CB Action

AUSTRALIA'S ONLY CB MAGAZINE

SEPTEMBER/OCTOBER 1993 $3.75

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– U- beaut pirate rig?

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Contents

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ON CHANNEL

THE RADCOM ACT

If nothing else, the articles which appeared in the last two issues of CBA about the new Radiocommunications Act certainly created a a lot of interest - which is precisely what we wanted to happen, although not necessarily with the end result whereby some readers decided they were heading for gaol because they hadn't paid their CB licence fee.

Our aim with the Radcom articles was to make both readers and retailers aware of the draconian penalties contained within the Act to ensure that those who are in fact operating illegally with modified equipment and retailers who are selling rigs capable of broadcasting on police frequencies (and they exist), became aware of what the new SMA could do if it so chose.

But let's now apply a degree of common sense.

Does anyone really think that they're going to be sent to gaol because they have an unlicenced CB rig or that the SMA is going to introduce "receiver licences" tomorrow and ban scanners the next day? Of course not, but, if and when the SMA decide to make an example of, say, somebody telling the police to get stuffed on a police channel, they now have the power to do it properly. Likewise if they decide to chase a retailer who is selling amateur equipment, modified to operate on, say, the RFDS channels, the Act certainly has the teeth to make it a nasty experience for the retailer...and that's what this Act is all about...hitting the people who are breaking the law in a BIG way. It's not aimed at the bloke who has two CBs but only one licenced and the guy who is running an amateur rig on 11m has been illegal for years anyway.

Nor should owners of scanners take fright. They are completely legal, require no licence, and will probably stay that way.

Additionally, as anyone who uses a CB knows only too well, the DOTC (now SMA) has never bothered to get serious about policing the service in the past and there is no reason to think that it will in the future.

Still, if you have held off purchasing a CB or scanner because of a fear that they may become illegal and/or you may have to buy a licence, forget it and buy the equipment - the then DOTC stated that this was "not the intention of the Act" in our July/August issue - it's just a pity the Act wasn't worded that way in the first place as it certainly would have saved a lot of confusion.

PACKET RADIO

In this issue we have a "think" piece about packet radio - a form of electronic communication which links computers to each other via the airwaves.

This is an exciting and relatively new radio activity that is enjoying increasing popularity on the amateur bands - so why not also CB?

Greg Towells reports in his "Bandspread" column that there are already packet stations operating on 11m and we believe that it would be a major boost to both the CB industry and CBers in general if this mode of communication could be approved by the SMA. We believe there is an excellent reason for the SMA to authorise legal packet operation on both 11m and UHF (it may even be legal now, but probably isn't) as phone-patching, encryption, Selcall, etc. are allowed and, given this, why not packet?

It is our intention to approach the SMA and request this new service - we'll let you know how we go in the next issue.

IN THIS ISSUE

In this issue we kick off with a top quality do-it-yourself RDF Loop project.

This device will allow you to chase down those annoying characters who just love to dump a carrier on your signal and what you do after you've located the interference is of course up to you. The following two issues will provide you with further d-i-y projects to maximise the efficiency of the loop and we have several other interesting projects lined up for future issues.

David Flynn reviews a new handheld which is either a sign of thing to come - or a pirate's delight, while part two of Rod Fewster's computer virus report will give computer users food for thought.

Add to this our regular columns, a "give-away" Sangean receiver, a review on the new PRO330e AM only rig, and there's a lot of reading to keep you going.Have fun and we'll catch you next time around.

CB Action

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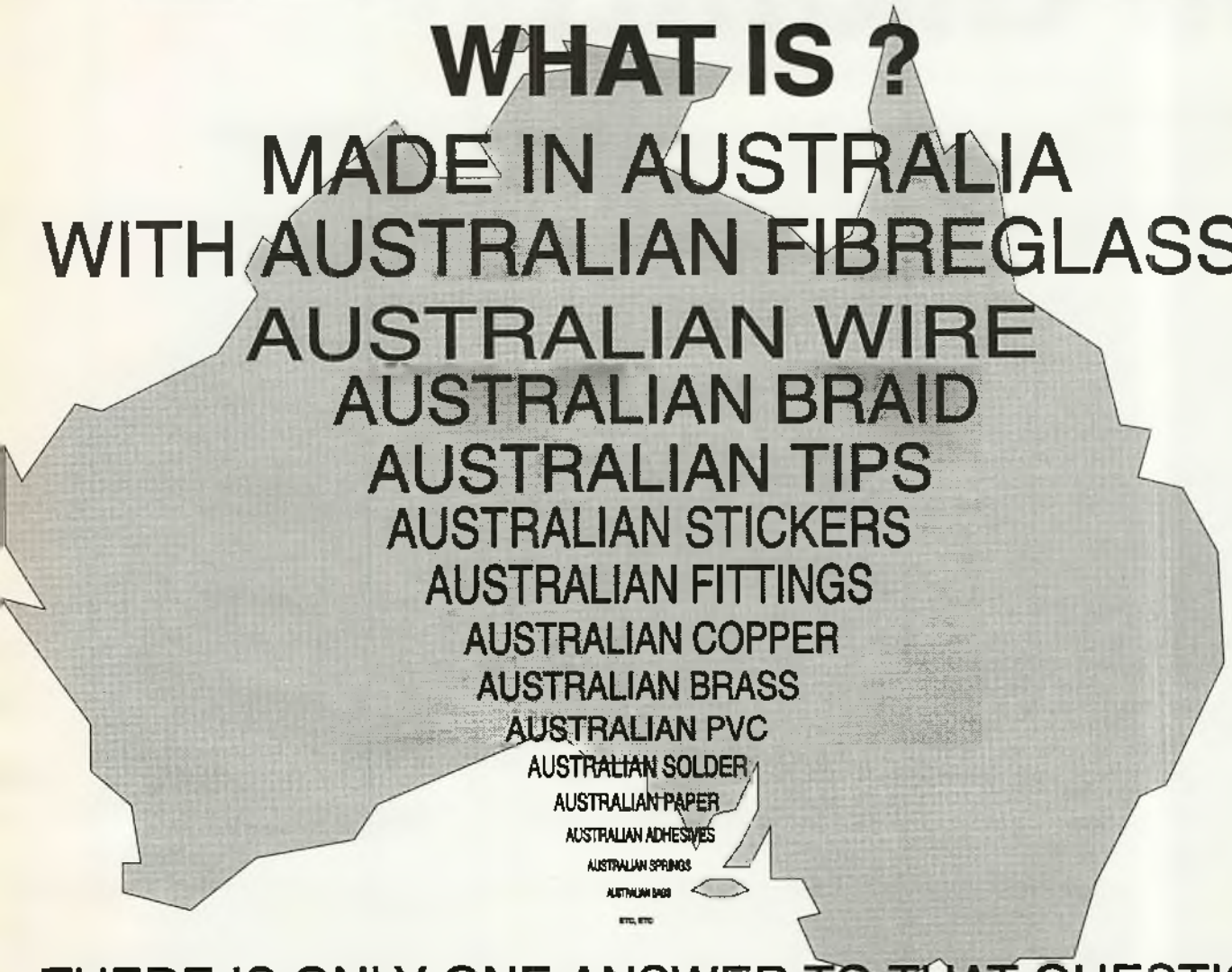

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THE SCATX

In today's economic climate innovation is one way of keeping your corporate head above water. New products, especially good antennas, are constantly being sought by those involved not only in scanning but the general communications industry.

Mobile One, a company which has been in CB as long as CB has been in Australia, has recognised this and is developing aerials aimed fair and square at those who wish to listen as well as talk.

As scanners become more and more sophisticated, giving us larger memories and broader frequency ranges, the need arises for antennas that can keep pace with the scanner. Especially mobile.

Mobile scanning is an entirely different ball game.

When monitoring at home, the distance between the transmitter and the scanner generally remains constant, thereby providing a constant signal to the receiver, not so in the car.

As you drive about the countryside, distances and altitudes change, effecting the input signal to the scanner. A GOOD aerial is a must, especially one that covers a multitude of bands. Enter the SCATX.

Designed to transmit as well as receive, the SCATX is probably one of the most flexible (in electronic terms) aerials you could buy.

Receive range is 27-38 MHz, 74-108 MHz, 118-136 MHz, 150-170 MHz, 430-512 MHz and, get this, 820-1300 MHz. Not bad when you consider the thing is less that 1.2 metres in length.

For those who wish to transmit, the SCATX will handle 36-37.5 MHz, 75.5-78 MHz, 114-128 MHz and 455-490 MHz with an SWR varying from 2:1 on the limits to around 1.1:1 in the centre of the operating band.

Gain from 0 dB to 4.5 dB is achievable depending on the frequency. I tried it out for a while on my commercial repeater with excellent results.

What makes the SCATX work? The principle of combining several antennas into one.

From lowband VHF to SHF, the SCATX exhibits 50 ohms across the range. The wide range is obtained by precision placement of the phasing and loading coils.

Because the SCATX is manufactured to such tight specifications, it is not recommended that it be tuned by cutting.

Like most aerials the SCATX requires a suitable ground plane, however, it can be mounted in a variety of locations, including bull bar, roof rack, gutter grip or mirror mount.

The SCATX is terminated with an Australian standard 5/16" X 26 TPI female ferrule.

Whether it be a permanent mount, or a Mobile One Magnet Mount, the SCATX is certainly an aerial for all applications.

PRODUCT REVIEW

Mobile One SCATX and SC BASE

Russell Bryant checks out something different from Mobile One.

SC BASE SCANNER ANTENNA

Without doubt the discone would be the most popular scanning antenna available on the market today, followed closely by the other scanning aerials such as active and directional.

Whether it be a discone, log periodic or active, one thing puts them out of reach of some hobbyists — price.

They can set you back several hundred dollars without much trouble at all.

Another factor governing the purchase of an external antenna is mounting it.

Something like a discone requires a good deal of room around it, a log periodic even more.

An active of course is the only aerial that doesn't need a lot of room.

Or is it?

For some time now the Mobile One catalogue has contained somewhat of a dark horse.

The SC BASE aerial resembles a two-way base antenna, in that it is about 1.5 metres in length and made of durable white PVC tube with an aluminium mounting section.

Designed to operate with today's super wideband scanners, the SC BASE does the job exceptionally well...much to my surprise.

For those who are restricted in what they can stick on their roofs, either by rules or by space, the SC BASE may be the answer to the problem.

The SC BASE is basically several dipoles cut to operate over a wideband encapsulated in one handy antenna.

A dipole provides not only the resonating element, but also the ground element required for optimum performance.

While designed for indoor use only, a little judicious application of silicon will equip it for installation outdoors.

While on the subject of where to put the SC BASE, it comes standard with 3.5 metres of RG 58 cable, terminated with a damn awful Motorola plug.

When are we going to see these things put to rest? A BNC or PL 259 at least should be fitted.

Even better would be an SO 239 socket so that the end user can determine the length of cable he needs and the location at which it should me mounted.

Notwithstanding the termination and cable length, the SC BASE makes an ideal alternative to the discone.

To run the aerial through its paces, I connected it to an old Bearcat 20/20.

As deaf as a post and with the selectivity of a garden hose, the old Electra Corp dinosaur purred along without so much as a hiccup.

Before you buy a base station scanning aerial, especially if money and space are a problem, check out the SC BASE from Mobile One.

At around $60 it's may be the aerial you are looking for.

Both the SCATX and SC BASE are available from Dick Smith Electronics stores and dealers across the country.

RIG REVIEW

MIDLAND 254 UHF HANDHELD

Is this the rig of tomorrow, or an illegal handheld which will breed a new band of spectrum pirates? David Flynn reports.

We writers write in different ways. When Russell Bryant picks up the pen he works his way carefully, methodically through his article. It's only after polishing off the very last line that he shapes up the introduction and adds the title. With me, it's almost the opposite - the title comes first, has always got to come first. The words which appear big and bold above these words set the tone for the entire article, so before I can even start hammering away on the wp I have to have `The Title'.

Most times, `The Title' comes easy. It's short, catchy, tells you what the article is about and tells me in which direction I should take. This wasn't one of those times, because the Midland 254 isn't an everyday radio.

On one hand, and in the wrong hands, it is a pirate's delight. Perhaps that should even read "anarchist's delight". There's no sense pretending otherwise - it is easy, all too easy, to modify a Midland 254 to cover an exceptionally broad range of UHF channels, programmed directly from the keypad in much the same way as you might program your scanner.

The essential difference is that the scanner is a receive-only device - the Midland 254 is a transceiver, complete with repeater offset and CTCSS tones.

The Midland 254 is a radio which can land you in hot water. It is not type-approved, although on the surface I can see no over-whelming technical problems with gear of this quality. It is great gear, and that it is a quite illegal radio doesn't make it any less great.

In fact it's more than a radio, at least in the singular sense. It's potentially several radios, and almost a do-it-yourself radio. You choose the channels, within certain frequency limits, and in they go. A 254 purchased off the shelf can only be programmed by a Midland dealer.

The dealer has a user-programmable 254 called a "master" into which they key your desired channels, offsets, CTCSS tones and the like, and then use a length of cable to connect the master to your own unit via each rig's microphone socket. The programming data is then dumped via cable to your rig, which copies this data and in effect becomes a "clone" of the master, although it lacks the ability change the frequency, tones or offsets.

The newer Midland 265 can be programmed direct from a PC. Either way, your rig's programming cannot be changed by you as a user, without going back to the dealer and having it re-programmed via the master unit.

