, 4.033 and 6.836MHz.

Due to work commitments I am unable to listen after 0800, but I believe that there are plenty of other frequencies used as the 'war' continues throughout the day. Military (u.h.f.) airband is also used, as there is often an E-3 AWACS flying somewhere off the south-coast. I have also had some limited success with 3.924MHz, which is a 'Plymouth Mil' frequency used by helicopters taking people and supplies out to various ships in the English Channel.

## Obituary

I am sure that there are many readers of this column who listen to the Air Training Corps h.f. network each Sunday morning. I have mentioned this network and their h.f. frequencies often enough in the past two to three years that I am sure that everybody must have seen (and heard) them by now.

The network is run each weekend by three 'control' stations who generally take control of the network - making sure that everybody gets a suitable chance to talk to everybody else, making sure that everyone sticks to the rules, and making sure that the newer stations get plenty of opportunity to learn the correct procedures. These three stations are 'MRA01' (somewhere in southern England), 'MRB01' (north-western England) and 'MRC01' (east Midlands).

At the end of January, station 'MRC01' was strangely absent from the network. It was later discovered that the operator, Eric Hersenander, had died. Eric was a very good radio operator with a very distinctive voice, and he was an excellent ambassador for the ATC. He always had time to chat to other operators, whether they were new to the ATC h.f. network, or 'old hands'. Although he had passed the RAE exams with ease many years ago, he never acquired a license, probably because he got more than the average amount of 'radio operating' from the evening and weekend ATC radio networks.



# 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.

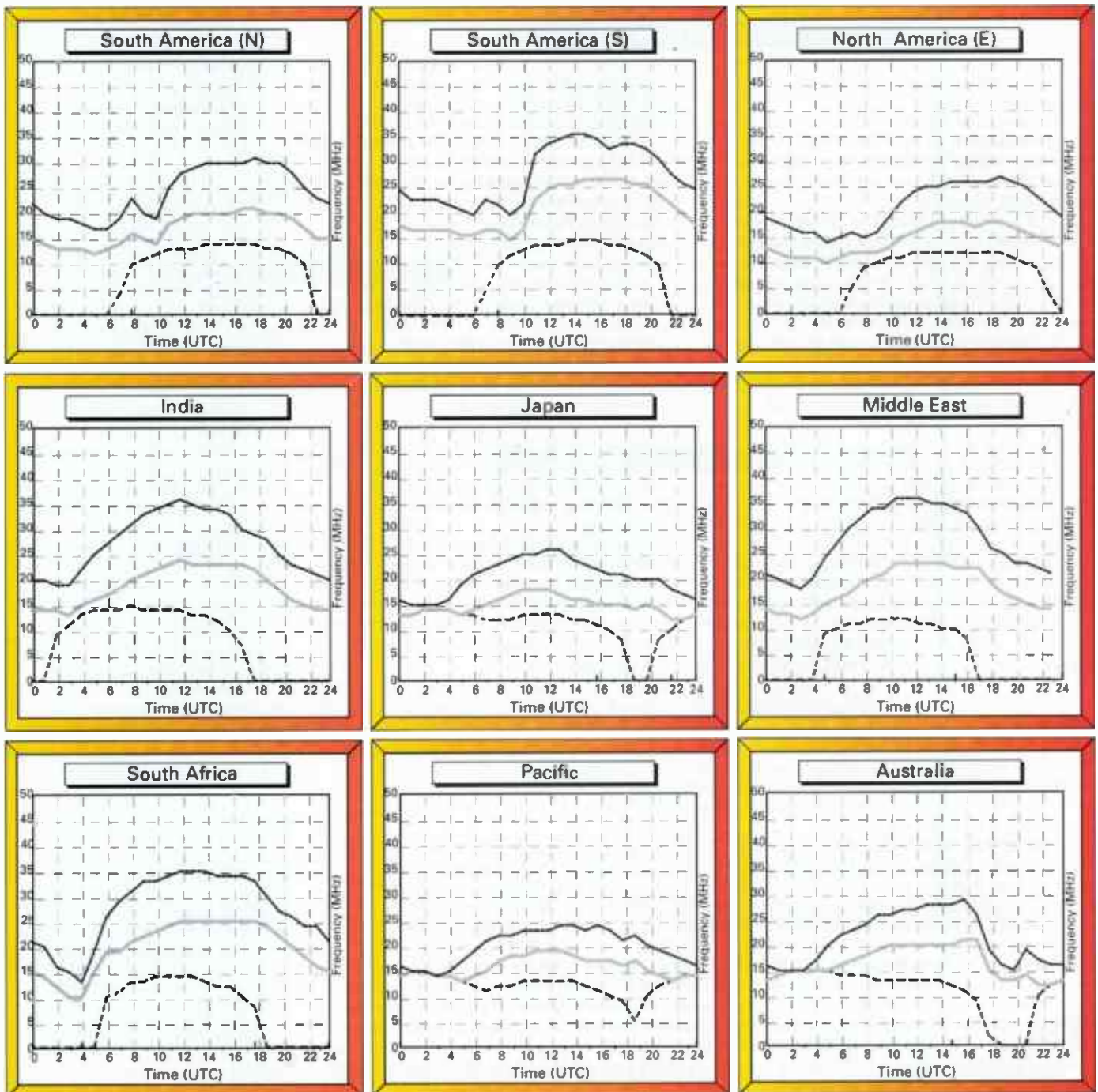
Lastly, the upper dashed line represents the maximum usable frequency (MUF), a 50%

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.

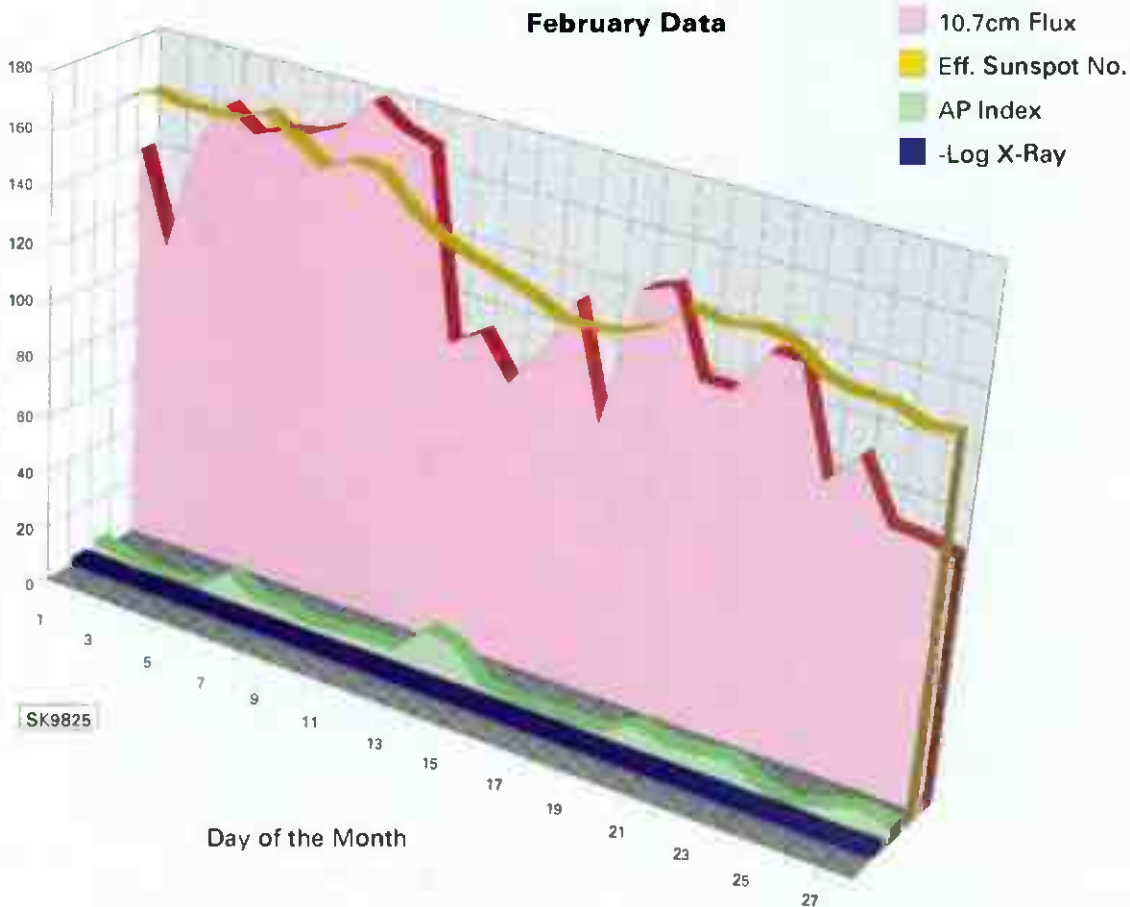
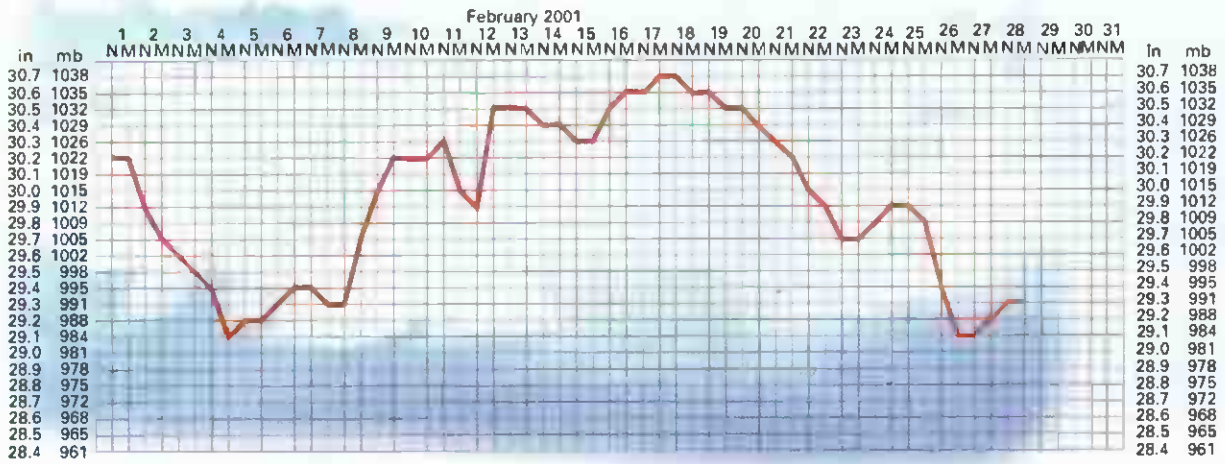
Good luck and happy listening.

