CB Action

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THE LAST CB ACTION

but...see page 27!

Reviewing the 500 memory UBC9000XLT Scanner

TX-3000 UHF — top quality new rig

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ON CHANNEL

FAREWELL CB ACTION - G'DAY "RADIO and COMMUNICATIONS"

Well, after close to 20 years CB Action is about to enjoy its first MAJOR change. There have of course been many minor (well maybe not all **that** *minor) changes during this time, from monthly to quarterly, to not at all for a year or so, to bi-monthly - and now monthly again, but with a difference.*

Commencing in 1976, CBA was actually publishing when even owning a CB was illegal and we sometimes wonder if those weren't the best days anyway. You operated behind closed doors and worried that every knock on the door was the dreaded RIs come to take you to gaol - owning a beam antenna was even more illegal than owning a CB - it was also fairly difficult as there weren't any on the market and you had to build your own .

It is a different scene today and while CB is still alive and well there is ever increasing interest in other forms of hobby communications... Changing times dictate that magazines need to change with them and so it is with CBA.

This is the final issue of CBA in its current format, however, as from late June, you can look forward to a 100 page monthly called "Radio and Communications". It will be a combination of CBA and our sister magazine Amateur Radio Action and readers of both will continue to receive the same amount of information, reviews, etc. that they now get in these two titles - except that they will now be combined into the one and, for CBA readers, they will now get their reading every month rather than every second month as now.

Our 1994 surveys indicated a tremendous "cross-over" of interests between CBA and ARA readers with a shared interest in scanners, antennas, DX, communications software, amateur equipment, CB HF and UHF rig reviews, etc. but to get this you needed to buy both magazines.

As of late June it will all be contained within the 100 pages of the new Radio and Communications...and there'll be more including sections on Internet, satellite imaging, do it yourself projects, satellite TV, computers for communications, BBSs - and the many other areas of interest to hobby communicators .

There will also be a FREE classified section where you can advertise your CB radios, antennas, power supplys, modems, SW receivers, etc. - see page 58 of this issue for details.

We believe that Radio and Communications will better meet the needs of today's CBers, amateurs and hobby communicators in general and there will be more, and better, reading for everyone.

Having made the decision to combine the two a couple of months back, the fact that it's a good decision was further strengthened when we recently learnt of an enormous increase in the cost of magazine paper which comes into effect shortly - try paper increases of between 50% and 70% - and then think what that's going to do to magazine cover prices.

By combining CBA and ARA into a substantial 100 page monthly, we can hold the cover price to $3.95 - just 20 cents more than CBA now costs for only 60 pages - that's an extra 40 pages for 20 cents.

Of course we have some regrets that the name CBA will vanish from the market after 20 years, however, knowing that we can produce an overall bigger, better, and monthly instead of bi-monthly publication without losing any of the old CBA features considerably outweighs those regrets.

We thank our many readers and advertisers, some of whom have been with us for the last 20 years, for their past support and the fact that all of them are now swinging their support into the new magazine.

...and if you're absolutely desperate for communication's info, you can still buy ARA which will continue with the May and June issues before joining us in the new one.

So from CB Action and me (the original Eagle One), thanks and goodbye - see you in June with Radio and Communications.

CB Action

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New SW club for Oz

The demand for DX clubs/groups in Australia continues.

Hot from the DX capital of Australia, Melbourne, a new club has been born to cater for DXers who are looking for something different in the hobby.

The **South Pacific Union Of DXers**, or **SPUD** as it likes to be called, is a 'Club with an attitude'. Consisting of some of Australia's finest DXers, SPUD wants to put the fun back in the hobby as well as promoting mateship. From the group's initial publicity, it looks like this club will cater for all interests. From shortwave to medium wave, utility DXing, tropical bands, world news, tech topics, free radio, FM/TV DXing and more. Well-known propagation expert, Mike Bird, will also be writing for the club, adding his touch to a well-rounded club.

It is great to see that computers will also be represented, as they can be an invaluable aid in the hobby. An E-mail message received from the club said the first edition of its new magazine was planned for March. The club aims to produce a monthly magazine between March and October with a bi-monthly mag for Nov/Dec and Jan/Feb.

To promote mateship, there is talk of having a tour or two. Planned for May is a tour of the Victoria Police D24 communications center in Melbourne, and for June, in between DXpeditions, a bus tour to Radio Australia's transmitter site at Shepparton.

The South Pacific Union Of DXers (SPUD) can be contacted via secretary, Paul Newton at PO Box 33, Montrose, Victoria 3765. Membership fees are A$30 for members in Australia, A$38 for people in NZ, PNG, Fiji and Japan, and A$41 for the rest of the world.

We'll be hearing more from SPUD in the future, so stay tuned.

New TV/FM group launched in Melbourne

A new FM/TV DX group was recently launched in Melbourne which caters for those who enjoy chasing FM and TV stations outside their normal reception zone. Called the **ICDX**, Robert Copeman, the group's creator, aims to cater for the growing number of people who DX outside the SW bands.

With around 35 members so far, it aims not to be a club but an outlet where DX catches and broadcast news can be shared. For the cost of one book of stamps (10 x 45¢) you will receive the monthly newsletter *Crossfire* with the latest news and loggings. At the time of going to press, issue 10 has been released with 10 pages of hot news and catches.

Robert Copeman can be contacted at 10 Cratloe Road, Mount Waverley, Victoria 3149.

Collapse of well-known DX club

And while on the subject of DX clubs, I'm sorry to report that the internationally famous DX club, **SPEEDX** has collapsed due to financial problems of rising postage and printing together with a falling membership.

The **Society for the Preservation of the Engrossing Enjoyment of DXing**, or, thankfully, SPEEDX for short, began way back in 1971 and at its peak had over 1200 members.

Renowned for its work in the field of Utility DXing and publications, this club will be missed by all. Many US DXers who frequent Rec.Radio.Shortwave on the Internet were actively involved in Utility DXing, and SPEEDX members were taken by surprise to learn in late January that the January magazine would be their last.

But out of the bad comes news of an exciting new project which is picking up the pieces and moving on from where SPEEDX left off. Several Utility listeners wanted to continue their activity of sharing their loggings and, better still, wanted to publish a magazine.

So the birth of **The Worldwide Ute News Club** (**WUN**) came about. This is a unique venture, as it's the first club dedicated to Ute DXing and is the first electronic club with an electronic newsletter on the Internet.

With some 218 members worldwide at the time of writing this, it is growing at a very fast rate. The good thing about the club is it's free to join. All you need is e-mail access to the Internet. To join the mailing list send an e-mail message to majordomo@phoque.info.uqam.ca with the following command in the body of your e-mail message: **subscribe wun**.

The listserver at the other end will add you to the mailing list, send you an acknowledgment back, as well as send you details on how to use the listserver. From that point on, as people post their ute loggings, tips and comments, within minutes you will receive their message in your e-mail mailbox.

Once a month an electronic edition of the magazine will be published with the latest loggings and news on all facets of Utility DXing. To assist those who only want to receive the magazine, there is another listserver address you can send a subscription message to. Its address is majordomo@phoque.info.uqam.ca. In the body of your message put **subscribe wunnews** — and each month the magazine will arrive at your electronic doorstep. To send your loggings, post to wun@phoque.info.uqam.ca.

The first edition has been published and went to an astonishing 40 pages. Not bad for a club which is only a month old! Congratulations to Richard Baker, who has been involved in much of the behind-the-scenes work in getting things started.

A printed version of the newsletter is available for US$18.00 a year, but at this time I don't have a postal address you can write to. The deadline for material has been set as the 10th of each month. On top of all this, there is now a World Wide Web page exclusively on Ute DXing.

The URL is http://sun-gabriel.aer.org:8800/.

...And yet more Internet news

It seems that the Internet is the place to be these days. No matter what aspects of radio you are into, the Internet has something for you.

SBS radio and TV are now there — http://acslink.net.au/tomw/sbs.html — and even the Department of Communications and the Arts has joined the global village. Its World Wide Web (WWW) home page is http://www.dca.gov.au. The last time I dropped by it was still developing many of the pages, but I guess we can expect to find more in due course.

For those who are interested in learning about propagation, the IPS here in Sydney has also joined on the Internet bandwagon.

The IPS' WWW home page address is http://www.ips.oz.au/rwc while its FTP site is ftp.ips.oz.au/users/rwc. I hope we can soon receive IPS *data* via this path. At the present time its site is still under development.

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Uniden Bearcat UBC9000XLT

..a surprising and rather and rather special piece of equipment

By Maurie Bund

We've watched over the years as manufacturers started taking the scanner marketplace seriously. Early scanning receivers needed crystals to select their channels, had a very narrow possible frequency coverage, and generally were pretty deaf. Some offered four channels, others up to 10 or even 20 channels. And they were very expensive indeed.

Even with frequency synthesis, some much later scanners were still little more than toys with big price tags. Their performance was generally well below that of comparable two-way radios, CB rigs included.

But the technology has now caught up with that of affordable transceivers and, in a number of key areas, some scanners have better-performing receivers than you'll find in some purpose-built transceivers. That's a very considerable achievement when you consider the enormous amount of spectrum a 'serious' scanner has to cover.

The latest radio in a proud line of **Uniden Bearcat** communications receivers, the **UBC9000XLT**, is a very good example of this trend indeed. If I were to rattle off some of its specifications and features, you'd probably agree it would be good buying at around $1000.

For just $600 or so, when Dick Smith Electronics stores start flogging them this month, this newcomer has to be rated as one of the radio world's better buys.

Some of the things which set this radio apart from many others are:

- It has 500 memory channels, broken into 20 groups of 25 channels, the idea being to sort frequencies into areas of similar interest. You can select individual group(s) to scan at will, or scan the lot. You can assign 16-character alphanumeric 'name tags' on up to 250 of the channels;
- outstanding scrolling alphanumeric display (which can be programmed to display names or callsigns rather than just frequencies and/or channel numbers;
- its almost complete tuning coverage of 25 to 1300MHz;
- its several tuning options for both scanning and searching;
- the way you can over-ride the factory defaults to select the mode (AM, FM-N or FM-W) and frequency step you want to use in any band, rather than be stuck with incorrect or overseas factory assignments (although, in this case, most are right for our market);
- its very solid and sturdy construction;
- the meaty supplied power supply;
- its sensible approach to controls and operation.

In any event, the Uniden Bearcat UBC9000XLT, to give its full name, is very much a business-like piece of gear, and its looks match the attitude. Size-wise, it's on the largish side at 267 X 85 X 189.5 (mm, whd) and, at 1.82 kg, it probably won't blow off the table either.

The case is all-black, with a slightly rounded front panel, and it's fitted with flip-down folding legs at the front for desktop use. In all, it looks very smart indeed. The controls are grouped sensibly, with everything falling easily to hand. So much so, in fact, that despite its quite sophisticated appearance, regular scanner users should really only need to consult the instruction manual for the truly esoteric features.

Looking at the front panel photo, you can see the main rotary on-off-volume control on the right. It works perfectly normally — you turn it clockwise to make it louder, or fully anticlockwise to shut it off altogether. Fine. Now tell me why the squelch control directly above it works backwards!? Maximum squelch is at the anticlockwise end, while *no* squelch is at the maximum clockwise end of the scale. It's confusing, and it's silly. I hope Uniden fixes that one very early in the production run...

Look again at the photo. There are no fewer than 42 main front panel controls — and what is that *biggest* knob, right there beside the display? Yep, a *tuning* knob, just like you find on any other serious receiver. Sure, you can enter frequencies from the keyboard, or push the up and down buttons to scroll through your 500 memories or search the bands, but that's a drag if you're only moving a little way. You don't really need an instruction book to tune with a good old-fashioned dial, either. It really is as simple as it looks, which is a great plus.

Another major plus is the speed of searching. If you haven't looked at a new scanner lately, you'll agree that it is, quite literally, phenomenal. Try a whopping **300 channels per second** in 5kHz steps. With a rate like that, you can mow down every single channel in any of the commercial bands in mere seconds.

Some scanners proudly boast that they zoom through the bands at a high speed — and most of them miss half the action because they only stop at the very strongest signals! This one can be running at its highest speed — which is really roaring along, faster than anything else I've ever come across — yet it will stop on even the weakest signal.

The front end is well-filtered, too. If you're tuned to, say, 445MHz, you only want to hear the signals on that particular frequency, but some receivers with poor front-end filtering often allow signals from other parts of the spectrum to 'leak' through, usually accompanied by quite bad distortion, which is not only confusing but downright annoying as well.

The Uniden Bearcat UBC9000XLT offers an optional CTCSS (continuous tone-controlled squelch system) decoder which, when tuned to the appropriate sub-audible tone frequency, will help to alleviate some of these problems. Remember, too, that almost *all* commercial two-way users of the spectrum are required to use CTCSS encoding on their signals. With the optional decoder fitted, you can run the receiver with the squelch turned completely off, yet hear nothing at all between signals. You generally wouldn't want to have the decoder turned on when searching, though, as you can choose from quite a number of CTCSS tones.

You could argue that the good performance in this area is as much a direct benefit of having a nice large case as it is good electronic design — perhaps it's a case of both! Good front-end filters are generally quite large, which is why some smaller receivers fare quite poorly in this regard.

My Icom IC-R1, for example, receives quite clear signals when tuned up to 100kHz either side of a signal. In the case of very strong, local signals, you can tune even further away and still have crystal-clear copy.

Another bugbear affecting most wide-ranging receivers is the clear reception of signals which aren't really anywhere *near* where they may seem. It's generally an 'image' of a signal exactly twice the first IF (intermediate frequency) away from the true frequency, which in many cases is 10.7MHz.

As an example, let's say you're tuned to a whopping great signal on 490.650MHz.

You consult your local frequency register, though, and discover that the channel is vacant.

So what gives?

Given adequate front-end filtering, you shouldn't hear this signal at all.

You're actually listening to 469.250MHz (add 469.25 with two times 10.7, and you'll see what I mean), which is a common police channel in many parts of the country.

One of the best ways to minimise or overcome the problem altogether is to use a really big first IF.

Some expensive scanning receivers use several conversion steps, with the first frequencies around 100MHz or even more, and it's easily possible in a physically large case to provide filters to eliminate the unwanted 'other side' signals when given a sufficiently large separation between a fundamental signal and its image.

I guess the first IF in this particular radio would have to be about 60MHz or so, but I cannot be sure as the specifications page is unusually shy about revealing very much useful information at all!

I'm afraid I didn't have the review scanner here for long enough to make any truly objective measurements of the UBC9000XLT's sensitivity figures, but I did have the chance to compare it to a couple of other good scanners and to some commercial transceiver equipment as well.

The result was a finding of surprising sensitivity — although, sadly, Uniden's specs page yielded nothing of value here, either. I found noisy S1 or S2 signals on the commercial gear were usually almost as good on the Bearcat — and it could certainly hear signals which the other scanners completely ignored. That's certainly a better result than I've usually experienced in the past.

Its supplied antenna is a little telescopic affair which connects to a standard BNC female connector, which is entirely standard and very appropriate for a receiver capable of receiving signals almost all the way from 25MHz to 1300 MHz.

Put the receiver into search mode and sit back for the ride of your life. That searching rate of 300 channels per second is almost impossible to believe, yet the circuitry is capable of stopping at even relatively weak signals even from its fastest scan.

Of course, you'll only want the receiver to stop at signals carrying voice transmissions, and that's exactly what it does. The scan pauses briefly (silently) on data transmissions, then decides to ignore the signal and resume the scan. That facility has been expected on scanners for years, mind you, but it's a handy one for those who search the bands.

Another handy feature for some is the automatic memory write capability. This feature allows you to specify search limits, then let the radio itself write frequencies for the signals it finds into vacant memory channels.

One of its smartest features where speedy scanning is concerned is the way it electronically 'sorts' memory channels within banks into frequency order. It doesn't actually change the memory numbers, I add, simply the order in which it scans the channels in each bank. Believe it or not, scanning the channels in this way makes the scan rate just a wee bit faster, because the PLL is able to lock up sooner. It may only be a small thing, but it certainly helps this amazing receiver honk along!

Needless to say, you can directly enter frequencies by tapping the numbers onto the keyboard, but be careful not to inadvertently overwrite the channels in memory — I kept doing that by mistake. If the channel you've just entered is already in one of the Bearcat's 500 memories, the display will warn you that the channel is a duplicate, and direct you to the original.

Summary...

The Uniden Bearcat UBC9000XLT is a top-line piece of gear at a mass-market price. Overall, it's a most impressive newcomer to the market. If the excellent quality and well thought-out workings are any indication, the scanner market is being taken very seriously indeed these days.

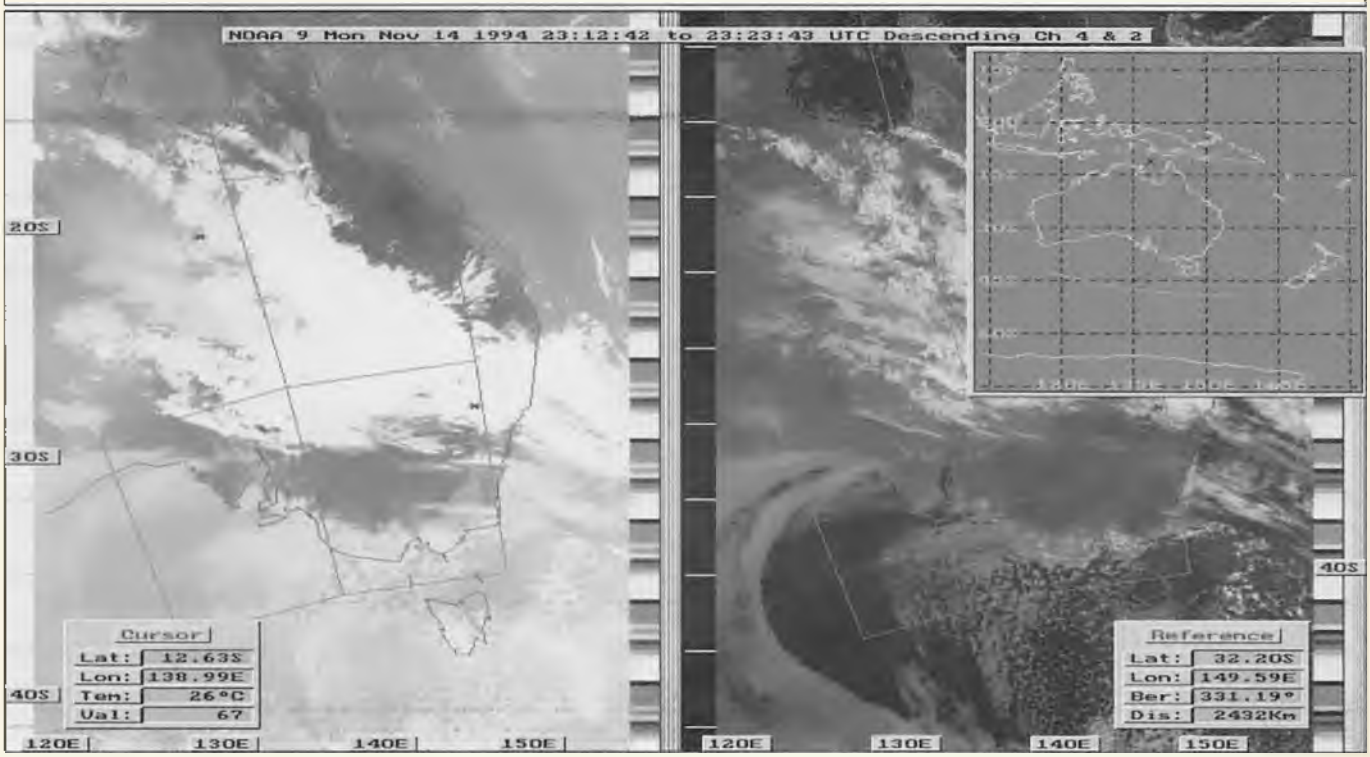
For a surprising $600 you'd be hard-pressed indeed to find another VHF/UHF receiver able to match the features offered by the exciting new Uniden Bearcat UBC9000XLT. But I warn you — the adrenalin surge which comes from putting the scanner into Turbo Scan mode is almost physically addictive!

CB Action thanks Uniden Australia for the loan of the review receiver.

Have you ever wondered...

"WHAT'S THE VIEW LIKE FROM OUTER SPACE?"

By Arthur Andrews



Ever since I received my first scratchy picture from a weather satellite some years ago, I have been bitten by the bug. I am not alone, it seems, judging by the number of queries I have received from people interested in weather satellites and remote imaging, after I wrote a series of articles in the sister magazine Amateur Radio Action.

I was lucky in being able to turn my hobby into a business enterprise concerned mainly with the application of weather satellites in education. One benefit from this was that I was able to test commercially available receiving equipment and software from the US, Europe and Australia, which has given me a pretty good insight as to what is available for the enthusiast. The great thing about WESATs is that they are available to everybody and provide a source of interest and enjoyment to a wide spectrum of fans throughout the world. Quite a few countries have their own Remote Imaging groups where members swap information and expertise in their hobby.

As space is limited I will briefly describe WESATs and their functions for newcomers to this fascinating hobby. If there is sufficient interest in this subject I am sure that the Editor would run some more articles in the future.

There are two types of weather satellites in operation, the Low Earth Orbiters, (LEOs), and the Geostationary type, (GEOs).

The LEOs are by far the easiest and least expensive to receive and, due to their low altitude of between 850 and 1000 km, give good ground resolution and spectacular cloud formations especially during the cyclone season.

Ground features, especially when the sun is high in the sky, are easily identified and the salt lakes of inland Australia are particularly impressive. Probably some of the most interesting pictures I have received were those of the bushfires during January and October, 1994, when the smoke from the fires could be seen streaming out to sea and the fires themselves could be identified as 'hot spots' on the infrared images.

There are currently eight (soon to be nine) operational LEOs, three American NOAA series and five Russian METEOR series. As old satellites 'die' they are replaced by newer models.

America has NOM 9, 10 and 12 in operation at the moment, NOAA 11 is still operating but is sending data only and no pictures. NOM 13 was launched in August 1993 but, due to a fault, was only operational for a few days.

By reading the official report concerning the satellite it appears its failure was due to a screw being over-tightened and penetrating the circuit board below, causing a short in the battery charging circuit. Maybe the report should have been entitled 'How To Screw Up A $70 Million Satellite'!

NOM 14 was due to be launched in early December, but at the time of writing (18 March), had not put in an appearance. The Russians launched a new Meteor satellite in February 1994.

The NOM series of satellites transmit HRPT (High Resolution Picture Transmission) images around 1.7 GHz, but to obtain these pictures specialised and expensive equipment is required which is beyond the scope of this article. However the APT (Automatic Picture Transmission) system images transmitted on 137.50 and 137.620 MHz require only fairly simple equipment and the images are suitable for all but the most advanced

....☞

"WHAT'S THE VIEW LIKE FROM OUTER SPACE?"

(continued from previous page...)

applications.

The NOM satellites transmit two images side by side. One is from the visible light (VIS) sensor, the other in infrared (IR). At night there are no VIS pictures and two different wavelength IR pictures are transmitted instead. The NOMs are 'sun synchronous', which means the satellite passes any given point about the same solar time each day. The Russian satellites are not sun synchronous.

An interesting point to note is that the satellites appear to reverse direction between one set of passes and the next set 12 hours later. For instance, the NOM series during their morning passes rise in the north and set in the south (known as the descending pass). During their evening passes they rise in the south and set in the north (known as the Ascending pass). This is due to the earth having turned 180° during the 12-hour period between passes.

The Russian Meteor series satellites differ from the NOMs, as they transmit one full screen image instead of two side by side. These tend to be more spectacular, especially during the summer when the sun is high in the sky. At night some, but not all, switch to an IR mode. The Meteor series transmit on 137.300, 137.400 and 137.850 MHz, but have been known to use other frequencies in the 137 to 138 MHz band as well.

The Chinese have launched some weather satellites, but unfortunately these have not operated for any length of time.

Not all the satellites are switched on all the time, but normally there are at least four to choose from. A satellite tracking program is an essential aid to keep tabs on where they are and when they are coming over.

Besides allowing you to see the weather situation at a glance, a lot more information can be gained from the images received, especially in the IR mode. Land and sea temperatures can be read, sea currents identified and river systems traced. With some software, distance and bearing measurements can be made from your location to any object you are interested in, whether it be a tropical cyclone or an active front coming up the coast.

In some cases, especially in country areas your hobby can also be helpful to the local bushfire or SES authorities during times of emergency when you can supply them with up-to-date pictures of the current weather situation.

Basically, the equipment to receive the orbiting satellites is fairly simple and, provided you have an IBM-compatible PC, it can be quite cheap.

The faster the PC and the larger its memory the better. A lot of the more sophisticated receiving programs require a minimum of 4 MB of RAM and a SVGA screen to operate. Besides the PC, you also need a VHF FM receiver capable of tuning between 137 & 138 MHz.

A normal scanner has too narrow a bandwidth to properly receive the APT images.

True, you would receive *something*, but you would be disappointed with the result. A scanner in the wide-band mode could also be used, but the problem here is the bandwidth is too wide, and unless you have a near overhead pass you will loose much of your picture in noise.

Some narrow-band scanners, such as the Tandy PRO-2025, can be modified quite simply for APT and produce acceptable results, but to obtain the best pictures a receiver built for the job is preferable. This is particularly important if you want to study temperatures where correct interpretation of the grey scale is essential for accuracy.

Ideally the receiver should have an IF bandwidth of 45 to 50 kHz. This type of receiver can be obtained from weather satellite firms abroad and there is one manufacturer in Queensland which produces an excellent receiver for around $400. Satellite receiver kits are also available, but they are not recommended unless you are a skilled constructor and have the necessary test gear for alignment.

An antenna is not a problem, and quite simple designs can be used to receive the orbiters. As in all forms of radio receiving, experimenting with antenna designs is half the fun.

Personally I prefer the crossed dipole 'turnstile' design cut to the required band of frequencies and which can be constructed from a trashed TV antenna very quickly.

Although a masthead amplifier is not essential, it is certainly an aid in receiving better pictures.

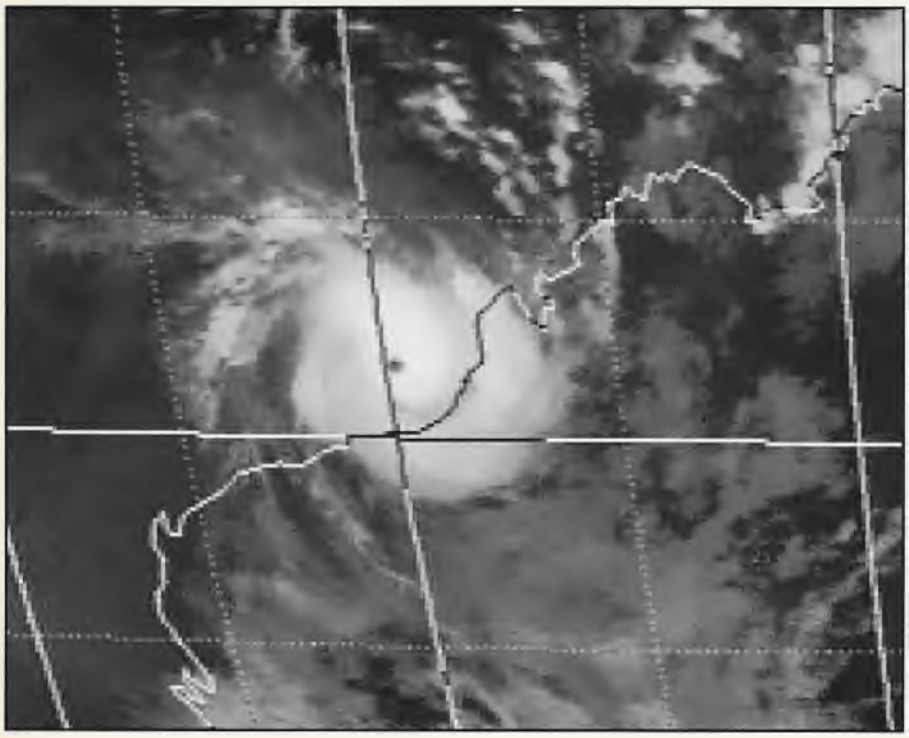
The wide-band TV-type masthead amplifier is not really suitable, especially in city areas, so an amplifier tuned to the wanted frequencies is preferable. Of course, good quality plugs and coax should be used at these frequencies. All that is required now is the decoder and software...

There are quite a large number of demodulators and software available, mostly from overseas, but we are lucky that there are some good Australian products as well.

One question I am often asked by people who are already receiving HF fax pictures is whether their demodulator board be used to receive weather satellite pictures as well.

Without going into the technical side, the answer is no; a decoder built for that specific function is required.

The decoder boards normally come in two designs, either the external type which plug into the computer's COM port, or a board that fits into a spare expansion slot inside the computer.



Left: Cyclone "Anne" off the coast of Western Australia.
Opposite page: Smoke from the NSW bushfires drifts eastward off the coast.