BLOOD BROTHER TO THE ICOM IC-U16

Some readers may notice similarities between the Midland 254 and the Icom IC-U16. These rigs are blood brothers, with nearly the exact same innards and exterior.

They both have 16 channels and the unique ability to program each memory channel with a unique channel number. You can forget about the usual 1-16 readout, setting individual channel numbers to read anything from 01 to 99 on the LCD display.

Like the Icom, the 254 also offers a hefty power output of 5 watts, switchable to 0.5 watts low power; and a quite hot receiver, with sensitivity rated at 0.35 microvolt for 12 dB S/N and adjacent channel rejection which understandably outstrips most scanners and UHF CB sets. Yet a key difference is that the 254 doesn't have the phenomenal bandwidth of the Icom. The U16 would happily span from 400 to 500 MHz, whereas there are three models of the Midland 254 to achieve the same spread - the 254A covers 406-430 MHz, the B 450-480 MHz and the C 480-512 MHz. These are the official specs, and in real life each model has far greater latitude - both the 254B and 254C will both do around 450-520 MHz, for instance.

This broadband capability makes the Midland one of today's most versatile handhelds. It can do the work of a scanner, UHF CB and commercial two-way combined, so it's a natural choice for anyone whose individual needs span more than one arbitrary slice of spectrum.

It's also the smart choice for the well-heeled comms fan, although the Midland's "radio non gratis" status and street price in excess of $1000 makes it one of life's less affordable luxuries.

IS THIS THE FUTURE?

And this where we can stop and ask, is this is the shape of rigs to come? Rigs which can be precisely, exactly what you want them to be? I vote that yes, we are going to see more of this in the years ahead. One analogy might be that of word processors. In the early days, say the late 70s or early 80s, large companies swung over their typing pools from typewriters to word processors.

These were simple dedicated machines which ran nothing but word processing software, and it was from such machines that companies like Wang made their fortune. But needs

changed and technology moved ahead.

The introduction of the personal computer or PC made it easier for uses to load and run a variety of programmes, making the PC anything from a wp to a database, a financial organiser or a graphics machine.

The PC changes depending on the software, and the software depends on you. This is how I see such rigs as the Midland fitting into the scheme of things.

There will always be a majority of radios which are locked into a particular band, be it UHF CB or commercial service - mass-produced, boxed and sold as off-the-shelf communication solutions. But more and more we'll see programmable radios - and they'll be programmed to your spec.

WHO MENTIONED LEGALITY?

Another big issue this raises is one of legality. Since the word about the new RadComms Act (1992) got around, this is an area where everyone is treading most gently.

The Midland 254 illustrates the potential difficulties when technology and bureaucracy don't, can't, won't keep pace with one another.

As we stressed at the outset, the Midland 254 is not type-approved. Does this means it is illegal to use?

Well, it depends... If I had a 254 programmed for 439.425 MHz, my local 70cm amateur repeater, my choice of radio wouldn't be an issue. The fact that I have a ham radio ticket, and that in the world of ham radio it is the operator and not the equipment which is licenced, makes the Midland my business and no-one else's. If I chose to use this same radio on UHF CB, it would be illegal. For operating an unauthorised device, the RadComm Act provides for a jail sentence of up to two years. Likewise if this rig was used on my commercial allocations.

I possess the appropriate licences both for UHF CB and commercial operation, but that's beside the point.

We get into a really grey area if I use the Midland to receive VKG.

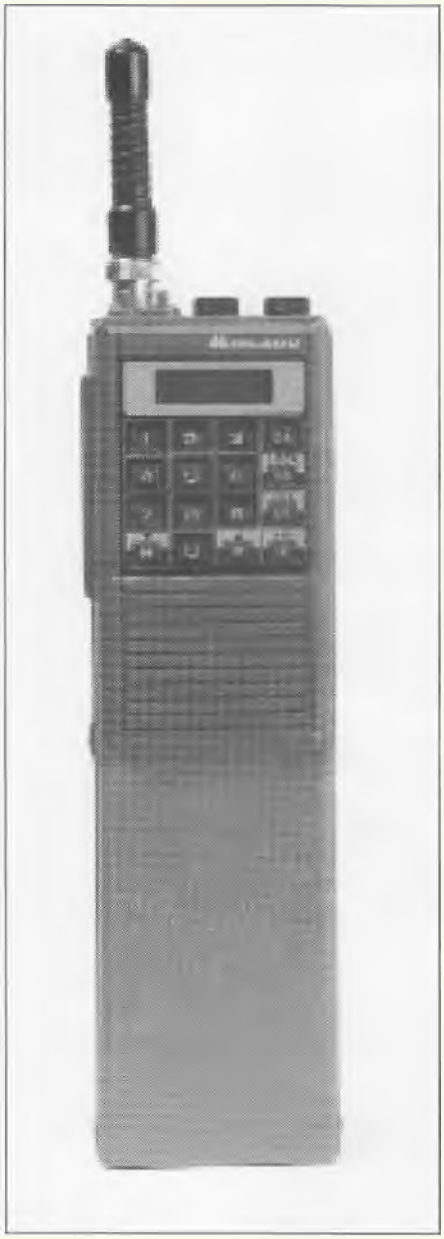
It's no more than a scanner, which traditionally do not require a licence, and if I could demonstrate that the rig's VKG programming included a transmit inhibit then I feel I'd be in the clear.

Then again, the new RadComm Act does give the Govt the right to introduce appropriate receiver licencing, which could make things more than a little hairy for anyone interested in scanning.

MADE TO MEASURE

To give you a first-hand appreciation of the Midland 254's versatility and real-life applications, let's look at how we programmed the 254 which was used during our CBA trial.

The basic set was a range of frequencies to suit my particular needs and



tastes, spanning some 20 MHz in total. Three channels had full transmit capability, while the remainder were receive-only.

This is not something you can change on a "clone" 254 - frequencies, CTCSS tones, duplex settings and tx inhibits are only changeable by re-cloning from the master, or of course if you have a modified 254.

The Midland's nifty channel renumbering feature allowed me to specify that the LCD display read particular channel numbers instead of the usual "1" through "16".

First up was UHF CB channel 21, 476.925 MHz, which I use as a short-range point-to-point simplex channel.

Next came VKG channel 23 (468.400 MHz), for Sydney city police; then VKG special operations channels 26, 38, 41 and 52 (468.475, 468.775, 468.850 and 469.125 MHz, respectively), plus VKG channel 65 (469.825 MHz) which is used for simplex car-to-car work.

After these are my strongest local channels for several major VKG districts - 8 (468.025 MHz), for the Blue Mountains; 17 (468.250) for Blacktown; 24 (468.425) for Parramatta; 25 (468.450) for North Sydney's D district; 28 (468.525) for the Eastern Suburbs; 36 (468.725) for the Chatswood/Eastwood E district; and 63 (469.400) for Wollongong.

This still left room for two commercial frequencies to which I have access - these were designated 90 and 99 (and no, I'm NOT telling you what frequencies they are!) Now looking at that, you can see it's a pretty good slice of spectrum.

The thing about this sort of radio is it's flexibility. Yes, extra channels would be nice, but I'm not complaining.

HOW MANY CHANNELS DO YOU REALLY USE?

How many of the 40 UHF CB channels do you ever really use? How many VKG channels do you really listen to?

My demo Midland was channeled to suit my own habits and needs.

I could have ditched all but the local VKG channels and added several more UHF CB spots had I chosen prior to programming. That said, you can wonder if there will be more channels to come. My spies tell me that the Midland's memory is driven by a computer microchip with a 16 kilobyte (16k) capacity, yet only 1k of this is accessed. So perhaps there's a 99-channel mod on the horizon... Rigs like the Midland 254 open up a Pandora's Box of questions. Should CBA pretend these rigs don't exist, tempt you with their capabilities, or simply raise their profile in order to raise the issue? There are unavoidable legal ones - just how legal is a rig like this, in any of it's guises - as receiver, transceiver, ham radio or commercial two-way?

Unfortunately for us, there are no simple answers. In any other circumstance the Midland 254 would be the best handheld on the market, but given it's lack of type approval and the dire threats of the RadComm Act it's only a matter for the black market - and could lead to heavy penalties for those with a taste for something special.

Scan 1993

By Russell Bryant

All frequencies are FM and all times are local, unless stated otherwise.

SCANNING THE VHF MARITIME BAND

When it comes to conventions or standards little is the same throughout the world. We drive on the left side of the road, the Europeans and Americans on the right. We use PAL as the standard for our television transmissions, yet in many countries NTSC or SECAM is the format. Radio frequencies also come in for some swapping of roles in different countries. Americans use 30 - 50 MHz for principal VHF services, yet in Australia this remains a very under-utilised band with Australia opting for the less atmospherically affected 70 MHz band.

While under normal circumstances we can live with these differences, there are, however, certain services and standards that need to share similar parameters world-wide.

Imagine the chaos if every country used different frequencies for shipping control. Sailing out of Australia, a vessel would need a radio for every country visited or territorial waters sailed through.

Logistically a nightmare.

For that reason maritime two way radio services are pretty well standard throughout the world. So too are the aircraft VHF and UHF bands, for the same reasons.

Located at the lower end of the commercial high band VHF allocations, the marine channels can provide an insight into the world of a captain of a super tanker, or a small local ferry operator. All ships that enter our harbours and ports need the 156 MHz VHF marine channels.

Likewise, the weekend sailor who rarely ventures beyond the harbour entrance also depends on maritime VHF for his safety.

While harbour control and ship movements are the glamorous image of VHF marine, more bread and butter activity can be found throughout the band. Fisherman may co-ordinate their work via marine channels, harbour taxis can be monitored picking up and setting down passengers across the vast expanse of a waterway. Ship chandlers, shipwrights and agents can be heard conducting business over the 156 MHz frequencies.

EMERGENCY ACTION

Every now and then certain frequencies come alive with activity.

Someone is in distress, help is needed. Dotted along the coast, usually close to a fishing village or boating community, are radio stations belonging to the Volunteer Coastal Patrol.

Throughout most of the year, men and women with a love for the sea give up their time - and money - to assist those who may have come to grief while enjoying their boating activities.

Assistance may be in the form of a simple tow, due to a lack of fuel, or it may be a fully fledged rescue because of bad weather. The VHF maritime bands are the life-line between the coast station and the troubled mariner. There is never a telephone around when you need one!

If you have marine radio aboard there is. Under the auspices of the Australian and Overseas Telecommunications Commission, access to the land based telephone is possible on dedicated channels throughout the band. Seaphone services extend almost one hundred kilometres to sea, and cover most of the populated coast line.

AOTC also maintain a continuous SOLAS or a Safety of Life at Sea watch on channel 16, which is the international VHF distress frequency. Regular daily coastal weather and navigation warnings are broadcast on channel 67.

If it floats, or has anything to do with ships, there is a fair chance it can be monitored on the 156 MHz marine channels.

Below is a list of the current Australian channel allocations and the services that may be encountered upon them.

CH	SHORE	SHIP	COMMENTS
01	160.650	156.050	Seaphone Service
02	160.700	156.100	Seaphone Service
03	160.750	156.150	
04	160.800	156.200	Seaphone Service
05	160.850	156.250	Seaphone Service
06	156.300	156.300	Port Operations, Commercial Services, Intership
07	156.350	160.950	Seaphone Service
08	156.400	156.400	Port Operations, Intership, Commercial Service
09	156.450	156.450	Port Operations
10	156.500	156.500	Port Operations Ship to Shore
11	156.550	156.550	Port Operations Ship to Shore
12	156.600	156.600	Port Operations Ship to Shore
13	156.650	156.650	Port Operations
14	156.700	156.700	Port Operations Ship to Shore
15	156.750	156.750	
16	156.800	156.800	Distress & Emergency
17	156.850	156.850	
18	161.500	156.900	
19	161.550	156.950	
20	161.600	157.000	Port Operations Ship to Shore
21	161.650	157.050	
22	161.700	157.100	
23	161.750	157.150	Seaphone Service
24	161.800	157.200	Seaphone Service
25	161.850	157.250	Seaphone Service
26	161.900	157.300	Seaphone Service
27	161.950	157.350	Seaphone Service
28	162.000	157.400	Seaphone Service
60	160.625	156.025	Seaphone Service
61	160.675	156.075	
62	160.725	156.125	Seaphone Service
63	160.775	156.175	Seaphone Service
64	160.825	156.225	
65	160.875	156.275	
66	160.925	156.325	Seaphone Service
67	156.375	156.375	Distress & Emergency, Weather Navigational Warnings, Traffic
68	156.425	156.425	Port Operations Ship to Shore
69	156.475	156.475	Naval Operations
71	156.575	156.575	Fishing Service Ship to Shore & Intership
72	156.625	156.625	Port Operations Intership, Commercial & Non-Commercial Service, Fishing Service
73	156.675	156.675	Non-Commercial Ship to Shore & Intership
74	156.725	156.725	Commercial Service Ship to Shore & Intership
77	156.875	156.875	Fishing Service Ship to Shore
78	161.525	156.925	Commercial Service Ship to Shore
79	161.575	156.975	Port Operations Ship to Shore
80	161.625	157.025	
81	161.675	157.075	
82	161.725	157.125	
83	161.775	157.175	Seaphone Service
84	161.825	157.225	Seaphone Service
85	161.875	157.275	Seaphone Service
86	161.925	157.325	Seaphone Service
87	161.975	157.375	Seaphone Service
88	162.025	157.425	Seaphone Service

Continued over page

ACTIVITY SHOULD BE STARTING SOON

Summer is traditionally the height of boating action, so it is from now, as the weather begins to warm up, that you will find the most activity on the band.

