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SWM

June 2004
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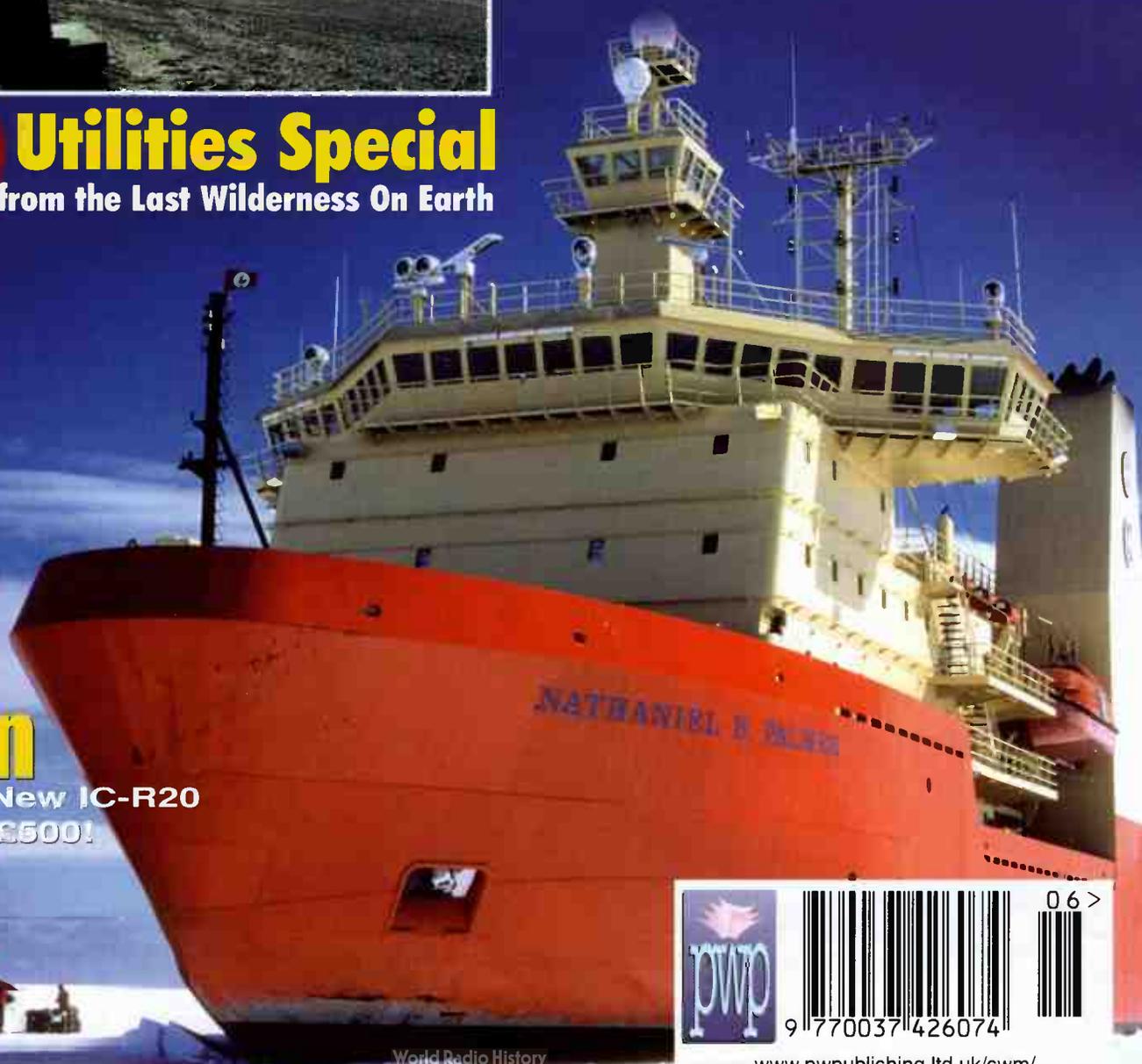
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- 14 Bands, 10 Banks
- 10 Priority Channels
- Memory Backup
- Programmable Alpha Characters
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- Programmable Search
- Channel Lockout
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- Search Mode: 25 freq/sec
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- Battery saver cct
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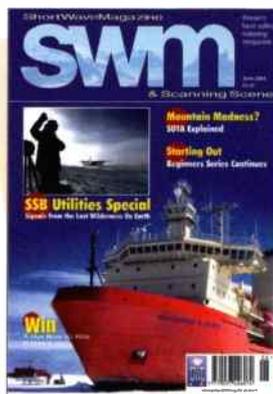
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cover subject: The Research Vessel *Nathaniel B. Palmer* is an ice breaking ship used for scientific research by the U.S. Antarctic Program. The *NBP* is 93.9m long and 18.3m wide with an ice breaking capability of 1m of ice at 3kt. This photo was taken near Ross Island, Antarctica.
Photograph by: Al Hickey.
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Share your thoughts

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

Coming Next Month

in SWM July 2004

- In The Ed's Shack - Constructing An Active Loop Antenna
- New! - Beginner Series - Getting Started - Part 3
- Battle of Arnhem Communications
- On Air With G3SWM
- Keep on top of the world of monitoring with SWM
- and much more...

*contents subject to change

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SWM Starter-
Airband
magazine -
including getting
started with
airband listening
and RIAT 2004
Show Guide!

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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.

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 £3.75 inc P&P each and photocopies are £3.00 per article inc P&P.

Binders are also available (each binder takes one volume) for £6.50 plus £1.75 P&P for one binder, £2.75 P&P for two or more, UK or overseas. Prices include VAT where appropriate.

A complete review listing for SWM/PW is also available from the Editorial Offices for £2 inc P&P.

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Technical Help

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

ED's



comments

I've been in discussion with our propagation guru **Jacques d'Avignon** because he's suggested some alternative areas to produce propagation charts for. Whilst I don't disagree with Jacques suggestions, I thought it would be best to see what you the readers and users of the charts think. Below are the suggested alternatives.

Jacques' suggestions are simply to reflect what's happening in the real world of s.w.l. We have never covered Scandinavia and he feels that there is a need for a chart covering this area. South East Asia is an area that is becoming more and more important in the world and has a number of s.w. outlets.

We would contract South America into one set of predictions to accommodate the Scandinavia forecast and remove the 'Pacific' chart replacing this with one for South East Asia.

I appeal to everyone who has a view to let me know. You can either E-mail me or write to the normal address on page 4 of this issue. I look forward to learning your views.

Acorn Three

In April's SWM we featured the long due update to the 'Acorn One' receiver, the 'Acorn Three'. Unfortunately, we published out-of-date information regarding the location of the supplier of the valves and valve bases for the project. Some of the recent mail generated by our project managed to get through, but it's likely that some orders have been lost. This has come to light due to the supplier's proprietor, **Rod Burman**, calling me with their correct details. He informed me that they have been at their new location for a number of years. To all of you who've sent orders to the old address, my apologies. The correct details are: **Valve & Tube, Woodlands Vale House, Calthorpe Road, Rhyde, IoW PO33 1PR, Tel: (01983) 811386 Web: www.valves.uk.com**

G3SWM Portland Success!

After last year's experience with an Italian contest swamping the 40m band, the *Short Wave Magazine* club call of **G3SWM** was on the air Bank Holiday Monday 3 May 2004. As you know, G3SWM was on-air in support of the second annual SWM listening contest. There was much activity with several 'pile-ups' encountered in the nine hour operation period.

This year, we operated on single band s.s.b. operation only, with most contacts being made on and around 7.070MHz. An APRS node was also on-air to beacon the station's presence and pass information to those interested in the event.



Completely under hypnosis. G4SLU in a trance at the logs of G3SWM.

We were located on Dorset's southern most Isle of Portland in the rare WAB square SY77DOR, G3SWM operated between 0700 and 1600.

Based on this year's superb event, we are planning some enhancements for the 2005 on-air activities, the addition of 2m s.s.b. being one of these. Next year's event will again be held on the May Bank Holiday with a slightly later start time. Everyone involved with the running of G3SWM enjoyed the experience.

I'm very grateful to the **Dorset Police Amateur Radio Society (DPARS)** for their invaluable help in organising the day's station and providing the station accommodation.

Great fun was had by all of those involved and next year's event is being eagerly anticipated. Listeners' logs and QSL cards are rolling in daily.

I'd like to thank all the stations who persevered through the pile-ups to make the day very enjoyable for all.

More For Your Money

We've been working hard in the Editorial Offices here in coastal Dorset, as we've been planning some special additions to go with SWM for the next twelve months.

The first of these additions is to be an Airband Supplement that will be bagged with the next (July) issue of your favourite radio read. *SWM Starter - Airband* is both a complete introduction to airband listening and a **RIAT 2004** show guide. So, all of those of you who are thinking of attending this year's Royal International Air Tattoo, or are remotely interested in airband monitoring, then this is for you. Keep a look out in your local newspapers for a copy.

Additionally, as I write this I'm investigating the possibility of having July's SWM available at RIAT 2004 too.

As a handy reference, here's a summary of what we've planned for SWM in future issues.

Month	Special Theme	Bonus
2004		
July	-	<i>SWM Starter - Airband</i>
September	Decode	<i>SSE Supplement</i>
October	Broadcast	-
November	Info In Orbit	Radio Software CD
2005		
January	DXTV	Airband Datacard
March	-	<i>SSE Supplement</i>
April	Amateur	-
May	-	Airband Supplement

Higher Quality

I'm sure that the most observant of you will have noticed that we've improved the paper quality used in the production of SWM. This benefits you in two ways, the paper is more robust and, more importantly, produces a higher contrast printed image. I hope you enjoy the improvement.

W4 73 Kevin

QSL

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

topqsl

Dear Sir

Wow! What a letter from Ronald Evans in February's *SWM*! I'm not quite sure why he is reading this magazine judging from his views. Here is my take on things.

I use a couple of scanners, a couple of h.f. sets, a computer and a TV with a freeview box to listen to all manner of broadcasts and communication transmission. To say that the 'Wired' computer is the only way forward is not true. Nor is it true to say that h.f. is the only real transmission medium. As of 2004 all of the many ways of transmitting information and data, or broadcasting entertainment have a place. As the years go by new methods appear and others fall by the wayside or are used less frequently. All the different types of technology have advantages and disadvantages, the trick is to choose the best for the job, be it for pleasure or for work.

My view is embrace the lot, but don't knock others for their particular preference. To give an idea of my own particular listening diversity, I enjoy listening to aeronautical transmissions from around the globe, catching the news from Radio New Zealand on h.f., listening to Radio Canada science programs on h.f. and the Internet and would believe BBC 7 on the Internet or my freeview box for re-runs of *The Navy Lark* and other such classics! Like many I really miss Concorde on the h.f. bands as well as v.h.f. Did I mention PMR-446 and then there's Search and Rescue communications or weather broadcasts, or medium wave or amateur - see what I mean. Diversity!

Anthony Barrett
Newton Abbot
Devon

Diversity - the name of the SWM 'game'. - Ed.

Dear Sir

I haven't read all of my copy of *SWM* yet, but I couldn't let the letter from Ronald Evans (Feb '04) go without comment. Personally, I found the recent articles on the transmitting stations fascinating reading. Each month I read most articles, but there are some I don't read. OK, h.f. may not be what it was, but the world moves on. In all hobbies, there will always be those who still build things from scratch and those who open their chequebook and buy a 'black box' and have no technical knowledge at all. Strangely enough though, the latter are often the ones who return to a vendor complaining of apparently 'faulty' goods. We've all seen them.

But there's room for us all. I for one, still find all aspects of radio communications absorbing stuff. Sure, you can listen via the Internet, but where's the skill in that? "What we need... are full details of the websites" he says? That would make the mag what? about one page? Wow! Really difficult stuff - not a bit like trying to extract a signal from the ether. That's what it's all about Mr Evans.

I, like many others, sit in front of a computer all day at work and don't feel inclined to use one at home as a big glorified radio. If you don't like the mags Mr Evans, don't buy them! The clue's in the titles - *Practical Wireless*, *Short Wave Magazine*. Go buy a PC magazine. (Note to the editor - don't be tempted to change the mags for one individual).

On a different topic, in the same issue, in his 'Decode' column, Mike Richards makes mention of *AirNav Suite 4*. I bought this when it was version 3, two or three years ago, to track North Atlantic traffic, listening mostly on winter Saturday mornings

before the sun came up and mused the reception from Gander too much. I have to say that anyone thinking of buying it for the same use should think twice.

AirNav stated that the databases would be updated regularly. They haven't done so in all that time. Take a look at their website. The last patch for it was April 2002. With the changes to the airways and reporting points in the UK last year, it has now become unusable. As the same database covers the whole of the world, I suspect it will be unusable elsewhere too.

At least with the earlier version 3, waypoints could be manually added to the database, but in version 4 it is read-only. I have mailed AirNav on numerous occasions asking when they are going to update it, and they always promise it's due out 'within the next two weeks'. They have obviously been concentrating their efforts on their Live Flight tracker, so I've given up asking. A great shame, as it was a great product.

One answer may be to use the waypoint database from the DAFIF site at <https://164.214.2.62/products/digitalaero/index.cfm> if anyone cares to download it, the latest version is *dafif.zip* at https://164.214.2.62/dafif/dafif_0401_ed71 - but it's a huge download at 23MB. Waypoints could then be converted back to lat. and long. Can't see me doing that in a hurry.

Anyway, keep up the good work!

Bob Farish
Garforth, Leeds

Bob, many thanks for the feedback. The correct mix of SWM depends on reader feedback. Just a single opinion's not going to have an effect, but that of many readers will definitely grab my attention. - Ed.

Dear Sir

Like Ian Evans (Top QSL March 2004), I have been a short wave listener for a long time and have read *SWM* on and off all that time. It seems to me that in recent years, coverage of h.f. bands has largely been replaced by all things digital. Is that where the main interest now is? People who I have asked don't agree that it is.

It seems that *SWM* no longer covers construction, which helps to stimulate interest, even if the readers are 'armchair constructors' and never actually build the projects. Also, many of us cannot rig the desirable 'long wire aerial', antennas are what butterflies and beetles have, and would appreciate some practical advice on making the best of what we can do.

A.J. Hunt
Dagenham, Essex

I am not too sure how you conclude that SWM only covers "...all things digital" as this is most definitely not the case. Every issue contains amateur, broadcast and utility h.f. material. We are, of course, duty bound to stay with new developments and we would be failing not to do so. With regards to constructional articles, I am personally a keen constructor and welcome anyone to submit documented constructional articles. This is one area that would sadly be missed by many a reader if it were to cease I'm sure. - Ed.

Dear Sir

Ronald Evans' trenchant views on all types of wireless broadcasting made for riveting reading in your February issue of *SWM*. In brief, Ronald's opinion is that if one owns a suitably configured computer there is no need for radio or TV receivers and he is quite right, provided one does not mind the annual outlay on tolls to satellite or telephone companies, not forgetting the annual BBC fees.

All magazine editors, especially those who address esoteric minorities, are faced with the problem of what to publish. They have to meet the interests of the youngster, newly enthused about radio, to the seasoned engineer who's designed and built, say, a TV transmitter, but what cannot be gainsaid is the need for everyone in any area of physics, so it is appropriate to be reminded from time to time of the evolution of radio communications, from Marconi, via the 'cat's whisker', through to valve era, the Marconi era to the present day.

Ronald should perhaps take a more relaxed view of life, realise that one day he too will be 60 and possibly be faced with educating little Ronald's in the ever exciting world of electronics.

William Brown
Chard
Somerset

Dear Sir

I am writing to thank you for printing the letter by R. Evans because it has reminded me that the world is still full of selfish, mindless, self centred people.

If I was in charge at *SWM*, I would have filed this letter where it belongs - in the bin! This person has no idea what short wave radio, or indeed radio, is all about. The magazine has more than enough coverage on computers and I for one buy the publication for s.w., v.h.f. and u.h.f. 'radio' news, old and new. This is a 'radio' magazine, there is a skill that has to be learned over the years on how to be a s.w.l., a skill that Mr Evans obviously knows nothing about. I find the thought of listening to radio on a PC a joke, he is missing out on a great hobby and interest.

I know you won't, but if you did go 'his way', I can guarantee you would drop at least half your sales and have to change the name of your magazine. The comment about Rob G3XFD living in the past suggests that Mr Evans thinks that *SWM* should be for young people only. Thank god he is on your side of the border.

Best wishes to you and the team.

M. McInnes
Cockenzie
East Lothian

Is there something you want to get off your chest?

Do you have a problem fellow readers can solve?

If so then drop a line to the Editor at QSL, Short Wave Magazine, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW.

Dear Sir

I have just read the QSL page in this fine magazine and the Top QSL has given me time to think and put my thoughts on paper. I am a little older than Rob Mannion so my ideas are not ultramodern! I started s.w.l. in the days when building radios was the normal procedure using any parts which could be scrounged - I mean recycled! Equipment was simple and easily understood. More important was the excitement when foreign stations were received. This excitement I still have today, despite failing hearing. To me, to listen to Gander Radio and

hearing that the temperature at Iqaluit is -24°C is more meaningful than to use the Internet and find out the same thing.

I am a firm believer in the Internet, I find it very useful for discovering, for example, the details of the BC348 and command radios. However, listening to broadcasts on the Internet does not 'turn me on'. I might read news items which originate in the appropriate countries but listen, never.

Construction of and use of a s.w. radio is still quite easy, although not to the standard of the AOR AR7030, but to build equipment to listen to

the Internet is quite out of the question!

Therefore, s.w.l. will always be of interest to a very large number of people, particularly those who live severely disadvantaged lives. Wind-up radios are a reality and allow the user to live almost anywhere in the world and listen to the world. No new infrastructure is needed.

I am probably incurably romantic and old fashioned, but I like it! Keep producing this fine magazine and best wishes.

**Dr F. Crossley
Congleton
Cheshire**

Dear Sir

You asked for comments following Ronald Evans' letter. I have very much enjoyed the recent articles about some commercial radio stations showing the both internals and the antennas. I would like to see such coverage at least continued, if not even extended, as I cannot think of another place of finding the information is such a well-presented way. Most people do not get the opportunity to visit and photograph as you do, and you are therefore extending the experience of your readers.

The title of the journal is, after all, *Short Wave Magazine & Scanning Scene*, not *Broadcasting Magazine* or *Internet Radio* magazine. We will all have our favourite sections of the magazine and I have particularly enjoyed John Wilson's recent contributions. Lawrence Harris's 'Info In Orbit' is my own favourite column as, despite being involved in the field, Lawrence always manages to find something unknown to me!

Certainly, I want to see *SWM* keeping up with current developments and not stuck in the 1930s. However, I think it achieves this with a well-balanced collection of articles from good contributors. Simple lists of stations heard, whether they be on-air or via the Internet do not make exciting reading for me, but I can see that some people enjoy them. Similarly, Ronald Evans might have some tolerance for those who have different interests to his own!

**David Taylor
Edinburgh**

David, well said. I couldn't have put it better!. - Ed.

Dear Sir

With reference to your Top QSL in the February edition of *SWM*, is this an attempt to get a dialogue going with the readership? If it is, I have the following to add. I enjoyed reading your article on the old broadcast stations. Whilst in the RAF I served on quite a few transmitting stations: Edlesborough, Heraklis, Muharraq, Hiltadu, Balado and Chenies. I am going back to the 60s and air cooled ACT9's so it was interesting to see the BBC versions. The antenna switching was also something else we didn't have. If Ronald Evans actually exists, please ignore him, he may go away!

**R. Dunlop
Perthshire
Scotland**

I hope Ronald doesn't go away as he's a SWM Reader too! I'll not ignore him either. He's welcome to voice his opinion here. Thanks for the support. - Ed.

Dear Sir

Your Top QSL by Ronald Evans bitching about poor freeview pics, perhaps if he bought the correct antenna then he would have a valid point. He states that he has a "very good" group A antenna, perhaps a wideband would help as this is what is required. As someone who has been licensed since the age of 14 and been on the Internet since the late 80s, I still find *SWM* very interesting.

As a company we recently provided a large amount of h.f. equipment to UK companies in Iraq prior to the Iraq war as there was talk of all the sat. 'phones being switched off when war broke out. My selling point was, when all else fails, h.f. will still be there. We also supplied scanners, frequency counters and repeaters. All these things help get pictures and news back to the UK.

**Rob Martin
Aerial & Satellite Systems
via E-mail**

Dear Sir

I have just read February's Top QSL. I think you might get a bit of feedback from many other readers about this. So here's my 'two pennies worth'.

First, short wave radio is still very much alive and kicking. You only have to remember the uproar from the BBC World service listeners in North America when the BBC closed their broadcasts in English to this continent. As well as millions of listeners in the third world, millions more in crisis/war torn areas of the world also rely on short wave broadcasts for accurate news from the outside world.

Many people who go on holiday or go abroad on business trips, always pack the small portable short wave radio to keep in touch with news or sport events at home. Yes we have mobile 'phone networks, but unlike short wave broadcasts (which are free) calls home are very expensive. As for the Internet, absolutely hopeless for portable use and if a laptop is used the local link can be expensive.

Second and returning to the home front: I have found the quality of Internet radio very poor, with its max and varying 48Kbps plus it has a habit of crashing, I have heard Radio Australia more clearly on the short waves than say Classic Gold on the Internet. True there are lots of stations there, but if you have got a satellite dish you can also get hundreds of stations and all at higher levels of quality. I do agree with Mr Evans on what he says about DAB, the quality of some stations is rather disappointing, but even this is a lot better than you will get via the Internet.

Having lived in a coastal location myself I know all about tidal fading effects on both v.h.f. and u.h.f. signals. A lot of these problems can be cleared by careful choice of antenna, its location and alignment.

Off-air radio has a long way to go both in analogue and digital form. For the moment f.m. radio on v.h.f. Band 2 offers the highest quality audio. This will continue until DAB is offered more bandwidth on v.h.f. Band 3.

Analogue radio on both domestic bands and the h.f. bands offers great coverage with relatively simple transmitters and receivers. Analogue will eventually be replaced by DRM, but I have a feeling good old analogue a.m. will outlive both f.m. radio and analogue television.

So thanks for your wonderful features about the high powered h.f. sites at Woofferton and Rampisham. I am looking forward to reading about Skelton, then how about Droitwich, Washford and say a TV/f.m. radio site such as Rowridge, Wenvoe or Mendip. The last three sites also transmit digital TV and DAB as well.

I think it is beyond the remit of the *SWM* and *PW* to go too much into wired broadcasting, perhaps an article every now and again would do but I think this is best left for one of the many computer and Internet mags. What *SWM* should continue to do is cover all the new exciting developments of good old fashioned radio plus of course news and coverage of today's radio scene I think this will keep you in business and us readers happy for many years to come.

**Simon Hockenhill
Bristol**

6th Edition of Domestic Broadcasting Survey

The Danish Short Wave Club International (DSWCI), now 47 years old, still has experienced DXers in 35 countries all over the world as members, has just issued the 6th Edition of its annual **Domestic Broadcasting Survey**.

This time the survey is divided into four parts. **Part 1:** The 32nd edition of the Tropical Bands Survey covering all **active** broadcasting stations on 2.300-5.700MHz. **Part 2:** Domestic stations on international short wave bands above 5.700MHz broadcasting to a domestic audience, or relaying such broadcasts to compatriots abroad which have increased in order to save production costs in external services.

Part 3: All **active** Clandestine short wave stations are listed with schedules and identifications in a different lay out. **Part 4:** Deleted frequencies which have not been reported heard during the past four years.

This new Survey is based upon many official sources and DX bulletins. A04 schedules are included when available. In order to make the **DBS** reliable, the Club's own monitors around the world have checked throughout the period May 2003 - April 2004, if each of the 1560 station frequencies is on the air. As a result of this monitoring, about 70% of the frequencies already have been confirmed being used in 2004! All **active** stations are marked with an A ('Regular'), B ('Irregular') or C ('Sporadic') in the list. The letter D means 'Likely inactive'.

A unique feature is the right column called 'Last log'. It shows the last month and year before **DBS** deadline on 15 April 2004 when the particular station was reported logged by a DXer somewhere in the world. This is another way of indicating the current audibility of the station. To make this **DBS** up-to-date and user-friendly, most frequencies which have not been heard during the past year have been deleted and moved to Part 4.

Other useful features for easy identification (ID) are the parallel frequencies and reference to Station ID sentences. Five sample extracts from the **DBS-6** are shown on page 2. Reviews can be found on www.dswci.org along with information of cost, etc. The 48 pages A4 size **DBS-6** is available by E-mail in pdf-format, approx. 663KB. A limited number is also printed on paper. They are sold by the treasurer: **DSWCI, c/o Bent Nielsen, Egekrogen 14, DK 3500 Vaerloese, Denmark.**



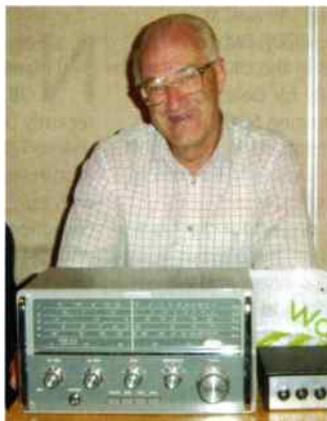
Tabletop Sale

The **Chelmsford Amateur Radio Society** is holding a Radio & Electronics Tabletop Sale on **Tuesday 3 August** starting at 1930. The sale will be held at the Marconi Athletic & Social Club in Beehive Lane, Chelmsford - the current meeting place of the society.

All radio amateurs, s.w.l.s and other electronic enthusiasts are invited to attend as sellers, buyers or just viewers. All good condition amateur, audio, electronic, electrical, photographic, computer and associated equipment may be offered for sale.

Tables cost £3 and entrance is free to buyers and viewers. Entry for sellers will be from 1830. Note: no entry for buyers until 1930. Refreshments will be available as will free car parking.

For further details contact **Colin Page G0TRM** on (01245) 223835 or E-mail colinpage@ukgateway.net or visit the club website at www.g0mwt.org.uk



Lucky 13 For Chelmsford

It was a case of lucky 13 for the Chelmsford Amateur Radio Society. Their recent Foundation Course started with 13 candidates and all of them passed first time. Chelmsford run courses for the Foundation, Intermediate and Advanced licences. For further information contact **Clive Ward M05IX** on (01245) 224577, mobile (07860) 418835, E-mail: training@g0mwt.org.uk or visit www.g0mwt.org.uk



Oldham's New Website

The **Oldham Amateur Radio Club** now have a new website address - www.oarc.org.uk The club meet every Tuesday at 1930 at the Air Training Corps, Park Lane, Royton, Oldham. The club also runs Foundation and Intermediate courses. For further information contact the secretary **Mike M1CVL** on (01706) 367454 or E-mail: M1CVL@thersgb.net



Competition Winner

Congratulations to **Michael Knott** from Mitcham in Surrey who won the SGC ADSP2 speaker, which was donated by W&S PLC for our competition, which appeared in the March 2004 **SWM**. Well done Michael!



communiqué

Silent Key

SWM has recently been informed by the Secretary of BARTG Ian Brothwell G4EAN of the death of BARTG President Alan Hobbs G8GJO/M3GOJ.

With the passing of **Alan Hobbs G8GOJ/M3GOJ** on 15 April 2004, I have lost a good friend and a respected and reliable BARTG committee colleague. I first met Alan when I joined the BARTG committee in 1978 (I believe Alan joined the committee earlier that year). I understand that his involvement with BARTG went back to its early days (as shown by his membership number which was 19). Alan was awarded honorary life membership of BARTG in recognition of his unstinting work for BARTG over a great many years.

Alan was a stalwart of the BARTG committee and rarely missed a committee meeting. His comments in the meetings were invariably salient and helpful. I was particularly grateful that he maintained BARTG's

constitution and seemed to know it by heart.

In the world of mechanical RTTY Alan was an undoubted expert. He was always willing to share his knowledge and help others get their teleprinters on the air. The April 2004 issue of *Datacom* includes '45Bd 145.300MHz A/start' in his contact details. Of late, Alan had come onto the h.f. bands as M3GOJ (though his work as an ATC instructor meant he was no stranger to h.f. operations).

Alan's technical talents were put to good use in co-editing the second edition of the RSGB's *Teleprinter Handbook*. His co-editors were Eric Yeomanson G3IIR and Arthur Gee G2UK (now both silent keys) who also served on the BARTG committee.

Although Alan used only mechanical RTTY he was not at all opposed to computer RTTY or indeed to any of the more modern datacoms modes. He was keen for BARTG to encourage all forms of datacoms but he preferred mechanical RTTY for his own station.

Many BARTG members will have met Alan at BARTG's annual rallies and, as with committee work, he gave generously of his time to ensure that these rallies were a success. He provided the radio comms for the stewards, managed the stand layout, ensured the stands had power as necessary and was always found at the rally at the very end when we had 900m² of floor to sweep.

Alan was the sort of person who would be of great benefit to any club (and was also involved with the Telecoms Heritage Group and ATC). I will always be grateful that he chose to put so much of his time and effort into BARTG.

In the last few months Alan realised that his health was deteriorating and planned to retire from the BARTG committee at our BGM this June (I already had noted his apologies for absence). Sadly, those apologies are no longer necessary and BARTG has lost a respected president and generous worker.

Sky Digital Launch

World Radio Network (WRN), the leading radio transmission company, has revealed the final key ingredient behind the imminent launch of FCUK FM on Sky Digital. As well as providing uplink to the *Eurobird* satellite thus making FCUK FM instantly available to over seven million Sky Digital households in the UK and Ireland, WRN has created an integrated playout facility for Delicious Digital, the music communications house that is managing FCUK FM.

At WRN's central London broadcast centre, the company's technical operations team has been working around the clock putting the finishing touches to the playout facility. Richard Jacobs, WRN's Business Development Manager, says, "this has been a tough project for our team but they have risen to the challenge and created this unique playout facility in record time. Add this to the uplink and EPG services and we are providing a total broadcast solution to Delicious Digital and FCUK FM".

The system has the built-in ability to switch from the station's live studios at the flagship FCUK store in Regent Street to digitally stored audio, captured throughout each broadcast day. The WRN facility also gives the station's programmers access to live output from other sources, as and when desired. The output of FCUK FM will route directly to WRN's cost-effective capacity on the Eurobird satellite - instantly feeding 7.2 million Sky Digital households across the UK and Ireland.

Ian Taylor, Director of Delicious Digital, is very excited about the project, "the huge FCUK FM promotional campaign has created an amazing buzz and the station is going to blow everyone away! The fact that WRN could provide the complete playout and transmission solution was absolutely invaluable to the success of the project".

With a slogan of 'None Of The Hits, None Of The Time', FCUK FM will rule out chart and pop music from its playlist and will consist of just the best of new British music from genres such as Indie, Rock, Dance and 'cool' R'n'B music.



Fort On The Air Loud & Clear

New exhibition of radio equipment and special amateur radio station GB2NFM was successfully opened recently by Admiral of the Fleet Sir Henry Leach. This was the culmination of 15 months volunteer work by Sussex radio amateurs to display the lifetime radio collection of the late Cyril Fairchild G3YY and restore an old signals room at Newhaven Fort Museum. The room high up overlooking the Channel now houses the collection and is an operational radio station which will make contacts worldwide.

Sir Henry inspected local sea cadets who had piped him aboard and formed a guard of honour. He went on to tour the Fort and meet local people including one Lewes man who had served with him on-board ship.

Sir Henry, who has local links via St Dustan's, explained that Cyril had been an interceptor during World War II listening in and reporting enemy Morse code transmissions to Bletchley Park where the intelligence gathered had a major impact on winning the war. Cyril's great grand daughter, ten year old Scarlett Paine assisted Sir Henry in unveiling a plaque commemorating the opening.

Newhaven Fort Museum is open to the public seven days a week and members of the Worthing and District Amateur Radio Club who carried out the work at the Fort will be on hand to talk to visitors and put the station on the air.



• Sir Henry Leach giving a speech before cutting the tape.



• Some of the equipment in the exhibition.



• Sir Henry Leach with young Scarlett after she and he unveiled the plaque commemorating the opening.

GB4IOM/GB4SPT DXpedition

Members of the **Wrexham & District Amateur Radio Society** will be operating from the Isle of Man, (IOTA EU116) during the period 1-8 September 2004. The site that will be used is Scarlett Point, a disused Coast Guard look-out tower, approx 2.4km South of Castletown, Isle of Man. (QRA: IO74, WAB SC26).

Operation will be on all h.f. bands, 50, 70, 144 and 432MHz, at full UK power. It is envisaged that the team will operate simultaneously on:

- Three h.f. bands (c.w., s.s.b., RTTY, PSK and some SSTV)
- One v.h.f. band

The team envisage a high level of activity on the lower h.f. bands, with particular attention being paid to 160 and 80m. It is planned to use a combination of antennas, including Phased Arrays, Yagis and Quads at heights of 13-30m. The call signs: **GB4IOM** and **GB4SPT** will be used.

Some operation from the islands mountain will take place, conditions permitting, for SOTA devotees. QSL via the Bureau or direct to M1LCR (further details and a PO Box address will be announced later).

A team of at least 10 operators will be active, and these so far include: Ronnie MD3ABZ, Steve MW1STE, Mark MW1MDH, John MW1VCD (SOTA Man), Adrian M1LCR and James M3JRP. In addition a further three operators will also be available.

The DXpedition site www.gb4iom.co.uk will contain updated information initially on a weekly basis and then continuously on-line during the period of the expedition. Visitors to the website will be able view and search logs and operators will be able see QSO confirmation within 12 hours of each QSO. The website will include information on how to work GB4IOM and GB4SPT. This will include frequencies, times and modes where we will be operating. A number of awards are planned for working the station, either multi-band/multi-mode or a combination and a QSLs are requested from s.w.l.s.

Members of the Wrexham and District Amateur Radio Society meets every other Tuesday and further details are available from the Club Secretary, **Adrian Rees M1LCR** on (07766) 864452, (01244) 303108, or E-mail: rees.a@btconnect.com

DAB Digital 'Boom Box' With Bite

Bush say that they are to take DAB Digital Radio to the street with a 'Boom Box' with bite! With its sleek urban feel and powerful sound, you can take the latest DAB digital radio technology with you wherever you go.

The FUSION004 boasts two channels with 7.5W r.m.s. output plus Bass Boost and Graphic equaliser settings. It incorporates DAB

June 6: The 8th Red Rose QRP Festival is to be held at Formby Hall, Alder Street (off High Street), Atherton, Manchester. This is a friendly get-together, intended to promote low power amateur radio operating and home construction. There will be trade stalls, club stands, low cost Bring & Buy, Morse receiving tests with certificates, refreshments and a well stocked lounge bar. Talk-in on S22. Admission is £1.50. More information from **Les Jackson G4HZJ** on (01942) 870634 or E-mail: g4hzj@ntlworld.com

June 6: The Anglo Scottish Repeater Group are holding their Radio Junk Rally at Cumwhinton Village Hall, one mile east of J44 (M6) on B6263. Talk-in and refreshments available as is wheelchair access. Tables are £5 and bookable in advance. Contact **Mick Barber M0AOH** on (01228) 526436 or E-mail: mickbarber@zetnet.co.uk

June 6: The Spalding & DARS Annual Rally is to be held at Sir John Glead Technical School, Halmer Gardens, Spalding. Doors open 1000 and entrance fee is just £2. There will be plenty of parking on site and hot snacks will be available. Visit www.sdars.org.uk or contact **Ambrose M0DJA** at rally-secretary@sdars.org.uk or **Alan 2E0HGV** at secretary@sdars.org.uk

June 13: Ipswich East Suffolk Wireless Revival are holding their rally at the Suffolk Showground, Ipswich. There will be a large undercover car boot sale, Bring & Buy, RSGB, club stands and GB4SWR talk-in. Visit <http://www.btinternet.com/~thomassg/eswr.htm> or E-mail: thomassg@btinternet.com

June 13: The 35th Elvaston Castle National Radio Rally takes place at the Elvaston Castle Country Park, near Derby. There will be all the usual traders, plus Bring & Buy, manufacturers marquee, entertainment, craft marquee, etc. General information from **Les Bagnall** on (01332) 559965 or secretary@elvastonrally.co.uk or trade enquiries from **Phil Johnson** on (01332) 752277 or trader@elvastonrally.co.uk

June 13: The East Suffolk Wireless Revival is to take place at the Suffolk Showground, Felixstowe Road, Ipswich. Doors open at 0930. There is ample car parking and the event is well signposted. The main attraction will be the radio car boot sale and in addition there will be a Bring & Buy, bookstall, Foundation Morse tests, h.f. station and local club stalls. Food and refreshments will also be available. More information at www.btinternet.com/~thomassg/eswr.htm or contact **John Quarmby G3XDY** on (01473) 717830 or **Steve Thomas M1ACB** on (07720) 412648.

June 19: The Reddish Rally takes place at St. Mary's Parish Hall, Reddish, Stockport, junction of Reddish Road/Broadstone Hall Road South. Admission just £1, talk-in on S22. Tables £10 each. **John G4ILA** on 0161-477 6702 or E-mail: john@mckae.freesterve.co.uk

June 20: The Newbury & DARS are holding their Amateur Radio Boot Sale at Cold Ash, near Newbury. More information from www.nadars.org.uk

New Alinco Switch Mode

Nevada are pleased to announce the release of the new Alinco DM-330MVE 'Communications Grade' switched mode 12V 25A power supply. This lightweight supply is ideal for the traveller, weighing just 2.3kg. It has been designed specifically for use with amateur band transceivers, having extremely low noise output. Should noise be a problem, then it has a patented Noise Offset circuit to move the noise frequency out of band.

Features include a large illuminated 'Instrument Class' voltage and current meter, voltage adjustment from 5 to 15V d.c., output voltage 'memory' and full protection circuits. The power supply will sell for £119.95 and is available from Alinco dealers, or direct from Alinco UK distributor Nevada, on 02392 313090 or visit www.alinco.co.uk



Digital Radio and f.m./m.w. and has both a CD Player and Cassette Recorder. The FUSION004's gunmetal grey finish with orange speaker cone detail is a far cry from the 'Ghetto Blasters' seen on street corners with break-dancers in the 80s. The FUSION's ultra sleek curves give it a unique, futuristic feel, and with it being powered by mains or batteries it's great for street, beach or bedroom listening.

DAB stations can be stored in 10 preset



memories and with the added benefit of scrolling text information, you can read on the display panel exactly what station you're listening to, plus extra information like competition details. The built-in clock has a handy auto update capability via DAB so there's no more need to worry about when to adjust the clock for Summer/Winter!

The Bush FUSION004 Boom Box is available mid April for £179.

SCANNER BASE VERTICALS

- SUPERSCAN STICK I (WIDEBAND)**£29.95 PLUS £6.00p+p
*FREQ:0-2000 MHZ *LENGTH:100cm *SOCKET:SO239 *RADIALS: 3X17cm
- SUPERSCAN STICK II (WIDEBAND)**£39.95 PLUS £6.00p+p
*FREQ:0-2000 MHZ *GAIN:3.00dB OVER SSSI *LENGTH:150cm
*SOCKET:SO239 *RADIALS: 3X50cm

These two superb fibreglass external wideband antennas have capacitor loaded trapped coils to give maximum sensitivity to even the weakest of signals. No wonder they are best selling verticals!!!

- AR-30 (AIR BAND)**£39.95 PLUS £6.00p+p
*FREQ:CIVIL & MILITARY AIR *GAIN:3.0/6.0dB *LENGTH:100cm
*SOCKET:SO239 *RADIALS:3X17cm
- AR-50 (AIR BAND)**£49.95 PLUS £6.00p+p
*FREQ:CIVIL & MILITARY AIR *GAIN:4.5/7.0dB *LENGTH:150cm
*SOCKET:SO239 *RADIALS: 3X50cm

These dedicated fibreglass external antennas are pre-tuned for both air band frequencies.
Get the gain and don't miss take off!!

- X1-HF VERTICAL (DEDICATED HF)**£49.95 PLUS £6.00p+p
*FREQ:1.50 MHZ *LENGTH:200cm *SOCKET:SO239 *RADIALS:NONE

This HF vertical antenna incorporates helical traps and is an ideal alternative to a long wire



DISCONE BASE ANTENNA

- STANDARD DISCONE (WIDEBAND)**.....£29.95 PLUS £6.00p+p
*FREQ:25-1300 MHZ *LENGTH:100cm *SOCKET:SO239 *RADIALS: 16
- SUPER DISCONE (WIDEBAND)**.....£39.95 PLUS £6.00p+p
*FREQ:25-2000 MHZ *GAIN:3.00dB OVER STANDARD *LENGTH:140cm
*SOCKET:SO239 *RADIALS:16

- HF DISCONE (WIDEBAND/HF SENSITIVE)**.....£49.95 PLUS £6.00p+p
*FREQ:0.05-2000 MHZ *LENGTH:185cm *SOCKET: SO239 *RADIALS: 16
- ROYAL DISCONE 2000 (WIDEBAND/STAINLESS)**.....£49.95 PLUS £6.00p+p
*FREQ RX:25-2000 MHZ FREQ TX: 50-52 144-146 430-440 900-986 1240-1325 MHZ *LENGTH:155cm GAIN:4.5dB OVER STANDARD *SOCKET:N-TYPE *RADIALS:16

The discone has been around for over 40 years and is generally recognised as the original and probably the best all round scanner antenna. Choose the best one for your station or call us for advice.