There are some designs which allow you to decode both HF Fax and APT using separate audio lead-ins.

There is also a large amount of software available for weather satellite reception and graphics manipulation.

One home-grown product is Michael Delahunty's MAXISAT which has many features for a modest price.

JVFAX, which may be obtainable on some of the telephone bulletin boards, is a good starter program which also includes circuit diagrams to 'roll your own' decoders.

As space is getting short I will take but a brief look at geostationary satellites. These satellites are of great value to the serious weather watcher as they are in a fixed position, transmit at regular intervals and give a far wider vision of the weather systems over and around Australia.

For more than 10 years Australia has been serviced by the Japanese 'Himawan' (Sunflower) series of geostationary weather satellites. GMS-4 is currently in use and is due to be replaced early in 1995. GMS-4 is located over the equator at 140° East, and can be received well all over Australia.

The Chinese were due to launch their own geostationary satellite, Fen Yun 2A, which was to be placed at 105° East, but unfortunately the rocket blew up whilst being tested and it is not known if or when another attempt will be made.

Besides transmitting VISSR high resolution images, GMS-4 also transmits a APT type fax signal — the same as the orbiters, but a bit faster.

All weather satellite software is capable of decoding both types of APT transmissions.

Every hour GMS transmits two pictures of Japan and surrounding areas, one in VIS and the other in IR.

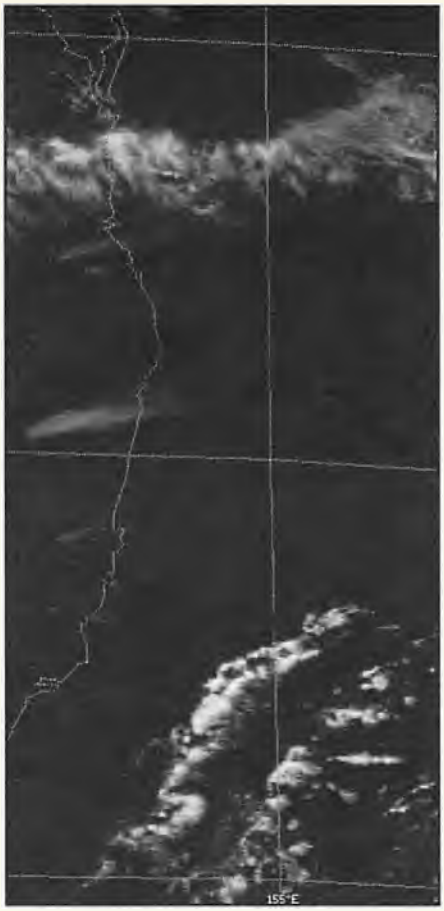
Every third hour, besides transmitting the above pictures, it transmits a full earth globe in four separate sections, two of the northern hemisphere and two of the south.

The latter two are of most interest to us as they cover Australia, New Zealand and the Indian and Pacific Oceans. The pictures are in IR format.

Images taken by GMS are first downloaded to the command station in Tokyo where the map gridding and country outlines are inserted, then they are up-loaded back to the satellite for transmission to receiving stations within range.

I was greatly amused by a visitor who, whilst watching a picture being received, remarked that he had not realised that the earth had grid lines marked on it! It would certainly take plenty of people and even more paint to keep them maintained!

As the satellite sends pictures of predetermined areas each time, the pictures can be stored by the software and displayed in animated sequence showing the movements of the weather patterns.



The satellite images are transmitted on 1.691 GHz, and a typical receiving station would consist of a parabolic dish antenna, feed horn, low noise amplifier, down-converter, (1.6 GHz to 137.5 MHz), a wide-band FM receiver, decoder and computer.

The size of the dish can vary depending how far south you are, but I have found that a 1.3 to 1.5 metre dish gives good results at my location in Central West NSW. I have experimented with a 90 cm dish but, due to the wide bandwidth signal, poor results were obtained. Feed horns are available commercially from abroad at $300 to $400, but an equally efficient one can be made out of a used coffee or baby food can for a few dollars.

Most of the readers probably have experienced getting blamed for TVI by neighbors if using a CB or amateur radio station even when they are not operating. In my particular area, TV reception is at its best mediocre and sometimes non-existent.

During a period when reception was particularly bad due to reduced power for maintenance at the TV transmitter, I had, by coincidence, erected a couple of weather satellite dishes for signal comparison purposes. I was amazed to find myself being blamed for the poor TV reception in the area.

Evidently a person who 'knew about these things', was going around saying that my dishes were 'sucking in the TV signals' and that is why everyone was getting poor reception. Ho hum!

A high-gain, stable, low-noise amplifier is essential for good reception. These are available from abroad, and there is at least one Australian manufacturer. Another important link in the chain is the down-converter, and this too has to be rock stable.

Some of the down-converters available from abroad have an integrated LNA. It is absolutely essential that good quality low loss coax cable and connectors are used between the horn, LNA and down-converter.

Unlike its geostationary cousins in the northern hemisphere, which transmit under the same parameters required for orbiting satellite reception, and therefore only one VHF receiver can be used for both types, GMS 4 uses an oddball bandwidth which necessitates a separate VHF FM receiver with an IF bandwidth of 260-280 kHz.

A scanner with a wide-band FM receiving facility (such as the Icom IC-R100) can be used with passable results, though moderate clipping of the grey scale will occur.

A dedicated receiver built for the purpose is a far better proposition for the perfectionist.

These again can be purchased in Australia as well as abroad.

A word of warning if purchasing a geostationary satellite receiver manufactured abroad; receivers advertised for the reception of GOES (American) or METEORSAT (European) geostationary satellites will *not* work properly with GMS transmissions. Before you part with your hard-earned dollars obtain a guarantee that the receiver has been modified for GMS or you will be wasting your money.

Weather satellite watching is an absorbing and educational hobby and once the non-believers receive their first image from space they are snared for life.

There is quite a variety of equipment available if you know where to look, ranging in price from a few hundred to a couple of thousand dollars for the more sophisticated hardware and software.

This article was meant only as an introduction into this fascinating hobby and only lightly covers aspects of weather satellite reception and image processing.

For those who want to learn more about the subject I can recommend Dr Ralph E Taggart's 'Weather Satellite Handbook' as a good starting point. It covers most facets of the hobby including do it yourself projects, antennas etc.

If any readers have questions about weather satellites and their reception which I may be able to help them with, please feel free to write to me C/- Post Office, Wollar, NSW 2850 and I will assist you if I can, but please enclose a SAE.

Bandspread

Sangean 803A mod

The following mod allows the BFO Pitch control on the **Sangean ATS-803A** (and other identical but different-branded radios) to function as a fine tuning control on all but the FM band.

After the mod, the control permits adjustment of about ±5kHz. You will require some small to medium Philips screwdrivers, a soldering iron, solder and a desoldering tool. Before proceeding, make a note of all frequencies stored in the memories channels, as you will likely lose them during the mod.

Power down the radio. It is best to carry out the mod (and any other mods on electronic equipment) in a well-lit work area.

Place the radio face down on the work bench so that the base of the unit is nearest to you.

Remove the battery compartment door and remove the batteries. Unscrew the six screws which retain the back panel of the case. Five are down recesses in the back panel at the top left, top right, bottom right and bottom-center right.

The sixth is in the left corner of the battery compartment. It is advisable to leave the screws in their respective holes since it is not as much of a fiddle when you get to put the radio back together.

You can feel when the screws have been unscrewed enough when they don't seem to be coming out any more.

Carefully free the back panel from the rest of the radio case, but don't try to pull it away from the radio. There is an awkward wire connecting the whip antenna to the rest of the radio and rough handling here will result in a breakage.

Once the back panel is free, lift it a few centimetres and then swing it back away from you, rotating it anti-clockwise in a way that keeps the left hand side of the back panel over the radio and hence the antenna wire safe.

It's easy done than said!

Set the lid down and check out the circuit board which lies behind the BFO ON/OFF switch.

The BFO switch is mounted directly onto this circuit board and you will see the switch's six solder pads arranged as two rows of three. The row to work on is the row furthest from you.

Identifying these, from left to right as solder pads 1, 2, 3, use the solder removing equipment to remove all solder from pad 3.

This should leave pin 3 visibly isolated from the surrounding circuit board.

Next, solder pins 1 and 2 together. The easiest way to do this would be by melting the solder on both pins simultaneously and adding extra solder to form a solder bridge... generally the thing that happens when you DON'T want it to happen. Well, here we do!

That's all there is to it. Replace the back, taking care not to catch the awkward wire in the case, or anywhere else.

Do up the six screws evenly (ie do them up until they are all just starting to resist, checking that the back panel is fully onto the rest of the case as you go, and then give each screw a little bit more of a turn). With too much force it is too easy to strip the screws right out of the plastic case of this radio.

Reinstall the batteries and power up. Remember the fine tune is always in use on AM, so at its extreme you'll be 5kHz off the indicated frequency.

While we are on that subject, you may find that stations appear to be on tune when the BFO control is slightly off its mid-position.

This is because few synthesisers are dead on frequency — in this price range anyway — and the fine tune allows you to receive stations optimally and this won't always be on the center frequency as displayed.

One of the best features of having a fine tune is that a whistle interfering with a station you're tuned directly onto can usually be nulled out by using the fine tune to move slightly off frequency.

Otherwise, if you are bothered by the thought of the display being a touch off-frequency, get back inside the radio and use a proper trimming tool to adjust T111 to bring the radio back on tune.

House loop shortwave antenna

Many people list shortwave listening as a part of their radio hobby — or shortwave monitoring is their entire hobby. Either way, all will have encountered difficulties getting a suitable antenna up at their residence at one stage or another.

Most city dwellers simply do not have the space on their restricted lots of dirt to put enough wire up into the air. Even worse is when you cannot string up an antenna in the open, or do not have any space to string it up in a straight line in the open. For you then, have a go at this idea — the **house loop antenna**.

Basically the name says it all: the antenna is a loop around the house. Despite the sounds of that, it performs very well.

Installing it is easy. Use any type (or types... will explain later) of wire. You will need about 15 to 40 metres of wire, depending on your setup and needs. Start the wire at, or near your receiver, and route it around the entire perimeter of your house or unit.

Try to keep it as far from itself as possible. The object of your labors is to form a square or rectangle with the wire around your residence. Use windows to your advantage whenever possible. If you have the choice of going from one point to another, use windows. The more wire you can get outside, the better.

What this is saying is that it is possible to get very good results from a wire that runs all round the inside of the house, just get as much wire up as possible. If your antenna is not allowed to be seen (for the sake of your health, perhaps!), use magnet wire or similar extremely thin wire where the antenna emerges outdoors or wherever. Just join it to the standard wire forming the antenna before it goes outdoors.

The antenna can be mounted low or high. A typical installation might be to have the wire thumbtacked next to the ceiling during its run indoors, although good results can be obtained running the wire along the edge of the rooms on the *floor*!

You can try some experimentation with lengths of wire and positioning

to obtain better results. When you have completed the loop, use a small length of coax to connect your antenna to your receiver. Just connect one lead of the antenna to the braid and one lead to the center conductor of the coax. As I said previously, the results you get from this setup can vary enormously with a bit of fiddling and experimentation.

Try using an antenna tuner, especially on the higher bands. If your antenna runs for a distance outdoors, connect that leg up to the center lead of the coax going to the receiver. Things could also be improved by disconnecting one lead of the lead-in.

Reviving gel-cell batteries

Gel-cell batteries are basically lead-acid cells, and are charged at a constant voltage, as opposed to the constant current used to charge NiCd cell. Maximum 'trickle charge' voltage is 2.3 volts per cell. Gel-Cell batteries can safely dissipate an indefinite charge at this voltage.

Additionally, there is a 'Maximum Bulk Charge Rate', which is typically 0.2C. Extremely dead cells may go above this rate if fed from a 2.3 volt cell charger. Going above this rate will cause excessive outgassing which will eventually dry out the electrolyte.

Editor's Note: *In respect to this article, "C" equals the capacity of the battery in amp hours. As an example - 0.1C - 1/10 of capacity, 0.2C = 1/5 of capacity.*

For a one amp hour battery, a charge rate of 0.1C would equal 1/10 of an amp.

When the electrolyte dries up, the cell develops a high impedance, refusing to accept much current at the 2.3V/cell potential. Result: a battery no longer useful because it will no longer charge up or hold a charge.

To reverse this situation (hopefully) you will need a drill press, a 1/4 to 3/8 inch drill bit, and a syringe. Clamp the cell in the drill press vice, and set the stop in order to drill about 1/8 inch through the cover.

Be careful here!! If you do not clamp the cell tightly, or do not set the stop correctly, the drill will dig into the cell, destroying the vent seal and possibly the whole cell. Once you have a neat little hole in *just* the plastic cover, use a small nail or tack to poke a small hole in the rubber vent seal.

Fill the syringe with distilled water, insert it into the vent seal hole, and add as much water to the cell as it will take.

Important, before carrying out this step, make sure you are wearing eye protection. If you overfill the cell, fluid will squirt out when removing the syringe. Be careful, since this fluid will consist of battery acid.

Using a constant current source, charge the cells at a 0.1C rate, this may require as much as 20 volts per cell if the cell is extremely dry.

Check the fluid often, replenishing it as required. When the voltage falls to about 2.5 volts/cell, switch to a constant voltage of 2.3 volts/cell. Charge for about a week to absorb any free fluid left.

At the end of this period, remove any unabsorbed fluid left with the syringe. If you destroyed the vent seal during the drilling operation, you can repair it to a degree by touching up with a silicon caulk or similar. Do not use too much or the cell may develop too much pressure during the outgassing that accompanies charging.

Computer interface for PRO-2005/6

Most scanners around on the market today that can be interfaced with a computer belong to the 'super-scanner' class, and carry the price tag that goes along with that.

Computer interfacing brings benefits like vast memory channel capabilities and almost infinite programmable search sequences — great features to possess, but out of the price range for most.

If you are the proud owner of a PRO-2005 or 2006, however, then this device could expand your listening horizons and enjoyment no end.

Called an **Optoscan 456**, this clever device permits that interface between PRO-2005/6 and your computer. What can it do? Glad you asked, but you *will* want one by the time I have finished...

The Optoscan 456, once installed, will permit scanning at around 25 channels per second, which is pretty quick.

You can set the scanner going, and leave it, and the computer will record *all* frequency activity detected on all frequencies in the search range and write them into virtually unlimited numbers of memory channels.

Complex store, search and scan features are accessed through a step-by-step software menu.

Scanning can be controlled by input CTCSS (sub-tone) or DCS (digital-coded squelch) settings, and signals received matching those parameters will be logged. Alternatively, the Optoscan 456 enables decoding of CTCSS, DCS and DTMF characters on signals received during the scan or search process.

You can tailor your search to only include signals with a known sub-tone, such as the police or a particular company, and exclude all else. DTMF can be decoded and logged with frequency and time received, an invaluable tool with some services.

This computer interface could form a potent addition for the scanner enthusiast, enabling the user to know exactly who is using what frequency where, and how often.

All commercial and government users of the spectrum use (or should at least!) sub-tones on their transmissions, and this can be very useful in identifying a particular user on a shared channel or repeater.

This all sounds good, but it would be a horror to install, right?

Not this package — the whole thing comes complete with an installation manual and video, and the whole procedure does not involve any drilling or soldering.

The PC software for computer logging, scanning and search is also included as are cables and the miscellaneous bits required to get the unit going.

The Optoscan 456 is available from Optoelectronics, 5821 NE 14the Avenue, Fort Lauderdale, Florida, 33334, USA. Price is US$299.

Note that Daycom Communications in Melbourne is now an authorised Optoelectronics distributor, so call them first for availability.

The Eagle Droppings column was a reader's favorite during the first years of CB Action. It generally recounted the many idiot happenings of early CB and later featured the usually disastrous activities of the well known "Fred".
It seems fitting that we include a couple of these early columns in this last issue of CB Action.

EAGLE DROPPINGS

A FEW DAYS OF HIGH WINDS in and around the Melbourne suburban area once again solved quite a few problems for the P&T boys. The morning following the big blow was noticeable for the absence of several of the "talk power" stations and later enquiries elicited the information that quite an array of expensive alloy tubing was littering numerous back yards.

One gentleman was particularly unfortunate when not only his 5 element imported quad hit the ground but also the mast—actually they didn't hit the ground directly but took a path through his 20 ft. cabin cruiser. I understand he wasn't exactly laughing all that much.

SOMETIMES a send-up can go just a little too far. In last month's issue we ran article covering all sorts of exotic CB aids such as DXelien, AM Fluid and the like and, would you believe it, we've been inundated with 'phone calls requesting further information on where it can be obtained, etc. Well, as mentioned in the story, Benny Isaacs out at Caulfield holds the sole Australian rights for most of the goods. Regretfully, he is currently out of stock of damn near everything and is not expecting further shipments for some time. However, if you're in the Melbourne suburban area could I suggest that you listen out for station KKK (which stands for the Kouth and Kulture Klub) as I'm led to believe that he has a small stock stacked away—prices are right and, if my information i5 correct, he is running a special on aRM Jelly as apparently it is multiplying and he is fast running out of storage space.

WHILE all you Melbourne DX fanatics were blowing your brains a couple of weeks back at hearing several Stateside stations booming through, please spare a thought for the poor guys in the Sunshine State. I had a 'phone call from a good 'on air" mate to enquire whether we were copying much Stateside down South and when I replied that there was a bit coming through he came forth with the offhand comment "well, it's sure been rolling in up here. Heading for work today I was battling to get a call through to Brisbane from the Gold Coast because of the Stateside DX — he even worked a few while mobile to the office '

Now this gent is not prone to wild fantasy and to the best of my knowledge is not the town drunk—nor am I aware that he eats magic mushrooms so I accept what he says as very close to Gospel. Maybe we'll now see a mass exodus of DXers to Queensland—at which time naturally it will start to belt in down South. Well, you can't stop a true DXer for trying.

CERTAIN Melbourne CBer does not appear to have been winning many friends recently although he has for sure been influencing a lot of people. He has been operating along the beachfront from Frankston to Melbourne—on AM—and has been splattering virtually everything within a 10 mile range.

I understand that several unhappy CBers recently had a quiet chat with him and politely requested that he cease and desist immediately. Said gent was running a Selectrix Cherokee but claimed that "no way" was he running any power. The fact that one of the cars that checked him out tracked him down by running without an antenna was pulling him at strength 2 from a distance of five miles seems to me that maybe said gent was not being strictly accurate with the truth. However, unhappy CBers now have his name, address and vehicle registration number so we can only hope that he took the hint.

I'VE HEARD OF UNLUCKY CBERS but one station I know really takes the award for continued disaster. Try the following on for size. When he first went on air eight months ago his Ringo collapsed one dark and wintery night and bent itself into a somewhat useless shape. About a fortnight later his beam followed the same path — now that wasn't bad for openers—but things got a damn1 sight worse than that. He had purchased two Midland 13-895 rigs, one for mobile and one converted to 240 volts, as a base rig—you're right - one day he plugged the mobile into the power socket — with obvious results. He replaced this with another unit, not a Midland. and operated it from a reputable power supply pack However, he had the replacement unit peaked to something in excess of 12W PEP and the result was that the power supply couldn't keep the power up to the rig and it punctured the finals. He then purchased a quality base rig and had it sent away to have a slider fitted and be peak tuned. It came back with the comment that it slid ok but there was no way anyone could get better than 10W PEP out of it. Meantime. his mobile rig (no longer the Midland) was sent away for the same treatment — it also came back with the comments, "it 's the worst rig we have ever sighted— it s so far out of alignment that if it was a car it would run around in circles".

Further, most everything that could be wrong was wrong .

So both the base and the mobile were sold and again replaced. Two days after this the shelf collapsed under the base rig and it became a virtual write-off while a day later his car was broken into and the mobile was stolen. I understand he now spends much of his time sitting in a corner muttering quietly to himself.

NOW I DON'T FOR A MOMENT expect you to believe this because had I not seen it for myself I wouldn't either—but its true. Local family in the area with possibly more money than sense bought a rig for their 13 year old son. Night he went on air they copped massive, and I mean massive, TVI and he complained bitterly that the rig wasn't working properly. He phoned a mate of mine and he in turn grabbed me and we went around to see what the problem was . . . it wasn't all that hard to find. Young son had wired the rig's coax cable onto the TV antenna in the wild belief that he would have a very handy little beam. Young son is now minus rig until he can convince the family that he has some vague idea of what, and how, CB actually is and works.

ANOTHER ON AIR ACQUAINTANCE of mine sold his five element beam after a couple of months with virtually no skip worth knowing about. Day after he sold it the Stateside stations started coming through like Bondi trams once did—now he's trying desperately to borrow his old one back so that he can get the measurements and build up another.

REGULAR READERS of this column will recall the ever continuing saga of my mate "Fred" who has enjoyed and/or suffered every conceivable type of misfortune ever to strike a CBer. Fred has suffered broken rigs, R.I. visits, fallen beams and shattered illusions since he first went to air about two years ago but at last, something has gone right for him. Recovering from the severe disappointment of losing his 3 element beam off the blunt end of a houseboat — and then showing how little it worried him by throwing the rig immediately after it — "Fred" got back into the spirit of things by buying yet another rig (about his 38th by my records) and a new 3 element antenna. Armed with the necessary equipment "Fred" trekked off into the wilderness one weekend and established a camp atop a very high mountain in the hope of working some long distance skip. And boy, did he ever work it...

America, Japan, Pacific Islands, Canada, Alaska, Europe —
you name it, "Fred" worked it and to say that he was ecstatic would be an understatement. It's about the first thing that has gone halfway right for him since his first adventurous entry to the CB scene.

What's more, except for that nasty illegal directional antenna, "Fred"

did it the hard way with a bog standard rig pushing something like 12W PEP. Being somewhat frightened to give his home address for QSL cards he used the box number of the club of which he is a member and, a fortnight or so later, naturally assumed that by now there should be quite a number of anxiously awaited international cards in the mail for him. However, a check revealed that this was not so — a fact which rather surprised "Fred" as he has great faith in human nature and though he did not expect a 100% QSL arrival he figured he should get at least a few.

Some solid investigation eventually revealed that a fellow club member, repeat fellow club member, had made claim to the cards and had happily pocketed them.

Not only that, but the said gentleman then had the incredible cheek, gall, slyness — or whatever — to claim that said cards entitled him to a new club record . . .

Fortunately, "Fred" had kept a record of his contacts and was able to prove rightful ownership and at the time of writing he has managed to reclaim several cards from his friendly fellow club member.

However, although normally placid of temperament and thoughtful of his fellow man, "Fred" is not in the slightest bit amused and is rather looking forward to again meeting with his friendly fellow club member. When advised that he shouldn't get too carried away as said f.f.c.m. tops 6ft 6 inches and weighs quite a lot, "Fred" made the comment that he didn't really care all that much as "a swift kick in the groin usually works wonders".

"What really cruds me off," said Fred, "is not that the bastard just pinched the cards but he then had the bloody cheek to try and claim a club record when nearly everyone knows that the furthest he's ever talked is out the dunny window to tell the dog to stop digging up the backyard."

Anyway, the next club meeting should prove very interesting— don't you wish you knew which club it is . . .?

EAGLE DROPPINGS

FOR QUITE SOME TIME there has been a strong rumour around the traps that our infamous mate Fred is none other than "Eagle One"— not so!

Fred actually does exist and the disasters which strike him and his equipment with such monotonous regularity are factual (well about 98% factual anyway — there is a 2% allowance for poetic licence as we subscribe to the old journalistic adage of "not spoiling a good story for the facts".

So having cleared up that point of contention let's look at Fred's latest interest. As you're probably aware by now Fred isn't exactly short of a dollar. He made most of his money from advance information on Poseidon shares several years ago and since then has dabbled in various import deals which continue to net him more than he cares to admit. For instance when the CB boom was right at its peak Fred imported a whole heap of rigs from Japan with the idea of a big killing... As it turned out killing was the operative word as all the rigs that arrived were wired for 110 volt operation rather than 240 volt and that little lot cost Fred quite a few of his well earned Poseidon dollars. Shortly after this debacle he purchased a large batch of directional antennas with a cash in advance payment from an extremely well known American company - sadly the well known American company went into receivership two days after Fred's payment had been made - naturally enough he's still awaiting the arrival of the antennas.

But that's all history.

Fred's current passion - along with CB - is the home computer.

He's always been an absolute sucker for anything which smacks of electronic magic and when the home computer systems came onto the Australian market he was literally beside himself with joy...

He placed an order for the Tandy TRS-80 system and, although he had no idea whatsoever what a computer was actually supposed to do, he just knew it was going to be something else. In due course the system arrived and Fred abandoned the CB scene to concentrate all his attention on this latest electronic age "toy". I use the word "toy" very loosely as the TRS-80 is indeed a highly sophisticated piece of computer hardware but, to Fred, it was his latest toy.

He vanished into his shack (yes, even CBers have shacks - just the same as real live Hams) and ventured out only for a quick meal, the occasional cold can and, when necessary, to say hello to his lovely wife - whose name he often finds hard to recall.

After several weeks of hard work he had finally reached the stage where he could execute quite a comprehensive program and, having tired of playing heads and tails, blackjack and backgammon (which he invariably lost to the computer), he approached one of his long time Ham mates and offered to transfer his entire log into the computer.

As the Ham was also "into" microprocessors, computers and the like, and was in fact also awaiting delivery of a TRS-80, he agreed that Fred could carry out the long and tedious job and, having checked out Fred's programming to ensure that it did actually work, the log was duly handed over.

Many, many hours later Fred told his Ham mate to come over as the job was now complete and, in Fred's words, "it's a boomer - just enter the callsign and the computer will come back with the date and time you worked the station, the name and QTH of the operator plus numerous other relevant details". With the arrival of the Ham, Fred switched on the computer, plugged in the cassette player and started to enter the program - in it went, no trouble.

Next followed the data, months of log entries all painfully transcribed and entered onto the tape.

There appeared to be just one small problem - for some reason the data simply wouldn't get itself entered in to the computer. Several hours later Fred had the good ides of listening to the cassette tape to make sure that the data was indeed on the tape - it wasn't... !

It appears he had committed the cardinal sin of pressing only the "play" button instead of both the "play" and "record" and, in consequence the tape was quite virginal with not a vestige of the log recorded on it.

Do I hear you say, "well, what's the problem. Sure it means some extra work but all he has to do is to again enter the log and go from there".

For most people yes - for Fred, no.

Somewhere, somehow - Fred has lost, mislaid or, more likely, destroyed the original log book and so there is no way known to man that he can now duplicate it once again into the computer log. To say that his one time Ham friend is amused would definitely be a mistake.

His one time Ham friend is totally bloody ropeable and, not only that he's now wondering how he'll ever explain it to the P & T gentlemen when they next call to carry out a station check.

Meantime, Fred seems to have lost a lot of interest in home computers and can be regularly heard back on the CB.

One of these days I must tell you his callsign as he's a nice bloke to talk to - his only problem is that he tends to go QRT quite abruptly in mid-sentence and this has caused him to lose many friends who figure he's just plain rude rather than merely suffering yet another mysterious power malfunction.

Online 1995

By Patrick McDonald

COMPUTER VERSUS RADIO

Will computers soon replace radios?

Will the ubiquitous INTERNET make shortwave and other radio broadcasts obsolete shortly after the year 2000? Will super hi-tech optical fibre systems running into every home and office, or universal personal cellular phones, put every single person on the planet instantly in touch with every other person on the planet? These are some of the questions I hear being discussed in various Australian radio circles, on international communications programs and, yes, on the worldwide INTERNET.

So what do I think?

Well, the invention of radio and television earlier in this century didn't do away with newspapers, magazines and books, did it? But the electronic media sure have had a big impact on the printed word.

I think the same thing is going on with communications right now.

Radio of all kinds *will* survive, but our favorite medium will rapidly become a part of a much bigger and totally-integrated communications world, linked with computers, satellites and fibre optic technology.

In fact, this is why I think the topics covered here in ONLINE (and elsewhere in CB ACTION mag) are so important for radio enthusiasts of all stripes... we're all going to have to know much more about computers and computer-related communications if we want to keep up with the radio hobby in the next decade or so.

Okay, let's get right into some computer software investigations.

Remember that all software mentioned in this column is only suitable for IBM-compatible computers; my apologies to that minority of you who are using Macintosh or Amiga machines...

Note too the difference between 'shareware' programs written and freely distributed on a try-before-you-try basis, and full commercial packages.

I'll distinguish between the two whenever I write reviews here in ONLINE. Only the former can of course be downloaded from computer bulletin boards and the INTERNET.

INTERVIEW WITH MICHAEL EVANS ABOUT TBSA BBS

Following the theme introduced in the last ONLINE, I'll now move on to another well-known entity in the radio and computer field, Michael Evans' TBSA.RADIO BBS, previously known as SPECTRUM RADIO BBS, located in sub-tropical Melbourne, and presently in its fourth year of operation.