In lieu of programming a few police channels into your scanner, try the 156 MHz marine frequencies as there is something new and exciting happening all the time. For any vessel that journeys beyond the safe waters of a harbour or port, the installation of VHF marine radio is a must.

Remember, however, that the monitoring of a telephone conversation without proper authority is illegal.

Seaphone calls are included within that definition.

MAILBAG

CFA CORRECTIONS

Stefan, Ballarat VIC, writes to correct a mistake in the May/June issue concerning the frequencies used by the CFA in the Ballarat area. The current channels and frequencies are 163.810 CH.9 primary for Ballarat, Maryborough, Kyneton and Daylesford areas. Channel 7 163.330 and channel 12 163.660 are used as "GOTO" channels. A link between the East Burwood HQ and the HF site is 149.675 MHz. HF frequencies 2488 and 4525 kHz are used to broadcast daily weather, fire bans and fire updates during summer months between 0830 and 1700 hours local. Stefan would like to know if there are any Space Shuttle frequencies worth monitoring?

Two frequencies, 259.7 and 296.8 are used by shuttle crews for comms, do not however, expect to hear a lot of action. As the shuttle passes over Australia, some transmission may, and I repeat may, be audible to scanner users here.

However, NASA employs microwaves for their normal day to day communications. Try and try again, is the only advice I can give to anyone attempting to chase spacecraft, including the shuttle.

GOLD COAST CALLING

AB, Southport QLD, checks in with the frequencies and callsigns of the police units in the Southport and Gold Coast areas. Channel 52 469.125 is used throughout the south coast area, controlled through Broad Beach. Channel 53 469.150 is used for car to car communications, while the water police use channel 55 469.200. During the Indy race period activity can be monitored on channel 26 468.475.

Callsigns allocated are Southport 210-212, CIB 510-511. Surfers Paradise 230-232, CIB 530, van 300. Runaway Bay 250-252, CIB 530. Burleigh 235-238, CIB 509. Narang 240-241. Coomera 245-246. Coolangatta 220-224. Traffic Units 900-902. Broadbeach 501-503, Bikes 904-906. Photo 600-601.

ADELAIDE AIR FREQS

MB, Reynella SA, jotted down a few of the frequencies used at the various airports surrounding Adelaide. Adelaide Airport is first up, (all are AM mode), 118.2 approach, 120.5 tower, 121.7 SMC, 120.7 FIS, 125.3 and 127.1 control, 126.4 Lloyd Helicopters, 130.65 Ansett, 131.6 police, 134.5 and 116.4 ATIS. Parafield 118.7 tower, 119.9 SMC, 120.9 ATIS, 124.6 tower, 129.9 AIR BP. Edinburgh 118.3 tower, 128.6 approach, 134.1 GCA, 134.8 RAAF. Miscellaneous frequencies include 122.7 and 122.9 gliders, 124.8 Kadina tower, 126.7 Aldinga airstrip and finally 126.0 Kangaroo Island.

He also asks "is the Tandy discone suitable for FLTSATCOM"? It is a good as any general purpose scanner antenna, beaten only by directional aerials such as beams and log periodic.

FM FEEDERS

AS, Greensborough VIC, would like to know about the frequencies used by radio and television stations to feed their programs from the station to the transmitter site. As he correctly observes, the majority of program feeds from television studios to other stations is via satellite. Radio stations servicing local areas used frequencies in the 900 to 1500 MHz bands to deliver the audio to the main transmitter site then via the more commonly known AM or FM frequencies. Some of the frequencies employed are 952.200, 953.400, 954.600, 955.000, 955.600, 955.800, 956.200, 956.400, 956.600, 957.000, 957.400, 957.800, 958.200, 958.600, 959.000, 959.800, 1434.500, 1442.500, 1458.500, 1468.500, 1470.500, 1499.000, 1511.000, 1517.000. Transmissions on these frequencies rarely, if ever, exceeds 10 watts so don't expect to hear 2MMM in Newcastle via it's feeder.

PRO PROBLEM 1

SH, Hackham West SA, is having trouble with his venerable PRO 2004. It appears that the receiver locks up for no apparent reason, displaying cryptic messages and flashing on and off. He asks if there is a solution to his troubles. Unfortunately, the PRO 2004 was plagued with a number of faults, faults that only appeared in some individual scanners.

From reports that I have read, the basis of all the failures in the 2004 is dry solder joints. Given that there are hundreds of solder connections inside the receiver, it would be a daunting task to trace the offending solder joint. I can only suggest that you contact Tandy in Sydney as they are familiar with the problem and may be able to assist.

PRO PROBLEM 2

JS, Dianella WA, enjoys scanning and uses a PRO 34 to further his interest in radio and electronics, however, occasionally the 34 loses all reception, in a manner similar to that when it runs out of charge. He asks if I have ever heard of this happening before. In a word NO. As with SH in the above letter, it sounds like something is not making connection, especially since you have indicated that connecting an external power supply doesn't solve the problem. I would be breaking out a multimeter and checking the solder connections on the DC board, possibly a regulator has packed it in. Failing that a trip to a technician is in order.

PRO PROBLEM 3

AS, Lindsay Heights NSW, doesn't really have a technical problem with his PRO 2022, more a design one. He would like to install 30 kHz spacing on the cell bands and is seeking a method of doing just that. Regrettably the 2022 uses a PLL which has been set by the factory and cannot be altered.

PRO PROBLEM 4

Mt Paringa SA, would like to increase the frequency range and channel capacity of his PRO 31 handheld. Again, what you see is what you get. The PRO 31 cannot, at least to the best of my knowledge, be altered in any way shape or form.

NEW KID ON THE BLOCK

WP has just moved to Bundaberg QLD, and has written to SCAN seeking frequencies for the area. The police operate a number of frequencies in the Bundaberg area, including 76.490/77.510, 468.475 and 119.100 AM. Bundaberg Fire Brigade uses 73.9365, the Port Authority use 156 MHz marine allocations, as do the many fishing vessels based in the nearby port.

The local taxi company has 488.675 and 488.975, the Bushfire Brigade 168.820, Ambulance 82.980, ambulance link 460.175/450.675, SES 468.600 and finally Shire of Woongarra 70.5375.

Scan 1993

WHICH IS WHICH

AR, Korumburra VIC, is deciding which scanner to buy. The three models selected are the AR 2500, PRO 2006 and PRO 2022. He would like to hook one of these to a D130 discone. First of all I would eliminate the PRO 2022, only because it uses a 10.7 MHz IF.

The AR 2500 is complicated to operate, especially if you have limited experience with scanners. I guess that narrows the odds a little...the 2006 will do the job, is easy to program, has good frequency coverage and high capacity memory.

The D130 discone is one of the best on the market, providing you remove the top element.

PRE-AMPS

DS, Merrimac QLD, has a PRO 2005 and would like to enhance its performance by installing a pre-amp. Pre-amps are good, however, for every action there is an opposite and equal reaction. In other words pre-amps are also bad.

Their virtue comes from the fact they can bring a signal hidden in noise up to acceptable level.

If there is a strong local signal around they can also sometimes amplify it, overloading the front end to produce all manner of unwanted signals from the scanner.

Only select a pre-amp that has variable gain and a by-pass mode so that you don't have to take it off the radio every time you don't want to use it.

FILTERS, SATS & MODS

Andy, Mt Gambier SA, owns a AR 1500 handheld, however, he has discovered that when connected to an aerial with gain, the 1500 overloads. Our reader asks if there are filters available to reject the images.

Firstly, the problem is not images, just an over sensitive receiver. Filters that can notch out these unwanted signals can be obtained...at a price.

By the time you have purchased a filter for every band the 1500 covers, you would have outlaid a significant amount of cash. These is a simple filter that can be made, probably from the bits and pieces in your junk box. You will need a BNC female to BNC male "T" adaptor.

Connect the "T" piece to the receiver ,then the aerial to one of the female end of the "T". Having identified the source of the interference, connect a piece of coaxial cable with one end terminated with a male BNC to the remaining female socket of the "T". The coax should be just over a quarter wave length of the frequency interfering with the scanner, with a sharp pair of side cutters, trim the co-ax until the unwanted signal disappears. This will work on most occasions.

To answer your other enquiry, the satellite transmissions referred to in the previous issue of the magazine are the US Navy Fleet Satellite Communications Systems, or FLTSATCOM for short.

They are most commonly heard on 261.450 - 261.950 MHz FM, however, there has been little activity since the US withdrawal from the Philippines. There are no mods currently available for the PRO 2026, a Uniden manufactured receiver for Tandy.

FREQUENCY CONVERTERS

Al, Windsor NSW, recalls an article on the FRG 9600 when I mentioned that I once owned one with a HF converter attached. The converter in question, (its name escapes me), converted a frequency below 60 MHz to one above.

For example, to listen to 8867 it was necessary to program 68867, exactly 60 MHz above real one.

I obtained the device from Andrews Communication about two to three years ago. I doubt very much if any are available now.

CONTACTS

NAME : John O'Connor
CONTACT : PO Box 670, Werribee, VIC 3030
INTEREST: For RB of Malak NT to contact him at the above address.

NAME : SA Scanner Group
CONTACT : C/O Modbury North Post Office, SA 5092
INTEREST: Persons genuinely interested in a monthly get together.

PROPAGATION

MIS-SERVICE 2

Following on from the piece in the last SCAN column, "ARE YOU BEING SERVED ?", is this piece of misinformation, together with a good example of "shooting yourself in the foot" thinking.

Gareth Powell is the Communications and Computer columnist for the Sydney Morning Herald and his articles usually feature accurate, well researched information relating to all aspects of modern technology toys, pocket computers, CT3 phones and his latest flavour of the month, cellular phones, or more particularly, their lack of security.

In a recent edition of the SMH, he highlighted the fact that analogue cellphones were not a secure form of communications, (try telling us something that we and thousands of others didn't know Mr. Powell), and that by using a scanning radio receiver, conversations could be overheard. To support his story, he states that he contacted a major retailer of scanners to ascertain availability and prices, only to be told that they, (the retailer), had withdrawn them, (scanners), from sale because the "government" had banned them....wrong, wrong, wrong! He went on to question the security of the new digital cellphones, because a device was now available in England that could decode these phones, rendering the digital transmissions open to monitoring.

He then called for the banning of scanners because of their ability to overhear private cellular telephone conversations. If, and it is a might big IF, the authorities paid one ounce, or should it be gram, of notice to Mr Powell and banned scanners, then every newspaper in the country would lose an important news-gathering tool, radio equipment outlets would be in financial trouble, and there would suddenly be a huge group of "pirates" for the Spectrum Management Agency to track down. In short, I think not.

TRUNKING THE LIGHT FANTASTIC

Speaking of journalists, here is another case of sensationalism in reporting. Back in June, Ten News in Melbourne carried a story on the implementation of the state wide trunking radio network to be introduced into Victoria. The male reporter held up a handheld scanner and boldly claimed that the new system will render scanners obsolete, because they can't scan trunking. I hope the Victorian Government are not going to place too much reliance on the security of trunking mobile radios. The Premier of that state should realise that unless digital scrambling is employed, conversations are NOT secure, despite what some uninformed people might want to believe.Over the past few months, much has been written in this and other magazines, about the new Radio Communications Act. In both ARA and CBA this material has been written by a suitably qualified legal practitioner. Before proceeding further, let me add, that I believe the gentleman concerned may well have also been involved in the drafting of the legislation right from word one.

What he wrote about is a legal interpretation of the letter of the law, the black and white of the Act and Regulations. How DoTaC or the newly formed SMA enforce the law is largely up to them.

Given the reaction to the editorial contained in this and other magazine, I can't help but wonder if some of the people out there, allegedly thinking people, let their imagination run away from reality. That they are not seeing Radio Inspectors under the bed and that if they transmit on a frequency without being licenced the next stop is the big house.

The intent of the law is to regulate and control unlicenced transmissions and equipment. It is not about putting people in gaol for having an old AWA 25M sitting in the junk box in the garage, as the writer of one letter to me thought.

Some retailers reacted in a negative fashion when these article first appeared, claiming customers were "put off" and that the report (not the Act itself) "would put them out of business".

They decided that potential customers would be unwilling to part with the funds to purchase a scanner in the mistaken belief that they would soon be banned. However, one smart purveyor of these devices quickly turned the gloom and doom to his advantage, by getting people to buy a scanner, "before they are banned". Wake up people. Basically it boils down to this...little will change. If you are a law abiding user of radio communications, be it a scanner, CB radio, commercial licencee or amateur, you have nothing to worry about. As far as unlicenced users are concerned, that's a different story.

GET IT LICENCED, GET IT LEGAL OR GET RID OF IT!

While on the subject of new laws, the United States Senate recently passed into law Section 302 of the Communications Act, 1934, which simply prohibits the sale and/or manufacture of scanners capable of receiving cellular Telecommunications.

Also included under the new Section are converters which make it easy to receiver 800 MHz transmission when attached to scanners that might not ordinarily do so. But even in America this does not mean that scanners are banned, simply that the authorities are now making it physically illegal to carry out a scanning function which is already illegal anyway.

THE END IS NIGH!