BEAM ANTENNAS

- MLP-32 (LOG PERIODIC)**£99.95 plus £6.00p+p
*FREQ:100-1300 MHZ TX & RX *GAIN:11-13dB *LENGTH:140cm *SOCKET: N-TYPE
- MLP-62 (LOG PERIODIC)**.....£169.95 plus £6.00p+p
*FREQ:50-1300 MHZ TX & RX *GAIN:10-12dB *LENGTH: 300cm *SOCKET: N-TYPE

These two beam antennas are sold mainly to our military & commercial customers. With an SWR 2:1 or better over the whole frequency, for performance it just doesn't get better.

- AR300XL** rotator for both antennas £49.95 plus £6.00 P+p



GETTING RIGGED UP

5' SWAGED POLES

Heavy Duty Alii (1.2mm wall)

- SINGLE 11/4"£7.00
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- SET OF FOUR 11/2"£34.95
- SINGLE 2"£15.00
- SET OF FOUR 2"£49.95

CONNECTORS

- PL259/9£0.75 each
- PL259/6£0.75 each
- PL259/7 for mini 8£1.00 each
- BNC (Screw Type)£1.00 each
- BNC (Solder Type)£1.00 each
- N TYPE for RG58£2.50 each
- N TYPE for RG213£2.50 each
- SO239 to BNC£1.50 each
- PL259 to BNC£2.00 each
- N TYPE to SO239£3.00 each

HI-SPEC COAX CABLE

- RG58 6mm standard£0.35 per mtr
- RG58 6mm mil spec£0.60 per mtr
- RF mini 8 7mm mil spec£0.85 per mtr
- RG213 9mm mil spec£0.85 per mtr
- RH200 9mm mil spec£1.10 per mtr
(Phone for 100 mtr discount price)

GOING MOBILE

- G-SCAN II MOBILE (WIDEBAND)**£24.95 PLUS £6.00P+P
*TYPE: TWIN COIL *FREQ:25-2000 MHZ *LENGTH: 65cm
*BASE:MAGNETIC *CABLE: 4m WITH BNC



- SKYSCAN MOBILE (WIDEBAND)**.....£19.95 PLUS £6.00 p+p
*TYPE:4 WHIPS *FREQ:25-2000 MHZ *LENGTH:65cm
*BASE:MAGNETIC *CABLE:4m WITH BNC

Don't lose those signals while on the move, get high performance reception where ever whenever.



PORTABLE ANTENNAS

- SKYSCAN DESKTOP (INTERNAL/WIDEBAND)**£49.95 PLUS £6.00 p+p
*TYPE:DISCONE STYLE *FREQ:25-2000 MHZ *LENGTH:90cm *CABLE:4m WITH BNC

- TRI-SCAN III DESKTOP (INTERNAL/WIDEBAND)**£39.95 PLUS £6.00 p+p
*TYPE: TWIN COIL *FREQ:25-2000 MHZ *LENGTH: 90cm *CABLE:4m WITH BNC

- SWP-2000 (GLASS MOUNT/WIDEBAND)**£29.95 PLUS £6.00 p+p
*TYPE: SUCTION MOUNT *FREQ:25-2000 MHZ *LENGTH:55cm *CABLE:4m WITH BNC

- SWP-HF30 (GLASS MOUNT/DEDICATED HF)**£39.95 PLUS £6.00 p+p
*TYPE:SUCTION MOUNT *FREQ:HF 0.05-30 MHZ *LENGTH: 80cm *CABLE:4m WITH BNC

- MAX-5 ACTIVE (INTERNAL/EXTERNAL/WIDEBAND)**£49.95 PLUS £6.00 p+p
*TYPE: ACTIVE PRE-AMP *FREQ:25-1800 MHZ *GAIN: 14dB *LENGTH: 140cm *CABLE: 4m WITH BNC



Get the most from your scanner buy using one of our portable antennas and enjoy great performance without the need to erect an external one.

SHORTWAVE WIRE ANTENNAS

- MWA-HF MKII (EXTERNAL DELUXE HF ANTENNA)**£49.95 PLUS £6.00 p+p
*TYPE:WIRE BALUN MATCH *FREQ:0-40 MHZ *LENGTH: 25M
*CABLE: 10m WITH PL259

- MD37-SKYWIRE (EXTERNAL STANDARD HF ANTENNA)**£39.95 PLUS £6.00 p+p
*TYPE: WIRE BALUN MATCH *FREQ:0-40 MHZ *LENGTH:25M
*CABLE:10m WITH PL259

- LONG WIRE BALUN (ON ITS OWN)**£19.95 PLUS £2.00 p+p

- LONG WIRE BALUN (ON ITS OWN)**£19.95 PLUS £2.00 p+p

Get the best from your HF receiver and get a long wire. Our own ferrite baluns give up to 2 "S" points greater signal than other similar baluns, with a smooth match over 40mhz.



HANDHELD ANTENNAS

- MRW-100 (SUPER GAINER BNC)**£19.95 PLUS £2.00 p+p
*FREQ: 25-1800 MHZ *LENGTH:40cm *FITTING:BNC
- MRW-210 (SUPER GAINER SMA)**£22.95 PLUS £2.00 p+p
*FREQ: 25-1800MHZ *LENGTH:40cm *FITTING:SMA

Going out? Don't miss out! Get a Super Gainer!!

SOMETHING EXTRA

- MRP-2000 (ACTIVE WIDEBAND PRE-AMPLIFIER)**£49.95 PLUS £6.00 p+p
*FREQ:25-2000 MHZ *GAIN:14.0dB *POWER:9-15v *CABLE:1m BNC-BNC

- MRP-137 (ACTIVE WEATHER SAT PRE-AMPLIFIER)**£44.95 PLUS £6.00 p+p
*FREQ:137.5 MHZ *GAIN:25.0dB *POWER:9-15v *CABLE:1m BNC-BNC



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-£19.50 PLUS £6.00 p+p



- TURNSTILE 137 (DEDICATED WEATHER SATELLITE)**£39.95 PLUS £6.00p+p
*FREQ:137.5 MHZ *LENGTH:100cm *SOCKET:SO239 *RADIALS:4
For use with receiving weather satellite pictures.



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LM&S

Long, Medium & Short Wave Bands

- **Martin Peters** 11 Filbert Drive, Reading RG31 5DZ
- **E-mail** lms@pwpublishing.ltd.uk

Thanks to all those of you who submitted mini autobiographies. First up; of course, it had to be **Sheila Hughes** from Morden.

Sheila took up active short wave listening in 1986 with the assistance of her son, **Paul GOBXC** and the support of her husband. The three of them (and the cat) reside in a terraced cottage blessed with a long, narrow garden. Apart from a dedicated listening post, radios can be found in the bedroom, the kitchen and the potting shed, from where Sheila's gardening activities are masterminded. Her main interest is the international friendship aspect of the radio listening community, independent of state and politics with a view to a more peaceful world. Sheila is also a keen stamp collector and dabbles in a variety of other pastimes. She boasts membership of the British DX Club and the International Shortwave League.

Sheila listened around the bands on 8 March with a particular interest in logging

stations that featured International Women's Day in their output. From what she says, the event did not go unnoticed, with Radio Tashkent airing a particularly informative programme. Sheila also mentions that the home-built loop she uses for medium wave listening resides on the dining room table. The question is, does this piece of technical wizardry get cleared away at meal times or does it fight for space along with the ketchup? I think we should be told.

Peter Pollard confirmed his tentative logging of Tibet on **7.385MHz** since he originally reported it a couple of months ago. News and Tibetan music go out each day from 1630. Fascinating topics observed so far include marriage customs, making yak butter and preparations for herding your sheep to summer pastures. You never know when any

Long Wave Table

kHz	Service	TX Location	Country	Power (kW)	Listener
153	Radio Romania	Brasov	RDU	1200	A* E*
153	RTA 1	Bechar	ALG	1000	A* E*
153	Deutschlandfunk	Donebach	D	500/250	A* B C* D E*
162	France Inter	Allouis	F	2000/1000	A C D E*
171	Medi 1	Nador	MRC	2000	A E*
171	Radio Rossii	Bolsakovo	RUS	600	B* E*
177	Deutschlandradio Berlin	Zehlendorf	D	500	A B* E*
183	Europe 1	Saarouis	D	2000	A C* D E*
189	Georgian Radio 1	Tbilisi	GED	500	E*
189	Rikisutvarpid	Gufuskalar	ISL	150	A* E*
189	RAI Uno	Caltanissetta	I	10	A*
198	BBC Radio 4	Droitwich	UK	500	A C
207	RTM Network A	Azial	MRC	400	A* E*
207	Deutschlandfunk	Aholmung	D	500	A B D
207	Rikisutvarpid	Eidar	ISL	100	A* E*
216	Radio Monte Carlo	Roumoules	F	1400	A B D
216	Radio Rossii	Krasnoyarsk	RUS	150	A*
225	Polish Radio 1	Solec Kujawski	POL	1000	A B* C* E*
225	Turkish Radio 4	Van	TUR	600	A*
234	Armenian national radio	Gavar	ARM	500	A*
234	RTL	Junglinster	LUX	2000	A D E*
243	Denmark Radio 1	Kalundborg	DNK	300	A B C E*
252	RTE Radio 1	Clarks town	IRL	500/150	A B C
252	Radio Liberty	Yerevan	USA/ARM	150	A E*
252	Algiers Radio 3	Tipaza	ALG	1500/750	A B C* D
261	Radio Rossii	Taldom	RUS	2500	C* E*
270	Czech Radio 1	Uherske-Hradiste	TCH	650	A B C* E*
279	Belarussian Radio 1	Sasnovy	BLR	500	A B* E*

* = dark

Listeners:-

- A Ernie Strong, Ramsey, Cambridgeshire.
- B Simon Hockenhill, Bristol.
- C Sheila Hughes, Morden.
- D Thomas Williams, Truro.
- E Jim Edwards, Wigan.

Listeners:-

- A James Glen, Dunfermline.
- B Ernie Strong, Ramsey, Cambs.
- C Simon Hockenhill, Bristol.
- D Sheila Hughes, Morden.

Local Radio Table

kHz	Service	Svc area/TX site	kW	SWL
558	Spectrum	Crystal Palace	1	B C
603	Capital Gold	Littlebourne	0.1	B C
630	BBC 3CR	Luton	0.2	B C D
630	BBC Radio Cornwall	Redruth		C*
657	BBC Radio Cornwall	Bodmin	0.5	B* C*
666	BBC Radio York	York	0.5	B D
666	Classic Gold	Exeter	0.34	B C
729	BBC Essex	Manningtree	0.2	B C
738	BBC Hereford & Worcester	Worcester	0.037	B* C
756	Magic Maldwyn	Newtown	0.63	B C
765	BBC Essex	Chelmsford	0.5	B C
774	BBC Radio Kent	Littlebourne	0.7	B D
792	Classic Gold	Bedford	0.275	B C D
801	BBC Radio Devon	Barnstaple	2	B C
828	Classic Gold	Bournemouth	0.27	C
828	Classic Gold	Luton	0.2	B C
828	BBC Asian Network	Wolverhampton	0.2	C
837	BBC Asian Network	Leicester	0.5	B C D
855	BBC Radio Norfolk	Norwich	1.5	B D
855	Sunshine 855	Lutlow	0.15	C
873	BBC Radio Norfolk	West Lynn	0.3	B D
936	Fresh AM	Skipton	1	B
936	Classic Gold	West Wiltshire	0.18	B D
945	Capital Gold	Boxhill	0.7	B C
945	Classic Gold	Derby	0.2	B
954	Classic Gold	Torrey	0.4	C
954	Classic Gold	Hereford	0.16	B C
963	Asian Club	Hackney	0.95	B C
972	Asian Club	Southall	1	B C
990	BBC Radio Devon	Exeter	1	A* C
990	Magic AM	Doncaster	0.25	B
990	Classic Gold	Wolverhampton	0.09	C
999	BBC Radio Solent	Fareham	1	C
999	Valleys Radio	Ebbw Vale	0.3	C
999	Classic Gold	Nottingham	0.25	B
1017	Classic Gold	Shropshire	0.63	C
1026	BBC Radio Jersey	Trinity	1	C
1026	BBC Radio Cambridgeshire	Cambridge	0.5	B C D
1035	Easy Radio London	Crystal Palace	1	B
1035	BBC Radio Sheffield	Sheffield	1	B
1035	Northsound 2	Aberdeen		C*
1116	Valleys Radio	Ebbw Vale	1	A* C

* = dark

Medium Wave Table

kHz	Service	Location	Country	kW	Listener	kHz	Service	Location	Country	kW	Listener
900	RAI Uno	Milan	I	600	B* C* D*	900	RAI Uno	Milan	I	600	B* C* D*
909	BBC Radio Five Live	Brookmans Park	G	150	B* C*	909	BBC Radio Five Live	Brookmans Park	G	150	B* C*
918	Radio Slovenia	Domzale	SVN	600/100	B* E*	918	Radio Slovenia	Domzale	SVN	600/100	B* E*
918	Radio Intercontinental	Madrid	E	50	C*	918	Radio Intercontinental	Madrid	E	50	C*
927	Radio Eury/SZ7 Live	Wolvertem	BEL	300	B* C*	927	Radio Eury/SZ7 Live	Wolvertem	BEL	300	B* C*
945	France Blue	Toulouse	F	300	B* D*	945	France Blue	Toulouse	F	300	B* D*
954	Czech Radio 2	Brno	TCH	200	D*	954	Czech Radio 2	Brno	TCH	200	D*
954	Onda Cera Radio	Madrid	E	20	B* D*	954	Onda Cera Radio	Madrid	E	20	B* D*
963	YLE Radio	Pori	FIN	600	D*	963	YLE Radio	Pori	FIN	600	D*
972	Nord Deutscher Rundfunk (NDR)	Hamburg	D	100	B* D*	972	Nord Deutscher Rundfunk (NDR)	Hamburg	D	100	B* D*
981	RTA 2	Algiers	ALG	600/300	D*	981	RTA 2	Algiers	ALG	600/300	D*
990	Deutschlandfunk (DLF)	Berlin	D	100	B* D*	990	Deutschlandfunk (DLF)	Berlin	D	100	B* D*
990	Radio Bilbao	Bilbao	E	10	D*	990	Radio Bilbao	Bilbao	E	10	D*
999	COPE	Madrid	E	50	B* D*	999	COPE	Madrid	E	50	B* D*
999	RIAS	Schwerin	D	5	D*	999	RIAS	Schwerin	D	5	D*
1007	SER	Many	E	5	D*	1007	SER	Many	E	5	D*
1017	Sudwestrundfunk (SWR)	Wolfsheim	D	100	B* D*	1017	Sudwestrundfunk (SWR)	Wolfsheim	D	100	B* D*
1035	RAI Due	Napoli	I	50	D*	1035	RAI Due	Napoli	I	50	D*
1044	Radio San Sebastian	San Sebastian	E	10	B* D*	1044	Radio San Sebastian	San Sebastian	E	10	B* D*
1053	Talksport	Droitwich	G	500	B* C	1053	Talksport	Droitwich	G	500	B* C
1062	Denmark Radio P3	Kalunborg	DNK	250	B* C* D*	1062	Denmark Radio P3	Kalunborg	DNK	250	B* C* D*
1071	Euskadi Irratia	Bilbao	E	50	B* D	1071	Euskadi Irratia	Bilbao	E	50	B* D
1071	Talksport	Clipstone	G	1	B* C	1071	Talksport	Clipstone	G	1	B* C
1089	Talksport	Brookmans Park	G	400	B* C	1089	Talksport	Brookmans Park	G	400	B* C
1098	Radio Slovenjko	Nitra	SVK	50	B*	1098	Radio Slovenjko	Nitra	SVK	50	B*
1107	Talksport	Lydd	G	50-2	B* C	1107	Talksport	Lydd	G	50-2	B* C
1107	American Forces Network	Bavaria	D	10	D*	1107	American Forces Network	Bavaria	D	10	D*
1116	Radio Pontevedra	Pontevedra	E	5	B*	1116	Radio Pontevedra	Pontevedra	E	5	B*
1125	BBC Radio Wales	Llandrindod Wells	G	1	D	1125	BBC Radio Wales	Llandrindod Wells	G	1	D
1125	Croatian Radio HR1	Zadar	HRV	100	B*	1125	Croatian Radio HR1	Zadar	HRV	100	B*
1134	Croatian Radio HR1	Zadar	HRV	600	B* D	1134	Croatian Radio HR1	Zadar	HRV	600	B* D
1143	American Forces Network	Many	USA/D	1-10	D*	1143	American Forces Network	Many	USA/D	1-10	D*
1179	Swedish Radio 1	Solivesborg	S	600/300	B* C* D*	1179	Swedish Radio 1	Solivesborg	S	600/300	B* C* D*
1188	VDA/RFE	Marcali	USA/HNG	500	B* C*	1188	VDA/RFE	Marcali	USA/HNG	500	B* C*
1197	VDA/RFE	Munich	USA/D	300/150	B* D*	1197	VDA/RFE	Munich	USA/D	300/150	B* D*
1197	Virgin Radio	Many	G	0.2-2	B	1197	Virgin Radio	Many	G	0.2-2	B
1206	France Info	Bordeaux	F	300	B* D*	1206	France Info	Bordeaux	F	300	B* D*
1215	Virgin Radio	Many	G	0.32-200	B* C*	1215	Virgin Radio	Many	G	0.32-200	B* C*
1233	Virgin Radio	Many	G	0.1-0.5	B* C*	1233	Virgin Radio	Many	G	0.1-0.5	B* C*
1242	Virgin Radio	Many	G	0.5-2	C*	1242	Virgin Radio	Many	G	0.5-2	C*
1242	France Info	Marseille	F	150	D*	1242	France Info	Marseille	F	150	D*
1260	Virgin Radio	Lydd	G	1	C*	1260	Virgin Radio	Lydd	G	1	C*
1269	Deutschlandfunk (DLF)	Neumunster	D	300	B	1269	Deutschlandfunk (DLF)	Neumunster	D	300	B
1278	France Blue	Strasbourg	F	300	B* D*	1278	France Blue	Strasbourg	F	300	B* D*
1278	RTE Radio 2	Cork/Dublin	IRL	10	D*	1278	RTE Radio 2	Cork/Dublin	IRL	10	D*
1287	Radio Lleida	Lleida	E	10	B*	1287	Radio Lleida	Lleida	E	10	B*
1296	CDPE	Valencia	E	20	B* C	1296	CDPE	Valencia	E	20	B* C
1314	NRK Europanalen	Kvitsoy	NDR	1200	B* C	1314	NRK Europanalen	Kvitsoy	NDR	1200	B* C
1323	Voice of Russia	Wachenbrunn	RUS/D	800/150	B* D*	1323	Voice of Russia	Wachenbrunn	RUS/D	800/150	B* D*
1332	RAI Uno	Rome	I	300	B*	1332	RAI Uno	Rome	I	300	B*
1341	BBC Radio Ulster	Lisnagarvey	G	100	B* C* D*	1341	BBC Radio Ulster	Lisnagarvey	G	100	B* C* D*
1359	RNE3	Madrid	E	600	B* D*	1359	RNE3	Madrid	E	600	B* D*
1368	Manx Radio	Douglas, IOM	G	20	A, B, D*	1368	Manx Radio	Douglas, IOM	G	20	A, B, D*
1377	France Info	Lille	F	300	B* D	1377	France Info	Lille	F	300	B* D
1386	Voice of Russia	Boishakovo	RUS	1200	D*	1386	Voice of Russia	Boishakovo	RUS	1200	D*
1395	Radio 10 FM	Trinthehaven	HOL	120	B* D	1395	Radio 10 FM	Trinthehaven	HOL	120	B* D
1404	France Info	Brest	F	20	B* D*	1404	France Info	Brest	F	20	B* D*
1413	RNE 5	Many	E	5-10	B*	1413	RNE 5	Many	E	5-10	B*
1422	DLF	Heusweiler	D	1200/600	B* D*	1422	DLF	Heusweiler	D	1200/600	B* D*
1440	RTL	Mamach	LUX	1200/300	C*	1440	RTL	Mamach	LUX	1200/300	C*
1467	TransWorld Radio	Romoules	F	1000	B* C* E*	1467	TransWorld Radio	Romoules	F	1000	B* C* E*
1476	Radio 1476	Vienna	AUT	60	B* D*	1476	Radio 1476	Vienna	AUT	60	B* D*
1485	SER	SER	E	2-5	B*	1485	SER	SER	E	2-5	B*
1494	Voice of Russia	Krasny-Bor	RUS	600	D*	1494	Voice of Russia	Krasny-Bor	RUS	600	D*
1494	France Info	Clermont-Ferrand	F	20	B* C	1494	France Info	Clermont-Ferrand	F	20	B* C
1512	Radio Eery/RVI	Wolvertem	BEL	300/25	B* C* D*	1512	Radio Eery/RVI	Wolvertem	BEL	300/25	B* C* D*
1512	Radio Nederland	Wolvertem	BEL/HOL	300/25	F*	1512	Radio Nederland	Wolvertem	BEL/HOL	300/25	F*
1530	Vatican Radio	Vatican City	CVA	150/450	B* D*	1530	Vatican Radio	Vatican City	CVA	150/450	B* D*
1539	Evangeliums Rundfunk	Mainflingen	D	700/120	C* D*	1539	Evangeliums Rundfunk	Mainflingen	D	700/120	C* D*
1539	SER	Many	E	2-6	C	1539	SER	Many	E	2-6	C
1557	France Info	Nice	F	300	D*	1557	France Info	Nice	F	300	D*
1575	RAI Uno	Genova	I	50	D*	1575	RAI Uno	Genova	I	50	D*
1575	SER	Many	E	5	B*	1575	SER	Many	E	5	B*
1584	SER	Many	E	2	B* C	1584	SER	Many	E	2	B* C
1593	Radio Caroline	Cork	IRL	?	C	1593	Radio Caroline	Cork	IRL	?	C
1602	Radio Vitoria	Vitoria	E	25	B*	1602	Radio Vitoria	Vitoria	E	25	B*
1602	ERTU mix	El Dakhla	EGY	10	D*	1602	ERTU mix	El Dakhla	EGY	10	D*

* = dark

Listeners:-

- A James Glen, Dunfirmline.
- B Fred Wilmshurst, Northampton.
- C Ernie Strong, Ramsey, Cambs.
- D Simon Hockenhull, Bristol.
- E Sheila Hughes, Morden

(or all) of this may come in useful so Peter recommends you give them a listen.

Congratulations go to **James Glen** for passing his Amateur Radio Foundation Licence exam. James now holds the callsign M3FUW, although at the time of writing, had not yet made any transmissions. Whether this is down to lack of time or lack of equipment I'm not sure but if I hear you on, James, I'll be sure to give you a call. James came across an unidentified American station carrying a weather forecast on **1665kHz** on 22 March at 0555. Unless this was an illicit broadcast, the actual frequency is likely to be either **1660** or **1670kHz**, as US stations on medium wave

broadcast on frequencies that are multiples of ten. If anyone knows what station this might be, James would be interested to know. A PC now graces the shack but as far as listening to international broadcasters goes, James says 'real' radio beats internet radio every time.

There's simply no challenge or sense of achievement when all you have to do is press a button for guaranteed, crystal-clear reception.

Meanwhile, **Vic Prier** has bid a tearful goodbye to his trusty Amstrad computer, it having crashed "for the last time". All is not lost, though and Vic managed a printout of the logs before the Amstrad drew its final breath. Every cloud has a silver lining and he is now up and running with a tailor-made PC, complete with printer. Glad you're back with us, Vic. Best of luck computer-controlling your Fairhaven receiver... and fathoming out *Windows XP*.

To **Camberley** and **Ernie Strong** was lucky enough to hear the 500kW, **216kHz** transmission out of Krasnoyarsk, Siberia one night in mid-March, as it just so happened that Radio Monte Carlo from Romoules was off the air for a short time. Further up the band, although the return of **252kHz** from Ireland is welcome, it's made the reception of Radio Liberty's relay in Armenia virtually impossible.

A good month on long wave also for **Simon Hockenhull** who managed to catch the Sasnovy transmissions on **279kHz** at around 2200. On medium wave Simon managed to rack up 46 UK local outlets (a personal record) and these are all detailed in the listings.

A really bad month for the world of international broadcasters. If you haven't yet heard **Radio Slovakia International** on short wave then I'm afraid you've missed your

Tropical Band Table

MHz	UTC	Service	Country	Listener	MHz	UTC	Service	Country	Listener
3.200	0300	Trans World Radio	MCO/SWZ	I	4.880	0115	All India Radio, Lucknow	IND	I
3.210	0045	WVCR Nashville	USA	I	4.885	0305	Radio Clube Do Para	B	I
3.215	0306	Adventist World Radio	USA/MDG	I	4.885	0305	Radio Dif Acreana	B	I
3.223	0110	All India Radio, Simla	IND	I	4.890	0545	Radio France Int'l	F/GAB	I
3.230	2000	WYFR	USA/AFS	I	4.895	2215	All India Radio, Kurseong	IND	C I
3.240	0305	TWR Manzina	MCO/SWZ	I	4.895	2255	Radio Ulan Bator	MNG	I
3.255	1845	BBC World Service	G/AFS	G I	4.905	2123	Xizang TB	CHN	B C I
3.279	0640	La Voz Del Napo	VEN	I	4.910	1940	Radio Zambia	ZMB	I
3.306	0115	Zimbabwe Broadcasting	ZWE	I	4.910	0055	All India Radio, Jaipur	IND	I
3.315	0050	All India Radio, Bhopal	IND	I	4.915	2225	GBC 1 Accra	GHA	C I
3.320	2020	SABC Meyerton	AFS	I	4.915	0030	Radio Anhanguera	B	I
3.345	2030	Channel Africa	AFS	I	4.915	0045	Radio Difusora, Macapa	B	I
3.365	1820	All India Radio, Delhi	IND	I	4.920	2123	Xizang TB Lhasa	CHN	B C I
3.915	2210	BBC World Service	G/SNG	C I	4.920	0035	All India Radio, Chennai	IND	I
3.950	0040	PBS Xinjiang	CHN	I	4.920	0715	Radio Quito	EOA	I
3.955	1820	Radio Taiwan International	TWN/G	A D F G	4.925	2325	RRI Jambi	INS	I
3.955	2220	Radio Korea International	KOR/G	A	4.930	2230	All India Radio, Shimla	IND	C
3.965	1832	Radio France International	F	F	4.940	0045	All India Radio, Guwahati	IND	I
3.975	1914	Radio Budapest	HNG	F	4.945	0145	Emissora Rural	B	I
3.980	1855	Radio Free Europe	USA/D	G	4.950	1915	Radio Nacional Angola	AGL	I
3.985	1854	Deutsche Welle	D	D F G	4.950	1935	Voice of America	USA/STP	I
4.005	2230	Vatican Radio	VVA	C F	4.950	0010	All India Radio, Srinagar	IND	I
4.190	2235	CNR Minority Prog	CHN	I	4.960	0110	All India Radio, Ranchi	IND	I
4.330	0055	PBS Xinjiang	CHN	I	4.965	0155	Christian Voice Radio	ZMB	I
4.460	2240	CHN Radio 1	CHN	I	4.975	1950	Radio Uganda, Kampala	UGA	I
4.500	0050	PBS Xinjiang	CHN	I	4.980	0100	PBS Xinjiang	CHN	I
4.750	2305	PBS Xizang	CHN	I	4.985	2245	Radio Brasil Central	B	I
4.760	0120	All India Radio, Port Blair	IND	I	4.990	0055	All India Radio, Intanger	IND	I
4.770	2230	FRON Kaduna	NIG	C I	5.005	0105	Radio Nepal	NPL	I
4.775	0035	All India Radio, Imphal	IND	I	5.009	0315	RTM Malagasy	MDG	I
4.775	0345	Trans World Radio, Manzina	MCO/SWZ	I	5.010	0105	All India Radio, Thiru'puram	IND	I
4.783	2225	RTM Bamoko	MU	I	5.015	2240	Turkmen Radio	TKM	C
4.790	0110	All India Radio, Chennai	IND	I	5.015	0035	Radio Pioneira	B	I
4.800	2109	CPBS 2 Beijing	CHN	B C I	5.025	2230	Radio Uganda	UGA	C
4.800	0055	All India Radio, Hyderabad	IND	I	5.025	0635	Radio Rebelde	CUB	I
4.805	2335	Radio Dif Do Amazonas	B	I	5.025	2030	Radio Tashkent	UZB	H
4.815	0345	Radio Difusora Londrina	B	I	5.030	2250	Radio Burkina	BFA	C I
4.820	2111	Xizang Lhasa	CHN	B C I	5.030	2250	China National Radio 1	CHN	I
4.820	0035	All India Radio, Kolkata	IND	I	5.035	0225	Radio Aparecida	B	I
4.825	0635	Radio Cancao Nova	B	I	5.040	0110	All India Radio, Jlepora	IND	I
4.828	0310	ZBC Zimbabwe	ZWE	I	5.047	0115	RTT Togo	TGO	I
4.830	2235	Radio Ulan Bator	MNG	I	5.050	2245	PBS Guangxi	CHN	I
4.830	2245	Radio Tachira	VEN	I	5.050	0205	WWRB Manchester	USA	I
4.830	0100	All India Radio, Jammu	IND	I	5.055	0310	Faro Del Caribe	CTR	I
4.835	2215	RTM Bamoko	MU	C I	5.060	0105	PBS Xinjiang	CHN	I
4.840	0025	All India Radio, Mumbai	IND	I	5.070	0825	WVCR Nashville	USA	B I
4.845	2115	DRTM Nouakchott	MTN	B C I	5.085	0120	WWRB, Manchester	USA	I
4.860	0040	All India Radio, Delhi	IND	I	5.105	2130	WBCQ, Maine	USA	B D I
4.875	0035	Radio Dif Rorajima	B	I	5.240	2134	Xizang TB Lhasa	CHN	I

DXers:-

- A Stan Evans, Herstmonceux.
- B Rhoderick Illman, Dxted.
- C Vic Prier, Seaton.
- D Peter Pollard, Rugby.
- E Fred Wilmshurst, Northampton.
- F Simon Hockenhill, Bristol].
- G Robert Hughes, Liverpool.
- H Clare Pinder, Appleby.
- I Jim Edwards, Wigan.

chance. An E-mail to me from the stations' Pete Miller confirmed that all short wave broadcasting was to cease on 1 May. Pete went on to say that "It is an absolute disaster as...our programmes bring in many tourists to the country".

Another shock is the loss of all English output on short wave from **Swiss Radio International**. After 70 years of programming in English, the service's final broadcast went out on 12 April. It's thought that short wave transmissions will cease altogether at the end of October.

Another Two Bite The Dust

Meanwhile, **Iran's external service** has suffered cutbacks. The German service has been completely axed whilst English is no longer beamed to Europe and America. Other broadcasts remain but only via the Internet and/or satellite via *Hotbird* at 13°E.

One glimmer of hope on the short wave horizon is the plan by Christian broadcaster **HCJB** to enhance its global presence with the expansion of transmission facilities at its site at Kimberley in Western Australia, according to a report by ABC News Online. The station has applied for approval to erect 31 radio towers in a move that would allow it to reach

up to 60% of the world's population. Their original application more than two years ago met with considerable opposition but station officials claim to have overcome any reasonable objections.

If you fancy your chances on the clandestine radio front, the **Voice of the Eritrean People**, a station opposed to the government, have just announced a frequency change. They now broadcast to the Horn of Africa and the Middle East on **15.595MHz** each day at 1730-1830.

Keep an ear out for **World Music Radio** on **5.815** and **15.810MHz**. WMR is an independent, non-political and non-religious radio station with a "cheerful mix of the best in current chart hits and the best hits from the past". The station first went on the air 1967 to 1973 from the Netherlands. Later, programming was carried via Radio Andorra, Radio Milano International and Radio Dublin. Most recently, during the summer of 1997, WMR broadcast from hired facilities in South Africa, claiming world-wide coverage.

Preparations to re-launch WMR once more began in 2003. Permission to use two short wave frequencies was granted by the authorities in Denmark both 10 and 1kW transmitters were ordered. Offices and a new on-air studio were completed February and the short wave transmitters finally arrived in mid April. Meanwhile new antennas have been erected near Karup in Central Jutland, Denmark, and the first test transmissions were due late April. Besides short wave, WMR will also be available via the Internet and locally

in Denmark on f.m.

The short wave table for March reflects mainly stations logged before the time change at the end of the month so bear this in mind. Many will now broadcast one hour earlier (UTC) than shown. Entries in bold were logged post time change.

I hope those of you who didn't favour the move to the tabular presentation of the short wave data have been getting accustomed to the format. I've had several requests for publication of the country codes. Kevin has promised to squeeze them in somewhere this month so you shouldn't have to look too far.

When sending your contributions in there's no need to present them in frequency order, as a bit of computer wizardry will do this for me at a touch of a button. What I do ask is that you place the columns of data in the same order as they appear in the published tables, that is MHz, UTC, Service, Country, Language and SINPO in the case of short wave. That way I can transfer the data without the need to remain fully conscious! If you haven't sent details of your equipment yet, please let me know what gear you use.

Finally, if I could ask that you send me your offerings by the end of the first week of each month, that'll enable be to include you in my deadlines. Thanks again for all your input. I look forward to hearing from you soon. Next time we'll begin to take a look at some of the clubs you can join to enhance your listening hobby, starting with the Medium Wave Circle. Until then, have a good month.

MHz	UTC	Service	Country	Lang	SINPO	SWL	MHz	UTC	Service	Country	Lang	SINPO	SWL	MHz	UTC	Service	Country	Lang	SINPO	SWL	
11.820	1200	Radio Polonia	POL	Eng	4444	SHH	15.310	1500	BBC World Service	G/THA	Eng	4445	RH	17.770	1540	Channel Africa	AFS	Eng	4433	SE	
11.820	1535	BBC World Service	G/CYP	Ara	5444	RH	15.335	1455	RTM Morocco	MRC	Ara	4343	RH	17.790	0520	BBC World Service	G/SNG	Eng	3553	JP	
11.830	2217	Radio Romania Int.	ROU	Eng	3333	FH	15.340	0750	Radio New Zealand Int.	NZL	Eng	4443	SE	17.800	1255	Deutsche Welle	D/RWA	Fre	3333	RH	
11.865	1530	RAI	I	Fre	5444	RH	15.350	1149	Voice of Turkey	TUR	Tur	4443	CP	17.805	1852	WHRA, Greenbush	USA	Eng	4423	PP	
11.880	0936	Radio Australia	AUS	Eng	4443	TW	15.355	1700	Radio Japan	J	Eng	3322	RI	17.810	1943	Radio Nederland	HOL	Eng	2412	EM	
11.895	2220	RAI	I	Eng	2412	EM	15.400	2050	BBC World Service	G	Eng	2222	TW	17.815	1210	Radio France Int.	F	Eng	4334	BC	
11.905	2130	Radio Tashkent	UZB	Eng	4444	SHH	15.400	0830	BBC World Service	G/ASC	Eng	5443	SE	17.830	1616	BBC World Service	G	Eng	3433	TW	
11.935	1530	Radio Canada Int.	CAN/CHN	Eng	3333	RH	15.400	0830	BBC World Service	G/ASC	Eng	3443	VP	17.830	1730	BBC World Service	G/ASC	Eng	4554	JP	
11.940	1741	Radio Romania Int.	ROU	Eng	3333	TW	15.415	1015	Radio Australia	EOA/AUS	Eng	5434	BC	17.830	1805	BBC World Service	G/ASC	Eng	3533	SH	
11.945	1530	Radio Free Asia	USA/MRA	Chi	5445	RH	15.415	1115	Radio Ukraine Int.	UKR	Eng	4444	SHH	17.830	0830	BBC World Service	G/ASC	Eng	3223	VP	
11.965	1178	Voice of Turkey	TUR	Tur	4443	RI	15.415	1155	Radio Ukraine Int.	UKR	Eng	2423	EM	17.835	0810	Radio Pakistan	PAK	Urd	2443	VP	
11.965	1745	Voice of America	USA	Eng	3333	TW	15.415	1155	Radio Ukraine Int.	UKR	Eng	4433	SE	17.840	1410	Deutsche Welle	D/RWA	Fre	3553	JP	
11.995	1525	Radio Sawla	USA/A	Ara	4344	RH	15.450	1455	Radio Tunisia	TUN	Ara	4333	RH	17.860	1250	Voice of Turkey	TUR	Tur	3343	RH	
12.045	1525	Radio Japan	J/SNG	Jap	4244	RH	15.450	1455	Voice of Russia	RUS	Rus	5445	RH	17.870	1750	Swiss Radio Int.	SUI	Eng	2412	EM	
12.050	1520	Radio Cairo	EGY	Ara	5555	RH	15.475	2140	Voz Christiana	CHL	Por	3554	FW	17.885	1250	Radio Kuwait	KWT	Ara	3343	RH	
12.050	1850	Radio Cairo	EGY	Ara	5555	VP	15.520	1250	Radio Ukraine Int.	UKR	Eng	5544	SE	17.895	1250	Saudi Radio	ARS	Ara	4344	RH	
12.070	1520	Radio Nederland	HOL/UZB	Eng	4443	RH	15.528	1200	Radio Ukraine Int.	UKR	Eng	4333	CP	17.895	1630	Voice of America	USA/MRC	Eng	4554	FW	
12.075	1430	Radio Nederland	HOL	Eng	4534	EM	15.530	1101	Radio New Zealand Int.	NZL	Eng	4444	TW	17.895	1843	Voice of America	USA/BOT?	Eng	5545	PP	
12.085	1002	Voice of Mongolia	MNG	Eng	2222	TW	15.530	1103	Radio New Zealand Int.	NZL	Eng	4443	SE								
12.085	1020	Voice of Mongolia	MNG	Eng	3242	TW	15.530	1210	Radio New Zealand Int.	NZL	Eng	4443	SE								
12.095	0900	BBC World Service	G	Eng	4433	SHH	15.565	0835	Voice of the Islamic Republic of Iran	IRN	Ara	4445	RH	18.960	1335	Radio Sweden Int.	S	Eng	4333	SE	
12.160	1845	WWCR	USA	Eng	3442	VP	15.575	1204	BBC World Service	G	Eng	3442	VP	18.960	1435	Radio Sweden Int.	S	Swe	3333	TW	
							15.575	1450	BBC World Service	G/CYP	Eng	3523	EM	18.960	1725	WYFR, Okoechobee	USA	Ara	4434	BC	
							15.575	1450	BBC World Service	G	Eng	3333	RH	19.010	1158	Voice of America	USA	Ara	2512	EM	
							15.575	1450	BBC World Service	G/CYP	Eng	3323	RH	19.010	1245	RadioLiberty/Radio Free Europe	USA/CLN	Urd	2212	RH	
							15.585	1445	Radio Exterior Espana	E	Spa	5555	RH	19.010	1548	Voice of America	USA	Eng	3333	TW	
							15.585	1445	Radio Exterior Espana	E	Spa	5555	RH								
							15.595	1030	Vatican Radio	CVA	Eng	4444	TV								
							15.600	2200	Radio Taiwan Int.	TWN	Eng	4423	EM								
							15.605	1600	Radio France Int.	F	Eng	4554	JP								
							15.605	1745	Radio France Int.	F/GAB	Eng	5443	SE	21.455	1030	BBC World Service	G	Eng	3333	TW	
							15.630	0830	Voice of Greece	GRC	Gre	5545	VP	21.455	1621	WYFR, Okoechobee	USA	Eng	4434	TW	
							15.650	1445	Voice of Greece	GRC	Gre	5545	VP	21.455	1725	WYFR, Okoechobee	USA	Eng	4434	BC	
							15.650	1445	Voice of Greece	GRC	Gre	5545	VP	21.465	1021	Radio Pakistan	PAK	Eng	3433	TW	
							15.660	1440	Adventist World Radio	USA/GUM	Lao	3232	RH	21.465	1021	Radio Pakistan	PAK	Urd	3433	VP	
							15.700	1150	Radio Bulgaria	BUL	Eng	4534	EM	21.470	1345	BBC World Service	G/SEY	Eng	4433	SE	
							15.700	1440	Radio Bulgaria	BUL	Eng	5555	RH	21.470	1625	BBC World Service	G/ASC	Eng	2553	JP	
							15.745	2225	WEWN, Birmingham	USA	Eng	4444	BC	21.470	1809	BBC World Service	G/ASC	Eng	3522	SH	
							15.760	1435	Kol Israel	ISR	Heb	5444	RH	21.505	1245	Saudi Radio	ARS	Ara	4343	RH	
							15.825	1320	WWCR	USA	Eng	5445	BC	21.575	1240	Radio Farda	USA/CLN	Far	2212	RH	
							15.825	1430	WWCR	USA	Eng	3323	RH	21.590	1510	The Overcomer Ministry	USA/D	Eng	3353	JP	
							15.825	1545	WWCR	USA	Eng	2544	FW	21.605	1240	UAE Radio, Dubai	UAE	Ara	5454	RH	
														21.605	1333	UAE Radio, Dubai	UAE	Eng	4555	FW	
														21.605	1340	UAE Radio, Dubai	UAE	Eng	5554	SE	
														21.605	1420	UAE Radio, Dubai	UAE	Ara	5545	BC	
							17.495	1705	WBCQ	USA	Eng	2544	FW	21.660	1025	BBC World Service	G	Eng	3333	TW	
							17.500	1657	Radio Bulgaria	BUL	Bul	4544	FW	21.660	1235	BBC World Service	G/THA	Chi	4444	RH	
							17.510	1036	All India Radio	IND	Eng	4444	TV	21.660	1440	BBC World Service	G/CYP	Eng	5544	BC	
							17.510	1040	All India Radio	IND	Eng	5543	BC	21.660	1410	BBC World Service	G/CYP	Eng	3554	JP	
							17.510	1050	All India Radio	IND	Eng	4433	TV	21.660	1450	BBC World Service	G/CYP	Eng	4443	SE	
							17.535	1052	Kol Israel	ISR	Heb	4433	TW	21.670	1030	Saudi Radio	ARS	Ara	3333	RH	
							17.535	0820	Kol Israel	ISR	Heb	4423	VP	21.695	1025	Libyan Radio	LYB	Ara	2232	RH	
							17.535	0845	Kol Israel	ISR	Heb	4544	FW	21.705	1235	Saudi Radio	ARS	Ara	5555	RH	
							17.545	1558	Kol Israel	ISR	Lad	4443	TW	21.745	0905	Radio Prague	TCH	Eng	2322	SHH	
							17.585	1000	Radio Japan	J	Eng	3323	GG	21.770	1230	Radio Sawla	USA	Ara	4444	RH	
							17.585	1015	Radio Japan	J/UAÉ	Eng	5544	SE	21.790	0815	Voice of Russia	RUS	Eng	4443	SE	
							17.600	1245	Radio Rossii	RUS	Rus	5555	FW	21.800	1130	YLE Radio	FIN	Eng	5544	TW	
							17.600	1325	Radio Rossii	RUS	Rus	5445	RH	21.800	1230	YLE Radio	FIN	Fin	4344	RH	
							17.620	1400	Radio France Int.	F	Eng	3544	FW	21.810	1128	Radio Sweden Int.	S	Eng	5534	TW	
							17.630	0830	Africa No 1	GAB	Fre	2342	VP	21.820	1032	Radio Japan	J	Ita	3434	TW	
							17.640	1320	BBC World Service	G	Eng	3323	RH	21.820	1036	Radio Japan	J	Ita	4444	TW	
							17.650	1610	WHRA, Greenbush	USA	Eng	4443	TV	21.820	1047	Radio Japan	J	Swe	3434	TW	
							17.650	1710	WHRA, Greenbush	USA	Eng	3544	FW	21.830	1232	RDP Int.	POR	Por	2432	RI	
							17.660	1050	Voice of the Islamic Republic of Iran	IRN	Eng	5434	BC	21.840	1238	Deutsche Welle	D	Ger	4433	TW	
							17.660	1930	Swiss Radio Int.	SUI	Eng	4334	BC								
							17.665	1320	Radio Cairo	EGY	Eng	3333	RH								
							17.690	0915	China Radio Int.	CHN	Eng	5443	SE	25.820	1205	Radio France Int.	F	Eng	2522	SH	
							17.700	1615	Voice of Turkey	TUR	Fra	5444	RH	25.820	1210	Radio France Int.	F	Eng	5544	BC	
							17.720	1150	Voice of Turkey	TUR	Tur	2422	RI								
							17.720	1315	Radio Romania Int.	ROU	Ita	5343	RH								
							17.735	1255	Radio Tunisia	TUN	Ara	5445	RH								
							17.745	1305	Radio Romania Int.	ROU	Eng	5454	SE								
							17.750	0750	Radio Australia	AUS	Eng	4433	SE								
							17.765	1255	Radio Sawla	USA/CLN	Ara	3223	RH								

DXers:- EM Eddie McKeown, Newry. GG Gerald Guest, Dudley. SH Simon Hockenhill, Bristol.
BC Bernard Curtis, Stalbridge. MC Michael Casey, Manchester. SHH Sheila Hughes, Morden.
CP Clare Pinder, Appleby. PP Peter Pollard, Rugby. TW Thomas Williams, Truro.
DH David Hall, Morpeth. GeG Geraint Gill, Llanfairfechan. SE Stan Evans, Hailsham. VP Vic Prier, Seaton.