This is a big, *big* computer bulletin board system, boys and girls! Running two telephone lines via Remote Access Professional Software (one of my favorites for ease of use, by the way) it comprises three work stations, two servers and an INTERNET server, with more than eight *giga*bytes of files available. Yep, that's right, TKSA BBS also offers INTERNET access, about which more details later.

Contactable on (03) 455 1309 and offering modem speeds all the way up to 28,800 bps, the system is networked as FIDONET 3:632/393 and INTERNET spec@apana.org.au.

Michael reports (and I can confirm from my recent visit) that TBSA BBS carries over 300 FIDONET message areas and more than 250 INTERNET newsgroups, including all your favorite radio conferences, such as HAM, SHORTWAVE, OZ_SW, OZ_SCAN, OZ_BROADCAST, OZ_SAT_INTEL, rec.radio.shortwave, rec.radio.scanner, alt.radio.pirate, and more.

And, of course among those seemingly endless 8.8 gigs of files are all the latest executable radio-related

THE INTERNET AND RADIO INFORMATION

OK, we've mentioned the INTERNET again, and it won't be the last time.

This great web of info is getting bigger every day and has lots to offer radio folks, no matter what part of the hobby catches your fancy. However, the INTERNET is so damn big that it's not always easy for newcomers to find what they want.

Here's where your regular copy of CB ACTION magazine comes to the rescue! Check out the following USENET newsgroups for all the latest discussions and new station/new frequency information: **rec.radio.shortwave** and **alt.radio.pirate** among others too numerous to mention here.

The first-mentioned is the biggest, and is my required daily reading first thing every morning these days. Looking for radio related shareware files? Use the INTERNET's FTP facility to travel to **ftp.funet.fi** in Finland and go into subdirectory **/pub/dx.** There you'll discover many further subdirectories carrying much of the latest shareware, and also international shortwave station program information.

Finally, if you fire up your MOSAIC, NETSCAPE or other World Wide Web reader (I use the simple LYNX program on my own UNIX shell account) you can point at **http://itre.uncecs.edu/radio/** to find page after page of radio info, receiver reviews and program schedule databases in HYPERTEXT format.

This means that you can follow various threads from computer to computer around the world, tracking down the radio-related info that you require. I employ the command **LYNX http://itre.uncecs.edu/radio/** and it works like a charm!

Actually, I run the SCREEN program first, to avoid extraneous characters. I really recommend that you try this. Many folks don't have the SLIP or PPP connection required for MOSAIC and NETSCAPE-type Web explorers, but most everyone can access LYNX.

Ask your friendly neighbourhood INTERNET service provider for more info about getting around the WWW. Two companies that I can recommend are Mark Fawcett's MICROPLEX on (02) 888 3685 and Nick Andrew's ZETA on (02) 837 1397.

These are the voice numbers for more information and, believe me, there are a heck of a lot of INTERNET service providers out there right now. All Australian and New Zealand capital cities are covered, and more links are being set up every day.

Just check the prices, my friends, as well as the services offered. There are great differences...

files, such as receiver control programs, packet radio terminal programs, databases, propagation predictors, logging packages and suchlike. Michael also specialises in keeping complete and up-to-date state-by-state frequency lists for all of Australia. Unique to the Australian radio BBS scene are the custom written radio 'door' programs. (A 'door' is an independent program within a computer bulletin board; users can leave the BBS while still online and employ the additional program as if it were on their own computer at home.) These include an Australia-wide Radio Frequency Door and an Australia-wide Aircraft Registration Door, both written by Michael himself. TBSA also runs the McListen Frequency Door. This means that TBSA users can look up a wide range of frequencies and aircraft data while online. TBSA BBS offers limited free access, and you can stop by and browse around for no charge, to see if the humungous system meets your radio and computer needs. (Remember that TBSA also carries a huge variety of non-radio computer programs for downloading). If you say 'yes' to full registration, you can settle up online via your credit card.

The abovementioned INTERNET access via TBSA is important to note. Everyone is interested in jumping into that big ole net these days, and Michael is the first of the radio BBS folks to get off the mark with this service. More details are available online at TBSA.

Sysop Michael Evans himself is no newcomer to the radio scene. He has worked for a number of years as a radio announcer for 3CV and 3BO in Bendigo, Victoria, and then as a technician for both Southern Cross TV-8 in Bendigo and ATV-10 in Melbourne. He has lots of experience in antenna work on high-rise transmission towers and installing radio equipment.

Michael is well-known over the past seven years for his work in radio communications for the annual Victorian Sun Tour Cycle Race. He's involved in five months of advance planning for this, the biggest professional cycling event in Australia, and has to install and provide repairs for the 40-odd radios used in the big race. His other radio interests revolve around the UHF/VHF scanning scene, listening to the essential services, the various media outlets, and always trying to find those elusive unlisted frequencies. He spends a lot of time updating the TBSA frequency files, due to the SMA Band Plan restructures that are taking place in Victoria at present.

Finally, Michael puts in many hours each week answering the BBS mail, updating files and doing the many other endless little tasks involved in running a computer bulletin board. He's a busy man, and TBSA shows that he really puts the time and effort into everything he touches. Why not give TBSA BBS a tinkle with your modem today and see for yourself!

As you have read elsewhere, this is the final issue of CBA in this format - but just wait for the new one!

It will really bring hobby communications right up to date - and every month instead of bi-monthly as now.

I hope to see you back here in late June when the first issue of our new Radio & Communications monthly hits the newsagents - 100 pages of hobby communications, amateur radio, computers, internet, scanners, satellites - and more.

Don't miss it.

SWLOGIT UPDATE

As I predicted in last issue's review of the new shareware SWLOGIT software by US software author David Toste, 'the only computer program the radio hobbyist will ever need,' Toste has indeed come out in several new and improved versions in the past two months.

Just to jog your memory, SWLOGIT includes a frequency log and database, a Report Script Writer (which writes reception reports for you) MUF (Maximum Useable Frequency) graphing and plotting on a world map, a Sun Terminator (greyline DX program), a World Clock with sunrise and sunset times, nifty VGA/EGA world maps and a Shortwave Stations Address Database, all in one integrated package.

I should mention that while not actually 'crippleware,' SWLOGIT won't run all its features until it is registered: for example, you are only able to log 100 records into the database. You cannot 'import' files. And you can only employ the QSL Script Writer once per load, meaning that if you want to use the Script Writer more then once, you have to exit the program and reload it.

So what's new in the 21 February release? The option of plotting LUF maps (lowest useable frequency) as well as MUF maps has been added. Slotted in too is a purple UTC marker in the MUF graph, which indicates the current UTC time. Another 45 new locations were also added to the MUF/LUF mapping facility.

Some bugs were noticed by the author and a keen-eyed users of SWLOGIT, in the scripts and routines, and these have been rewritten and optimised for much more speed. (The SWLOGIT documentation also includes more details on using the new macros and script files). David Toste has also provided a program to convert your SWLOGIT database from older versions 1.00-1.16 to this current version of 1.18. This allows you to make use of the new Transmitter Site field in the database program.

Australian and non-North American users now have the option to select a different date format. Available are: MM-DD-YY, DD-MM-YY, YY-MM-DD.

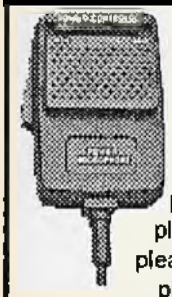
This is a small but genuinely useful feature, as those of us know, who have struggled with various North American programs for years, trying to remember to reverse the month and day each time a date is entered or retrieved. Finally, some bugs in the UTC offset calculator have been fixed, and the option of searching for all reception reports sent out between two dates has been added, which is useful for sending in your monthly reception reports to the local radio club.

I think all the above makes SWLOGIT v1.18 a much better program overall. If you've only experimented with the earlier versions up to 1.2, it's definitely worth having another look. It's available as SWLIT118.ZIP in compressed format at SHORTWAVE POSSUMS BBS and other radio sites, tho the extension may differ if local sysops use ARJ or LZH compression techniques.

If you have INTERNET access, you can check for the latest versions of the program at ftp.virginia.edu in the subdirectory /pub/swlogit.

POWER BAND COMMUNICATIONS

1289 Nepean Highway
CHELTENHAM 3192.
Ph. (03) 584 7631
Fax. (03) 583 0846
Melway Ref. 86 J1
(Opposite Cheltenham Police Station)



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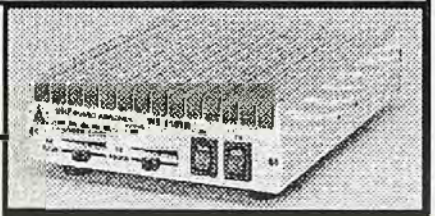
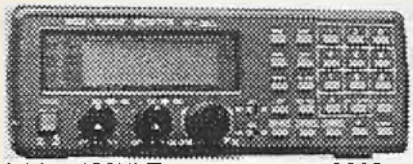


SCANNERS

ICOM-UNIDEN-AOR & Wide Band Antennas



Uniden 120XLT	$369
Uniden 220XLT	$449
Uniden 2500XLT	$579
AOR AR-1000	$649
AOR AR-2800	$749
AOR AR-1500	$679
AOR AR-8000	$1245
ICOM IC-R100	$1175
ICOM R-1 (special this month)	$695
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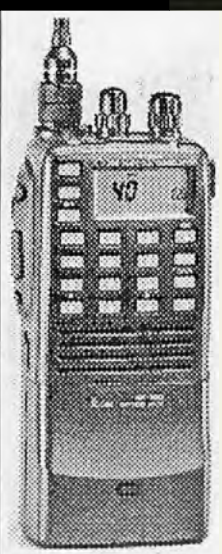

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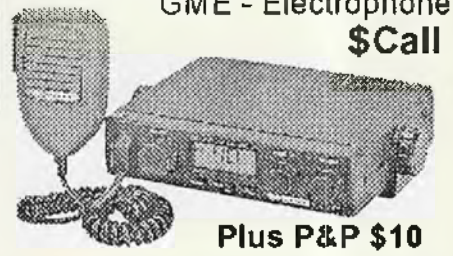

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If you're curious why we are not giving away this $600, high quality, 500 memory channels, top-line Uniden UBC9000XLT scanner in this issue....

...it's because we are giving it away in "Radio and Communications" - (hint) turn to page 27 to find out more.

GME-ELECTROPHONE'S BRILLIANT NEW TX-3000

Australian design and construction shows the way...

Reviewed by Ken Reynolds

Introducing a brand new UHF CB transceiver from GME-Electrophone... made in Australia for Australia and New Zealand, with the carton printed the right way up and designed so you don't open it at the wrong end... but fer crissakes, how do you get the *other* stuff out of the package?!!

Leading the field

GME-Electrophone continues to wave the Australian flag and thumb its nose at the Asian imports, with the introduction of the new **TX-3000** UHF CRS transceiver. Designed and assembled in Oz from a variety of imported and locally-made components, this new UHF compact even sports an Australian-made, ergonomically-styled microphone wrought from super tough polycarbonate plastic... the melt-resistant stuff they use for electric jugs and the like.

In its race to produce an all-singing all-dancing SELCAL transceiver in the TX-4000, GME left wide open a hole in the market when it discontinued the simpler-to-operate, lesser-featured TX-472s. Naturally, not everyone wants to or needs to own UHF CB with SELCAL. And, recognising it now did not have a contender for the middle ground consumer, GME set about filling the gap.

Enter the TX-3000 UHF CRS transceiver...

Readers may have gathered from the introduction that there might be something amiss about the packaging of the TX-3000. There is, but it's not all that bad. If you haven't taken a good look at the TX-4000 packaging you might not have noticed that the carton is printed upside down.

However, because of the single-ended construction of the box, you are not likely end up with the rig on the floor suffering from concussion. So, just a kindly jab to say we noticed the new box was printed right way up...

In fact, GME hedged its bets and worked this box out so it opened at the end so it can't be printed wrong way up!

And, don't you love the picture... a TX-3000 UFO hovering about 1,000 feet above a paddock full of cattle. Hmmm. Removing the inner cardboard accessory box from the outer carton is a bit of a challenge, and one is tempted to rip the whole box apart and dump it with the rubbish! Now, the TX-3000 is a bit of a credit to GME-Electrophone. Instead of updating out an old design, or simplifying the TX-4000, the crew at Gladesville in suburban Sydney, designed and built a brand new rig.

And what's more, we reckon they done real good.

Construction

The TX-3000 is encased in a compact, matt black steel and plastic shell measuring only 170mm wide, 140mm deep (less front panel knobs and rear antenna connector), and a very slimline 40mm thick. It's just so Oz to round off the measurements to even figures like 40mm instead of the usual imported 39mm or 43mm or whatever. The skeleton consists of steel, aluminium and the black plastic fascia which integrates neatly with the two main steel case halves to form a neat, sturdy package.

The case fits nearly perfectly and, when screwed down tight, makes an almost seamless shell. Good work GME, but a shame to spoil a great job with those crummy 'self-tappers' you biffed into the sides... at least you used *real* screws for the rest of the cabinet construction.

The main fibreglass circuit board is securely mounted to steel frame lugs of the chassis which produces a very rigid overall construction.

The front panel styling is clean and simple, with well-labelled controls surrounding the almost central Liquid Crystal Display (LCD) window.

In this model, the loudspeaker has been relegated to the lower case half, probably for economy and space saving, where it has been secured with more horror sheet metal screws.

A two-pinspeaker wiring connector is provided on the main circuit board so the loudspeaker can be easily removed for service access and, what's more, the speaker wires are a good length so the unsuspecting service technician should not accidentally rip them out when opening the case.

There are only two other flexible wires in the whole transceiver, and these are to interface to the outside world for operating power. The main circuit board is double-sided (foil wiring on both sides) making extensive use of Surface Mount Device (SMD) technology on the top side with the more conventional 'hardware' type

components mounted on the underside.

The channel switch is mounted to the left of center with the usual Squelch and combination on/off switch and Volume controls occupying the right hand side.

Three rectangular pressbuttons set directly below the LCD window account for, from left to right, PRIORITY channel operation, dual function SCAN stop/start, and MEMory channel scan selection, with the third button used to toggle between simplex and repeater operation through channels 1 to 8.

That's new

Brand new to UHF CB is the use of a snap-lock style 'modular' microphone connector pirated from the telephone industry. The receptacle for this connector is direct circuit board-mounted, and when mated the assembly is hidden behind a small sliding panel (on the far left hand side of the fascia) which adds mechanical stability and strain relief to the slimline, very flexible microphone cable. (See photo.) At the far end of this cable is the new GME microphone, designed and produced locally, and made from tough polycarbonate plastic.

It uses an electret condenser transducer insert and is a very comfortable shape to hold having had the 'hanging' stud recessed into the rear case half.

The mic hook arrangement is different but effective.

Receiver

Unlike the TX-4000 and past models, only one user-programmable scan group is available in the TX-3000.

Entering and removing active SCAN channels from the group is done in the normal operating mode by selecting the desired channel with the channel switch, then holding down the SCAN/MEM button for about two seconds until the MEM display is either illuminated or cancelled with an associated audible 'beep'.

Scan rate is about 10 channels per second, and occupied channels are reliably 'caught' it their signal strength is above about 0.15µV (microvolts) with the mute set at threshold — minimum setting for receiver quieting. Unfortunately there is no channel 'skip' control, and to advance the scan from an occupied channel it is necessary to cancel and then restart the scan function, which will begin from the captured channel.

Receiver sensitivity for the TX-3000 is about average for mobile rigs at 0.28 µV for 12dB SINAD, but signals well below this level gave quite comfortable listening.

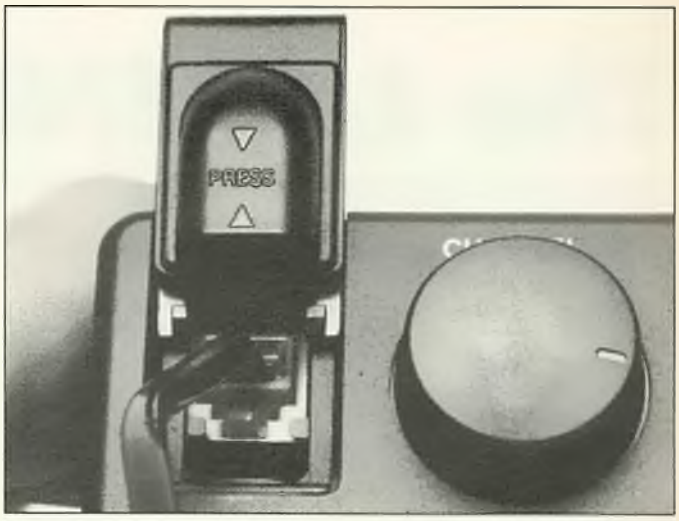
Recovered audio is good with plenty of 'guts' in the mid audio frequency range, and enough output level to get you started on industrial deafness. There is a bit of speaker 'break-up' distortion with the volume turned flat-out, but what can you expect from a 2.5-inch loudspeaker? Audio output was measured at three watts into a four ohm load. There is no receive signal strength indicator in the TX-3000. Squelch threshold was found to be 0.1 µV, while at the maximum setting a fairly low 0.75 µV signal input would produce audio output.

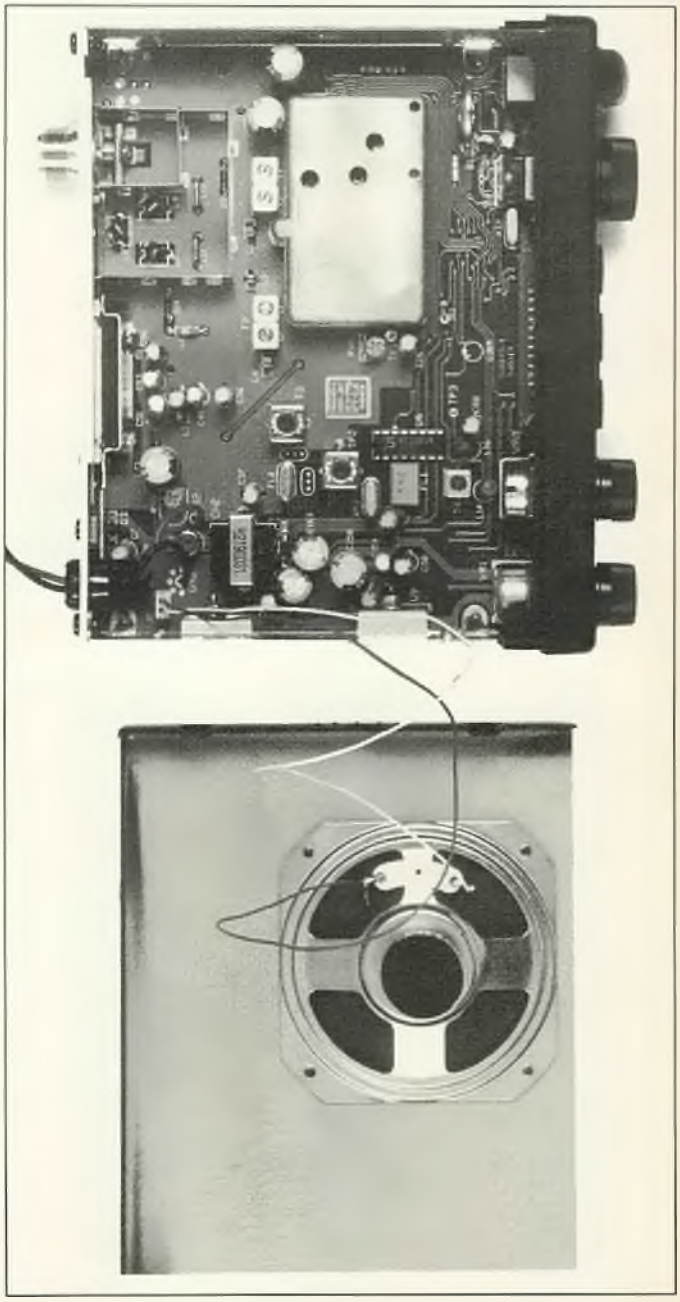
Transmitter

Operating at 13.8 volts DC, the measured RF output power (channel 20) was 5.25 watts with a maximum deviation of 4.2kHz. Total current requirement for transmit was 2.1 amps. Transmitted audio is clear, but appeared to be a bit 'clipped' by the microphone audio input circuitry.

Summary

The innovative gang from Gladesville has produced an appealing, compact and effective UHF CRS transceiver that is unpretentious about its abilities. If there was a local design award the TX-3000 should snap it up.





The LISTENING POST

Track tuning?

Lance Noll provides the following frequencies for motor racing teams.

These are especially handy for the many motor fans who take scanners track-side to local rounds of events such as the Australian Touring Car Championship series.

Note that some of these frequencies will also include telemetry data sent from the car back to the pit crew for PC analysis of what's happening under the hood.

Lance is always on the lookout for frequencies — he collected the one for Wayne Park Racing at the Brisbane Motor Show, where the team's 911 was on display. Lance did the obligatory sit-in-the-driver's-seat and noticed the two-way radio installed near the driver, bearing an SMA approval sticker with the transmit and receive frequencies... so it sure pays to be on the alert! Lance also tried other racing teams on display, such as those of Brockie, Johnson and Scaife, but their radios had been removed — they must have known he was coming!

161.350	Holden Racing Team
450.025	Advantage Racing
450.200	Advantage Racing
450.300	Dick Johnson Racing
450.450	Advantage Racing
469.500	Dick Johnson Racing
471.525	Nissan Motor Sports
471.775	Michael Preston Racing
471.925	Kalari Transport
472.000	Glenn Seton Motor Racing
472.025	Wayne Park Racing
472.500	Murray Carter Motors
484.975	Nissan Motor Sports
519.975	Dick Johnson Racing

Organising body CAMS (the Confederation of Australian Motor Sport) can also be heard on 495.150 MHz.

Indy Car frequencies

Looking for some listening tips for the Gold Coast Indy Car series, Ken Glasson found the following posted on the Internet super-BBS system.

Some may, of course, change from country to country due to local allocations, but you may want to keep these in your little black book if you're heading to Surfers for next year's event:

Adrian Fernandez	464.5625, 461.5125
Al Unser, Jr	857.8375
Alessandro Zampedri	460.6875
Arie Luyendyk	461.2375, 462.0125
Bobby Rahal	468.2625, 469.2625
Bryan Herta	461.8375, 463.9875
Buddy Lazier	466.5875, 464.4625
Claude Bourbonnais	461.2125
David Kudrave	460.5875
Dominic Dobson	468.4625, 463.4625
Emerson Fittipaldi	852.1875, 858.8875
Franck Freon	463.2375, 461.4625
Frederik Ekblom	468.9875
Hiro Matshushita	462.0875
Jacques Villenueve	466.2625, 466.5375, 468.3875
Jeff Andretti	464.8125
Jeff Wood	464.0625
Jimmy Vasser	467.0875, 468.4125
Lyn St James	461.3875
Marco Greco	467.7500, 467.8000
Mario Andretti	461.7125
Mark Smith	462.1375
Mauricio Gugelmin	464.0375, 469.8875
Michael Andretti	467.0375, 461.1125
Mike Groff	462.8125, 464.7875
Olivier Groulliard	465.2375, 466.0125
Parker Johnstone	461.6250, 462.0250
Paul Tracy	854.8375
Raul Boesel	468.2875, 466.1875
Robby Gordon	461.0625
Ross Bentley	461.7375, 461.4625, 463.2375
Scott Goodyear	463.7375, 464.2375
Scott Sharp	466.7625
Stefan Johansson	853.4875, 853.5125, 855.5875
Teo Fabi	467.1875, 464.9375
Willie T Ribbs	463.4375, 463.9125

IndyCar Officials have been heard on 457.0125, 451.8125 and 457.1875; the Pace Car on 451.5250; and

ST JOHN AMBULANCE BRIGADE

Go to any public event — fun runs, community days, town festivals, air shows and much more — and you'll likely see the volunteer guys and gals from the St John Ambulance Brigade ready for lending a hand with any first aid as required.
Now here's where you'll *hear* them:

NSW	Queensland	410.5750
53.5500	82.9800	410.8750
83.1300	507.5750	411.2000
84.1500	507.6500	411.6500
404.2000	509.4750	411.7500
404.7250	509.5500	411.9750
404.8500		412.1000
413.6500	**SA**	412.3250
414.1750	76.6700	413.4750
414.2000	78.1000	413.5750
414.3000	158.4700	413.9500
453.3500	158.5300	414.1000
462.8500	159.0700	450.5500
470.4000	159.1600	450.8250
830.9875	159.1900	451.1250
852.1375	159.2500	451.5000
852.2125	159.3100	460.3250
852.5625	159.7300	460.6250
875.9875	404.0250	460.9750
928.1375	404.1250	461.0000
928.2125	404.5000	494.1000
928.5625	404.6500	495.0250

Compiled by David Flynn

coverage from the local crew of ESPN satellite sports network on 455.9625.

Tee up

Michael Evans noted the following frequencies for Melbourne TV channel HSV-7 active at the Masters Golf, played at Huntingdale in Victoria. These are ones to watch for other major televised sports events:

Engineering and Outside Broadcast (OB) Crews: 162.0875
On-course Radio Microphones: 215.500, 216.250, 217.500, 219.100, 221.250
OB Vans: 485.275, 485.400, 485.750
Studio-Huntingdale Link: 491.750

"Most of the tournament officials used Motorola trunking off the Rialto group of frequencies," said Michael. "Some of the catering people appeared to be using the short-term rental frequencies around 471 MHz."

Michael also provides the following frequencies used at Melbourne's National Tennis Centre for the concert by Janet Jackson (the only member of the whacko Jacko family who didn't need plastic surgery to look like Diana Ross). Once again, try these for any other Tennis Centre events.

Security: 471.875, 474.975, 475.050, 475.125
Floor Crew: 415.450
Lighting: 415.475

GSV-9 did live crosses to the "Hey Hey It's Saturday" TV show, and were heard on the following:

461.575 (technicians), 485.425 (Director to Floor Manager), 486.375 (program audio feed).

Scanning clubs

It would make sense, wouldn't it? I mean, whatever your hobby, there seems to be a club for it — a group, formal or informal, where you can meet and mingle with like-minded souls.

And there are clubs for amateur radio operators, CBers and shortwave radio fans, so why not scanning?

Truth to tell, the answer to that one escapes me. Unlike CB and amateur radio, scanning is not a form of radio communications which allows you to get to know your comrades on the air — so monitors should have more of a need to meet in person.

Unlike shortwave radio, there are no commercial utility broadcasters which make public their program schedules, frequencies and hours of operation.

Shortwave stations rely on shortwave listeners, and love to tell people how to listen to their programs. Scanning enthusiasts work in the dark, comparatively speaking, so we really should be relying upon each other to share our findings.

Whatever the reason, when you start scanning you're generally on your own. That's why CBA comes in so handy. But what to do between issues?

If you have a computer and a modem, the best place to be is the network of computer bulletin board systems (BBSs) such as **Shortwave Possums** (you can read more about this in Patrick McDonald's *Online* column, elsewhere in this issue).

....☞

The LISTENING POST

There are a very few scanning clubs. At the time of writing, I know of only two in Australia: the **Newcastle Scanner Group** (PO Box 728, Charlestown NSW, 2290), and **West Australian Radio Monitors** (PO Box 297, Cloverdale WA, 6105). A group may also be starting soon in Brisbane and the Gold Coast.

You can also try the larger radio clubs, some of which cover scanning in addition to shortwave radio and other listening-oriented hobbies.

These are best if you have a broader interest in radio than just scanning.

The long-running **Southern Cross DX Club** caters for shortwave and scanner listeners. Write to the club at GPO Box 1487, Adelaide SA, 5001 for a free copy of its monthly magazine *DX Post*.

A new group on the horizon is the curiously-named **SPUD — the South Pacific Union of DXers**. This gathering of friendly radio fans aims itself at listeners of everything from scanning and TV/FM DX to shortwave, medium wave and utility monitoring. For more details write to SPUD at PO Box 33, Montrose Vic 3765.