The first release of The Handbook of Australian Railway Frequencies is almost gone for good. The publication has proved extremely popular with scanner and rail fans alike. I have a few dozen left that were from the bottom of the box and have dog ears or dirty covers and, as such, can't be sold at regular prices.

To clear the stocks (my children don't like eating paper) I plan to sell these off at $10 per copy, post paid. A second copy comes in handy, especially if you take it into the field or you missed out when first released.

Just drop me note at the regular column address (not to the registered business address of 410 Church Street, Parramatta 2151) and be sure to include your name and address.

Please make cheques or money orders payable to me.

SCAN
PO BOX 344
SPRINGWOOD
NSW 2777

A stamped self addressed envelope please, if you require a personal reply.

WARM NEWS

Western Australian radio monitors - edited by Peter Philips.

For those readers interested in following the WA country fire action, below is a list of WABFB channels/frequencies.

The WABFB is a co-ordinated fire service provided by both state and local government authorities and manned by mostly volunteer staff. The operation is similar to that of the CFS of SA or the CFA of Victoria. As can be seen by allocations, ceratin channels are utilised in certain areas...and, as always, listen by all means but stay right away from the actual area of the fire.

CH	TX Freq/RX Freq	Shire Area
01	79.405 / 78.445	Boddington, Broomehill, Carnamah, Croorow, Katanning, Three Springs, Tambellup, Toodyay, Wandering, Westonia, Williams.
02	79.435 / 78.475	Beverley, Boyup, Brook, Brookton, Greenough, L. Grace (E), Dalwallinu, Yillinu, Yilgarn.
03	79.465 / 78.505	Cuballing, Kojonup, Pingelly, Trayning, Wickerpin, Wyalkatchem.
04	79.495 / 78.535	Cranbrook (W), Esperance, Harvey, Moora, Northampton, Victoria Plains, Waroona, York.
05	79.555 / 78.595	Cranbrook (E), Dandaragan, Mullewa, Murray, Quairading.
06	79.525 / 78.565	Chapman Valley, Narrogin, Northam, Wagin, Woodanilling.
07	79.585 / 78.625	Cunderdin, Kellerberrin, L. Grace (W), Perenjori, West Arthur.
08	79.570 / 78.610	Collie, Dardanup, Donnybrook-Balingup, Dumbleyung, Dowerin, Goomalling.
09	79.510 / 78.550	Busselton, Capel, Chittering, Corrigin, Denmark, Irwin, Mingenew, Wongan-Ballidu.
10	78.865	Simplex car-car (outside Metro area).
11	79.390 / 78.430	North Metropolitan - Gnowangerup, Narembeen.
12	79.480 / 78.490	Central Metropolitan - Bruce Rock, Jerramungup, Manjimup.
13	79.450 / 78.520	South Metropolitan - Kent, Koorda,
14	79.870 / 78.460	Kondinin, Mukinbudin, Morawa, Plantaganet.
15	79.885 / 78.415	Bridgetown-Greenmount, Kulin, Mt Marshall.
16	79.900 / 78.580	Albany, Augusta-Margaret River, Merredin, Nungarin, Nannup, Ravensthorpe.
17	78.685	Simplex unofficial car-car.
18	76.550	Simplex unofficial car-car.
19	79.420	Simplex unofficial car-car.
20	80.430 / 78.340	Official control centre.
30	78.850	Simplex Mundaring Shire (Swan Region).

Anyone wishing to join a radio monitoring club in WA should contact Peter Philips at WARM News, PO Box 297, Cloverdale, WA 6105.

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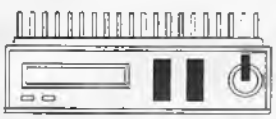

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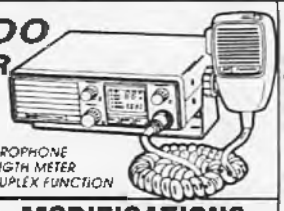

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Plus all the usual features:
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Remote mount control head with 3m cable & Receive Enhancement standard.
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NOTE:–
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I enclose Cheque/Money Order
Please debit my Credit Card VISA ☐ BANKCARD ☐ MASTERCARD ☐ Please send goods COD ☐
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Phone ( ) .....

Signature .....

Expiry Date .....

Name.....

Address .....

.....P/code .....

HF Utilities

By Bob Wilson

AFRTS STILL ON SW

Risto Kotalampi reports on the Internet electronic mail that AFRTS is still on shortwave. While most of their regular shortwave broadcasting left the bands many years ago a few luckily DXers have been able to catch their SSB broadcasts.

The last list to hand from Risto shows the following channels in use. 7571.8, 8975.5, 9242.3, 9334.3, 9929.3, 10537.8, 12651.3, 13651.3, 16041.2, 16541.4 and 19918.4.

All frequencies use LSB and only one or two frequencies are in use at the one time. I've been one of the lucky ones to log 7571.8 here in our afternoons at 0719 till past 0746.

NEW MARITIME BOOK OUT FROM TELSTRA

Telstra (OTC Maritime) has released their new edition of the Radio and Satcom services Guide. This free publication incorporates material on all of the maritime services offered from OTC maritime for VHF, HF and Satellite comms. It also shows the expected HF coverage around Australia together with a map of Australia listing all the VHF channels available at the time of print.

This 12 page publication is very handy for anyone wishing to cover the high seas on shortwave radio. To obtain your copy just ring *Telstra on 009-81-0023* from anywhere in Australia.

MARITIME SAFETY IMPROVEMENTS IN EFFECT

And while on the subject of maritime communications, Telstra advises me that the Australian Maritime Safety Authority (AMSA) has made changes to the monitoring of maritime distress and safety channels around Australia.

Telstra and the AMSA have fitted all coastal radio stations (CRS) with the full range of distress and safety frequencies as required by GMDSS. The channels are 2182, 4125, 6215, 8291, 1290 and 16420. Telstra's five CRS's at Perth, Sydney, Melbourne, Townsville and Darwin will all now monitor these channels rather than just Perth.

UTILITY MAGAZINE AVAILABLE ELECTRONICALLY

A growing trend in DX circles is the use of the electronic Bulletin boards to supply the latest DX information. On the other side of the world the Speedx Club has done just that by releasing an electronic edition of their Utility column.

Speedx has a very high reputation among Ute DXers around the world for its efforts in helping DXers.

I remember their much sought after publications on ute DXing were considered a necessary tool next in importance only to the DXer's radio. If you have access to any shortwave Bulletin boards, have a look for regular copies of Speedx's **"World of Utilities Electronic Edition"**. If you can't find it, drop into *Shortwave Possum (02-651-3055)* and pick it up from there. For the cost of a call you can have the latest Ute loggings and news from one of the world's most experienced DX clubs.

TIME SIGNAL STATIONS

Recent amendments to world time highlight the need for international time signal stations. DXers in Australia are familiar with WWV, WWVH and our own VNG, but what else is out there? Julian Smith reporting in Internet gives a brief insight into CHU, from Ottawa in Canada. Their frequencies are 3300 (3Kw), 7335 (10Kw) and 14670 (3Kw). All antennas are vertical and ID's (station identifiers) are given in English and French. This station operates 24 hours a day and can be QSLd at the following address: *CHU, National Research Council, Ottawa, Ontario, K1A OR6.* From Japan there is signal station JJY. Their operating channels are 2500, 5000, 8000, 10000 and 15000 all with 2Kw. This station is a easy catch here in Australia and while 2500, 5000 and 10000 can be jammed by WWV and WWVH, their 8MHz signal is clear most times. A distinctive Japanese/English announcement can be heard IDing the station too. Their address is *Communications Research Laboratory, 2-1 Nukui-Kitama-chi 4-chome, Koganei-shi Tokyo 184 Japan.*

MAJOR CHANGES IN EFFECT FOR US MILITARY TRAFFIC

Way back in June last year the USAF made several changes to its military operations as part of the restructuring after the end of the cold war. Our friends from the **NZ DX Times** have reported some of the changes that are know to have occurred. *SAC* (Strategic Air Command), *MAC* (Military Airlift Command) and *TAC* (Tactical Airlift Command) are no longer. *SAC* is now called **USSTRATCOM** (United States Strategic Command). **USSTRATCOM** exists to deter aggressors and has some 2900 Air force and Navy staff based at Offut AFB in Nebraska. *MAC* is now called **AMC** (Air Mobility Command) and is responsible for moving the armed forces around as required. 179,000 people and 1606 aircraft form this unit and is made up from the merger of staff from *MAC* and *SAC.* According to this article **AMC** aircraft use the callsign "REACH" followed by two numbers for tankers and five for air missions. However *MAC* callsigns have still be heard. *TAC* is now **ACC** (Air Combat Command) and provides air combat forces to the USAF, in a ready state in the event of trouble. In this unit there are the Fighters and Fighter Bombers. And interesting to note from this is that **ACC** also has **USCENTAF** (US Central Airforces), the air component of US Central Command which was used for Operation Desert Shield.

GCCS (Global Command Control System) is now **GHFS** (Global High Frequency System) and relies on HF comms for large parts of its network. EAM (Emergency Action Messages) originate from Offut and Andrews AFBs, so keep listening for these. Here is the list of frequencies that has been gathered so far. If you find any changes or locate additional ones please let us know.

Europe and the Mediterranean region; 4725, 6738, 8967, 8993, 11176, 13201, 15015 and 17975.
Atlantic; 6738, 8967, 11176, 13201, 15015, 17975.
Caribbean, Sth America and Africa; 6738, 11176, 15015.
Greenland and Arctic; 4725, 6738, 8967, 11176, 13201, 15015, 17975.
Pacific; 17975, 15015, 13201, 11176, 8993, 6738, 4725.
Indian Ocean; 17975, 15015, 11176, 8993, 6738, 4725.
Nth America; 17975, 15015, 13201, 8993, 8967, 6738 and 4725.

As you can see some channels overlap, so they may be the best bet on which to listen out. Also remember that all is not quiet in the Middle East, so military air traffic to this region can come alive at a moments notice if things again flare up.

VIRUS THREAT

While almost everyone has heard about computer viruses, few actually realise the damage they can do. Rod Fewster is, among things, extremely well versed in this aspect of computers so we asked him to share some of his knowledge with our readers...here's Part One of a very interesting, not to say educational, report on the how, why and when of the computer virus problem...Second and final part.

In our last issue (July/August) expert virus-doctor Rod Fewster looed at the problem of computer viruses. This is the second part of that report and it should be must reading for any owner of a computer.

TROJAN HORSE PROGRAMS

A stablemate of the computer virus is the Trojan Horse, commonly referred to simply as a 'Trojan'.

Like viruses, Trojans can be loosely classified as 'File', 'System' and 'Multipartite' but, unlike viruses, Trojans do not self-replicate... they must be deliberately copied to reproduce.

Trojans are programs which are usually released disguised as useful utilities or something which looks interesting enough to make you want to run it, but they have also been discovered concealed inside legitimate programs and games.

Trojans usually strike the instant you run them, and may pull one or more of dozens of dirty tricks.

Some common Trojan activities are to delete every file in a directory or delete specific files by name or type, fill your hard drive to capacity with garbage, slow down your computer's processor, lock your keyboard, or format your hard drive.

Some extremely dangerous Trojans attack a hard drive's boot sector and/or partition table, effectively making all data on the drive inaccessible and sometimes rendering the hard drive itself useless, within a fraction of a second of being run... virtually instantaneous.

There are a couple of anti-virus scanners around which attempt to find Trojans by looking for suspicious code, but these are not all that effective and often trigger false alarms. Most anti-virus scanners don't even bother trying. A sub-species of the Trojan is the 'Bomb'. Bombs are programmed to 'go off' when a specified set of parameters is met... the presence or absence of a particular file, the amount of free disk space, a particular keystroke or sequence of keystrokes, after the computer has been booted up a certain number of times, or just about any 'trigger' the programmer wishes to incorporate. Some bombs (called 'Time Bombs' for obvious reasons) are preset to activate themselves at a specified time or date. Some of these are extremely vicious, using a similar pattern of destruction to that of 'first strike/second strike ' multipartite viruses.

ANSI BOMBS

Basically a Trojan, the 'ANSI Bomb' can range from humorous to very nasty indeed. There are harmless 'joke' ANSI Bombs which will re-map your keyboard so that everything you type comes out gibberish, or make 'smiley faces' (the CTRL-A character) bounce all around the screen when you type 'DIR'.

There are also malicious ANSI Bombs which re-map your keyboard so that the [Enter] key sends the command 'ECHO Y| DEL *.*' to your hard drive.

The sneakiest ANSI Bombs of all are hidden inside compressed archives. These don't even have to be 'run' in the true sense. They will delete files, trash your boot sector or partition table, or format your hard drive as you unpack the archive.

WHICH IS THE WORST VIRUS?

The answer to this question depends on the interpretation of 'worst'. Some anti-virus programmers interpret 'worst' as meaning 'hardest-to-detect' while others think worst' equates with 'most effective', either in the ability to spread or to the degree of damage caused.

Anyone who has been using a computer for a while will have seen the message 'Invalid media or Track Ø bad – disk unusable' when trying to format a dud floppy. Imagine how you'd feel if the same type of message appeared on your screen when you tried to format your hard drive!

In my opinion, the most dangerous viruses (and Trojans) are those which attack and destroy a hard drive's boot sector.