April 2001  
Circuits to London



# Propagation Extra

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



## guide to the chart

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

The K and AP indices are measures of geomagnetic activity.

The K index ranges from zero (very quiet) to nine (severely disturbed). K values of five or greater correspond to geomagnetic storm conditions that can relate to poor propagation conditions.

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



# Amateur Bands

Our question this time is a wee bit academic - but it'd be nice to find an answer! Given a good receiver, where would we look to add more selectivity? Oddly enough, perhaps the first place to consider is the main tuning dial - backlash in this neck of the woods will negate everything else one can do.

All the receivers I've owned have been fitted from new with anti-backlash gears - the 'gear' comprises a couple of gears tensioned against each other by a spring - so the basic requirement here is to lubricate at the specified intervals with the specified lubricant, while not 'drowning' it!

Now we can address the prime question. The *ideal* is a perfect, loss-less, filter just wide enough to pass a speech channel which will sit in the antenna feeder and move about automatically as the operator wishes. *Practically* we are stuck with a filter of known but not necessarily ideal characteristics - such may be an i.c. filter or a mechanical filter such as Collins or Kokusai, or a filter made of a collection of crystals. Thus our super-duper receiver may well boast a switch which lets us bring into play a.m., c.w. or s.s.b. filters at the turn of a switch. Now we've just added a complication, namely avoiding leakage around the switch!

So, in effect, we find our limits are forced upon us by the realities. As ever in the final analysis, we balance many factors in the scale and the balance tends to be different for each one of us.

## DXpeditions

Come March 19, the members of Barry ARS will be on Ascension, ZD8, for eight days before a fifteen-day bash from St Helena, ZD7. Callsigns are being settled as I write. The cards for both activities go to GW0ANA.

The Bouvet saga goes on. However, beware of c.w. pirates as Chuck 3Y0C only uses the mode upon firm request.

From Victor UA2FM we have it that the new Russian Postal Rules require the name of the addressee of a PO Box Number **must** be shown first to be delivered, this means the proper name first, **not** a callsign.

VK0LD/VK0MM has, in typical style, stirred up a hornet's nest by stating that he will only QSL via E-mail. Perhaps he needs to take thought rather than going off half-cocked!

Finally, the D68 DXpedition. Listen carefully for the operators instructions as to his listening frequency. More details on <http://www.dxbands.com/comoros>

## The Mail

Perhaps we could start with something **very** unusual - a 'Thank You' card from G2DYM arising from our mention last time of his various antenna products, Q-code list and so forth. Memory says that's only the second since I started this piece back in the 1960s.

Next we have a letter from **Ron Pearce** in Bungay who, as an enthusiast for the simple receiver, has been trying for some time to persuade our Editor to give the black boxes a rest in favour of a couple of issues devoted to the home-brew and simple gear. There is a problem here, Ron, in that advertisers pay for their space while the magazine has to pay out for the 'editorial' content (such as my bit) each month, and paper, printing, etc.

To strike a balance is the art of being an editor! As for my mention of a one-f.e.t. receiver, I simply took a one-valver, replaced the 'bottle' by a f.e.t. and then fiddled with the component values (in particular the resistors)

until I persuaded it to behave. The 'persuading' bit is always the time-consuming part, but the satisfaction comes of persuading it to slide gently into and out of oscillation. 'Ploppy' reaction is a pest, to put it mildly!

**Harry Richards** sent in a copy of the obituary notice on Al Gross which appeared in the *Daily Telegraph* of January 16. What a pleasant change to read about a radio amateur who entered the hobby by the classic route and sustained the youthful interest throughout life. Harry asks if Yours Truly had heard of Al - yes I had, but I guess I'm in the minority - most amateurs, asked about walky-talkies, would think of the Japanese offerings.

Still with the unusual, most readers will be aware my XYL holds UR5CMM - that situation has now changed in that her UK callsign is MW0GAL.

**Ted Trowell** on the Isle of Sheppey sticks to c.w. - I guess he has found it the best mode for his hearing. I often wonder why people struggle on with, say, s.s.b. when for no more bother than a few hours spent learning Morse they could be relieved of much of the discomfort.

A similar argument might well be used by the 'black box' owner might be used as reason for replacing, say, the a.m. filter by a s.s.b. equivalent. On Top Band, Ted hooked VK6HD, 5B4AGC, TK/DL7HZ and HB0/DM2AUJ. At 3.5MHz we find VK6HD again with W3BY and on Forty K6PT, DS5USH, CN8YR, 5B4AGC, N4AF, PZ5RA, JF1NZW, 7X4AN, EA9EU, JA5PL, BX7AA and CO2FC. Up again to 10MHz for 3W7CW, ZB2/K4ZLE, P43JB, VO1SA, VQ9OM, EA6ZY, V5/DJ7XG, V47SS, YV1NX and FG/F6HMJ.

The 14MHz collection was shorter - JA7SSB, RA2/N1BB, 8P9RM and ZD7DP. On 18MHz VK6HD re-appears, along with PZ1AP, JX7DFA, FR5FD and FJ8W8MV. Another thin crop was from 21MHz where HL1CG, JH1TFE and KL7HF entered the book. At 24MHz we see JT1BH, VK8HA, FG/F6HMJ, XE2NJ, OX3NUK, V47SS and P43JB.

That leaves us Ten, and here we see VU2EEC, 3B8/OE3GEA, V51AS, JW3FL, VU2BK, XE1YJL, CO2PH, YV1NX, CO8ZZ, W6JZH, PY2OT, 8P9EM, VE5ZX, CX4GL, HI3LFE, XE2/NR7O, 8R1J and HC2/UA4WAE, plus some rare States like W7CA (Wyoming), N7OG (Utah), N0RA (MN), K0SN (WI), W0CGR (Colorado) and N0TM (Nebraska).

From **Colin Dean** in Barnsley we see 7MHz gleanings from BV2RS, D68BT, EK8WY, EK1700GM, JAs 1/4/6-7, JT1CO, OD5IU, SY2A (Monk Apollo, Mt Athos), TF3TF, UN7MAU, UN9LM, VO1BC, VO1WIZ, YB0A, 4K8M, 5A1A, 7L2UBM; plus 18MHz from A43MF, D68BT, FM/F2JD, KH6LEM and 5R8FU. Then, Colin peeped into the mysteries of 28MHz and found CE5GO, CP6XE, C6AFV, D68BT, D68WL, HH2SJR, HI9/DL5YV, JW0FS, JX3EX, J39JQ, NP2KW, OD5SX, PJ5/UA1ACX, SU1SK, TA2BK, TF3AO, TI2JJP, WP3HI, XE2XWB, YB0ABB, ZF2NT, 5A1A, 5R8FU, 8P9AR, 8R1AK and 9K2SS.

Finally the **Goodhalls** in Oxford. Peter's eye was doing fine up to Christmas Day, but then a week later he woke up and noted things weren't 'just so'. They whipped him back in to hospital and another 90-minute op. Now it's a case of 'wait and see' - and as always, the hardest part is the waiting.

On the bands they've been looking at the DX segments of Top Band and Eighty - as Paul remarks, good practice for Field Day activity in June!

## Finale

Thanks to those who sent letters and cards, they will be pleased to know I duly escaped from the clutches of the hospital even if it does mean a diabetic diet from now on. As for the new car, Galina collected it and has been using it to visit the hospital in Aberystwyth - she's put in a couple of thousand miles in the driving seat while Joe Muggins paid for the thing and got his first ride in it as a passenger when MW0GAL collected me from Bronglais.

See y'all in a month - deadline as usual.

A mate of mine came over the other Saturday evening for a few beers and a curry. You know how it is. As well as his overnight kit (well - we did have quite a few drinks) he arrived armed with a Co-op carrier bag. He explained that some years ago he had been given a scanner and he didn't know how to programme it. Out of the plastic bag he hauled an AOR AR2002 scanner. There was a photocopied book of words as well, but he has an amateur ticket and we all tend to suffer from docophobia, so I don't blame him for not looking at that.

The AR2002 seemed to be in very good condition indeed and I set about filling it up with some frequencies. These radios were at the high end of the market in the eighties with the title of 'Most Coveted Scanner' going to the AOR company's AR3000 model, which is still available new today. The AR2002 worked very well indeed and I soon loaded it's 20 channels with some rescue, marine and airband frequencies for him to listen in on.

These sets were sold mainly to government users in the UK and the USA and this is illustrated by the fact that they only have a twenty channel memory capacity. The government people would require high performance, but would either use the radio hooked up to a computer for frequency and channel control via the software that AOR made available or through other specialist programming.

If it was going to be used in either a vehicle, vessel or aircraft then twenty channels would be enough for the job in hand. Anyway, the 2002 is now sitting in my mate's front room ticking away reliably and providing interest for any visitors to his home. It's surprising just how few people are aware that for a modest cost you can tune into local comms of interest.

Coverage on the AR2002 starts at 25MHz and so with a half decent antenna, low v.h.f. DX stuff will also be heard on it. I wish someone had given me a nice AR2002 or a 9000XLT...or anything.

## Marine Band

I received an E-mail via the SWM office from David who explained the difficulties that he was having trying to monitor the marine band on a Belcom marine band scanner. The set is hooked up to a marine band antenna. He was receiving a mass of spurious Channels 0 and 16, probably the most frequently used channels. He explained that he lives about half a mile from a police antenna mast which has a host of antennas bolted on it. He spoke with a local radio dealer who thought that it could be a pager system causing the interference. He was getting the same



problem on a hand-held scanner on the marine band.

David wondered what could be done. I took advice from an old mate in Northants and eventually it was decided that David should fit a coaxial stub on the antenna feed line to null out the interference. So, assuming that the police transmission was causing

the problem and assuming that it's on 154MHz, I suggested to David that he cut a length of coaxial about 460mm long and attach it to the coaxial antenna feed from his main antenna about two or three feet from the scanner and inside the radio room. He hooked it up core to core and braid to braid, making sure that it remained open circuit at the bottom end.

When the interference was present, David then chopped a bit off the end of the stub, 10mm at a time. When he made the second 10mm chop, the interference ceased. A good result. If his problem had been caused by two transmitters, then he may have had to make two stubs on roughly a quarter wave of the interfering frequencies and fit both of them. So it can be worthwhile fitting quarter wave stubs cut to the interfering frequency. It certainly worked for David.

## Update

Thanks to Jim near Keighley in Yorkshire who keeps me up-to-date with things in his area. In March last year I heard from Jim that the West Yorkshire Police were none too keen on adopting the new Airwave TETRA radio system on grounds of cost (who can blame them). The police authority were considering telling Jack Straw, the Home Secretary, that they didn't want his new wireless because it was too pricey.