Equipment Used

Bernard Curtis - Realistic DX-400 + outdoor wire

Clare Pinder - JRC NRD-525 or Sony SW55/FRT-7700 ATU + outdoor wire

Eddie McKeown - no information.

Ernie Strong - Yaesu FRG-8800/FRT-7700 ATU + outdoor wire.

Francis Hearne - Sharp WQT370 or Yaesu FRG7 + wire or Vega Selena + whip

Fred Wilmschurst - JRC NRD-525 + indoor wire.

Gerald Guest - no information

James Glen - no information

Jim Edwards - JRC NRD-545 + 80m wire

John Parry - no information

Peter Pollard - Sony ICF-2001D + whip

Rhoderick Illman - Kenwood R-5000 + wire or Sony AN1

Sheila Hughes - Panasonic DR48 or Sony ICF-7600DS + 16m outdoor wire or home-brew loop

Simon Hockenhill - Roberts R876 or Philips D2345 + whip or AKD Target HF3 + 4m indoor wire

Stan Evans - Kenwood R-2000 + Balun/11m indoor antenna

Thomas Williams - no information

Vic Prier - Fairhaven RD500DX + Datong AD-270 or vertical

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memories ★ Noise blanker.

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(Probably the best ATU around)

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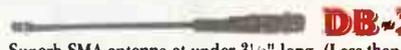
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World Radio History

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Can be used in reverse

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Can be used in reverse

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Includes 8.33kHz spacing

Nothing was left out of this handle

Optional case£15.99
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New comprehensive scanner (25-1300MHz) Alpha Tag, PC clonning control. Smart scanner + trunk track facility. Includes power supply. ARC-780XLT "Butel-Software". (works 95/98/ME/NT/XP).....£34.99

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ICOM IC-R5

New pocket hand-held scanner (0.1-1310MHz) AM/FM/WFM. Superb high-speed scanner featuring alpha tag and much more. BATTERIES AND CHARGER INCLUDED

"Icom quality at a very affordable price"

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Optional cigar lead.....£19.99
CS-R5 software R5.....£22.95
OPC-478 PC lead R5.....£24.95
IC-R3 scanner + TV screen.....£299.99
Icom R-20.....Phone for lowest price

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ALINCO DJ-X3

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

You couldn't fit much more into this compact scanner if you tried

Optional battery pack and drop in charger £39.99

Soft case.....£15.99
PC interface.....£42.95
Cigar lighter lead.....£19.99

OUR PRICE
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Bandscan

Australia

● **Greg Baker** PO Box 3307, Manuka, Australia
● **E-mail:** greg@wordgraphics.com.au

The UK-based Daily Mail Group (DMG) has been in the news here recently. As regular readers of this column will be aware, DMG owns and operates the Nova network of radio stations in Australia. Radio ratings show that the Nova station in Sydney; Nova 96.9 FM - has increased its share of audience and remains Sydney's most popular radio station having been at number four in some recent ratings periods. The station Nova 937 in Perth has also increased audience share and Nova 100 FM in Melbourne has maintained its place on the popularity pecking order.

Some commentators here believe that DMG's bid for Hollinger in the UK will mean it needs to sell its Australian holdings. However, there is also some reason to think this story is part of the continuing war between DMG and home-grown radio networks which appear prepared to fight very hard to keep their market share and squeeze DMG out. One piece of evidence of this is a report of DMG's supposed financial woes printed on Austereo letterhead; hence the Hollinger story - and released to London stockbrokers and investors.

Another piece of evidence is a trade mark fight with local giant Austereo using the slogan "Sounds Different" despite DMG's trade marking "Totally Different". Despite these signs there are no indications that the demise of DMG in Australia is imminent and DMG has just gained a second Sydney FM commercial radio licence by outbidding a joint venture between Sir Richard Branson's Virgin group and Australia's Macquarie Radio Network. DMG are reported to have been keen to keep Virgin out of the Australian market.

DMG is due to launch its Nova station - Nova 919 - in Adelaide during the second half of 2004 and the new Sydney station by December 2004.

As well as the Sydney, Melbourne and Perth stations, DMG operates over 60 stations in regional New South Wales, Victoria, Queensland, South Australia and Western Australia. DMG in Australia is at www.dmgradio.com.au

Maori Television

A new television network known as the Maori Television Service (MTS) has been launched for Maori speakers in New Zealand. MTS has been decades in the making and has the aim of helping to

preserve the Maori language much as the introduction of a Welsh language programme has been credited with benefits for the Welsh language since its introduction in 1982.

Half the Maori population is under 24 years of age and will comprise the target audience of the new network. Physically, MTS studios have been modelled on their Canadian counterpart, the Aboriginal Peoples Television Network. Members of the public can watch programmes being made in the main studio through glass doors. On Friday evenings, their youth-orientated music show is open for teenagers to come and go from the studio as they please.

OTH Radar

The Australian version of the Russian woodpecker, the Jindalee Operational Radar Network (JORN) based near Alice Springs in the Northern Territory, is to be upgraded to improve the detection of boats and aircraft to Australia's north. The upgrade is designed to improve the detection of small objects and incoming missiles.

The original Alice Springs operational and research station together with operational stations at Laverton north of Kalgoorlie in Western Australia and Longreach in Queensland provide coverage over much of Indonesia to Australia's north. The system has only recently been delivered years late and hundreds of millions of dollars over budget.

In addition, the government has signed agreements with the peoples of the Torres Strait between New Guinea and the Australian mainland to set up trial surface wave radar transmitter and receiver sites on these islands. The trial will take place over a period of up to three years and is designed to give a 24-hour wide-area surveillance of aircraft, ships and boats travelling in the Torres Strait.

The government says that it will improve Australia's capacity to detect and intercept

immigration, quarantine and fisheries offenders; assist with search and rescue operations; and provide early storm warnings. The transmitters will be on what is known as Pumpkin Island and the 440 metre receiver will be sited on Dauan Island.

Satellite Sale

Optus, Australia's second largest telecommunications company is planning to sell its satellite network. Regular readers of this column may recall that there was a great debate in Australia when Optus (and its orbiting hardware) were bought by Singapore owned Singtel. The fuss was caused because the Optus satellites carry traffic from Australia's defence forces and reportedly for the Australian Security Intelligence Organisation.

Optus has four orbiting satellites and plans to launch a further two in the next few years. The Optus satellites are crucial to expansion of Australia's pay television via Foxtel and the regional pay operator Austar. Optus plans the sale to free up capital it can use in the competitive Australian mobile telecommunications market. The sale to Singtel was approved by the federal government so no doubt this sale will in due course be approved, too, even if defence analysts are uneasy.

Reception Reports

Michael Beesley from Romsey in Hampshire has been listening to stations in my part of the world again. He says that as the days grow longer reception of Australasian stations is improving after what he says has been a difficult winter. He reports Radio Australia (RA) at 0700 on 13.630MHz, SINPO 45444; 0700 on 15.160MHz, 45343; 0700 on 15.415MHz, 45333. He has heard Radio New Zealand International (RNZI) at 1155 on 15.530MHz, 45444 but bemoans the fact that RNZI dropped this frequency in March.

Michael has also heard RA at 1100 on 11.880MHz, 35333; 0750 on 17.750MHz, 35232; 0815 on 9.710MHz, 35333 and 1600 on 9.475MHz, 35222; and RNZI at 0830 on 9.885, 33333 and at 0710 on 15.340MHz, 45533. Michael

reports Voice International at 1230 on 13.685MHz, 35322 and at 1730 on 13.635MHz, 34333.

Note that the current RNZI frequency schedule is at www.rnzi.com/pages/listen.php Reader **Martyn Gardiner** from Portsmouth has also reported RA coming through clearly on 11.660MHz at 1600 using his Icom receiver.

Other News

The Australian Broadcasting Corporation (ABC) has denied allegations that it was planning to scrap its popular Radio National network. Radio National is at www.abc.net.au/rn

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

Off^{the} Record

- **Oscar** *do SWM Editorial offices*
- **E-mail** *off.the.record@pwwpublishing.ltd.uk*

Since I began writing this column I have not yet mentioned the British f.m. free radio stations at all, so now perhaps would be a good time to begin to address the issue.

Hopefully, I will be able to make clear my standpoint and offer a general overview of most of the fundamental aspects of the current f.m. scene.

I believe there are some good things and some bad things to be said about it, but we who have matured by a generation or two must check ourselves from time-to-time to make sure that we are not falling into the trap of behaving and sounding like the crusty old fuddy-duddies that we ourselves despised and rebelled against when we first became interested in free radio. I will aim to examine the arguments in an intelligent way and without any preconceptions.

Two Modes - Two Worlds

Let there be no doubt from the outset that I am primarily an a.m. enthusiast and always have been. There are several reasons for this, including the fact that it has an authentic radio sound. I like the filtered and processed audio of an a.m. station and the experience of tuning across the carrier with a nice analogue tuning knob and hearing the splatter of the side bands.

From an engineering standpoint, transmitting broadcast quality audio in a.m. is more interesting and challenging than in f.m., and the variable propagation conditions on the a.m. bands, be it l.w., m.w. or s.w. also make the listening or broadcasting experience more interesting. There are those who would have us believe that a.m. is a dying mode, but especially on m.w. the band seems more crowded and congested today than it has ever been.

Having said that though, the fact is that in free radio terms there is an enormous amount of activity on f.m. Band 2, and comparatively little on m.w. and s.w. Several years ago there were stations on f.m. as well as a.m. that interested me, but nowadays the a.m. scene and the f.m. scene have become like two completely separate realms.

The stations, programmes, ways of operating and the people involved are different. I suppose future circumstances could make me have a change of heart, but as things stand, my realm is the a.m. one.

Twiddling Our FM Knobs

What we will hear depends, of course, on where we are geographically. In London and

the South East the band is crowded with stations, a substantial proportion of which are unlicensed. Numbers seldom fall below a dozen or so, and can rise to several dozen at peak times like evenings and weekends.

In other towns and cities the numbers are smaller, but these stations often have a significant presence in amongst the licensed ones. Most unlicensed stations suffer raids from time-to-time, but seem to be able to replace any lost equipment and return to the air within a few days. Almost all of the stations seem to fall within one of only two programme genres.

The first is Afro-Caribbean ethnic, playing lots of reggae, soul and other types of black music. The second - and probably the most prolific - is a kind of urban youth thing, playing rave, garage, hip-hop, rap, etc. I would be interested to hear reports of any f.m. stations doing anything vastly different.

Big Up The Massive Crew

The f.m. stations of 2004 are not to my taste, and I am sure many others who consider themselves to be fans of free radio would concur. The fact is however, that on careful consideration we may have to accept that these stations are the definition of today's free radio movement. They would seem to fulfil all the criteria and perform all the functions in an equivalent way to the free radio stations of decades gone by. They attract large and loyal audiences. They break new ground in terms of music and presentation and offer exposure for material which does not get mainstream airplay, highlighting inadequacies in the existing licensed radio services. They make a protest effectively by their defiant existence and the establishment authorities are rattled and threatened by them and seek to eliminate them. Sounds familiar?

Exterminate

Official figures indicate that considerable numbers of stations are taken off air each year by the raiding authorities, and I heard one report recently that the heat has been turned up yet again since the beginning of this year with the introduction of OFCOM. Various accusations and allegations are levelled at these stations as reasons why their broadcasting activities must be terminated with urgency.

Suggestions include causing interference, financial irregularities and even that they are criminal gangsters. Sounds convincing, but the problem is we have been told things in the past that have turned out not to be true. I

feel I need to ponder these issues further before deciding if I am sympathetic, neutral or hostile.

As I am running out of space I will continue to discuss this topic at a later date. I am confident we can come to some concrete conclusions.

Here's A Funny Thing

In the 1960s the authorities sought to eradicate something which in 2004 we are all celebrating as a phenomenon which we acknowledge was wonderful, marvellous and ground-breaking.

Pirate BBC Essex Review

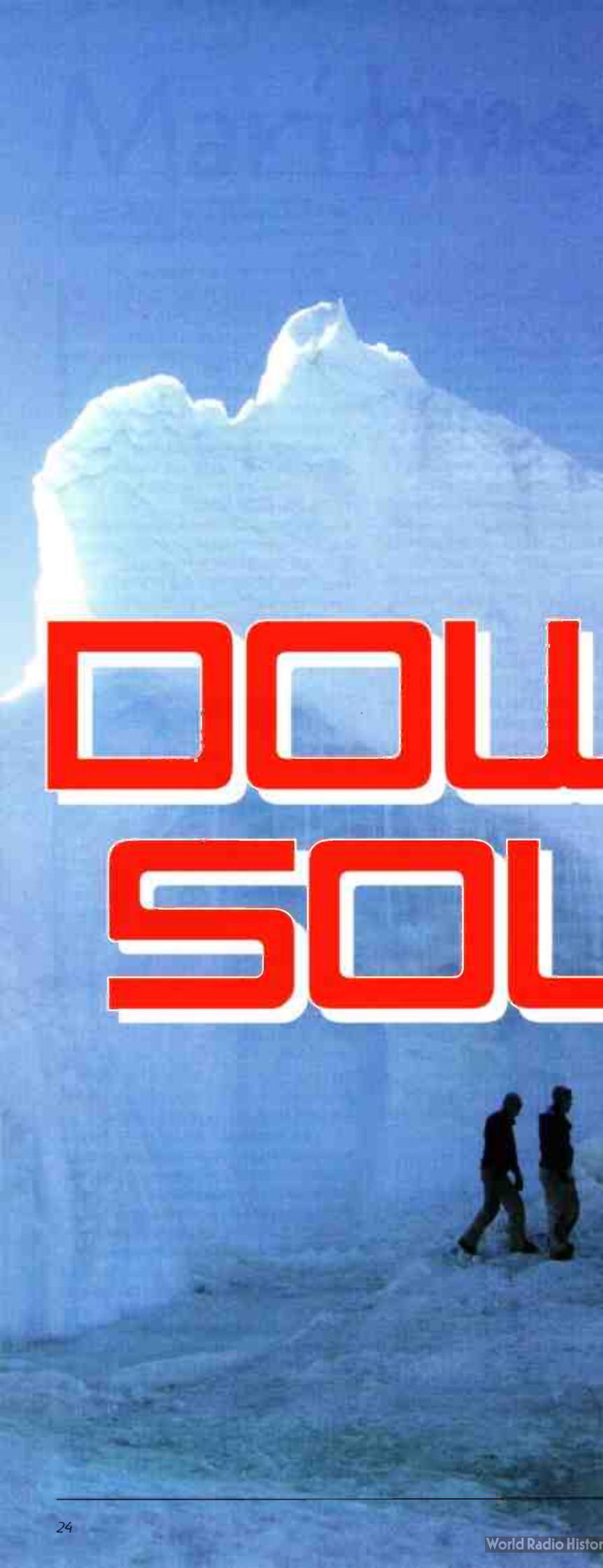
Reaction to this project from the anorak world was favourable on balance. Widely reported elsewhere, the three BBC Essex a.m. frequencies of 729, 765 and 1530kHz were linked to studios on the *LV 18* lightship in Harwich for a week as a tribute to past offshore radio stations. A good selection of presenters with old familiar names took part.



There were quite a few fluffs, gaffs and glitches, including some real pirates intercepting the link frequency and hijacking the station output for a while. A few grumpy folk commented that it all sounds like old-hat has-been radio and is a waste of time.

Most listeners thought the station made for enjoyable listening, sounded happy and largely succeeded in recapturing the feel and atmosphere of the original pirate ships, with personality and fun coming across in abundance. Musical selections included plenty of excellent lesser-known oldies.

One common and valid complaint among free radio enthusiasts about the licensed stations is that they have restricted play-lists and one hears the same songs far too often. Some people have been suggesting that it might be a good idea to have a station with this sort of format on air permanently instead of just for one week. I would tend to agree, but I would propose that the best way to have something that sounds like a free radio station is if it is a free radio station.



Always an interesting catch, Ben Hogan explains about receiving stations in the Antarctic region.

There are many reasons why people have ventured to the southernmost latitudes of the planet. Initially, explorers from Europe and America travelled there for the sake of science, the advancement of knowledge, for Britain, Empire or just for the hell of it.

In later years economic pressure led to the exploitation of the southern oceans of the world as natural resources in the northern hemisphere became stretched. Seal hunters sailed down south and as time went by, they were followed by the whalers.

Whaling vessels headed southwards when the mammals became scarce in other waters and whole whaling fleets that had previously boasted Scotland or Scandinavia as their home ports based themselves in south America or at South Georgia where, somewhat wistfully, they named their billets after their homes in Leith Harbour or Grytviken.

Fishing now provides a vital revenue stream for some of the communities in the south. The Falkland Islands Government and the Government of the Island of South

DOWN SOUTH

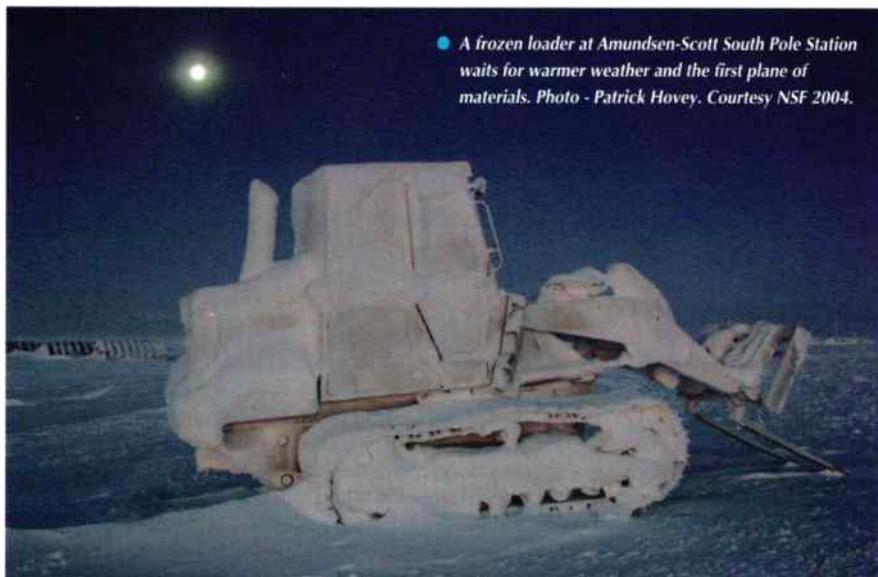
Georgia and the South Sandwich Islands now licence fishing operations and with oil exploration continuing in the area, it seems possible that the region will prove to be more valuable than anyone ever imagined.

The fishing season lasts from April to September, encompassing most of the Antarctic winter. Conditions on the vessels are harsh. Most of the ships are around 50m long and are crewed by a variety of nationalities whose ages vary between 18 and 45 years. Often subjected to blizzards and extreme sea conditions the crews live in a damp, smelly environment for months at a time.

Unspoilt Laboratory

Going even further south to the polar region the Antarctic provides a living unspoilt laboratory. These days many governments have bases in the region whose main purpose is the study of the planet and other worlds.

Other worlds...well, yes. In 1969 a party of Japanese glaciologists working near the Allen Hills in Antarctica picked up a few rocks and discovered that they were meteorites. In all they found nine. The climate and lack of



● A frozen loader at Amundsen-Scott South Pole Station waits for warmer weather and the first plane of materials. Photo - Patrick Hovey. Courtesy NSF 2004.

human activity in the area enables meteorites to lay undisturbed for millions of years. Ice flow can reveal them or they can be found just resting on the blue ice where they have landed.

Since 1969 there has been a mini gold rush of scientists to the region eager to duplicate the Japanese discoveries. So far, thirteen such rocks have been determined to have



● Byrd Field Camp workers prepare to unload a Challenger tractor from the rear of an LC-130 aircraft. Photograph - Mark Sabbatini. Courtesy NSF 2004.



● PRC-1099 used extensively in Antarctica.

originated on Mars.

Not surprisingly the United States of America is the biggest player in the area and their bases are operated by the

Suspended Claims

New Zealand, Australia and many other countries have bases in the Antarctic and although most countries claim a slice of the continent all those claims have been suspended since 1961. In this year

12 nations, including the USA and the Soviet Union, signed the Antarctic treaty. This agreement demilitarised the continent, established the pre-eminence of science and provided that all nations bases would be open to inspection. The fact is that in Antarctica countries and races generally operate in a spirit of co-operation and friendship that can only be envied at more temperate latitudes.

This is partly due to the psychological effect on a few thousand people being scattered on a meteorologically hostile continent of over thirteen and a quarter million square kilometres.

The British have three bases in the Antarctic, Rothera, Halley and Signy and two on the Island of South Georgia. For nearly sixty years the British Antarctic Survey have carried out the majority of UK activities in the area. They also operate two Research vessels, the RRS *James Clark Ross* and the RRS *Ernest Shackleton*. In addition to these ships the BAS

military, United States Antarctic Program (USAP), NASA and the National Science Foundation (NSF). There's an anecdote told by NSF personnel that the US Congress required a programme to retrieve a 7.5kg sample of rock from the planet Mars. A Senate committee took evidence from NASA, "Mr. Chairman, it will cost thirty billion dollars." Then the Pentagon made their pitch, "Mr. Chairman, it will cost fifty billion dollars." Then a little man in a white coat wearing a lapel badge that read 'NSF' came in dragging a full sack, "Ah, Mr. Chairman..."

Table 1

These are frequencies used by the USAP at South Pole and McMurdo.

MHz	Use
2.182	Distress/Calling/Search & Rescue
3.0235	Distress/Calling/Search & Rescue
4.067	Palmer Station
4.125	Seal Island, Cape Sheriff (Primary)
4.131	Seal Island, Cape Sheriff (Secondary)
4.240	Maritime Ops
4.553	Palmer Station
4.718	Air Traffic
4.770	Field Parties
5.7275	Air Traffic
6.7095	AirTraffic
7.338	USAP RTTY
7.995	USAP Field parties
8.090	Information transmissions
8.364	Distress/Calling/Search & Rescue
8.418	Maritime
9.032	Air Traffic (Primary)
9.034	Air Traffic (Palmer Station)
9.115	Palmer Station
10.639	Weather Broadcasts
11.256	Air Traffic (Tertiary)
11.553	USAP Field Parties
11.5545	Other camps and South Pole
12.220	Weather Broadcast
12.628	Ship to Shore
13.2525	Air Traffic (Secondary)

All are u.s.b. unless otherwise stated.

Casual callsigns in use include Mac Relay or Mac Sideband, Mac Centre, Mac Ops, Mac weather, Siple or South Pole.

Official callsigns are as follows:

McMurdo	NGD
Palmer	NHG
Amundsen-Scott South Pole	NPX

Table 2

Some BAS simplex frequencies that may be in use include

MHz
3.023
4.067
5.080 may be used with I.s.b.
5.800
7.450
7.755
9.106
9.115
10.049
11.055
11.260 aviation frequency
17.515

Table 3

BAS split working channels

MHz	Paired With
4.030	4.553
7.450	7.626
8.198	9.106
11.255	11.565
14.475	14.915
16.040	16.315

Please note that all these frequencies may also be operated simplex.

run four Twin Otter aircraft and a Dash 7 for flights from Port Stanley, Falkland Islands to the peninsula. You will have heard of HMS *Endurance* - well this isn't a BAS vessel but a warship designated as an ice patrol vessel assigned to the area.

Another player in the Antarctic area is an outfit called Adventure Network International. Based in Canada, they take paying tourists to the region and have employees in the area throughout the summer. They also provide guides for parties travelling to the South Pole. Yes guides! When you hear of an expedition travelling to the South Pole, it is a little known fact that they will be accompanied by an experienced professional guide. These people derive their income from taking people to the pole. They are seldom mentioned in any publicity material issued by expeditions and never receive any public acclaim. When you hear of a couple of accountants making a journey on foot to the pole you can rest assured that they would perish without the assistance of a guide. Adventure Network International mainly use satellite telephones but also have utilised h.f. radio on **15.026MHz**.

All the organisations with interests in the region have to deal with extremely cold temperatures, high winds and blizzards. Those on land also have to travel over treacherous terrain with the ever present danger of crevasses and unstable ice.

Minimising the risks to those who live, work or visit in the Antarctic is the duty of their employers or tour operators. Radio is an important factor in this and its use has saved countless lives out on the oceans and ice fields of the region.

Hotel California

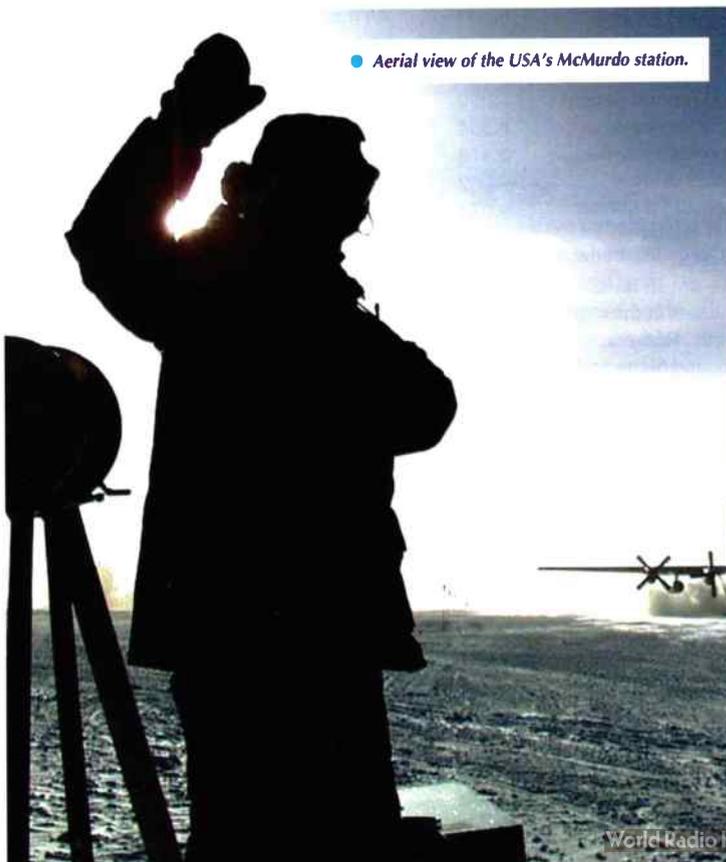
By far, the most comprehensive radio operation, on all frequency bands, is



conducted by the Americans. They have their largest base at McMurdo station also known as Mactown or 'The Hill'. It sits on a slope above the little hut built by Robert Falcon Scott and his men in 1901. Mactown is certainly correctly named, for it is indeed a small town with electricity, services and a population of over a thousand in the summer months. Everything in Mactown has a name. Some buildings are named after places at home like the California Hotel. Some locations receive their names following solemn events such as the airstrip on the ice shelf, Williams Field, after the bulldozer driver who lies, still with his machine out in the ocean.

With some v.h.f. and u.h.f. communications facilities shared with the neighbouring New Zealanders at Scott Base the Americans have a large radio presence indeed. The Americans also have bases at South Pole and Palmer Station on Anvers Island.

Although satellite communications are used for many hours a day by the USA personnel in Antarctica, and Iridium 'phones have become common, many day-to-day communications rely on h.f. radio.



● Aerial view of the USA's McMurdo station.



● A worker at the South Pole waves goodbye to an LC-130 military aircraft as it departs McMurdo station with about 35 employees who spent the winter at the bottom of the world. Photograph - Mark Buckley. Courtesy NSF 2004.

In summer months field parties are deposited on the continent by the various organisations and the outlying camps utilise h.f. radio.

McMurdo also communicates with the South Pole base using RTTY at 75bd, 850Hz shift. (100w.p.m.). The following frequencies are used: 2.650, 4.872, 5.810, 6.397, 7.340, 7.750, 8.090, 9.073, 10.235, 11.004, 13.552, 15.564 and 17.362MHz

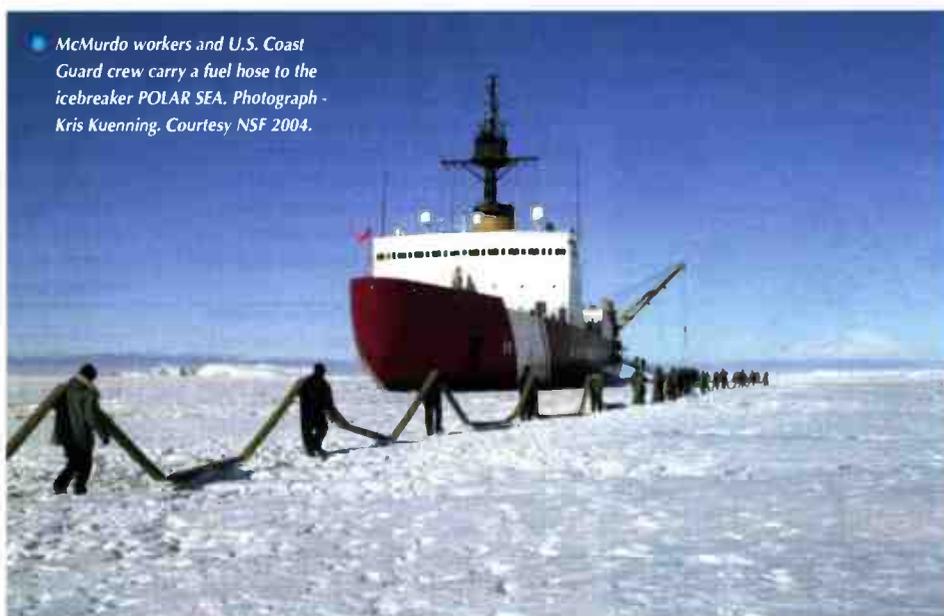
The equipment in use varies from military equipment to a Drake TR7 and Kenwood TS-450S hooked up to a TS-922A linear amplifier. An Icom IC-735 is also located at the South Pole. Other equipment includes a Mackay MSR8000D h.f. transceiver. Power output from base transmitters is generally in the kilowatt region and antennas in use include rhombics, two conical monopoles, a sloping 'V' and three tri-band beams pointed at the United States.

Field radios are generally the Transworld 1.6 - 30MHz PRC-1099 series. A rugged transceiver made to military specifications the PRC-1099 has found favour with many users due to its reliability and versatility. Power output can be configured but field crews usually run them at about 20W. Explorers in all regions of the world can be heard on air using the PRC-1099 and USAP have around a hundred and fifty of them for parties to take out into the field.

Amateur radio operators will often use the amateur radio shack at McMurdo. Located in the old NASA building, it's on air at sporadic time but generally a 'net' will build around operation on **14.247MHz** on Sundays between 0200 and 0600.

BAS

The British Antarctic Survey (BAS) - a division of the National Environmental Research Council - operate three bases which are located at Rothera, Halley and Signy. In the summer they will send up to 20 parties into the field. The main station, Rothera lies at 67.94°S and is on Adelaide Island some half way down the



● McMurdo workers and U.S. Coast Guard crew carry a fuel hose to the icebreaker POLAR SEA. Photograph - Kris Kuening. Courtesy NSF 2004.



● The Research Vessel Laurence M. Gould anchored near the British research station Port Lockroy, located near the Antarctic Peninsula. Photo - Al Hickey. Courtesy NSF 2004.



● USAF C130 stuck in a ravine. Courtesy NSF 2004.



Antarctic Peninsula.

Halley Base on the Brunt Ice Shelf at 75°S is situated on the mainland. Established in 1955 it is Britain's most isolated station on the continent.



The third British base is on Signy Island at 60°S. The island is roughly twenty square kilometres and since the base was rebuilt in 1995-1996 it is manned only between November and April with a maximum population of between eight and ten.

Although most of the island is covered with ice there are large areas of bare rock and mosses.

The BAS also have a base at King Edward Point, South Georgia. This newest of the BAS bases was opened in March 2001 and the work there mainly involves fisheries science. Bird Island, off the South Georgia Coast is another British Base mainly concerned with the study of seabirds and seals.

Like the other players in the field the British Antarctic Survey use v.h.f. radios and some satellite equipment but h.f. is by no means ignored.

Starting with the South Georgia frequencies, you can try **4.049MHz** and on Mondays, Wednesdays and Fridays at 1930 there is a sched' with King Edward Point fisheries on **3.0235MHz**. In the months that Signy is occupied they may operate on **4.067** and **3.188MHz**. Please note that my information indicates that **3.188MHz** frequency is used with lower side band and is paired with **3.800 MHz** (also l.s.b.) for split frequency working. Other BAS frequencies are shown in **Table 3**.

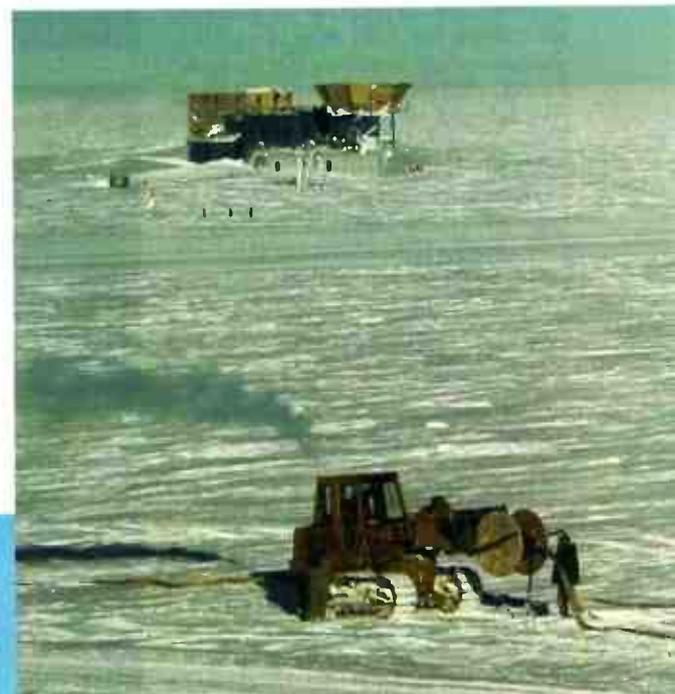
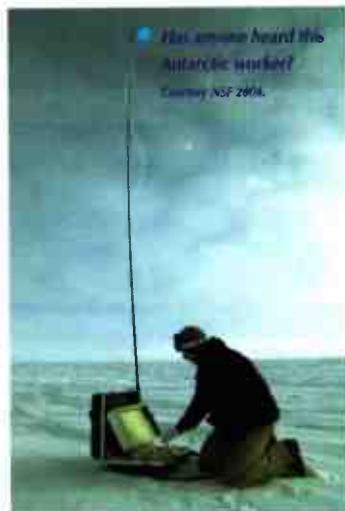
The Americans have next door

neighbours at McMurdo in the form of the New Zealanders at Scott Base. The two bases are within easy walking distance of each other and visits are common. The Kiwi's used to have an 'American' night once a week to give them the chance to drink more! They share some v.h.f. communication facilities with their neighbours and, of course, use satellite technology to the full but they can still occasionally be heard talking with their people in the field on **2.773, 5.400, 8.101** and **11.570MHz** during the Antarctic summer which is, of course, during our winter period in the northern hemisphere.

Never Easy

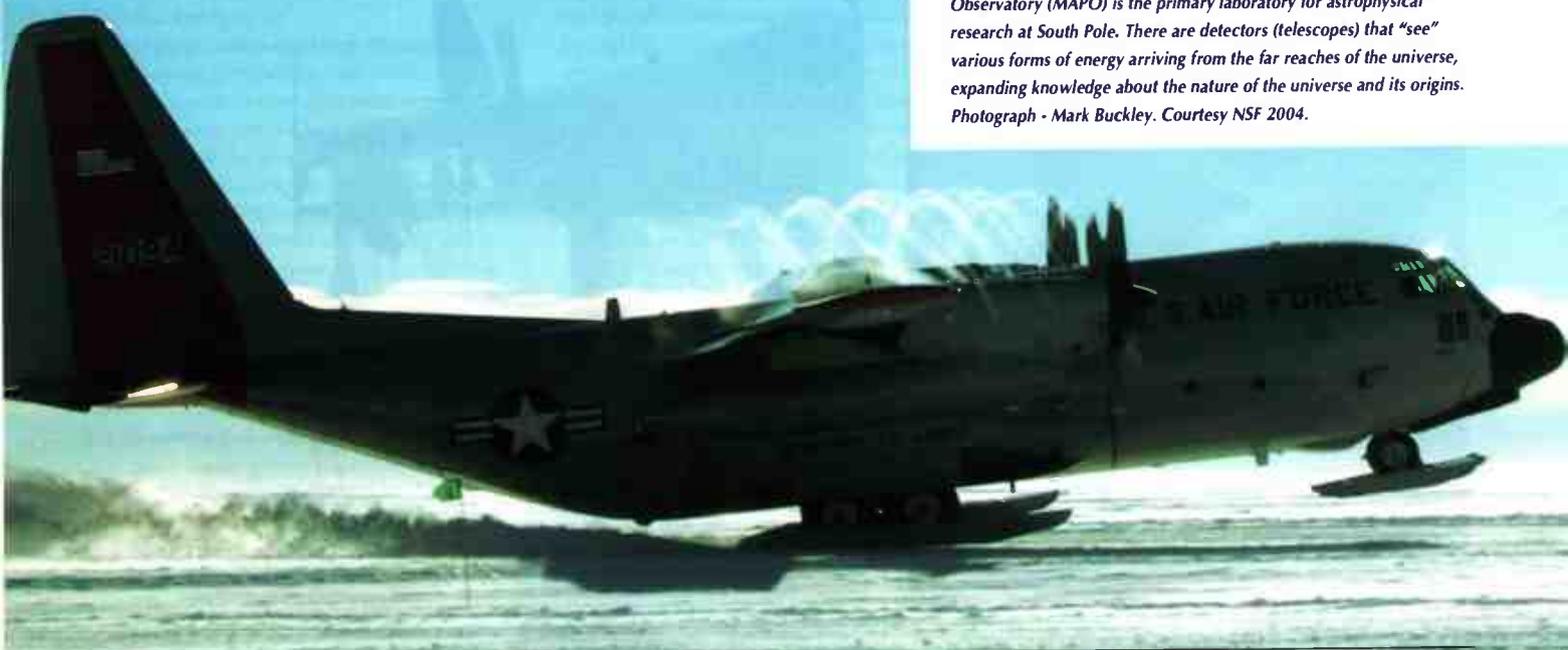
I hope that this short introduction to the subject has whetted your appetite for monitoring traffic from one of the remotest and hostile regions of the world.