Some 'simple' boot sector trashers merely move the original boot sector to another location. Others overwrite it with rubbish. In cases like this boot sector repair is often trivial and all files can usually be retrieved intact, but some of the more dangerous system (and multipartite) viruses can cost you hard-earned cash by trashing the boot sector so thoroughly that the drive becomes totally useless.

Some anti-virus software packages 'capture' a hard drive's vital partition table and boot sector and let you store them on a floppy disk, the idea being that if they're damaged they can be replaced, thus restoring the drive to its original condition without loss of data.

That's all well and good in theory, but this type of 'protection' is useful only in cases where the boot sector can be overwritten. If the boot sector is 'BAD' (ie: corrupted to a degree that it cannot be overwritten) then you'll need the services of a data recovery laboratory to retrieve your lost files, and after a serious multipartite attack the retrieved files would be worse than useless anyway as they would still be infected by the very virus which caused the damage in the first place.

To restore a hard drive with a 'BAD' boot sector to useable condition you must first low-level format it, and this is where it can become expensive. Most modern computers are equipped with IDE drives, and IDE drives can be formatted at boot sector level only by the manufacturer... a costly and time-consuming exercise, as the drive usually has to be shipped overseas.

WHERE DO COMPUTER VIRUSES COME FROM?

Computer viruses must be written just like any other program... they don't simply appear by magic or create themselves out of thin air.

Most viruses are written with deliberate malice aforethought. Some are believed to have been written for research purposes and released accidentally.

Some are the product of 'free speech'... Ralph Burger wrote one of the first books on the virus threat and, very thoughtfully, actually included source code to create a couple of viruses. Numerous strains based on Burger's code have appeared all over the world, and other publications which help 'do-it-yourself' virus writers have appeared since.

It's not difficult to write a virus. Any competent assembler programmer could write one. Fortunately, most don't...

However, there are several do-it-yourself kits available to would-be computer vandals who lack the programming skills to write their own viruses from scratch. Programs like the Virus Construction Set and the Phalcon/Skism MPC (Mass-Produced Code) Generator can be downloaded from 'underground' bulletin boards, and many of these bulletin boards also have hundreds of live viruses available for download... with no questions asked.

The current Big Gun of do-it-yourself virus kits is the Virus Construction Laboratory from NuKE, arguably the Top Gun of the virus-writing world. The VCL is a class act with features like pull-down menus, mouse support, a GUI, and context-sensitive help screens. The author, 'Nowhere Man', obviously has the skills to get a job as a programmer with just about any software publisher in the world if he turned his mind to it. One could be forgiven for wondering why a guy with all that talent spends his time writing viruses...

To make life even easier for budding virus writers, the Dark Avenger Mutation Engine and similar programs (which can be used to transform common easily-detected viruses into hard-to-detect polymorphic viruses with hundreds of thousands of variations) are also available from underground bulletin boards. ('Dark Avenger' is the alias used by a Bulgarian virus writer of some repute.)

Statistically, most new viruses seem to appear during school and university vacations, which seems to indicate that the majority of virus writers may be students.

WHAT CAN YOU DO TO PROTECT YOURSELF?

There are several steps you can take to minimise the threat of virus damage. First... make regular backups of your important data files! You may be able to replace the programs on your hard drive from the original floppies, but if you lose a month's worth of data files there's no cheap way to get them back.

To protect your computer against ANSI Bombs, replace DOS's ANSI.SYS with ANSI.COM... a tiny freebie by Australian programmer David Nugent which is available for download (as DNANSI.ARJ (or ZIP/LZH/etc) from most good bulletin boards.

The simplest (but one of the most important) steps is to routinely scan every new program — whether on a floppy disk or downloaded by modem from a bulletin board — for possible virus infection before you run it or install it on your hard drive.

While it is unlikely that shrink-wrapped commercial software will contain a virus, this has happened in the past.

It pays to check EVERYTHING!

ANTI-VIRUS SOFTWARE

A good anti-virus software package which will scan hard and floppy disks and automatically monitor the hard disk and memory for signs of virus activity is essential.

In some cases anti-virus software can remove a known virus without damaging the host program. The key word here is 'known'... the number of 'unknown' viruses increases virtually every week. (Personally, I'm a firm believer in the 'delete the infected file and replace it with a clean copy' routine.)

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VIRUS THREAT

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There are literally dozens of shareware and commercial anti-virus software packages available. It pays to check out their functions and abilities carefully.

There's one important question you should ask before shelling out your hard- earned dollars... and it's not 'How many viruses will it detect?' There's not much point in buying anti-virus software which will detect five million antique viruses if it can't detect this month's 'Top Ten'. 'How recent?' is far more important than 'How many?'

You also need to know how often the software is updated to include the latest viruses, as these are usually the viruses which are most common at any given time. This is very important! At the rate new viruses are appearing, the anti-virus package which detects every known virus today is a waste of money if it's only upgraded every couple of months. Outdated anti-virus software is worse than no anti-virus software at all... it lures you into a false sense of security. If the anti-virus product you're considering doesn't guarantee you first-rate backup and fast upgrades... forget it!

Also, remember that you're in Australia. The virus scene here is not the same as in Europe or America. We've had viruses running wild here for months which most European and American anti-virus software still can't find... and that includes some of the expensive commercial packages!

To my knowledge there has never been a virus-infected release of a commercial anti-virus software package, although infected 'pirate' versions appear from time to time. It pays to buy originals. The free copy you get from your mate, pinch from school or university, or download from a 'pirate' bulletin board may make your eyes water.

Shareware anti-virus software is different story altogether. It is a favorite target of virus writers and computer vandals who often deliberately infect and distribute the 'latest versions' within hours of their release.

For years, bulletin boards have been a fast and reliable source of the latest shareware anti-virus products. These were sent around the world enclosed in 'secure' archives to guarantee their integrity, but the appearance of an underground program known as 'The AV Generator' has virtually put an end to secure shareware distribution.

This nasty little piece of work allows quick and easy duplication of the 'security envelopes' used by most shareware authors to guarantee that their programs have not been modified. Until this program appeared on the scene, only a very skilled programmer would have been able to create a passable fake security envelope. Now virtually anyone can create a bogus 'secure' archive which looks like the genuine article. These days, thanks to the AV Generator , what you see in a shareware archive isn't necessarily what you get... and what you get may be deadly!

Recently the AV Generator was used to create virus-infected 'secure' archives of one of the world's best-known shareware anti-virus scanners. These bogus archives first appeared on bulletin boards in Sydney and, because it was ostensibly the 'latest version', they spread rapidly to all parts of Australia. The scanner was infected with Dudley... a vicious polymorphic fast-spreader which used the scanner to infect just about every file it checked. The scanner was unable to detect Dudley either in itself or in the files it infected, and the virus spread across the country like wildfire. There appears little doubt that this bogus archive helped Dudley become 'Australia's Most Infamous Virus'.

Today's virus writers incorporate increasingly elaborate and sophisticated anti-detection routines into their creations to conceal them from anti-virus scanners.

Better anti-virus software packages use a high-tech multi-layered approach to detect and protect against attack by 'new' and 'unknown' viruses... TSR (Terminate and Stay Resident) 'watchdogs' which keep a lookout for file and/or system virus activity, reliable signature scanning for known viruses, and some packages use state-of-the-art integrity checking.

My personal favorite, Leprechaun Software's VirusBuster, uses all of the above techniques, and also uses a unique method to examine files, more or less turning the virus writers' own weapons against them. It ignores the DOS calls used by stealth and 'on-the-fly disinfector' viruses to hide themselves and, basically 'sneaks in the back door' to take these viruses by surprise. (This technique is so effective that many 'less intelligent' anti-virus software packages actually 'detect' VirusBuster as a stealth virus!)

VirusBuster has a couple of other things going for it which I think are very important: It's an Australian product, and the Leprechaun programmers have their fingers firmly on the pulse of the Australian virus scene. There have been 22 VirusBuster updates so far this year alone... compare that to most of the major American and European anti-virus software packages, which have released only two or three updates during the same period, while some haven't released any at all!

A few commercial anti-virus houses recently started incorporating 'integrity checking' routines into their packages. Integrity checking, provided that files are 'clean' in the first place is, without a doubt, the most effective method of detecting sneak attacks by new and undetectable viruses. Files are compared against 'snapshots' of vital file information which are stored in a database, and any changes are easily detected.

It's interesting to note that integrity checking has been used by VirusBuster since Leprechaun Software pioneered the concept four or five years ago, and at that time many so-called 'anti-virus experts' branded it as a sales gimmick.

HARDWARE/SOFTWARE PROTECTION

Some of the latest computer motherboards claim to have 'anti-virus' ability. They do offer a slight degree of protection, but I have yet to find one which justifies its 'anti-virus' claim. (I have the built-in anti-virus protection switched off in all three of my computers...)

Another approach to anti-virus protection uses a combination of hardware and software. This usually consists of a card which plugs into an unused slot on the main board used in conjunction with its own anti-virus software package.

Some of these hardware cards use 'watchdog' routines to monitor hard disk activity, but they are often so intrusive into everyday computer operations that they wind up in the bottom drawer after only a few days of use. Most use

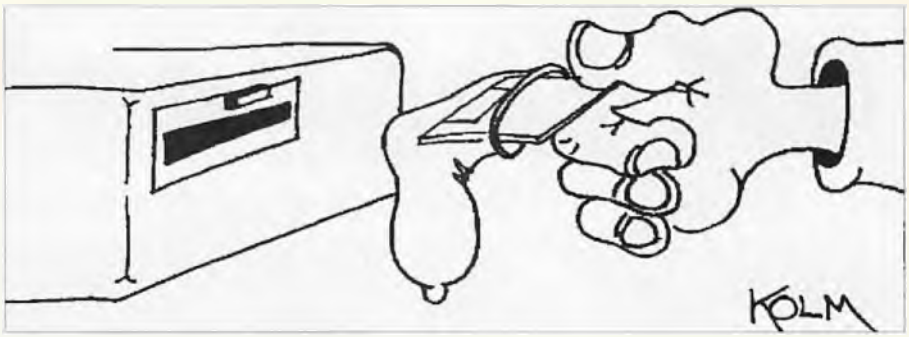
EPROMs which require continual (and expensive) updating with new virus signatures, and are probably best described as 'software on a card'.

To decide the issue, viruses and Trojans which attack the hard drive at port level can easily bypass these cards, and 'anti-virus' motherboards.

THE ULTIMATE PROTECTION!

There is one device available which provides 100 per cent foolproof and guaranteed protection of an IDE drive's vital boot sector and partition table, and which will fully virus-proof all files in a user-selectable protected area on a hard drive. Unlike 'software on a card' hardware protection systems, the Australian designed and manufactured C:CURE is installed between the hard drive and its controller and intercepts all commands and instructions to the drive at port level. No virus or Trojan — past, present, or future — can penetrate C:CURE's protection, and C:CURE never needs upgrading.

The manufacturers were so confident in their product that they were offering a full-house i486 system worth $6,000 plus $10,000 in cash to anyone who could beat C:CURE's security at last year's Brisbane Computer Expo. No-one did...



C:CURE is available either as a stand-alone unit or as an integrated package with the latest version of VirusBuster. I've personally tested just about every major shareware and commercial anti-virus package available, and I have to conclude that, in my opinion, the C:CURE/VirusBuster combination provides the best anti-virus protection presently available anywhere in the world!

Further information on C:CURE and VirusBuster is available from Australian Tech Support. Phone (07) 881 2087 or send a fax to (07) 881 2832.

THE BOTTOM LINE.

The worst possible attitude you can have towards the computer virus threat is: "It will never happen to me!"

Viruses and Trojans are proliferating at an alarming rate. As fast as new varieties or mutations of older ones are detected, more appear , and some virus experts predict that over two thousand new viruses will strike the computer community in 1993 alone.

If you use a computer, whether for work or play, the odds are that it will be attacked by a virus. You can protect your computer against virus attack. How well you protect it is up to you.

DX Logbook

By Rob Williams

Here we are again with another action packed column full of DX tips.
It seems that international shortwave broadcasters continue to be under financial pressure from their Governments forcing cuts in foreign language output and cuts in operations to stay within budget.
So far most have been able to make minor changes to keep their output up, but how long can it go on till we see an international broadcaster close down completely.
Unfortunately there are no votes in SW broadcasting.
As always all times are in UTC (same as GMT) and unless indicated all frequencies are in kHz and shortwave broadcasts are in AM mode.
So lets get going.

BROADCAST UPDATE FOR US SW STATIONS

Back in my last column I talked about the moves to rationalise US Government broadcasts.

Well, in June President Clinton released a press statement which will see changes to the international broadcast scene.

A new independent board of Governors will supervise the running of RFE, RL and VOA.

It's aims are to promote US news and views as well as providing balanced reporting of world events into areas where political freedom is unavailable.

A new Asian Democracy Radio is to be created and aimed at areas in Asia, while Radio and TV Marti which broadcast to Cuba will continue with its current mandate.

The amalgamation of these broadcasting services will offer financial savings in the range of US$250 million as well as concentrate the future direction of US international broadcasting. Some foreign languages are also expected to be cut from both RFE/RL and VOA, however, details of these cuts are unknown.

The board will also move into areas of new technology as demand warrants it.

NEW ADDRESS FOR DW

Deutsche Welle has a new address effective from 1 July. Their address is now D-50588 Cologne, Germany. This special 5 digit code is for their exclusive use.