An update from Jim from the Yorkshire Post paper on 20th January. It seems that the police authority have put the heat on Jack for more money and Jack has coughed up! The West Yorkshire

chief constable, Graham Moore, said, "It is recognised countrywide that West Yorkshire took charge in getting massive amounts of cash". Full marks to Graham then! It does seem that the implementation of a digital police radio system may not be without opposition as it is claimed that the radios can cause problems to some medical equipment and there are also health concerns which have been expressed by Dr. Gerald Hyland, a biophysicist, of the University of Warwickshire.

## Not A Criminal

However, time marches on and at least when digital comms are widespread in official use they will not be overheard by naughty old hobbyists. Like, for instance, Simon from South Devon who about nine years ago was mobile in his jalopy in Torquay, monitoring the cops, when he was stopped by those same officers. He was searched, his jalopy was searched and the scanner was found. The officers asked Simon to turn the unit on and, horror of horrors, their local repeater immediately started spouting from the speaker grille.

Simon's world turned high intensity blue and he was later cautioned by a chief inspector.

This is where it gets sensible. Simon showed the policeman his collection of QSL cards and a press cutting of him listening to Helen Sharman, the first British astronaut. The officer realised that he wasn't dealing with a criminal mastermind here and Simon was given his scanner back. Simon tells this story in the hope that others will be dissuaded from making the same mistake as he did.

Does anyone know what Helen Sharman is doing at the moment? She was working as a scientist with

confectionery company Mars in those days.

## Mystery Solved

Regarding the piece on police radio codes that was printed in February SWM, John from Cheltenham wrote that he heard a yarn that the night shift police in his area were using an additional code to the Gloucestershire force's usual 10 codes. Until about 0200 anyone overhearing a police transmission may have heard the Code 10-11 being used. It was never used on day shift or after two in the morning. Simon puzzled over this for some time until one night there was a security compromise. "Do you need 10-11?" asked one officer to his mate. The reply was, "Yes please, with salt and vinegar". Mystery solved.

## Security Obsession

Radio comms security has been an obsession of the authorities for many years. Yet the amount of equipment that manages to find it's way to the open market while still programmed with official radio frequencies just never ceases to amaze. If you attend any sizeable radio rally or event I can guarantee that someone will be selling equipment that is still programmed up with frequencies for the police or other official user.

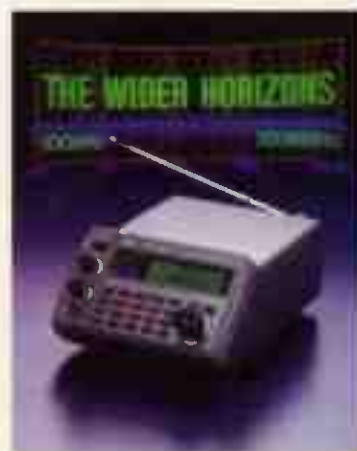
Most of the time the folk selling the kit are unaware that the channels are still loaded in the set. They just buy the stuff and sell it on. I have come across a load of this stuff myself, but it's of no use to

me. I live in an area where police transmissions just don't penetrate. I get to hear a lot of mountain and marine rescue traffic though.

With marine traffic in mind, it's certainly always worth listening to the v.h.f. marine band if you live anywhere near the ocean or even at a high location. During a

recent military JMC exercise many communications between the 'opposing forces' were overheard on the marine band. The exchanges were really interesting with a mass of verbal sparring between participants.

Other traffic between vessels was between 200-300MHz which really is within the remit of military airband I guess. On the v.h.f. marine band I overheard them arranging drinks at the end of the exercise...which is where we came in isn't it.






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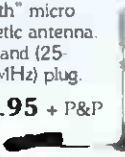
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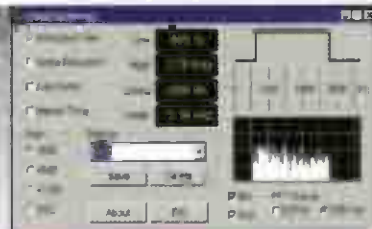
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## WR-1500

## WR-3100

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WR 1000i/WR 1500i/3100i: DSP Internal full length ISA cards

### Construction of externals

WR 1000e/WR 1500e/3100e external RS232/PCMCIA (optional)

### Frequency range

0.5-1300 MHz

0.15-1500 MHz

0.15-1500 MHz

### Modes

AM,SSB/CW,FM N,FM-W

AM,LSB,USB,CW,FM-N,FM-W

AM,LSB,USB,CW,FM N,FM W

### Tuning step size

100 Hz (5 Hz BFO)

100 Hz (1 Hz for SSB and CW)

100 Hz (1 Hz for SSB and CW)

### IF bandwidths

6 kHz (AM/SSB),  
17 kHz (FM-N), 230 kHz (W)

2.5 kHz(SSB/CW), 9 kHz (AM)  
17 kHz (FM-N), 230 kHz (W)

2.5 kHz(SSB/CW), 9 kHz (AM)  
17 kHz (FM-N), 230 kHz (W)

### Receiver type

PLL based triple conv. superhet

### Scanning speed

10 ch/sec (AM), 50 ch/sec (FM)

### Audio output on card

200mW

200mW

200mW

### Max on one motherboard

8 cards

8 cards

3-8 cards (pse ask)

### Dynamic range

65 dB

65 dB

85dB

### IF shift (passband tuning)

no

±2 kHz

±2 kHz

### DSP in hardware

no - use optional DS software

### IRQ required

no

no

yes (for ISA card)

### Spectrum Scope

yes

yes

yes

### Voice filters

yes

yes

yes

### Published software API

yes

yes

yes (also DSP)

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# Info in Orbit

This month I bring you a feature about the polar orbiting satellites, hoping this will be of interest, particularly for those relatively new to the subject, who might not be aware of the nature of the hardware that transmits the signals to which we strain our antenna! Getting pictures of the satellites was not easy. The Space Monitoring Information Support Laboratory kindly provided some graphics, and my membership of the Friends and Partners in Space (FPSpace) mailing list led me to **Mark Wade's** amazing web site - Encyclopaedia Astronautica - where I found several actual pictures of Russian spacecraft taken at exhibitions. Mark is duly credited, as is the Satellite Index Project web site of **Rick Oestmann**. See details of these sites in 'Web Watch'.

## NOAA Weather Satellites

The 'NOAA' satellites are operated by the National Oceanographic and Atmospheric Administration in America, and are polar-orbiting satellites in varying degrees of 'operational' status. In some cases, parts of the onboard systems are now non-functioning.

NOAA-16 was scheduled to enter operational status by the end of February, following completion of post-launch testing. It is expected to replace NOAA-14, originally an early afternoon WXSAT, the orbit of which has since drifted to later in the day, thereby preventing proper use of some of the on-board equipment. Those with suitable receivers and able to spend some time monitoring the frequencies, will be aware that NOAA-9 - an old, non-operational WXSAT - is periodically transmitting beacon and other non-a.p.t. signals.

The satellites monitor the entire Earth, doing more than just imaging. They measure weather patterns affecting the climate of the whole earth and provide visible and infrared radiometer data for imaging, radiation measurements, temperature and moisture profiles. Ultraviolet sensors measure ozone levels in the atmosphere and monitor the ozone 'hole' over Antarctica from mid-September to mid-November.

Each day they send global measurements to NOAA's Command and Data Acquisition station computers, adding vital information to forecasting models, especially for remote ocean areas, where conventional data are lacking. For details about how you can collect samples of the h.r.p.t. images recorded during remote orbits, see the November 2000 SWM.

To summarise, they carry the AVHRR (advanced very high resolution radiometer) imager, a high resolution infra-red sounder, a space environment monitor to monitor charged particles (often from the sun), a microwave sounding unit and the ARGOS data collection unit (data transmissions from ocean-based buoys).

As mentioned, performance of the NOAA WXSATs is not uniform: NOAA-12 and NOAA-14 are providing good quality a.p.t. and h.r.p.t. NOAA-16 is also providing excellent h.r.p.t. For various reasons, NOAA-15 and NOAA-16 are not providing reliable a.p.t. As at mid February, NOAA-15 has been providing good h.r.p.t. for a few orbits.



## METEOR WXSATs

We hear transmissions from two series of METEOR WXSATs - though not normally during the same period. METEOR 3-5 is the oldest of the currently operating METEORs, having been launched on 15 August 1991, but is still the operational satellite. Its orbit is not sun-synchronous, so it slowly drifts from day to day, gradually crossing the equator earlier as the days pass. It's orbital plane therefore periodically passes through the twilight region where, due to the low angle of solar illumination, it is powered off for a few weeks. METEOR 2-21 was launched on 31 August 1993, two years after METEOR 3-5, and is the WXSAT that is usually powered on during METEOR 3-5's off-periods.

## METEOR 2-21

This second METEOR series was still operational when the third series (METEOR-3) was being developed and launched. It includes optical-mechanical, multi-spectral/infrared scanning television units, a radiometric sensor for uninterrupted observation of electromagnetic fields in space, and an eight channel, infrared radiometer for observation of global vertical temperature profiles.

The spacecraft was checked out prior to launch by the first automatic digital spacecraft test system in the Soviet Union. Their orbits (81.2° at 850km altitude) allow a repeat scan of every location at six and twelve hour intervals by a constellation of three satellites at 90° to 180° intervals, though these no longer operate.

Data was processed at hydro-meteorological offices in Russia, and the METEOR series served the Ministry of Defence by providing operational meteorological data for reconnaissance satellite scheduling, operational

weather data for use by the Armed Forces in local and global operations, and the monitoring of radiation in near-earth space.

## METEOR 3-5

The METEOR-3 series also carries scanning systems and transmits real-time imagery in the visible-light band. Other on-board systems include a scanning TV-sensor with on-board data recording system for global coverage, and automatic data transmission mode, an infra-red radiometer for global coverage and direct data transmission



Fig. 1: NOAA-12 spacecraft courtesy NOAA.



Fig. 2: NOAA early January a.p.t. image from Byron Smith in Welwyn Garden City, Herts.

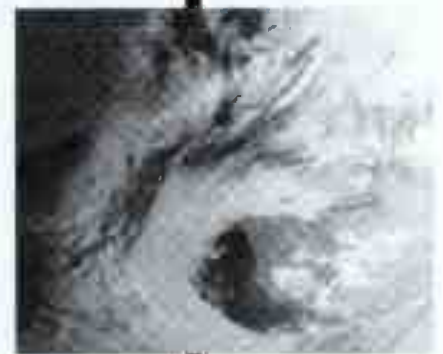


Fig. 3: The h.r.p.t. NOAA-15 0833UTC 19 February 2001 channel 2.