NATIONAL BRAMBLES' FREQUENCIES

This is one of Australia's largest companies when it comes to transport and security, and a big search of the SMA's CD-ROM database by Michael Evans has uncovered the following 'mother of all frequency lists'. These channels are allocated around Australia — if you're after a Brambles catch, tune in and see which are active in your area:

71.6375	169.8700	463.8750	482.5000
73.0100	404.0500	463.9000	482.6750
73.1300	404.1500	464.6500	482.8000
73.3400	404.3250	466.9000	484.0500
73.8500	404.4000	469.5250	484.8750
76.3250	404.5500	469.5750	486.7750
77.9600	405.0000	469.6000	487.0750
80.6100	409.3750	469.6250	487.1000
81.9150	413.5000	469.6750	487.1500
84.7200	413.6000	469.7000	487.3750
150.5250	413.7750	469.7500	487.7000
150.6125	413.8500	470.8000	487.8750
150.6625	413.8500	471.3750	488.0000
150.7375	414.0000	471.4000	489.2500
150.9125	414.4500	471.4250	491.3250
151.2250	418.8250	471.6000	491.6750
155.1250	450.0750	471.7500	493.1750
156.3750	450.1750	472.0750	494.2000
156.7250	450.2250	472.1000	494.4500
156.8000	450.3500	472.4250	494.8250
156.8000	450.4000	473.0500	496.5250
158.3800	450.6000	473.5000	496.8750
158.9350	450.6500	473.6000	499.4000
159.0100	450.8250	474.0000	499.6500
159.0400	451.4000	474.4250	507.7250
159.1300	453.6250	475.1250	508.2750
160.2700	454.3750	476.0000	508.9250
162.5200	455.1500	477.6250	509.2250
162.6100	457.4000	478.7000	517.7250
162.9875	458.0250	478.8000	518.9250
163.2625	460.1000	479.2000	519.2250
163.8700	460.1250	479.6250	519.7500
167.6500	460.1500	481.5750	830.0125
167.9200	460.3250	481.8750	830.4125
168.0550	460.9000	481.9000	830.8875
168.7900	463.1250	481.9500	852.4625
169.6000	463.2250	482.1750	875.0125

Down In Daimaru...

Still in Melbourne, if you're wandering through shopping heaven Daimaru, Alan Cheng lists Myer Security on 470.900 MHz, and Michael Evans says to listen for the contract guards from ADT Security on 492.975 MHz.

Shopping in SA

Matthew Volkmer adds some more hospital and shopping center frequencies for Adelaide to our lists of previous issues:

Hospitals:
Womens' and Childrens' Hospital (formerly Adelaide Childrens' and Queen Victoria hospitals): 467.250, 471.325, 494.825, 509.175
Lyell McEwin: 472.150
Modbury: 484.850
Flinders Medical Centre: 493.950, 494.550

Shopping centres:
Westfield Shoppingtown Kilkenny: 469.700, 469.975
Westfield Shoppingtown Oaklands Park, 469.700
Westfield Shoppingtown Modbury, 465.225
Westfield Shoppingtown West Lakes, 485.150
Myer Centre (City): 464.925
Myer Parabanks (Salisbury), 469.950
Myer Elizabeth City Centre, 470.050
Myer City Cross, 469.825.

Return to sender

Thanks to all those readers who drop me a line to share their latest finds with the rest of Australia's scanning fans. However, please let me stress that I'm not in the position to provide a personal reply to any mail. If you write seeking who's on what frequency or where you can find such-and-such a company, I'll print the answer here in *The Listening Post* if I have it on hand, or I'll print your query and invite readers to respond. But I simply do not have the time to do personal replies.

Footy frequencies

More sports stuff from Lance Noll: the **Seagulls Football Club** uses 472.025, with the **Broncos** logged on UHF CB channel 25!

SO WHAT'S HAPPENING TO CB ACTION?

Turn the page to find out...

BOOKS WORTH READING

Your Passport is now waiting...

It's time to pick up your Passport — that's your **Passport To World Band Radio** (PWBR), of course! Yep, the 1995 edition is now out, and it's crammed full of useful information to help you plan your DX day... or should I say DX *night*.

The 1995 edition, with 536 pages, has something for everyone. Remember those textbooks you had at school which you carried around day after day? Well, you use PWBR in the same way. It's a textbook for DXers which points you in the right direction.

This annual publication is a must for the novice shortwave listener, or for the advanced DXer who enjoys studying the bands.

What time can I hear the news from India? When does Israel have its DX program? It's questions like those your PWBR can answer.

The front of the book contains all the program details to help you find your favorite programs, while up the back the annual 'blue pages' is your ready reckoner to the bands.

It's all there.

At a glance you can check any shortwave channel over the entire 24 hours to see who is there. And if you're looking for information on SW radios, deciding what to buy, or if you simply want to keep up with what's on the market here and overseas, then PWBR should be included in your world band travels.

I personally find the ads just as interesting as the written word.

Do *you* know what the Yacht Boy 500 looks like? And what about computer software to drive your DXing? It's all there... from tips to choosing a radio to how to contact distant and exotic stations.

A valuable item included in the receiver reviews is a look at some of the new digital signal processors (DSP) which have hit the market. These remarkable 'black boxes', based around the latest microprocessor chips, can improve reception dramatically.

There is even a review of the MFJ DIY shortwave receiver kit — something you can build yourself. (Both the range of MFJ products and the Timewave DSP units are marketed in Australia by radio specialist Daycom in Victoria. Call them on (03) 543 6444.)

Other chapters include...

The 'Compleat idiot's guide to getting started'. This section helps those who want to jump aboard the SW train.

In **'Techs, skies and audio tape'** the future of the hobby is discussed. (I'd like to see more articles like this included in future editions. Without discussion DXers won't have a say in how our hobby is changing. It's through the international books like PWBR and the WRTH that open discussion can take place.)

One piece of criticism I have of the book is its very limited look at the curly subject of propagation.

While the topic can be complex and fill up many books the size of PWBR, it needs to be presented in an easy-to-read form which is both accurate and covers locations from various points around the world.

The two pages of 'broad' information on the last pages isn't enough.

The book is available from Daycom, and from Dick Smith Electronics stores across Australia. My thanks to Craig Tyson, one of the contributing editors, for the review copy.

"Proceedings 1994-95" book also available

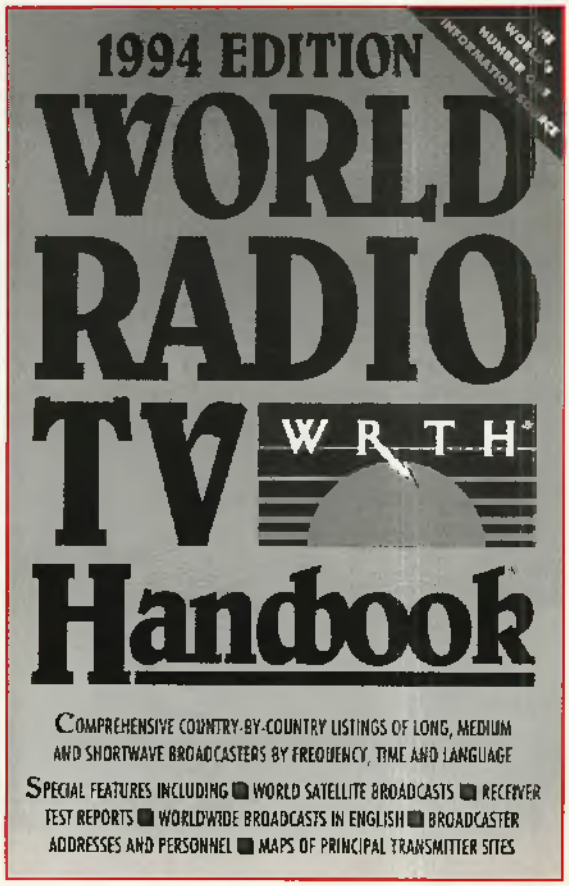
Another in the fine series of books from the Fine Tuning team in the US has also hit the streets.

The new book has close to 200 pages of high-quality technical material for the advanced DXers looking to squeeze every drop of signal out of their antenna and radio.

This edition includes articles on multiple beverage antennas, ferrite loops and specialty antennas for the tropical bands, as well as an up-to-date look at the Russian SW scene, with details on stations, frequencies and times. Two articles look at propagation, while there is a look into how to tackle noise in your radio shack. Proceedings 1994-95 costs US$20.50 plus US$5 for surface mail or US$17 airmail. Cheques must be drawn on a US bank and made out to Fine Tuning Special Publications.

The address to write to is Fine Tuning, C/- John Bryant, RRT no.5, Box 14, Stillwater, Oklahoma 74074, USA.

A note from the editorial team at Fine Tuning announced that, due to fatigue they are suspending future publications for an indeterminate period.



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*OH, IT'S ALSO CHANGING ITS NAME!

Times change and so does CB Action.
This is the final issue of CBA in this format but fear not - it's simply getting better.
To provide a wider spread of news and information to hobby communicators, CBA will combine with its sister publication Amateur Radio Action to become "Radio and Communications" - 100 pages per month, cover price $3.95 - with the first issue due to publish on 27 June.
All of CBA's features will be retained:
***CB UHF and HF rig reviews**
*** Scanner reviews**
***Scanner frequencies**
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***27 MHz DX information and updates**
***Antenna articles**
***Shortwave listening**
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many new features including
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*** Computers & communications**
***Satellite reception**
***Equipment modifications**
***Bulletin Board Systems**
PLUS
amateur radio reviews and information.
In short, you'll get everything you now get in the bi-monthly CBA - plus an extra 46 pages - and monthly!
Look out for it at your newsagent on 27 June.

RADIO *and* COMMUNICATIONS

DICK SMITH ELECTRONICS

Tune Into The Very Latest From uniden.

Bearcat 144XLT uniden. Scanner

Offers wide frequency coverage, yet is extremely easy to operate. With 16 programmable channels and 66-88, 137-174 and 406-512MHz coverage, it's great for listening to known VHF/UHF services. Through the use of a straightforward 2-digit LED display you can easily check what frequency is entered into each channel, and a specific frequency can be given Priority status where necessary. Supplied complete with AC adaptor and telescopic antenna.

Cat D-2744

$149.95

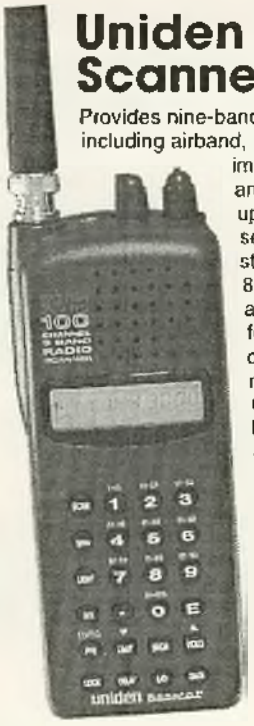
60XLT Scanner

A simple-to-use 10-channel scanning receiver for listening to known VHF/UHF services. Covers 66-88, 137-174, and 406-512MHz. Also great for listening to ethnic language services that don't operate on the FM broadcast band.

Cat D-2746

$169.95

uniden.



Uniden 120XLT Scanner

Provides nine-band VHF/UHF coverage including airband, 100 memories, and improved super fast scan and search features (scan up to 100 channels/sec, search at 100 or 300 steps/sec). Covers 66-88MHz, 108-174MHz, and 406-512MHz. Also features 10 priority channels, data skip and memory back-up. Complete with NiCad battery pack, AC charger and detailed instructions.

Cat D-2752

$369

uniden.

Uniden 220XLT Scanner

The Twin Turbo 220XLT hand-held scanning receiver provides ten-band VHF/UHF coverage including air band, 200 memories and improved super fast scan and search features (scan up to 100 channels/sec, search at 100 or 300 steps/sec). Also features pre-programmed channel steps to suit Australian conditions, including 800MHz. Complete with NiCad batteries, AC charger and detailed instructions.

Cat D-2755

$469 uniden.

2500XLT Scanner uniden.

State-of-the-art hand-held scanner from Uniden. With super-wide 12 band frequency coverage (25-549.95 and 760-1300MHz), 400 memories, and advanced 100 channel per second Turbo Scan for faster frequency location. Includes priority channels and memory Auto Sorting for easier operation, plus memory Auto Store facility which is useful when searching for new active frequencies. Also features channel steps to suit most Australian conditions (inc 800MHz), plus 4 user-selectable steps for greater flexibility. Complete with NiCad batteries, AC adaptor/charger, carry case and detailed instructions.

Cat D-2725

$499

Uniden UH-053 UHF CB
Price Breakthrough!

New for 1995! The Uniden UH-053 answers the needs of users who require a compact FM transceiver for communication over short-medium range local areas, without the complexity and expense of existing high-power hand-helds.

The UH-053 provides coverage of the first 16 channels of the UHF CB band, with selectable repeater operation on channels 1-8 inclusive. Simplex operation on all 16 channels is selectable if repeater access is not required. With its compact 150 x 41 x 63mm case size and 1 watt RF output, the UH-053 provides convenient and effective coverage, and is compatible with existing mobile or hand-held UHF CB transceivers. Being fully SMA approved, no licensing is required.

Each UH-053 is supplied with a NiCad battery pack, AC charger, belt-clip, and flexible antenna, ready for operation. An optional speaker/microphone (D-2025) is also available for more convenient belt-mounted usage.

Cat D-1753

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UH-053 shown approx full size.

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NOVICE NOTES WITH

Paul Butler, VK3DBP

Last time, we began to investigate the electronic component known variously as a valve or tube. So far, we've seen the diode, which has two electrodes, and the triode, which has three. To see how they work see CBA, March/April 1995.

Now it's time to go on to valves with four or five electrodes, called respectively the **tetrode** and the **pentode**. But first, to understand them better, we need to know a little about positive and negative feedback.

Feedback — a real howl!

One of the best-known examples of feedback is the oft-quoted one of the public address system in which the microphone gets too near to the loudspeakers. In this situation, any slight noise at the microphone goes into the system and is amplified, appearing at the loudspeakers.

This output, of course, then gets back into the microphone and goes around again, undergoing further amplification. The process quickly gets out of control and the whole lot takes off with an almighty howl.

This is an example of **positive feedback** — the output is fed back to the input so that it progressively adds to the input signal. We say that the signal is fed back in phase with the input.

A designer hoping to produce an electronic oscillator makes good use of positive feedback.

Essentially, an oscillator is an amplifier in which a sniff of the output is applied to the input, so that the thing takes off just like a howling PA system.

The key to good design is to control the degree of feedback, so that the device oscillates in a predictable and reliable way.

Amplifier designers, however, know the perils of positive feedback and spend a lot of their time avoiding it!

On the other hand...

Not all feedback is positive. Under the right conditions, the signal fed back can be arranged to partially cancel out the input.

Now the overall effect is to reduce the gain of the amplifying system.

This time the feedback is 180 degrees out of phase (a full 360 degrees of phase difference brings things back in phase again).

At first sight, this seems a bit ridiculous — why spend good money buying electronic devices which produce lots of amplification, only to turn around and reduce the amplification using negative feedback?

The answer is that the introduction of **negative feedback** makes the circuit less critical when it comes to choosing components to build it.

Off-the-shelf components have a certain amount of tolerance associated with them.

For example, a 1 kilohm resistor may not have a resistance of exactly 1000 ohms.

A batch of these components will vary in resistance from about 900 ohms up to 1100 ohms, if they are rated at 10 per cent tolerance.

This variation in resistance within a batch, and from batch to batch, could make the large-scale production of electronic devices very difficult.

A designer may make a prototype which behaves itself within certain defined parameters.

But when lots of them are made commercially, the tolerances of the components would make it unlikely that many of the production output would behave like the prototype.

Negative feedback designed into a circuit makes the component tolerances much less critical.

The gain of an amplifier stage may be reduced as a result but this can be adjusted by including further stages.

A good amplifier designer makes careful use of negative feedback to get just the right design performance.

A couple of circuits showing how feedback can be achieved are shown in **Figure 1**.

Inter-electrode capacitance

Now back to valves. The geometry of a diode puts the hot cathode at the center of a cylindrical anode or plate, and the proximity of these two conductors introduces a certain amount of capacitance.

A capacitor is basically two conductors separated by an insulator, so any situation in which this occurs has some capacitance associated with it.

The inter-electrode capacitance of a diode is not important for the vast majority of applications.

In the triode, however, there are three inter-electrode capacitances. In many applications, they can adversely affect the performance of the device.

There is capacitance between each pair of electrodes, that is, there is grid-cathode capacitance, grid-anode capacitance and anode-cathode capacitance. Each can affect the circuit containing the triode valve in different ways.

Input capacitance

When a signal is applied to the grid of a triode valve, the signal source will 'see' the grid-cathode capacitance across it. Because of the amplification of the triode stage, however, even more capacitance is 'seen'.

In **Figure 2**, we can see the effective capacitance between the grid and the anode (plate), shown dotted in the diagram.

This produces a current around the circuit which must be supplied by the input signal source. And because the triode is acting as an amplifier, the effective grid-anode capacitance is equal to the actual capacitance multiplied by the amplifier gain.

This means that the effective capacitance 'seen' by the source is much bigger than just the grid-cathode capacitance, as much as several hundred picofarads if the gain of the stage is high.

This is not important in audio frequency (AF) stages but becomes very significant in radio frequency (RF) circuits.

Output capacitance

The biggest contribution to the capacitance in the output circuit comes from the anode-cathode capacitance. Again, this is particularly important in RF circuits.

Any capacitance has a reactance, equivalent to the resistance of a

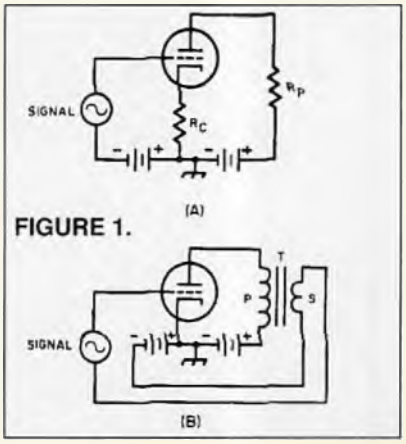

FIGURE 1.

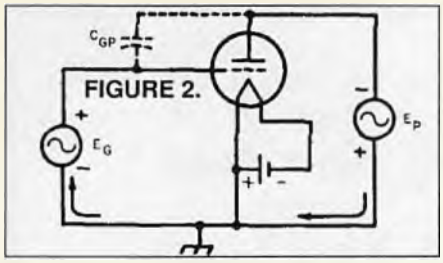

FIGURE 2.

resistor. At high frequencies, the reactance drops to a low value and effectively shorts out the input and output.

A nifty way to get around the problem of inter-electrode capacitance in some circuits is to include tuned circuits on the input and output.

These are designed to resonate at the particular frequency in use. By clever choice of components in the tuned circuits, the inter-electrode capacitance can be included as part of the capacitance in the resonant circuit, and the problem then goes away!

Add an electrode — get a *tetrode*

If another electrode is placed between the grid and the anode, the inter-electrode capacitance can be reduced. The electrons still have to get through, however, from grid to anode, so the new electrode must be another grid or mesh, with holes for the electrons to pass through. This is referred to as the **screen grid** and the four-electrode valve is known as a **tetrode** (see **Figure 3**).

Because the anode is now screened to some extent from the grid, its attractive pull on the electrons passing through the valve is reduced.

To help out, the screen grid is made positive relative to the cathode. Most of the electrons are now travelling so fast that they shoot straight through the holes in the screen grid. Some do hit it, though, so a small screen grid current flows.

And another — the pentode

The next problem is associated with what happens to the electrons once they get past the control grid (and the screen grid in the pentode). Having been accelerated by the high voltage on the anode, they are travelling pretty quickly. As they plough into the anode, their energy is absorbed, dislodging a spray of electrons back out of the metal.

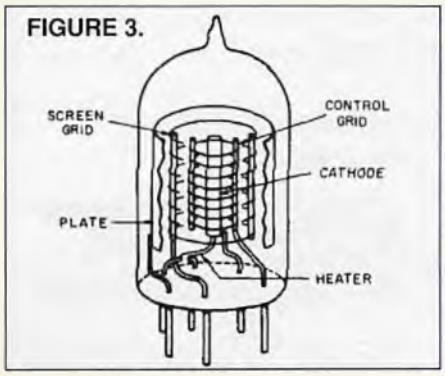

FIGURE 3.

This is called **secondary emission**, and in a triode it causes no problem. This is because the secondary electrons are repelled by the negative control grid and sent back to the anode where they belong. In the pentode, however, the positive screen grid tends to collect the secondary electrons, forming a reverse current between the anode and the screen grid.

The answer to this new problem is yet another grid. This time it is called the **suppressor grid** and it is placed between the anode and the screen grid. The suppressor grid is held at a negative voltage relative to both screen grid and anode and stops the secondary electrons from getting back to the screen grid.

Once the screen grid is in place, the grid-anode capacitance is reduced to a very small value, so low that it contributes little to the input capacitance despite the amplification factor discussed above.

Beam tetrodes

It is interesting to mention briefly a specialised kind of tetrode known as a **beam tetrode**. In this device, which is essentially a pentode with a few modifications, the electrons are shaped into concentrated beams as they pass between cathode and anode.

This, together with other design features, reduces secondary emission to a sufficient degree that a suppressor grid is not needed.

One benefit of the beam pentode is that it can draw a large anode current at relatively low anode voltage.

Large power outputs can be obtained with only small power input at the control grid. For this reason, beam pentodes are usually used in preference to other types of valves for power amplification.

Valve circuit configurations

Valve circuits are most often shown with the input applied across the control grid and cathode; the output is then taken across anode and cathode.

The common electrode in this case is the cathode, which is connected to the negative (earthed) side of the power supply by a resistor and capacitor in parallel.

We'll look at the role of the components in the cathode circuit in a moment. First, let us see if there are alternatives to the 'common cathode' stage.

In fact, any of the three electrodes, cathode, grid and anode, can be used as the common terminal. Two other possibilities need to be considered, therefore, in addition to the common cathode configuration. These are the grounded-grid amplifier and the cathode follower (see **Figure 4**).

The grounded-grid amplifier

In this circuit, the signal is applied between the cathode and grid and the load resistance **R** is connected from anode to grid. As the signal source is in series with the load, up to 10 per cent of the output power has been 'fed through' from the input.

The advantage of the grounded-grid circuit is that the grid acts as a shield between cathode and anode.

This reduces inter-electrode capacitance. This makes the amplifier stage very stable and free from the danger of oscillation, a particularly important feature in RF applications.

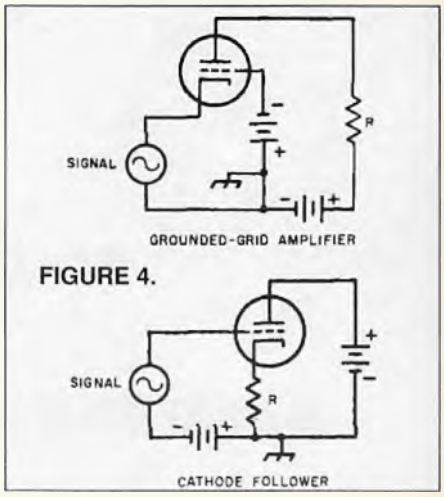

FIGURE 4.

The cathode follower

Now the anode is the common electrode. This time, all of the output is fed back in opposition to the input, so the output signal voltage is less than the input signal voltage. The stage still produces power gain, however.

The important feature of the cathode follower is its very low output impedance, compared with high input impedance.

This means that it can be used as an impedance converter, behaving just as a transformer does in a similar application.

This allows two dissimilar circuits to be connected together without loss of power.

Bonus features of the cathode follower are that it has a low input capacitance and the low output impedance allows it to handle a wide range of frequencies.

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NOVICE NOTES WITH

Paul Butler, VK3DBP

This makes it an excellent choice for wide-band circuits.

Bias circuits

Valve circuits are sometimes shown with batteries providing the DC voltages around the circuit, and this reflects the way that real circuits are sometimes built.

More often, however, resistances are used to set the DC voltage conditions.

This is the role of the resistor in the cathode circuit of a common cathode amplifier, setting the right voltage difference between cathode and grid.

With the addition of a cathode resistor, the anode current now has to flow through, too.

This leads to unwanted negative feedback.

The cathode bias resistor is shorted out at signal frequencies, therefore, by what is known as a bypass capacitor.

The value of this capacitor is chosen so that it presents low impedance at the frequencies being amplified.

Finally for this edition of Novice Notes, here are some questions for you to think about:

1. The 'space charge' of a vacuum-tube is the:
(a) potential between anode and cathode
(b) electron flow to the anode
(c) cloud of electrons surrounding the cathode
(d) electrostatic field between the anode and cathode

2. The purpose of the screen grid in a vacuum-tube is to:
(a) control the signal voltage
(b) amplify the plate current
(c) reduce the internal capacitance between the grid and the plate
(d) increase the internal capacitance between the grid and the plate

3. Compared to a triode, a pentode has a smaller:
(a) space charge
(b) anode-grid capacitance
(c) amplification factor
(d) number of grids

4. The voltage applied to the screen grid of a pentode vacuum tube, measured with respect to the cathode, is:
(a) positive
(b) negative
(c) nil
(d) not measurable

5. The purpose of the suppressor grid in a pentode vacuum tube is to:
(a) reduce the space charge
(b) reduce secondary emission from the anode
(c) act as a shield between the control grid and the screen grid
(d) provide feedback from control grid to anode

6. How many grids are there in a pentode vacuum-tube?
(a) 2
(b) 3
(c) 4
(d) 5

7. The element which does not relate to solid-state devices is the:
(a) collector
(b) emitter
(c) drain
(d) filament

8. A 'soft' tube is a:
(a) VHF transmitting valve
(b) low power receiving valve
(c) a faulty vacuum tube which has gone gassy
(d) a vacuum tube with an open-circuit heater

9. In a grounded grid amplifier circuit, the control grid is kept at:
(a) RF ground potential
(b) DC ground potential
(c) the same potential as the cathode
(d) the same potential as the anode circuit

10. One of the basic requirements for an oscillator is:
(a) neutralisation
(b) modulation
(c) negative feedback
(d) positive feedback

Answers
1 (c), 2 (c), 3(b), 4(a), 5(b), 6(b), 7(d), 8(c), 9(a), 10(d).

A QUICK UPDATE

Since Novice Notes began in CBA quite a while ago now, there have been a few changes. The amateur radio service is now in the hands of the **Spectrum Management Agency** (SMA) and they view things somewhat differently from the previous body, the **Department of Transport and Communications** (DoTC). We have already see changes in CB radio, particularly in the area of licensing of equipment.

Whether major changes are in the wind for the amateur service remains to be seen. For readers of this column, many of whom are potential amateur operators who plan to take the Novice examination and later perhaps the full call (AOCP) examination, a most important change has already happened, in that the management of examinations is no longer centralised but has been handed out to individuals and organisations within the amateur radio service.

To get the latest, Novice Notes acquired a copy of RIB70, RIB71 and RIB72 (the best stab we could have at RIB is Radiocommunications Information Brochure!). These blue and yellow documents replace the old green and white DOC70, DOC71 and DOC72 from (guess where?) the old DoTC.

In many ways, the only things that have changed are the color scheme and the acronym (DoTC became SMA). There are definite moves towards more privileges for Novices and it is important for potential amateurs to be aware of these and other changes. The requirement to pass a regulations examination is still there, so the examinee must bone up on those, too.

Novice Notes plans to spend some time examining the RIBs, so watch out next time for our thoughts. Of course, learning the regulations is not the most exciting pastime in the world but is it a necessary step towards getting on the air on the amateur bands. We'll try to make it a reasonably painless experience, anyway.

That's all for this time from Novice Notes.

DX Logbook

By Rob Williams

Greetings once again, and welcome to the HF bands. This is where you get your dose of Shortwave DXing. This column will give you the essential elements you need to hear shortwave broadcast stations from around the world.

Sometimes we stray outside those goals to cover relevant issues relating to broadcasting, but most of the news is from the many stations which frequent the shortwave bands. Now on with the news...

WOR changes due to summer time

Keeping up with Glen Hauser's **World Of Radio** programs is a never-ending task. Things aren't made any easier when US SW broadcasters shift programs to cater for daylight saving — or, as Glen calls it, "Daylight Shifting". The 2130 broadcast on our Saturday mornings at 2130z on 12,160 kHz has generally been good, but from the beginning of April the broadcast will be an hour earlier, reducing the chances that this frequency will propagate to us. The best chance for us to hear one of Glen's many transmissions will be the Sunday night (Aussie time) broadcast from WWCR at 1030z on 5065 kHz. WWCR will also be introducing 9475 kHz between 2100 and 0000z, to supplement 15,685 and 7435 kHz.

BBC introduces major changes

Significant changes to BBC's World Service programming took place at Bush House on April 1. In the past, programming of popular BBC material may not have been available at the most desirable times for particular target zones.

If, for instance, you wanted to hear a particular program, you had to tune in to one of several chances on the chance you might hear the program. This may mean trying to hear the BBC when it isn't targeted to your region. Now, with its new **Split streaming**, programs will be aired in the targeted zones at more appropriate times.

There are to be five regions, or zones.

The first one will combine Europe, the Middle East, the former Soviet Union and South-West Asia into one 'stream'. The next will cover Africa, the third Southern Asia, then there is Asia-Pacific and, finally, the Americas.

Continuity will be maintained but, according to the BBC, programming content will not be effected. This means that listeners in, say, Australia, will continue to hear news from London and won't be feed news which only relates to Australia.

Even before the changes took place, there was much discussion over the Internet about what these changes would mean to DXers/SWLs. The latest estimates from the BBC put their listening audience at 130 million people worldwide, with an English-speaking audience of 37 million.

At the time of going to press I hadn't yet seen the new programming line-up, so it remains to be seen whether DXers will be happy with the changes. Time will tell...