CALLING ALL DXERS

David Martin from OZDX fame reports an unidentified Bolivian station on 5945.8 from around 1105 to fade-out around 1240. There are regular Spanish ID's at approximately 1130 and the station carries native sounding stringed instruments and singing. David has heard an ID something like Radio "Sah-oontah" but is also sure it isn't Radio Santa Ana de Yacuma.

If you do hear this station and can ID it why not drop him a note either through the OZ SW electronic mail forum, direct to OZDX or to me.

DX DAILY ENDS

DX Dynamo Glen Hauser has curtailed his daily DX program due to lack of financial support and what appears to be also a lack of support from DX interests in the States which seems to happen during their summer months.

Australian DXers have been able to catch the program in our afternoons on most weekdays, but it seemed to be aimed at US DXers more than the international audience that Glen has previously catered for.

DX Daily may return during their winter period but in the meantime he is thinking about launching a DX weekly program.

This will be separate from his weekly World Of Radio that could be aired mid-week.

ENGLISH FROM RADIO PAKISTAN

Radio Pakistan has the following sked effective till 4/9.

English slow speed news at 0230 to 0245 on 9515, 15190, 17705, 17725, 21730 then at 1100-1115 on 17900 and 21520. English is aired at 1600-1615 on 11570, 13590, 15515, 15555, 15675 and 17725.

Another broadcast goes to air between 1700 to 1800 on 11570 and 15550.

POLISH NEWS AND VIEWS

Marc Visser's reports in the international shortwave echo the following English language sked for Polish Radio.

1200 to 1255 on 6135, 7145, 9525 and 11815.
1500 to 1555 on 7285, 9525, 11840.
1700 to 1755 on 7270, 9525.
1930 to 2025 on 6135, 7270, 7285 and 9525.

While all these broadcasts are targeted towards Europe they are worth trying in our early morning period for possible reception.

SHORTWAVE TROUBLES AT SHEPPARTON

Jerome Van Der Linden reports that Radio Australia is having a minor problem with the new antenna switching matrix at Shepparton. It seems that the computer which controls the switch between transmitters and antennas only responds to one switching request at a time. As each request can take up to two minutes each there can be an unwanted delay in starting broadcasts if several changes are required.

RADIO FRANCE INTERNATIONAL AVAILABLE IN ENGLISH

Here is part of the Radio France International Sked for the Z93 period. English is as follows.

1230 to 1255 to Europe on 9805, 11670, 15155 and 15195.

To Nth America on 15365, 17575 (till 4/9) and 21465 (from 5/9 to 25/9).

1400-1455 to the Middle East and Asia on 11910 (via China), 17650 and 17695.

1600-1655 to Europe on 6175.

To Africa and the Middle East on 11705, 12015 (via France and Moyabi), 15530, 17620, 17795, 17850.

Extra news that has come to hand are plans by RFI to build new shortwave stations at Djibouti and Thailand.

There are also plans to increase English output from two and a half hours per day to six to eight hours per day by 1995.

They see a need to strengthen their signal penetration into Africa as well as increase their coverage of South East Asia, Australia and New Zealand.

CSM SEASONAL CHANGES IN EFFECT

The World Service from Christian Science Monitors has made some minor changes to their broadcasts.

WSHB will be using 9840 for their broadcast from 0800 to 1000 to Australia and surrounding areas.

continued over page...

As well, KHBI will be on 9460 between 1800 and 2000 to Australia and NZ and then they move to 13840 between 2000 and 2200 for a broadcast to Australia.

UAE AVAILABLE IN ENGLISH

UAE has English on the following sked till 4/9. To Nth America between 2200-0000 on 15305 and 15315. To Nth West America at the same times on 11885. Thanks to Don More reporting this sked on Internet.

NEW SHORTWAVE SITE ON-LINE FROM MOROCCO

News from Dan Ferguson of VOA is that their new site at Morocco is on the air with limited broadcasting.

Two transmitters are in use between 1600 and 2200.

The first is on 15410 with English to Africa while the other is on 17785 with English between 1600 and 1730 then into Portuguese from 1730 to 1830 and French from 1830 to 2200 except on Mondays to Fridays between 2030 and 2100 when they air Hausa. This new facility is built on mud flats and will have eight new transmitters on the air before the end of the year. As Morocco comes online Grenville will discontinue services towards Africa.

IRAQ ON SW

Tom Sundstrom reports on the Fido International SW echo hearing Radio Iraq International between 2040 and 2110 on 11810 and 13680, however, 13680 was heavily jammed.

BUDGET CUTS THREATEN SWEDEN INTERNATIONAL

The Swedish Parliament has cut the operating budget of Radio Sweden International by a third. This has forced Radio Seden management to drop broadcasts in Spanish and French from 3rd July last. Also most Swedish programs on SW will now be relays from their domestic service. What has shocked officials inside Sweden is that they will maintain broadcasts in minority languages of Estonian and Latvian at the expense of the more common Spanish and French. Considering that Sweden plays an important part in European politics and economics there has been suggestions that it is a political move.

HEAR CATHOLIC NEWS DIRECT FROM THE VATICAN

Radio Vatican has the following English sked until 30/9.

To the Americas daily on 9505 and 11620 from 0250 to 0315.

To Africa 0315 to 0345 on 11625, 0500 to 0530 on 11625, 15099, 17730, 0630 to 0645 on 11625, 15099 and 17730, 1600 to 1620 on 15099 and 17730, 1730 to 1800 on 11625, 15099 and 17730, 2000 to 2030 on 9845, 11625 and 15099.

To Asia, Australia and New Zealand between 1345 to 1415 on 15099, 17528, 1600 to 1620 on 15099 and 17730 and finally 2245 to 2315 on 9600, 11830 and 15099.

VIETNAM STILL HEARD ON SHORTWAVE

English broadcasts from The Voice Of Vietnam are aired as follows.

1000-1030 on 15010, 12020, 9840.
1100-1130 on 9732, 7285, 1230-1300 on 15010,12020, 9840.
1330-1400 on 15010, 12020, 9840.
1600-1630 on 15010, 12020, 9840.
1800-1830 on 15010, 12020, 9840.
1900-1930 on 15010, 12020, 9840.
2030-2100 on 15010, 12020, 9840.
2330-0000 on 15010, 12020, 9840.

Their address for mail is *Voice of Vietnam, 58 Quan Su Street, Hanoi, Vietnam*. Thanks to Andreas Volk from Germany reporting in Internet for that sked.

HAWAII JOINS THE WORLD OF SHORTWAVE

While some countries are leaving shortwave it's nice to know that there is a new one joining. Religious broadcaster WHRI is building a sender on the Big Island in Hawaii, eight miles from the southern most tip of the USA.

Due on air late September/October, the transmitter was shipped during June. Programming will be feed via satellite

DX TIDBITS

**** WWCR has managed to return to the airways with a temporary setup following the recent devastating fire.***

**** By the time you read this TWR Bonaire will have left shortwave after starting a service back in the mid sixties. Medium wave will continue and a new satellite service, in conjunction with HCJB will feed programmes to Latin broadcasting stations for airing over local transmitters.***

**** The Danish Shortwave Club has released their annual Tropical Band Survey (TBS) listing active broadcasters between 2000 and 5900 kHz.***

All stations are in frequency order and the publication contains a wealth of information for those who chase those small broadcasters. The TBS is available for nine IRC's from DSWCIDK-2670 Greve, Denmark.

**** The Voice Of Free China has signed a contract with Deutsche Welle to use their transmitters in Germany for broadcasts to Europe. At this stage no starting date has been announced. Once the sked becomes available you'll see it here in CBA. Back in June there was a scare that VOFC was to close after funding for the station was under threat, however, the rumor was short-lived. The Government has decided that there will be no financial increase over the last financial year so forcing VOFC to make cuts to their operations.***

Their current sked till 26/9 for English is as follows.

0200 to 0300 and repeated again at 0300 to 0400 to Japan and Korea on 15345 and to Australia and New Zealand on 9765. 0200 to 0300 to SEA on 11860 and to Central America on 11740. Between 2200 and 2300 via WYFR on 21720 to Europe. 0300 to 0400 on 11740 to East Indonesia and the Philippines.

**** Marconi Inc. has won a VOA contract to build a US$35 million shortwave base for facilities at Sri-Lanka. The site will initially have three transmitters and is expected on-air late 1994.***

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AH-7000 discone 25 to 1300MHz.....$229
IC-R100 100KHz to 1856MHz.....$925
IC-R7100 25MHz to 2000MHz $2100
IC-R72A 100KHz to 30MHz..... $1599
IC-40G UHF handheld c/w BP7 orCM96 battery pack.....$649

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DX Logbook

continued from page 23

from their studios at Indiana. They expect to reach Australia, China and S.E.A. from this new site.

ALBANIA - A COMMUNIST FRONTIER

Radio Tirana, from Albania, has English on the following sked. 0130 to 0200 and 0230 to 0300 to Nth America on 9580 and 11840. 1430 to 1500 on 7155 and 976 0(towards Europe). The best chance for us to catch it is from 2130 to 2200 on 9760 and 11825.

ANNIVERSARY TIME FOR AUSTRALIAN DX CLUB

June last saw the 20th anniversary of the Southern Cross DX club. A special edition of DX Post brought back some of the past achievements and milestones that has made the club a respected source of DX info for hobbyists around the world.

As well as all the regular loggings and notes, the special features from past editions of the magazine were most interesting. The club was formed after a meeting of 12 local DXers back on 22 June, 1973, with the first magazine being printed on a spirit duplicator and running to five single sided pages.

Today the magazine runs to between 30 and 40 pages and is posted to some 300 destinations around the world. Happy Birthday Southern Cross, a job well done.

DXers wishing to learn more about the Southern Cross can write to their central address at *GPO Box 1487, Adelaide, SA 5001.* Mention CBA when you write and don't forget to include a few stamps to cover postage.

LATEST OZ DX AVAILABLE ON-LINE

As mentioned in a previous column OZ DX is now available on-line electronically.

If your local SW BBS doesn't have a copy then drop into Shortwave Possum BBS (02-651-3055) and pick it up. At the time of writing edition no. 82 hit the streets with some very useful DX loggings. OZ DX editor David Martin has ten pages packed full of the latest catches from DXers in Australia and overseas. Here is some of that latest news.

* There is some reshuffling of the SW frequencies from India. The changes are;

3205 is now used by Itanager (Lucnow moved to 3245).
3268 Kohima, will be swapped with Srinagar.
3305 to be shared between Bhopal and Imphal.
3345 continues to be shared between Jammu and Jaipur.
4760 Imphal will replace Port Blair.
4775 Guwahati will be moved to Gangtok.
4940 unidentified station is Guwahati A (moves to 3375 at 1500).
4950 will be moved from Jammu to Shimla and Port Blair.
4990 to be shared between Bhopal and Guwahati.
5010 a new frequency for Thiru'puram.
5050 shared between Aizawl and Srinagar.

QSL ROUND-UP

You might well be interested in a few QSLs which have arrived recently to my PO box.

* **A QSL** from the pirate broadcaster Kiwi Radio for one of their regular Sunday evenings broadcasts. See my notes in last month's column for sked.

* **A nice QSL card** signed by John Vodik for the special VOA SSB stereo broadcast. My card was numbered number 44 and arrived within one month.

* **Also from VOA** came my Botswana QSL card celebrating the opening of this new shortwave facility...another country verified for me. I must check to see how many countries I have now had verified. Also included was a small book with the American Constitution in it.

* **And some loggings** to wet your appetite - 3397.4 Radio International del Peru, from San Pablo in Peru was heard at 1043 with local songs interspersed with station Id's.

* **6105.5 Radio Panamericana** La Paz from Bolivia at 1045 with news program.

***TWR via HCJB**. Portuguese program with light music and station ID. The broadcast was logged at 0752 and just before 0800 HCJB ID'd and said that this was a test broadcast in co-operation with TWR.

* **The latest edition** also lists updated news on the MW and FM scene in Indonesia, which can often be hard to obtain.

If you wish to contact me with DX tips or a list of your recent QSLs, or just have a question about the hobby, write to me at ;

PO Box 108,
Minto,
NSW 2566.

If you would like a direct reply please include a SSAE.

SANGEAN ATS-606

"THE TAKE ANYWHERE SW RECEIVER"

by Rob Williams

Sangean has just released what I think is their best compact shortwave radio to date. The new unit, model-name the ATS-606, is an improvement in many areas over previous models and is a sign that Sangean intends to be a force in the pocket-size shortwave radio market.

Designed with the traveller in mind, its compact size together with its surprisingly large number of features, makes this radio a must if you're considering the purchase of a small, portable radio.

Tuning starts way down on Longwave frequencies at 153 kHz thru to 513 kHz, then ranges from Mediumwave up to the extended USA limit of 1710 kHz.

A small switch in the battery compartment allows you to reset the tuning range on Mediumwave to either nine or 10 kHz spacing to suit the US or Canada.

Shortwave is continuous from 1715 to 29995 kHz with the FM band starting at 87.5 and going up to 108 MHz.

Simplicity is the name of the game in respect to the way the controls are laid out which, together with keys performing dual functions, makes the basic operation easy, even before reading the manual. Many portable SW radios that have dual function keys require you to retreat to the manual before you even get the thing turned on.

Phase-lock-loop technology, coupled with a large LCD display, gives an accurate frequency read out and a feature of the system is that the display can be toggled between the frequency and time.