Listening to Antarctica is never easy, but to hear live radio traffic from this interesting area most definitely makes the effort well worthwhile. **SWM**



● A New York Air National Guard LC-130 Hercules plane takes off from a resupply mission to the West Antarctic Deep Field Research Camp, Onset-D. The NYANG flies ski-equipped planes in support of the U.S. Antarctic Program. Photograph - Douglas Ruuska. Courtesy NSF 2004.

● A Caterpillar works near the Martin A. Pomerantz Observatory at Amundsen-Scott South Pole Station. The Martin A. Pomerantz Observatory (MAPO) is the primary laboratory for astrophysical research at South Pole. There are detectors (telescopes) that "see" various forms of energy arriving from the far reaches of the universe, expanding knowledge about the nature of the universe and its origins. Photograph - Mark Buckley. Courtesy NSF 2004.





Win

The Hot New

Icom R20



IC-R20 Specifications

Type:	Hand-held
Architecture:	Triple Conversion
Frequency Range:	150kHz - 3.304999GHz
Channels:	1250
Scan Banks:	18 (max)
Search Banks:	25
Modes:	a.m., n.b.f.m., w.b.f.m., u.s.b., l.s.b., c.w.
Steps:	100Hz, 1/5/6.25/8.33/9/10/12.5/20/25/30/50/100/200kHz
Priority:	1 channel
IFs:	1st 266.7/429.1MHz, 2nd 19.65MHz, 3rd 450kHz
Sensitivity:	(Receiving on single band operation, except spurious points):
	n.b.f.m. (1kHz/3.5kHz Dev.; 12dB SINAD)
	1.620-4.999MHz <0.56µV
	5.000-221.999MHz <0.4µV
	330.000-832.999MHz <0.56µV
	833.000-1304.999MHz <0.71µV
	1330.000-2304.999MHz <5.6µV
	2330.000-2999.999MHz <18µV
	w.b.f.m. (1kHz/52.5kHz Dev.; 12dB SINAD)
	76.000-108.000MHz <1.8µV
	175.000-221.999MHz <1.8µV
	470.000-769.999MHz <2.5µV
	a.m. (1kHz/30% Mod.; 10dB S/N)
	0.495-4.999MHz <2.2µV
	5.000-29.999MHz <1.4µV
	118.000-135.999MHz <1.4µV
	s.s.b./c.w. (10dB S/N)
	0.495-4.999MHz <0.4µV
	5.000-29.999MHz <0.25µV
	50.000-53.999MHz <0.25µV
	118.000-146.999MHz <0.25µV
	330.000-469.999MHz <0.32µV
Selectivity:	a.m./n.b.f.m. -6dB @ 12kHz -60dB @ 30kHz
	c.w./s.s.b. -6dB @ 3kHz
	w.b.f.m. -6dB @ 150kHz
Scan:	100 channels/second
Search:	30 steps/second
Audio:	>100mW at 10% THD
Power:	Internal Li-Ion battery, 4 x AA or 6V d.c.
Size:	58 x 140 x 31mm (WxHxD)
Weight:	300g
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Accessories:	Antenna, belt-clip, hand-strap, a.c. adapter, Li-Ion battery

As reviewed in *SWM* May 2004

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Dave Roberts reviewed this fantastic new hand-held wideband scanner in last month's *SWM*, he was very impressed with what he found. You can find out just how good the R20 is for yourself - go on - have a go at winning this amazing new scanner from Icom and discover its capabilities first hand.

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Now you have a chance to win one of these stunning radios for yourself. Special thanks to Icom UK for donating the R20 as a prize. The new IC-R20 is available from all good radio stores, with a suggested retail price of £499.99. For more information contact Icom UK Ltd., Tel: **(01227) 741741** or web: **www.icomuk.co.uk**

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Q2: What battery is supplied with the R20?

Q3: What is the maximum scan speed of the R20?

Q4: What is the highest frequency to which you can tune the R20?

Q5: In which *SWM* can you read a review of the IC-R20?

Q6: How long will the R20 record for?

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SWM/Icom R20 Competition, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW.

Competition Closes 21 July 2004

The closing date for this competition is 21 July 2004, the winner will be drawn on 26 July 2004 - the first correct answer drawn will win. The winner will be announced in the September 2004 *SWM*. The Editor's decision is final. If you do not wish to be contacted by PW Publishing Ltd. or associated companies please tick here.



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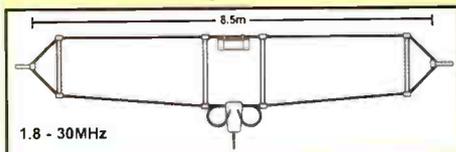
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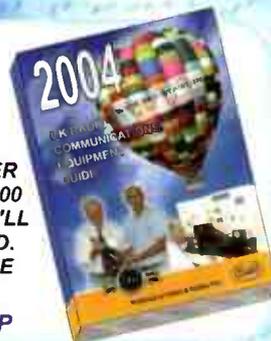
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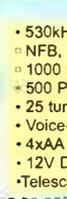
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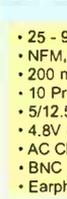
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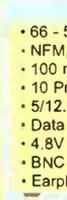
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- 1250 Memories
- Name Tagging
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- 1000 Memories
- 3x Antenna Connectors
- Audio 2.5W (8 Ohms)
- Supply 13.8V DC
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*Tuning resolution: 1Hz
*Modes: AM, AMN, AMS, CW, FM3, FM6, FMN, (ISB & DSB, Pro Demodulator Option only) *Antenna: 50ohm (SMA) *Dynamic Range: 95dB *IP3: +8dBm

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bhi NES10 2 & NES 5



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*Speaker with built-in DSP noise filters *Dip switches for 8 filter settings (NES10-2) *DSP settings preset, no user adjustment (NES-5) *Plugs directly into 3.5mm speaker socket *Handles up to 5 Watts input *Max 2.5 Watts output *Requires 12V at 0.4 Amps max *Use mobile with cigar adaptor

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- Stereo through earphones
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- 25-1300MHz with gaps
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- 1000 Memories
- 100 Skip channels
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- 8 char. alphanumeric display
- Band scope
- PC programmable

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YAESU VR 120D



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- Smart search
- Alphanumeric tags
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X-SWEEPER with GPS: £1599.95

CAN'T DECIDE? PHONE FOR EXPERT ADVICE

CB

Clive Hardy investigates the state of health of a once major hobby radio facet that previously fed newcomers into amateur and hobby radio - Citizens Band.



Is 27MHz CB in the UK on its last legs? Or is it just going through a bit of a lull? The questions are asked because all the anecdotal evidence suggests that the amount of activity on the bands is minimal. And the intended ending of the licence requirement for CB also indicates that there's not enough demand for them to justify the administrative costs of issuing them. Yet there are several Internet sites for CB clubs in the UK, and a few for individual operators, suggesting that some people are keeping the airwaves warm. So what's the position? Is there anyone out there using CB, or is it a no-go area?

Finding Out

In my initial research for this article I explored the Internet in an effort to contact someone still using CB. I looked through the various web sites for active UK groups and found about half a dozen UK groups with websites that suggested some level of activity. I then sent E-mails to various chairmen, other people listed on the site, and also to some people with their own sites. About half of the E-mail addresses no longer exist, and from those that got through I received only two replies. One was from the chairman of a club with just over a dozen members, most of whom had recently obtained the new Foundation amateur licences and were no longer active on CB. "Virtually dead", was his description of the bands. Over half of the club's new M3s took the RAE in December last year and are now Full amateur licence holders. The other reply was from a club that

once had over 250 members, but now had only one! These clubs effectively exist in name only. Perhaps that applies to all the others. The lifetime membership offered by almost all clubs means that no correlation can be made between the number of members listed on a website and the amount of activity within the group.

Due to the very poor response to my enquiries I also contacted someone local to me who I knew had been a key player in a CB club many years ago. Did he know anyone still on the air? Well, almost! He thought that a chap in the west of the county might still be on it, one guy nearer to home - both old timers, and the local idiot who uses it to swear and generally verbally abuse any mobile operators that pop up on the 27/81 part of the band.

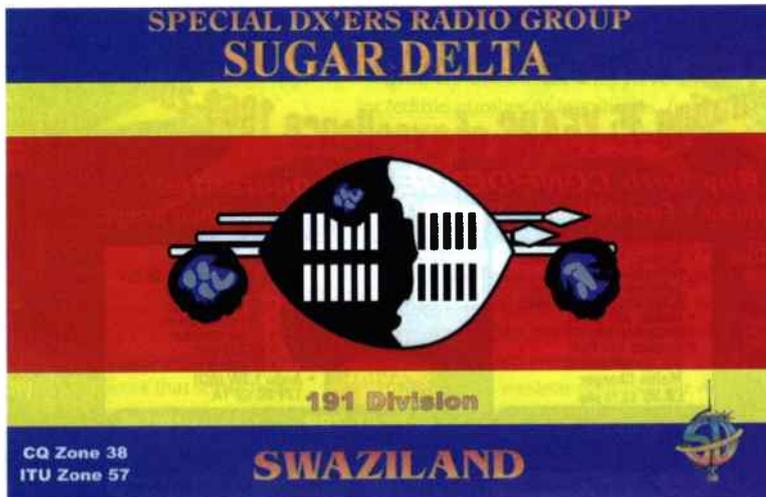
I think that every major population area had one brain dead buffoon of this type who was probably responsible for more CB users leaving the bands, particularly the legal f.m. channels, than anything else. One particular individual was 'busted' by the Radiocommunications Agency on at least three occasions, incurring him losses through fines and seized equipment of over £1000. Despite that, after over 20 years, he's still hanging in there. Probably no one listening so no one complains. But I digress.

Despite my early failure to find a CB user all was not lost. My contact then put me in touch with someone he was certain was still using CB, and living locally. One 'phone call later I was having a chat with him over a cup of tea. He'd been on the

bands from the early 80s and was still operating occasionally, mostly just outside the authorised frequency bands using s.s.b. mode, from his car. But he couldn't think of any operators beyond the ones already mentioned – legal or otherwise – within 80km. Was he being economical with the truth to protect other pirate operators like himself who used unauthorised modes or frequencies? I don't think so. Just like the club chairman, he described CB as "more or less dead". We agreed that the current state of the sunspot cycle meant that DX working was difficult, but was that the only reason for the quiet bands? Let's look at the history.

In The Beginning

American CB sets were dumped on the UK when the boom in activity brought on by the fuel crisis in the USA ended and there were lots of superfluous radios that needed to be sold somewhere, and the UK was, as ever, an easy touch. Even so, lots of people had lots of fun with it for a year or two until, in 1981, CB was legalised. No one can deny that as a vehicle for raising public interest in radio communications its introduction was a big success. The activity that reaped most benefit from the seeds of interest that CB had sown was amateur radio. Despite a very sniffy attitude towards CB from some quarters of the amateur radio community, particularly from its national society, the interest it generated dramatically increased the number of people entering that side of the hobby. The down side for CB was that most of the sensible operators on the band quickly moved on. Standards of operating and politeness on the bands were abysmally low. Parents who overheard what their kids were listening to on the channels banned the radios from



A Slow Demise

It's hardly likely that any new life will be breathed into the activity. What's the incentive? For most people who want short range hassle free radio communications, PMR446 fits the bill perfectly. Simple to use inexpensive equipment. No need to listen to other users. Licence free. CB on the other hand requires bulky equipment, large antennas, and you'll almost certainly end up with undesirable voices on the channel. 27MHz is not a good frequency for local contacts. The ground wave is short and unwanted signals can arrive from all around the world. At present there is plenty of interference from

● *DX for those who are interested...*

Russian operators, said to be taxi drivers and the like, using high powered redundant military equipment. Scanning the 'legal 40' whilst writing this article, it was the only activity I heard - and conditions for such long distant communication on 27MHz are currently unfavourable. As they improve, the interference can only get worse.

For people who want to use radio for world-wide contacts, CB is extremely limited. The band's dependence on favourable solar conditions for regular global communication means that long distant contacts are off the menu for a good part of each 11-year sunspot cycle. In that area, amateur radio offers vastly more scope and, since the introduction of the Foundation Licence in 2002, can be accessed with relative ease.

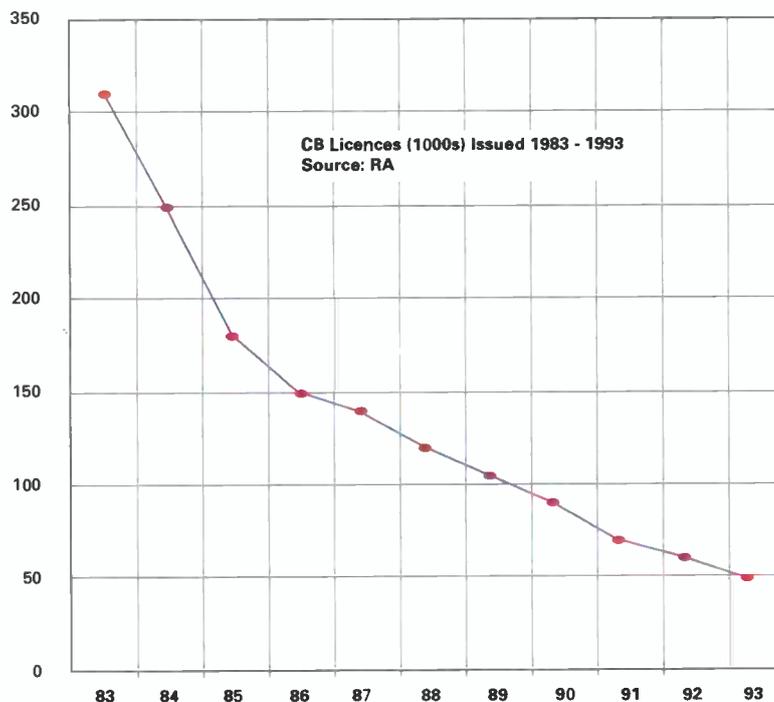
Is Anybody Out There?

After all my enquiries, the largest single group of CB users as far as I could tell is the 4x4 vehicle community, some of whom use it during off road events in support of the main activity. Apart from these mud larkers, one wonders if there's

more than a few hundred active CB users in the UK. It's only because some people are still buying CB licences that makes me put the estimate as high as that.

When Will It End?

What of the future? With all the factors stacked against it, I can't foresee any resurgence of interest in 27MHz CB. Inevitably some hardy souls will stick with it to the bitter end, but not many. Its days are most definitely numbered.



● *The Licence statistics say it all.*

the house, and within a few years CB was confined to the more yobbish elements of the boy racer brigade. Some of the older hands formed clubs, mostly for the social contact, but a cohesive association representing CB across the country never materialised. Public interest moved on. Listening to cellular 'phone conversations on the scanners which were starting to appear was far more entertaining than listening to 'bucket mouths' on the CB. The sale of licences was in rapid decline. By the end of the decade the writing was writ large on the wall. The only way things were going was downhill.

happy birthday Nevada

35

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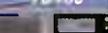
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Climb Every Mountain

SOTA - Summits On The Air

**Tom Read
M1EYP explains
how SOTA
changed his
outlook on
radio and life!**

A few years ago I was involved in 'Hilltopping', which is the practice of driving up to high vantage points in a car and using the line-of-sight opportunities to do some DXing in the v.h.f. part of the radio spectrum. The kind of DX targeted was mainly broadcast stations on f.m. - low power, temporary, Restricted Service Licences (RSLs), etc. Around the same time I was studying for my amateur radio licence and finding out about Summits On The Air (SOTA).

I was fortunate enough to be allocated a place on the Teachers' RAE Crash Course in Harrogate in April 2001. Nearly all the other delegates were teachers of physics, and so were already highly competent in much of the knowledge required. I, on the other hand, am a teacher of mathematics and so some of the theory was a little more challenging for me to grasp. However, I had been an active s.w.l. and reader of *SWM* for over 12 years and so I had the advantage on other parts of the syllabus!

A fellow delegate by the name of Alan helped me with the physics theory underlying some of the concepts. Little did I know that this would be the start of what has been, without fear of exaggeration, a life-changing process for me and my family!

After passing the RAE and gaining the callsign M1EYP, I 'played' with amateur radio in a limited way, happily improving my journeys to and from work by chatting on the Stoke-on-Trent **GB3VT** and Stockport **GB3MN** repeaters, using a tiny Standard C108 hand-held 230mW transceiver. I also demonstrated amateur radio to students at school at every opportunity and put them in touch with local radio clubs. But that was the extent of my amateur activity and the lion's share of my radio hobby time was still devoted to the broadcast bands, both international and local.

A New Thing

I received an E-mail from Alan, who I'd met in Harrogate, explaining that he'd been allocated the

adjacent callsign to mine - **M1EYO** - and he'd got involved with a 'new thing' called SOTA. I decided to have a look for myself, as I had a slight interest in hillwalking.

The following weekend 7 September 2002, I was out operating in my car on the A537 (Cat & Fiddle) Macclesfield to Buxton road. After scanning the v.h.f. broadcast band for RSLs and Irish stations and finding little of interest I decided to see what was on the 2m amateur band. Quite remarkably, I found two SOTA stations!

Dave GW4GTE/P and **Shirley MW3GTE/P** (now **MW0YLS**) were operating from the summit of Gyrn Moelfre SOTA reference GW/NW-049, see explanation box) in North Wales, a few kilometers east of the town of Oswestry. I didn't expect to be able to talk to them on my 230mW hand-held, but I did, getting a 57 report.

I mentioned that I'd heard from Alan M1EYO about SOTA and asked if Shining Tor (overlooking the A537 at 559m a.s.l.) was a SOTA summit. It turned out that it was and I decided to take the 25 minute stroll with my kids



up to the summit and kick-off my own SOTA account.

I thought that there must be plenty of qualifying summits within easy reach of my hometown of Macclesfield, nestling as it does next to the Peak District. It was worth a go!

During my ascent, Shirley and Dave remained on frequency, thus guaranteeing two of the four contacts that are needed to claim the two activation points that are available for Shining Tor, G/SP-004. **Laurie G0MRL** joined the net too on 145.425MHz f.m. from the summit, **Kevin M1CUE** joined in to give me the all-important fourth contact. My SOTA account was open, with a princely two points sat in it!

At this point, I had no idea whatsoever of just how far it sat adrift of the mammoth totals already racked up by the likes of Alan and Shirley during 2002, the first year of SOTA! I was very much drawn to it, as it offered some kind of 'replacement' to my mobile hilltopping and with the DXing opportunities becoming rarer with each new commercial radio station licensed, here was something that similarly rewarded me for getting up on high ground and using line-of-sight advantage.

Next Step

The next step in my SOTA quest was to find out more and discover what my local qualifying summits were. The SOTA summit lists, known as Association Reference Manuals and rules are available to download from the main SOTA website www.sota.org.uk

I learned that I had two more summits in close proximity - Gun G/SP-013 near Leek and The Cloud G/SP-015. I made the easy strolls up these with my hand-held, making the four contacts required on each.

Although it became easier in later months, with a higher quality radio and the growing popularity of SOTA, it was quite difficult to get the four contacts on my early activations. Tactics such as working into local repeaters and persuading stations to QSY to simplex channels were employed! Repeater contacts themselves are not allowed in SOTA. I got the four points and my interest in amateur radio had multiplied tenfold.

My next nearest summit was Raw Head G/SP-016, an hour's

drive away. It was clear that my summit trips were quickly spiralling outwards and I needed better equipment. I didn't relish the prospect of over two hours of driving, the walking time and perhaps not being able to make the contacts.

So, I invested in a Yaesu FT-817. Although I had to wait for h.f. privileges, I figured that I could get an M3 licence. Furthermore, the FT-817 could be used as a mobile 2m radio and h.f. receiver in my car and as a base station in my shack. It seemed to be the perfect choice for my requirements.

After walking around the woods and edges on Bickerton Hill and activating from the summit of Raw Head, I had completed my SOTA activity for 2002. It was November and I decided that I would wait until the better weather of Spring before I would go out on the hills again. Little did I realise that once 2002 became 2003, I would be swept away by the irresistible addictive force of SOTA!

So Much For Spring

On 2 January 2003 I was activating from Winter Hill G/SP-010 in Lancashire and the following day on Billinge Hill



G/SP-017. By the end of the month, I had reactivated all the summits claimed in 2002, including gaining an extra three bonus points for Shining Tor, as it was within the winter bonus period of 1 December to 15 March.

Whilst *en route* to Shining Tor, I worked Alan M1EYO/P, who was activating from that very summit. When I reached the summit, he was just packing up.

Longer walks and higher summits beckoned, as did the need to acquire correct equipment and clothing. At this stage I was still inexperienced, too much to know what was really important so, during the year I built up the Summits

and equipment in tandem with each other and by the end of year my sons Jimmy and Liam and I were suitably dressed with a good range of equipment including a trusty Ordnance Survey 1:25000 map and compass.

I added a new piece of equipment in February 2003 - a camera as there are many superb photo opportunities on the tops



and by this stage I was adding pages to my website - <http://tomread.co.uk> - for each summit activated. The website includes driving and walking directions, information of note to potential activators and the accounts and photographs from my visits.

Fell-Walking

Kinder Scout G/SP-001, Derbyshire, was my first four pointer and was the day that started my 'love affair' with the fell-walking and amateur radio aspect of SOTA. Jimmy and I followed some of the first section of the Pennine Way from Upper Booth Farm, up the steep section known as 'Jacob's Ladder' and up the track to Kinder Low. The true summit of Kinder Scout is notoriously difficult to find in the peat bogs on the summit plateau. However, the trig. point at Kinder Low lies at 633m a.s.l., only 3m lower than the true summit at 636m a.s.l.

The SOTA rules require the activation to be conducted from within 25m vertically of the summit and any distance away horizontally, provided that the land between does not fall more than 25m below the summit. In cases like Kinder



Scout, where the terrain is challenging, then the 25m rule can prove useful.

The four contacts were easy to come by on Kinder. After completing the activation, Jimmy and I enjoyed a very pleasant scenic walk back down and a hearty lunch.

Band Chasers

There is a regular band of chasers monitoring for summit stations each weekend and any time where an alert has been posted on the Internet. The most popular band and mode is 2m f.m., which isn't surprising as v.h.f. thrives on the excellent line-of-sight possibilities given from mountain-top operation and the wealth of good lightweight 2m portable gear available.

A wide range of equipment is used by regular activators, but the most popular rigs are the Yaesu FT-817 and VX-7R. When operating I use the supplied rechargeable NiCad battery pack and carry a

second, ready charged, to swap over if I end up making lots of contacts. Others use motorcycle batteries, which give a considerably longer operating time, but of course adds extra weight to the rucksack!

In the early days of SOTA, a wide variety of antennas were used - home-brew contraptions, quads, HB9CVs, supplied rubber ducks and many more. Many regular activators now use the antenna system developed by Richard G3CWI - the SOTA Beam. This is a lightweight 3-element Yagi that mounts on a fishing pole. It's a 2m antenna and can be mounted vertically for f.m. or horizontally for s.s.b. and changed from one to the other in seconds. Richard, however does most of his SOTA work on 40m c.w. using an inverted V and the Scottish activators primarily use 40m s.s.b.

Summit-to-Summit

I read about the increasingly regular activity from other activators and the increasing likelihood that I could make summit-to-summit contacts by strategically choosing where to ascend to. SOTA was about to take me over the border into Wales and the summits in the North East of the principality, near Wrexham.

I decided to 'open my Welsh account' with an activation of Cynr-y-Brain GW/NW-043, just off the Horseshoe Pass. My plan worked - the very first contact was SOTA's Welsh Association Manager, **Roger MW0IDX/P** on Yr Aran GW/NW-019.

I was out activating whenever I could. I was back into Wales on the Clwydian Range with an activation on Great Orme GW/NW-070, looking out over the Irish Sea on a hot sunny afternoon. I was into Lancashire and the Forest of Bowland and even over the water in Northern Ireland activating from summits in County Antrim, where I used the unusual callsign **MN1SWL/P**, the club callsign of the International Short Wave League (ISWL), with the Northern Ireland secondary club locator.

Points are accrued to the individual, not a callsign, so it's

possible to use club calls, as well as your own and still claim points. More importantly, M3 licensees who become 2E0 holders and then M0 operators, wouldn't be required to start their scores from zero with each callsign change!

I operated four summits from County Antrim but the highlight was a cross-Irish Sea summit-to-summit contact with Alan M1EYO/P. He was on Black Combe G/LD-030, while I was on Agnew's Hill GI/AH-005.

As the long days of the summer approached the number of SOTA activators increased, as did the frequency of activity. July came and with it the first SOTA camp and barbecue in Snowdonia, organised by Roger MW0IDX. Jimmy, Liam and myself climbed and activated Moel y Dyniewyd GW/NW-056. There were no problems gaining the contacts to qualify as ten stations were queuing up to work us from the campsite up the road!

A few weeks later we went back to Snowdonia climbing Tal-y-Fan GW/NW-040 for a great view over the Irish Sea on Saturday and the highest point in England & Wales, Snowdon on Sunday. We took the Miners' Track path up Snowdon and thoroughly enjoyed the ascent. We didn't consider taking the mountain railway to the summit as the SOTA rules require a 'person-powered' ascent to qualify.

I completed more activations in Wales, Shropshire and Lancashire, before our family holiday on the South Coast,



where we slotted in activations from Butser Hill G/SE-004 (Hampshire) and St Boniface Down G/SE-008 & Brighstone Down G/SE-012 (Isle of Wight). It would be fair to say that SOTA had by this stage become a rather defining consideration in our lives.

At the end of August, I reactivated Shining Tor G/SP-004 a couple of times. There were no points in this for me, as I'd already claimed them back in January, but any chasers working me could claim points. My main mission was to utilise my newly bestowed h.f. privileges using my FT-817 and a 40m inverted V dipole. I found the crowded 40m s.s.b. band difficult to work through with my portable 2.5W, but still made several contacts.

Off To The Lakes

The next couple of months saw my first activations in the Lake District (LD) and Northern Pennines (NP) regions where I met **Martin M3ZOO/P** on Pen-y-ghent G/NP-010. The next SOTA get-together, the Lake District Youth Hostel weekend, organised by **Myke G6DDQ** was about to take place too.

We stayed at the Butharlp How Youth Hostel in Grasmere. Jimmy and I drove up to Honister Pass, from where we climbed to the summit of Dale Head G/LD-020, got out the radio gear and the packed lunches. It was a beautiful clear sunny day for the back end of November and the views were magnificent.

I quickly set up the SOTA Beam and in the next hour I made 17 QSOs, including summit-to-summit with Alan



M1EYO/P on Loughrigg Fell G/LD-047, Shirley M0YLS/P on Coniston Old Man G/LD-013, **Stuart G0MJG** (using clubcall GX20A/P) and **Keith G00XV/P** on Stony Cove Pike G/LD-018 and Myke G6DDQ/P and **Chris G3XWB/P** on High Raise G/LD019. In addition, there were further SOTA-to-SOTA

contacts with **Riley G7GOD/P** on Winter Hill G/SP-010, **Dave MW0DFA/P** on Pen Llithrig y Wrach GW/NW-013 and **Roger MW0IDX/P** on Moelwyn Mawr GW/NW-016. Then we walked across the ridge to the adjacent summit of Robinson G/LD-021 for another activation, before meeting the group back at the Youth Hostel. The following morning we activated Stony Cove Pike G/LD-018, accompanied by **Ray M1REK**, racking up 18 points for the weekend.

Qualifying

I have now ascended over 60 different Marilyns in England, Wales and Northern Ireland and have over 80 qualifying activations to my name. At the time of writing (March 2004) I am placed around 16th in the SOTA Activators Honour Roll. Alan M1EYO leads with over 1000 points and is the first to gain the 'Mountain Goat' award. The equivalent title in the chasers section is the 'Shack Sloth', the first person through this milestone was Keith G00XV. Certificates are awarded when 100, 250 and 500 points are attained in each section.

You can get involved in any of three different ways. Firstly, as an Activator; this is where you get out, climb the hills and set-up a portable amateur radio station to make contacts from the summit. Secondly, you can participate as a Chaser; this is where you work the activating summit stations, claiming the

SOTA Summit References Explained

SOTA use a system of unambiguously serialising the summits that are possible to operate from. Each peak therefore, has a unique reference which is made up as follows:

CC/RR-XXX

Where CC signifies the country, eg 'G' or 'GW'
RR the region. In England for instance, there are:

- Central England (CE-xxx)
- Devon and Cornwall (DC-xxx)
- Lake District (LD-xxx)
- Northern Pennines (NP-xxx)
- Scottish Borders (SB-xxx)
- South Central England (SC-xxx)
- Southern England (SE-xxx)
- Southern Pennines (SP-xxx)
- Tyne to the Wash (TW-xxx)
- Welsh Borders (WB-xxx)

XXX summit serial number.

There is a list of qualifying summits in the SOTA *Association Reference Manual* for each of the counties. These are available from SOTA.

points from the warmth and comfort of your shack. Thirdly and possibly of most interest to SWM readers, is s.w.l. participation. You can listen to the summit activations on your scanner or h.f. receiver and claim the points for the stations heard.

My own s.w.l. entry tends to be limited to stations I have heard and tried to contact, but failed. The SOTA Management Team are very keen to see a large influx of entries from the s.w.l. community. I have managed some 'deliberate' s.w.l. loggings for SOTA stations on 7MHz.

To view the SOTA s.w.l. scores, at present, you need to become a member of the Summits reflector - <http://groups.yahoo.com/group/summits> and then access the table via the Files section. Joining this reflector has the added benefit of receiving all the activity alerts for forthcoming summits activations.

Life Changing Stuff

So, what was all the 'life-changing' stuff about that I mentioned earlier? Well, through SOTA, I have a wonderful new interest, which is enthusiastically shared by my two sons. I have much improved health and fitness and the exhilarating experience of walking on the tops on absorbing the wonderful views. Moreover, I am much more into amateur radio than I ever was and I have a whole new circle of very good friends.

SWM



Background Info

SOTA was 'conceived' by **John Linford G3WGV** who contacted **Richard Newstead G3CWI**, a leading lightweight outdoor portable 'adventure radio' specialist. John with the help of **Matthew M5EVT** and others then worked on devising a set of viable rules for the award, a process that took around 1000 man hours.

One of the main questions was what defined a hill or summit? There are several lists of hills in the UK including the Munros, Murdos, Hewitts and Corbetts. It was decided to adopt the Marilyns list, as this gave a distribution of hills throughout the UK that could be climbed for SOTA, over a range of altitudes.

A 'Marilyn' (a 'tongue-in-cheek' play on words with the name of the most famous British hill classification - the Munro!) is defined as a 'relative hill', that is a hill with a minimum of 150m (approximately 500 feet) of drop on all sides. Should it be the case that a hill, on one of the sides does not drop this amount, before rising to a higher summit, then it doesn't count as a Marilyn - the higher top only would count.

An example of this is in Cheshire, where there is a walk to the summit of Shutlingsloe beyond the edge of the Macclesfield Forest. Shutlingsloe stands at 506m a.s.l, but only drops 136m to the highest coll between it and Shining Tor. So, it is the latter that counts as a Marilyn and the former misses out.

The Marilyns list was devised and compiled by **Alan Dawson** and his definitive reference work is *The Relative Hills of Britain*. SOTA uses the Marilyns list with Alan's permission.

An online automatic results database has been developed by **Gary G0HJQ**. This is used by all registered activators and chasers to submit their logs and the database does the rest, calculating the new scores and ordering the honour rolls. It also offers summary statistics and all the data for each summit in the programme. It may be accessed via the main SOTA website.

SOTA summits can only be activated for points once per calendar year, but a chaser can claim a worked summit once a day.

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new icom IC-R20 "dualwatch"



Aimed as the successor to the IC-R10, the IC-R20 has many advanced features incorporated into its clean stylish design including dual watch; built in digital (audio) recorder function; wideband coverage in all modes; high speed scan capability and a standard Lithium Ion battery. The IC-R20 will appeal to such users as scanner hobbyists, security/surveillance companies, government agencies and other professional users.

Ultra wideband receiver:

The IC-R20 is the first handheld receiver which covers 150 kHz to 3304.999MHz in SSB and CW modes as well as AM, FM, WFM modes.

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The IC-R20 is a dualwatch receiver,

which allows you to receive two channels simultaneously. You can listen to a broadcast station, TV audio, ham marine, aviation or utility communications, while scanning or even monitoring another channel. With two tuning knobs on the top of the receiver, operation such as tuning a channel while listening to another channel is made easy; the large display shows both band settings.

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The IC-R20 has a built-in 32MB Digital (audio) recorder, which allows you to record received audio for up to 260 minutes. The IC recorder is useful in a variety of ways, like recording wireless microphone audio at a meeting. Recording qualities are selectable from HQ, SP and LP modes and playing speed is

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The VSC (Voice squelch control) opens the squelch only when a modulated signal is detected and ignores unmodulated, beat noise signals. The CTCSS and DTCS tones provide quiet stand-by while waiting

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PC programming capability:

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For further details please see www.hamradio.co.uk

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Icom technology brings you wide band, all mode coverage from 100kHz to 2GHz. The IC-R8500 includes SSB (USB, LSB), CW, AM, FM and WFM modes. The IC-R8500 is not a scanner - it's a professional quality communications receiver with versatile features from high speed scanning to computer control.

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Full feature DSP audio noise reduction filtering professionally installed by ML&S

- IF shift which allows you to reduce interference from nearby signals
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Specifications:
 Frequency Coverage : 0.100-1999.99
 Mode : SSB (USB,LSB) AM CW,FM,WFM
 Dimensions : 287(W) x 112(H) x 309(D) mm
 Weight : 7.0kg

- Accessories:**
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 - Dressler ARA-60 Active SW Antenna.....£189.95
 - Dressler ARA-2100 Active V/U/S Antenna.....£189.95
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AR-7030 DSP

High performance coupled to enhanced microprocessor features and facilities forms the cornerstone of its success.



Frequency coverage is from 0 - 32MHz all mode: AM, Synchronous AM, USB, LSB, CW, DATA & NFM. Four 455 kHz IF filters are provided as standard with provision for a further two (including Collins mechanical filters), all of which are 'self aligned' by the receiver for optimum performance and passband symmetry; this plus the standard fitted TCXO makes the AR7030 ideal for ECSS applications. The self tuning variable bandwidth synchronous detector is a pleasure to use and 'hangs on' to the weakest of signals, audio quality is superb.

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- High speed scanning - 100ch/sec (VFO scan)
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- Standard Lithium-Ion battery that allows up to 11 hours of continuous receive capability (FM mode, single receive)
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- Noise reduction functions.
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- Useful bandscope
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100kHz-1300MHz AM/FM/WFM/LSB/USB/CW. This amazing little scanner is an ideal pocket communications receiver with keypad entry! **PC Programmable. Requires ADMS-3 at £39.95**

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UK Scanning Directory

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Entry Level DSP Noise Cancelling Speaker for AM & FM Reception



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Adjustable Noise Eliminating Speaker



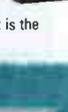
NEIM-1031 Only £129.95

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ITU Country Codes

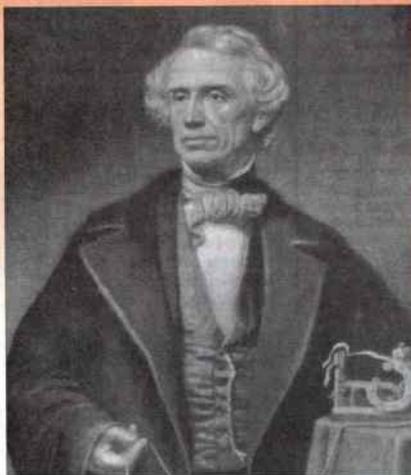
To assist you with the LM&S short wave tables - here's a listing of the ITU Country Codes. Please keep this list in a safe place for future reference.

AFG	Afghanistan	CAN	Canada	GAB	Gabon	KRE	Dem. People's Rep. of	NDR	Norway	SYR	Syria
AFS	South Africa	CBG	Cambodia	GEO	Georgia	KWA	Korea	NPL	Nepal	TCD	Chad
AGL	Angola	CHL	Chile	GHA	Ghana	KWT	Kuwait	NRU	Nauru	TGD	Togo
ALB	Albania	CHN	China	GMB	Gambia	LAD	Lao P.D.R.	NZL	New Zealand	THA	Thailand
ALG	Algeria	CLM	Colombia	GNB	Guinea-Bissau	LBN	Lebanon	OMA	Oman	TJK	Tajikistan
AND	Andorra	CLN	Sri Lanka	GNE	Equatorial	LBR	Liberia	PAK	Pakistan	TKM	Turkmenistan
ARG	Argentina	CME	Cameroon	GUI	Guinea	LIB	Libya	PHL	Philippines	TON	Tonga
ARM	Armenia	COG	Congo	GRC	Greece	LCA	Saint Lucia	PNG	Papua New Guinea	TRD	Trinidad and Tobago
ARS	Saudi Arabia	COM	Comoros	GRD	Grenada	LIE	Liechtenstein	PNR	Panama	TUN	Tunisia
ATG	Antigua and Barbuda	CPV	Cape Verde	GTM	Guatemala	LSO	Lesotho	POL	Poland	TUR	Turkey
AUS	Australia	CTI	Côte d'Ivoire	GUI	Guinea	LTU	Lithuania	POR	Portugal	TUV	Tuvalu
AUT	Austria	CTR	Costa Rica	GUY	Guyana	LUX	Luxembourg	PRU	Peru	TZA	Tanzania
AZE	Azerbaijan	CUB	Cuba	HND	Honduras	LVA	Latvia	QAT	Qatar	UAE	United Arab Emirates
B	Brazil	CVA	Vatican	HNG	Hungary	MAU	Mauritius	ROU	Romania	UGA	Uganda
BAH	Bahamas	CYP	Cyprus	HOL	Netherlands	MCO	Monaco	RRW	Rwanda	UKR	Ukraine
BDI	Burundi	CZE	Czech Republic	HRV	Croatia	MDA	Moldava	S	Sweden	URY	Uruguay
BEL	Belgium	D	Germany	HTI	Haiti	MEX	Mexico	SDN	Sudan	USA	United States
BEN	Benin	DJI	Djibouti	I	Italy	MHL	Marshall Islands	SEN	Senegal	UZB	Uzbekistan
BFA	Burkina Faso	DMA	Dominica	IND	India	MKD	Macedonia	SEY	Seychelles	VCT	St Vincent and the Grenadines
BGD	Bangladesh	DNK	Denmark	INS	Indonesia	MLA	Malaysia	SJM	Solomon	VEN	Venezuela
BHR	Bahrain	DDM	Dominican Rep.	IRL	Ireland	MLD	Maldives	SLV	El Salvador	VNM	Viet Nam
BIH	Bosnia and Herzegovina	E	Spain	IRN	Iran (Islamic Rep. of)	MLI	Mali	SMD	Western Samoa	VUT	Vanuatu
BLR	Belarus	EGY	Egypt	IRQ	Iraq	MLT	Malta	SMR	San Marino	YEM	Yemen
BLZ	Belize	EQA	Ecuador	ISR	Israel	MNG	Mongolia	SNG	Singapore	YUG	Serbia and Montenegro
BOL	Bolivia	ERI	Eritrea	J	Japan	MOZ	Mozambique	SOM	Somalia	ZMB	Zambia
BOT	Botswana	EST	Estonia	JMC	Jamaica	MRC	Morocco	SRL	Sierra Leone	ZWE	Zimbabwe
BRB	Barbados	ETH	Ethiopia	JDR	Jordan	MTN	Mauritania	STP	Sao Tome and Principe		
BRM	Myanmar	F	France	KAZ	Kazakhstan	MWI	Malawi	SUI	Switzerland		
BRU	Brunei Darussalam	FIN	Finland	KEN	Kenya	NCG	Nicaragua	SUR	Suriname		
BTN	Bhutan	FJI	Fiji	KGZ	Kyrgyz Republic	NGR	Niger	SVK	Slovak Republic		
BUL	Bulgaria	FSM	Micronesia	KIR	Kiribati	NIG	Nigeria	SVN	Slovenia		
CAF	Central African Rep.	G	United Kingdom	KOR	Korea (Rep. of)	NMB	Namibia	SWZ	Swaziland		

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We look at fitting a scanning receiver into your car

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Radio Active is published on the third Friday of each month - available from all good newsagents or direct by calling 0870 224 7830 priced at only £2.75.

Plus all the usual features packed with information for the radio enthusiast...

Starting Out

Part 2

Back due to reader demand. This month, we continue the rerun of the excellent beginner series from the past brought to you by the late Brian Oddy G3FEX.

The fact that a few high power medium wave transmitting installations can provide an adequate signal-to-noise ratio (40dB) in virtually all regions of the UK during daylight has already been discussed in this series (SWM May 2004). Some of the larger and more highly populated countries around the world also find it economic to provide networks of m.w. stations to cover their entire area. However, this is certainly not the case in Africa, Asia and South and Central America, where vast expanses of farmland, pasture, woodland, forests, jungle, desert or mountains separate the more densely populated localities. The cost and complexity of providing such a network would be very considerable indeed.

A particularly high level of lightning activity exists near the equator and the effect of the frequent discharges is to render reception of the m.w. band all but impossible for much of the time, so an alternative method for broadcasting has to be found. Fortunately, the use of the lower frequencies in the h.f. region provides the answer to this problem.

The Tropical Bands

There are four segments in the lower h.f. region allocated to broadcasting, namely the 120, 90, 75 and 60m bands. These bands are usually referred to as the **tropical bands** since they are primarily intended for use in the equatorial areas of the world, although the 75m band is also allocated to international broadcasting in Europe and to Amateur Radio in the USA. The limits of the allocations and the countries concerned can be seen in **Table 1**.