Fig. 4: METEOR series 2 spacecraft - courtesy Mark Wade.



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modes and a scanning 10-channel IR-radiometer.

The Russian *METEOR-3* series of meteorological satellites provides daily weather information including data on clouds, ice and snow cover, atmospheric radiation and humidity sounding. The satellites orbit at a higher altitude than the *METEOR-2* class, providing more complete coverage of the earth's surface. They have the same payload as *METEOR-2*, but also include an advanced scanning radiometer with better spectral and spatial resolution and a spectrometer for determining total ozone content.

The spacecraft incorporates three-axis stabilisation and twin 10m span solar panels. The orbit can be adjusted by ion thrusters. Meteorological data is transmitted to four primary sites in the former Soviet Union, in conjunction with about 80 other smaller sites. Imagery - automatic picture transmission - is available on 137.30MHz to ground stations.

*METEOR-3* has two 0.5 - 0.7µm radiometers. The first provides direct relay with a swath width of 2600km and a resolution of 1 x 2km. The second stores data on an on-board data recorder, providing global coverage with a swath width of 3100km and a resolution of 0.7 x 1.4km.

The payload also includes a scanning infra-red radiometer at 10.5 - 12.5µm and an 8-channel IR radiometer for atmospheric sounding at 9.65 - 18.7µm. *METEOR-3* also includes a 4 channel UV ozone monitor (0.25 - 1.03µm) at 2km altitude resolution and a particle radiation detector (0.15 - 90MeV). Infra-red transmissions from *METEOR 3-5* ceased many years ago.

## RESURS

The latest *RESURS - (01-N4)* launched 10 July 1998 - is the first in the series to carry a.p.t. (automatic picture transmission) hardware to enable thousands of users to receive images in the 137MHz band (137.85MHz to be precise). As with other polar-orbiting WXSATS, it carries a range of instrumentation. *RESURS* is in a sun-synchronous orbit, south-bound during the late morning, so we can receive imagery around the same local time each day.

On-board systems include a high resolution multi-spectral scanner (MSU-E) for Earth observation in the visible and near infra-red spectrum, a middle resolution multi-spectral scanner (MSU-SK) for Earth and cloud observation, television apparatus MR-900M for cloudiness and Earth observation in visible and near-infrared spectrum with spatial resolution 1.6 x 1.8km; unit ISP-2 for the measurement of the solar constant; multi-spectral scanning radiometer SRRB for measuring of components of radiation balance of the Earth (built by France), and a small telescope (NINA) for measurement of the stream characteristics of charged particles (Italy). The imaging mechanism performs a conical scan with a viewing angle of 39°.

Operationally, the satellite has been occasionally silent at a.p.t. frequencies, only to resume some weeks later. Discussion on the RIG (Remote Imaging Group) Internet mailing list often includes general reception observations.

## OKEAN-O, OKEAN-4 & SICH-1

Transmissions from these three oceanographic satellites are especially interesting because they are so infrequent. *OKEAN-O* is officially catalogued by Russia as *OKEAN-O* number 1, and was launched on 17 July 1999 into a circular, sun-synchronous orbit. Dniprocosmos State Enterprise, the National Space Agency of Ukraine and Yuzhnoye State Design Office, the Space Monitoring Information Support laboratory (SMIS) of the Space Research Institute (IKI RAN), and the Committee for Hydrometeorology SRC Planeta, Moscow, Russia, have all provided information on these satellites.

In past decades, a sequence of a.p.t. (automatic picture telemetry) transmissions were recorded from specific *COSMOS* satellites. These were apparently experimental, and were monitored in Britain and western Europe by people using suitable (that is, WXSAT) scanners. I still have audio cassette tapes with recordings of brief bursts of data from *COSMOS-1500* and *COSMOS-1766*, amongst others. One source described them as 'Naval radar satellites'. The *OKEAN* and *SICH* series are virtually identical.

The *OKEAN* series satellites were designed for internal use in USSR meteorological service (ice cover in polar regions being the main application). As with a.p.t. transmissions from the NOAA WXSATS, the transmission on 137.40MHz from *OKEAN-O* is just one of several down-links. The spacecraft carries many instruments, and therefore provides various types of transmission - including high and low-rate data flow on 8.2GHz, and the v.h.f. transmission on 137.40MHz. Telemetry and control are performed using a

*Kondor-1* ground platform transmitting on 1533MHz, and a *Kondor-3* receiving station on 460MHz.

The RLSBO unit is a side-looking radar. There are two units - RLSBO (R) with right-side looking and RLSBO (L) with left-side looking radar. The operating wavelength is 31mm, producing a ground resolution of 2.5 x 1.3km, and a swath width of 455km. This instrument allows the whole of earth's surface to be mapped by radar. It is 'power hungry', so radar scans have limited continuous operation time. Visit the Ukrainian and Russian Remote Sensing Satellite home page: [http://www.ocean-o.dp.ua/en\\_page-1.html](http://www.ocean-o.dp.ua/en_page-1.html)

Sometimes *OKEAN-O* has provided a near daily



Fig. 5: *METEOR 2-21* spacecraft - courtesy SMIS.



Fig. 6: *METEOR 3-5* spacecraft.



Fig. 7: Close-up of *METEOR-3* instrument package courtesy Mark Wade.

Fig. 8: *METEOR-3* exhibited at Hannover Expo 2000 courtesy Mark Wade.

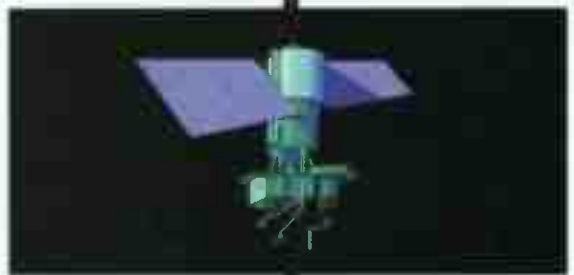


Fig. 9: *RESURS 01-N4* satellite illustration graphic.





Fig. 10: *OKEAN-O* courtesy SMIS.

sequence of transmissions - invariably during easterly passes over Russia ground stations, though it is a long time since I have heard of a radar transmission being made.

Figure 13 shows a typical visible-light pass, showing the curious decreasing number sequence along the right side of this south-bound pass.

### FENG-YUN 1C

Although there is no a.p.t. transmitted by this Chinese WXSAT, if you have the necessary h.r.p.t. hardware, you can receive high quality h.r.p.t. images from *FENG-YUN 1C*. Unfortunately, I do not!

Acknowledgement: pictures in this feature have been provided by a number of organisations and individuals, including NOAA, SMIS, Mark Wade and Rick Oestmann (see 'Web Watch'). Those interested in finding out more details - for example, the rockets used to launch these satellites - should visit these two web sites for this, and much more information at: <http://www.friends-partners.org/mwade/index.htm> and <http://www.roestmann.com/>

### METOP Launch Agreement

EUMETSAT has signed a launch services contract with Starsem for the launch of its METOP polar orbiting satellites. The launch of the first satellite of three in the series, part of the EUMETSAT Polar System (EPS), is planned for 2005. METOP will comprise a morning sun-synchronous WXSAT provided by EUMETSAT, and an afternoon WXSAT provided by NOAA. Launch slippage has so far pushed back the launch of *METOP-1* by two

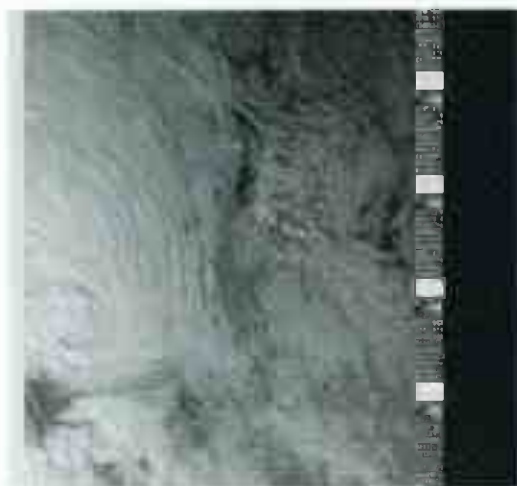


Fig. 13: *OKEAN-O* 1 February 2001 0834UTC from Stu Nestling.

## Reader Offer

### Kepler Elements - WXSATS & ISS

With *MIR* scheduled to have been brought down in the Pacific ocean in early March, I had to remember to modify this section! If you want a set of disk files containing the latest 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 to me, at the address at the head of the column. A print-out is included that identifies NASA catalogue numbers for the WXSATS. The disk file is ideal for automatic updating of tracking software.



Fig. 11: *OKEAN-01 (SICH-1)* courtesy Mark Wade.

years.

The launch services contract specifically covers the first two spacecraft, with an option for the third. The launch vehicle being supplied by Starsem will be the highly reliable Soyuz/ST which incorporates the *Fregat* upper stage. Launches will take place from Baikonur in

Kazakhstan. The Soyuz/ST is a development of the early sixties launcher, which lofted Gagarin for the first manned orbit.

### New Feature

I hope to feature reader's WXSAT receiving stations in future editions. Look out for the first victim next month!

### Shuttle Launch Schedule

STS-102 *Discovery* is the 8th *ISS* Flight (5A.1) and is scheduled for launch on 8 March, subject to possible delay. Payload - Leonardo MPLM (Mini Pressurised Logistics Module), for an 11-day mission, also transferring crews - three up and three down.

STS-100 *Endeavour* is the 9th *ISS* Flight (6A), and is scheduled for launch on 19 April for an 11-day mission. Payload - Raffaello MPLM, SSRMS (Space Station Remote Manipulator System).

Fig. 12: *OKEAN-01* model exhibited at Ukraine Pavillion, Hannover Expo 2000 courtesy Mark Wade.

Fig. 14: *FENG-YUN 1C* - more information about this Chinese satellite in Web Watch.



### Web Watch

Visit the Ukrainian and Russian Remote Sensing Satellite home page: [http://www.ocean-o.dp.ua/en\\_page-1.html](http://www.ocean-o.dp.ua/en_page-1.html)

*FENG-YUN 1C* - for more details visit these two web sites: <http://www.friends-partners.org/mwade/index.htm> and <http://www.roestmann.com/>

### Frequencies

- NOAA-14 transmits a.p.t. on 137.62MHz.
- NOAA-12 transmits a.p.t. on 137.50MHz.
- NOAA-15 and NOAA-16 are undergoing tests.
- METEOR 3-5 uses 137.30MHz.
- OKEAN-O, OKEAN-4 and SICH-1 use 137.40MHz for brief transmissions.
- 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.