New Danish sked released for summer

Radio Denmark, from transmitters in Norway, broadcasts to South-East Asia and Australia at the following times:

0830 to 0855 on 21,705
0930 to 0955 on 17,740
2130 to 2155 on 7135
2230 to 2255 on 9635

Transmissions aimed towards Western Australia and South East Asia go out 1230 to 1255 and 1330 to 1355 on 13,800 kHz, and 2330 to 2355 and 0030 to 0055 on 7275 kHz. QSL cards are available for correct reception reports for one IRC or US$1.00

Belgium's English output

RVI has English at the following times: 0630 to 0655 on 9925 to Australia and South West Europe; 0900 to 0925 on 6035 to South Europe; 1300 to 1325 on 13,670 to North America; 1800 to 1825 on 5910 to South Europe; 2100 to 2125 on 5910 to South Europe; 5930 to north-west Europe; and 2330 to 2355 on 13,800 to South America.

Thanks to Paul Brems for the latest sked.

WEWN — broadcasting around the clock

Here is the sked for WEWN, which was effective from March:

0800 to 1059 on 9350
1100 to 1559 on 7425
1600 to 2059 on 9425
2100 to 2159 on 7435 and
2200 to 0759 on 7425

Funding problems for RCI — again...

For the past four years, Radio Canada International has been funded by the country's external affairs department. But now RCI has been moved back under the umbrella of the Canadian Broadcasting Corporation, so RCI's funding must come from within CBC's own budget. Fair enough — but *no* extra funds have been given to CBC to support RCI! In fact, the CBC budget is being *cut* by 25 per cent over the next three to four years.

CBC's president, Anthony Manera, resigned in disgust, and now the future of RCI is once again up in the air. A meeting to try to resolve the funding problems will be held towards the end of March.

Thanks to David Rovinsky for bringing this to light on the Internet.

OZ DX catches

• **KSDA** carries Wavescan, produced by Adrian Peterson, at 1600 on 9370 and 2300 on 11,980. From March 26 to June 24 ,between 0900 and 1000z, KSDA will conduct a special transmission to PNG and northern Australia using the backbeam off transmitter 1, using 100kW aimed at 345 degrees. The frequency will be 9530 kHz. Wavescan will be carried on the special tests and a special QSL card will be issued for correct reception reports. Thanks to Arthur Cushen for this catch.

• On 4935 kHz at 1555z Guy Atkins logged Nairobi with Afro vocals and heard an ID at 1559z as **KBC Nairobi**. Still heard at 1616, but fading out due to sunrise.

• **CKZN** was heard on 6160 kHz at 1004z with contemporary songs. Thanks David Martin...

• On 7262 kHz at 1050z David Foster logged **Ulan Bator** with Mongolian songs in parallel with 4850. This appears to be its home service. English lessons were carried at 1136z.

That's just a taste from the latest OZ DX newsletter. The March edition carried a run down of their Indonesian-Ramadan survey.

HCJB makes seasonal changes

Effective from March 1, **HCJB** made a change to its English broadcast to the South Pacific. Previously, the station was operating on two channels — 6135 and 9745. This season, 6135 will be the only channel used.

HCJB's reason for this is mainly due to transmitter reliability and the low sun-spot cycle. Late next year it should have two new 100 kW senders and, as the sun-spot cycle moves back up, it will once again use two frequencies to its target zones.

HCJB's SSB transmissions will be on 15,540 and 21,455 kHz, both USB. Look for **DX Partyline** at 0909z on Saturday nights. **Ham Radio Today** is aired at 0930z on Wednesdays, and its short DX catch segment goes out at 1030 on Wednesday.

Here in Sydney, 15,540 kHz can be heard from around 0000 to 0700z which gives us a chance of hearing DX Partyline at 0109 on our Sundays.

The European release of DX Partyline is also audible at good strength at 0740 on 6205 kHz. Also **The Latest Catches** is there at 0200z on our Thursdays on 15,540 kHz.

Radio New Zealand's sked

Effective from March 19 to May 6, **Radio New Zealand** will be using the following sked: Monday to Friday between 1650 and 1849z on 6100 kHz; Sunday to Thursday between 1850 and 2050z on 11,910 kHz; Sunday to Thursday between 2051 and 0458z on 15,115 kHz; Monday to Friday between 0459 and 0716z on 11,900 kHz; Monday To Friday 0717 to 1206z on 9700 kHz; Friday and Saturday between 1850 and 2058z on 11,910; Friday and Saturday 2059 to 0458z on 15,115 kHz; Saturday and Sunday 0459 to 0758z on 11,900 kHz and 0759 to 1206z on 9700 kHz. Occasionally, sport will be broadcast on 6100 kHz between 1207 and 1649z.

DX snippets

• Alex Wellner reports that **Radio Minsk** in Belarus has an English transmission every Tuesday at 1945z on announced frequencies 6010, 6020, 7210 and 11,960 kHz.

• Since January 1, **Radio Prague** has suffered budget cuts, and has lost one of its three transmitters. Its 250kW transmitter at Rimska Sobota in Slovakia is off the air, leaving it with two 100kW units at Litomysl in the Czech Republic.

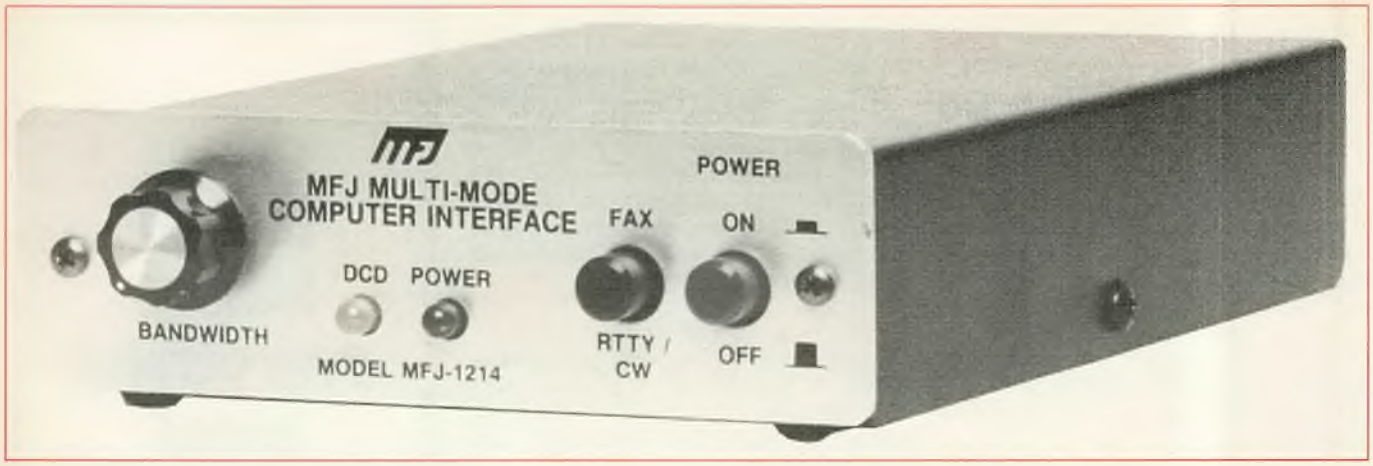
• The **Voice Of Turkey** is expected to have five new 500 kW transmitters on air

NEW SKED AVAILABLE FROM DEUTSCHE WELLE

Thanks to Andreas Volk, we now have a copy of the operational schedule (sked) for Deutsche Welle. Due to space constraints and the sheer size of it, I can't print the entire sked, but here is the section for the current broadcast period which should interest locals :

kHz	Start (UTC)	End (UTC)	Relay Station	Power (kW)	Antenna Azimuth	Target Area
1548	0200	0250	TRINCOMALEE	400	035	SAS
1548	1600	1650	TRINCOMALEE	400	035	SAS
6160	0900	0950	ANTIGUA	250	205	OC/CAM
6170	1600	1650	TRINCOMALEE	250	015	SAS
7225	1600	1650	TRINCOMALEE	250	345	SAS
7285	0200	0250	WERTACHTAL	500	090	SAS
9615	0200	0250	TRINCOMALEE	250	015	SAS
9670	2100	2150	TRINCOMALEE	250	120	SEAS/OC
9690	0200	0250	JUELICH	100	075	SAS
9690	0200	0250	WERTACHTAL	500	090	SAS
9765	2100	2150	WERTACHTAL	500	090	SEAS/OC
9875	1600	1650	NOVOSIBIRS	999	195	SAS
11730	0900	0950	TRINCOMALEE	250	345	EAS
11785	2100	2150	TRINCOMALEE	250	120	SEAS/OC
11945	0200	0250	JUELICH	100	070	SAS
11945	0200	0250	WERTACHTAL	500	090	SAS
11965	0200	0250	TRINCOMALEE	250	015	SAS
12045	0200	0250	SAMARA	250	140	SAS
12055	0900	0950	IRKUTSK	250	110	SAS
13690	1600	1650	MALTA	250	080	SAS
15245	0900	0950	WERTACHTAL	500	090	SEAS/OC
15245	0900	0950	WERTACHTAL	500	255	SEAS/OC
15595	1600	1650	WERTACHTAL	500	090	SAS
17715	0900	0950	TRINCOMALEE	250	120	SEAS/OC
17780	0900	0950	JUELICH	100	080	OC
17810	1600	1650	MALTA	250	080	SAS
21680	0900	0950	WERTACHTAL	500	090	OC

SAS = South Asia, OC/CAM = Oceania and Central America, SEAS/Oc = South East Asia and Oceania.



MFJ-1214

A multi-mode computer interface for the PC

By Paul Butler, VK3DBP

We all know how much fun it can be to talk to other communications enthusiasts, but amateur radio operators get the opportunity to use other ways of talking together. Try a substantial network of their own satellites, transmitting live, fast-scan television and fax, and data communications of many varieties over the air via humble personal computers, and you'll know what I mean. But you don't have to be a licensed amateur to listen to the exotic modes. With a gadget like the MFJ-1214 you can tune into some of the most interesting non-packet data modes at your house. Paul Butler explains...

One of the benefits of boning up on theory, regulations and Morse Code in order to get an Amateur Operator's Certificate of Proficiency (AOCP) is that you can then play around with a whole host of different communication modes. Not only can you talk to other amateurs, but you can exchange pictures, computer files or just plain text using one of the many digital modes available to amateur radio enthusiasts.

With the arrival of the personal computer in many amateur shacks, the use of digital modes is easier these days than ever before.

There are lots of computer people around the world who like nothing better than to write programs to handle radioteletype (RTTY), facsimile (fax), slow-scan television (SSTV) and even good old CW (Morse Code). Many of these programs are shareware, and are readily obtained through dial-up bulletin boards.

The program on its own is not enough, however. To make the computer 'talk' to the transceiver, you need some hardware which will provide an interface between the two. For some applications, this can be as simple as a single integrated circuit and a few off-the-shelf components. But if you get serious about chasing a variety of modes, you may end up wanting something a bit more sophisticated.

Home-brew designs are a possibility, but you may prefer to buy a box of tricks ready to plug in and switch on. Several manufacturers produce such devices, covering a range of modes and a corresponding range of prices. This review looks at just one of the many available, the **MFJ-1214** PC from the well-known and highly respected MFJ Enterprises in Mississippi, USA.

This particular interface is really a combination of hardware — the box which goes between the computer and the transceiver — and software — the program which controls the computer and makes the whole lot do what you tell it. Although the two go together in this application, this is not always the case.

There's lots of fun to be had with this low priced ($345) unit for both amateurs and hobby communicators

For example, another interface, the AEA PK-232 'Pakratt' from Advanced Electronic Applications Inc, will run many of its modes quite happily from any simple communications program run on a computer, or even from a dumb terminal. A bit of patient tinkering could probably persuade the MFJ-1214 to do the same, but here we will concentrate on how it runs with the software supplied.

The MFJ-1214 PC multi-mode computer interface

This diminutive box offers two distinct types of communication mode, pictures and text. In the picture group, it will handle weather facsimile images, built up either from two levels only (black and white), or full grey-scale and color pictures. In text mode, it deals with Morse Code and radioteletype, both Baudot and ASCII.

There are many other modes around — packet, AMTOR, SITOR and others — but the MFJ-1214 does not know about them. If you think you might want the other modes at some point, shop around for other MFJ models or look at the range offered by other manufacturers.

The computer requirements for the text modes are quite basic — an 8 MHz or faster DOS computer, minimum EGA graphics, a hard disk for program and text file storage. For fax, the computer needs to be faster and VGA graphics are essential. As picture files tend to be quite large, a hard disk of decent size is a good idea, too. Any current entry-level computer (eg. 386, 486), like those commonly bought for domestic use, will handle everything the MFJ software can throw at it. Oh, and Macintosh owners... bad luck!

There is a definite tendency now for boxes of electronics to get smaller, and the MFJ-1214 is no exception. The front panel is about 12 cm by 4 cm and the box is about 16 cm from front to back. On the front, there are two pushbutton switches; one is the power switch, the other selects between fax and RTTY/CW. A red LED

indicates whether the power is on, a yellow one indicates the arrival of data. Finally, a rotary control alters the bandwidth of the interface for each of modes supported.

On the back, there is a 25-pin RS-232 serial port, two RCA phono sockets and a 5-pin DIN socket. Unfortunately, the serial cable supplied with the unit does not fit very readily into the space around the serial port and getting all the plugs to fit was a real squeeze. This cable goes off to the serial port on the computer. A 9-pin port on the computer can be used if necessary, as long as an internal jumper in the MFJ-1214 is adjusted to suit.

The RCA sockets provide for audio into the interface from a receiver and a connection to the transmitter for CW keying. The 5-pin DIN connection provides audio in, audio out, press-to-talk and a squelch input. Interestingly, the cable supplied has *six* inner conductors, not five; presumably the green inner and the uncoated screen lead perform the same function.

The unit may be powered from a 12V DC plugpack, which was not supplied. Power requirements are about 300mA. The move to plugpacks is understandable, as it keeps the unit size down. A typical shack now has several of these thing lined up, however, and it can be a real problem keeping the leads tidy and making sure the right plugpack is plugged into the right device!

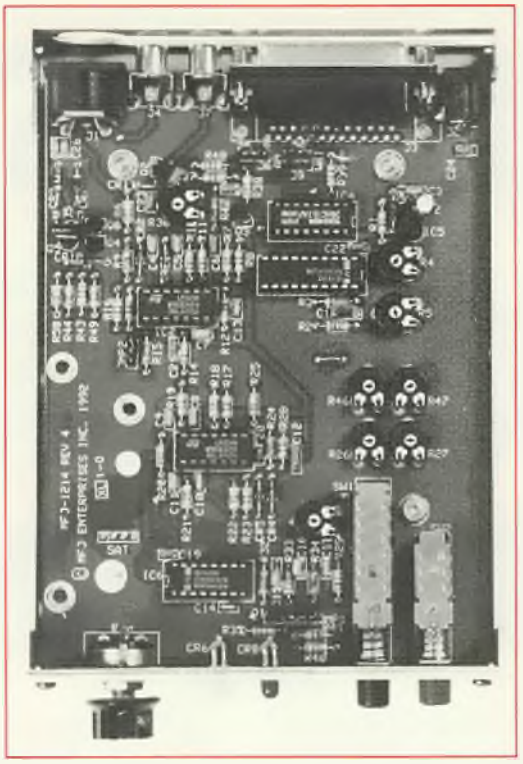
Apart from the squeeze getting the plugs into place on the back panel, there was no problem getting the MFJ-1214 going. The fun started when it came to getting the software fired up and making the whole thing work.

The MFJ 1214PC software

A disk is supplied with the package, on which the programs are loaded in a compressed format. Three files are copied to the hard disk, one for the programs and two with sample images and pictures. These are self-extracting files... all you have to do is type the name of the file and away it goes.

The result of the extraction is a whole host of executable programs, one for each separate function, and some data files which control the parameters for operating each mode. This should not worry the user, however, because the whole lot is run from a reasonable menu interface, run by typing VT (why VT? No idea!).

An attempt has been made to give the software a graphical user interface (GUI), so the main menu, for example, consists of thumbnail pictures of the screen used for each of several sub-programs. Each thumbnail can be selected using a mouse or by typing the appropriate function key.



This seems to be a very cumbersome way of getting to the right spot, since the menu loading takes time and the final result is not really any more user-friendly than a simple list.

By the way, the documentation says that menu loading can be speeded up by a bit of file management at the DOS level. I tried this and got a real mess on the screen — perhaps a few more attempts would have eventually got it right. A programmer has to be really clever to make a GUI work better and faster than a simple text-based list.

I have seen it done (for example, in a very clever piece of software called PC-Titler) but the MFJ version gets my personal thumbs-down.

The screens are *very* cluttered and confusing. At least the mouse can be dispensed with if you wish, since every function can be selected by a keypress (commonly known as a keyboard shortcut).

To start things off, the program has to be configured for the particular computer in use. A selection of serial port — COM1, COM2 and so on — is made, together with the relevant interrupt. I have performed this type of setup enough times for it not to be a problem.

The first-time user, however, might have a few qualms about the process. Why not make the selection of the correct interrupt automatic once the serial port is chosen?

In fact, an attempt *has* been made to provide an automatic setup for the COM port but I could not get it to work.

The idea is that the audio IN and audio OUT lines on the interfaces are shorted together, then the software is told to go away and find the MFJ-1214. Despite many attempts, the process simply did not work; I eventually went back to setting it up manually.

The next stage is to get the right video setting. This was *extremely* confusing, despite experience with other programs.

There is a *test* function which is used to see if the setting has been completed correctly and again there is an Automatic option, which this time *DID* work. It was still not clear at the end of the process, however, whether the EGA setting was adequate (since it seemed to work).

The test screen I finally got was not the same as the one in the manual but the sample fax supplied with the software did load and display properly.

The key to this whole exercise seems to be patience. If you are starting out in this area, it would probably help to have someone around with some experience of computers and exotic amateur modes who could help out. Even once the whole thing is going, finding signals and making sense of them needs further patience. Never mind, on we go...

Facsimile mode

Pressing function key F2 from the main menu gets the user into the SEND/RECEIVE FAX section of the program. This menu has no fewer than 32 options, presenting a very confusing picture to the first-time user. Initiating -RX- (receive) brings up the receive screen and in comes the signal... you hope.

A good starting point is to tune into the AXI and AXM transmissions on 5.100 and 11.030 MHz, where the Bureau of Meteorology transmits weather fax images.

These are sent using two tones — called mark and space — which show up nicely on the -RX- ADJUST option, as the incoming signal is presented on a 10-stage bar chart.

The exact tuning of the receiver can then be adjusted so that the bars at the ends are both UP and those in the middle are not. A grey-scale fax would have information in the other positions as well, so the same function could be used for tuning.

The MFJ-1214 user must also remember to adjust the interface as well as the software.

This does not come easily to a PK-232 user like me, since I am used to leaving the box alone except when I use its built-in tuning indicator.

On the MFJ, the bandwidth control must be set to the right spot for each

....☞

MFJ-1214 Review

(continued)

mode (fully counter-clockwise for grey-scale fax, just left of center for weather fax charts) and the pushbutton switch must be in the correct position (IN for fax, OUT for RTTY/CW).

The interface, as expected, did its job on AXM, and in came the weather charts. There was quite a lot of fiddling required, however, and the software did not lend itself readily to this. The word *patience* was mentioned above — well, you need *more* of it here! This is particularly true when progressing to color fax, which I would have to say left me unimpressed. The process seemed difficult and not a patch on what slow-scan TV has to offer.

Decoding the pictures from news agencies would be good fun, but finding another amateur in this country with whom to swap color faxes could be difficult (I hear it's very popular in Japan!).

This is made even more difficult by the separation process employed. A color image is separated by the MFJ software into three grey-scale pictures, one for each of the secondary colors cyan, magenta and yellow. The three separations are transmitted one after the other, then they are reassembled at the other end into the final image.

Another general point here — the key to a good interface is whether it can pull a signal out of the noise under difficult conditions. The narrow bandwidth of the MFJ-1214, achieved by some clever filtering, means that it will certainly perform well under difficult conditions. But the design of this unit seems to indicate that it is aimed at the entry-level user. So why is the supporting software so messy? It has good features — automatic setup options, the nifty ten-stage bar chart for tuning — but the whole package comes across as somewhat clumsy.

Anyway, on to the next stage...

Radioteletype operation

The text functions in the MFJ-1214 hardware/software combination include CW (Morse), Baudot teletype and ASCII teletype. In some ways, the impression is that these were added on to the software because they could be — the supporting documentation is patchy and even *more* patience is required.

The problems encountered here are not unique to this particular MFJ setup. I have played around with RTTY, ASCII and packet for years, and always I have come up against the same problems — which frequencies have interesting transmissions on them, and what mode are the stations using? With CW, the main problem is with trying to decode non-machine Morse with a machine — it's a compromise at best.

For the answer to the 'What frequency?' issue, see the section below on the MFJ Frequency Manager. 'What mode?' is a harder one and the people at MFJ have had a go at it. An Audio Analyser is available from the RTTY menu, which shows the signal in 16 levels in bar-chart format. Mark and Space indicators are provided, too. Sometimes (but, oddly, not always), the decoded text is displayed in both Letter and Figure form.

A quick aside — to expand the range of characters available in radioteletype, each combination of digital 1s and 0s in the code used is used twice. The transmitting end should let the receiving end know which set is in use at any time. If conditions are a bit variable, however, the receiver can lose track of things and use the wrong set. The MFJ Audio Analyser cleverly displays both, so you can see exactly what is going on.

There is also an Analyse function in the MFJ software. This is brought into play by pressing F10 and it gives quite an interesting screen. Clearly the software is saying something... but exactly *what* is unclear since the feature appears to be undocumented. Odd, really.

The Auto Converter function adds another possibility in the search for signals to decode. This adds an automatic adjustment to the tuning indicator already mentioned, which is supposed to make the tuning less critical. The idea is to press A, for Auto ADC Adjust while the tuning indicator is operating (ADC stands for analogue-to-digital converter, which is the function of the MFJ interface).

In practice, the Auto Adjust shifts parameters in the tuning indicator known as HI, MI and LO, which then, the manual suggests, helps in tuning the signal in. It was not exactly clear from the manual how this was to be accomplished.

Decoding Morse Code

Embedded within the RTTY area of the software is the Morse Code section. This is quite tricky to find and, once found, does not perform all that well. Its greatest limitation is its inability to detect the sending rate of the Morse signal coming in. This is a very severe limitation, since hand-sent Morse is very common and the software should adjust dynamically to it. Machine-generated Morse would presumably be decoded satisfactorily but we're up against the same problem as with RTTY — at what speed is the transmitter sending?

The Frequency Manager

MFJ has tackled the question of frequency usage head-on and provided in the MFJ-1214 software a nifty and well-stocked Frequency Manager database. While recognising that this may well drift out of date quite quickly, many of the frequencies will remain stable and the entries therefore provide a good starting point for finding the right places to look for interesting signals.

Many CBA readers would no doubt readily take on the challenge of finding exotic signals and working out how to decode them. As stated several times above, all that is needed is a bit of patience!!

Summary

The MFJ-1214 interface is a robust piece of electronics which presents few problems in use. It has good specifications — a decent range of modes, good filtering, easy to set up and operate — and undoubtedly works within spec.

The accompanying software has its good points and its not-so-good points. Its a bit of a mish-mash, cobbled together in a rather messy way. Its automatic functions are variable, but it does offer a range of tools for the patient (there's *that* word again!) enthusiast who is prepared to nut out what is going on.

What I would like to see is a way into the MFJ-1214 interface which is a bit more transparent, rather like the PK-232 approach. When I send commands to the PK-232 from a simple communications program, it 'talks' back to me and tells me what is going on. I had a feeling that this particular MFJ hardware-software combination was keeping me in the dark.

THE INVISIBLE CONNECTION - PART 3

(or what makes an antenna work)

By Ken Reynolds

To date...

In the last two issues of CBA we have considered various characteristics of some of the simpler, practical antenna designs which might be found in common use around the world in professional and amateur (not necessarily ham radio) stations.

To refresh, most of the antennas are based on the premise of a one half-wavelength 'primary' radiator where the 'driven element' is fed directly by electrical cable — usually co-axial cable because of its important self screening property and therefore being largely unaffected by external influences. These basic antennas designs will form the foundation for many more sophisticated designs which include:

Multi-element Parasitic Arrays like Yagi-style beams, where further tuned elements are 'excited' into operation by being in the presence of the strong RF field surrounding a single primary driven element, or by perhaps several similar elements driven in phase.

Collinear antennas, which consist of an 'array' of interconnected basic antennas stacked end to end, and arranged so that each active element is fed 'in phase', causing all the antenna elements to radiate in unison.

Passive Reflector antennas, where the energy output from perhaps one single driven element is focussed into an intense beam of radiation with a power density of hundreds, perhaps thousands of times greater than the original emission. The most well known of this group is the **parabolic reflector antenna** which makes the invisible connection between the earth and its spacecraft, and even the radio universe.

When is a half-wave not a half-wave?

It has been mentioned on various occasions that a one half-wavelength antenna appears as a pure resistance (well, almost) only at its resonant frequency.

Mathematically speaking, the previous sentence is an over-statement of the case, because any operating frequency can only be shown to have one half-wavelength, or one precise distance that electromagnetic radiation will travel between the beginning and end of one half cycle.

Any other distance would not be one half of one wavelength at the operating frequency as, under the given conditions, it will be some other fraction of a wavelength but not one half wavelength.

The term 'one half' is precise by definition and has no room for compromise. It simply means that one whole unit of anything is split exactly into two identical parts — it is impossible to have a big half and a small half, although some readers might disagree...

I cannot over-emphasise for readers the importance of properly understanding the meaning of 'one half-wavelength' as it applies to radio communications. Especially in the area of antennas and transmission lines. Being able to determine the relationship between physical length and electrical length is probably *the* most important factor of all.

Not recognising the proper definition of 'one half-wavelength' as it applies to our topic has probably caused more grief and ambiguity than any other single factor in the history of radio communications. Refer Figure 1.

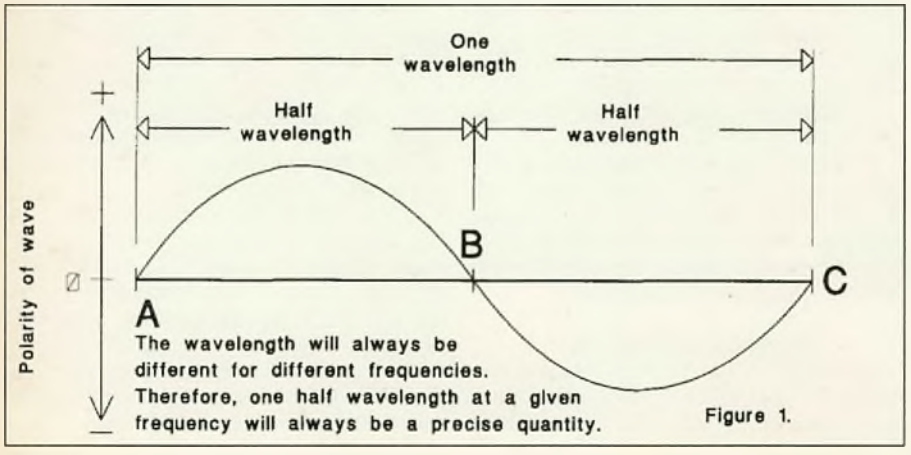


Figure 1.

Not so convenient...

Thus far, we have only looked at 'convenient' half-wave antennas where the main radiating element has been bisected at the center point and fed where there is a suitable, substantially resistive impedance of between 30 and 70 ohms.

For some antenna configurations — like a vertical half-wave, omnidirectional base station antenna for 27MHz — it is not convenient to feed the antenna at the center point due to a combination of cost, space and weight factors.

A quarter-wave groundplane antenna occupies substantial space with its spreading radials, while a sleeve dipole is heavy, clumsy and expensive. The best compromise seems to be the antenna style you see mounted on thousands of dwellings around the country... a lightweight, tubular aluminium, half wavelength, vertical antenna having its feed point at the base, allowing unobstructed, omni-directional radiation.

Yep. It looks and sounds easy. However, anyone who has tried to *build* such an antenna by connecting the feeder direct to the antenna base will testify that these antennas usually produce dismal results with an SWR that will likely pin the needle in the red.

While the average power along the half-wave antenna remains essentially constant the impedance at any point along its length varies as a function of voltage and current at that point.

At the center point of a half-wave antenna the current is always highest, while the out-of-phase voltage is at its ebb. In either direction away from the center the measured voltage will be increasing while the current will be simultaneously decreasing.

This can be easily demonstrated with some simple arithmetic in the Ohms Law equation which states that **resistance** is equal to the **voltage** divided by the **current.**

$$\text{So, } R = \frac{E}{I}$$

...where: R = Resistance in Ohms
E = Voltage in volts
I = Current in amps

As you can see from the formula, where there exists a large voltage and a small current the resistance (impedance) will be high and when the values are reversed the resistance will be correspondingly lower.