The transmitters and antennas used by tropical band broadcasters are quite unlike the high power transmitters and tall mast radiators used by many m.w. stations. Relatively low power transmitters (1kW) are often employed in conjunction with low and quite simple horizontal antennas to launch the radiation upwards at high angles towards the E layer of the ionosphere - see 'Starting Out' last month - where it is reflected back down to the surrounding countryside irrespective of the nature of the terrain. However, during the hours of daylight much of the radiation is absorbed as it passes through the lowest D layer to reach the E layer, especially around noon, hence the area covered during daytime is rather limited.

At sunset, on the other hand, single and multiple reflections take place to considerably extend the area covered by the signal. Later, the ionisation of the E layer weakens to allow signals to reach the higher F layer where a single reflection may extend the range by many hundreds of kilometres - see **Fig. 2.1**. Multiple reflections between the F layer and earth can extend the range by several thousand kilometres and enable listeners in many countries to hear the tropical band broadcasts at night.

Although many of the stations broadcast throughout the day, some concentrate on the peak listening periods and only operate in the early morning or during the evening, local time. It is important to understand that the broadcasts on these bands are intended to provide a domestic service for the country of origin and are not of an international nature -

hence the programmes are much like our own m.w. domestic services and consist of news bulletins, sports news, cultural and educational programmes, pop and classical music, discussion programmes, etc. and many carry advertisements since they often have commercial backing. The broadcasts are usually in a common language most easily understood by local listeners, thus avoiding local tribal dialects which may cause confusion and mis-understanding!

Since these bands are allocated to other services in many areas of the world including Europe, the reception of these broadcasts in the UK is often difficult with much interference present. During the summer months high levels of static here may make reception difficult on the lower tropical bands. However, the 60m band is usually free from this problem. Each band has its own characteristic, so let us now consider each of them in turn.

120m (2.3-2.5MHz)

Long distance reception is never possible on this band during daylight because all the signals reaching the ionosphere are absorbed by the D layer until sunset - even at night propagation conditions are usually unfavourable. Most of the stations run relatively low power, 300 to 1000W being typical. (There are a few stations in Australia and China which run 50kW, but very few listeners in the UK have ever heard them). There are also a number of commercial services operating on this band in Europe. Interference from static is often a problem during the summer months in the UK.

90m (3.2-3.4MHz)

There are many interesting stations to be heard on this band, most of them being located in Africa, Asia and South America. Propagation conditions are usually best during the hours of darkness but some stations may be audible during the late afternoon or early morning. A good deal of interference exists from the many commercial and official services operating on this band.

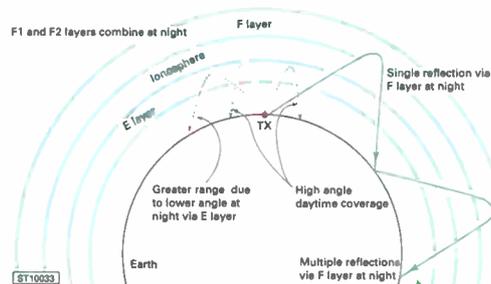
75m (3.9-4MHz)

This band is also allocated to international broadcasting and a number of stations located in the Far East, Japan, China, Pakistan, Falklands, UK and Switzerland may be heard during the late afternoon and early morning as well as during darkness. Although many of the broadcasters use transmitter powers of 1 - 20kW some are of much higher power, namely 100 or even 250kW! Radio Amateurs are permitted to use this band in the USA and Canada, their s.s.b. signals may often be heard at night.

Table 1. Tropical Band Allocations

	120m	90m	75m	60m
Europe & N. Africa	no allocation	no allocation	3.900-4.000MHz	no allocation
Africa	2.300-2.500MHz	3.200-3.400MHz	no allocation	4.750-5.060MHz
Asia	2.300-2.500MHz	3.200-3.400MHz	no allocation	4.750-5.060MHz
Oceania	2.300-2.500MHz	3.200-3.400MHz	3.950-4.000MHz	4.750-5.060MHz
N. America	no allocation	no allocation	3.950-4.000MHz	no allocation
South & C. America	2.300-2.500MHz	3.200-3.400MHz	3.900-4.000MHz	4.750-5.060MHz

Fig. 2.1



60m (4.75-5.06MHz)

This is the most active of the four tropical bands and many signals from countries in Oceania, Asia, Africa and S. America may be heard - transmitter powers vary from 100W to 250kW! Reception is possible from about two hours prior to sunset until two hours after sunrise in winter - about one hour less in summer.

Although it is possible to hear some of these stations with a simple s.w. receiver plus whip antenna, to get the best results a good communications receiver and resonant half wave antenna is necessary - these bands are really the happy hunting-ground of the experienced DXer, so don't expect too much with simple equipment! It is partly this difficulty which appeals to the many dedicated tropical band DXers around the world, who often spend hours searching for signals from some of the 130 or more countries involved.

Language identification recordings will certainly help you to identify some of the stations concerned and the charts in 'LM&S' each month detail the frequencies and times of some of the stations which listeners have been hearing recently. An up-to-date guide book may also help you decide which station you are hearing (see Appendix), although it is important not to guess the identity of a station hidden under severe interference by simply referring to a book!

When sending reception reports to tropical band stations remember that the broadcasts are intended for local listeners and not DXers, so your report will be of little more than academic interest to them. But a more detailed report may well help you to obtain that rare QSL (confirmation) card.

International

As well as **domestic** broadcasting, many of the world's broadcasters also provide an **international** service, since this gives an opportunity to inform listeners in other countries of their local news and events as well as their viewpoint on international current affairs. They usually offer a wide variety of programmes which are designed to hold the listener's interest and these are broadcast in a language appropriate for the chosen **target area** of reception.

The Short Wave Bands

By international agreement, eight segments of the h.f. region, usually referred to as the **short wave bands (s.w.)** have been allocated to international broadcasting. The bands are located between **49 and 11m (6 to 25MHz)** and the limits agreed in 1979 are shown in **Table 2**. The frequencies used by the broadcast stations within these bands are allocated under agreements drawn up by the **International Telecommunication Union (ITU)** - an agency of the UN with 162 member states - located in Geneva. However, overcrowding exists on these bands and many broadcasters now operate outside the 1979 band limits and some also use the **22m (13MHz)** band.

There are several books available which list the international broadcasters and the frequencies allocated to them and anyone new to short wave listening might well decide to look up a particular station and set their receiver to the frequency indicated, only to be disappointed to find the station inaudible. Unlike the l.w. and m.w. broadcasts, most of the s.w. ones may only be heard at certain times on particular frequencies during the 24 hour period. The reason for this is that international broadcasters make use of the **sky wave** signal from their h.f. transmitting installations to exploit the reflecting properties to the highest (F) layer of the ionosphere. Whereas the l.w. and m.w. domestic services rely upon the **ground wave** to provide a good signal to noise ratio in a given service area, the attenuation

of the ground wave is too severe for international broadcasting.

The nature of the ionosphere has already been outlined in this series to which it may be added that the degree of ionisation present is also related to the sunspot count and their appearance follows a regular cycle of events, reaching a maximum about every 11 years.

The angle at which the sky wave signal leaves the transmitting antenna and the density of the ionisation in the F layer controls the highest frequency that can be reflected back to earth. The highest frequency which can be reflected back when the radiation is vertical is called the **critical frequency**. If a wave with a frequency slightly greater than the critical value is sent up vertically, it will penetrate the ionosphere and be lost into space. However, it is important to note that if the same wave is sent up at an acute angle, it will be reflected back to earth.

The angle of radiation is one of the factors which determines the distance covered by a single reflection from the ionosphere - high angles are used to reach nearby areas and low angles, typically 7°, are required for the longest distances. The maximum distance along the surface of the earth which can be covered by a single reflection from the F layer is about 400km. In order to control the angle of radiation and the general directivity of the sky wave signal, many broadcasters employ directional beam antennas. These are often large curtain arrays, supported by masts 100m or more in height and since a separate antenna is needed for each transmitter and wave band in use, many s.w. transmitting stations occupy large areas!

The maximum frequency which will be reflected by the ionosphere over any particular path is known as the **maximum usable frequency (m.u.f.)**. This depends upon the time of day, the season, the latitude and the period of the sunspot cycle. Radio observations around the world make daily measurements of the critical frequency and thus are able to forecast the m.u.f. In practice it may be possible to use frequencies of up to four times the critical frequency in international broadcasting.

In the area between the transmitter and the point where the reflected waves return to earth, the signals cannot normally be heard, so this is called the skip zone - see **Fig. 2.2**. Sometimes, however, there may be some scattering of the signal from the lower layers of the ionosphere which may reach listeners within the skip zone.

When the reflected waves meet the surface of the earth they may be reflected back towards the ionosphere and on reaching the F layer, they are once again reflected back to earth - also shown in **Fig. 2.2**. Multiple reflections of this type considerably extend the range of the signal - typically three reflections may be needed from the UK to reach India and six or seven to reach Australia. It is also possible for the signal to travel all around the world in this way, this often results in an echo of the signal which is delayed by about 1/7th of a second!

So, how then does a listener make use of all this? The answer lies in the application of up-to-date **broadcast schedules** which are obtainable from most broadcasters four times a year, in March, May, September and November by post or via the 'net. These take account of the seasonable changes in propagation and detail the best frequencies and times for selected target areas.

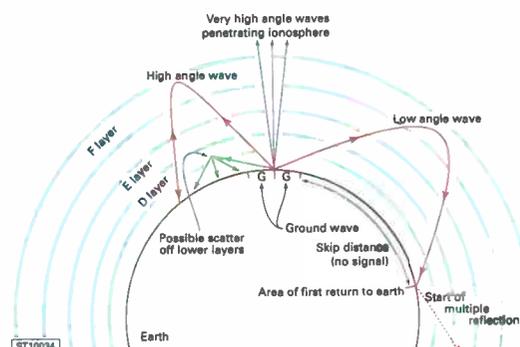
The *International Listening Guide (ILG)* gives an hour by hour summary of all s.w. broadcasts and details frequencies, languages used, target areas and programme details it was once available as a paper document, now the publisher, **Bernd Friedewald DK9FI**, distributes an electronic database and reader application. Details are available from **ILG Software & BFM Internet-Vertriebs GmbH, PO Box 1112, Merianstrasse 2, Hessenweg 2, D-34567 Homberg, Germany** or www.ilgradio.com/ilgradio.htm

The *World Radio TV Handbook (WRTH)* is published annually. It covers every broadcasting country in the world and gives details of station frequencies, times of operation, interval signals, maps and addresses. Available from the **SWM Book Store**.

Table 2. The SW Broadcast Bands

Band (m)	(MHz)	ITU agreed limits	Out Of Band limits in use
49	6	5.900 - 6.200	5.145 - 6.995
41	7	7.100 - 7.350	7.000 - 8.690
31	9	9.400 - 9.900	9.010 - 10.870
25	11	11.600 - 12.100	11.000 - 12.200
22	13	13.570 - 13.870	13.605 - 13.860
19	15	15.100 - 15.800	15.010 - 16.230
16	17	17.480 - 17.900	17.387 - 18.080
13	21	21.450 - 21.850	21.450 - 21.810
11	26	25.670 - 26.100	

Fig. 2.2



ICOM

Scanner

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THE IC-R20 RECEIVER IS HERE!

The IC-R20 handheld receiver contains a host of advanced features that will appeal to scanner hobbyists and professional users. Check out this pro-grade scanner's amazing features...



- Dualwatch capability (in selected bands)
- 0.150 to 3304.999MHz wideband coverage in SSB,CW,AM,FM,WFM modes
- Built-in 260 minute digital (audio) recorder
- High speed scanning - 100ch/sec (VFO scan)
- Total of 1250 memory channels
- Standard Lithium-Ion battery gives 11 hours of continuous receive capability (FM mode, single receive)
- Operation and charging from an external power source
- Built-in ferrite bar antenna for AM and earphone cord antenna for FM broadcasts
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- Optional CT-17, CI-V controller for PC remote control
- PC programming capability
- Dial speed-up function... when rotating the tuning knob rapidly, the tuning speed automatically speeds up
- Scan pause setting (2-20 seconds and hold) and scan resume (0-5 seconds and hold) setting
- Auto power off (30-120 minutes and busy)...Busy setting turns off the IC-R20 when signal is received for 3 minutes
- Various key lock functions...All, No SQL, No VOL and Normal lock settings
- Rotary selector and up/down buttons are reversible
- Useful bandscope
- and much, much more!

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Satellite

TV News

- **Roger Bunney** 35 Grayling Mead, Fishlake, Romsey, Hants SO51 7RU
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Last month's copy date just missed a dramatic extension in the terrorism war. On the morning of 11 March bombs, actuated by mobile 'phone calls - exploded in several passenger trains across Madrid within minutes of each other killing 191 commuters and injuring 100s of other passengers. Extensive news coverage resulted in numerous sat uplink trucks establishing all day transmissions from the centre of Madrid - 'NEWSLINK' for example was parked outside of Madrid's 'Querto De Atocha' rail station offering reports into the European TV networks (Eutelsat W2, 16°E; 12.562GHz-Horizontal; Symbol Rate 2816 + Forward Error Correction 3/4) but a sombre backdrop of the rail station with a row of hearses outside, waiting. And on Eutelsat W1, 10°E both the APTN slot 10.967GHz-Vertical (4167+5/6) - '+8-D EBU'; and at 11.099GHz-V (5632+3/4) as 'SERVICE 1' feed continuous reports and '2-ways' with the networks. Eutelsat's SESAT 36°E satellite carried up to seven downlinks across the 11.053-11.107GHz bandwidth - all H running 6111+3/4 - and Roy Carman (Dorking) reckoned that the Spanish own satellite slot -HISPASAT @ 30°W - was full of national and international feeds that almost every few MHz at Ku-band during the day that frequency was in use. Edmund Spicer (Littlehampton) noted EFE News Agency; Canaries feeds; Atlas News Agency; Globecast's La Mancha and other Globecast feeds; Tele Madrid feeds; Tele Cinco and TVH Galicia on 30°W and commented that 10°E was 'quite full as well'.

The following day widespread anti-terrorism demonstrations were seen across Spain with at least seven, 16°E live OB/news feeds during the evening, undoubtedly HISPASAT 30°W was equally active. The Spanish news reports on 13 March covering ousting the government. The new crew announced their intention to withdraw the Spanish troops from Iraq. For a third day satellites were full of Spanish news!

The Russian elections were also held on 13 March when Mr. Putin was re-elected. Moscow reports were carried over both 10°E and 16°E birds. Most interesting was not the news of Mr. Putin's success, but what was happening behind the reporter. It's usual to have a locked off camera shot with the studio reporter inlaid into the view - this is usually the Kremlin and nearby buildings. As the unnamed reporter updated the election results, there appeared to be a celebratory bonfire behind in the Moscow night. There were no fireworks, the flames increased and by then the reporter was watching a monitor. Across Kremlin Square, a gigantic building called the *Menage*, it was the World Heritage building. A quick check on W2, 16°E and the 'NTV RUS-6' satellite truck was uplinking live pictures from the square, the Moscow fire brigade trying to extinguish the fire - a totally impossible task - it burnt down. Normally this would have been a major news item in the 'West', but the events in Madrid pushed the election and fire to the backside of the news.

Madrid continued to make the news when a terrorist bomb nest was found, a major explosion occurred as they detonated themselves night of 3 April, coverage the next day and 'BBC MADRID' ran many reports over 2F3, 11.2538GHz-H (4226+7/8) during the 2F3 'access slot' - see later.

Terrorism continues, 30 March and raids discover 750kg of fertiliser capable of making a large bomb, in Crawley, W. Sussex - Langley Green and its Internet cafe, nearby Horley. The 'SIS 12 8MB TD' sat truck sets up outside New Scotland Yard to await statements from the authorities, 'SIS 12' was found on 16°E - 12.525GHz-H (5632+3/4). The same evening, Meridian 'BT TES 43 8MBit' carried a live broadcast into the live 1800 Meridian Tonight via AB1 @ 8°W, 12.580GHz-H (5632+3/4).

In Iraq, civil war seems to have broken out across the

country (April 5), urgent news reports were being carried. CBS News regularly updated into NY and appears on 16°E between 12.525-12.555GHz-H usually in NTSC though occasionally the 'CBS NEWS' team uplinks from the 'MANSOUR HOTEL BAGHDAD' on 10°E. Checking the *Intelsat 7076* slot @ 1°W, ABC NEWS can be found on or near to 11.675GHz-V (5632+ 3/4) feeding NY ex Baghdad and identifying as 'SERVICE 1', the news crew will leave a locked-off shot of local buildings, palm trees, etc. running rather than killing the uplink, expect output to be running NTSC.

'LONEWOLF' was the identification over *Europe*Star*, 45°E late March at 11.564GHz-V (5632+3/4), this was an interview with Pakistan's President Mushariff, discussing the military action along the border with Afghanistan with their own and US Special Forces fighting Al Qaeda and the Taliban. At that time, the understudy to Bin Laden was thought to be surrounded and fighting was severe - reports Roy Carman. Len Brooks (Skegness) notes that 45°E carried an MPEG 4:2:2 transmission from 'TELEMEDIA CAPE TOWN' over 11.514GHz-V, a documentary into the social life of jockeys in broken German and Afrikaans! *Europe*Star* also carried 'SATVIISION UK' at 11.645GHz-V (2170+3/4) but this must have been a test transmission as the colour bars cut with no pictures seen. Len also has seen 'SGU-1' on the Russian Express AM-22 sat @ 53°E as a DX catch. A first sighting in Skegness 30 March of Israel's AMOS-2 satellite @ 4°W with test programming @ 10.726GHz-H (2894+ 3/4).

Whitesand Bay near Plymouth became the centre of media interest on 27 March when HMS *Scylla*, a decommissioned Leander class frigate of 2500 tonnes was 'sent to the bottom'. Three explosive charges blew holes in the stripped down hull and the frigate sank below the waves to become a reef for both divers to explore and for Plymouth's centre for marine biology to study as marine life takes up residence. The afternoon sinking was carried over *Eutelsat W2*, 16°E @ 12.524GHz-H (5632+3/4)

Bahrain Excitement

This the first year for the Bahrain Grand Prix on 4 April which provided excitement as drivers contended with driving sand. The previous day was practice and the German networks were on hand to interview participants. A small bouquet had been established on W2 @ 12.552GHz-H (11265+3/4) by RTL as 'SLOT 1 RTL' and 'SLOT 2 RTL BAHRAIN'. The former 'SLOT' appeared to be in use exclusively by RTL but 'SLOT 2' was a shared output by both NTV and RTL.

Horse racing from Dubai was seen by Edmund Spicer over *Atlantic Bird 3* @ 5°W on the Globecast 'GCPE1' lease, 12.534GHz-H (27500+3/4), several hoardings mentioning DUBAI gave the confirmation.

A very rare sighting was a Kurdistan TV feed over W2 21 March signing as 'TES 26° uki', 11.144GHz-H (5632+3/4) from inside a large sports hall. Content was curious, initially with folk in national dress singing and dancing, a local band, then modern pop offerings, developing into a political meeting, locals waving flags and speeches, the transmission lasted for perhaps two hours, possibly an OB (outside broadcast) to studio link for local Kurd TV.

Finally, this August will feature the Olympic Games from Greece and the *HELLAS-Sat* bird @ 39°E has been positioned for that very purpose, during March several OBs were seen from this slot featuring the Olympic flame on its journey out of Greece (on 12.633GHz-V). The 12.550-12.750GHz-V spectrum should feature in outside broadcast and events coverage and data rates SR6111+3/4 are commonly used. There's a programme bouquet at 12.525GHz-V (27500+3/4) that also carries 'ERT SAT' and other Eastern Med broadcasters.



Test pattern before a news feed into Spain from the USA (AB-1 @ 12.5°W).



President Putin and Cabinet friends discuss his election tactics, (NSS-7, 21.5W). Pic Roy Carman.



Madrid's residents take to the streets protesting for peace. Pic Roy Carman.



Fire in Kremlin Square as seen from the APTN office, (W1, 10°E).



Sky News outside Paddington Green nick, inside are the released UK citizens from Cuba held by the Americans (W2, 16°E).



Policeman stands guard outside a Madrid rail station whilst hearses wait outside, (W2, 16°E).



A news service facility company awaits a transmission from Portugal (W1, 10°E).



HMS *Scylla* is prepared for her final trip to the seabed. Pic Roy Carman.

- **Ben Hogan**, *do SWM Editorial Offices*
- **E-mail** ssbutils@pwpublishing.ltd.uk

If you drive south west on the A12 autobahn from Berne, Switzerland, you arrive at the small town of Fribourg. Turn right and carry on north and you'll find yourself at the attractive little commune of Belfaux.

In December 1998, in the woods just one and a half kilometres from Belfaux train station, the Swiss police and bomb disposal crews started to dig. Following directions given to the British Intelligence service by Soviet defector Vasili Mitrokhin they swiftly located the three packages that comprised a cache hidden there by agents operating out of the Russian Embassy in Berne.

The whole stash comprised an explosive booby trap device, codenamed Molniya (lightning), a radio transmitter, receiver, coding device, antennas and accessories and had been concealed there some 32 years previously.

This hide was one of hundreds established in central and western Europe, North America, Israel, Turkey and Japan and had been implemented as part of a plan by the Soviets to equip sabotage units of communists in these countries to be activated should a full scale conflict develop. In the last decade three such radio equipment packs have been recovered in Belgium alone. The Swiss fired a water gun disruptor at the device, which exploded, and the equipment therein was retrieved.

The transmitters deployed under the earth were usually BR-3U devices, a unit primarily manufactured for the KGB. Measuring 100 x 240 x 330mm it sends FSK signals at a rate of either four hundred and fifty or seven hundred and fifty words per minute when connected to the tape coding unit. Output power is 80W and frequency coverage is from 4.5 to 18MHz.

The receiver code named 'SVIR' after its designer, Prof. IB Svir of the National University of Radio Electronics - Kharkov, covers 4-20MHz and is supplied with an earpiece. Various plugs and accessories are hidden in the pack, which also contains a dipole antenna. This equipment would have been more than adequate to provide communications with the former Soviet Union should the need arise. Interestingly, the equipment is labelled in English as is any documentation included with the set.

Given that hundreds of these hides were established in countries identified as targets by the Russian authorities, it follows that very many of these radios still remain in hiding. As

they are almost all booby trapped with the 'Molniya' package, it follows that some may have exploded when disturbed by farming activities or construction equipment. I believe that one was discovered around five years ago in the UK.

It is not impossible that, as a person with a keen interest in communications, you may be approached by someone who has discovered such a device. There is a specific procedure to disarm the explosive charge in the equipment case, but after all these years it is inevitable that the trigger unit and the explosives have become unstable.

If any buried equipment is discovered the



KGB transmitter/receiver (SVIR) and accessories.

police should be informed and reminded that the contents may contain explosives. Remember that many police officers weren't born when the 'cold war' was being fought and in any case most wouldn't have a clue as to what you were talking about. It also makes one ponder whether the individuals recruited for these sabotage operations are still living and working in these countries.

HF Bands

Searching through the h.f. bands is a marvellous way of killing vast amounts of time. Engaging in this activity in early March I stumbled on 4.742MHz, a frequency used by the RAF, usually with the callsign 'Architect'.

On this occasion the station transmitting appeared to be on a Royal Navy vessel. As I continued to monitor a 'phone patch' was set up and a conversation ensued. Now I am aware that the Royal Navy now have a very sophisticated satellite communications system enabling them to make and receive calls by telephone practically anywhere in the world. Also they carry mobile telephones when in reach of base stations located on shore. I can't imagine what had occurred to make an h.f.

'phone call necessary. The security implications are obvious. I assume that their mobile 'phones were out of commission...but the satellite too?

The US Customs Service have an incredible number of employees, from unfortunates stationed in the Alaska/Canada border, to the staff that have the rather exciting job of driving the high powered long but narrow beamed speed boats called 'cigarette boats' or 'go fasts' by those in the service. The crews of these vessels have, perhaps the most glamorous of tasks within US Customs. They are usually bronzed, fit and have wrap around sunglasses.

As with all western nations their main focus these days has to be the importation of illegal drugs. A massive amount of these shipments come via sea from the islands of the Bahamas and West Indies into Florida. Another major drug trade route is from Mexico into the states of Arizona, New Mexico and Texas.

Here the US authorities face a major task in attempting to control access across the vast border. On many Texas nights I have sat in the Chihuahua Desert north of the border formed by the Rio Grande River and watched through a nightscope as drug importers cross the river

in a small boat and set off on foot into the night with pack on their backs.

They return several hours later minus the load in the rucksack. They bury the drugs in a stash and note the exact location with a GPS. They can then call their

customer who picks up the gear when the Border Patrol and Customs are out of the area. The money has already been transferred. The mules then return to Mexico and repeat the process another night. This is a constant traffic and I've literally tripped over bags of drugs in that desert that have been mislaid by their owners.

Keeping tabs on such a massive trade is very hard work. In addition to v.h.f. and u.h.f. systems the USA authorities have their Customs Over The Horizon Enforcement Network (COTHEN) to help them. These days it is largely a cellular h.f. system directing the radio transmissions to the relevant area and, of course, they use the Automatic Link Establishment (ALE) system but u.s.b. voice can still be heard and some really hot operations are sometimes monitored leading to very exciting listening.

Try these frequencies 5.732, 7.527, 8.912, 10.242, 11.494, 13.907, 15.867, 18.594, 20.890, 23.214 and 25.350MHz. Most transmissions are ALE but some u.s.b. is heard and it's well worth listening. This is not easy monitoring but well worth the effort if you hear a live operation.

DX

Television

● **Keith Hamer & Garry Smith**

17 Collingham Gardens, Derby DE22 4FS

● **E-mail:** dxtv@pwpublishing.ltd.uk **Web Site:** www.test-cards.fsnet.co.uk

March was another disappointing month for Band I reception. Fortunately, tropospheric reception broke the monotony with openings on the 3rd, 15 and 17th from the Benelux countries.

Reception Reports

Tom Crane (Hawkwell) comments on the unusually quiet conditions this year. Tom's only reception is a possible video carrier at 45.7500MHz at 1233 on 14 March, heard via a scanner. This does not correspond to any currently used frequency allocation so was it some form of mixing?

There was a small tropospheric lift on the 3rd. **Stephen Michie** (Bristol) logged Lopik NED-2 E27 text pages and NED-3 E30 showing children's programmes plus very weak NED-1 signals on E29. On the same morning, **Peter Barber** (Coventry) logged Belgian signals from Wavre emerging through the noise at 0755 on E8 and E10. Vision buzz on E3 was also heard, presumably RTBF-1 Liège. Signals faded shortly after 1000.

Living in the south-east, **Tony Jones** (Basildon) has the edge on tropospheric reception with NED-1 from the Dutch E4 Lopik outlet visible above the noise most days. The Belgian networks RTBF-1 (French-language) and VRT TV1 (Flemish-language) on channels E8 and E10 from Wavre also appeared regularly with occasional sound and text information. Improved conditions on the 15th brought in NED-1 E7 (Markelo) and on the 17th, France-2 L21 and France-23 E24. On the 21st, the NED-1 PM544 test card was visible at 0430. Occasionally, a French station on L54 appears. This is possibly the M6 network from Lille.

An E-mail from **Lt. Col. Rana Roy** (India) confirmed that reception in other parts of the World was thin on the ground too. A brief tropospheric lift on the 17th between 0715 and 0830 produced Lahore (Pakistan) E5, Kasauli (India) E5, Amritsar (India) E7, Jallundhar (India) E9, Pakistan TV E10 and Mussorie (India) E10.

In Finland, **Perti Salonen** describes the year so far as 'disappointing'. Usually it is easy to pick up signals at a distance of between 250 and 350km in Band I or at u.h.f. from Vaennaes, on the east coast of Sweden or from St. Petersburg, Russia. Low-pressure systems around the Baltic regions have kept tropospheric reception at bay.

FM Results

On 1 March, **George Garden** (Edinburgh) tentatively logged Saga FM 101.4 and 106.6MHz from Derby and Waltham respectively. Oddly the signals were more like lengthy Meteor-Shower bursts and long enough to recognise David Hamilton announcing a piece of music.

The New Season

By now, the Sporadic-E season should have commenced and openings to the south should have confirmed whether Spanish Band I transmitters have all ceased operation. The closure of the Spanish outlets is a sad loss. The high-level signals from the various mainland outlets meant reception was easy with simple antennas, thus whetting the appetites of budding DXers.

Experienced DXers are hoping that the lack of Spanish activity blocking Channel E2 will improve the chances of encountering distant exotic signals. However, Spanish transmitters used to close during the afternoon up until the early Eighties but we didn't seem to receive Ghana every day, although the 250kW Izaña E3 transmitter in Tenerife used to remain on-air and was received fairly regularly.

If you're not quite so experienced, or you're new to the hobby and would like to get into it – the 'DXTV Special' articles appeared in the January 2004 issue of *SWM*.

New Installations

A recent visit to **Andrew Jackson** (Birkenhead) revealed an impressive receiving antenna 'farm' with both wall and chimney mounted arrays. A massive rotatable Triax 100-element u.h.f. array with a Labgear 7271 amplifier adorns the chimney although with the intrusion of digital TV in the UK, the number of DX channels has greatly reduced over the years. A 13-element Band III array is bracketed to the wall and is currently beamed to the south-east. Various dipoles and a multi-element Band II array add to the visual impact and so do a couple of satellite dishes. The new addition over the coming weeks will be a gigantic five-element beam for Band I reception, providing there is room!

Meanwhile, **Tony Jones** (Basildon) has erected a compact VF-100 array for Bands I, II and III. An amplified u.h.f. wideband grid completes the set-up and daily results from the Continent are possible.

Both Andrew and Tony have set-ups that

Fig. 1: The distinctive Spanish CTE colour test card. This version includes the region, transmitter and channel information.



Fig. 2: A Spanish test card from Guadalcanal on E4 with an additional regional identification showing 'Zona Sur'.



Fig. 3: A real rarity from the archives this month. The BBC Clock used for one night only on 7 November 1953, for their 'Elizabethan Evening'. All the programmes were set in, and in-vision announcers dressed as in, the reign of Queen Elizabeth I.

consist of a D-100 DXTV converter with its reduced i.f. bandwidth feeding into a portable colour receiver.

Nigel Homer E-mailed me saying he's had fantastic results in Band I with a D-400 vision-only converter fed from just a wire dipole pinned ('randomly') to the wall. Unfortunately, a change of location means that he is now plagued with baby alarms and pirate radio links in Band I, particularly around Channel E3 (55.25MHz), which used to be the most fruitful DX channel.

Service Information

Belgium: A new RTBF service called 'AB4' is now on air using Channel E60.

Luxembourg: A reports suggests that the Dudelage channel E7 Band III transmitter has ceased operation.

Italy: 'France-2' and the Swiss service TSR (Télévision Suisse Romande) will cease broadcasting in the north of Italy but may return once DVB-T is launched. The French company 'TF1' is to launch a national sports channel called 'Sport Italia'. Services 'Tele+1' and 'Tele+2' ceased at the end of July 2003. The abandoned frequencies are now available for new services.

This month's Service Information was kindly supplied by **Gösta van der Linden** (Netherlands) and **Lionel Michelland** (France).

Keep On Writing!

Please send your DXTV, slow-scan TV and f.m. reception reports, news, off-screen photographs and information to arrive by the first of the month to: **Garry Smith, 17 Collingham Gardens, Derby DE22 4FS**. We can also use off-air pictures stored as 'JPG' files on PC discs and good-quality video recordings.

Our DXTV and archive TV website can be visited at www.test-cards.fsnet.co.uk via the Internet.

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The WINRADIO WR-G313i receiver is a software-defined high-performance HF receiver (9 kHz to 30 MHz, optionally extendable to 180 MHz) on a PCI card. The front-end is a DDS-based double-conversion superhet, the last IF stage is implemented in software resident in the on-board DSP.

This receiver is intended for government, military, security, industrial, surveillance, broadcast monitoring, and demanding consumer applications.



The receiver is extremely sensitive, making it possible to comfortably read CW signals well under -130 dBm input levels, yet featuring a respectable 95 dB dynamic range making the receiver resistant to strong signal overload.



The high sensitivity is also matched by that of the S-meter: The calibrated S-meter shows the received signal levels in dBm, μ V or S-units, down to the receiver noise floor. The IF bandwidth of the receiver is continuously adjustable from 1 Hz to 15 kHz, in 1 Hz steps.

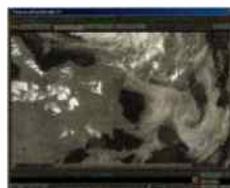
Several WR-G313i receivers can reside in a single PC (as many as there are free PCI slots), which provides an ideal solution for high-performance multi-channel surveillance and monitoring systems.

As the last IF and demodulation processing are entirely software-defined, this means that additional demodulation or decoding modes can be easily added by a mere software change.

In addition to audio recording, the receiver can also record a 20 kHz wide spectrum at the IF level, making it possible to thoroughly analyse a signal, and experiment with extracting a weak signal with different filter settings for the best reception.

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Attn' 123

● **Enigma** 17-21 Chapel Street, Bradford, West Yorkshire BD1 5DF. Fax: (01274) 77004
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We have been asked several times about Second World War spy stations operating in Britain. Numbers stations were certainly operating before 1939 - probably all using Morse. The earliest one that we know of operated from **Vienna** in 1918. The **Vatican** intelligence service may have used a short wave transmitter well before 1939. In 1938, **Dr Karl Spiecker's** conspiratorial German Freedom Party sent clandestine broadcasts, including coded messages, from a fishing boat anchored in the English Channel. From October 1939 to June 1940, this organisation ran a transmitter (backed by the French Ministry of Information) from the Paris suburbs sending s.w. messages to Germany. It claimed to be operating mobile from Germany itself. However, the earliest **known** British stations appear to date from the Second World War period.

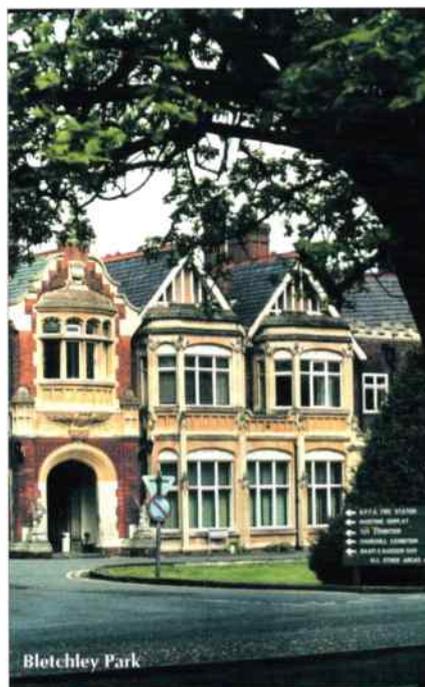
The war saw a sudden transmitter-building programme, not only for military communications, but also for the Diplomatic Service, Secret Intelligence Service, SOE and broadcasting. By broadcasting, we don't only mean the BBC, for other complex parallel broadcasting operations were established, quite unconnected with the BBC. These were the top secret Black Propaganda stations which eventually were to number 50, broadcasting in 14 languages as follows: Bulgarian (2), Czech (2), Danish (4), Dutch (2), Flemish (2), French (5 + 1 for Belgium), German (11 + 1 for Austria), Hungarian (1), Italian (8), Norwegian (1), Polish (2), Romanian (3), Serbo-Croat (4), Slovak (1). Schedules varied considerably between different stations. Some stations were short lived, others lasted for years. All operated on h.f. apart from one ('**Soldatensender Calais/West**', known as G9) which used the very high powered 'Aspidistra' transmitter at **Crowborough**. Each station had its own particular character, and these ranged from Communist to Catholic to German patriotic, etc.

Where did all the short wave transmissions come from? A certain **Harold Robin**, a technician working for Philco was responsible for all these secret transmitters and his manager **Col. Richard Gambier-Parry** became SIS's Contoller of Wireless Communications and in 1938 he introduced Robin to this friend **Peter Hope**, who had been given permission to set up a small commercial radio

station in **Liechtenstein**. A home-made 10kW transmitter was built. Hope, in London, kept in contact with Robin, using their own unlicensed and illegal 250W transmitter, avoiding cost of 'phone calls. Radio amateurs complained of pirates invading the 48m band! Just before the outbreak of war at a time when 'phone lines were unusable, this link was used to call Robin back to London, where Gambier-Parry asked him to build a second s.w. transmitter for an MI6 site at **Woldingham** which was already being used by Poles and Czechs to send coded Morse messages to their own countries.

Gambier-Parry then found a site at **Rendcomb**, a disused airfield near his home in Cirencester. Several 100 foot masts were erected and three transmitters installed. He set up HQ at **Whaddon Hall**, later one of SOE's receiving stations, and not far from **GCCS Bletchley Park**. (SOE's main transmitter site was at Signal Hill, **Poundon**). In early 1940, he built another transmitting station at **Gawcott**, near Buckingham and installed two 7.5kW transmitters. A similar station was built at **Potsgrove**, near Woburn Abbey.

Studios for all these sites were established at **Milton Bryant** and the recording centre at **Wavendon Tower** nearby. For security reasons, the recorded programmes were sent by road (on discs) to the transmitter sites, rather than over land-lines. Apart from



Rendcomb, all these sites were in the Buckinghamshire area.

A well known German language Black station was **Gustav Siegrfid Eins** (Golf Sierra 1). The words "Hier ist Gustav Siegrfid Eins" were read out several times at seven minutes to each hour. These were followed by coded groups sent to various 'agents', such as GS7, GS22, etc. At first, these codes were made deliberately easy to break, so that the Germans would come up with messages like "Meet me under the lime tree in the village at eight pm". (As these *Lindenbäume* exist in so many villages, the Gestapo would be sent on a wild goose chase!). Messages later became simply random meaningless groups of numbers, implying to the Germans that the network had increased their security! After the messages came news from *der Chef*, introduced by his adjutant - news which always carried a disturbing, subversive slant.

Although the BBC was famously known for sending coded messages to agents in Europe, it was the Black stations which sent the bulk of this material. In fact, **all** the orders sent to the French Resistance were broadcast twice daily from Gawcott or Potsgrove by the Black station, Honneur et Patrie (F5). Similarly, resistance movements in other countries received their coded messages from their appropriate Black stations.

After the war, these Buckinghamshire sites continued to be used by MI6, under cover of the Diplomatic Wireless Service (whose HQ and main receiving site was based at **Hanslope**). Gawcott and **Creslow** (eventually the largest site with nearly 200 masts!) were in use as h.f. transmitting sites until the 1990s. Poundon and Hanslope were used for h.f. receiving and, in collaboration with GCHQ, for direction-finding. All these sites were linked by multiplex v.h.f. - later replaced by u.h.f. and microwave. In the 1980s the DWS was renamed HM Government Communication Service and HMGCC Poundon became the nerve centre of this vast network - carrying diplomatic point to point communications with embassies abroad - both routine diplomatic traffic **and** messages to (collocated) MI6 stations. Agent running transmissions (i.e. in the form of Lincolnshire Poacher (E3)) eventually moved to Cyprus and 'Cherry Ripe' (E3a) was set up in the Far East and these are now probably the only remaining h.f. elements of FCO communications. The old war time wooden masts remained until the 1980s and some were still in use at Poundon in 1995. After an extensive and expensive rebuilding programme, Gawcott, Poundon and Creslow all closed down a few years later, leaving Hanslope as the FCO's technical research and communications HQ.

Lastly, an error appeared in our last column, the special M3 identification referred to was not 287, but **121**, which ENIGMA identified as 'special' as long ago as 1995. Unlike others, which use schedule numbers, 121 has no fixed schedules, can appear at least four times daily and has very variable group counts. However, SN 287 holds the record as the longest running schedule.

Amateur

Bands

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Green Radio

At last the mains p.s.u. for my 19-Set is sorted, although it only supplies the volts to use the set on receive. It uses a 240V transformer from Maplin for the h.t. supply, plus a separate transformer and a modified voltage regulator board from a 13.8V p.s.u. to supply the 12V required for the valve heaters. The audio from the set goes to an external box containing a i.c. audio amp and loudspeaker powered by 12V from the p.s.u., an arrangement, which allows me to comfortably listen to my piece of history. Purists who wish to weep about the fact that I fitted the mains p.s.u. into the original 12/24V converter can take comfort from me not having modified the radio!

JLB Would Have Loved It!

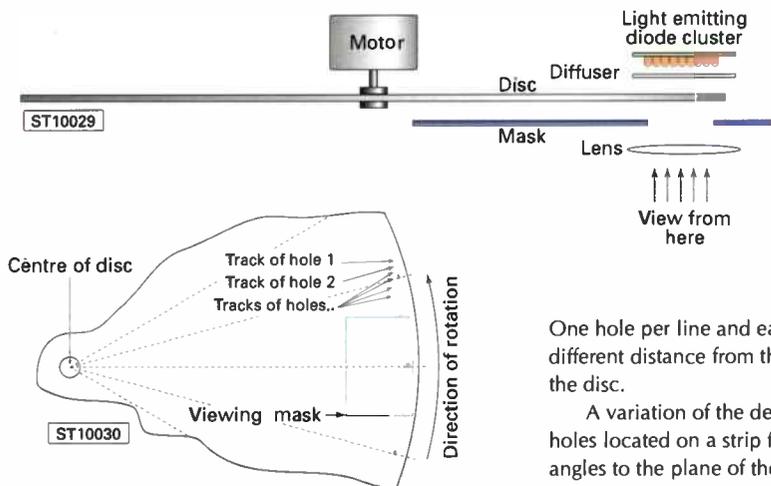
As a regular reader of *Sprat*, the quarterly journal of the G-QRP club, I always note an advert for the Narrow Bandwidth TV Association. At long last I've discovered exactly what they get up to. This group is



Way across South America in Chile, close to its border with Peru, a team will be using the call 3G1E as it operates from the fibreglass lighthouse on the Alacran Peninsula.