# dressler

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**Intercept Point** +45dBm IP 3rd order (10MHz/12V)

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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



### ARA 60

#### Technical performance

**Frequency range** 40kHz-60MHz (full performance) 60-120MHz 2-3dB less gain

**Output impedance** 50-75 ohm coaxial

**Connector to Rx** PL type delivered as standard. Other standards can be fitted on request


**Gain** 10dB +/-0.2dBs

**Intercept Point** +50dBm IP 3rd order (10MHz/12V)

**DC power supply** 11.5-13 volt DC at 80mA typ. (230V/12V DC stabilised mains adaptor is supplied with the antenna)

**Mast diameter** 30-50mm can be fitted

**Dimensions** 115cm total length. Antenna tube 50mm x 160mm  
Ideal for base stations



### ARA 2000

#### Technical performance

**Frequency range** 50-2000MHz

**Output impedance** 50-75 ohms coaxial

**Gain** 19dB -1000MHz  
18dB -1400MHz  
16dB -2000MHz

**Noise figure** 1.5-2dB -1000MHz  
1.8-2.5dB -1500MHz  
2.5-4dB -2000MHz

**3rd order IP** +35dB typical

**Output impedance** 50-75 ohms coaxial


**Connector standards** N type connector at the antenna. BNC male connector to the receiver

**Power supply** 12V DC at 160mA DC. Power supply for 230V AC is delivered comes with the antenna

**Dimensions** Length 450mm. Diameter 90mm

**Weight** 2kg

**Accessories** Mains wall plug adaptor (230V A/12V DC). Interface unit (remote supply unit)  
12m coaxial cable and mast mounting clamps



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# Satellite TV News

The gunman firing shots at the White House back on February 7th was rapidly himself shot, such is the security surrounding President Bush - he's the 43rd president. This was very much apparent on Bush's swearing-in day on January 20 when FBI surveillance/coverage cameras followed the President's first motorcade through Washington's wet streets.

Once again, FBI footage was erroneously linked via Reuters uplink station into Europe on the 21.5°W, NSS-K 11.462GHz-V (SR 5632+FEC 3/4) lease. The whole cavalcade was swamped with G-men with long open coats running or walking with 'the car', security men lurking behind guards and all with radio earpieces. The presidential cavalcade was long... a commo truck bristling with antennas, a paramedics truck and ambulance! Carried live over the Atlantic lease.

We have numerous Arabic readers and those with interests in the Middle East, keeping up with the home news is easy thanks to ArabSat-2A/3A now slotted at 26°E. New TV channels appeared recently - Dubai EDTV, Dubai sport, Dubai Business, Palestine, Orbit, INN, ANN, Mustakilla and Saudi-2 (all on 11.747GHz-V, SR 27500+3/4) and an interesting package up at 12.015GHz-V (27500+3/4) showed up NDS-TV, Al Manar, Zen-Future and rather geographically distant TV Djibouti! Saudi-TV-2 carried many of its programmes and movies in English - a 1m dish + 0.6dB noise INB is sufficient to offer excellent quality reception.

Though both Israel and Iran aren't represented on ArabSat, Stefan Hagedorn's Internet newsletter reported mid January that 'Simaye Azadi Iran National TV' has appeared on Eutelsat 2F3, 21.5°E, 11.568GHz (27500+3/4) - times unknown.

Whilst checking NSS-K on Jan 22 I happened across the Globecast digital package - 11.590GHz-V (20145+3/4) on the RSD-301 receiver which flagged up 'there's more channels to scan' - so I scanned and found service idents for 'GP Dutch', 'GP French', Finnish, Greek, Italian, Spanish and English channels, but with no programme/pictures. Indicative of new activity, though these additional channels disappeared the next day!

Less happy was the Globecast caption on Jan 27 that advised that all PGA (Professional Golf of America) tournaments would be encrypted in PowerVu as from Feb 1, 2001. The AT&T Pebble Beach National however remained in the clear for two days after deadline and then the screen went blank. I hope that Daytona and Indy racing doesn't encrypt - true excitement!

Icy 'sport' was carried over Intelsat 801, 31.5°W on Jan 21 with BT's 'TES-10 ANDROS' uplink truck in Switzerland uplinking motorbike and rally car 'snow track' scrambling - a beautiful setting in a snowy valley surrounded by high mountains and a blue skies backdrop, contrasting with our own UK grey skies, freezing and drizzle outside!

Eutelsat 2F4, 28.5°E also featured this same venue - 11.554GHz-H, 27500+3/4 though a scramble bike (spiked wheels) towing a skier is perhaps tempting an early demise! This was a broadcast for the Czech TV channel 'CT-2'.

The International Space Station end of January welcomed its first resident crew, the US media circus courtesy of NASA TV carried a live Q and A session with the onboard crew, answering queries from several radio and TV stations. This was a non-encrypted Globecast package over NSS-K. Interesting to note the astronaut images were jumpy akin to slow scan, certainly not like the usual high quality pictures seen these days from space.

Analogue TV still lives and the 'tvsh' Albanian satellite channel appears on Eutelsat 2F3 @ 21.5°E - 11.555GHz-H, audio 6.60MHz in the evenings. 2F3 is an inclined orbit craft and the signal levels will slowly

change throughout the 24 hours.

Scanning over the Ku airwaves from Eutelsat W4, 36°E January 27th I found a very strong (+100%) digital carrier - 11.624GHz-V with SR 6116+3/4 - service ident '11624', no help there and no pictures. Seen a few days later similar to the 27th. Any ideas?

Roy Carman (Dorking) cruising the Clarke Belt found the German Kopernikus-3, 23.5°E busy with news feeds on the 12th Jan. They've now discovered BSE and 12.605GHz-H (6111+3/4) and the farmers were hysterically protesting on the Ministry of Agriculture front steps.

Meanwhile, in Cologne (Köln), 12.626GHz-H was carrying a regional news feed with yet more protesting farmers - and still blaming the English BSE - the reporter's final comment was that the German football teams eat German beef!

Kopernikus is usually very busy late afternoons with regional news feeds, it's worth a scan. The next day the Italians discovered their own BSE and a live analogue (I) news item for 'Porta, Porta' over Intelsat 705 @ 18°W (11.135GHz-V) came from the Cremonini meat packing plant. The plant manager was far from happy becoming verbally emotional, the reporter couldn't continue his news broadcast due to the background 'rabbit'!

The Russian Express-3A satellite @ 11°W used to carry the Serbian 'RTS-SAT' TV channel, but it suddenly disappeared. It's now re-appeared over Eutelsat 2F4, 28.5°E with programming, check 11.186GHz-H SR 6111+3/4.

RTS has also been reported over Hot Bird, 13°E - 12.188GHz-V. Russia's national TV Channel 1 is often carried over NSS-K 21.5°W around the 1630-1800 slot, originating from the Reuters Moscow bureau and converted to NTSC 525 lines for 'onwards despatch' to the US networks - 11.487GHz-H, 5632+3/4.

The rarely reported satellite - Telecom 2D @ 8°W transmitted a corporate Jan 31st for the Tokyo Broadcasting System. This was a high-flying promo for the latest version of the Toyota Yaxis which is manufactured in their new French factory - the car surrounded by many admiring Japanese.

This same day Roy Carman viewed several live reports from the Netherlands following the decision of the 'Scottish court' in the Lockerbie 'plane explosion. Eutelsat W2, 16° carried '2 lives' from Holland both for CBS American news (11.134GHz; 12.540GHz-H, 5632+3/4) whilst a 3rd W2 downlink (11.012GHz-H) featured a live on-site Lockerbie discussion over the verdicts.

Good to hear from reader Nick of Sutton. Nick uses an acquired 'slightly bent' 900mm prime focus dish with his Eurostar 8000AD-C1 analogue/digital receiver plus 0.5dB noise Eurostar LNB, home-made polar mount/controller and a clear tracking sky of 38°E to 38°W. He too caught a Lockerbie news feed on Jan 31, but on Hot Bird 13°East, 12.538GHz-H, 5632+3/4 with service ident 'Starbird UKI 94' outside of the court building.

After 2130 a news report into for a Scottish news programme and from 2200 a 'live' into ITN's News at Ten. Nick's a Hot Bird enthusiast and watches the German analogue 'Viva Zwei' music channel, 11.178GHz-H, audio 7.02/7.20MHz. The much moving NITV (National Iran TV) channel that was once on Hot Bird (11.623GHz-V, 27500+3/4) and long departed now reveals porn promos for Channel XI

On a personal note, the dish installation at my home is being replaced with a 1.2m offset Channel Master during February, my first move from prime focus to offset dishes after some 14 years.



Encryption rules OK, via Globecast digital, NSS-K.



Happy New 2001 via NSS-K Outside broadcast.



Live DB from Pasadena, California, Rose Bowl Carnival on New Years Day.



Arainospace launches Turksat 2A/Euroasia 1A January 10, via Astra 19°E analogue.



Syrian test card via Arabsat 2B @ 30.5°E C-band.



Intelsat 801 action ex Switzerland.



Live security coverage from FBI cameras - President Bush's first official trip around the Washington streets.



New Arabsat 26°E digital TV channel.

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

# DX Television

**A**vid readers of this column will immediately notice that it has been reduced to only one page so our apologies if we can't squeeze all of you in!

It was a generally bleak start to the New Year for long-distance reception. The *Quadrantids* Meteor-Shower event in early January was a non-event; even F2 failed to affect Band I frequencies. A few minor Sporadic-E openings materialised, proving that Band I antennas were still functioning!

Towards mid-January, high pressure over Scandinavia created ideal conditions for tropospheric reception with DXers in the north-east and Scotland enjoying intense openings to Scandinavia lasting several days.

## Band I Activity

**Iain Menzies** (Aberdeen) identified ARD signals from Germany on Channel E2 at 1820 on the 9th, via Sporadic-E. On the 15th, shortly after 1000, **Stephen Michie** saw the same station in Bristol, accompanied by a subtitled programme from Slovenia on E3.

On the 20th using a scanner, **Simon Hockenhill** (Bristol) heard short bursts of Meteor-Shower activity on Channels E2, R1, A, E3 and R2 from 2000 until 2350UTC. Earlier in the day, between 1000 and 1500, there were fading tone burst carriers and weak p.m.r. via F2 around 34-35MHz. Similar reception occurred on the 21st.