Because of the way the current and voltage is distributed along a half-wave antenna, the voltage will always be highest at the each end of the antenna and lowest at the center of the antenna. The current

will be opposite in phase, so it will be highest at the center of the half-wave and lowest at the ends.

If these facts are considered in terms of the formula, it must follow that the impedance measured along the antenna will be highest at each end of the antenna and lowest in the center.

Other factors

Some other simple formulæ allow us to calculate the expected values of voltage and current in such an antenna for a given impedance and power level.

The ultimate impedance at the ends of a half-wavelength antenna are affected by some other factors, including height above ground, length-to-diameter ratio of the conductor, and proximity to other objects. However, the impedance at the either end of our half-wavelength antenna is likely to be about 2,000 ohms.

It should now become clear that feeding such an antenna directly at one end from a 50 ohm source is bound to produce dismal results, because the old rule still applies. Maximum power transfer will only occur when all the impedances are correctly matched... and readers will agree that 50 ohms to 2000 ohms is far from a good match.

SWR and efficiency

Another simple equation allows us to calculate the SWR (SWeR to some and Standing Wave Ratio to others) produced by such a mismatch.

Let's assume that our antenna has 2,000 ohms of pure resistance (with no other reactive components like inductance and capacitance) at the end feed point and we attempt to feed power into the antenna from our standard 50 ohm coaxial cable feedline.

We know that we are searching for a low SWR of about 1.5 to 1, or even less to produce good power transfer to and from the antenna for acceptable efficiency. Because our antenna shows only pure resistance of 2,000 ohms at the feed point and we know our cable to be 50 ohms, we can use a simplified formula for calculating the SWeR, or Standing Wave Ratio upon which we base our power transfer efficiency.

So, SWR = $\frac{R}{Zo}$ when R is the larger value.

Where: R = Load Resistance
Zo= Characteristic impedance of the feedline

Therefore, SWR = $\frac{2{,}000}{50}$

SWR = 40 to 1.....and that's a *long* way from our target!

An SWR of 10 to 1 means that almost all the generated power is reflected back, and the scale becomes so compressed between an SWR of 40 to 1 and infinity, that we will consider a SWR of 40 to 1 to *be* infinite, and conclude therefore that it is impractical to feed our half-wave antenna directly from 50 coaxial cable. If we do, almost no power will be absorbed by the antenna under these conditions. In simpler terms, we just won't get out at all!

Let's consider our options...

We have decided to feed our vertical half-wave antenna at the base using 'off-the-hook' RG-58 coaxial cable having a characteristic impedance (Zo) of 50 ohms.

So, by some means we must make our feed line believe that it is sending power into a resistive load of 50 ohms.

On the other hand, however, the antenna feed point is looking for a source of power from a much higher impedance generator (transmitter) in the order of 2,000 ohms.

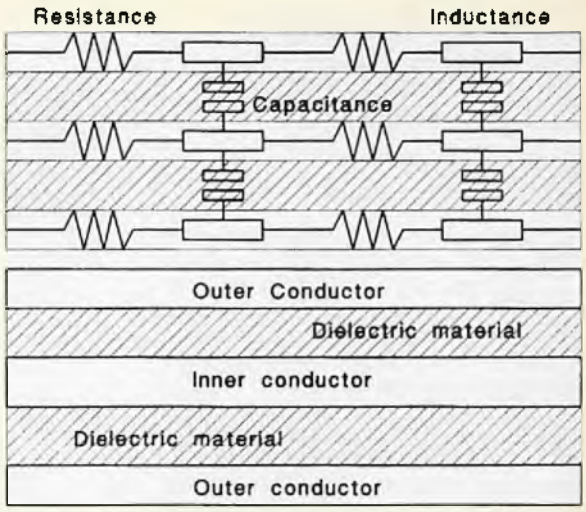
The answer of course is an **impedance transformer** of some kind which fulfils both requirements without losing too much power in the conversion process.

There are two main ways to achieve an impedance conversion which will satisfy both sides of the equation and allow the transmitter to deliver almost all its power to the antenna. They are: 1 **Lumped Constant Transformer**, or 2 **Distributed Constant Transformer**.

A lumped constant transformer uses coils made of a conducting medium (usually copper wire) to produce an inductor which will produce inductive reactance when connected to a source of alternating voltage, and capacitors to produce values of capacitive reactance. (See the separate definition box.).

Inductive reactance and capacitive reactance values can be manipulated to advantage in a matching network, and the effect of one can be cancelled with similar values of the other. To design a lumped constant transformer requires precise knowledge of components characteristics and some math beyond the scope of this discussion... or, of course, a fair bit of luck.

A distributed constant matching network is a lot easier to mess with and will likely produce some gratifying results even for beginners provided a few common sense principles are observed.



Cross section of coaxial cable above and and electrical equivalent top. **Figure. 2**

Characteristic impedance

We have discussed transmission lines and characteristic impedance in past issues. Briefly revising, a transmission line like RG-58 coaxial cable embodies a combination of resistance, inductance and capacitance. Pure resistance along the length of the copper wire conductors, inductance, also along the length of the conductors, and capacitance that exists between the inner and outer conductors.

All these factors are a result of the physical and electrical values within the cable and changing any one value will change the ultimate performance of the cable. **See Figure. 2.**

If we send a alternating current down an infinite length of open circuit RG-58 cable for example, several things can be observed.

....☞

Formation of quarter wavelength matching stub.

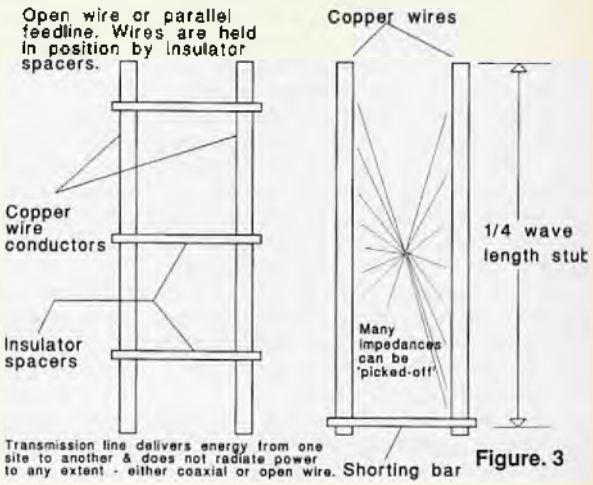


Figure. 3

THE INVISIBLE CONNECTION - PART 3

(continued

Due to an interaction between the **distributed constants** of resistance, inductance and capacitance all of the transmitted power will be consumed within the cable, and the combination of constants will appear as an almost pure resistance when viewed from the feed point.

In fact, the value of impedance will be about 50 ohms for RG-58, which just happens to define its characteristic impedance. So the interaction between inductive reactance and capacitive reactance has resulted in cancellation leaving only pure resistance — in theory anyway.

Environmental behavior

On shorter lengths of cable, however, external factors can have a strong bearing on the way in which the transmission line actually behaves. If the source impedance, cable impedance and load impedance are all the same, all is sweet, and the requirements of equilibrium are met.

Change the value of any one component, however, and we have blown the whole ball game in no uncertain terms. None of the components will match any more, resulting in decreased efficiency depending on the value of mismatch. And so we return to our original problem — but a bit more informed this time.

Other feedlines

Coaxial cables are not the only type of transmission lines in use these days, but they are the most prevalent. Parallel-wire transmission line was very common in the days of black-and-white TV. The two main types were 70 ohm and 300 ohm 'ribbon', some of which still dangles from TV aerials today.

Open wire feedline is still used today on many very high power transmitters, and phased antenna arrays in amateur radio and other applications. Open wire feedline usually looks a bit like a ladder, having two parallel wire conductors held apart by electrically-insulating spacers. **See Figure 3.**

Similar rules apply to parallel feedline as do for coaxial cable. The both have characteristic impedances derived from their conductor diameters and spacings.

Open wire feeder has now fallen out of favor for most applications because it is clumsy and difficult to install with the conductors remaining strictly parallel, and its performance is seriously affected by nearby objects. It does not have that important self-shielding characteristic mentioned earlier that favors coaxial cables.

Open wire feeder does have one major advantage: it generally suffers from much lower losses than coaxial cables, and can be used for very long feedline runs with little attenuation in signal strength.

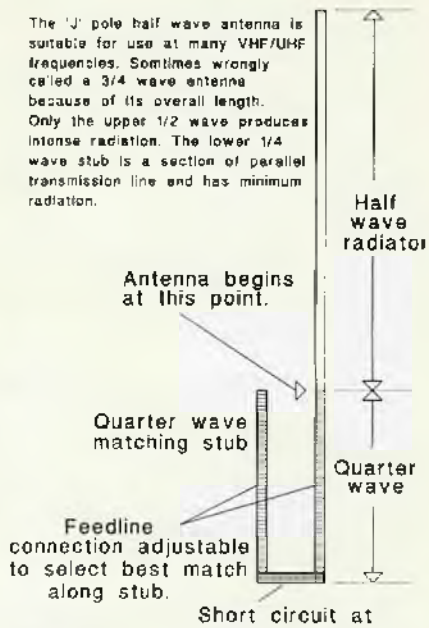


Figure 4.

Stubs and strange behavior

The real complexities of 'stubs' and stub matching are way beyond the scope of this article. However, if readers are prepared to accept a few facts and figures, it can be demonstrated to advantage the usefulness of short lengths of transmission line.

A '**stub**' is usually a short length of transmission line either one half wavelength or one quarter wavelength long. We all know that it will be a different physical length for each individual frequency, don't we?

A very interesting set of conditions occurs within short lengths of transmission which has only been hinted about to date.

For example, if we connect one quarter wavelength of transmission line to our RF signal source and place a short circuit at the far end, the signal source will see the stub as an open circuit and largely disregard the length of cable.

Similarly, if we connect our stub to the base feed point of our half-wave antenna it will be also ignored there.

The antenna is a signal source for a receiver, so the same conditions exist for this case too.

Just as our half-wave antenna exhibits various impedances, beginning with low impedance in the center and increases as we move towards the ends, our short circuit stub also has varying impedances along its length.

So, if we were to connect a feedline at different points along the length of the stub it stands to reason we would be able to 'pick-off' a whole range of different impedances...

A 'J' curve that works

I'm not too sure about financial 'J' curves, but there is no doubt that the **J-pole** antenna is a very effective configuration that has been in use for many years.

It consists of a one half-wavelength radiator end-fed by one quarter-wave of open wire feeder, short-circuited at the far end. Because open wire feedline is a bal-

DEFINITIONS

Inductive Reactance, **Capacitive Reactance** and **Resistance** have one main property in common: they resist the passage of an electric current in a circuit. However, a resistance always offers the same amount of resistance to current flow independent of the frequency of the electric current.

Resistor — A non-reactive 50 ohm resistor (pure resistance) will always resist the passage of an electric current to the value of 50 ohms, whether the electric current is DC (direct current — flowing in only one direction) or AC (alternating current, which continually changes direction).

Inductive Reactance — Inductive Reactance exists only when an electric current is changing in level or direction in an inductor (coil). In the presence of a steady direct current through a circuit, there will be no measurable inductive reactance, and only the resistance of the circuit will be observable. In the presence of an alternating current — like a transmitter RF signal — any circuit inductance will resist the change in value and direction of the current by an amount dependent on both the value of inductance and the frequency of the current. Increasing the value of inductance or frequency will increase the value of inductive reactance and decreasing the values will have the opposite effect.

Capacitive Reactance — This is a bit more difficult to grasp, and we won't discuss it fully for now. We'd define it as the opposite of inductive reactance in its nature. It decreases in value as the frequency of alternating current is increased or the value of capacitance is increased.

Both Inductive Reactance and Capacitive Reactance play a major role when our half-wavelength dimensions are incorrect. The shorter we are with our dimension, the higher will be the value of capacitive reactance. If the measurement is too long, the inductive reactance will increase with length. Like resistance, values of both inductive reactance and capacitive reactance are measured in ohms.

anced-type feeder, it should be connected to a balanced feedline. Coaxial cable is an *un*balanced feed system and theoretically needs a 'balun' to make the conversion from unbalanced to balanced feed.

See Figure 4.

The cost of DIY

If your prime objective in building your own aluminium half-wave base station antenna is to save money, you will probably be disappointed.

The retail price of aluminium has gone through the roof in the last decade or so, and the cost of small quantities of tubing ceases to be an attractive proposition. Sometimes one can 'pick up' suitable stock off-cuts at a good discount from one of the major suppliers — provided you don't look too interested — but it is unusual to come across all the right tube sizes at the right time from the one vendor.

This area, however, is where the bulk-buying antenna manufacturers get ahead in leaps and bounds.

Manufacturers buy hundreds of kilos of mixed-size aluminium tubing at one time, and pay around 50 per cent of the RRP, or even less in many cases. This gives them the ability to market a complete product for a price not much more than a home-brewer can purchase the raw materials.

So, commercial base station antennas for 27MHz are so reasonably priced these days that you can't expect to save much money by rolling-your-own.

However, if you possess a thirst for knowledge derived from your own research and development experiments, a few lengths of metal tube might be money well spent.

We will look at building a practical version of a J-pole antenna for 27MHz next issue, and perhaps even a gain antenna for UHF CB ***(well actually that will be in the first issue of Radio and Communications - on sale June 27 - Editor).***

NOISE CANCELLING MICROPHONES ARE BACK

Noise cancelling microphones are not new. In the earlier days of CB they found great popularity with truckies and other users forced to operate under noisy conditions.

Ordinary CB microphones usually pick-up sound equally well from all other directions as well as directly in front of the handpiece. They are known as omnidirectional devices and are the ones that come with virtually every CB radio.

Noise cancelling microphones are known as uni-directional devices that favour sounds from directly in front of the transducer while rejecting the unwanted audio clutter from all other directions.

Therefore, noise cancelling microphones are ideally suited for mobile operation where wind and road noises are always a hindrance to clear radio communications. They also serve well for home or office use where the background sounds of TV, radio and other activities often override the desired transmitted audio. Noise cancelling microphones of the 70's and early 80's were basically expensive power mikes costing around $70 or more, but with changing techniques, today's noise cancelling dynamic microphones are very effective and only cost around half the price for good audio quality with high rejection of unwanted off-side sounds.

The CB-560N Noise Cancelling microphone is the latest addition to POWER BAND's range of new high tech microphones. It uses a 500 ohm impedance, high quality, dynamic microphone insert and mechanical phase conversion to produce its directional characteristics.

Other new microphones include the CB-660A Power Mike at $39, and CB-660E1 Power Echo Mike at $69, both using the latest surface mount techniques for high reliability and longevity.

All mikes are sold complete with four pin plug and wired to suit Uniden radios.

A surcharge of $5 is charged for other wiring configurations.

For more details, direct your enquiries to POWER BAND COMMUNICATIONS in Melbourne on (03) 584 7631 or fax on (03) 583 0846. Or call at 1289 Nepean Highway, Cheltenham. 3192.

1995 CB ACTION DXCC COUNTRIES LISTINGS

Compiled by Jack Haden

It's that time of the year again when the DXCC listings appear within the pages of CBA. Quite a few newcomers still write in asking me what country number is this, and which number belongs to that, so now is the time to inform the newcomers and refresh the old timers with a new listing for 1995.

From time to time it's not unusual to get irregularities with the listings. Some clubs vary a little in the issuing of prefix numbers as there are no published guidelines on 11 metres within this regard. Generally, most clubs follow the lead that the Italian-founded Alfa Tango DX Group takes — however, despite being the biggest DX group on 11 metres, it is often a tad slow in keeping up with the rapid changes taking place on the world stage DXCC-wise.

So you will no doubt come across the odd discrepancy now and again which doesn't match up with this or other club listings. For example, the Sierra Alfa DX group lists 224 as Eastern Kiribati, 266 as Western Kiribati, 272 as Republic of Nauru, 327 as Croatia and 328 as Slovenia, but these are in conflict with the listings of Alfa Tango and some other large DX groups. So be aware that variations do exist. The operator should tell you quickly enough where he or she is during the course of the contact taking place.

Hong Kong (60) looks certain to retain its DXCC status after 1997, with China letting the old crown colony remain an independent territory, as a special autonomous region of mainland China. As for the old Portuguese territory of Macau (240)... well, it's still anyone's guess as to what will eventually happen.

Hopefully, by the time you read this, a decision will have been made on the re-introduction of Palestine (deleted 30 June 1968) to the DXCC world. I among others know very well it qualifies for inclusion, so it's only a matter of time when Palestine eventually is welcomed back into the fold again.

Papua New Guinea has expressed views of making the island of Bougainville semi-autonomous after years of war. By granting the people of Bougainville limited self-government it will be a part of the passage to possible full independence in the future. For us, should this become reality, it will mean another new DXCC country for the radio listings.

Should Chechnya win its full independence from the Russian Republic, no doubt a few others in the Federation will be most tempted to follow suit and thus change the DXCC standings yet again. Maybe not right now, but possibly some time in the future. The world is a rapidly-changing place...

Quite a few deleted countries exist in this listing. 46, 87, 139, 179, 292, 322 and 324 have all yet to find new homes, so to speak, well after they have disappeared from the DXCC limelight.

As usual I have left you with some extra blank spaces at the end of the list to add the odd new one that will come along in due course with Pratas Island, Scarborough Reef, and Palestine as being likely candidates further down the proverbial track.

Number	Country	Zone	Worked	QSL Rcvd
1	Italy	EU		
2	USA	NA		
3	Brazil	SA		
4	Argentina	SA		
5	Venezuela	SA		
6	Colombia	SA		
7	Netherlands Antilles	SA		
8	Peru	SA		
9	Canada	NA		
10	Mexico	NA		
11	Puerto Rico, West Indies	NA		
12	Uruguay	SA		
13	Federal Republic of Germany	EU		
14	France	EU		
15	Switzerland	EU		
16	Belgium	EU		
17	Hawaiian Islands	OC		
18	Greece	EU		
19	The Netherlands	EU		
20	Norway	EU		
21	Sweden	EU		
22	French Guyana	SA		
23	Jamaica, West Indies	NA		
24	Republic of Panama	NA		
25	Japan	AS		
26	United Kingdom (GB)	EU		
27	Iceland	EU		
28	Honduras	NA		
29	Republic of Ireland (Eire)	EU		
30	Spain	EU		
31	Portugal	EU		
32	Chile	SA		
33	Alaska	NA		
34	Canary Islands	AF		
35	Austria	EU		
36	San Marino	EU		
37	Dominican Republic	NA		
38	Greenland	NA		
39	Angola	AF		
40	Liechtenstein	EU		
41	New Zealand	OC		
42	Liberia	AF		
43	Australia	OC		
44	Republic of South Africa	AF		
45	Serbia	EU		
46	deleted... see 13 prefix			
47	Denmark	EU		
48	Saudi Arabia	AS		
49	Balearic Islands	EU		
50	Republic of Russia	EU		
51	Andorra Principality	EU		
52	Faroe Islands	EU		
53	El Salvador	NA		
54	Luxembourg	EU		
55	Gibraltar	EU		
56	Finland	EU		
57	India	AS		
58	East Malaysia	AS		
59	Rodi Dodecanese	EU		
60	Hong Kong	AS		
61	Ecuador	SA		
62	Guam Island	OC		
63	St Helena Island	AF		
64	Senegal	AF		
65	Sierra Leone	AF		
66	Mauritania	AF		
67	Paraguay	SA		
68	Northern Ireland	EU		
69	Costa Rica	SA		
70	American Samoa	OC		
71	Midway Island	OC		
72	Guatemala	NA		
73	Republic of Suriname	SA		
74	Republic of Namibia	AF		
75	Azores Islands	EU		
76	Morocco	AF		
77	Republic of Ghana	AF		
78	Zambia	AF		
79	Philippines	AS		
80	Bolivia	SA		
81	San Andres/Providencia Isl	NA		
82	Guatanamo Bay	NA		
83	Tanzania	AF		
84	Ivory Coast	AF		
85	Zimbabwe	AF		
86	Kingdom of Nepal	AS		
87	deleted... see 323 prefix			

1995 CB ACTION DXCC COUNTRIES LISTINGS

Compiled by Jack Haden

Number	Country	Zone	Worked	QSL Rcvd
88	Cuba	NA		
89	Federal Republic of Nigeria	AF		
90	Crete Island	EU		
91	Rep of Indonesia	AS		
92	Libya	AF		
93	Malta	EU		
94	United Arab Emirates	AS		
95	Mongolia	AS		
96	Kingdom of Tonga	OC		
97	Israel	AS		
98	Singapore	AS		
99	Republic of Fiji	OC		
100	Republic of South Korea	AS		
101	Papua New Guinea	OC		
102	State of Kuwait	AS		
103	Haiti, West Indies	NA		
104	Corsica Island	EU		
105	Botswana	AF		
106	Ceuta & Melilla	AF		
107	Monaco Principality	EU		
108	Scotland, UK	EU		
109	Hungary	EU		
110	Cyprus	AS		
111	Kingdom of Jordan	AS		
112	Lebanon	AS		
113	West Malaysia	AS		
114	Pakistan	AS		
115	State of Qatar	AS		
116	Turkey	AS		
117	Arab Republic of Egypt	AF		
118	The Gambia	AF		
119	Madeira Islands	AF		
120	Antigua & Barbuda Islands	NA		
121	Bahamas, West Indies	NA		
122	Barbados, West Indies	NA		
123	Bermuda Island	NA		
124	Amsterdam & St Paul Isl.	AF		
125	Cayman Islands, West Indies	NA		
126	Nicaragua	NA		
127	US Virgin Islands	NA		
128	British Virgin Islands	NA		
129	Macquarie Island	OC		
130	Norfolk Island	OC		
131	Guyana	SA		
132	Republic of Marshall Islands	OC		
133	Mariana Islands	OC		
134	Republic of Belau (Palau)	OC		
135	Solomon Islands	OC		
136	Martinique Island FWI	NA		
137	Isle of Man (UK)	EU		
138	Vatican City	EU		
139	deleted... see 323 prefix			
140	Chilean Antarctica	AN		
141	St Pierre/Miquelon Island	NA		
142	Lesotho	AF		
143	Saint Lucia Island	NA		
144	Easter Island	OC		
145	Galapagos Islands	SA		
146	Algeria	AF		
147	Tunisia	AF		
148	Ascension Island	AF		
149	Laccadive Islands	AS		
150	State of Bahrain	AS		
151	Islamic Republic of Iraq	AS		
152	Maldive Islands	AF		
153	Kingdom of Thailand	AS		
154	Islamic Republic of Iran	AS		
155	Taiwan, Republic Of China	AS		
156	Cameroon	AF		
157	Montserrat, West Indies	NA		
158	Trinidad & Tobago, W. Indies	SA		
159	Somalia	AF		
160	Sudan	AF		
161	Poland	EU		
162	Republic of Zaire	AF		
163	Wales (UK)	EU		
164	Togo Republic	AF		
165	Sardinia Island	EU		
166	St Maarten Saba Eust'us Isl	NA		
167	Jersey Island (UK)	EU		
168	Mauritius Island	AF		
169	Guernsey Island (UK)	EU		
170	Burkina Faso	AF		
171	Svalbard Island	EU		
172	New Caledonia	OC		
173	Reunion Island	AF		
174	Uganda	AF		
175	Chad Republic	AF		
176	Central African Republic	AF		
177	Sri Lanka Island	AF		
178	Bulgaria	EU		
179	deleted... now 329/330 prefix			
180	Sultanate of Oman	AS		
181	Syria	AS		
182	Guinea Republic	AF		
183	Benin	AF		
184	Burundi	AF		
185	Comoros Islands	AF		
186	Djibouti	AF		
187	Kenya	AF		
188	Malagasy Republic	AF		
189	Mayotte Island	AF		
190	Seychelles Islands	AF		
191	Swaziland	AF		
192	Cocos Is (Central America)	NA		
193	Cocos Keeling Islands	OC		
194	Dominica Island, West Indies	NA		
195	Grenada, West Indies	NA		
196	Guadeloupe, French W. I.	NA		
197	Republic of Vanuatu	OC		
198	Falkland Islands	SA		
199	Equatorial Guinea	AF		
200	South Shetland Islands	SA		
201	French Polynesia	OC		
202	Bhutan	AS		
203	People's Republic of China	AS		
204	Mozambique	AF		
205	Rep of Cape Verde Islands	AF		
206	Ethiopia	AF		
207	Saint Martin Island	NA		
208	Glorioso Island	AF		
209	Juan De Nova Island	AF		
210	Wallis & Futuna Islands	OC		
211	Jan Mayen Island	EU		
212	Aland Islands	EU		
213	Market Reef	EU		
214	Congo	AF		
215	Republic of Gabon	AF		
216	Mali	AF		
217	Christmas Island	OC		
218	Belize	NA		
219	Anguilla, West Indies	NA		
220	St Vincent & Dependencies	NA		
221	South Orkney Islands	SA		
222	South Sandwich Islands	SA		
223	Western Samoa	OC		
224	Western Kiribati	OC		
225	Sultanate of Brunei	AS		
226	Republic of Malawi	AF		
227	Rwanda	AF		
228	Chagos Archipelago	AF		
229	Heard Island	AF		
230	Fed. States of Micronesia	OC		
231	St Peter & St Paul Rocks	SA		
232	Aruba, Dutch West Indies	SA		
233	Romania	EU		
234	Afghanistan	AS		
235	International Tele'nications Union, Geneva	EU		
236	Bangladesh	AS		
237	Burma (Myanmar)	AS		
238	Cambodia (Kampuchea)	AS		
239	Laos	AS		
240	Macau	AS		
241	Spratly Islands	AS		
242	Vietnam	AS		
243	Agalega & Brandon Islands	AF		
244	Pagalu Island	AF		
245	Niger	AF		
246	Sao Tome & Principe Island	AF		
247	Navassa Island	NA		
248	Turks & Caicos Islands	NA		
249	North Cook Islands	OC		
250	South Cook Islands	OC		
251	Albania	EU		
252	Revilla Gigedo Island	NA		
253	Andaman & Nicobar Islands	AS		
254	Mount Athos	EU		
255	Kerguelen Island	OC		
256	Prince Edward & Marion Isl	AF		
257	Rodriguez Island	AF		

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J 061CB

1995 CB ACTION DXCC COUNTRIES LISTINGS

Compiled by Jack Haden

Number	Country	Zone	Worked	QSL Rcvd
258	Tristan de Cunha Island	AF		
259	Tromelin Island	AF		
260	Baker & Howland Island	OC		
261	Chatham Islands	OC		
262	Johnston Atoll	OC		
263	Kermadec Islands	OC		
264	Kingman Reef	OC		
265	Central Kiribati	OC		
266	Eastern Kiribati	OC		
267	Kure Island	OC		
268	Lord Howe Island	OC		
269	Mellish Reef	OC		
270	Minami Torishima Island	OC		
271	Republic of Nauru	OC		
272	Niue Island	OC		
273	Palmyra & Jarvis Islands	OC		
274	Pitcairn Island	OC		
275	Tokelau Islands	OC		
276	Tuvalu Islands	OC		
277	Sable Islands	OC		
278	Wake Island	OC		
279	Willis Island	OC		
280	Aves Island	NA		
281	Ogasawara Island	AS		
282	Auckland & Campbell Isl.	OC		
283	St Kitts/Nevis Island	NA		
284	Saint Paul Island	NA		
285	Fernando de Noronha Island	SA		
286	Juan Fernandez Island	SA		
287	Malpelo Island	SA		
288	San Felix & Ambrosio	SA		
289	South Georgia Island	SA		
290	Trinidade & Martin Vaaz Isl	SA		
291	Sovereign Base Cyprus	AS		
292	deleted July 1993			
293	Guinea Bissau	AF		
294	Peter I Island	AN		
295	Southern Sudan	AF		
296	Clipperton Island	NA		
297	Bouvet Island	AF		
298	Crozet Islands	AF		
299	Desecheo Island	NA		
300	West Sahara & Rio de Oro	AF		
301	Armenia	AS		
302	Asiatic Russia	AS		
303	Azerbaijan	AS		
304	Estonia	EU		
305	Franz Josef Land	EU		
306	Republic of Georgia	AS		
307	Kaliningrad	EU		
308	Republic of Kazakhstan	AS		
309	Kirghizia	AS		
310	Latvia	EU		
311	Lithuania	EU		
312	Moldavia	EU		
313	Tadzhikistan	AS		
314	Republic of Turkmenistan	AS		
315	Urkraine Republic	EU		
316	Uzbekistan	AS		
317	Byelorussia	EU		
318	Sov. Military Order of Malta	EU		
319	UN HQ, New York	NA		
320	Banaba (Ocean) Island	OC		
321	Conway Reef (Fiji)	OC		
322	deleted... see 74 prefix			
323	Yemen Republic	AS		
324	deleted... see 74 prefix			
325	Rotuma Island	OC		
326	Malyj Vysotskij Island	EU		
327	Republic of Slovenia	EU		
328	Republic of Croatia	EU		
329	Czech Republic	EU		
330	Republic of Slovakia	EU		
331	Bosnia-Herzegovina	EU		
332	Republic of Macedonia	EU		
333	Eritrea	AF		
334	North Korea (Democratic People's Republic of Korea)	AS		
335				
336				
337				
338				
339				
340				

Zones:

AF = Africa
AN = Antarctica
AS = Asia
EU = Europe
NA = North America
OC = Oceania
SA = South America

AND THE WINNER IS...