The pictures move, but they're very low on detail. With NBTV the usual way to generate the dot is to pass light through a hole. Each line has its own dot, so there's 32 holes to pass in front of the light for each frame. In the early days a neon bulb was used as the light source.

Today ultra bright I.e.d.s do the job. The holes are passed in front of the light one at a time. Moving the holes is achieved by putting them around the edge of a circulating disc.



One hole per line and each hole a different distance from the centre of the disc.

A variation of the design has the holes located on a strip fixed at right angles to the plane of the disc. Whichever is used, a mask is placed in front of the disc so that only one dot is visible at any one time. The viewing

aperture in the mask equates to the screen of an ordinary television and usually has a magnifying lens placed in front of it.

If the disc is rotated slowly it appears to the viewer that a single dot moves up and across the screen from right to left in a series of lines, each line directly to the left of the next. Rotating the disc at 750r.p.m. to produce 12.5 frames a second passes 400 dots across the screen every second. That characteristic of human sight, persistence of vision, which means we still see things some

time after they've gone from our view, causes the 400 moving dots displayed each second to merge into, if the source light is constant, a more or less rectangular screen of light.

To generate an image the brightness of the light is varied according to the position of the dot on the screen, so it's obviously important to make sure that the light is falling on the right part of the screen. Synchronisation of the disc's rotational position with the brightness of the light is critical.

Still Going Strong

It's easy to see why mechanical television isn't in general use today, yet despite this, it isn't difficult to see why it still has an enthusiastic following. To anyone with an affection for engineering the sheer 'mechanicalness' of the system has a certain charm, and for radio amateurs it has at least one advantage over other moving image alternatives.

As the name NBTV indicates, narrow bandwidth. Small amount of information being passed, small amount of bandwidth required. An NBTV's moving image information can be contained in an a.m. signal receivable on an ordinary receiver.

Listen out on 3.7MHz a.m. between 0800 and 0830 clock time on Saturdays for the distinctive sound of NBTV signals. At the moment listening is all that can be done unless you've got a Mac computer. Despite claims for its existence on several websites, at the moment I haven't been able to locate any software to decode NBTV signals on a PC. I'm sure something will be produced sooner or later. For Mac users, try <http://homepage.mac.com/kd6cji/>

If you're tempted to build a 'steam television', the NBTVA can supply members with all the necessary electronics. To learn more, take a look at their website www.nbtv.org where there's a wealth of information, or contact the NBTVA's Chairman & Secretary **Dave Gentle, 1 Sunny Hill, Milford, Derbyshire DE56 0QR.**

Something For The Weekend?

A couple of weekends are well worth a mention for the radio activity that should occur. The first is the 5 and 6th June when the 60th anniversary of D-Day will be remembered. Dover ARC will be operating a special event amateur station, but it's likely that there will be quite a few similar stations on the air that weekend. Way across South America in Chile, close to its border with Peru, a team will be using the call 3G1E as it operates from the fibreglass lighthouse on the Alacran Peninsula. They won't be on the air all 48 hours of the weekend as they're shutting up shop at 1600.

A couple of weeks later will be the third Museums on the Air weekend. Stations will be set up at all sorts of museums in the UK and elsewhere. Another lighthouse activation that weekend as well. This time at Portofino near Genoa on northern Italy's Mediterranean coast. Times are unknown, but the callsign will be IR1PL. Collectors of QSL cards should be able to obtain some interesting examples from both weekends' special event stations.

dedicated to low definition and mechanical forms of Amateur TV and as such uses equipment that the inventor of television would recognise.

Narrow Band TV (NBTV) operates very much as John Logie Baird's televisions did, using mechanical rather than electronic means to move the image-generating dot across the screen. Instead of having the 625 horizontal lines of today's domestic television with 25 frames per second, it has 32 vertical lines updated at 12.5 frames per second.

Propagation

forecasts

- Jacques D'Avignon VE3V9A
- E-mail: Jacques@pwpublishing.ltd.uk

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.

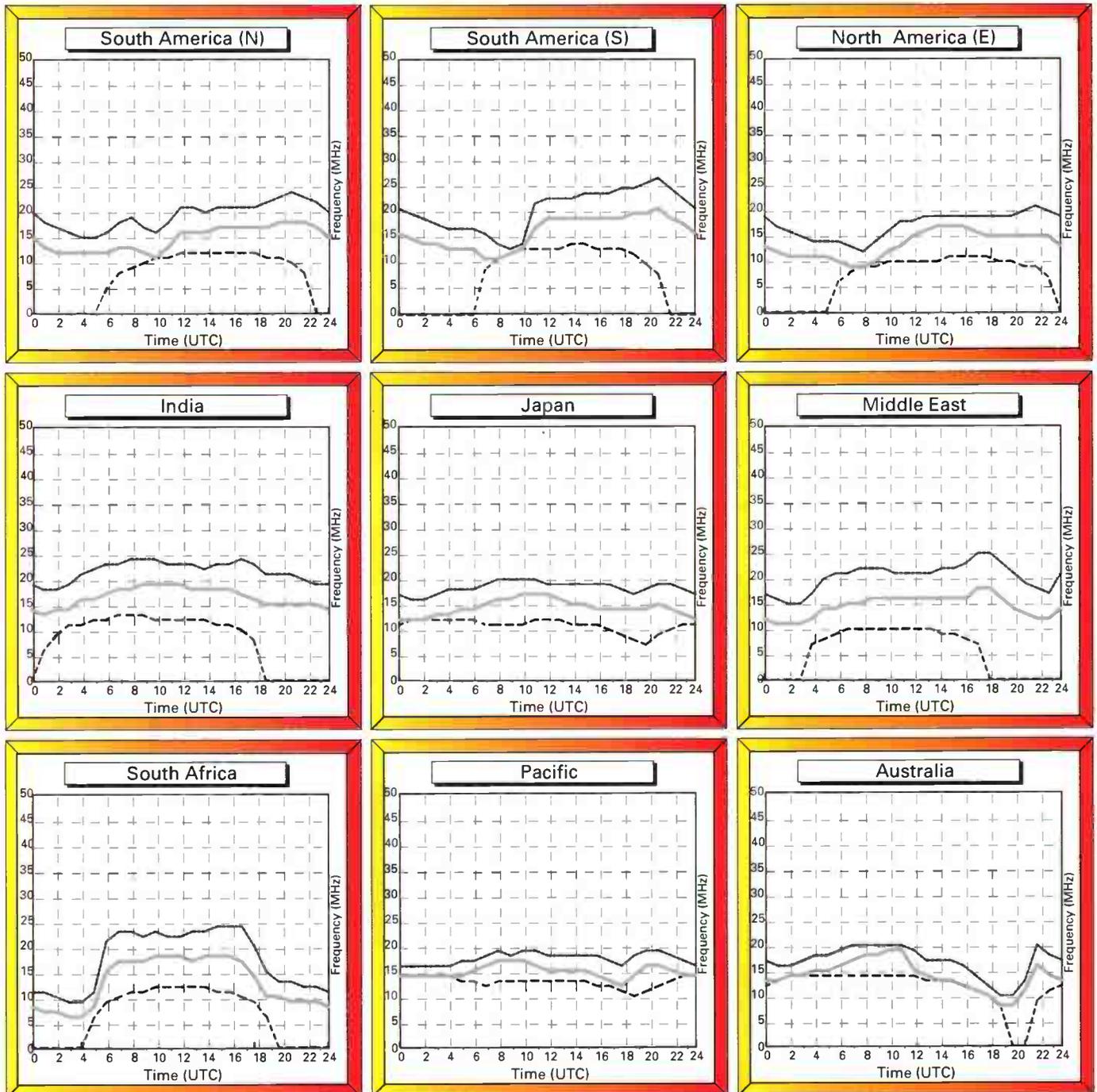
The middle line indicates the optimum working frequency (OWF) with a 90% probability of success for the particular path and time.

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.

June 2004
Circuits to London



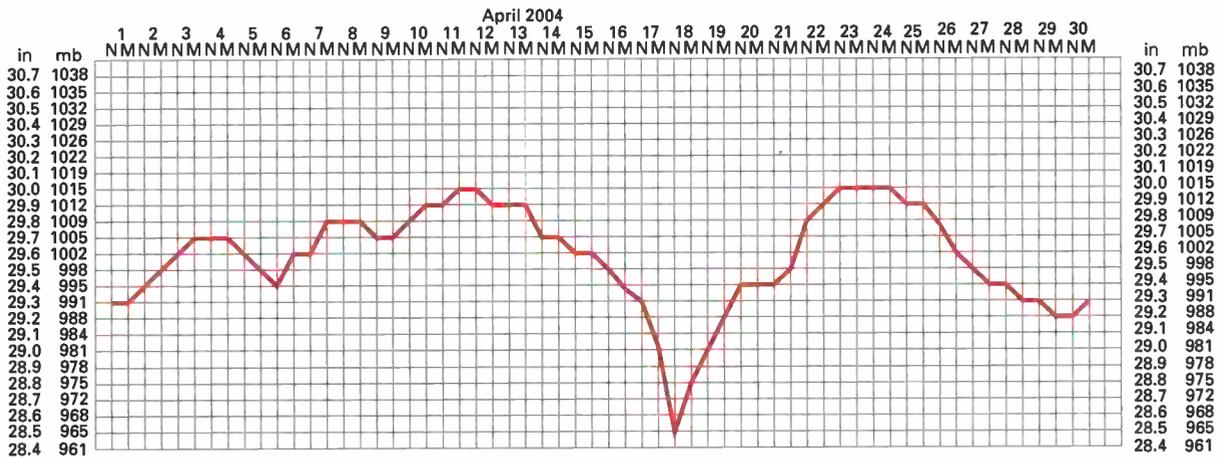
SK10031

Propagation

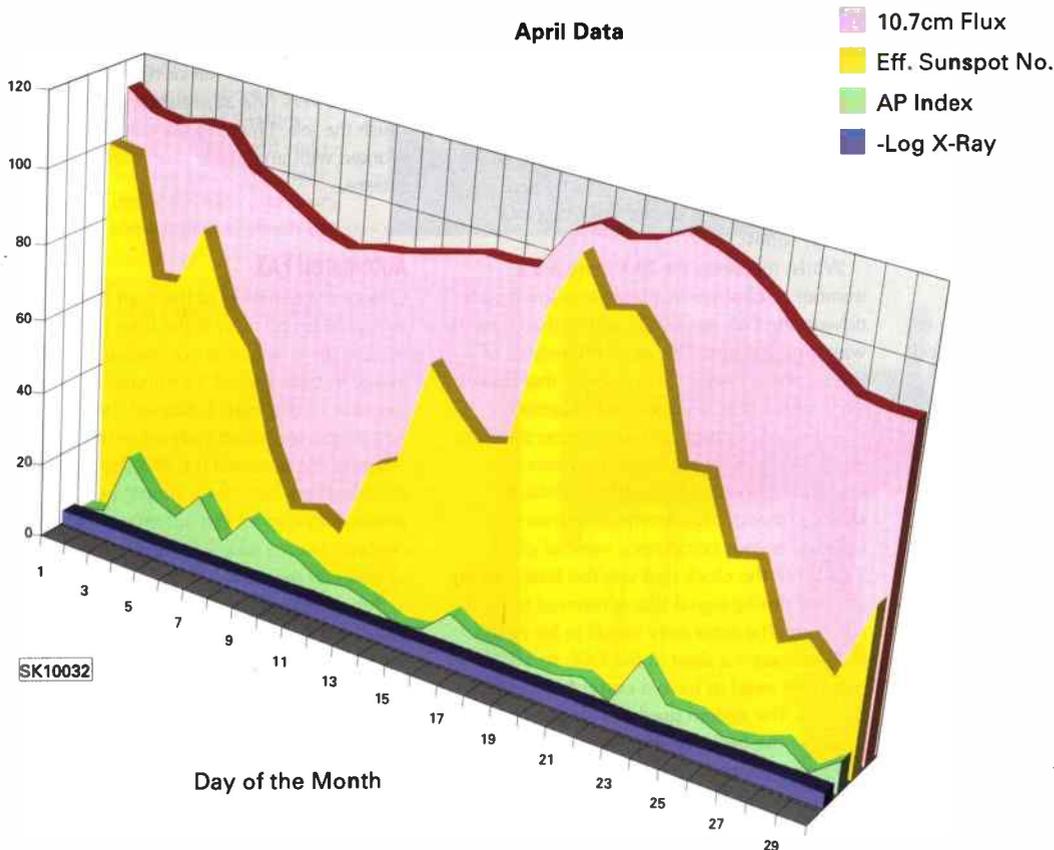
Extra

- **Kevin Nice** G7TC, M3SWM,
SWM Editorial Offices, Broadstone
- **E-mail:** kevin.nice@pwpublishing.ltd.uk

Ron Ham's barometric pressure chart, taken at Storrington, W. Sussex, April 2004



April Data



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.

Decode

● **Mike Richards G4WNC**, 49 Cloughs Road, Ringwood, Hants BH24 1UA

● **E-mail** decode@pwpublishing.ltd.uk **Web site** www.mikespage.btinternet.co.uk

This month I'm going to take a look at one of the less well known FAX packages, *Weatherfax2000*, produced and distributed by New Zealand based company Xaxero.

This is a program that's clearly intended for the mariner. As well as featuring conventional h.f. FAX reception, *Weatherfax2000* features NAVTEX and RTTY modes so it can handle a good range of active h.f. utility signals. To make life easy for the listener a demo version is freely available via the Internet so, it allows you to try-out all the features for 30 days before deciding whether or not to purchase it.

Visit the Xaxero website at www.xaxero.com where you will see there are three versions of the software available. Two versions require an external interface - either USB or serial port based, whilst the third needs only a standard PC soundcard. If you just want to try the software the soundcard version is the obvious choice, as the others require you to purchase a specialised interface. The system requirements for *Weatherfax2000* are pretty reasonable, with just a 200MHz Pentium or faster computer running *Windows 95* or later. As with all system recommendations, the minimum specification is just that the program will work, but it will feel very sluggish.

Installation of the soundcard version is a two-stage affair but the instructions are very clear. First of all you need to visit the download website at:

www.xaxero.com/sound.htm The next step is to download *Weatherfax2000* (*nf602.exe*) and then the soundcard enhancement program (*faxsound.exe*). Make a note of where on your PC's hard disk the programs are downloaded to. Then double-click the *nf602* file to start the *Weatherfax2000* installation. When this task has been completed successfully, you can double click the *faxsound* file to add the soundcard interface. These two steps complete the installation so, you can now run the program for the first time.

To help get you started successfully *Weatherfax2000* has an automated hardware set-up routine that checks your soundcard and audio levels. When you get to the appropriate prompt you need to make sure your receiver is switched-on and connected to the PC ready to receive a FAX signal. The set-up routine will then check and adjust the audio levels for you. This is a real boon for

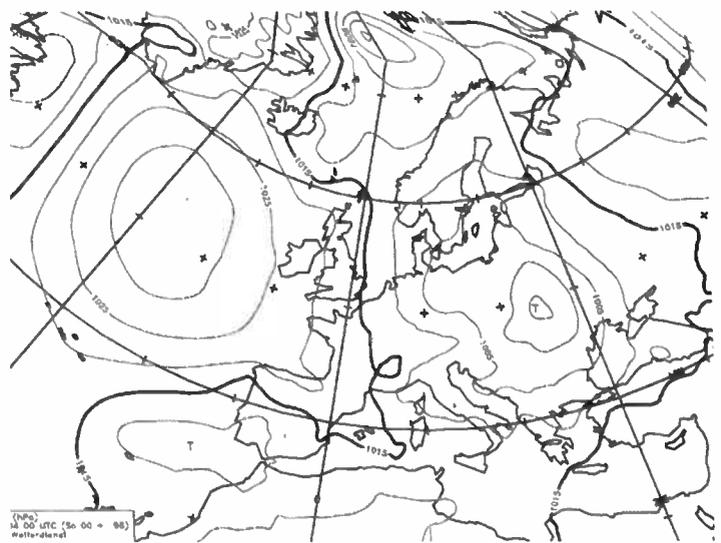
the novice, as inappropriate computer level setting is one of the most common causes of reception problems! But more on this later.

With the installation and set-up complete, you're now ready to start receiving. Being a *Windows* based program the interface is pretty intuitive so you can probably find your way around. In its start-up state

Weatherfax2000 is set for manual FAX reception so you have to press the green FAX start button and select a new file to begin reception. With this, the program starts its initialisation routine and then displays the main FAX window plus a useful tuning indicator. This indicator comprises a narrow window where the top represents white and the bottom for black. You just need to tune your receiver so that the signal evenly spans the full range and you will ensure the received pictures span the full range of display tones.

Whilst receiving the FAX there are a number of controls available to allow you to tidy-up the FAX as you go, rather than have to wait until the end. The most impressive of these controls is the 'Skew' slider that makes slant adjustment a simple task. Slanted or skewed FAX pictures are a common problem and arise from timing errors between the transmitting FAX station and the default settings of your programme. The main variable is your computer's internal clock. This is not the clock that sets the time, but an internal timing signal that is referred to by the software. The error only needs to be very small to cause a slant in the FAX, so all FAX programs need to have a correction system built-in. The system used in *Weatherfax2000* is one of the best I've seen so far and is certainly very easy to use.

To carry out slant correction, you can either click the slant button on the toolbar or use the 'Picture' menu, where you will find the slant correction panel which comprises a simple



● A received FAX weather map.

slider that you can drag with your mouse. This is a very quick way to correct most of the skew but is too crude to complete the job. To finalise skew correction, *Weatherfax2000* has a very simple solution - instead of dragging the slider, you just click to the left or right of the slider this gives the very fine adjustment that's required to finish the job. I have to say this system really worked well and made slant correction a breeze.

Automated FAX

One of the penalties of the high quality charts available on h.f. FAX is the time it takes to receive an image. It is not unusual for a typical image to take around 15 minutes to complete. Because of this most seasoned listeners rely on automated reception systems to bring in the images. The standard h.f. FAX format used by most stations includes a simple but effective protocol to control the automated reception process. Let me take you through the sequence so you can see how it works.

Between images it's common practice for the FAX station to send a continuous tone. However, some stations drop carrier altogether, so don't be surprised if you find a blank where the station ought to be! The automated reception cycle starts with a 300 or 675Hz tone that's used to indicate the IOC setting for the FAX signal. The tone is sent by switching between full black and white at the tone frequency. On completion of the tone the synchronisation cycle start. This cycle comprises a series of pulses made up of

Weather Fax - Satellite Weather

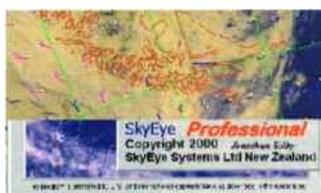
Quick downloads

- [WeatherFax USB \(10 Meg\)](#)
- [WeatherFax Sound Card \(10Meg\)](#)
- [WeatherFax FTCH \(10 Meg\)](#)
- [WeatherFax ES233 Demodulator \(10 Meg\)](#)
- [SkyEye USB \(05 Meg\)](#)
- [SkyEye PRO \(05 Meg\)](#)

Website contents



[WeatherFax by HF Radio](#)
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Software for Windows and Linux



Order a CD Today



- The colourful Xaxero website offers trial **Weatherfax2000** software.

thought for the soundcard settings at this point. The main role of the soundcard is to take an analogue signal from your receiver and turn it into a digital representation. This conversion is done using a process that is, logically, called Analogue to Digital or A/D conversion. The method for achieving this conversion is fairly straightforward and conforms to industry standards. The first step in the process is to examine and measure the voltage of the incoming audio signal.

Rather than take a steady measurement as you might with a multi-meter we need to take regular instantaneous measurements. To get a realistic representation of the analogue signal we need to take lots of measurements. Much research has gone into this aspect of A/D conversion and *Nyquist's Law* states that you have to take measurements at least twice as often as the highest frequency that you want to capture. For our FAX signals 4kHz is probably the highest frequency we will need so we would need to measure that signal at a rate of at least 8000 measurements every second. The frequency of measurement is known as the sample rate and it's the rate of sampling and recording the signal's instantaneous values. Although 8000 is the minimum rate, you'll often find that the soundcards are run at a higher rate, such as 11kHz. High sampling rates help retain the quality of the converted signal and are well within the capabilities of today's fast soundcards.

Another factor that needs to be considered is the accuracy of the instantaneous signal measurement. Accuracy is determined primarily by the maximum number of data bits available for each measurement. The most common measurements use eight-bit sampling that allows 256 possible values for the sampled signal. For more sophisticated measurements, 16-bit sampling is also available, which provides over 65000 possible values, allowing much more detail. As an example, audio of CD quality, uses 16-bit measurement with a sample rate of 44kHz.

One really crucial point to note about the A/D conversion is that the input signal's level needs to be kept within the acceptable range of the A/D converter itself. If the input level is too high, then output clipping will occur. This means that some of the (varying) higher levels of the input signal will all be recorded as having the same (maximum) value. As a result, you will lose any data or picture information in this part of the signal. It's therefore vitally important that you keep the maximum input level below the clipping level of the A/D converter.

Next month I'll provide a few tips on how to do this along with a few tools you can use to keep your audio under control.

95% white and 5% black-the speed of the synchronisation pulse is used to indicate the drum speed of the FAX signal.

The majority of weather FAX signals use an equivalent drum speed of 120r.p.m. but there are some variations so checking this setting is important. This synchronisation period often lasts for 30 seconds, so makes a very useful tuning reference for getting your receiver spot-on. All you have to do is adjust the tuning so that the whites are just clean and you will get good well balanced reception. In addition to communicating the drum speed, the synchronisation sequence also shows you where the edge of the image will rest so you can use this to align manually received images before you get to the FAX chart itself.

With the automated set-up complete the full FAX image follows as normal. At the end of the picture another 450Hz tone is used to indicate the end of the transmission. Most FAX software use this signal to trigger automated storage of the received image and to return the software to standby ready for the next image.

Getting back to *Weatherfax2000*, this program includes fully automated FAX reception, along with a few additional features that look interesting. The most obvious is 'Auto-Continuous' which sets the software to monitor a frequency and use a.p.t. to recognise and receive all valid FAX images. This is great for unattended operation but can leave you with a hard drive full of images you may or may not want. When using this mode

there are two main adjustments available to cater for differing signal quality. If you set Auto-Continuous to strict the program will only receive and store an image if it receives the full start tone and synchronisation pulses. This is a useful filter that should help stop weak or noisy pictures being captured. If you want to receive everything you just set to normal and *Weatherfax2000* will start just using the 30 second synchronisation pulses.

If you really want to get sophisticated you can make use of *Weatherfax2000's* scheduler to choose the charts you want to receive. This is a really powerful tool that makes *Weatherfax2000* ideal for the serious weather enthusiast. As well as being able to use this to select the time you want to receive, you can also use *Weatherfax2000* to tune your receiver if it's supported. At the time of writing the only receivers supported were the Icom maritime range, but you may well find that the command set is the same for Icom's short wave receivers. Overall the *Weatherfax2000* is an interesting decoder that's certainly worth a try.

Levels

I'll take this opportunity to run through one of the common problems that blight new data mode listeners. And that is setting audio levels. Much receiving software that's PC based, has the software processing of the audio input carried out by the computer's soundcard. So, it's important to bear a

Sky High

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There's quite a bit of military u.h.f. information this month so apologies to all those v.h.f. listeners. Just a quick reminder, please don't ask for an E-mail reply or send in a stamped envelope, all replies will be done through the 'Sky High' column.

March Changes - OTA's

Following on from the previous 'Sky High' columns here's some more news of the March Airspace changes that reached me too late for inclusion last month. The UK military Operational Training Areas, (OTA's) have been fairly radically re-designed. The number of areas has been increased from seven to eight and only two of them, (BRAVO and ECHO), now have enclosed boundaries.

The others all have an open boundary which follows the UK coastline in a theoretical line that is the equivalent to a position 19.2km offshore. It now appears that some of the new OTA frequencies became operational as early as mid February, but the introduction of the new re-designed OTA areas were implemented with all the other airspace changes on March 18th.

As I have previously stated this was possibly the biggest overall change to UK airspace in history, or certainly in the 35 years I have been monitoring the airbands. Before moving onto the new frequencies, I thought we would have a look at what has happened to the old frequencies.

(OTA A) I had not seen the old OTA A frequency 337.85 reported for well over a year, but it was recently reported unexpectedly by one correspondent in early March 2004. Further information indicates that it is still allocated to TAD 056 and as it is rarely reported may be an ADR standby?

(OTA B) The OTA B frequency 306.75 had not been reported for a couple of years and is thought to have been withdrawn some time ago.

(OTA C) The frequency 300.55, (TAD 068) had been noted in use regularly in OTA C during 2003, (it is also a Culdrose operations frequency which has been noted as recently as March 2004). Since about October 2003 I have had several reports that it is now in use as an Air/Air frequency by Leeming Tornados but a further report suggests that Leuchars' Tornados were using this frequency, so is it now an ADR/ASACS frequency used for fighter co-ordination or

Safety of Flight? Any comments anyone?

(OTA D) OTA D frequency 277.2 was noted in use several times during the first eight months of 2003. Since August, I have only seen one report which was in November 2003. From information received it appears to still be allocated to TAD 061, so once again I would suggest that it is still in use but perhaps with a different ASACS task?

(OTA E) The OTA E frequency 364.975 which was not allocated to a TAD is presumed to have been withdrawn some time ago.

(OTA F) The OTA F frequency 279.25 was noted in use as recently as mid February 2004, but not since and I suspect that it has been withdrawn to tie in with the introduction of the new frequencies. Further information compounds this theory as it was previously TAD 069 but this TAD now appears to have no frequency allocated to it.

The new OTA frequencies are as follows, they are all allocated brand new UK TAD numbers from 151 to 158. I have already had reports of C, E, F and G in use in the past few weeks.

OTA A	262.625
OTA B	356.425
OTA C	362.375
OTA D	362.55
OTA E	255.775
OTA F	276.225
OTA G	396.475
OTA H	312.125

UK TADS

Times have rather changed since the 1960s and 1970s when TAD lists were Top Secret documents and were kept in locked safes and had to be signed out to pilots before and after every mission. As u.h.f. capable airband radios did not become available to UK enthusiasts until 1984, in theory they would have been of little use before this date.

Even by the late 1980s and early 1990s with the former Iron Curtain countries turning to democracy, TAD lists were still hard to come by. It was therefore interesting to have recently been told a story of an enthusiast who asked a pilot at an air show last year if he has a TAD list to spare - only to be given one!

I am not too sure whether that incident actually happened as in my experience even in the modern era, genuine TAD lists are still

not that common. I say genuine as there is sometimes a lot of out-of-date and sometimes inaccurate information passed around varying groups and other sites on the Internet.

It was therefore a surprise when, like Double Decker buses, two pieces of information arrived

almost at the same time at the end of March. It was only when I studied them carefully that I realised it must have been well over two years since I last had sight of a reasonably up-to-date list.

Anyone who monitors these frequencies regularly will be aware that some are heard almost on a daily basis, whilst others are reported very rarely if at all, so keeping track of them is not easy. As many 'Sky High' readers will be aware, information on TAD changes does not always come to light immediately.

I had originally wondered if there may be some TAD changes connected with March airspace changes, but reports of new frequencies started to appear earlier than the March date. As far as I can ascertain some of the TAD changes appear to have taken place around mid February 2004. The first obvious change as can be seen from the information above was that the UK TAD listing has been extended from 148 to 158.

Thanks to a number of sources, the following list of frequencies are believed to be possible new UK ASACS/TAD allocations. 251.375, 255.825, 275.95, 282.075, 361.825, 362.1, 367.35, 368.0, 368.425, 369.0, 372.25, 374.4, 375.275, 379.9 and 388.725. I have been slowly collating the information together over the past couple of weeks, but this is where readers of this column can help.

Unfortunately, some of the information I have does not identify the operator of each frequency, (i.e) Buchan, Neatishead, etc. So if any of you can tie up the connection please get in touch and I'll include the information in a future 'Sky High'.

One bit of information I don't think I have included in the column is that 371.6 is a newish ASACS frequency first noted last year and has been heard calling both Neatishead and Buchan frequency, it in use as TAD 115. With thanks to **Ron, John, Kevin, Jim and Photavia Press.**





Mildenhall

A small piece of history took place at 1222 on the 20th April when WIZZY 52, an MH-53 became the last aircraft ever to be worked by the original Mildenhall Tower. The old Tower then closed after 65 years of Air Traffic operations and the new Control Tower became operational immediately. (The callsign WIZZY was I believe used for the helicopters deployment to Scotland).

Also, work on the runway is apparently progressing well and is at present slightly ahead of schedule with a current proposed runway opening date being in early August - just time to organise an Air Fete for the August Bank Holiday - I wish!

Starlifter

I have had an E-mail from **Brian and John** who have just returned from a March trip to the USA. During their trip they went to Nellis to watch the Green Flag and Air Warrior exercises, (lucky so and so's). Whilst they were at Nellis, Brian reports that he found out what he thought was a surprising fact. They spoke to a C-17 pilot and he told them that as of the end of April there would only be 41 or 42 C-141s left flying with all of the 'B' models due to be retired by the end of 2004.

Well, I knew they had been regularly retiring the airframes with very high hours to the AMARC but I didn't realise that the overall retirement of the type was so well advanced! Just 42 aircraft left out of the original 284 built is quite a high retirement percentage.

A quick bit of research told me that the entire fleet is expected to be retired by the end of 2006, so it will only be a couple of years before another bastion of our skies disappears completely. Just to show my age, it is quite humbling to think that I photographed my first Starlifter at

Mildenhall Show, 35 years ago in May 1969.

Bits & Pieces

Lastly, whilst I was searching the u.h.f. band for new TAD frequencies in early April, I came across two transmissions of what appeared to be some faint Air/Air chatter on the frequency 291.85. Can anyone identify the operator of this frequency as it is new to me?

Also whilst searching the u.h.f. band I came across 365.1 which was soon identified as a new Plymouth Military Radar frequency. A couple of BROADWAY flights were heard with two-way communications with Plymouth. (This is also the Mildenhall Operations Dispatch frequency).

Donna Nook

An E-mail from **Sid T** asks the following, "Has there been a frequency change at the Donna Nook bombing range, I only live 32km away and one year ago I could hear them with no problem. I have not listened in for a while having been out of the scanning scene for some months, I have got back into it and can't hear the range. I have tried when it has been 'active' which is obvious as the aircraft come in low down the coast where I live - please can you help?".

Well Sid, you did not mention which frequencies you were monitoring but the frequencies I have listed are as follows: 340.15 and 342.175. 340.15 replaced 387.675 in July 2003 so that may be why you have not heard anything - I hope that helps.

Having mentioned the Starlifter, our picture this month is a rare photograph of NASA's Airborne Observatory, Lockheed L-300-50A (C-141A), N714NA, seen on the ramp at Travis AFB in 1979.

Abbreviations

ACC	Air Combat Command
ACMI	Air Combat Manoeuvring Instrumentation
ADR	Air Defence Region/Radar
AEW	Airborne Early Warning
AIRCENT	Airforces Central Europe
AIRSOUTH	Airforces Southern Europe
AUX	Auxiliary Radio
AFIS	Aerodrome Flight Information Service
AFRC	Air Force Reserve Command
AMC	Air Mobility Command
ANG	Air National Guard
APCH	Approach
ASACS	Air Surveillance And Control System
ATC	Air Traffic Control
ATIS	Automatic Terminal Information Service
AWACS	Airborne Warning And Control System
C/POST	Command Post
C/S	Callsign
CAC	Centralised Approach Control
CFS	Central Flying School
CH	Channel
CRC	Control And Reporting Centre
CRP	Control And Reporting Post
DATIS	Digital ATIS
ETPS	Empire Test Pilots School
FAC	Forward Air Control
FIR	Flight Information Region
FIS	Flight Information Service
FOST	Fleet Officer Sea Training
FRADU	Fleet Requirements & Distribution Unit
FS	Flight Squadron
FSATO	Fleet Support Air Tasking Organisation
FTS	Fighter Training Squadron
FW	Fighter Wing
GCI	Ground Controlled Interception
H24	Operational 24 Hours A Day
ICAO	International Civil Aviation Organisation
ICF	Initial Contact Frequency
JAAWSC	Joint Anti War Warfare Shore Co-Ord
LACC	London Area Control Centre
LDOC	Long Distance Operational Control (HF)
LJAO	Local Joint Area Organisation
LMS	London Middle Sector
OTA	Operational Training Area
LUS	London Upper Sector
MAS	Middle Airspace Service
MATZ	Military Air Traffic Zone
NATO	North Atlantic Treaty Organisation
NDB	Non Directional Beacon
OPS	Operations
PETF	Practice Emergency Test Frequency
PRI	Primary (Frequency)
RAF	Royal Air Force
RAPCON	Radar Approach Control
RTTY	Radio Teletype (also noted as RATT)
RWY	Runway
S/B	Standby (Frequency)
SAR / S&R	Search And Rescue
SEC	Secondary (Frequency)
SHF	Support Helicopter Force
SOF	Safety Officer Flying (Squadron)
SOG	Special Operational Group
SSR	Secondary Surveillance Radar
ST	Stud
STC	Special Tasks Cell
SVFR	Special Visual Flight Rules
TAD	Tactical Air Designator
TC	Terminal Control
TCA	Terminal Control Area
UAS	Upper Airspace
UAS	University Air Squadron
UK ASACS	United Kingdom Air Surveillance And Control System
USAF	United States Air Force
USCG	United States Coast Guard
USN	United States Navy
WFU	Withdrawn From Use
VOR	VHF Omni-Directional Range Beacon

Maritime

Beacons

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In January I received the sad news that **Brian Oddy** had suddenly passed away. When I first began to DX maritime non-directional beacons (NDBs) many years ago Brian was both very helpful and supportive in my efforts and especially when I began to produce my beacon booklet. We exchanged regular correspondence, not only concerning aspects of radio but also other personal news. I am sure that all readers of this column join with me in expressing our most sincere condolences to Brian's family circle.

Over the years as beacon DXers we have experienced many changes regarding the maritime beacons. The beacon chains are closing down and their transmission format changing, the wholesale closure of beacons across Europe and indeed beyond, means having to dig some beacons out from under the strong Differential Global Positioning System (DGPS) signals that emit from a number of former NDB locations. And now you have a new column compiler! I do not plan to radically change the format of the column and, like my predecessor, do welcome your logs, comments and questions. I would ask however that if you write to me with questions or information requests that you please include an s.a.e. or international reply coupon if you live outside the UK.

Propagation conditions during the period January to March were generally not great although the regular Spanish beacons were audible in the UK most nights and **MA (284.5)**, **MY (289.5)** and **BA (292.5)** being heard on occasions during daylight. This is confirmed by **Tony Moore** who found that the North/South path was fairly weak from his location in Redcar. **Roelof Bakker** was successful in receiving the **309.5kHz** Ukrainian beacon chain at his QTH in the Netherlands although he points out that he had to use either his active loop or phasing system in order to eliminate the QRM caused by DGPS stations.

In Lancashire **Alan Gale** managed to receive **KA (305)** during daylight, while in Guernsey **Lionel Roithmeir** received **FI (294)** from Majorca. **Giorgio Casu** from Sardinia is fortunate to be able to receive some of the Spanish beacons that are not often received in the UK such as **NO (297)** and **AS (295.5)**.

By the time you read this column it will be summer; we know it's summer as the rain is warmer. This means however that the sea routes in Arctic Russia will have opened for shipping and if propagation conditions are favourable during the limited darkness that prevails in those latitudes at this time of year there is a chance that some of the beacon chains that operate from that region on a seasonal basis may be heard. Frequencies to listen to are **294.5**, **297.5**, **303.5**, **306.5**, **309.5**, **312.5** and **318.5kHz**.

Remember that these are chains of beacons so you should listen on each frequency for at least

six minutes. These beacons are only activated when the shipping routes are open and would not be operational during the winter. The same listening procedure should also be used when listening for beacons from the Ukraine and also when trying to receive **BT** and **BK** on **312.5kHz** from the Baltic. While the long hours of daylight are not conducive to beacon DXing, some surprising catches can still be received.

While on the subject of listening procedures for maritime beacons I will mention, for the benefit of newcomers to this area of the hobby, that you should listen to the each Spanish beacon frequency for at least a minute. It is also important to ensure that you have your beat frequency oscillator (b.f.o.) switched on in order to receive marine beacons. Most Spanish beacons will transmit their identification two or three times during a ten second period every minute, so careful listening is required. If you have yet not tried NDB DXing, then may I suggest that you could spend a little time listening to these frequencies. All the identifications are in slow Morse and you do not even have to know Morse to identify them, as you can easily jot down the dots and dashes for later decoding. Once you sample this part of the listening hobby you'll soon become hooked!

Long wave Maritime Beacon Chart

kHz	C/S	Station name	Location	DXer
283.5	NA	La Entallada	Canaries	A* B*
284.5	MA	Cabo Machicharo	Spain	A B* C* D* E* F*
285.5	AS	Castellon	Spain (Med)	E*
289.5	MY	Cabo Mayor	Spain	A B C* D* E*
292.5	BA	Estaca De Bares	Spain (N/W)	A B D* E* F*
293.5	MH	Mahon	Balearics	A* B* E*
294.0	FI	Cala Figuera	Majorca	A* C* E*
295.5	PS	Cabo Penas	Spain (N.West)	E*
296.5	FI	Cabo Finisterre	Spain (N/West)	A* B* E*
297.0	NO	Cabo De La Nao	Spain (Med)	E*
299.5	KN	Skrova	Norway	A* B
300.0	LT	La Isleta	Canaries	A*
300.0	GA	Malaga	Spain (S/East)	A*
300.5	BS	Belosarayskiy	Ukraine	A*
304.0	D	Rota	Spain (S/West)	A* B*
305.0	KA	Klaipeda Rear	Lithuania	A* B* D* F
305.7	DA	Dalatangi	Iceland	A* B* D*
309.5	EYA	Yevpatoriyskiy Lt.	Ukraine	B*
309.5	OD	Odesskiy	Ukraine	B*
309.5	SW	M. Khersonesskiy	Ukraine	B*
309.5	TR	M. Tarkhankutskiy	Ukraine	B*
312.5	BK	Balitsk	Baltic Russia	A*
312.5	BT	Mys Taran	Baltic Russia	A*
314.0	SN	San Sebastian	Spain (North)	A* C* E*
337.0	MY	Myggenaes	Faroes	A B C* D* F*
372.0	OZN	Prins Christian Sund	Greenland	A* B* D* F*
381.0	AB	Akraberg	Faroes	A* B* C* D* F*
404.0	NL	Noslo	Faroes	A* B* C* D* F*

Note:

All Frequencies are in kHz. All entries marked * were logged during darkness, all other entries were logged during daylight or at dawn/dusk.

Copies of your logs may be sent to me by post or E-mail to beacons@kilkeel17.freemove.co.uk Logs for the period April to June should be with me by 30 June. Details of my beacon booklet, covering both aero and marine beacons, may be had by sending an s.a.e. to me. A factsheet for newcomers to this area of our hobby is also available by the same means.

Equipment Used

A = **Robert Connolly**, Kilkeel, N. Ireland Equipment: Receiver: JRC NRD525 Antenna: Datong AD370 antenna & Timewave DSP-9+ filter.

B = **Roelof Bakker**, Middelburg, Netherlands Equipment: Active whip and active loop + two tuneable pre-amplifiers The output from the pre-amps is routed to a phasing unit and then into the main receiver, a Wandell & Goltermann SPM-3 selective level meter. The output from the SPM-3 at 1500Hz, is down converted to 500Hz. Here follows a Datong FL-3 filter and/or a LC-filter with a bandwidth of 25Hz. With exception of the SPM-3 and the FL-3, the station is home-made.

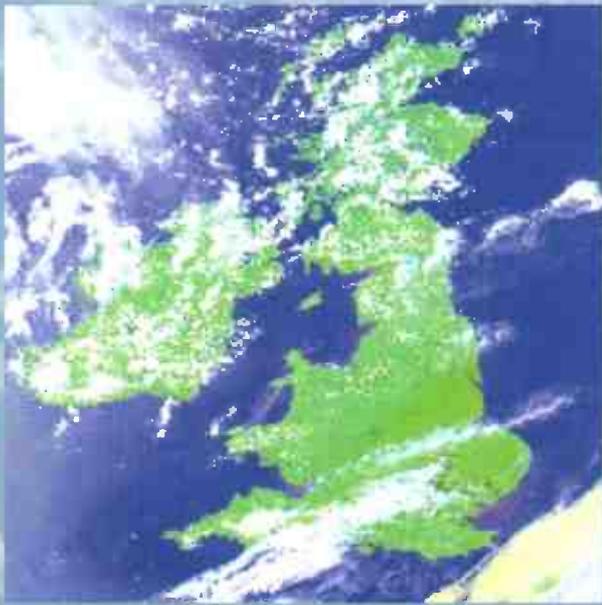
C = **Lionel Roithmeir**, Guernsey Equipment: Receiver: AOR AR7030 Plus 300/125Hz filters Antenna: Maynard ATL-3 indoor loop or Wellbrook AL1530 loop outdoors.

D = **Tony Moore**, New Marske. Redcar, England Equipment: Receiver Lowe 225 Antenna: Datong AD370 Active Antenna Vert Filter: Datong FL 2.