The two clocks can display two different time zones and, in conjunction with the FM/real/dual switch, will display your local time on one and UTC (or GMT) on the other.

To assist with night-time DXing, a small light in the display can be activated for about 20 seconds by a switch on the top of the radio.

The keylock doesn't work with the light switched on.

Stereo tuning, keyboard locking, frequency band, standby and alarm all have symbols which share the display window.

This pocket beauty won't inconvenience anyone worried about excess luggage as it measures a tiny 148(L) x 89(h) x 30(w) mm and weighs in at just 300 grams without batteries.

There are 18 memory locations available for the SW bands and nine for each of the other three bands which provides you with more than ample memories for all your radio listening.

Tuning, like many radios of this size today, can be done in two ways...either through direct keyboard entry or via the large up and down keys next to the keyboard. The latter method moves the frequency in either direction by the standard channel spacing on each band.

The radio can also scan up and down from a selected frequency on any band by using these keys.

In shortwave mode you can scan from any point, however, once it shifts into a recognised SW band the scan locks into scanning within that band only.

For example, say you scan from just below the 49 metre band up.

Once it reaches 6200 kHz, the start of the band, the radio beeps and it displays the 49 metre band symbol and continues scanning up, to the limit of the band. It then switches back to the bottom of the band and starts scanning up again.

Power is provided by either three AA batteries for mobile operation or an optional AC adaptor.

Like most portable gear, the internal batteries are disconnected when connected to the AC adaptor

After the radio is turned off, the memory settings act as a meter (for about seven seconds) to show remaining battery strength. If the reading falls below two the batteries should be replaced.

If, the radio is turned on, an "E" is displayed or the battery symbol flashes, it's time to replace the batteries.

Sangean should be congratulated for this innovative idea.

With the radio turned off, the time is continually displayed and, by operating the FM band switch, the other time zone is displayed for a few seconds before switching back to the default time.

The radio makes an ideal bed-side alarm clock too, which allows you to fall asleep listening to your favorite station and wake up to either music or a beep.

The "standby" feature can be set to turn the radio off in 15 minute segments up to one hour after activation if not manually turned off.

A great idea for the alarm clock function provided by Sangean is a system called "Humane Waking System" (HWS).

When the wake-up time is reached a repeating beep tone using the inbuilt speaker increases in volume every 15 seconds for one minute then stops for one minute before beginning the cycle again.

This cycle keeps up for 30 minutes.

If you don't wake up after that there's a good chance that you're dead as no one could sleep through it.

Additional feature to assist your listening include an attenuator switch on the side of the radio which reduces the signal strength on strong AM stations on LW/MW or SW.

The same switch is used in FM mode to switch between mono and stereo when using the set of stereo earphones that are included with the radio.

There is also a small switch which can lock all controls in either the on or off

Read the review - and then try your skill with this issue's crossword.

You just might soon be the lucky owner of a Sangean ATS-606 courtesy of Dick Smith Electronics.

The radio may be small but the performance is excellent

state. This can prevent the radio from being accidentally bumped "on" when packed in your bag or, when listening to the radio, from being accidentally moved to another band or frequency.

The seven segment telescopic antenna works well on FM but isn't as successful on SW.

An external antenna socket on the side of the radio enables you to use a much better antenna arrangement for optimum signal.

While not included with the radio, Dick Smith sells an optional Sangean wind-up long-wire antenna (Sangean ANT-60 cat. no. D-4400) for $19.95 which improves SW reception.

A portable antenna is great for travelling as it takes up so little space in the travel bag and can be unwound in a hotel room or dropped out the window to dramatically improve reception.

A hinged stand on the back of the radio enables it to rest at 45 degrees for easy operation.

It would certainly seem that Sangean designers have looked at their earlier models, talked to users, and done a lot of market research, the results of which are all incorporated into this latest unit.

For such a compact radio, it's packed with features that simply are not found on most radios of this size.

If there was space available inside the radio case I would suggest that a BFO for SSB tuning be included, but, there simple isn't any space left...maybe next time Mr Sangean.

With the radio in the carry case, the telescopic antenna can push past the sides of the case to be extended, however, strange to report there is no access to the earphone socket...something else to consider Mr Sangean.

TUNING THE BANDS

Longwave tuning is done in nine kHz steps while MW is either nine or 10 kHz, SW is 5 kHz and FM is 50 kHz.

There is no provision to tune in steps smaller than this, nor is there a fine tuning control.

On LW, MW and FM this is not a problem as all stations are on predefined channels, however, on shortwave some smaller stations are known to drift off their regular frequency which, with no fine-tuning function available, makes for some difficulty.

If you enter any frequency that doesn't end in zero or five it gets rounded down to the nearest frequency which ends in zero or five. If you intend to listen to, say 12000 kHz, you need to type in the entire frequency. It won't accept just 12.

When tuning around on a band with the frequency preset in a memory location, brackets are displayed around the memory location to indicate you already have it in memory.

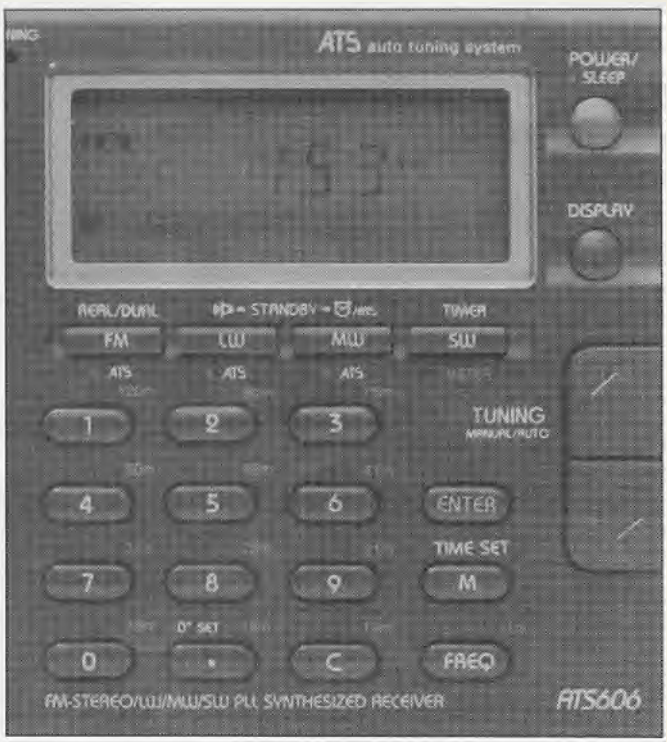
On SW, when memory locations one to nine are full a "0" is displayed and buttons one to nine will store frequencies in locations 10 to 18.

By hitting the "0" button you can toggle between memory locations one to nine and 10-18.

A novel feature called Auto Tuning System (ATS) allows the radio to automatically scan the LW/MW and FM bands and store stations into the nine memories available on each band.

So, if you arrive in a new town, you just activate the ATS on each band and let the radio store the nine strongest stations it finds on each band.

(continued over page)



Tuning and control buttons are of good size, clearly labelled and easy to use.

SANGEAN ATS-606

"THE TAKE ANYWHERE SW RECEIVER"

(continued from previous page)

Full marks to Sangean for including this excellent feature. Using the sleep timer in conjunction with the alarm clock allows you to tape favorite programs automatically. Now there's no excuse for missing your favorite DX program.

For novice users, the SW meter switch enables you to go directly to the SW band on which you intend to DX.

Just operate the SW/timer/meter switch and hit a key on the keypad corresponding to the band you want and the radio goes directly to it.

It's pretty simple and requires a minimum number of buttons to be pushed.

RECEIVER PERFORMANCE

The six kHz wide bandwidth filter is acceptable for normal broadcast listening but I would have preferred a sharper filter for the SW bands.

Unfortunately, it would seem that the designers decided that this may have added too much extra cost to the radio and moved it to an unrealistic price level. Using the inbuilt telescopic antenna on longwave I was able to tune in Sydney airport ATIS some 50 Km away.

Other beacons could also be heard.

There was some breakthrough from the MW band, particularly at 450 kHz, which is just about where you would expect it.

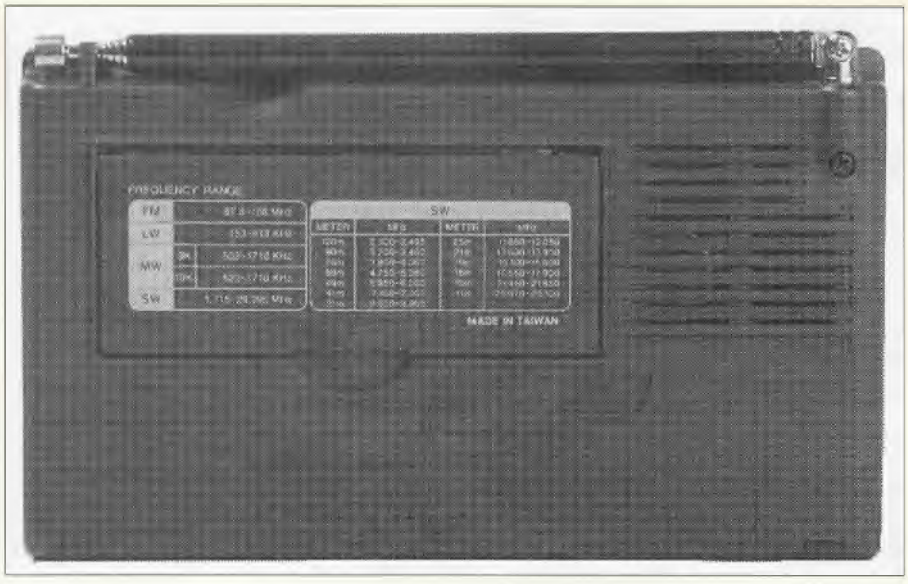
As I live some 10 Km from the ABC's main MW site the breakthrough wasn't all that bad but it could be heard.

MW performance was good with the inbuilt ferrite rod performed as expected and hundreds of distant stations across the band appearing at night. Do not, however, expect to use this radio for serious MW DXing, it's just not designed for that. FM was excellent with reception of FM stations from up to a hundred Kilometres away... in fact FM reception was even good while in the train travelling to work. Shortwave reception was reasonable across the bands given both the unit's size and price and I was able to log several different broadcasts with little effort.

There was a degree of co-channel interference but, except from powerful broadcasts on adjacent frequencies, I was able to listen to many popular broadcasters.

I found the audio output at normal listening levels to be good, but if you intend to use it at home for long periods of time, I suggest you buy an AC adaptor as the batteries won't last too many DX sessions with the volume turned up too high.

Included with the unit is a small external antenna adaptor box which has a small screw connector which you can use to terminate coax or a long wire antenna when you want to use a external antenna.



Telescopic antenna folds out of harms way and the radio's frequency range is listed on rear panel.

OVERSEAS MARKETING

There are two models of this radio available - the ATS606P and the ATS-606 - but here in Australia only the 606 is available.

The "P" indicates a package, ie: it includes a AC power supply and portable antenna. In Europe the radio is sold by Siemens and is marketed as the RK-759 (ATS-606P) and the RK-659(ATS-606).

SUMMARY

This "full-featured" radio compares well with larger and more expensive radios and must be considered as a good portable radio for those times you wish you could take your shortwave radio with you.

Thanks to Chris Ayres from Dick Smith Electronics for the opportunity to review this new radio which is realistically priced at $249 and is available at all DSE outlets.

The catalogue number is D-2847.

BEFORE YOU RUSH OUT AND BUY ONE, HOWEVER, DICK SMITH ELECTRONICS HAVE PROVIDED US WITH ONE TO GIVE AWAY SO CHECK OUT THE CROSSWORD TOWARDS THE REAR OF THIS ISSUE.

Bandspread

By Greg Towells

Welcome again to Bandspread.
Well it is Spring again and at this time of year a young person's thoughts turn to....radio, of course!
The same goes for some not so young.
Anyhow, here is another load of info and comments to keep you both interested and involved.

PHONE PATCH

I received a lot of comment about the autopatch review in last issue's Bandspread. Most people simply were not aware that phone patching is legal for use in the CBRS for any purpose. Naturally enough,if you plan to use phone patching within the CB bands you have to accept that your calls are going to be far from private, with a potentially huge audience out there "on the side". For this reason, phone patch use on CB bands should be limited to conversations of a general nature or for emergency use. It is the emergency-use side that makes phone patch on CB extremely useful.

It allows the person at the emergency site to be in direct contact with the emergency services, rather than having information relayed through a third party with the delay and misinformation that usually occurs in such circumstances.

Even in large cities, there are vast areas that do not have public phones and even some metropolitan roads can be very lonely places, especially at night.

If you come across an emergency situation in these places, having access to phone patch could prove to be a lifesaver.

If you use a phone patch on CB frequencies, there are a few very simple ways to keep unwanted users out of your system.

One is the password/code system that the autopatch reviewed in the last Bandspread employed. Another is simply to use sub-audible tone encoding, known as CTCSS.

Using CTCSS, your base station and autopatch will only respond to signals with the same subtone as you have programmed the radio to accept.

RADCOM ACT 1992

Just about everyone has been talking about, and writing about the new Radiocommunications Act 1992 lately, and for good reason too. The possible ramifications of what is contained in that Act are huge and could impact in a big way on the manner in which we enjoy our hobby of radio.

However, for all the reports of what could happen, the penalties or whatever, what most people are totally unaware of is the actual contents of the new Act. It makes very interesting reading, and is not as full of "legalese" as many Acts that I have had to wade through in my time.