As always with CB Action competitions there was a huge number of entries - but only one winner - and he is Wayne Campbell of Jannali, NSW. Congratulations Wayne - the unit is on its way to you. Have fun...

Our thanks to Uniden Australia for their prize of the latest UBC2500XLT scanner.

AUSTRALIAN ASSOCIATION OF CITIZEN and BAND RADIO OPERATORS Inc.

PRIVACY CONCERN FOR CBERS

Many of the uninitiated, and those new to CB radio, often fumble their way through each contact and make it obvious to others that they are new to the band.

This is often a result of there being little available instruction in the box — not so much about the new radio that may have just been purchased, more to do with on-air.

Others of course have received some education if they have been subscribers to CBA, but this often comes after the initial on-air experiments that get them on the road.

Of all the things that they need to learn as 'new chums', one that may initially get a low priority is a person's right to privacy, plus the importance of not announcing on-air their full name and, particularly, their address.

This is not obligatory, but just traditional good sense, where your address is kept 'under wraps' to avoid strangers of ill repute who may be listening, knowing when to move in and rob you of your possessions.

This can happen simply because you casually mentioned to another operator on-air that you were going away fishing for the weekend.

So this tradition of such privacy has continued over the years in the CB world, and many may have been reprimanded by others for breaking this code of confidence.

ACBRO last year became concerned when it discovered that SMA, which recorded CBers' names and addresses for licensing purposes, was breaching the CB code of anonymity, by making available for sale lists of radio licensees of all descriptions. This included the CBRS licensees' full names and addresses.

In subsequent communications with the Spectrum Management Agency (SMA), ACBRO said "The publication of private information to do with CBers has always been a concern of our committee and the membership...".

ACBRO was glad to have sympathetic response from the Adelaide office of SMA, and pleased to learn that the matter would be referred on to its head office in Canberra.

Now, that is the place where it is known that things can move slowly, but ultimately a response to this matter was received from Mr Peter Stackpole, Executive Manager, acknowledging ACBRO'S concern.

The letter offered an explanation and showed that a wrong now had been righted.

Perhaps it also showed that even people in high places, sometimes, can get it wrong. Mr Stackpole's response (in part) which follows, should set readers fears to rest in this privacy matter.

To quote:

"As you may be aware, the Spectrum Management Agency (SMA) was established under the Radiocommunications Act 1992 (the Act) which came into force on 1 July 1993.

From that date, the SMA, amongst other things, took over the responsibility for issuing radiocommunications licences from the then Department of Transport and Communications.

"Section 143 of the Act provides that there is to be a register known as the Register of Radiocommunications Licences (the Register).

Section 147 of the Act provides that the Register is to contain certain information for each apparatus licence including the licensee's name and postal address. Section 151 requires that the Register be publicly available. Accordingly, the Act requires that the names, postal addresses and other information of licensees on the Register must be made available to the public.

"The SMA has a database of radiocommunications licences which it is using as a substitute for the Register whilst the computer system for the formal Register is being established.

"The SMA initially thought that the database was the Register and, because of the requirement in the Act to make the Register publicly available, believed that it had to make the contents of that database available to the public.

However, it later became clear that the database did not have the necessary functionality to do all the things that the Register is required to do, and the SMA realised that the Register could not formally be put in place until the appropriate computer system had been developed and installed.

"Once the SMA recognised that the database was not the formal Register, and so was not subject to the public availability requirements of the Act, the SMA deleted from the publicly-available database certain information of a personal nature (ie name, address, callsign) relating to licences where there is no requirement for frequency co-ordination — eg Citizens Band (CB) and amateur licences.

"The SMA took this action around September 1993, so that from that time none of that information has been made available to the public by the SMA.

However, it appears that some of this information has been circulated by a number of private parties.

"The SMA has written to a number of distributors concerning this matter.

"When the Act came into force on 1 July 1993, the SMA took steps to notify licensees of the requirement in the Act to make the Register publicly available.

This notification was placed on applications for licences, renewal notices and licence certificates issued after the Act came into force. In more recent times this notification has not been included for some licences

where the information concerning the licence has been removed from or will not be included in, the publicly-available database.

"Since October 1994, the individual CB license has been superseded by a class licence.

In other words, there will be a general licence to operate a CB transceiver without the need for the registration of individual licences.

"However, the operation of a CB transmitter will still be required to conform to certain conditions.

The fact that the operation of CB transmitters will not require a registered licence means that no information concerning CB operators will be included in the Register.

"For your information, the computer system for the formal Register of Radiocommunications Licences is expected to be operational around April this year.

"The SMA regrets any inconvenience that has been caused to you by the disclosure of certain information."

Part of ACBRO's submission on the abolition of license fees related to the benefit to CBers of there being no 'register' of their names and private details if abolition could be approved, and thankfully it was.

For a few who feel that ACBRO's place in society is of little consequence, it can be seen that when a change to the licensing application and apparatus licence occurred, ACBRO was there for its members, reading the very fine print which said "...Under S. 147 of the Radiocommunications Act 1992, the information shown on this licence will be included in the Register of Radiocommunications Licences and the Approved Frequency Assignment Database (AFAD). These databases are available to the public..."

So the letter from Mr Stackpole is informative and comforting, but again, it can only be emphasised that one of the by-products of the Class Licensing system is that such a database is now *not* compiled, let alone made available to every man and his dog.

Editor's Note: *I wonder how the amateurs feel about this particular situation...*

They're in the unhappy position of not only having to pay higher licence/access/tax fees but also having their name appear on the Register.

Maybe CBers have got it right!

ACBRO ASSOCIATED CLUBS

Below is a list of clubs and organisations affiliated with ACBRO Inc. If you have one of them in your area, please give them your support of membership. Full details can be obtained by contacting the group of your choice from below.

For membership or affiliation enquiries please contact:
ACBRO Inc., P.O. Box 170, Walkerville 5081, South Australia.

Cleveland Bay Radio Club	P.O. Box 1641, Aitkenvale,QLD 4814
SA Rotten Radio UHF Assoc.	P.O. Box 4, Dry Creek,SA 5094
LT Club Inc.	P.O. Box 626, Launceston,TAS 7250
Radio City Australia	26 Wootten St. Greenacres SA 5086
Pioneer Radio Association (SA)	P.O. Box 1017 Salisbury, SA 5108
Plantaganet Rep't Institute of WA	PMB 306, Cranbrook, WA 6321
Burnie Citizens Radio Club	P.O. Box 655, Burnie, TAS, 7320
Transworld CB Radio Club	90 Crozier Avenue, Daw Park SA 5041
Canning River Radio Club	53 Parkside Ave, Mt. Pleasant WA 6153
Overland Radio Club	P.O. Box 1010, Murray Bridge, SA 5253
Eureka CB Radio Club	P.O. Box 27, Reynella, SA 5161
Transworld Sidebanders (The X/Ray Club)	13 First Street, Port Pirie, SA 5540
Echo Romeo CB Assoc.	P.O. Box 302, Morphett Vale SA 5162
Rotten Radio Group Intnl	P.O. Box 4, Dry Creek SA 5094
Broken Hill UHF Repeater Club Inc.	P.O. Box 1023, Broken Hill NSW 2880
Gippsland Repeater Assoc. Inc.	P.O. Box 555, Maffra, VIC 3860
Murray Bridge Agric & Hort Society	P.O. Box 315, Murray Br., SA 5253
Samba Club	P.O. Box 16, Salisbury, SA 5108
Tweed Radio DX Group Intnl	P.O. Box 773, Murwillumbah, NSW 2484
The Pathfinder Radio Soc. Club	P.O. Box 24, Woodridge, QLD. 4114
Dirty Dozen Radio Group	P.O. Box 426, Morphett Vale, SA 5162
Hotel Zulu Radio Group Inc.	P.O. Box 66, Elizabeth, SA 5112
White Fox Radio club	P.O. Box 288, Salisbury, SA 5108
Mega Mouth International	P.O. Box 55, Mowbray, Launceston, TAS 7250
The Triple "R's" Group	451 Regency Road, Sefton Park, SA 5083
Tru Blue Radio Group	P.O. Box 379, Blackwater, QLD. 4717
Sugar Valley Radio Club	9 Martin Place, Edgeworth, NSW 2285
Blue O Radio Group	P.O. Box 53, Monaro Cresc, ACT 2603
Sydney Radio Group	P.O. Box 185, Gordon, NSW 2072
Ratbag CB Radio club	P.O. Box 227, Welland, SA 5007
Sun Centre CB Radio Club	P.O. Box 912, Swan Hill, VIC 3585
Port Adelaide Radio Club	P.O. Box 352, Pt. Adelaide, SA 5015
Cherokee Indian Aust. Group	P.O. Box 1679, Mildura, VIC 3500
Sth. West District CB Radio Club	P.O. Box 620, Warrnambool, VIC 3280
A.M.O.S. CB Radio Club Intnl	P.O. Box 351, Broken Hill, NSW 2880
Pioneer Radio Association Aust.	P.O. Box 1415, Mount Isa, QLD 4827
Naracoorte UHF Association	P.O. Box 465, Naracoorte, SA 5271
Gosford Radio Club	50 Pacific Highway, W. Gosford, NSW 2250
Ultra-Lite Radio Club Inc.	P.O. Box 17, Strathpine, QLD 4500
Felix Radio Club	P.O. Box 78, Goodna, QLD 4300
Inlander CB Radio Club	P.O. Box 5712, Rockhampton, QLD 4702
Aust. Red-Heeler Soc. Radio Club	P.O. Box 8018, Wynnum North, QLD 4178
Central West CB Radio Club Inc.	P.O. Box 628, Orange, NSW 2800
Vic Red Heeler Radio & DX Group	P.O. Box 1802, Ballarat, VIC 3354.
Kilo Romeo Circle of Friends	P.O. Box 16, Cleveland, QLD 4163
Radio Hobart Group	P.O. Box 266, Glenorchy, TAS 7010.
Welsh Dragon Radio Club	P.O. Box 581, Belmont, VIC 3216
Oscar Romeo CB Club	P.O. Box 203, North Geelong, VIC 3215
Coal Miners Wonthaggi CB Club	P.O. Box 420, Wonthaggi, VIC 3995
East Coast Radio Club	P.O. Box 412, Bexley, NSW 2207
MBV 08 Repeater Assoc.	c/o Post Office, Charleston, SA 5244
Q'land Radio DX International Club	P.O. Box 586, Warwick, QLD 4370
Q'land Blue Heeler Soc. Radio Club	P.O. Box 1122, Castle Hill, NSW 2154
The 43 Australian Radio DX Club	P.O. Box 96, South Oakleigh, VIC 3167
Sugar Valley Radio Club	P.O. Box 1070, Edgeworth, NSW 2285
Ozzy Eagle DX Group	P.O. Box W110, Armidale, NSW 2350
Home Brew Makers CB Radio Club	1 Lexen Court, Hattonvale, QLD 4341
International Black Duck DX Group	1 Lexen Court, Hattonvale, QLD 4341
Ozzie Radio DX Group	P.O. Box 683, Bairnsdale, VIC 3975
Aust. Nat. Four Wheel Drive Council	P.O. Box 79, Canberra, ACT 2601
The UHF Assoc. of Western Australia	P.O. Box 316, Cloverdale, WA 6105
Geelong Radio CB Club of Australia	P.O. Box 736, Belmont, VIC 3216
Ugly CB Club,	72 Garibaldi St, Traralgon, VIC 3844
Elizabeth CB Radio Foxhunt Group	c/- 44 Pix Road, Davoran Park, SA 5113
Newcastle Scanner Group	P.O. Box 728, Charlestown, NSW 2290

DXinternational

By Jack Haden

Winter DX decline near...

Winter is not too far away and, together with winter, comes the annual drop in conditions on 11 metres for the DX fraternity. This year's winter is not going to be a good one for DXing on the band, I'd expect, if last year's winter performance is any indication. However, there will be some decent openings about, but don't expect big signals and learn to accept rapid fading and flutter as the anticipated openings will quite often be short and sweet at that.

Actually, a Melbourne-based DXer summed it up nicely in a recent letter to me: "The solar minimum approaches and offers little respite for the DXer, however be that as it may, patience and perseverance will reward the die-hard DXer with an occasional activation into the Central Pacific region, and a chance to renew old acquaintances in Europe and the CIS. So pull down the Yagi, dismantle it, clean it and service it, replace the coax and get ready, because when the DX windows *do* appear, it's first in best dressed!" Well done lad, I couldn't have said it better myself!

Now, let's have a look at what's been happening on the 11 metre band...

From Poland with love...

I knew that is was only a matter of time before it kicked off on 11 metres: junk mail from the old communist countries of eastern Europe. It appears that a few of our old 'comrades' are now well and truly aboard the bandwagon of entrepreneurial fever, so to speak, and are embroiled in a variety of schemes and business ventures. All of which, of course, are designed to make the participants filthy rich — and what better way to go about the whole exercise than sharing your new-found wealth with your mates in the west, especially with your radio DX mates in Australia?

Chain letters, pyramid selling amongst others, have been with us for quite some time, so it was no surprise to me when I heard that a number of Australian DXers, members of prominent Italian-based DX groups, have been receiving 'get rich quick' mail from fellow members in eastern Europe, in particular Poland. It is evident that the addresses have been obtained from the annual member's callbook, or directories as they are better known on 11 metres, with Mike, the 161-AT-169, and Tibor, the 161-GR-02, sending quite a few 'get rich quick' leaflets to Australian DXers in recent times.

Australia has firm laws in place regarding these schemes, and I would firmly discourage any DXer from becoming involved in these 'you beaut' one-off rags to riches gravy trains. If you receive this type of mail from a fellow member in your radio club I would suggest that you send the material to your divisional club co-ordinator for further action.

On amateur radio, this type of 'business promotion' has been going on for years now. Just last year I received a letter from Sudan asking me to invest in a Muslim goat farm project guaranteed to return handsome dividends in the first 12 months!

In 1992 I received quite a number of letters from individuals in obscure African countries requesting that I sponsor them for eventual immigration to Australia, not to mention the odd penfriend request I still get from Africa now and again.

All the just-mentioned activities directed to me suggest someone has extracted my name and address from an amateur radio callbook, QSL Managers List, or a DX newsletter, all of which circulate around the world, or even possibly from a computer bulletin board... who knows? With a lot of get rich quick organisations sharing mailing lists, the problem of unsolicited mail can only get worse.

Now we have fellow radio DXers on 11 metres picking addresses from the club callbook and seeing if another sucker can be had for the taking.

Be warned!

As for my letters from Africa, they have dropped away to nothing, as I placed them all in 'file-13' (the garbage bin) from the very start.

The 1995 Wyong Field Day has been and gone. I went for a quick look for the first time in four years or so, and was a little disappointed with it. The Flea Market attendance was down and the range of pre-loved equipment very limited this year — a reflection of our harsh economics times, I think, and not a lot there for the CB community. The illustrious Sam Voron, aka VK2BVS, the usual purveyor of CB gear at the Field Day, was conspicuous by his absence, at last report meandering about the boonies of Africa, possibly on the trail of the equally-illustrious Doctor Livingstone, I presume.

As usual, the ugly side of CB radio was present at the Field Day. A small contingent of losers from the gutters of UHF CB were seen wandering about yelling and screeching into a shoulder mic wired to a belt-clipped hand-held. Complimented with the latest moron fad of wearing American baseball hats on back to front, they did little to enhance the reputation of CB radio and CBers in general.

However, reflecting the changes in the communications hobby, I observed quite a lot of computer-related items on offer, not to mention the abundance of second-hand scanners on sale along with numerous scanning directories too. Not being an enthusiast of either of the just mentioned, I can spare no other details, but they did outnumber the CB-related items on sale at the Field Day 1995...

Central/South America & the Caribbean

Not much in the way of spectacular DX to report from this region. With deteriorating conditions, signals have been very poor. Gone are the days of five by nine-plus signals from Brazil and Venezuela. However, DXers in the northern states of Australia are still working into this region from time to time, although those in southern states are reporting rather lean times.

French Guyana was logged at 0101z by way of 22-FG-03 operated by Marcel, who was a poor three by two at the time. Marcel, as with most French nationals in the country, is connected with the Ariane rocket project, and is there on a short-term basis until the end of this May. QSL route not obtained.

Peru is one of the easier ones to work, due to the country being on the Pacific ocean side of South America. At 2355z I heard a weak signal from Alfonso signing as the LR-05 from the capital, Lima. At best, Alfonso managed a four by one peaking two. Just up the band a wee bit the 8-AT-102 or 112 was also trying to make it through, and was only a three by two at best around the 0005z mark.

Argentina was floating about the noise at 0122z with a just-audible signal from 4-AT-011, who was calling desperately for 'small islands' in the Pacific at the time. He continued calling for around 20 minutes and failed to get any response at all from the call frequency and thus disappeared. QSL manager for this station is via 14-AT-158, Jean in France.

Guadeloupe is one of the easier catches from the Caribbean, and at 0155z a fair five by two signal was logged by way of 196-AT-103. Surprisingly, not one person in Australia answered the call and the station was snapped up by a New Zealand DXer for a quick contact. QSL route for 196-AT-103 is via Brunella, the 14-AT-224 in France.

Bolivia came through the noise at around 0300z by way of UNIT-107 operated by Carlos. Although only a poor three by two here at the best, a couple of Queensland stations managed to work him from his location in the Bolivian capital, La Paz. Carlos runs only 25 watts into a half-wave dipole at 30 feet, and has limited frequencies on 11 metres.

Paraguay struggled to make it through the noise at 0015z by way of UNIDADO-67 operated by Juan-Carlos near Asuncion, the capital. Although barely readable here in Sydney, a New Zealand station managed a quick contact as Juan-Carlos slowly faded away.

Middle East & Arabia

Activity from this part of the world is starting to drop off as operators become frustrated with the ever-present poor conditions and divert their interests to other matters. However, there is still the odd

reasonable signal coming through to be worked, and by being there at the right time you will reap the benefits, no doubt.

Israel is one of the easiest catches from this region, and at 0901z I heard a number of Australian stations working 4YZ operated by Josef. At the time Josef was a good five by two peaking five on a relatively quiet band. Josef has also been noted on the band signing as 4YZ16-SES a few months back.

Lebanon still proves to be quite popular with DXers in the Pacific judging by the small pile-up that I heard trying to contact 112-SM-102 operated by Faisal around the 0744z mark. Faisal was a good five by three report, and assured all who worked him that his QSL card was a certainty providing you sent a small 'contribution' to him. An Italian station, the 1-AT-1003, had been noted signing portable 112 prefix earlier this year, the QSL route for this one is via: Nicoletta, PO Box 54, Gela 93012, Italy. Return postage essential.

Qatar was represented on the band at 0700z with a good five by five signal from 115-SG-004 with Ali at the mic, and at the time was working colorful Melbourne-based DXer, Dave the 43-AT-109 who was operating maritime mobile at the time. Later I heard Dave score another in this region by working the Pacific International Zero SVL maritime mobile in the Red Sea near Saudi Arabia.

United Arab Emirates can be heard most times the band is open to this region, and at 0855z I heard the 94-MRV-101 operated by Ishram who was a nice five by six at the time. Just down the band a tad was the 94-AV-001 with Nafra at the controls, and although only a five by two Nafra had a number of stations calling him. Some Australian DXers have experienced QSL problems with some stations in the UAE so just be cautious.

Saudi Arabia made an appearance by way of a station calling simply as FZM at 0801z, who was a fair five by one to two at best. A station in far north Queensland secured the contact, but by the time a clear frequency was arranged the FZM had faded away into the noise and crud on the band.

Africa & Indian Ocean Region

As with the Middle East and Arabia, signals to this region have also gone downhill too. The usually good, stable summertime paths to this region, considered by many to be the prime DX season to this region, simply failed to materialise for most of us, especially those in the southern states of Australia. However, those in Western Australia and the northern states, although reported signals were down, still managed to work the odd one or two during the brief openings which were about sporadically.

Reunion Island, whose QSL reputation is legend, has been noted on the band with the emergence of the following stations, amongst others heard: 173-GG-101 Alaise, 173-SW-104 Fabrice, 173-CF-002 Gert and MEGA-115 operated by Renaud. Most of the mentioned stations were logged in the 0400 to 0800z time slot, and all were quite readable here in Sydney. Just be a tad cautious when QSLing this crowd.

Malagasy Republic, better known to most of us here as **Madagascar**, was heard on the band at 0606z by way of 188-AT-103, name unknown. The station was only a three by three at the time and appeared to be calling Europe. Should you be lucky enough to work this one then the QSL route is: Frederic, 14-AT-695, PO Box 17, Cap D'Ail 06320, France. Return postage essential.

Mauritius was reported to be active by way of some maritime mobile activity some time back, with 168-JSB/MM who was worked by a few in Europe and the Middle East. Should you have worked this one and need the MM points for an award, then QSL via Helen Baldwin, 34634 Mercer Lane, Fraser 48026 Mississippi USA.

Ethiopia is reported to have a resident operator, by way of Jean-Yves who, it is hoped, will come on air as the 206-YY-101 in due course.

His wife Berhan has also a callsign, 206-YY-102 and their daughter Tinsae is 206-YY-103. It appears every one except the cat has a callsign, with the family bodyguard Samson being the 206-YY-104! They will be operating from Addis Abha and the route for QSLing is via: Marc, 14-YY-039, PO Box 17, Ploemeur 56270, France.

Return postage essential.

Zimbabwe appeared on the band during early February via 85-AT-106 and at 0455z was five by two into Western Australia. However, not too many in the eastern states made it through before conditions changed. If you were lucky the QSL route is: Tim the 26-AT-029, PO Box 17, Kenilworth CV8-1SF, Great Britain. Return postage is a must.

Swaziland created quite a bit of interest the other month when the 191-CE-01 popped up on the band and, although the signal was poor, a small handful from this side made it through for a good contact. If you were one of the lucky ones then cards, with the usual trimmings, go via: Peter, PO Box 5212, Delmenville 1403, Republic of South Africa.

Djibouti often makes an appearance on 11 metres by way of the 186-AT-103 with Jean-Luc at the mic. Although his recent signals have been poor, those with a directional antenna should be able to work him. At 1600z Jean-Luc was a poor four by one report.

QSL route, with all the trimmings required, goes via: 14-AT-077, Jean Louis, PO Box 165, Port De Brouc Cedex 13525, France.

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DXPEDITION CALENDAR

Jan Mayen Island *was scheduled to be on air during late February to early March with Per coming on as the 211-AT-164. However, with poor propagation in the Pacific being the norm I hadn't heard of any one here working the operation. If you did by chance, then cards go via: Box 16, Trondheim 7001, Norway.*

Tunisia *will appear on the band May 1 to 8 for the purpose of IOTA points, as Djerba Island is activated with the station signing as 147-AT-DI. QSL via Siggi, 13-AT-133, PO Box 1137, Bischberg 96118, Germany.*

Slovakia *is scheduled to appear on 11 metres in a DXpedition capacity signing as 330-AT-DX from May 4 to 7. QSL route is via Henry, 14-AT-065, PO Box 12, Vendin Le Vieil, France.*

Egypt *by way of 117-AT-DX was to have appeared from the port city of Alexandria from February through to May, and the QSL route is via German station 13-AT-170.*

Bhutan *will probably be finished by the time you read this, as the 202-GIR-DX was to have been on air during March/April. QSL route not known.*

Andaman *and* ***Nicobar****, much needed by many, was rumored to be active during March/April by way of 253-GIR-DX, although I heard no mention of it here. QSL route via 1-GIR-001, Vigillio, PO Box 16, Macerata-62100, Italy.*

Pacific DX tourist #1, Thorsten, the 13-AT-455, plans to trek about the islands starting operations in mid-March and plans to finish around August. Thorsten hopes to activate the following islands on 11 metres: ***Solomon Islands, Papua New Guinea, Vanuatu, Wallis & Futuna, Western Samoa, Western Kiribati, Marshall Islands, Federated States of Micronesia, Nauru*** *and* ***Baker & Howland Islands****. No firm schedule has been established and possibly some islands may not be activated. QSL route has been given as Erik, the 13-AT-457, PO Box 1341, Kusel-66865 Germany.*

Pacific DX tourist #2, a member of the BRC Radio Group, should be active as you read this if all which was planned becomes a reality. Starting from March and finishing in November, the following island nations may appear on air: ***Rotuma Island, Banaba Island, Pitcairn Island, North Cooks, South Cooks, Western Samoa, Wallis & Futuna, Vanuatu, Eastern Kiribati, Western Kiribati, Baker & Howland Island, Marshall Islands****, and the* ***Mariana Islands****. Signing as 325-BRC-0, 320-BRC-0, 274-BRC-0 and so on, the QSL route is via the BRC QSL Bureaux, PO Box 33, Zichem 3271 Belgium.*

Aruba*, in the Dutch West Indies, should be active during April as 232-RC-0, although actual dates of the operation are not known. QSL via 14-RC-075, Herve, PO Box 2032, Bourges Cedex 18026, France.*

Scotland *is joining the IOTA program with the* ***Isle of Skye*** *appearing as 108-AT-EU-008 commencing 20 May and concluding on the 31st. QSL route is via Duncan, the 108-AT-443 via PO Box 1, Duns, TD-11 3AB, Scotland UK.*

Berlengas Island*, a part of Portugal, will be activated for IOTA points during May (actual date not known) as 31-TO/BI. The QSL route is via Mr Jorge Santos, PO Box 189, Torres Vedras 2562, Portugal.*

DXinternational

By Jack Haden

Liberia, on the west coast of Africa, has always been a hard one to crack here, especially on the short path. In the past I have always found the morning long path the best way to work this area, but with conditions very poor beggars cannot be choosers any more. The 42-AT-102 has been reported as active with the Europeans being the luckiest, however, should you be lucky too the QSL route is via: Mario, 1-AT-157, PO Box 1, Mareno 31010, Italy. Return postage etc a must.

South Africa came onto the band earlier this year by way of a New Zealander, Tim the 43-AT-103 signing portable 44 prefix. This proved to be quite a novelty station, especially with those in Europe. QSL cards go direct with the usual trimmings to PO Box 83030, AUCKLAND, New Zealand.

Nigeria was reported active by way of 89-Condor, operated by Manville near Lagos. At 0200z Manville was a workable three by five into the Northern Territory shack of Paul, the 43-AT-219. Paul says the QSL route is via PO Box 2738, Lagos, Africa. I know quite a few DXers in the southern states who need a Nigerian contact badly.

Europe

The decline in propagation has also inevitably knocked about the once-big signals from Europe. As well, the once-regular evening openings are now gone, replaced with short sporadic openings which take place anytime during the evening or night.

Most of the 200-plus countries confirmed by DXers here in Australia have already 'cleaned-up' Europe and thus are not too bothered about it all. Most have their antennas locked on Africa and the Indian Ocean in an attempt to extract the odd rare one should it appear. However, some late February paths to the United Kingdom and environs proved to be popular with most east coast DXers, particularly those down south.

Russia is always about 11 metres to provide us with some form of entertainment, usually in the form of drifting transmissions, overmodulated signals or, in some instances, drunken operators, as in the case of 50-RU-109 operated by Alex. At 1020z Alex was quite inebriated and, like Boris Yeltsin when he's had a few too many vodkas, was having trouble being understood. The Australian station Alex was working quickly dropped him and left him slobbering at the mic to himself or anyone who cared for a couple of minutes' light entertainment. Further up the band, a more dignified 50-AT-380 was working a few Australian and New Zealand stations and was five by six at 1036z. Nearby, Larry the 50-AT-109 was working a Melbourne station and was five by four at the time. Serge, the 50-XY-015 has also been reported as active in recent weeks.

Great Britain was about the band in the late February openings to Europe, and at 0930z the 26-AT-185 operated by Dave was logged at a fair five by two report. Also noted was 26-AT-561 with Pete at the mic and 26-CG-88, 26-TW-103, 26-AA-07, and GB-115 in London amongst others.

Scotland appeared on 11 metres by way of 108-BPR-101 operated by Jock, and when asked what 'BPR' stood for I was told it was 'Bag Pipe Radio'! Jock was a good five by four from his home on the Clyde River, and was mainly looking for a contact into Norfolk Island at the time. Jock has been retired for a number of years from the Clyde shipyard where he worked for 46 years as an marine electrician.

Wales came through the usual rabble at 1002z by way of 163-DR-102 operated by Marcus, and at the time was a reasonable five by one peaking three. A little down the band I heard a better signal from 163-GWR-01 with young Meralda at the controls of her father's station. Meralda was a good clear five by five peaking six at 1018z.