E = **Giorgio Casu**, San Gavino Monreale, Sardinia Equipment: Receiver: Icom 756 Proll Antenna: Wellbrook LF1010.

F = **Alan Gale**, Lancashire England Equipment: Receiver AOR AR7030+ with 125Hz CW Filter Antenna: Wellbrook ALA100 Loop, Tuned Doublet, Wellbrook ALA1530, 12 AVQ Trap Vertical, Inverted L with UMB, Skysweeper 3.05 decoder software.

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Later this year, two new frequencies will be added to our familiar automatic picture transmission (a.p.t.) settings - for the first time in several decades. A new satellite not far off launch heralds the change. Now may be the time to start thinking about updating your a.p.t. receiver!

NOAA-N (NOAA-18) Scheduled For Launch

There are currently seven satellites transmitting some form of weather satellite (WXSAT) imagery, though not all are transmitting both a.p.t. and h.r.p.t. formats. NOAA-12 is the oldest and transmits both image streams - both are of good quality. NOAA-13 failed not long after launch when

its battery apparently became accidentally shorted out.

NOAA-14 transmits h.r.p.t., but the image stream is frequently unsynchronised - see Fig. 1. NOAA-15 transmits both image streams and of good quality. NOAA-16 transmits h.r.p.t. only - see Fig. 2 - due to the failure of a switch. NOAA-17 is the most recent of the current constellation and transmits both streams - see Fig. 3.

The next in the series to follow NOAA-17 is therefore NOAA-18. Conventionally, this name is attributed only when the satellite is successfully placed in orbit, before then, it is called NOAA-N. The satellites having the new frequencies are NOAA-N (and later, NOAA-N' Prime). There are various sources on the Internet that give a launch date for

NOAA-N but there are some discrepancies - see 'launch dates'.

Like the previous satellites, NOAA-N's orbit will be polar and sun-synchronous. It will have an ascending pass at about 1340. As long as launch does not slip too much, it will therefore be well timed to replace NOAA-16.

NOAA-N forms

the first component of the Initial Joint Polar-orbiting Operational Satellite System (IJPS). There will probably be four polar orbiting satellites in this NOAA-EUMETSAT constellation. NOAA-N will be followed by NOAA-N' (NOAA N Prime) within a few years and also in an 'afternoon' orbit. NOAA-18 will be joined by METOP-1 (with METOP-2 following later) in complementary orbits. The METOPs will be 'morning' satellites.

The two satellite series (NOAA and METOP) have some common payload equipment for their joint mission, but their physical structures - the platforms - are quite different. Both will carry the Advanced Very High Resolution Radiometer (AVHRR) scanner that produces real-time, high resolution image data in six channels (visible and infra-red) for immediate transmission. They will also carry the High Resolution Infra-red Radiation Sounder (HIRS) to produce measurement profiles of humidity and ozone levels in 20 channels of data.

The Advanced Microwave Sounding Unit (AMSU) A1 and A2 makes atmospheric measurements even under complete cloud cover and is also on both platforms. The Microwave Humidity Sounder (MHS) measures humidity and rainfall rates and the Space Environment Monitor (SEM) makes measurements of solar activity in the earth's radiation belts.

There will be some joint support activities - EUMETSAT will support data from NOAA WXSATs 'blind' orbits where the satellite is not visible from NOAA stations, allowing users to access more data in near real-time.

Transmission Frequencies

Users with suitable reception equipment should continue to receive high resolution images (h.r.p.t.) and low resolution images (a.p.t.) from the NOAA satellites. However, a.p.t. transmission frequencies will change to 137.1 (lower) and 137.9125MHz (upper). METOP satellites will provide a version of h.r.p.t. (more accurately, it is advanced h.r.p.t. - a.h.r.p.t.) and the new low rate picture transmission (l.r.p.t.) format.

Like a.p.t., this will be transmitted in the v.h.f. band, but will carry all five image channels, compressed to a reduced resolution of 4km. Both transmissions will require new hardware. The data will therefore require special software for decoding. Given the availability of standard a.p.t. from NOAA-18, I suspect that there will not be a rush to buy new hardware for decoding METOP data!

The h.r.p.t. stream will carry additional instrument measurements and will therefore be modified. This data stream should still be receivable with existing hardware, but the modified format of the data means that new decoding software will be required.

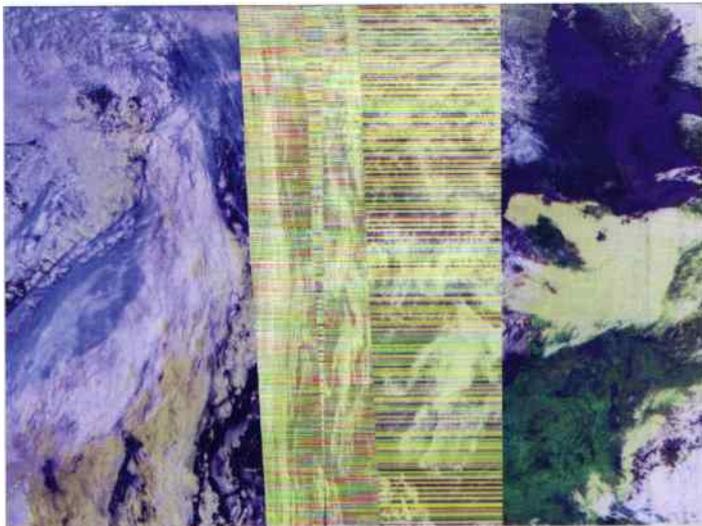


Fig. 1 NOAA-14 0853 12 April showing extensive 'bar code' interference.

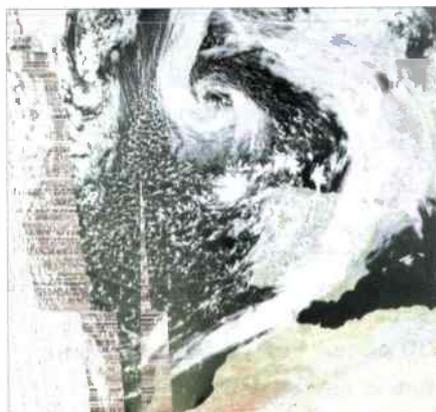


Fig. 2: NOAA-16 1422 1 April from J L Querton in Spain.



Fig. 3: D2 1530 1 April © EUMETSAT 2004 from J L Querton.



Fig. 4: NOAA-17
4 April from Kevin
Hughes.

The biggest problem for amateurs wishing to monitor the new METOP transmissions to produce images, will be encryption. This has been slightly relaxed in the case of METEOSAT-8, the new European geostationary WXSAT, but for METOP it may add a significant problem. Any person wishing to decode METOP data via a.h.r.p.t. will have to formally register their details.

Launch Dates

The NOAA/SIS gateway (see link) shows the launch date for NOAA-N as 4 October 2004 (coinciding with the anniversary of the launch of the world's first satellite - SPUTNIK-1). Unfortunately, to add a little confusion, an adjacent page on the large NOAA site <http://noaasis.noaa.gov/NOAASIS/ml/launch.html> and www.osd.noaa.gov/POES/launch.htm - gives September as the launch date.

NOAA-N' (N prime) launch is now shown as no earlier than October 2005, possibly 2008, and may not be launched if it is not required for replacement purposes. No doubt this will be clarified.

I contacted **Darrell R. Robertson**, the Satellite Data Services Team Leader at NOAA/NESDIS Direct Services Division, for some clarification about frequencies and launch dates. He kindly explained: "NOAA-N (to be renamed to NOAA-18 once on orbit) will transmit a.p.t. in the frequency range of 137.10 and 137.9125MHz. The a.p.t. frequencies will be moved to the outer edges of the 137MHz frequency to minimise interference found in the mid ranges. The a.p.t. bandwidth will be 0.034MHz, with a data rate of 0.017Mb/s. HRPT will transmit on 1698 or 1707MHz with a bandwidth of 2.66MHz and data rate of 0.665Mb/s".

"Launch dates are subject to change for a number of reasons (need, launch vehicle, weather, resources, other launches...). Currently we are listing December 2004 but again, many factors contribute to when it will actually launch. Stay tuned".

EUMETSAT METOP Launches

METOP-1 Launch December 2005
METOP-2 Launch December 2009
METOP-3 Launch June 2015

Europe started from a position having no

polar orbiting WXSATs, so the new digital formats have been designed for inclusion from the start. The new METOP constellation will comprise three satellites. METOP-1 l.r.p.t. data will join EUMETCast when the satellite

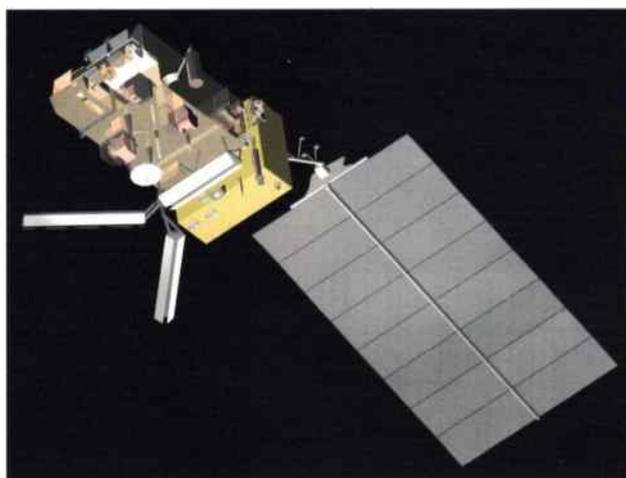


Fig. 5: METOP satellite illustration courtesy ESA.



Fig. 6: FENGYUN-1C 1804 10 April showing distortion.

starts transmitting. **John Tellick** of RIG and GEO comments: "I see no reason why AHRPT shouldn't also join the data stream. My understanding of the original (pre EUMETCast) data access policy to METOP data was that since we - amateurs/schools/educational users were granted free access to the original MSG data then free access to that user group would be valid for METOP data".

EUMETCast is now the prime dissemination channel in Europe for EUMETSAT data, using HotBird-6 to transmit METEOSAT-8 and other data via a television channel transponder.

Current WXSATs

All a.p.t. data from NOAA-12, NOAA-15 and NOAA-17 continues to be good. It is the h.r.p.t. data from FENGYUN-1C, NOAA-14 and NOAA-16 that are non-nominal - a good phrase meaning not working properly!

Despite my usual aim to receive a high resolution image from all h.r.p.t. satellites at

reasonably regular intervals, I overlooked the old Chinese FENGYUN-1C for a few weeks. **Mike Long** posted a note to one of the WXSAT forums noting that its images were now distorted. I monitored it for a couple of days - see Fig. 6 showing the compressed nature of much of the field of view. I assume that the dark area on the left side is the sky.

FENGYUN-1C was launched in 1999 and is past its expected end-of-life - it was replaced by FENGYUN-1D in 2002, but was not switched off when this became operational.

NOAA-14 has had its h.r.p.t. images spoilt by 'bar code' interference for a long time. Since 30 March, however, there have been occasions when the image was mostly clear. **Figure 1** shows that 12 April was not one of those clear days!

Jean-Louis Querton lives in Costa Blanca, Spain and has been monitoring NOAA-16. He sent me a couple of pictures illustrating the synchronisation problem that drifts through its images. During the course of a couple of orbits, the 'bar code' type of interference can drift sideways and allow

most of the image to be of good quality; it can also drift and expand, ruining the picture.

Jean-Louis noted: "The picture shows an interesting weather situation, with heavy shower over part of Spain, West France, UK and Ireland". Jean-Louis also sent a WEFAX image from METEOSAT-7 from the same time, showing the same weather systems.

Once more the tell-tale symptoms of interference have hit **Kevin Hughes'** a.p.t. images (see Fig. 4). An otherwise perfect image showing the melting ice in Bothnia and nearby regions and the long swathe of continent down to north Africa.

'Stationary' Clouds!

Despite many years of WXSAT imaging it did not come as a surprise to me to notice something new. Looking at an animation of the visible-light image from channel 12 on METEOSAT-8, I noticed there were two different levels of cloud - and one was not moving! Closer examination showed that although there was a clear prevailing wind



Fig. 7: Lee waves seen over Devon during late March. METEOSAT-8 © EUMETSAT 2004.

carrying the main cloud system, there around Dartmoor were three seemingly stationary clouds. Slowing down the animation revealed that the clouds were actually forming in one direction and dispersing in the other. I thought about this and decided that it must be associated with the hilly terrain of Dartmoor over which I have walked on many occasions.

I posed the question to the rig-1 mailing list, and **Douglas Deans** kindly responded: "It appears that those clouds are located close to Dartmoor which has some high elevations. We have a strong moist south-west wind at the moment and my guess is that as the air is lifted over the hills, the air saturates and cloud is formed. You can see the tails of cloud blowing away and dispersing on the lee of the hills. Of course it is a continuous process so clouds seem to appear stationary".

Ton Lindemann also confirmed this: "They are called 'Lee waves', or 'mountain (orographic) waves'. Moist air is forced to lift up by the hills and becomes saturated. The waves are stable long as the wind doesn't change in direction or force".

Beginners' Questions about WXSATs

Analogue - Digital signals? What's the difference? What's the future?

If you are a recent entrant into our hobby of weather satellite image reception and/or decoding, or are thinking about joining it, these are a few of the questions that might come to mind.

Analogue & Digital

Most weather satellites (but not all) transmit both analogue and digital signals. Analogue signals are of a *continuous* nature, that is, they represent currents or voltages that change gradually (as on an analogue meter), not in discrete steps. WEFAX (from some geostationary WXSATs) and a.p.t. (from some polar orbiters) are examples of analogue signals. In both cases, the sound of WEFAX and a.p.t. can be heard, after they have been extracted from the main carrier, as a varying audio tone. They can produce images of good quality, and can be calibrated to provide an indication of temperature, giving reasonable accuracy. Analogue signals are used for low resolution data transmissions to enable the

largest possible audience to receive them at nominal cost.

Digital satellite transmissions are produced from an advanced generation of electronics. They represent instantaneous (digital) measurements of current or voltage and are intrinsically more precise. With digital data, you either receive a valid data measurement or you do not. Digital data can be sent with added information to allow ongoing quality checks to be made on the

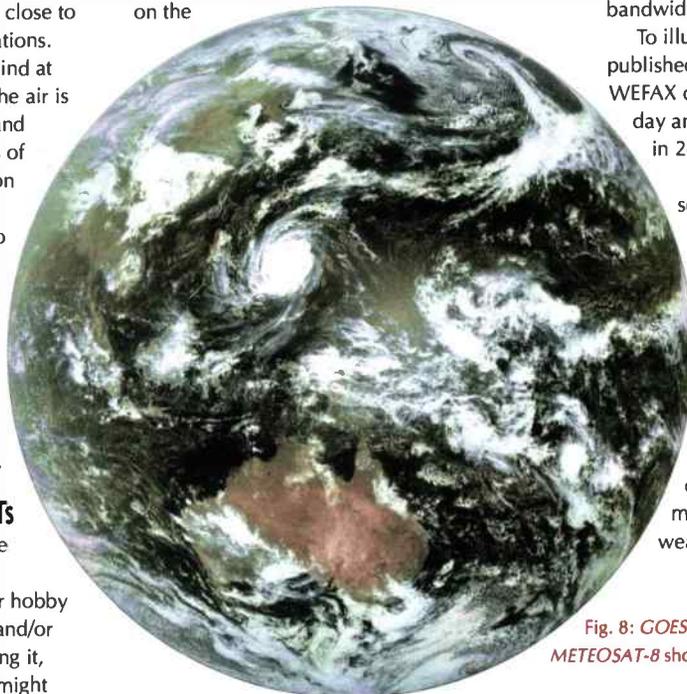


Fig. 8: GOES-9 11 April 0300 LIRIT format from METEOSAT-8 showing typhoon Sudal © EUMETSAT 2004.

data itself. This means that for professional purposes digital data is the only answer. It provides quantitative measurements and well as quality, and is therefore used for the highest data rate transmissions - high resolution picture telemetry (h.r.p.t.) and for METEOSAT's Primary Data transmissions. With additional data processing, users can extract a wider range of meteorological information from the data stream that would not be possible using the analogue mode.

The new (digital) version of WEFAX is LRIT and the new (digital) version of a.p.t. is LRPT. Digital LRIT is an international standard for data transmission that was developed by the Coordination Group for Meteorological Satellites (CGMS). Unlike WEFAX, there are variants of LRIT to enable individual countries to serve their specific needs, but there is a basic consistency. Digital signals can carry significantly more information in a given bandwidth than can analogue. Such data can also be compressed - see the paragraph on transmission frequencies - making its overall bandwidth requirements much less.

To illustrate the effect of this, NOAA has published the following facts: Amount of WEFAX data in 24 hours: 330 megabytes per day and the amount of LRIT data possible in 24 hours: 1.5 billion bytes per day.

During the last 40 years we have seen a mixture of analogue and digital. The future is digital. By international agreement with the World Meteorological Organisation (WMO) and the world's space signatories including EUMETSAT, NOAA and China, some current and all future WXSATs will provide digital transmissions of imagery. The transition has taken a long time to come but will enhance meteorologists' understanding of weather systems.

Frequencies

a.p.t.

NOAA-12 and NOAA-15 transmit a.p.t. on 137.50MHz.
NOAA-17 transmits a.p.t. on 137.62MHz.
during overlap periods, NOAA-12's a.p.t. may be switched off.

h.r.p.t.

NOAA-12 and NOAA-16 transmit h.r.p.t. on 1698.0MHz.
NOAA-14 and NOAA-17 transmit h.r.p.t. on 1707MHz.
NOAA-15 transmits on 1702.5MHz.
FENGYUN-1C and -1D transmit c.h.r.p.t. on 1700.5MHz.

WEFAX: METEOSAT-7 (geostationary) transmits WEFAX on 1691 and 1694.5MHz and Primary Data on 1691.0MHz.
EUMETCast transmits METEOSAT-8 data on HOTBIRD-6's transponder 129 on 11.096GHz.

Scanning

Scene

● **Dave Roberts** do SWM Editorial Offices, Broadstone
● **E-mail** scanning@pwwpublishing.ltd.uk

A Geek, that's what I am. I'll come clean. What being a geek really means is that I can indulge my interests while freely admitting my extreme geekiness. One symptom is that wherever I am I find myself on constant antenna watch. Large or small I don't care! Antenna spotting inevitably leads to an investigation in order to ascertain their use and the gear connected to them.

For the last week I have had many opportunities to behave geekily as I've had to spend some time with other similar sad individuals at locations where antennas and base station equipment abound. Travelling around any part of the UK it's impossible not to notice the numerous masts and associated equipment cabins scattered about.

A main antenna site will often have around three substantial towers scattered around an area of about ten acres or so. The biggest and boldest is usually the broadcast mast. Carrying the radio and television transmissions they are usually identifiable by a white 'stick' at or near the top of the mast, the height being about 80 or 90m or so. Yes, these are usually the tallest towers in the area and will have satellite or microwave dishes and a few dipoles dotted about on them together with the broadcast antennas.

A few metres shorter is the mast that interests us geeks. This one is generally owned by, either, the local council, water company or energy supplier. More often than not it will be home to a local radio station, the radio systems of the power suppliers and the water authority. The councils may have several systems on board including roads and transport (the gritters to you and me) and other maintenance staff. The emergency services will usually be on this site as well. Maybe even an amateur radio repeater or packet radio node may have been able to sneak in on this one.

Until recently you may also have found the military communications system known as 'MOULD', but this will probably have disappeared by now. There may be a mobile 'phone company or two as well. Soon there'll be more room on the tower and much more room in the equipment cabins as many services will head down the TETRA trail and several antennas will disappear to be replaced with the three 'white stick' antennas mounted in a triangle formation around the mast. There will almost certainly be a few microwave dishes knocking around as well because these will be utilised for controlling the base station transceivers on site and for linking to other locations.

If you like to see the dishes then the third tower is the one for you. This will be the one that's owned by British Telecom and will be almost entirely inhabited by dishes. BT transfer much of their traffic by microwave these days and these dishes handle this plus paging and data services. A satellite dish will collect the pager traffic and other antennas will handle the output to the pagers. As BT have their fingers in the Cellnet/O2 pie there may well be one of their mobile 'phone systems installed as well.

These pictures may help you identify any towers in your area...well it beats watching television by a long shot.

Back In Action

Any folks who happened by the Greater Manchester Police analogue frequencies a few months ago may have been surprised to hear them back in usage when the force was thought to have been using the Airwave TETRA service. It appears that the coverage provided by the Airwave service was too comprehensive with numerous base stations in the area resulting in cell areas overlapping. This resulted in a phenomenon known as 'cell dragging' where the individual cell/base station was holding on

to the call from the mobile too long and preventing its hand over to the next base.

Communication outages became common and the GMP returned to their old analogue system for a few months until the people at O2 Airwave figured out which base stations to turn off to prevent the problem. This they did. Communications now restored and presumably a few bob has been saved on the electricity bill as well. They say that 98% of the force is now back on Airwave - I guess that the tea wagon staff account for the remaining 2%.

Nationally most officers that are using the Airwave system seem pleased with it citing coverage, audio clarity and flexibility as its main advantages. It should work well...it's cost enough!

Data Signals

At the other end of England I'm informed that as Devon and Cornwall Police run along the Airwave road their old v.h.f. frequencies are being occupied by data signals. Is this the new user running tests or are the force still transmitting on these channels to keep their equipment ready in case teething troubles necessitate a temporary return to the analogue system?

Notwithstanding the growth of digital communications there will always be a core group of businesses that require conventional PMR systems, whether trunked or otherwise. For reasons of reliability or security some companies will always need an in-house system to which they have exclusive access and over which they have exclusive control.

Large industrial sites will often cite exclusivity as the reason for having their own communications for security, maintenance, supply and perhaps their own specialist fire staff. For these businesses to have to rely on a system supplied by a major communications entity that has many customers sharing the same service infrastructure is simply not an option. Rest assured there will still be much on air to monitor for many years yet.

Just because the services are all going to digital systems that doesn't mean that they have totally disappeared. The frequency 138MHz still holds many of the air to ground/air support frequencies and is perhaps worth a check. Likewise many simplex frequencies in 147/148MHz still appear to have some emergency services traffic in use. Don't despair!

Remote Control

Finally, "Remote Control Your Home" shouted the advert in the *Daily Telegraph*. For £29.95 plus £3.95 postage *Telegraph* readers are offered a plug that fits a three pin wall socket and has its own socket mounted on the front with an on/off button. You also get a remote control handset that switches the socket on and off. This means that you can "Boil your kettle without missing the TV!" and perform many other life enhancing functions.

I assume these things work on licence free channels. I truly hope that they have some sort of encoding to prevent rogue signals turning on the toaster while you're on your fortnight's hols in 'Skeggy'. Does anyone have any details of these units?



An electricity board mast with police and everything else on it!



A broadcast mast.



A boring old BT microwave mast.

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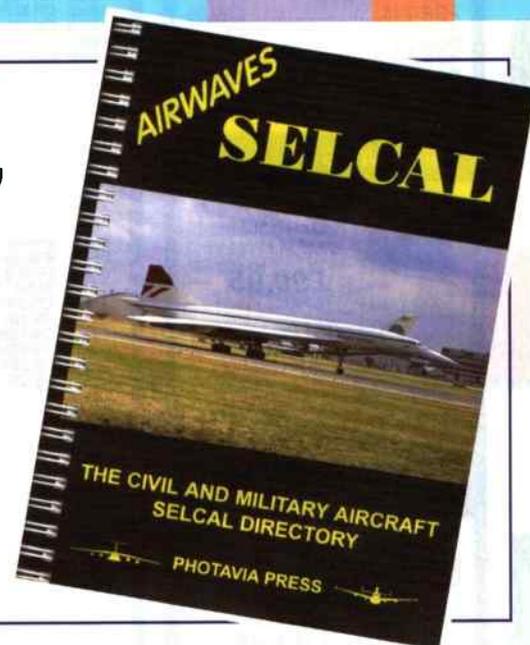
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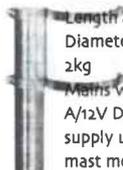
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YORK RADIO CLUB (AMATEUR) G4YRC. Meets at the Bishopthorpe Social Club, Bishopthorpe, Main Street, York. Details from Gareth Foster G1DRG. Tel: (01904) 421392.

NORTHUMBERLAND

NORTHUMBRIA ARC, G4AAx. Meets at the Old Telephone Exchange, Cresswell Road, Ellington, Morpeth, Northumberland. Details from Mr D. Stansfield G0EVV. Tel: (01670) 513026.

SOUTH YORKSHIRE

FINNINGLEY ARS, G7HAH. Details from John Fennell G4HOV. Tel: (01427) 872522.

MALTY & DARS, G4SKM. Meets at the Centenary Hall, Clifford Road, Hellaby, Rotherham. Details from Keith Johnson G1PQW. Tel: (01709) 798098.

MEGBOROUGH & DARS, G4BTS. Meets at the Harrop Hall, Mexborough, South Yorks. Details from Mr R.T. Sheppard G0KSK. Tel: (01709) 586329.

SHEFFIELD ARC, G0INF, NRAE/RAE tuition provided. Meets at the Sheffield University Staff Club, 197 Brook Hill, Sheffield. Details from Mrs Irene Glossop G0SFH.

TYNE & WEAR

HOUGHTON-LE-SPRING ARC, G3NMD. Meets at the Dumrie Royal British Legion, Dumrie, Fencehouses, Tyne & Wear DH4 6LJ. Details from Foster Aungles G0ABF. Tel: 0191-584 4673.

SOUTH TYNESIDE ARS, G0XWQ. Meets at the Boldon Scout Hut, Grey Horse Car Park, Front Street, Boldon. Details from William Wilson M08WJ. Tel: 0191-421 9921.

TYNEMOUTH ARC G0NWM. Meets at the Linskill Centre, Linskill Terrace, North Shields, Tyne & Wear. Details from Mr G.N. Thompson G0SBN.

TYNESIDE ARS, G3ZQM. Meets at the St Teresa's Club, 200b Heaton Road, Newcastle-upon-Tyne NE6 5HP. Details from Mr J. Pickersgill G0DZG. Tel: 0191-265 1718.

WEST YORKSHIRE

DENBY DALE & DARS, G4CDD, G5KMK. Meets at the Pie Hall, Denby Dale, West Yorkshire. Details from Mr J.P. Morley G4FSQ.

HALIFAX & DARS, G2UG. Details from Mr S.P. Ormayer G4RAW. Tel: (01422) 203062.

KEIGHLEY ARS, G0KRS. Meets at the Cricket Club, Ingrow, Keighley, West Yorkshire. Details from Mr I. Townson M1BGY. Tel: (01274) 723951.

LEEDS & DARS, G4LAD. Meets at the Radio Shack, Yambury (Horsforth), RUF Grounds, Brownberrie Lane, Horsforth, Leeds LS18 5HB. Details from Mr E. Howden G0IBU.

NORTH WAKEFIELD RC, G4NOK. Meets at the East Ardsley Cricket Club, Nr. Wakefield. Details from Mrs Olga Parker 2E1ASV. Tel: 0113-253 9087.

OTLEY ARS, G3XNO. Meets at The RAOB Club, Westgate, Otley, West Yorkshire. Details from Jack Worsnop G0SNV. Tel: (01274) 636197.

PONTEFRACT & DARC, G3FQY. Meets at the Carleton Community Centre, Pontefract, West Yorkshire. Details from Colin Wilkinson G0NQE. Tel: (01977) 677006.

SPEN VALLEY ARS, G3SVC. Meets at the Old Bank WMC, Mirfield, West Yorkshire. Details from Mr J.R. Wilde G0FOI. Tel: (01274) B75038.

WAKEFIELD & DARS, G3WRs. Meets at the Ossett Community Centre, Prospect Road, Ossett, W. Yorks. Details from Ian Roberts. Tel: (01924) 216502.

WAKEFIELD RPTG GP, G0KNR. Details from Mike Charlton G60XZ.

WHITE ROSE ARS, G3XEP. Meets at the Moorfoot RFC, Moss Valley, Kings Lane, Leeds LS17 7NT. Details from Mr M. Wilson G7SDW. Tel: 0113-273 6039.

MIDLANDS

BEDFORDSHIRE

UNSTABLE DOWNS RC, G4DDC. Meets at the Chevus House, 77 High Street South, Dunstable, Beds LU6 3SF. Details from Phil Sealord G8XTW. Tel: (01525) 384419.

SHEFFOLD & DARS, G3FJE. Meets at the Church Hall, Amphill, Shefford, Beds. Details from John West. Tel: (01462) 812799.

ST SWITHUN'S ARC, M0AJV. Meets at St. Swithun's Church, Rectory Rooms, Sandy, Beds. Details from Kelyn Darton G0WOD. Tel: (01767) 683179.

CAMBRIDGESHIRE

CAMBRIDGE & DARC, G2XV. Meets at the Coleridge Community College, Radegund Road, Cambridge. Details from Ron Huntsman G3KBR. Tel: (01223) 501712.

DUXFORD ARS, G82WMM. Meets at Building 177, Imperial War Museum, Duxford Airfield, Cambs. Details from Mrs B.I. Pope. Tel: (01279) 656149.

GTR PETERBOROUGH ARC, G4FHW. Meets at the 6th Form Building, Stanground College, Farset Road, Fletton, Peterborough. Details from Alan D. Ralph G8XLH.

HUNTINGDONSHIRE ARS, G0HSR. Meets at the Medway Centre, Medway Road, Huntingdon. Details from David Leech G7DUJ. Tel: (01480) 431333.

MARCH & DRAS, G3PMH. Meets at the British Legion Club, Rookswood Road, March, Cambs PC15 8DP. Details from Mr J. Braithwaite G3PWK. Tel: (01353) 698885.

PETERBOROUGH R & ES, G3DQW. Details from Mr V. Edwards G8NGZ.

WISBECH AR & ELEC. CLUB, M5ARC, G4PQL, G8NED. Meets at RAFA Club, Old Market, Wisbech. Details from Alan Bndgeland M0DUU. www.warec.org.uk

DERBYSHIRE

80LSOVER ARS, G4RS8. Meets at the Blue Bell, High Street, Bolsover, Derbys. Details from Colin Morris G0RKT. Tel: (01246) 822856.

BUXTON RA, G4SPA. Meets at the Leewood Hotel, Buxton. Details from Derek Carson G4IHO. Tel: (01298) 25506.

DERBY & DARS, G2DJ. Meets at Carlton Road United Reform Church, Carlton Road, Littleover, Derby. Details from Martin Shardlow G3SZJ. Tel: (01332) 556875.

EREWASH VALLEY ARG, G0PCX. Meets at The Sitwell Arms Public House (between Horseley Woodhouse and Woodside). Details from Peter Russell M0AQI.

MOUNT ST. MARY'S ARC, G4MSM. Meets at the College, Spinkhill, Sheffield. Details from Rev. P. McCardle G0DAG. Tel: (01246) 812230.

NOTTS & DERBY BORDER ARC, G4NID. Meets at Marpool United Reform Church, Chapel Street, Marpool, Ilkeston. Details from Graham Bromley G4UTN. Tel: (01773) 834308.

NUNSFIELD HOUSE ARG, G3EE0. Meets at the Nunsfield House, Boulton Lane, Alvaston, Derby. Details from William F. Smith G7PJJ.

STH DERBYS & ASHBY W ARG, G0SRC. Meets at the Moira Replian Centre, 17 Ashby Road, Moira, Swadlincote, Derbyshire DE12 6DJ. Details from Mrs S. Wailey. Tel: (01283) 760822.

STH NORMANTON, ALFRETON & DARC, G0CPO. Meets at the New St. Community Centre, New Street, South Normanton, Derbyshire. Details from Peter Getting M0CQL. Tel: 0115-955 5766.

GLOUCESTERSHIRE

CHELtenham AR ASSN, G58K. Meets at the Presbury Library, Presbury, Cheltenham. Details from Ian Wilson G4BGW. Tel: (01452) 731956.

CHELtenham CLUSTER SUPP GP, G87DXC. Details from Mr A.M. Davies G0HDB. Tel: (01684) 72178.

GLOUCESTER AR & ES, G4AYM. Meets at the Churchdown School, Churchdown. Details from Mr A.J. Martin. Tel: (01452) 618930.

SMITHS INDUSTRIES RS, G4MEN. Meets at the Sports & Social Club, Evesham Road, 81shops Cleeve, Cheltenham GL52 4SF. Details from A.J. Hooper G1JMF.

STROUD RS, G4SRS. Meets at the Minchampton Youth Centre, Nr. Stroud. Details from Mr S.G. Spencer G3ILO.

WHITE NOISE LISTENING G0WNL. Details from Adrian Deane G7KCG.

HEREFORD & WORCESTER

BROMSGROVE & DARC, G3VGG. Meets at the Anvcroft Arts Centre, Bromsgrove, Worcs. Details from Mr J.F. Burford G40AZ.

BROMSGROVE ARS, G4TUI. Meets at the Liley End WMC, Bromsgrove, Worcs. Details from Barry Taylor G0TPG. Tel: (01527) 542266.

DROITWICH ARC, G4PVO. Meets in the Community Hall, Doitwich Spa, Worcs. Details from Hector Wragg M1BUV. Tel: (01905) 794399.

HEREFORD ARS, G3YDD. Meets at the Civil Defence HQ, Magistrates Court, Gao Street, Hereford. Details from Tim Bridgland-Taylor G0WJL. Tel: (01432) 279435.

KIDDERMINSTER & DARS, G0KRC. Meets at the Sutton Arms, Sutton Park Road, Kidderminster, Worcs. Details from Mr A.W. Saunders G00ZB. Tel: (01299) 400172.

MALVERN HILLS ARC, G4MHC. Meets on the second Tuesday of the month at the Town Club, Great Malvern. Details from Mike G3TGD. Tel: (01905) 830752, E-mail: mike@allensons.fsnet.co.uk

REDDITCH RC, G4ACZ. Meets at the WRVS Centre, Ludlow Road, Redditch, Worcs. Details from Mr R.J. Mutton G3EVT. Tel: (01789) 762041.

VALE OF EVESHAM RAC, G0ERA. Meets at the BBC Club, High Street, Evesham, Worcs. Details

from Mr A.C. Lindsay G4NRD. Tel: (01386) 41508.

LINCOLNSHIRE

1F ATC, G7MCD. Details from Sqn. Cmdr. Adrian Utting G1WZQ.

BEAUMANOR ARC, G3BMR

DEMONTFORT UNIVERSITY, G3SDC. Open to past & present students. Details from Mr R.G. Titterton. Tel: 0116-257 7059.

HINCKLEY AR & ES, G3VLG. Meets at the United Services Club, St. Mary's Road, Hinckley. Details from Mr R.A. Bennett G8FF. Tel: (01455) 846493.

LEICESTER RS, G3LRS. Meets at Gilroes Cottage, Groby Road, Leicester LE3 9QJ. Details from Mr S.P. Hay G3HYH. Tel: 0116-224 2598.

LOUGHBOROUGH & DARC, G3RAL. Meets at Hind Leys College, Shephed, Loughborough, Leics. Details from Chris Walker G1ETZ. Tel: (01509) 504319.

MELTON MOWBRAY ARS, G4FOF. Meets at the St. John Ambulance Hall, Astorby Hill, Melton Mowbray, Leics. Details from Mr R. Winters G3NVK. Tel: (01664) 63369.

NATIONAL SPACE CENTRE ARS, M1NSC. Details from Mr J. Heath G7HIA.

TAMWORTH ARS, G8TRS. Details from Mr A.I. Dyson G0JHW. Tel: (01827) 830437.

WELLAND VALLEY ARS, G4WVR. Meets at The Village Hall, The Green, Great Bowden, Leics. Details from The Secretary.

LINCOLNSHIRE

EAGLE RADIO GROUP, MOERG. Meets at the Eagle Hotel, Victoria Road, Mablethorpe. Details from Terry Stow G0SWS. Tel: (01507) 478590

FIVE BELLS GROUP, G4SIV. Details from Mr B.K. Tatnall G40DA.

GRANTHAM RC, G0GRC. Meets at the Kontak Social Club, Barrowby Road, Granttham, Lincs. Details from the Secretary. Tel: (01476) 657436.

LINCOLN SHORT WAVE CLUB, G5FZ. Meets At The Railway Club, Triton Road, Lincoln. Details from Mrs Pam Rose G4STO. Tel: (01427) 788356.

RAF CONINGSBY ARC, G3LQS. Meets at Essex Block, RAF Coningsby. Details from Peter Hanson G0NVY.

RAF WADDINGTON ARC, GORAF. Meets at Pwepwie Inn, Fossebanc, Saxilby Road, Lincoln. Details from Robert Pickles G3VCA. Tel: (01522) 528708.

SPALDING & DARS, G4DSP. Meets at The Old Fire Station, Spalding, Lincs. Details from Raymond Pearson G8ELV. Tel: (01775) 711953. Web: www.sdars.org.uk

SPILSBY ARS, RS91468. Details from Clive Ironmonger G6HYF. Tel: (01790) 752712.

NORTANTS

KETTERING & DARS, G5KN. Meets at The Liacs Public House, 39 Church Street, Isham, Kettering, Notts. Details from Fay Barwell G6AKS. Tel: (01536) 390954.

MID NORTANTS AR EXP GOING. Details from Lionel Parker G5LP.

NORTHAMPTON RC, G3GWB. Meets at the British Timken, Social & Athletic Club, Cotswold Avenue, Duston, Northampton. Details from Norman Miller G0GBZ. Tel: (01327) 349188.

NORTHAMPTON SCOUT ARG, G6NDS. Meets at Overstone Scout Activity Centre, Northampton. Details from Ian Rivett G8WPU.

PARALLEL LINES CG, G4LUP. Details from Mr P.S. Lidsay G4CLA.

NOTTINGHAMSHIRE

ARC OF NOTTINGHAM, G3EKW. Meets at the Hayward Road Community Association, Hayward Road, Mapperley Road, Nottingham NG3 6AD. Details from Ron Hague G4XOU. Tel: 0115-919 9177.

DUKIERES ARS, G4XLT. Meets at Ambleside Community Centre, Ambleside, New Olterton, Notts. Details from Colin Foster G7DEX.

HUCKNALL ROLLS ROYCE ARC, G5RR. Meets at the Hucknall Rolls Royce Sports & Social Club, Watnall Road, Hucknall, Nottingham. Details from Mr P. Hart G4JSM.

MANSFIELD ARS, G3GQC. Meets at the Debdale Park Sports & Recreation Club, Debdale Lane, Mansfield Woodhouse, Notts. Details from David Peat G0RDP. Tel: (01623) 631931.

NORTH NOTTS DATA GROUP, G0WNN. Details from Tony Jenkins G8TBF.

SIEMENS ARC, G8ZK, G8IGQ. Meets at the GPT Sports Ground, Beeston, Nottinghamshire. Details from Chns Archer G4VFK. Tel: 0115-943 3387.

SOUTH NOTTS ARC, G0AOU. Meets at the Fairham Community College, Famborough Road, Clifton, Nottingham NG11 9AE. Details from Gary Bishop G0WUG. Tel: (01509) 672846.

WORKSOP ARS, G3RCW. Meets at the Club House, 59-61 West Street, Worksop, Nottingham S80 1JP. Details from Terry Calvert G4GBS. Tel: (01302) 743130.

SHROPSHIRE

OSWESTRY & DARC, G4TTO, G1ORA. Meets at the Sweeney Hill Hotel, Sweeney, Oswestry. Details from Ant Astley G0WAJA. Tel: (01691) 860545.

SALOP ARS, G3SRT, M1AXW. Meets at The Postepost Club, Railway Lane, Abbey Forge, Shrewsbury. Details from John Bumford G0GTN. Tel: (01743) 249943. E-mail: john.bumford@virgin.net

TELFORD & DARS, G3ZME. Meets at the Dawley Bank Community Centre, Dawley, Telford, Shropshire. Details from Mr M. Vincent G3UKV.

Tel: (01952) 255416.

STAFFORDSHIRE

BURTON-ON-TRENT & DARS, G3NFH. Meets at the Stapehill Institute, Main Street, Stapehill, Burton-on-Trent, Staffs. Details from Mr M.W. Cotton G4HBY.

CANNOCK CHASE ARS, G6SW. Meets at the Four Crosses Inn, Watling Street, Hatherton, Cannock. Details from Arnold Matthews G3FZW. Tel: (01543) 262495.

CHAD RC, G4CAR. Meets at the Swinfen Officer's Club, Swinfen, Lichfield, Staffs. Details from Bernard Jayne G8FL. Tel: (01543) 268569.

UCHFIELD ARS, G3WAS. Meets at the Queens Head, Sandford Street, Uchfield. Details from Roger Smethers G3NLY. Tel: (01543) 672762.

MOORLANDS & DARS, G4NHT, G1MAD. Meets at the Creda Works, Blythe Bridge, Stoke-on-Trent, Staffs ST11 9LJ. Details from Mr B.J. Butcher G4HKG. Tel: (01782) 395793.

NEWCASTLE-U-LYME SCOUT AR COM GR, G7UQG

STOKE-ON-TRENT ARS, G3GBU. Meets at the '45' Club, 92 Lancaster Road, Newcastle-under-Lyme, Staffs. Details from Albert Allen G4DHO. Tel: (01782) 638801.

SUTTON COLDFIELD RS, G3RSC. Meets at the Rugby Club, Walmley Road, Sutton Coldfield, West Midlands. Details from Paul G. Turner G7MWD. Tel: 0121-350 4263.

WARWICKSHIRE

AVON VALLEY ARA, MORAD. Details from Mr Peter Bradham G0WJX. Tel: (01905) 724531.