On the 22nd between 1018 and 1020 **Peter Barber** (Coventry) encountered a minor Sporadic-E opening with a Spanish news bulletin E2 from Madrid. On the 24th Italian signals appeared on Channel A with RAI UNO's new butterfly logo visible throughout the opening, lasting from 0755 to 0810. A regular visitor was NED-1 E4 from Lopik which fluttered up by tropospheric scatter on several dates.

In Penarth, South Wales, **Brian Williams GW0GHF** monitors Lopik using an Icom R7100 scanner. The signal is never strong enough these days to produce a locked picture, but its exact frequency is measured as 62.214MHz, slightly lower than the nominal E4 frequency of 62.250MHz. Brian wonders if its power level has decreased over the years.

## Tropospheric Reception

**George Garden** (Edinburgh) monitors Channel 35 for signs of improvement of distant Channel 5 broadcasts. This technique paid off on January 13th when Bildsøle, although perfect initially, later became jammed with heavy interference. Rotating the Triax 100 antenna eastwards produced a clear Danish TV-2 PM5534 test card from the 600kW transmitter at Nibe. On Channel 49 Swedish TV-4 signals were evident with the '4' logo in the top-right of the picture. The weather forecast displays the logo in the lower left - see picture.

BBC-1 from Caldbeck on Channel 30 was extremely strong just before the *One O'Clock News* but then co-channel Swedish signals took hold from the SVT-2 1MW outlet at Göteborg.

Further north in Aberdeen, Iain Menzies discovered various Band III signals from Norway and Denmark on the 13th and 14th. Iain hopes to install a multi-system receiver soon, but with tropospheric openings few and far between these days, we cannot help thinking it will be used more for domestic rather than DX use!

On the 15th Stephen Michie noticed various Dutch stations whilst searching through the u.h.f. band. These included NED-2 E27 and NED-3 E30, both aired from the Lopik mast. On E26 regional station TV Flevoland was displaying text pages, accompanied by Radio Flevu sound. A mystery text transmission on E22 is thought to be RTV Oost from the 200kW transmitter at Zwolle.

Both **Ian Milton** (Ryton) and **Peter Barclay** (Sunderland) reported excellent performances from Scandinavian transmitters, received between the 13th and 16th. Signals included Norway NRK-1 on channels E5, E6, E8, E9 and E11, the Norwegian second network TV-2 on E44, Denmark DR-TV on E5, E7, E8 and E10, Danish TV-2 on E22, E26, E27, E28, E30, E40 and E56, Sweden SVT-1 E7 and E9 and SVT-2 E30. In addition, Ian identified the Swedish TV-4 network on Channel E49. Peter also

logged ARD on E11, tentatively from Teutoburger Wald.

## Overseas Reports

In Northern India, **Lt. Col. Rana Roy** is finding that TEP conditions are improving, with Channel E2 signals emerging from the south-east between 1400 and 1530 local time. Channel R1 signals from that direction have been identified as Vietnam.

Daily tropospheric reception from transmitters in Pakistan includes Lahore E5, Bahawalpur E10, Faisalabad E6 and Rawalpindi-Islamabad E8. Indian transmitters include Amritsar E7, Jullandhar E9, Kasauli E6 and some low-power repeaters on E5 which relay programmes from Delhi. Bathinda E12 came in occasionally.

Band I tropospheric reception was reported by **Perti Salonen** (Finland) on the 1st, 6th, 7th and 22nd from the Russian ORT-1 R1 transmitter at St. Petersburg.

## FM Reports

The anticyclonic conditions produced f.m. signals in various parts of the UK. From announcements, George Garden identified DLF from Bremen on 107.1MHz and Radio Niedersachsen (NDR-1) on 91.1MHz from Steinkimmen, in northern Germany.

Despite an overcrowded f.m. Band Stephen Michie (Bristol) captured a French station on 105.2MHz on the 13th. UK stations were identified during the period 12th to 17th, the most distant being Mendlesham with Vibe FM on 106.4MHz.

**Fig. 4:** This month, we switch from commercial logos to BBC Test Cards and Identification Symbols in the popular 'Down Memory Lane' spot. We begin with the BBC Coat of Arms shown during the early Fifties at the start of Children's programmes.



**Fig. 1:** Danish TV-2 PM5534 test card.



**Fig. 2:** Swedish TV-4 weather forecast.



**Fig. 3:** Arabic text on E2 photographed by Stephen Michie.

## Service Information

**Gösta van der Linden** (Netherlands) has supplied an update relating to regional stations in The Netherlands. Rotterdam-Waalhaven on Channel E49 will not resume regional transmissions despite rumours that cable stations TV West and TV Rijnmond would be aired from the site. Kanaal 9 broadcasts from Lopik on E33, but transmissions are digital. Watch out for these regional stations, all of which are horizontally polarised:-

Omroep Fryslan:	Irnsrum E28 150kW
RTV Drenthe:	Smilde E25 250kW
RTV Oost:	Hengelo (planned) E36 50kW, Zwolle E22 200kW
Omroep Flevoland:	Lelystad E26 50kW
Omroep Gelderland:	Arnhem E58 32kW, Doetinchem E40 0kW, Radio Kootwijk (new location, was at Nieuw Millingen) E32 80kW, Rossum E24 50kW
RTV Noord:	Hoogezand E36 100kW
RTV Noord Holland:	Wormer E55 200kW

## Keep On Writing!

Please send your DXTV, slow-scan TV and f.m. reception reports, news, off-screen photographs and information to arrive by the first of the month to:- **Garry Smith, 17 Collingham Gardens, Derby DE22 4FS**. We can also use off-air pictures stored as JPG files on PC disks and good-quality video recordings. You can also E-mail reports and information to: [garry.smith@g-wizz.net](mailto:garry.smith@g-wizz.net) Finally, don't forget our website for DXTV and archive TV enthusiasts. The address is: [www.test-cards.fsnet.co.uk](http://www.test-cards.fsnet.co.uk)



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- Jupiteru

	Model	Description	£ RRP inc VAT
	<b>AR5000</b>	High performance full featured wide band all mode base receiver 10kHz - 2600 Mhz. IF selection as standard 220kHz, 110kHz, 30kHz, 15kHz, 6kHz, 3kHz (500Hz optional). Supplied with mains power supply.	<b>£1295.00</b>
	<b>AR5000+3</b>	High performance base receiver with three enhanced options factory fitted: noise blanker, synchronous AM, automatic frequency control.	<b>£1449.00</b>
	<b>AR3000A</b>	Unique all mode extremely wide band base-mobile receiver 100kHz - 2036mhz with no gaps. RS232 port fitted.	<b>£699.00</b>
	<b>AR3000A +(plus)</b>	Customised AR3000A with switchable narrow SM & SAT filters, Tape relay, SDU ready and discriminator output.	<b>£799.00</b>
	<b>AR8200 Series 2</b>	New advanced wide band all mode hand-held receiver with enhanced microprocessor facilities, slot card options available, multi-function display.	<b>£395.00</b>
	<b>AR8000</b>	The New Concept. Wide band all mode hand-held receiver with many microprocessor facilities, dot matrix display and computer compatibility.	<b>£296.00</b>
	<b>ICOM R2</b>	0.1300mhz Handie. Fits in the palm of your hand. AM/FM, FM Narrow - 450 memory channels	<b>£139.00</b>
	<b>IC R8500</b>	100kHz - 2GHz Continuous. All mode no gaps. 1000 Memories. 4IF band widths	<b>£1440.00</b>
	<b>IC-R75E</b>	Excellent all round for the professional listener	<b>£629.00</b>
	<b>IC-PCR1000 &amp; PCR 100</b>	0-60MHz. High Stability receiver circuit 100 DB Dynamic range. Twin bandpass Tuning. Optional digital processor. Best selling receiver	
	<b>ICOM PCR1000</b>	ICOM PCR1000 - 0-1300mhz. All modes. Computer driven. On screen programming. Band scope. Instant band scope access via mouse. List of features, call for brochure.	
	<b>PCR100</b>	PCR 1000 £299.00, PCR 100 £199.00 (SAME SPEC WITHOUT SSB)	

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**GARMIN GPSIII**



Moving map features basemap, built-in European, African and Middle East to 20mi; includes lakes, rivers, cities, railways, coastlines, motorways and roads. Uploadable CD ROM, detailed map data available from MapSource CDs.

RWP **£325.00**


**GARMIN STREET PILOT**



Built-in international map contains motorways, major roads, lakes, rivers, streams, airports, cities, towns, coastlines, motorway exits plus waypoints.

**STREET PILOT COLOUR**  
 RWP **£545.00**  
**STREET PILOT**  
 RWP **£410.00**

**GARMIN GPS12**



The Garmin GPS12 series products are as rugged as GPS gets. Military-tough construction and waterproof cases make these units ideal companions for any outdoor adventure. All feature a 12 channel receiver that locks onto stellites fase and stays locked on, even under extreme conditions. These units may be tough on the outside, but their operations are easy and logical.

RWP **£129.00**

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## YUPIERU

### YUPIERU MVT 9000 EU

Yupiter's flagship model, with a range exceeding 2000mhz, a real time bandscope.



- ▷ 531 kHz - 2039 Mhz
- ▷ 1000 memory channels
- ▷ All modes: W FM, FM, N-AM, AM, LSB, USB, CW
- ▷ Multiple scanning steps 50Hz - 125kHz
- ▷ Alpha numeric display
- ▷ Band scope with marker function for direct access to displayed frequencies
- ▷ Duplex receive capability - hear split frequency signals easily with VFOs
- ▷ 20 search bands
- ▷ Fast tune facility gives 10 times function for quick tuning
- ▷ Built in ferrite rod antenna for AM broadcast reception
- ▷ OP90 Soft Case

**£329.00**

### YUPIERU MVT 3300EU

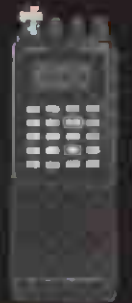
An exciting new handheld packed with features - but at a price you can afford! The receiver has "breathtaking performance" ensuring this set is destined to be a number one seller

- ▷ FREQUENCY: 66 - 88MHz, 108 - 170MHz, 300 - 470MHz, 806 - 1000MHz
- ▷ MODES: AM/NFM
- ▷ STEPS: 5, 6.25, 10, 12.5, 25kHz
- ▷ MEMORIES: 200
- ▷ BAND MEMORIES: 10 (user re-programmable)
- ▷ PRIORITY CHANNELS: 10
- ▷ SCAN/SEARCH SPEED: 30 per sec
- ▷ POWER: Requires 4 x AA batteries
- ▷ SUPPLIED WITH: Antenna, Earpiece, Carrying Strap and built-in Desk Stand



### YUPIERU MVT 7100 EU

Probably the most popular high end scanner. It's easy to use and can receive just about anything going!