Northern Ireland was loud and clear at 0910z with a strong signal coming from UNIT-909 in Belfast, operated by Mick. The signal was a good five by eight at peak before fade knocked him back to five by three. Mick operates a HR-2510 into a 11-element log periodic at 35 feet.

The **Republic of Ireland** boasts quite a few keen DXers, and it came as no surprise to hear a five by six signal from Roy, the 68-SS-112 at 1000z. Roy was looking for a friend of his in New Zealand, and became a little bit ticked off at the number of Australian stations calling him, thus preventing him from hearing his mate in New Zealand. However, a couple of 68 Alfa Tango members stepped in and cleared the call frequency by asking those interested in a contact to move with them to another clear spot and thus help keep Roy's temper under control!

Jersey in the Channel Islands, a renowned tax-free haven, was heard via a French-speaking station calling as the 167-VGI-01 operated by Jean-Claude at 1031z with a poor three by one report. Speaking no English, he appeared content working any French-speaking stations that came his way. At first I was under the impression he was maritime mobile on board a trawler but I am not 100 per cent sure on that.

Greece is usually easy to find when southern Europe is coming in, so it was no surprise to hear a good five by six signal from 18-SG-018 at 1110z who was busy working a Brisbane station at the time. Also noted was 18-SV-195 operated by Anastasia. At 1145z, she was a steady five by four report from Athens.

Poland is becoming just as numerous as the Italians on 11 metres as far as the old eastern European stations are concerned. CB radio equipment must be selling like the proverbial hot cakes there, judging by the rapidly-increasing number of stations coming on air. Around 0820z 161-AT-158 operated by Adam was five by five, same applies to 161-AT-114 Marek, who was busy working Captain Dave, the 43-AT-109 who was maritime mobile at the time. Also noted as being active on the band was 161-AT-489 operated by Miles, and Tom who signs as the 161-EE-416 was also heard about the traps.

Slovenia can be found on the band most times when Europe is coming through. At 0800z the 327-AT-111, 327-SL-102, 327-WT-09 and the 327-AT-104 were all noted about the band with reasonable signals, and had no trouble working in to Australia and the Pacific. Also reported was a semi-DXpedition station signing as 327-SD-0, which was quite active in January. QSLs for this one go via, Max, PO Box 124, Arcisate 20151, Italy.

Lithuania came through quite clear at 1034z by way of 311-LU-02 who was five by five at the time. Also noted was 311-ER-01 operated by Den with a weaker four by two report. Just be a wee bit cautious when dealing with 311-AV-111 operated by Alex. It appears Alex, although demanding three American dollars for a QSL card-issuing fee, hasn't yet sent any payees a card to date.

The **Slovak Republic** was active with the appearance of Anton, operating as the 330-AT-103. At 0845z Anton was a workable four by three at best. Not long after, at 0915z, I noted 330-SL-95, operator unknown, working

a station in the Cook Islands.

The Slovak station was a reasonable five by one peaking two at the time.

Ukraine was represented on the band by 315-AT-101 operated by Vlad. At 0931z Vlad was a good five by three peaking six at times. Just down the band a touch the 315-AG-9 with Alex at the mic was doing good business with Australia with his strong five by seven signal. Most stations had no trouble keeping up with Alex despite his drifting up and down two to three kiloHertz all the time. Ukraine was also about in a DXpedition category with 315-SD-0 being active earlier in the year, QSL via Mr Eduardo, PO Box 11046, Zaragoza 50080, Spain.

Malyi Vysotskij Island was noted around 1110z amongst the European rabble the other month by way of 326-ZZ-101, name unknown. Quite a few European stations called this one a slim, and I think they may be right, as they would be the first to know of any *real* DX activity from this very rare one. The 326-ZZ-101 was a just readable three by two at the time and quickly disappeared after being challenged by prominent European DXers, one saying the signal was coming from the old Soviet Union.

Asia & the Pacific region

Quite a bit of excitement broke out on the band, with two Frenchmen on DXpeditions in Asia and the Pacific keeping spirits alive amongst Australia's DX community. They activated rare one after rare one during January and February.

Being in the immediate neighborhood, the countries the pair activated were easily worked by all and sundry, including those running just a few watts into a vertical antenna. I bet the people back in Europe, who are always chasing after Asia and the Pacific, were simply green with envy that these new ones were being knocked off with relative ease by DXers in the Pacific! And not before time either — for too long Europe has had the monopoly on the choice African DX, so it's refreshing to see our lads get their glory in our own part of the world without the European menace.

Banaba (320) was reported active during January by a few DXers on the east coast, one or two claiming to have worked the station in question. Could it have been our trickster friend on the east coast pulling everyone's leg?

There are no resident expatriates living on Banaba. Only 284 Banabans live permanently on the island, which has no electricity, no motor vehicles, no airport and is linked to Tarawa in Western Kiribati by a three or four times yearly shipping service.

There are no facilities for tourists on the island, so past amateur radio DXpeditions have had to charter a vessel and bring all their own fuel and food covering their stay — a costly exercise in anyone's book. The only activity I can foresee from Banaba on 11 metres would be by a local villager with a solar-powered CB system, or from foreigners operating from aboard a cruising yacht which has called in for a quick visit.

Western Kiribati is becoming well-known as a country of bad QSLers. I often receive inquires here as to whether I know so-and-so on Tarawa, as people continually try for a QSL out of this division. Despite sending a SAE and return postage, returns have been poor.

One must keep in mind, however, that Kiribati is a very poor developing nation and resources are limited in the country.

Most 224 prefix people you will encounter on the radio are not too well off, and have a CB radio primarily to talk to friends and relatives on neighboring islands, and thus are not 'professional' DXers in a real sense.

Some of them do not fully understand the protocols and importance surrounding the obligations in regard to QSLing and what it is all about. Also keep in mind that IRCs are not accepted by the Post Office in Kiribati, so sending an IRC is just a complete waste of time and money.

I know for certain that resident and long-time operator of CB, Hang, the 224-AT-104 or 224-RA-01, does QSL to those who are in the log and have sent return postage.

Eastern Kiribati station, the 266-AT-102 was heard on the band at 0245z with a good five by five report into Sydney. Due to past QSL problems, a QSL manager for this station has been appointed, so cards now, with all the required trimmings, go via Henry, 14-AT-012, PO Box 17, Cap D'Ail 06320, France.

The **Marshall Islands** have been heard on the 11 metre band in a burst of activity with a number of stations monitored. Best signal logged came from 132-TR-61 operated by Julian, and at 0450z he was five by seven. Also noted from the Marshall Islands in recent weeks were the 132-AT-102, 132-BY-108, 132-KX-104 and the KXR-03 amongst others heard on the 40-channel block. Some also report troubles getting a QSL return from this one too, so just be cautious.

Guam is a regular on 11 metres from the north Pacific, and at 0847z the 68-W-459 was heard working young Ben, the 43-TR-116 in Sydney, and was a good five by seven peaking nine. It was disappointing to hear Tony in Guam say that he didn't QSL, as quite a few Australian stations requested a QSL exchange. Tony is with the military on Guam and was operating from his work using a military transceiver into a log periodic on the base, hence the good signal report on a relatively dead 11 metres.

The **South Cook Islands** appeared via 14-AT-193, operated by Oliver, signing from 250 prefix. On February 4 around the 2200z mark he was only a four by zero peaking two at best, workable and thus better than nothing at all. If you made, as many did, QSL with all the trimmings via: Henry, 14-AT-012, PO Box 17, Cap D'Ail 06320, France.

The **Northern Cook Islands** were to have been activated by Oliver, the 14-AT-193, signing portable 249 prefix after the completion of the South Cook operation.

At deadline time I hadn't heard him active, however if you were lucky and made a contact, then QSL the same route as for the South Cook activity. Rumors of a **Pitcairn Island** (274 prefix) operation by Oliver were just that... rumors!

American Samoa has been reported active by way of 70-AT-101, operated by Nonie from Pago Pago. At 2312z the signal was a fair four by three into Sydney. QSL via 14-AT-012, Henry, via PO Box 17, Cap D'Ail 06320, France.

Cambodia appeared on the band in the period January 13 to 20 by way of Laurent, the 14-AT-212 signing portable 238 prefix.

Although signals were not all that brilliant, Laurent worked quite a number of Australian DXers, with those in the northern states making it through easily whilst those in the southern states had to battle poor conditions to make it through for a new one.

QSL route is via: Jean, 14-AT-158, PO Box 17, Cap D'Ail 06320, France. Return postage essential.

Kirghizia in the old Soviet Union appeared on the band with Yuri, the 309-EX-599 leading the way, and at 0600z was a fair five by three report. Quite a few stations in Australia made a contact with Yuri, whilst further up the band 309-KZ-909 operated by Vladimir, five by five peaking six at the time, was also doing brisk business.

And that's all I have for this edition of DX! I hope there is something for everyone. Despite very poor DX conditions on the band, I think something more than luck may be needed somehow!

Thanks, as usual, go to those who took the time to send in their loggings. A stamped, self-addressed envelope must be provided for a personal reply via PO Box 299, Ryde, NSW 2112. 73 de Jack.

CB UHF REPEATER LIST

NEW SOUTH WALES

Callsign	Town/Locality
	CHANNEL 1
BEL01	Belbora
BHI01	Broken Hill
BIN01	Bingara
BOB01	Harden
BRE01	Brewarrina
BRH01	near Broken Hill
BUN1	near Merriwa
CHT01	Charlestown
COR01	Corowa
DNQ01	Deniliquin
GRE01	Grenfell
GUY01	Guyra
JIN01	near Jindabyne
KGL01	Kyogle
MBI01	Moonbi
MRT01	Wilcannia
MTE01	Mt Eagle
NEE01	Dubbo
NIM01	Nimmitabel
NYN01	Nyngan
RYL01	Rylestone
SYD01	Sydney
ULA01	Ulladulla
WAG01	Wagga
WGT01	Walgett
	CHANNEL 2
BER02	near Gloucester
BRH02	Broken Hill
CAN02	Cangai - West of Grafton
EDN02	Bega / Eden
GDH02	Gunnedah
INV02	Inverell
KHN02	Khancoban
KOS02	near Thredbo
KUR02	Sydney - Blacktown
LGW02	Mt Lambie
LIS02	near Byron Bay
MAC02	Port Macquarie
NBR02	Wee Waa / Narrabri
NOW02	Nowra
PAR02	Parkes
WAL02	Walcha
WAN02	Wanaaring
WBD02	Walbundrie
VRB02	Urbenville
	CHANNEL 3
CAN03	near Orange
CAS03	Casino
COM03	Mt Kophi
DUN03	Dungog
GIL03	Braidwood
GTH03	Griffith
MDI03	Murrurundi
MNA03	Manilla
MOR03	Moree
MTI03	Tubramurra Shire
PLO03	East of Armidale
RWT03	Hay
SYD03	Sydney
TEN03	Tenterfield
	CHANNEL 4
ALB04	Albury
ARM04	Armidale
CBN04	Coonabarabran
DRK04	Girard
GLB04	Goulburn
HAY04	Hay
MON04	Kandos - near Mudgee
MUS04	Muswellbrook
OGU04	Ogunbi - near Tamworth
RIV04	Penrith Area
SOU04	near Cooma
THA04	near Broken Hill
TUL04	Tullibigeal
TWH04	Banora Point
WAN04	Mt Wandera
WAR04	Warialda
YNG04	Young
	CHANNEL 5
	EMERGENCY REPEATERS
BIN05	**Katoomba**
BKE05	**Mt Gunderbooka**
CAP05	**near Tenterfield**
CHN05	**Charlestown**
COR05	**Corowa**
FOR05	**Mount Tallabung**
FRA05	**Bellingen**
GLB05	**Goulburn**
JIN05	**Jindabyne**
MTS05	**Narromine**
MTU05	**S-West Slopes, East River**
OXY05	**Bourke**
SYD05	**Sydney**
TAM05	**Tamworth**
TBO05	**Mt Talbingo**
	CHANNEL 6
BAR06	near Narrabri
BON06	Bonshaw - Q/NSW border
COF06	Coffs Harbour
COL06	Oakey
GGG06	Glengary
LGW06	Lithgow
MAL06	Mallanganee
MTG06	Bowral
MUM06	Mumbulla Mountain
NAR06	Narromine
NEW06	Sugarloaf Range
ROB06	Mt Robert
TUM06	SnowyMountains
WAL06	Walcha
WEN06	Tolarno
	CHANNEL 7
BAL07	Buckombil Hill
BOM07	Bombala
BOO07	Booral - near Bulahdelah
COW07	Cowra
GLH07	Glen Lyon
GLI07	Glen Innes
MIL07	Milton
NUN07	Nundle - near Tamworth
SYD07	Sydney
WAL07	East of Walcha
	CHANNEL 8
BAT08	Bathurst
COB08	Cobar
CON08	Condobolin
EUC08	near Eucumbene
GLE08	Glen Innes
GRE08	Gresford - near Dungog
GRF08	near Grafton
KEM08	Kempsey
MER08	near Merimbula
MUR08	Tomewin
NAR08	Narrandera
ROB08	Illawarra
TBC08	Tooleybuc
URA08	Uralla - near Armidale
WAL08	Walcha
WOY08	Karlong

NORTHERN TERRITORY

Callsign	Town/Locality
	CHANNEL 1
ALS01	85 KM SE of Alice Springs
BPK01	90 KM N of Alice Springs
DRW01	Darwin
KVB01	Double Hill
MLG01	Milingimbi
	CHANNEL 2
ALC02	115 KM NE of Alice Springs
DDB02	Garibaldi Station
SWN02	150 KM NNE of Alice Springs
	CHANNEL 3
ELK03	325 KM NE of Alice Springs
ERL03	185 KM SSW of Alice Springs
MMI03	Mistake Creek Station
	CHANNEL 4
DPW04	70 KM S of Alice Springs
MST04	110 KM S of Alice Springs
	CHANNEL 5
None assigned	
	CHANNEL 6
HEN06	120 KM SW of Alice Springs
	CHANNEL 7
AMB07	85 KM SE of Alice Springs
ASP07	Alice Springs
	CHANNEL 8
None assigned	

QUEENSLAND

Callsign	Town/Locality
	CHANNEL 1
ANN01	St Annes Range
BAR01	near Barcaldine
BAT01	Bathurst Heads
BNE01	Mt Cotton
DEL01	Collinsville
HAN01	Hannaford
HUG01	Hughenden
ING01	Inglewood
INN01	Innisfail
MDT01	Middlemount
MOR01	Mt Hope
OWN01	Mt Oweenee
RKY01	Mt Archer
ROM01	Mt Bassett
SPC01	Windorah
TSV01	Townsville
TTH01	Twin Hills
WBB01	Mt Perry
WCT01	Charters Towers
	CHANNEL 2
GLD02	Gladstone
GLN02	Glenden
ING02	Mt Cordelia
JCK02	Julia Creek
LAU02	Laura
MAB02	Broadsound Range
MIN02	Glenlyon Dam
POR02	Drummond Range
SPC02	Bowen
TAM02	Tambo
TAR02	Taroom
TRN02	Quilpie
TWB02	Mt Kynoch
WAG02	Aranyi South
WAV02	Wavell Heights
WBR02	Mt Kanigan
WON02	Cogango Range
	CHANNEL 3
ABC03	Gold Coast
CHI03	Chinchilla
CTS03	Charters Towers
INK03	Mt Inkerman
KIL03	Kilcoy
LAI03	Mt Beau Brummell
MBO03	Tinana
MTO03	Monto
MTW03	Mt William
PCC03	Edward River
SPR03	Springsure
VHO3	Mt Isa
	CHANNEL 4
BBG04	Sloping Hummock
DIP04	Double Island Point
EID04	Eidsvold
GDI04	Goondiwindi
HOP04	Rockhampton
IPS04	Ipswich
JER04	Jericho
MBH04	Moranbah
MOW04	Darling Downs
TSV04	Townsville
VHN4	Expedition Range
VHW4	Cannonvale
	CHANNEL 5
	EMERGENCY REPEATERS
ABC05	**Springbrook**
BNE05	**Mt Glorious**
CEM05	**Clermont**
FSB05	**Mt Goonaneman**
GEM05	**MtWolvi**
ING05	**Mt Cordelia**
MIL05	**Commodore Peak**
QBM05	**Darling Downs**

The following channels are the input channels for a repeater:

IN	Frequency (MHz)	
31	477.175	
32	477.200	
33	477.225	
34	477.250	
35	477.275	** for emergency use only
36	477.300	
37	477.325	
38	477.350	

The output channels are listed below:

OUT	Frequency (MHZ)	
1	476.425	
2	476.450	
3	476.475	
4	476.500	
5	476.525	** for emergency use only
6	476.550	
7	476.575	
8	476.600	

VHN05	**Charters Towers**
VHP05	**Biloela**
	CHANNEL 6
BLK06	Blackdown Tablelands
BRA06	Sea View Range
CBT06	Mundubbera
CHT06	Mt Janet
CLE06	Police Mtn
CNE06	Bergen
DIM06	Mt North Iron
GLD06	Mt Larcom
MIL06	Palardo Hill
MKY06	Gympie / Mackay
PRR06	Clermont
RIC06	Yan Yean
TAM06	Tambo
THG06	Thargomindah
VHN06	Wilkes Knob
	CHANNEL 7
BIL07	Banana Range
BNE07	Toohey Mtn
CTR07	Towers Hill
DMD07	Clermont
ESK07	Esk
GEM07	Gympie
IND07	Fraser Island
ING07	Mt Mercer
MUR07	Mt England
VHO7	Mt Hutton
WBB07	Mt Watalgan
WRA07	Warwick
YKA07	Mt Slowcombe
	CHANNEL 8
AMI08	Amiens
AMP08	Monto
BAL08	Noondoo
BLL08	Blackall
CHN08	Mt Peanga
CHT08	Charters Towers
EMD08	Emerald
HBY08	Ghost Hill
MBR08	Mt Brisbane
NEB08	Nebo
ONV08	Ocean View
TLD08	Atherton
VHN08	Barkly Down

SOUTH AUSTRALIA

Callsign	Town/Locality
	CHANNEL 1
CDA01	Ceduna
MJN01	Oodnadatta
MTR01	Leigh Creek
PRC01	Carrieton (Nth of Orroroo)
PAR01	Adelaide (North)
TYN01	Oodnadatta
VLA3	Crystal Brook
	CHANNEL 2
BOR02	Bordertown
BRP02	Orroroo
CLV02	Cleve
MYP02	Myponga
VLA4	Kingoonya
	CHANNEL 3
ADL03	Adelaide (Central)
ALN03	Yunta
BLN03	Blinman, Flinders Ranges
CTR03	Moonta
KBY03	Port Elliot
UNO03	Port Augusta
	CHANNEL 4
BLF04	Port Pirie
BAR04	Nuriootpa
KOK04	Lake Gairdner West
NAR04	Lucindale
PKI04	Kangaroo Island
	Leigh Creek (North East of)
	CHANNEL 5
	EMERGENCY REPEATERS
ADL05	**Adelaide suburb**
BEE05	**Crystal Brook**
EUD05	**Eudunda**
MNT05	**west of Woomera**
MTG05	**Penola/Mt Gambier**
	CHANNEL 6
LST06	Elliston (Eyre Peninsula)
NON06	120 Km West of PtAugusta
REN06	Renmark
SNO06	Snowtown (nearPt Pirie)
TIN06	Coonalpyn
WKI06	Kangaroo Island
WLG06	Tarcoola
WLP06	Willpena
	CHANNEL 7
CLR07	Clare
MTG07	MtGambier
MUT07	south of Cockburn
UNO07	Kyancutta
VLA7	Streaky Bay
WIL07	Hawker
YKP07	Warooka
	CHANNEL 8
BRYY08	Burra
MBV08	Murray Bridge
MTA08	Quorn
PTL08	Tumby Bay/Port Lincoln
	Oodnadatta (200 KM SW)
	Yalata (187 Km N/W of Ceduna)

TASMANIA

Callsign	Town/Locality
	CHANNEL 1
DEV01	Devonport
FIS01	Flinders Island
SET01	Grasstree Hill
	CHANNEL 2
CHN02	Herring Back
LCN02	Launceston
TWC02	Mt Read
	CHANNEL 3
NEC03	Ben Lomond
	CHANNEL 4
MID04	Millers Bluff
	CHANNEL 5
	EMERGENCY REPEATERS
HBT05	**Hobart**
LTE05	**Fingerpost Hill**
	CHANNEL 6
REC06	Mt Paul
VJA6	Mt Lloyd
WCT06	St Valentines Peak
	CHANNEL 7
CHT07	Barren Tier
TNE07	Mt Victoria
	CHANNEL 8
BRN08	Burnie
TBL08	Table Mountain
TNE08	St Marys

VICTORIA

Callsign	Town/Locality
	CHANNEL 1
ALX01	Eildon
APS01	Apsley
MEL01	Melbourne
OME01	near Omeo
ROU01	Penshurst
STA01	St Arnaud
WAL01	Walhalla
	CHANNEL 2
BAL02	Ballarat
KER02	Mt Kerang
MAN02	Mansfield
MOE02	Moe
PYA02	Pyalong
	CHANNEL 3
ABE03	South
DEL03	Bombala
HOR03	Horsham
FAL03	Falls Creek
JNR03	near Dartmoor
WBT03	Mt Wombat
WPH03	Weeaproinah
YLA03	Yella
	CHANNEL 4
ANA04	Mt Anakie
ARA04	Ararat
BEN04	Bendigo
CRJ04	Traralgon
HAW04	Hawkesdale
MCA04	Marambingo Hill
	CHANNEL 5
	EMERGENCY REPEATERS
BAL05	**near Ballarat**
MAN05	**Mansfield**
MEL05	**Melbourne**
RFY05	**Rufty**
	CHANNEL 6
FOS06	Mt Fatigue
HLV06	Healesville
ECH06	Echuca
BRN06	Mt Concorde
MSS06	Mt Seldom Seen
SWH06	Swan Hill
WAN06	Wangandry
WIL06	Mt William
	CHANNEL 7
BOL07	Mt Bolton
BND07	near Bendigo
MEL07	Melbourne
MOR07	Mt Shadwell
MVL07	Mt Gordon
SHP07	Shepparton
TAL07	Mt Granya
	CHANNEL 8
ART08	Safety Beach
DUN08	Cavendish
HAR08	Mt Alexander
MCN08	Mt Cann
MYR08	Mt Porepunkah
TER08	Mt Terrible

WESTERN AUSTRALIA

Callsign	Town/Locality
	CHANNEL 1
COL01	Collie
DEN01	Denmark
GER01	Geraldton
KAM01	Kambalda
KAT01	Katanning
KLB01	Kellerberrin
LEN01	Leonora
MIA01	Mia Mia Station
MKT01	Poison Hills
PER01	Perth
WAR01	Warakuna
WIK01	Wickham
	CHANNEL 2
BIN02	Bindoon
BUN02	Near Bunbury
CAR02	Carnamah
KAL02	Mt Charlotte
LYN02	Lyndon Station
MRD02	Merredin
VLN5	Mt McLure
WLP02	Walpole
	CHANNEL 3
ALB03	Albany
CLA03	near Carlotta
NOR03	Nannup
PER03	Boleystone
VET03	near Bardoc
	CHANNEL 4
BYB04	Dinninup
ESP04	Esperance
GNG04	Lancelin
KUL04	Kulin
MTB04	Cranbrook
NEW04	Newman
	CHANNEL 5
	EMERGENCY REPEATERS
PER05	**Orange Grove**
MTR05	**Mt Barker**
VLN6	**Perth**
	CHANNEL 6
DAR06	Darkan
JUR06	Mt Lesueur
MGR06	near Margaret River
MNP06	Albany
MTS06	Mt Solus
VKM06	Wyalkatchem
	CHANNEL 7
BDG07	Bridgetown
C0007	Coolgardie
MGR07	Augusta
MTB07	Stirling Ranges
PIN07	Pinjarra East
VRK07	Mt Bakewell
	CHANNEL 8
MAN08	West Manjimup
MSA08	Mt Saddleback
PER08	Kalamunda
QUN08	Quinorlup
RVT08	Ravensthorpe

A.C.T.

Callsign	Town/Locality
	CHANNEL 1
CBA01	Canberra (Portable)
	CHANNEL 2
CBA02	Isaacs Ridge
	CHANNEL 7
GIN07	Mt Ginini
	CHANNEL 8
CBA08	Isaacs Rid

REPEATER UPDATE

To maintain the UHF repeater list in an up-to-date manner requires the co-operation of repeater owners and local users. Please ensure that when an error is found, or an update is required, that you contact:

Trevor Colwell, ACBRO Inc.,
PO Box 170,
Walkerville 5081, South Australia
who will ensure that this information is included in the next repeater list.

RADIO and COMMUNICATIONS

Commencing with the first issue of the new combined CB Action and Amateur Radio Action magazine - RADIO and COMMUNICATIONS, on sale 27 June - CBers and hobby communicators will be able to place a FREE classified in each monthly issue. CB radios, scanners, antennas, wanted/for sale, power supplys, etc. (but neither purchase nor sale of amateur equipment by non-amateurs) can all be placed with the first 25 words FREE, then just $4 per 25 words after that. Adverts must be clearly PRINTED and those for inclusion in the first issue must be received no later than 16 June, any received after that date will be held over for the following issue.
Please read and note the conditions below.

Readers of **RADIO and COMMUNICATIONS** may use the **CLASSIFIEDS** column to the extent of 25 words absolutely free! This offer applies only to private "For Sale" or "Wanted" classified listings, and to computers, software or computer peripherals and other hobby communications equipment - scanners, CBs, etc. A **limit of one classified** advertisement applies to each advertiser. Any additional words **must be paid for or the advertisement will not be accepted.**
A nominal fee of $4 per additional 25 words or part thereof will apply. This fee should accompany your material if applicable. Please enclose this fee or your advertisement will not appear. Preference is given to paid advertisements, and we receive an awful lot of them each month.
Your advertisement's inclusion **cannot be guaranteed**, but every effort will be made to place your advertisement in the issue following receipt of copy. The 25 words must include your name, and phone number.
The publisher reserves the right to amend or reject any advertising material considered unsuitable for publication.
No correspondence will be entered into nor will classifieds be accepted or discussed over the telephone..
Repeat **CLASSIFIEDS** advertisements will be accepted for a fee of $4 for every 25 words - including the first 25.
Once again, this fee should accompany your material.

Advertisements for **commercial goods or services** will not be accepted for publication in these classifieds pages.
This classified section is for **private sales/purchases** only.
For details of display advertising elsewhere in the magazine phone Kate Shaw on (03) 752 6186. Readers should note that all advertisements are required to comply with the provisions of the Victorian Consumer Affairs Act of 1972. They should be aware that, under the above Act, Post Office box numbers can be published **only if the full name and residential address** of the box holder is supplied with the advertising material.
The form below is to be used for all classified advertising material in **RADIO and COMMUNICATIONS**. Letters on plain paper requesting the insertion of a classified advertisement will not be accepted.

Photocopy or clip this form and post it complete to:
RADIO and COMMUNICATIONS Classifieds
Box 1, Yarra Road
Wonga Park 3115
Cheques should be made payable to ACP Syme Magazines Pty Ltd.
IMPORTANT NOTICE: Unsuitable material includes advertisements for wanted amateur transmitting equipment where no valid amateur call sign is shown, sale of equipment modified for general coverage transmit, etc.

Please feel free to send us a photocopy of this form, but, it must be a copy of the full page - not just the form.
Also please note, as these classifieds are keyed in by a typist who doesn't know a Bearcat scanner from a Ringo antenna, please ensure that your writing is legible to someone other than you!
If it's not, it is likely to not be run.

FREE **PAY $4**

FREE **PAY $4**

NOT FOR PUBLICATION, BUT THIS SECTION MUST BE COMPLETED

Your name: ..... *Amateur Call sign (if any):* **VK** .....

Residential address: ..... *Phone contact*: ( )* .....

Your signature: ..... *Today's date:* / / .....

* This number is for the editor's use only - to check any details. **A business hours** number please. *NOT* for publication!

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Pocket a P65 today!

Unit shown actual size

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Weighing only 300 grams and with compact dimensions, the P65 fits neatly into your pocket or comfortably on your belt.

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For more details please phone:

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- NSW (02) 689 2499
- QLD (07) 240 3710
- WA (09) 277 9399
- ACT (06) 257 4411
- SA (08) 348 2888

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TX3000 FEATURES

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- *Priority Channel*
- *Dustproof Electret Microphone*
- *Compact and Lightweight*
- *Selectable Duplex Channels*
- *High Contrast Backlit Liquid Crystal Display*
- *Designed and Manufactured in Australia*

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GME Electrophone

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BRISBANE (07) 273 4355 Fax: (07) 273 5907 **ADELAIDE (08) 234 2633** Fax: (08) 234 5138
PERTH (09) 330 5322 Fax: (09) 317 1787 **AUCKLAND N.Z. (09) 274 0955** Fax: (09) 274 0959
CHRISTCHURCH N.Z. (03) 379 1488 Fax: (03) 379 9246