MID WARWICKSHIRE ARS, G3UDN. Meets at the St. John Ambulance HQ, 61 Emscote Road, Warwick. Details from Bernard Pittaway. Tel: (01926) 420913.

RUGBY ATS, G4APD. Details from Tony Humphries G0OLS. Tel: (01455) 552683.

STRATFORD-UPON-AVON & DRS, GOSOA. Meets at the Home Guard Club, Tiddingham, Stratford-upon-Avon, Warks. Details from Ron Horsley G0MRH. Tel: (07970) 148204.

WEST MIDLANDS

ALDRIDGE & BARR BEACON ARC, GONEQ. Meets at the Aldridge Central Hall Community Centre, Middlemore Lane, Aldridge WS9 8AN. Details from Mr C.J. Baker G0NOL. Tel: (01922) 636162.

COVENTRY ARS, G2ASF. Meets at the Binley Church Hall, Brinklow Road, Coventry. Details from John Beech G8SEQ. Tel: (01203) 673999.

DUDLEY ARC, G4DAR. Meets at the Community Centre, Sedgley Central Library, St. James Road, Dudley. Details from Tony Lucas G4LVA. Tel: (01384) 271925.

HILLCREST ARS, G0SPM. Meets at The College, Simms Lane, Netherton, Dudley, West Midlands. Details from Stuart Viney. Tel: (01384) 232457.

KYNOCH R & TVS, G3HPP. Meets at the Club Workshop, IMI Ltd., Sportsfield, Perry Bar, Birmingham. Details from Mr G. Nicholls. Tel: (01922) 635376.

MIDLAND ARS, G3MAR. Meets at Unit 22, 60 Regent Place, Hookley, Birmingham (jewelry quarter). Details from John A. Crane G0LAI. Tel: 0121-628 7632.

SANDWELL AMATEUR RADIO CLUB, G0CWC. Meets at Sandwell ARC, Broadway, Oldbury, Warrley, West Midlands B68 0DP. Details from Stuart Collins M0BTO. Tel: 0121-561 4663.

SIERRA HOTEL ARS, G0OBS. Details from Warwick M. Hall G4WMM.

SOUHULL ARS, G3GEI. Meets at The Shirley Centre, 274 Stratford Road, Shirley, Solihull, West Midlands. Details from Paul Gaskin G8AYY. Tel: 0121-783 2996.

SOUTH BIRMINGHAM RS, G3OHM. Meets at Hampstead House, Fairfax Road, West Heath, Birmingham. Details from The SBRS Secretary.

STOURBRIDGE & DRS, G6OI, G6RS. Meets at the Old Swinford Hospital/School, Stourbridge, West Midlands. Details from Tom Edwards.

WEST BROMWICH CENTRAL RC, G4WBC. Meets at The Sandwell Public House, High Street, West Bromwich, West Midlands. Details from Ian Leitch G0PAI. Tel: 0121-561 2884.

WEST MIDLANDS POLICE ARC, GOCOP, G1WMP. Details from Steven Jones G6LRL.

WILLENHALL & DARS, G4ETW. Meets at The Liberal Club, Villiers Street, Willenhall, West Midlands. Details from Dave Bradbury. Tel: (01902) 411252.

WOLVERHAMPTON ARS, G8TA. Meets at the Electricity Board Sports Club, St. Marks Road, Chapel Ash, Wolverhampton. Details from Mrs J. Smith. Tel: (01902) 751936.

WORDSLEY RC, G4WAR. Meets at the Brick Maker's Arms, Mount Pleasant, Brierley Hill, West Midlands. Details from Andy Evans G1PKZ.

LONDON & CENTRAL

Berkshire

ARBORFIELD ARC, G3IHH. Details from Mrs E.W. Harding 2E1AUQ.

BRACKNELL AEC, G4BRA. Meets at the Coopers Hill Community Centre, Bagshot Road, Bracknell, Berks. Details from John Ellerton G3ANC.

BURNHAM BEECHES RC, G3WIR. Meets at the Farnham Common Village Hall, Victoria Road, Farnham Common, Bucks. Details from Mrs Eileen Chislett G6EIL. Tel: (01628) 625720.

MAIDENHEAD & DARC, G3WVK. Meets at the Red Cross Hall, The Crescent, Maidenhead, Berkshire. Details from Neil Savin G0SVN. Tel: (01628) 626210.

NEWBURY & DARS, G5XV. Meets at the Rugby Club, Monk's Lane, Newbury. Details from Max Maxwell G7DXC. Tel: (01635) 253233.

READING ARC, G3ULT. Meets at the Woodley Pavilion, Woodford Park, Haddon Drive, Woodley, Reading. Details from Mamoch Standen G0JMS. Tel: 0118-972 3504.

BUCKINGHAMSHIRE

AYLESBURY VALE RS, G4VRS. Meets at the Harwick Village Hall, Aylesbury, Bucks. Details from Mr L.L. Cropley G0DFC.

CHESHAM & DARS, G3MDG, G1MDG. Meets at the White Hill Centre, Chesham, Bucks. Details from Mr T.J. Thirwell G0VPW. Tel: (01442) 832169.

CHILTERN ARC, G3CAR. Details from Roy Page G4YAN. Tel: (01494) 254216.

MILTON KEYNES ARS, G3HIU. Meets at Bletchley Park Museum (The Green Room, B Block Annex), Wilton Avenue, Bletchley, Milton Keynes. Details from Malcolm Bay M0MBO on (01525) 874075.

MILTON KEYNES SCOUT ARS, G0SMK. Meets at The Quarries, M.K. Scout Campsite, Cosgrove, Details from Mr P.A. Orchard G0RYZ. Tel: (01908) 648186.

GREATER LONDON

ADDISCOMBE ARC, G4ALE. Meets at the Lion Inn, Brighton Radio Club, G4GQR. Meets at Vallance Community Centre, Sackville Road, junction of Connaught Road, Hove. Details from Hon. Sec G0RNS. Tel: (01273) 699104.

CROWBOROUGH DARS, G0CRW. Meets at the Plough & Horses, Walshes Road, Jarvis Brook. Details from Mrs M. Clark. Tel: (01892) 663666.

EAST SUSSEX AMATEUR TV GROUP, RS178475 was GB3VX. Details from Keith Ellis G8HGM. Tel: (01323) 720220.

SOUTHDOWN ARS, G3WQK. Details from Jim Hairs G4DRV. Tel: (01323) 728479.

THE QRZ ARG OF SUSSEX, GB3VX. Meets at the Coach Station, Wartling Road, Eastbourne. Details from Stuart Constable M0CHW. Tel: (01435) 863020.

HAMPSHIRE

ANDOVER RAC, G0ARC. Meets at the Village Hall, Wildhem, Andover, Hants. Details from Mr R.S. Coleman G0WYD.

BASINGSTOKE ARC, G3TCR, G8IYN. Meets at the GEMS Social Club, Lister Road, Basingstoke, Hants. Details from Bob Brown M0CJJ.

FAREHAM & DARC, G3VEF. Meets at the Portchester Community Centre, Westlands Grove, Portchester, Hants. Details from Andrew Sinclair G0AMS. Tel: (01329) 235397.

HIGHFIELD PARK RC, G4WD. Meets at Highfield Park RC, National Air Traffic Service, Highfield Park, Highfield, Hants RG27 0LD. Tel: (01734) 225019.

HORNDEAN & DARC, G4FBS. Meets at Lovedean Village Hall, Lovedean Lane, Lovedean, Hants. Details from Stuart Swain G0FYX. Tel: (01705) 472846.

ITCHEM VALLEY ARC, G0IVR. Meets at the Scout Hut, Brickfield Lane, Chandlers Ford, Eastleigh, Hants. Details from Sheila Williams G0VNI. Tel: (01703) 813827.

SONY BROADCAST ARC, G4SZC. Accredited C&G RAE centre. Meets at Sony Sports & Social Club, Priestley Road, Basingstoke. Details from Stephen Harding G4JGS. Tel: (01256) 55011.

SOUTH HAMPSHIRE INT. TELE SOC., G3DIT. Meets at G3JZV's QTH, space is limited. Details from Rev. I.R. Mortimer G3JZV. Tel: (02392) 649254.

SUBMARINE ARC, G3BZU. Meets at HMS Collingwood, Newgate Lane, Fareham, Hants PO14 1AS. Details from Mr W.S. Blyth G0PPH. Tel: (01329) 232386.

THREE COUNTRIES ARC, G4WWR. Meets at the Bramshott Parish Inst. & Club, Headley Road, Uphook, Hants. Details from Damian Kamm G7RVF. Tel: (01428) 724456.

WATERSIDE ARS, G4JYN. Meets at the Applemore Scout HQ, Applemore, Hythe, Southampton. Details from Tony Horton G0LKG. Tel: (01703) 841794.

ISLE OF WIGHT

BRICKFIELDS ARS, G0BAR. Meets at Brickfields Horse Country Cent, Newham Road, Binstead, Isle of Wight. Details from Mr Pebody.

ISLE OF WIGHT RS, G3SKY. Meets at The Old Cafe, Whiteciff Bay, Holiday Park, Bembridge. Details from Alan Reeves G4ZFG. Tel: (01983) 294309.

OXFORDSHIRE

BANBURY ARS, G0BRA. Meets at St. John's Church Social Club, South Bar, Banbury, Oxon. Details from Mr R.S. Marsden G1Y5Y. Tel/FAX: (01295) 253509.

HARWELL ARS, G3PIA. Meets at the Social Club, Harwell Laboratory, Didcot, Oxon. Tel: (01235) 223250.

OXFORD & DARS, G5LO. Meets at the Grove House Club, George Street, Summertown, Oxford. Details from Mr D. Walker G3BLS. Tel: (01865) 247311.

VALE OF WHITE HORSE ARS, G5RR, G4VWH, G6VWH. Meets at The Fox, Steventon, Details from Ian White G3SEK. Tel: (01235) 531559.

WEST SUSSEX

CHICHESTER ARC, G2NIM. Meets at the St. Pancras Hall, Chichester. Details from Graham Swann G0WSD.

CRAWLEY ARC, G3WSC. Meets at the Tilgate Forest Rec. Centre, Hut 18, Tilgate Forest, Crawley, West Sussex. Details from Mr J.S. Spence G0FPI.

HORSHAM ARC, G4HRS. Meets at the Guide Hall, Denne Road, Horsham, West Sussex. Details from Alistair Watt G3ZBU. Tel: (01403) 253432.

MID SUSSEX ARS, G3ZMS. Meets at Marie Place, Leylands Road, Burgess Hill, West Sussex. Details from Mr C. Childs 2E1DCP. Tel: (01444) 244689.

T.S. VINDICATRIX ASN, G0WVB. Details from Don Still G0OOC.

WORTHING & DARC, G3WOR. Meets at the Lancing Parish Hall, South Street, Lancing, West Sussex.

WORTHING & DISTRICT VIDEO RG, G83VR. Details from the Treasurer. Tel: (01903) 211919 (w).

WILTSHIRE

CHIPPENHAM & DARS, G3VRE. Meets at the Sea Cadet HQ, Chippenham. Details from Jon Ainge G4LQZ. Tel: (01249) 462610.

SWINDON & DARC, G3FCF. Meets at the Eastcott Community Centre, Savenake St., Swindon. Details from Den Forrest M0AOCM.

TROWBRIDGE & DARC, G2BQY. Meets at the Southwick Village Hall, Southwick, Trowbridge, Wilts. Details from Ian Carter G0GRI. Tel: (01225) 864698.

SOUTH WEST & CHANNEL ISLANDS

AVON BRISTOL ARC, G3TAD. Meets at the Lodgeside Club, Lodge Road, Kingswood, Bristol. Details from Dave Bendrey G7BYN.

GORDANO ARG, G6GRG. Meets at The Ship, Redcliffe Bay, Portishead, Avon. Details from Mr R.T. White G8SPC. Tel: (01275) 874001.

NORTH BRISTOL ARC, G4GCT. Meets at the Self Help Enterprise, 7 Braemar Close, Northville, Bristol. Details from David Coxon G0GHM. Tel: (01275) 790448.

SEVERNIDE TV GROUP, G83ZZ. Meets at NBARC, Filton, Bristol. Details from Paul Stevenson G8MYM. Tel: 0117-965 5386.

SHIREHAMPTON ARC, G4AHC. Meets at the TS Enterprise Sea Cadet Unit, Station Road, Shirehampton. Details from Mr R.G. Ford G4GTD. Tel: 0117-985 6253.

SOUTH BRISTOL ARC, G4WAW. Meets at the Whitechurch Folk House, East Dundry Road, Bristol. Details from Mr L.F. Baker. Tel: (01275) 834282.

THORNBURY & SOUTH GLOS ARC, G4ABC. Meets at the United Reform Church Hall, Rock Street, Thornbury, Bristol. Details from Stan Greenhill G0RYM. Tel: (01454) 413177.

WESTON-SUPER-MARE RS, G4WSM. Meets at the Woodspring Hotel, High Street, Worle, Weston-Super-Mare. Details from Stephen Cole G3YOL. Tel: (01934) 843144.

CORNWALL & SCILLY IS

CORNISH RAC, G4CRC. Meets at the Perran-Ar Worthal Village Hall, Perranrivel, Nr Truro, Cornwall. Details from Mrs Cheryl Hammett 2E1ADQ. Tel: (01726) 882758.

NEWQUAY & DARS, G4ADV. Meets at the Treviglas School, Newquay. Details from Mrs Maggie Reed G0KEM. Tel: (01726) 882752.

POLDHU ARC, G82GM. Meets at the Club House, Poldhu Cove, Mullion, Cornwall TR12 7JB. Details from Mrs Carolyn Rie M0ADA. Tel: (01326) 240144.

SALTASH & DARC, G4GVK, G8SAL. Meets at the Toc H Hall, Warraton Road, Saltash, Cornwall. Details from Bnan Giles. Tel: (01752) 844321.

ST AUSTELL ARC, G0ECC. Meets at Poltair School. Details from Reg Pears G4TRV. Tel: (01726) 72951.

DEVON

APPLEDORE & DARC, G2FKO. Meets at the Appledore Football Club. Details from Mr B. Jewell M0BRB.

AXE VALE ARC, G8CA, G7AXE. Meets at the George Hotel, Axminster, Devon. Details from Pat Cross G0GHH. Tel: (01297) 33756.

DARTMOUTH RADIO CLUB, G1RCD, G0DRC. Meets at the Yelverton War Memorial Village Hall, Meavy Lane, Yelverton, Devon. Details from Ron Middleton G7LLG. Tel: (01822) 852586.

EXETER ARS, G4ARE. Meets at the Moose Centre, Spinning Path Lane, Blackboy Road, Exeter. Details from Ray Donno G3YBK.

EXMOUTH ARC, G0XRC. Meets at The Scout Hut, Marpool Hill, Exmouth.

NORMAN LOCKYER OBSERVATORY ARG, G0AXC. Meets at the Norman Lockyer Observatory, Salcombe Hill, Sidmouth. Details from Ron Hanson G0NOC. Tel: (01395) 515349.

NTE (PAIGNTON) ARS, G0OSH. Meets at Paignton Community College, Upper School, Waterleaf Road, Paignton. Details from Rod Maude G0WSM. Tel: (01803) 521066.

TORBAY ARS, G3NJA. Meets at the Highweek Family & Social Club, Highweek, Newton Abbot, Devon. Details from John Olway G3RMA. Tel: (01803) 556425.

UNIVERSITY OF PLYMOUTH ARS, G0UOP Details from Alan Santillo G0XAW.

DORSET

BLACKMORE VALE ARS, G4RBV. Meets at Shaftesbury Club for Young People, Coppice Street, Shaftesbury, Dorset SP7 8PF. Details from Mr A. Marriott G0GLF. Tel: (01258) 860741.

BOURNEMOUTH RS, G2BRS. Meets at the Kinson Community Centre, Kinson, Bournemouth, Dorset. Details from Chns R. Ellis M5AGG, Broken Ridge, Fir Tree Close, St. Leonards, Ringwood, Hants BH24 2QW. Tel: (01202) 893126.

CHRISTCHURCH ARS, GOMUD. Meets at the Siemens Pleys Sports & Social Club, Grange Road, Somerford, Christchurch, Dorset. Details from Mr K.P. Harris G7WSN. Tel: (01202) 484892.

FLIGHT REFUELLING ARS, G4RF. Meets at the Flight Refuelling Social Club, Merley, Wimborne, Dorset. Details from Martin Axon 2E1DFZ. Tel: (01202) 693334.

POOLE RS, G4PRS. Meets at the Boumemouth & Poole CFE, Constitution Hill Site, Poole, Dorset. Details from Phil Mayer G0KKL. Tel: (01202) 700903.

PORTLAND ARC, G0VOP/G7VOP. Meets at Clifton Hotel, Grove Road, Portland. Details from Kerry Morris G1WIK. Tel: (01305) 786591.

SOUTH DORSET RS, G3SDS. Meets at the Church Hall, Chickereil, Weymouth, Dorset. Details from John Rose M0BQO. Tel: (01305) 832057.

SWANAGE & PURBECK ARC, M0BLJ. Meets at Kings Arms, Langton Matravers, Dorset. Details from Peter Wakefield M1WCH/M3WCH. Tel: (01929) 424413.

WESSEX AMATEUR WIRELESS CLUB, G1WAW. Details from Ken Powell G1NCG. Tel: (01202) 549376.

JERSEY

JERSEY ARS, GJ3DVC. Meets at the German Signal Station, Rue Baal, La Moye, St. Brelade. Details from Mrs Anne Mourant MJOBJU. Tel: (01534) 734948.

SOMERSET

PRESTON COMMUNITY SCHOOL ARC, G0PCS. Details from Craig Douglas G0HJD. Tel: (01935) 71131.

TAUNTON & DARS, G3XZV. Meets at The Memorial Hall, Trull, Taunton. Details from David Rosewam M0CJF.

***WEST SOMERSET ARC, G00WX.** Meets at the West Somerset Community College, Minehead, Somerset. Details from Robert G1NOR. Tel: (01643) 863462.

WINCANTON ARC, G0WRA. Meets at King Arthur's Community School, West Hill, Wincanton. Details from Mr G.A. Fingerhut G0ENW. Tel: (01963) 370506.

YEovil & DARC, G3CMH, G8YEO. Meets at the British Red Cross HQ, 72 Grove Avenue, Yeovil, Somerset. Details from George Davis G3ICO. Tel: (01935) 425669.

ESSEX

BRAINTREE & DISTRICT AMATEUR RADIO SOCIETY, G3GK. Meets at the Braintree Hockey Club, Church Street, Bocking, Braintree. Details from John M5AJB. Tel: (01787) 460947.

CHELMSFORD ARS, G0MWT. Meets at the Marconi Social Club, Beehive Lane, Chelmsford, Essex. Details from David Bryant M0BQC. Tel: (01245) 602838. E-mail: cars@g0mwt.org.uk

CLACTON RADIO CLUB, G3CRC. Details from Mr D. Fitzpatrick M0CHL.

COLCHESTER ARS, G3VCO. Meets at the Colchester Institute, Sheepen Road, Colchester. Details from Frank R. Howe G3FUJ. Tel: (01206) 851189.

DENGIE HUNDRED ARS, G0UTT, G7SDH. Meets at the Henry Samuel Hall, Maryland, Essex. Details from Mrs Christine Wade. Tel: (01621) 772986.

HARLOW & DARS, G6UT. Meets at the Mark Hall Barn, First Avenue, Harlow, Essex. Details from Len Brackstone G1UFF. Tel: (01279) 832700. FAX: (01279) 864973.

HARWICH ARIG, G0GRH. Meets at the Park Pavilion, Barrack Lane, Harwich. Details from Eugene Kraft G4FTF.

LOUGHTON & EPPING FOREST ARS, G4ONP. Details from Marc Litchman G0T0C. Tel: 0208-502 1645/(07803) 023501.

SOUTH ESSEX ARS, G4RSE. Meets at the Paddocks, Long Road, Canvey Island, Essex. Details from Mrs Betty Maynard G6LUO. Tel: (01268) 695474.

SOUTHELD & DRC, G5QK. Meets at the Alexandra Yacht Club, Clifton Parade, Southend-on-Sea, Essex. Details from Alan Radley G0TFM. Tel: (01268) 741229.

STANFORD-LE-HOPE & DARC, G4SLH. Meets at the St Joseph Parish Rooms, Scratton Road, Stanford-le-Hope, Essex. Details from Ken Thompson G4PAD. Tel: (01375) 671238.

VANGE ARS, G3YCW. Meets at the Barnstable Community Centre, Basildon, Essex. Details from Mrs D. Thompson. Tel: (01268) 552606.

KENT

BREDHURST RX & TX SOC., G0BRC. Meets at Rock Avenue Working Mens Club, Rock Avenue, Gillingham, Kent. Details from Mr T.M. Wheeler G7MIM.

CRAY VALLEY RS, G3RCV, G1RCV. Meets at the Progress Hall, Admiral Seymour Road, Eltham, London SE9. Details from Richard Perzyna G8ITB. Tel: (01689) 602948.

DOVER RADIO CLUB, G3YMD. Meets at the Dover Grammar School for Boys, Astor Avenue, Dover. Jim Cairns M1BKI. Tel: (01304) 852773.

EAST KENT RADIO SOCIETY, G0EKR. Meets at St. Bartholomew's Church Hall, Heme Bay, Details from Paul Nicholson G3VJF. Tel: (01227) 743070. FAX: (01227) 742288.

HASTINGS ELEC. & RC, G6HH, G1HHH, G6LL. Meets at West Hill Community Centre, Croft Road, Hastings, East Sussex. Details from Mr J. Boothroyd G0MTJ. Tel: (01233) 732656.

HILDERSTONE ARS, G0HRS. Meets at Hilderstone A.E.C., Broadstairs, Kent. Details from Mr G. Shaw M0AQA.

HOME COUNTIES ATV GRP, G6HCT. Meets at the Binfield Club, Binfield (near M4/J10). Details from Mr A. Brooker G4WGZ.

MAIDSTONE YMCA ARS, G3TRF. Meets at YMCA Sports Centre, Melrose Close, Maidstone, Kent. Details from Colin Wilson G0VAR. Tel: (01622) 736636.

MEDWAY ARTS, G5MW, G8MWA. Meets at Tunbury Hall, Catkin Close, Tunbury Avenue, Walderlade, Chatham. Details from Mr J. Hale G3FTH.

NORTH KENT RS, G4CW. Meets at The Pop-in-Parlour, Graham Road, Bexleyheath, Kent. Details from Mr A.V. Fribbens G8MLQ. Tel: (01474) 365694.

SWALE ARX, G4SRC, G6SRC. Meets at the Ivy Leaf Club, Dover Street, Sittingbourne, Kent. Details from Gordon Powell M0AKA. Tel: (01795) 665559.

THE MORSE CLUB, G30XQ. Meets at The Five Wents Memorial Hall, Swanley/Hextable Road. Details from Ken M3CZA. Tel: 0208-306 3544.

WEST KENT ARS, G3WKS. Meets at the St. Marks School Hall, Tunbridge Wells, Kent. Details from Malcolm Sheppard G4FWG. Tel: (01892) 652272.

NORFOLK

ANGLIA TELEVISION ARS, G0TXV. Meets at Anglia TV, Norwich NR1 3JG. Details from Jim Bacon G3YLA. Tel: (01603) 615151.

GREAT YARMOUTH RS, G3YRC. Meets at the Bradwell Community Centre, Bradwell, Great Yarmouth, Norfolk. Details from Mr A.D. Besford G3NHU.

GRESHAM'S SCHOOL ARC, G3PX0. Details from Rev. R.N. Myerscough G3PX0.

KINGS LYNN ARC, G3XYZ. Details from Derek Franklin G0MQL.

NORFOLK ARS, G4ARN. Meets at Norwich Aviation Centre, Norwich Airport. Details from John Wadman G0VZD. Tel: (01935) 604769.

NORTH NORFOLK ARC, G2MCM. Details from Tony Smith G4FAI. E-mail: g4ai@connectfree.co.uk

SUFFOLK

BURY ST. EDMUNDS ARS, G2T0. Meets at the Culford School, Culford, Bury St. Edmunds, Suffolk. Details from George Woods G3LPT.

FELIXSTOWE & DARS, G4ZFR. Meets at the Orwell Park School, Nacton, Near Ipswich. Details from Paul Whiting G4VQC. Tel: (01473) 642595.

FRAMLINGHAM COLLEGE ARC, M0CBB. Tel: (01728) 727232.

IPSWICH RADIO CLUB, G4IRC. Meets at the Golden Hind, Nacton Road (3rd Wednesdays at The Hollies, Bucklesham Straight Road), Ipswich. Details from Keith Gaunt G7CIV. Tel: (01394) 420226.

LEISTON ARC, G6BFS. Meets at Leiston Town Athletic Assn., Victory Road, Leiston, Suffolk. Details from Paul Catermole M3MIG. Tel: (01728) 746044.

LOWESTOFT DRS, G3JRM. Meets at The George Barrow Hotel, Oulton Road, Lowestoft. Details from Phil Holden G0JSG. Tel: (01502) 585448.

MARTLESHAM RS, G4MRS. Meets at the BT Laboratories, Martlesham Heath, Ipswich, Suffolk. Details from Darren Hatcher. Tel: (01473) 644475.

SUDBURY & DRA, G0SMI, G7SRA. Meets at the Old School, Wells Hall Road, Great Comard, Sudbury, Suffolk. Details from Bryan Panton G1TWY.

SUFFOLK DATA GROUP, G87MXM. Details from Peter Pryke G8HUE. Tel: (01473) 631313.

NORTH WALES

CLWYO CONWAY VALLEY ARC, G6WTM. Meets at the Studio, Penrhos Road, Colwyn Bay, Cwylid. Details from Mr R.W. Evans G6WPMC. Tel: (01745) 855068.

HALKYN & DARS, G3WHRG. Details from Mr D. Austin G1DXHG.

NORTH WALES RS, G3WONW. Meets at the Old YMCA, Queen's Drive, Colwyn Bay, Cwylid. Details from Ted Shipton G0WDSJ. Tel: (01745) 336939.

WREXHAM ARS, G4WXM. Meets at the Community Centre, Maesgwyn Road, Wrexham. Details from Mr P. Moran G0W0WR.

GWYNEDD

MEIRION ARS, G4WZP. Meets at the Royal Ship Hotel, Dolgellau, Gwynedd. Details from Gervase Chavasse G4URJ. Tel: (01341) 421028.

PORTHMADOG & DARS, G0WMI. Meets at the Yacht Club, The Harbour, Porthmadog, Gwynedd. Details from Mr G. Cadwalladr M01DFN.

THE DRAGON ARC, G4WTTA. Meets at the Ebenezer Church Hall, Lon Foei Graig, Llanfaiwlwl, Isle of Anglesey. Details from Stewart Rolfe G0W0TF. Tel: (01248) 362229.

POWYS

POWYS ARC, G4W4VN. Meets at the ATC HQ, Park Lane, Newtown, Powys. Details from Mrs Jean Brown 2W1CEZ. Tel: (01686) 640814.

SOUTH WALES

ABERFORTH YMCA, G4WSZY. Meets at the Hut B17, The Airfield, Aberforth. Details from Mr G. Carruther G4WHGJ. Tel: (01239) 811205.

ABERSYSTWYTH & DARS, G40ARA. Meets at the Scout Hut, Plascrug Avenue, Abersystwyth. Details from John Woodward G6WIDK. Tel: (01970) 890657.

CARMARTHEN ARS, G4W4YCT. Meets at The Aelwyd Care Home, Carmarthenshire County Council,

Tregynw Road, Llanguunor, Carmarthen SA31 3BS. Details from Mr W.D. Hughes G4ZXL. Tel: (01267) 231359.

CLEDDAU ARS, G4WSYG. Details from Trevor Perry G4DQX. Tel: (01646) 600725.

LLANELLI ARS, G4W0EZO. Meets in the Furnace Community Hall, Furnace Square, Llanelli. Details from Roy Jones G4W0JZK. Tel: (01554) 820207.

PEMBROKESHORE RS, G4W0EJ. Meets at Furzy Park Community Centre, Furzy Park, Haverfordwest, Pembrokeshire. Details from Ian M. Jones M0W0CAB. Tel: (01437) 763028.

GWENT

ABERGAVENNY RS, G4W4GFL. Meets at the Hill Residential College, Pen-y-Pound, Abergavenny, Gwent. Details from Glyn Hughes G4W0DQY. Tel: (01633) 483186.

BLACKWOOD & DARS, G4W6GW. Meets at the Oakdale Comprehensive School, Oakdale, Blackwood, Gwent. Details from John Evans G8BITI. Tel: (01495) 225178.

EBBW VALE COLLEGE RS, G4W0IWF. Meets at the Gwent Tertiary College, Ebbw Vale Campus, College Road, Ebbw Vale, Gwent. Details from Mr T. Hayden G4W0HCN. Tel: (01495) 305192.

NEWPORT ARS, G4W4EZW. Meets at the Brynglas Community Centre, Brynglas Park, Newport, Gwent. Details from Paul Nicholls.

PONTYPOOL ARS, G4W3RNH. Meets at the Settlement, Rockhill Road, Pontypool, Gwent. Details from Graham Smith G4W00LZ.

MID-GLAMORGAN

BRIDGEND & DARC, G4W4JNP. Meets at the Club Brynmawr, Brynmawr, Bridgend. Details from Alun Hulmes. Tel: (01656) 721574.

HOOVER (MERTHYR) ARC, G4W3RDB. Meets at the Hoover Sports Pavilion, Hoover Ltd., Pentrebach, Merthyr Tydfil, Mid Glamorgan. Details from Robert Cummings G4W0RVG.

MID GLAMORGAN ARC, G4W0CNA. Meets at Aberkenfig Sports & Social Club. Details from Mervyn Carey G4W4VSE. Tel: (01656) 734668.

SOUTH GLAMORGAN

BARRY ARS, G4W3VKL. Meets at Sully Sports & Leisure Club, South Road, Sully, S. Glamorgan. Details from Richard Mortimore G4W4BVJ. Tel: (01446) 738756.

HIGHFIELDS ARC, G4W4LFO. Meets at the Highfields Physically Handicapped Centre, Allensbank Road, Cardiff. Tel: (01222) 561542.

WEST GLAMORGAN

PORT TALBOT (BS PLC) ARS, G4W3EOP. Meets at the British Steel PLC Sports & Social Club, Margate, Port Talbot, West Glamorgan. Details from Mr J. Chinnock M4W0AGE.

SWANSEA ARS, G4W4CC. Meets at the Applied Sciences Building, Swansea University. Details from Frank Burrow G4W8BME. Tel: (01792) 390233.

SCOTLAND WEST & WESTERN ISLES

CENTRAL REGION FALKIRK & DARS, G4M0FC. Meets in the 62nd Forth Valley Scouts Hall, Denny Road, Larbert, Nr. Falkirk. Details from Brian J. Waddell G4M4XQ. QTHR or E-mail: gm4xqj@btinternet.com

STIRLING & DARS, G4M6NX. Meets at Bandedath Industrial Estate, Throsk, Nr. Stirling. Details from John Shery G4M0AZC. Tel: (01324) 824709.

DUMFRIES & GALLOWAY

WIGTOWNSHIRE ARC, G4M4RIV. Meets at the Aird Unit, Stranraer Academy, Stranraer (entrance from Cairnport Road). Details from Neil Macdonald G4M4LQS.

STRATHCLYDE AYR ARC, G4M0AYR. Meets at the University of Paisley, University Campus, Beech Grove, Ayr KA8 0HN. Details from John Shankland M4M1JAS. Tel: (01292) 445599.

CENTRAL SCOTLAND FM GROUP, RS38728. Details from Thomas Stalker G4M7TZU. Tel: (01698) 816793.

DALRY ARC, M4M0ARG. Meets at The Turf, In Dalry Court, Hill Street, Dalry. Details from Alex McKeeman M4M0AMB. Tel: (01294) 823295.

DUNOON & DARS, G4M0C0D. Meets at the Edward Street Community Centre, Edward Street, Dunoon. Details from A.E. Horton G4M0BUL. Tel: (01369) 840217.

HELENSBURGH ARC, G4M4HEL. Details from G. Castpick G4M70AF. Tel: (01436) 675922.

INVERCLYDE ARC, G4M0GKN. Meets at the Cardwell Bar, Cardwell Road, Gourcock, Strathclyde. Details from Andrew Givens G4M3YOR. Tel: (01475) 638226.

KILMARNOCK & LOUDOUN ARC, G4M0ADY. Meets at the Hurlford Community Centre, Cessnock Road, Hurlford. Details from Steve Campbell G4M00SS. Tel: (01560) 483800.

LARGS & DARS, G4M0VKG. Details from Mr J. Clough G4M0MDD. Tel: (01475) 568584.

LORN ARS, G4M0LRA. Details from T. Olsen G4M0EQW. Tel: (01866) 2580.

MID LANARK ARS, G4M3PKX. Meets at the Newarthill Community Ed. Cent., High Street, Newarthill, Motherwell, Lanarkshire ML1 5GU. Details from John Neary G4M0XFK. Tel: (01698) 822860.

MILTON OF CAMPSIE ARS, G4M0MOC. Meets at The Red Cross Hall, Kirkintilloch. Details from John MacKenzie G4M0HJV. Tel: (01360) 312954.

PAISLEY ARC, G4M0PYM. Meets at the Paisley YMCA Hall, 5 New Street, Paisley PA1 1XU. Details from John Quigley G4M0TQA. Tel: 0141-889 6860.

SCOTTISH DIGITAL COMMS. GRP, G4M7VSR. Details from Stuart Clink G4M1VBE. Tel: (01698) 884803.

WEST OF SCOTLAND ARS, G4S4AGG. Meets at the Multi Cultural Centre, 21 Rose Street, Glasgow. Details from Hon. Sec.

SCOTLAND EAST & HIGHLANDS BORDERS

BORDERS ARS, G4M0BRS. Meets at the St. John Ambulance Hall, Benwick-upon-Tweed. Details from A.M. McCreadie G4M0BPY. Tel: (018907) 50492.

GALASHIELS & DARS, G4M4YEQ. Meets at the Focus Centre, Galashiels. Details from Jim Keddie G4M7LUN.

KELSO ARS, G4M4KHS. Meets at the Abbey Row Community Centre, Kelso. Details from Margaret Chalmers G4M0ALX. Tel: (01573) 226372.

FIFE

GLENROTHES & DARC, G4M4GRC. Meets at the Football Pavilion, Station Road, Thornton, Fife. Details from Alexander Adam G4M0FVD. Tel: (01592) 874374.

GRAMPIAN

ABERDEEN ARS, G4M3BSQ. Meets at the Red Cross HQ, 22 Queens Road, Aberdeen. Details from Robert Duncan. Tel: (01224) 896142.

BANFF & DARC, G4M0PYC. Meets at the Princess Royal Park Football Ground, Conference Road (Deveronvale F.C.), Banff. Details from Steve Roberts G4M4HWS. Tel: (01888) 551377.

MORAY FIRTH ARS, G4M3TKV. Meets at the Grant Arms Hotel, Fochabers. Details from Geoff Crowley G4M7SJC. Tel: (01542) 882818.

HIGHLAND REGION

FORT WILLIAM ARG, G4M0FRG. Details from R. Johnstone G4M1YGV. Tel: (01397) 703046.

INVERNESS ARC, G4M4TFP. Meets at The Emergency Operations Centre, Inverness (except July and August). Details from R.F. Goodall G4M00GZ. Tel: (01463) 811701.

LOTHIAN

COCKENZIE & PORT SETON ARC, RS177035. Meets at the Throome Inn, Lounge Bar, Old Cockenzie High Street, Cockenzie, E. Lothian. Details from Mr Bob Glasgow G4M4UYZ. Tel: (01875) 511723.

LOTHIANS RS, G4M3HAM. Meets at the Orwell Lodge Hotel, Polwarth Terrace, Edinburgh EH11 1NH. Details from Thomas G. Main, Sec.

ORKNEY

ORKNEY ARC, RS181749. Details from Mrs Terry Penna. Tel: (01856) 741233.

SHETLAND ISLANDS

LEWICK RC, G4M3ZET. Meets at the Islesburgh Community Centre, King Herald Street, Lerwick, Shetland. Details from Ian C. Millar G4M7FRD. Tel: (01950) 460306.

TAUNSIDE REGION

DUNDEE ARC, G4M4AAF. Meets at the Dundee College, Graham Street Annex, Dundee. Details from Martin Higgins M4M0DUN, c/o Dundee ARC, 60 Duns Crescent, Dundee DD4 0RZ

PERTH & DARC, G4M4EAF. Meets at the Perth Sports & Social Club, 12 Leonard Street, Perth. Details from Ron Harkess G4M3THI. Tel: (01738) 643435.

STRATHMORE & DARC, G4M3GBZ. Meets at 2231 Sqdn ATC, 1 Lochside Road, Forfar. Details from Graham Scattergood M4M0BSX. Tel: (01307) 468824.

N. IRELAND

CO. ANTRIM ANTRIM & DARS. Meets at the Clotworthy Arts Centre in the Castle Grounds in Antrim. Details from David Hutchinson G4F4M or visit www.g4f4w.co.uk

BALLYMENA RC, G4M3FFF. Meets at 70 Nursery Road, Gracehill, Ballymena, Co. Antrim. Details from Jeffrey Clarke G4H4CN. Tel: (01266) 659769.

CARRICKFERGUS ARC, G4I0X. Meets at the Downshire Community School, Downshire Road, Carrickfergus. Details from John Branagh G4I3YRL. Tel: (01960) 367208.

***GLENORMLEY ELECTRONICS ARS, G4M0XYZ.** Meets at Knockagh Lodge, 236 Upper Road, Greenisland, Co. Antrim. Details from James Hoey G4I0BJH. E-mail: g4i0bjh@ntworld.com

LAGAN VALLEY ARS, G4IGTY. Meets at the Harmony Hall Arts Centre, Harmony Hill, Lisburn, Co. Antrim. Details from Ron McCaughey G4INT0.

ROYAL NAVY (ULSTER) ARC, G4I0URN. Club affiliated to the Royal Navy Amateur Radio Society. Details from Alex Miller G4ISFV.

CO. ARMAGH

ARMAGH & DARC, G4I0ADD. Meets at County Armagh Golf Club, 7 Newry Road, Armagh City. Details from John A. Murphy. Tel: 0283-752 2153.

CO. DOWN

BANGOR & DARS, G4I3XRQ. Meets at The Stables, Groomsport, Co. Down. Details from Terry Barnes G4I3USS. Tel: 0289-147 3948.

NEWRY & MOURNE ARC, G4IMBBO. Meets at the Shamrock Social Club, Newry.

ULSTER DX ARG, M4I0UDX. Details from Mr P.G. Mercer G4I4VV.

CO. FERMANAGH

LOUGH ERNE AMATEUR RADIO CLUB G4I0LEC. Meets at the Railway Hotel, Fonthill Street, Enniskillen, Co. Fermanagh. Details from Herbie Graham G4I0JPO. Tel: 02866 387761.

TYRONE

THE FOYLE & DARS, M4I0AKJ. Meets at 159 Victoria Road, Bready, Co. Tyrone. Details from Trevor Campbell G4I1XGA. Tel: 0287-134 5405.

International Radio Clubs

AMSAT-UK (G0AUK)

Information from Jim Heck G3WGM, Badgers, Letton Close, Blandford, Dorset BH11 7SS. E-mail: g3wgm@amsat.org or visit www.uk.amsat.org

British Amateur Radio Teledata Group (BARTG - G4ATG, GB2ATG)

Contact Membership Secretary Andrew Thomas G8GNI, M5AEX, Dame School House, 103 High Street, Stony Stratford, Buckinghamshire MK11 1AT, E-mail: members@bartg.demon.co.uk or visit www.bartg.demon.co.uk

British Amateur Television Club (BATC - RS38114)

Enquiries to Dave Lawton G0ANO, 'Grenehurst', Pinewood Road, High Wymcombe, Bucks HP12 4DD. Tel: (01494) 528899. E-mail: memsec@batc.org.uk or visit www.batc.org.uk

British DX Club (BDXC-UK)

Enquiries to Club Secretary Colin Wright, 126 Bargery Road, London SE6 2LR. E-mail: secretary@bdxc.org.uk or visit www.bdxc.org.uk

Danish Shortwave Club

Information from Treasurer Bent Nielsen, Egekrogen 14, DK-3500 Vaerloese, Denmark or visit www.dswci.org

International Listeners' Association (RS88763)

Details from Trevor Morgan GW4OXB, 1 Jersey Street, Hafod, Swansea SA1 2HF. E-mail: gw4oxb@net.nl.com



International Short Wave League (ISWL - G4BJC)

Information from Honorary Secretary Bill Mackie G-9137/G4AIE, 23 College Park, Horncastle, Lincs LN9 6RE. E-mail: bill.mackie@zetnet.co.uk or visit www.iswl.org.uk

Military Wireless Amateur Radio Society (G0PTZ)

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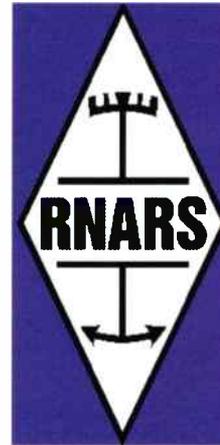
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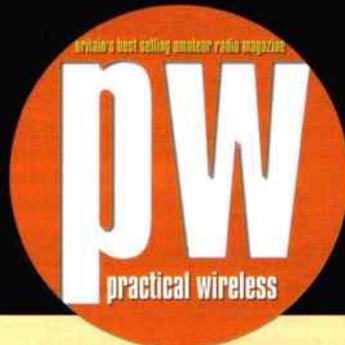
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