- ▷ 530kHz - 1650mhz
- ▷ AM/FM/WFM/SSB/CW
- ▷ 1000 Memories
- ▷ C/W N/Cads & charger
- ▷ OP51 Soft Case £17.95 + £2 p&p

**£199.00**

## USED EQUIPMENT PRICE LIST

MAKE	MODEL	PRICE	ICOM	R-75 RECEIVER	PRICE	SHI ELECTRONICS	1200MHz TRANSCEIVER	PRICE
AEA	PIC 33 TNC	£10.00	ICOM	SP-21 EXTENSION SPEAKER PER. CO	£10.00	SHI ELECTRONICS	FL-2000MHz VHF ANTENNA	£10.00
ALUNDO	AD-45 70cm MOBILE SW	£130.00	ICOM	THE HANDBY	£190.00	SHI ELECTRONICS	FL-2000MHz VHF ANTENNA	£10.00
ALUNDO	DJ-51 HANDBY 2M WIDE RECEIVER	£120.00	ICOM	W-211 2M WIDE RECEIVER	£140.00	SHI ELECTRONICS	FL-2000MHz VHF ANTENNA	£10.00
ALUNDO	TJ-105V VHF VATE 6MHz	£100.00	ICOM	JR-305 2M WIDE RECEIVER	£120.00	SHI ELECTRONICS	FL-2000MHz VHF ANTENNA	£10.00
ALUNDO	TRANSCEIVER	£100.00	JRC	JR-305 2M WIDE RECEIVER	£120.00	SHI ELECTRONICS	FL-2000MHz VHF ANTENNA	£10.00
ALUNDO	DP-300 DUAL BAND MOBILE	£150.00	JRC	JR-305 2M WIDE RECEIVER	£120.00	SHI ELECTRONICS	FL-2000MHz VHF ANTENNA	£10.00
ALUNDO	DP-300 DUAL BAND MOBILE	£150.00	KANTRONICS	KAY-PLUR TM	£200.00	SHI ELECTRONICS	FL-2000MHz VHF ANTENNA	£10.00
ALUNDO	TRANSCEIVER	£200.00	KANTRONICS	AT-200 A	£120.00	SHI ELECTRONICS	FL-2000MHz VHF ANTENNA	£10.00
ALUNDO	DP-300 DUAL BAND MOBILE	£150.00	KANTRONICS	AT-200 A	£120.00	SHI ELECTRONICS	FL-2000MHz VHF ANTENNA	£10.00
ALUNDO	TRANSCEIVER	£200.00	KANTRONICS	AT-200 ATU	£220.00	SHI ELECTRONICS	FL-2000MHz VHF ANTENNA	£10.00
ALUNDO	DP-300 DUAL BAND MOBILE	£150.00	KANTRONICS	BC-15 RAPID CHARGER	£40.00	SHI ELECTRONICS	FL-2000MHz VHF ANTENNA	£10.00
ALUNDO	TRANSCEIVER	£200.00	KANTRONICS	BC-15 RAPID CHARGER	£40.00	SHI ELECTRONICS	FL-2000MHz VHF ANTENNA	£10.00
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**NEW! JUST RELEASED! VERSION!**

**SCANCAT GOLD for Windows "SE"**

Since 1989, The Recognized Leader in Computer Control

Once you use SCANCAT with YOUR radio, you'll NEVER use your radio again WITHOUT SCANCAT!

SCANCAT supports almost ALL computer controlled radios by AOR, DRAKE, KENWOOD, ICOM, YAESU and JRC (NRD) Plus PRO-2005/6/35/42 (with OS456 535), Lowe HF 150, and Watums Johnson

**NOW SUPPORTS BC730XLT UNICOM**

**SCANCAT GOLD FOR WINDOWS "SE" (Surveillance-Enhanced) All Scancat Windows Features Plus...**

- Selective Sound Recording using PC-compatible sound card: "Point & Shoot" playback by individual files.
- Demographic search for frequency co-ordination and 2-way Usage Analysis.
- Detailed logging to ASCII type files with DATE, TIME, Sg Str, Air Time.
- 6 New sweep Analysis Functions.
- With Scancat Gold for Windows "SE", your spectrum never looked so good! Load virtually any database and Scancat "SE" will examine your database plot each and every frequency no matter what the range, and "pass" the entire analysis on your screen.

**SEVERAL GRAPHICAL ANALYSIS MODES AVAILABLE**

- By Signal Strength per frequency in a "Histogram"
- By Signal Strength plotted in individual dots
- By Number of hits per frequency in a "Histogram"
- **IF THAT ISN'T ENOUGH, try this... Multicolored, 3-D "Spotted Landscape"**

SCANCAT GOLD "SE"... \$159.95 + S & H \* UPGRADE SCANCAT GOLD V7.30 "SE" ..... \$59.95 + S & H \*

**SCANCAT'S WINDOWS FEATURES**

- Unattended Logging of frequencies
- Scan Create Disk File
- Spectrum Analysis to Screen OR Printer
- Supports PerCom-Mr Scanner and Betty Bearcat: CD Rom
- Scan VHF & HF Icom's Simultaneously
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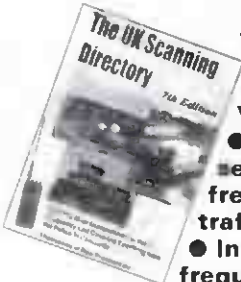
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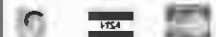


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# Decode

## DSP For All

I've covered lots of decoders in this column, many of them with built-in digital signal processing features. However, this month I wanted to mention a wonderfully simple d.s.p. filter that's ideal for anyone using a standalone decoder or just for general listening.

The program is called BR-universal filter and has been put together by **Bernd Reiser**. As well as being very effective, its also very compact (650Kb) and freeware. This makes it particularly attractive to download and try from the Internet.

As you can see from the flow diagram, the filter includes a host of advanced d.s.p. features. What I particularly liked and the point that makes it eminently suitable for utility work is the way you can adjust all the parameters. If you've seen my previous discussions on the use of filters for utility decoding, you will know that its all too easy to over-filter a data signal and end-up making it worse rather than better.

When you run the program, you are presented with a large l.c.d. like display and an array of buttons. The first task is to press the 2nd OPT button, which brings-up a second more complex display where you can set-up the parameters you want to use. But the very first job is to click the Options tab and choose the input source that you want to use. Unless you have a particular reason or want to use any other, I would recommend choosing your sound card's 'Line' input.

This is generally well matched to the sort of output levels you will get from most receivers. Now you can connect the line-out of your receiver to the Line-in of your sound card and you should start to hear the receiver through your computer speakers. If the sound is badly distorted, you will need to adjust the Input level slider on the options tab to reduce the level.

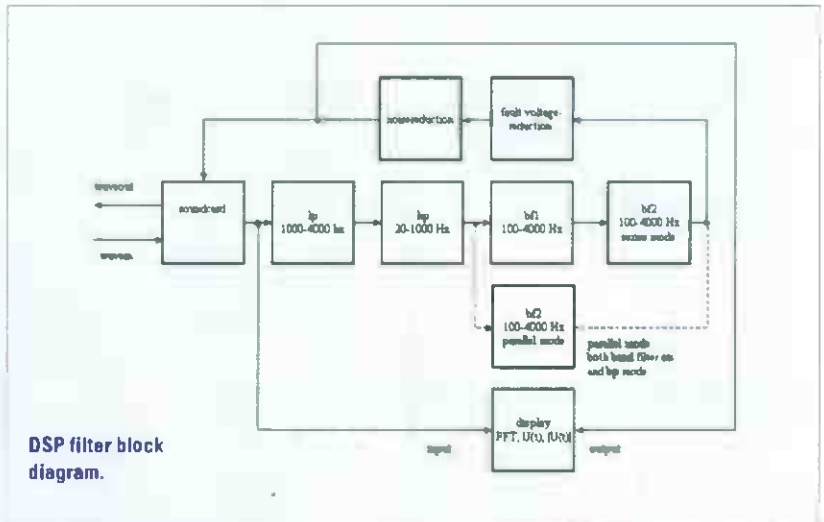
To help you get this right, press the DSPLM until you get the display showing a set of three vertical bars, now adjust the Input slider so that the Peak Level just reaches the top of the display. If you've got this part working, you should also find that the main display comes to life. I suggest you set this to show the FFT spectrum display by toggling through the DSPLM button.

## Ready To Start

Now you're ready to really start using this excellent little filter. First select the Filter tab and you can work your way through the different filter types. The most useful for utility work are the separate high and low pass filters as these can be used together to create a custom band pass filter of just about any shape and bandwidth.

When you come to setting-up the filters, the dual display systems really comes into its own. Whilst the left-hand display shows the input signal, the right-hand one shows the signal after its been through the filter. This provides a very useful check on the effect of the filter and helps avoid over-filtering.

Whilst using the high and low pass filter, I suggest you leave the Order settings at around 2 or 3 - moving up to higher settings will provide a sharper cut-off but runs the risk of over processing the utility signal. If you're into c.w. reception, then you will find the band pass filters really helpful as they can be used to pluck difficult signals right out of the noise. You even have the facility to name and store your favourite settings. All you do is choose the



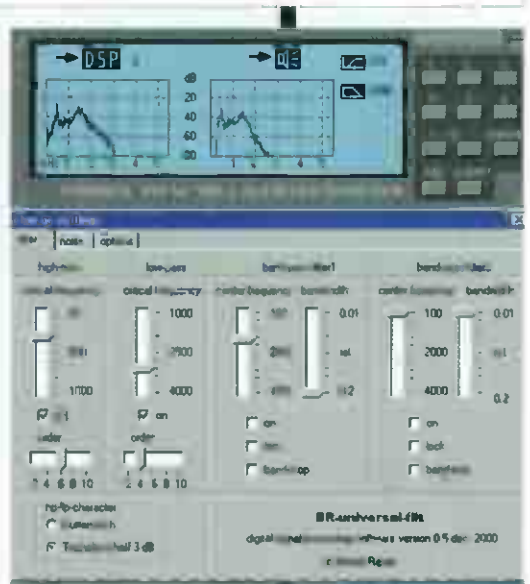
DSP filter block diagram.

Options tab and in the bottom right hand corner enter the name and select the button number you want to use. Once this is done just press 'Speichern' to store it.

As you've probably gathered, I thought this was a brilliant filter system that's dead easy to use and provides excellent results. To get your copy visit Bernd Reisers site at: <http://ramses.wh2.tu-dresden.de/~bernd109/amateurfunk/amateur.html>

## Makoto Mori Software

Regular readers will be aware of the excellent RTTY program that Makoto has produced (MMTTY), well he has now turned his hand to SSTV with a new release MMSSTV. The new program follows a similar

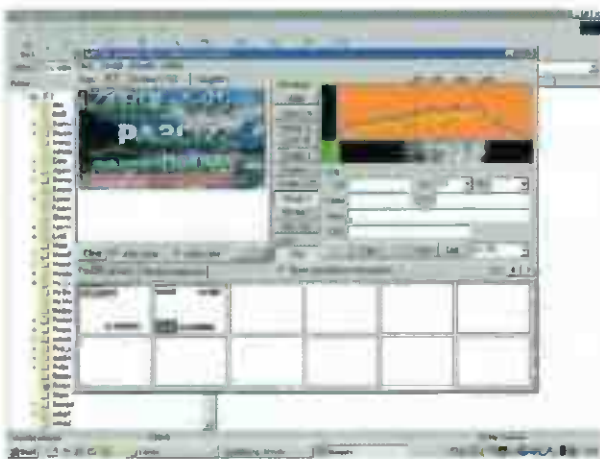


DSP filter screen shot.

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Picture received with MMSSTV.



Picture received with MMSSTV.

layout and range of features and first impressions are very good.

Makoto has incorporated some of the best ideas from *MMTTY* whilst also picking-up the best points of some of the other programs around. One of these is the old problem of correcting slanting pictures. This is caused by slight inaccuracies in the PC/Soundcard clock and can be very irritating.

With *MMSSTV* all you have to do is receive a slanted picture, select the Sync tab from the main display and hit the Slant button. Now all you have to do is move your cursor to the top edge of the picture click, then place the cursor at the bottom of the screen. You then just adjust the angle of the line to match the slant of the picture. When you've done, just click again and *MMSSTV* works out and stores the necessary clock correction - it doesn't get much easier than that.

The best way to evaluate the program is to try it - it's free! You can get a copy from Oliver Welps web site: <http://home.wanadoo.nl/n19222/programs/mmsstv05.exe>

### MMTTY Update

For RTTY fans you will be delighted to know that Makoto has released version 1.61 of his excellent *MMTTY* RTTY program. Nothing staggering in the new version, mainly fixes for minor glitches.

### Klingenfuss Guides

It's that time of year again when the new *Guide To Utility Station* and the *Frequency List CD-ROM* hit the market. Joerg has done his usually very professional job and delivered the 2001 Guide (19th edition) fully updated with the latest frequencies.

One of the new features for this edition is some detail on the new h.f. E-mail networks that are starting to appear on the short wave bands. Joerg provides some useful background on the systems along with some frequency allocations. If you've not treated yourself to one of the books, I can thoroughly recommend that you do. As well as containing a very up-to-date frequency list, there is a host of information to help you get the very best from your monitoring.

The 2001 *Super Frequency List CD-ROM* is another regular that provides electronic, searchable access to Joerg's impressive range of frequency listing. In addition to the main utility list, there are broadcast listing and details of former utility stations. There's even some sample software.

The final release is the 2001/2 *Guide to World-Wide Weather Services*. This contains frequencies and FAX

schedules for all the h.f. weather stations along with stacks of sample images so you can get a pretty good idea of what you should be able to receive. For more information on these or to buy your copy, please contact the SWM Book Store.

### More Software

Who says RTTY is dead? You wouldn't think so given the number of new RTTY programs appearing on the Internet. However, the new one for this month is *HamScope* by Glen Hansen. Its rather unfair to call it a RTTY program, because it does lots more than that.

First of all the program builds on the BPSK and QPSK features in *WinPSK* and adds an impressive panoramic display along with several other tuning aids. There is also support for RTTY, ASCII, c.w. and two FSK16 modes. Whilst many of these are predominantly amateur modes, its not unusual to find the more successful systems spilling over into commercial h.f. operation.

A good example of this is *FACTOR*, which has now become the mainstay of h.f. E-mail networks. The program is really easy to install and set-up and is well worth a try. As well as an excellent range of tuning options, the program also includes an automatic tuning system, so it will automatically find and decode signals within the receivers pass band. If you want to make it focus on a particular signal, you just click the mouse on it. As you can see, it looks pretty good. You can get the latest version from: <http://users.mesatop.com/~ghansen/>

### Web Watch

Visit Bernd Reisers site at: <http://ramses.wh2.tu-dresden.de/~bernd109/amateurfunk/amateur.html>  
 You can get a copy of *MMSSTV* from Oliver Welps web site: <http://home.wanadoo.nl/n19222/programs/mmsstv05.exe>  
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# Attention-123!

I'd like to thank Peter of Saffron Walden Gert of Zoetermeer (NL) and not least, Enigma 2000 for their logs, etc. Enigma 2000 can be contacted at the above address or via their web site at <http://reachus.at/enigma>

This time round we're devoting the whole column to station news. As always, there is a lot more Morse than voice activity, but seeing fewer and fewer s.w.l.s can read Morse, we'll concentrate here on voice stations, starting with...

## E25 - A New English Language Station

This a.m. station was first logged in Russia on 27th December and appears to transmit daily at various times between 1240 and 1300 and 1340 and 1400UTC, so far only noted on 9.450MHz. Transmissions begin with a five minute piece of Arabic style music, followed by a 3-figure call lasting around four minutes. (IDs include 222, 227, 440 and 447). Three distinct formats are used, and we don't yet know whether these are linked with particular schedules or not. I have given two of these variant suffixes, A & B:-

E25) "Message, Message, Message" followed by around 20 four-figure groups. Then "Repeat, Repeat, Repeat" and the whole message is then repeated, followed by the words "End of Message".

E25A) After the musical introduction is some kind of traffic list, e.g. 440 220 67 70 69 70 / 440 749 67 63 69 70 / 440 639 67 63 69 70. This list, in this case, all relating to ID 440, is repeated for about five minutes, and a different male voice continues with an E25B transmission.

E25B) These may or may not always follow the E25A format. In the above example (18th January) this section was as follows:-

440 call repeated for five minutes, then, "Message, Message, Message" and a single four figure group. This was an error, and suddenly cut out, and music recommenced, the voice appearing over it and format continued as E25 (in this case 23 groups). "End of Message", then more numbers were read out: 440-11, 442-19, 449-20, 440-20, 442-19, 442-20, 442-19, 449-20, 442-19, 449-20, 442-19, 449-40, 447-17. "End of Transmission" Music stops 1259.

This third section seems to be a list of IDs and group counts, maybe messages to be sent in the near future. In this particular example, transmission restarted at 1340, with different music (this time with vocals) and a third voice with slower delivery. Here the call was 222 and 19 groups followed. Before the repeat message had finished, the music restarted and another weak unidentified numbers station could be heard in the background. At the "End of Message" came a little more E25B format: 227-20, repeated several times, then "End of Transmission" at 1356.

So far, the third group of the text has always been the same four figures as the last group. Voices have a strong Arabic accent, and this is an interesting and active new station worth monitoring, as we need a more complete picture of its habits. It has also been heard between 1451 and 1507 on the same frequency, and it's quite likely that other times and frequencies are in use.

## E3A (Cherry Ripe) Schedule

We can now provide a complete schedule for this M16-operated station:-

1000	20.474//23.461	2200	18.864//24.644
1100	18.864//23.461	2300	18.864//21.866
1200	18.864//23.461	0000	18.864//21.866
1300	18.864//21.866	0100	19.884//21.866

17.499 and 22.108MHz now appear to be silent. Unlike E3, which uses three parallel frequencies, E3A has only ever used two.

## Other News

The German language stations, run by the Russians, G6 and G7 seem to have reversed roles. No G7s seem to be active at present and G6 has increased its activity, with several schedules now running. Their Spanish services V6 and V7 are both very active, Russian language S6 is far more active than S7 nowadays, so also is English E6 over E7 now being the most active voice station of Family I. However, M12 is still probably the most active in the whole family. M14 has reduced its activity a little. This all reflects the different priorities of GRU and FSB.

A new S7 variant (S7C) has been noted: a standard null message call followed by a five-figure group; the only one heard so far: 132 132 132 000 22211 repeated for a few minutes. Other odd Russian formats have recently popped up including a couple of S6Cs (repeating a single five-figure group). These have always been of the 11\*1\* type, but of course, the rule had to be broken eventually with a recent "66054". Since then, the rule has applied!

Another new variant S6F consists of the dual message S6E style, but with the second message being of the unusual S6B (two group commencing with a stutter group) type. In this case, the Schedule Number was 270 and the DK/GCs 356/21, 270-481/2, the second message being 11111 00032. The transmission commenced at 10 minutes past the hour (odd for S6) and was repeated an hour later. On the following day, the repeats were of normal S6 format and did **not** include the 481/2 message tagged on at the end.

An interesting new Family XIV Schedule (Russian operated) is S21 at 1130UTC on Thursdays on 7.019MHz in the 40m amateur band. There should be a parallel, but we haven't found it yet. S21's Morse arm is M45, which still operates the same schedule.

Family III is still very active, but runs very few voice schedules, one new one being 232, on Thursday at 0800 on 10.050MHz. If not around by the time you read this, it could well have changed frequency. To understand the habits of Numbers Stations, our two Enigma guides are absolutely vital, otherwise it's like looking for needles in haystacks! They are still available from us at £7.50 the pair.

E17z is still around, operating erratically as usual, now at around 0800 in the 11.170MHz region. Although using the same format, (and voice) as E17y, it is far less organised. E17y is operated by the Russians from Cuba, beaming to the USA, whereas E17z probably emanates from one of the ex-Soviet republics, possibly Ukraine.

Another family member which sends much more Morse than voice is XV, it has only three voice schedules (one for each of its three languages E18, G22 and S4). In January, S4 was using a very low frequency of 3.373MHz. It can be heard on the 2nd Tuesday of the month at 2230 with long messages. Like other members of its family, it uses consecutive monthly serial numbers as decode keys. February's is 209, March will be 210, etc.

## Finally

Lastly, the Czech's S17C is still going strong after many years with its mysterious daily message at 1250 on 6.945//8.190MHz. In February 1997, my favourite station M23 (because it has so many disguises!) began a schedule (579 - from Syracuse?) at 0800 and 1400 daily on 8.307//9.285. As I keep saying, it's still with us and has yet to send a single message. At least the timing of its 10 minute transmissions has improved over the years.

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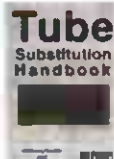
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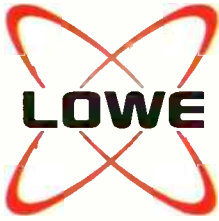
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