So where can you obtain a copy?

You could lob into your local Government Bookshop and obtain a copy there, but odds are that they would end up "out of stock" very smartly, if they are not already.

There is another way, provided that you have a computer and modem, and that is to dial up your local radio BBS and download the file RCACT92.ZIP. That's right, this file contains the entire Radiocommunications Act 1992 in Ascii format and, once downloaded, you can print it up for yourself or do fancy things like searching for text strings on items that you are specifically interested in.

There are many very interesting parts in the Act...like Section 301 - supply of Radiocommunications devices to unlicensed persons, or Section 85...trading spectrum licences, or simply the definitions of transmitters and radiocommunications devices. Keep in mind that the Act does need to be read in conjunction with the relevant regulation that governs the service that you are interested in.

Still, the Radcom Act 1992 is an interesting document, and if nothing else, makes a good on-air debating point.

IS YOUR HOME BUGGED?

Good question, **IS** your home bugged?

While there are a multitude of signals out there that drift into our homes, to the delight of scanner enthusiasts, it might be that you are a target of scanner users just as much are the police. Sure, you say, and who has bugged me?

The answer would be "you".

How many of you out there have "baby monitors"?

Baby monitors are those devices where you put the transmitter in the room with baby and carry the receiver around with you so that you can go running every time that baby has cries.

How often have I seen/heard people put these monitors in the baby's cot that is located in the parents room, and not bother to turn them off at night?

The local scanner owners might well be in for a spot or two of R-rated action. These monitors generally have a short range of maybe just a few hundred metres or so, however, that could still mean that a few of your neighbours know just what happens in your bedroom 24 hours a day.

Add a bit of height to the monitor, and a good receiving antenna to a scanner, like a discone, and the range might increase to 500 metres or more.

Fun, isn't it?

Known frequencies for these monitors are 37.100 MHz, 49.820, 49.830, 49.845, 49.875, 49.890, and 49.900 MHz.

If you use one of these baby monitor devices, you could use your scanner as a second receiver and not have to leave the shack to check on the baby.

More bugs.

Hands up all those who also use a cordless telephone?

Lots of people do for the simple reason that it frees you from staying in the one place to talk on the phone.

You can carry out your phone conversation next to the pool, lying in bed or even sitting on the throne in the littlest room in the house, with your cordless phone.

That's great, however, did you ever consider that it is also a transmitter and this means that your neighbourhood scanner listeners could be enjoying your conversation too.

For some reason, cordless phone users believe that their conversations are totally private, whereas most cellular users are well and truly aware of the non-private nature of their use.

Again, due to their low power and antenna systems, cordless phones are also short range, a few hundred metres or so. But even that short range means that there are potentially plenty of listeners in the neighborhood and even more with a good scanner and antenna.

It seems that every second house has a cordless phone around my neighbourhood (except me) and the spectrum is alive with cordless users most evenings and weekends.

Common cordless phone base frequencies are 30.100, 30.125, 30.150, 30.175, 30.225, 30.275 MHz and the corresponding portable frequencies are 39.775, 39.825, 39.850, 39.875, 39.925, and 39.975 MHz.

Be careful, however, it can come as a nasty surprise what your neighbours are saying about you and, if you use a cordless phone yourself, be aware that others can listen to your own conversations.

Is all this coming as a bit of shock? Well hand about, there's more to come... Do you have a "video sender"?

This is the device that you connect to the audio and video output of your VCR and it transmits the signal coming from the VCR to as many TVs located throughout your home as you like, without the need to run cable to each one. Common output channels for these video senders are channels 0, 1, 5 and 6 on VHF and channel 34 on UHF TV.

Normal range for these units varies depending on height and location, but is generally about 30 metres.

So what if you only watch TV, but close (location-wise) neighbours could watch your videos for free if they tune their TVs to your chosen channel of operation.

Worse still, your neighbours could wise up to your video preferences if your VCR tends to be used for video movies only available on mail order from Canberra.

So what's the solution?

Either turn your house into an RF shield, at some considerable expense or, more sensibly, just be aware of the potential for outsiders to listen in to your conversations, bedroom antics, etc.

CB DEREGULATION

I heard a rumour recently that when the new Amateur regulations finally come into being, it is likely that Citizens Band Radio Service will also be deregulated.

If this occurs, it seems likely that no licenses or license fees will be required for CB radio operators.

The USA abolished CB licenses a long time ago with the administration costs being quoted as the reason for the chop.

I wonder whether CB deregulation would be a good idea for the Australian CB scene. For a start, Australian CB is very different to the USA, particularly our local UHF operation.

Certainly the dropping of the requirement for operators to be licensed has merit, but there is a definite case for UHF CB repeaters to continue to be regulated and licensed.

If UHF CB repeater operation were deregulated, anyone could set up a repeater where and when they liked, with no regard for the resulting interference to existing installations.

(continued on page33)

PACKET ON CB AGAIN

Further to the recent mention of packet on CB radio in a recent Bandspread column, here is some more information for those interested in what is happening in the spectrum around the CB bands.

You will find the Oceania Packet BBS Network on 27.540.9 MHz LSB. Peter, AUS3PB, writes to say that stations are active all over Australia on this frequency, except for Western Australia.

Stations that can be logged on this frequency include:

AUS4JC John in Queensland.
AUS3DP David in Central NSW.
AUS3MX Max in Melbourne.
NCA1VL Franck in New Caledonia.
NCA1VA Alain in New Caledonia.
AU7TAS Bill in Tasmania.
FRA3DF Jon-Paul in France.
USA1FL Chris in Florida USA.
THA1ST Jack in Tahiti, and the list goes on and on.

You could really work the world on packet using this frequency alone. Peter says that many of the operators using packet on this frequency are amateurs who like the way things are done on the network, without requiring the high standards expected of amateur radio packet operations.

Sorry to disappoint you Peter, but the standards on the amateur packet network are slipping somewhat. Abusive, sarcastic and defamatory messages fly back and forth and piracy is rampant. I must point out that only a minority of messages fall into these categories, however, enough of them exist to concern sensible operators. There's nothing like reading a spiteful message addressed to all, then discovering that the originating stations' callsign is YOURS.

It's a bit difficult to type and send a packet message if you are high speed mobile or at work at the time and by the time you manage to do something about it, half of Australia has already read it.

Peter makes a good case why packet radio operation is ALREADY LEGAL on CB radio frequencies.

I'll let Peter tell it in his own words: "We have read this booklet [the DOC 14] inside and out, and as far as we can see we can run packet radio on 27 MHz from a frequency of 26.965 to 27.405 MHz using the normal channels.

The mode will be on SSB on upper or lower (whichever we pick) and we will not move off that frequency so that it can be used as a marker frequency."

Peter points out that the modes allocated for use on 27 MHz CB are AM and SSB, both upper and lower sideband, and FM for UHF CB.

Peter goes on: "Now as far as we can see, we are using a voice frequency which is still being modulated via the mic socket. Yes, I know as a technician that a voice is different from a computer generated signal, but how then can Selcall be used. Both of the tones we use in packet radio are in the tone frequency that Selcall's use"?

Now that is one good point, and I wonder if someone in the know out there can clarify that one. There are a number of digital modes that rely on a series of audio tones piped through the mic socket for operation, yet are still classified according to the type of modulation used, be it SSB or FM.

RTTY and AMTOR are just two of these modes.

Anyhow, have a listen to 27.540.9 Mhz and see what's there.

Peter runs a 386SX computer with an MFJ 1278 TNC, and uses FBB v5.15 software for the packet BBS. The advantage of this software is that when it forwards messages or files it automatically compresses them, thus saving on-air time and the cluttering up of the spectrum.

Thanks for the information Peter, I hope readers manage to have a listen to what's happening there on 27.540.9 Mhz sometime.

JUST COMMUNICATIONS

"we'll get you talking"

PH (03) 873 3710
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FAX (03) 872 4229
552 WHITEHORSE RD., MITCHAM
THE YELLOW SHOP near Mitcham Rd.

USER'S GUIDE TO RADIO
AUSTRALIAN ISLAND MAP
SHOWS
* SAFE OPERATING AREAS FOR C B. NOW AND WHEN THE SKIP CHANGES
* FLYING DOCTOR REGIONS
* CHANNELS TO CALL ON FOR FLYING DOCTOR AND O.T.C. RADPHONE RELATED TO TIME OF DAY, SEASON AND DISTANCE TO BASE.
* POINTING ANGLE INFO FOR AUSSAT SATELLITES
* HOW TO PASS EMERGENCY MESSAGES TO TRAIN DRIVERS
* HOW TO FIND SOUTH WHEN THE NIGHT SKY IS A FOREST OF STARS
* PRACTICAL NOTES ON GENERAL REMOTE AREA SAFETY

$6 AS SEEN ON T.V.

Mobile scanning antenna. This is the best we have found for performance. Only 1 metre in length, it is resonant on 5 different frequencies, so that if you're keen you can even transmit with this one. Scanning range is 40-950 MHz!!! Not bad for a 1 metre long stick. Ideal on a gutter mount or roof mount. $39-00
For this serious scanner... AH-7000 discone base antenna from ICOM.
Being ICOM manufactured, this is quality from top to bottom. Stainless steel elements discone style, with broadband coverage from 25MHz to 1300MHz. Your scanner may not go that wide!!! Complete with 10 metres of high quality coaxial cable and plugs fitted ready to go. Mounting brackets for a mast mount complete the package.
$232.

As advertised on Bert Newtons TV Show

$199.95 Soft Case Included (Battery not included)

This amazing full colour pocket sized TV has newly developed HSM (Hatadi Super Matrix) system, that significantly upgrades picture quality.
It is battery powered or can be plugged into your car cigarette lighter (option) or used with house AC/DC adaptor (option).
Also available as options are external and internal car antennas for in car Colour TV use.
Please ring for prices

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POCKET SIZE COLOUR TV

FROM PEARCE SIMPSON
** 2.2" Screen*
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** Automatic Tuning*

WHAT FREQUENCY IS THAT?

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N.S.W. -	
Full list	**$25**
AIRCRAFT	
full list	**$25**
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(attaches to sun visor)	**$11.00**
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(attaches to sun visor)	**$11.00**

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Expiry date.....
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AUSTRALIA'S CB SPECIALISTS

Bandspread

Although some repeaters seem to be battlegrounds for local powerheads, the UHF CB repeater network seems to be fairly reliable and well planned.

If deregulation occurred, would enforcement of CB regulations continue, particularly those relating to emergency and call channel usage? It could lead the way to a free for all on all channels, worse than at present, but with no enforcement, or worse, no rules at all. The number of times that CB has been used in the past to obtain assistance could well become just a memory. What credibility would unlicensed operators have when emergency assistance is required? Would "Cretin 56" get a response to a call for help, or would a station with the call NDP-826 be more successful, because of the bona fide callsign?

What do you think? I would like your opinions on this.

UHF CB REPEATER DISAPPEARS

At the time of writing, the Sydney UHF CB channel 4 repeater was still inactive, having been that way for some months.

This is probably a good thing, considering the extremely offensive RF pollution that had occupied the repeater for a considerable period of time prior to its prolonged closure.

After poking around the spectrum, I discovered a new UHF Amateur repeater had arisen recently from a similar location, on 439.575 MHz. It sounds very much like the aforementioned UHF channel 4 repeater, complete with the beep at the end of the repeater tail. That's about it for this issue. Please feel free to write with any news, questions or whatever to:

PO Box 577, St Marys, NSW 2760.

BROADCAST BARGAINS

PRO-520XL Deluxe AM CB

From its sleek, black casing to its instant channel nine (emergency) switch and powerful 7-watt audio output, the Pro-520XL is a whole lot of transceiver for this low, low price! Featuring separate volume, squelch and RF gain controls, its very easy to use. Also includes a noise limiter for reduced ignition noise, heavy duty mic, mobile mounting kit and public address facility (requires optional speaker).

Cat D-1235

uniden

$139.95 *2 Year Warranty!*

Uniden PC-122 Compact AM/SSB CB

The very latest version of the super-compact PC-122. With front-mounted microphone socket and a space-saving design, it's ideal when dashboard space is in short supply. It will fit comfortably in most vehicles and is designed to match modern dashboards. DOTC approved. Superior features include:

- LED received Signal and RF output indicators
- Switchable noise limiter for clearer reception
- Separate volume, Squelch, RF gain and Clarifier controls, for easier operation
- Covers all 40 channels on AM, LSB & USB
- PA facility (requires optional speaker)
- Includes mic, mounting hardware and instruction manual.

Cat D-1715

uniden

$269 2 Year Warranty

EXCLUSIVE BONUS FOR CB ACTION READERS

Present this advertisement when you purchase a PC-122 and receive a 5ft helical whip pack (Cat D-4076 valued at **$24.95**) at no extra cost. Offer expires 31st October '93.

MS-100 CB Extension Speaker

$29.95 uniden

A slimline 5W extension speaker for use where only a small mounting space is available. Comes with a flush mounting bracket and lead fitted with a 3.5mm plug to suit most CBs and scanners. Size is 73 (W) x 66 (H) x 37 (D)mm.

Cat D-2275

uniden

Pro-330e Micro AM CB

Cat D-1120

$149.95

Finally get that new car and now you find there's nowhere to mount a CB? The sensational Uniden 330e is a totally new concept in CB design that takes up less space and gives more mounting options than ever before. The PRO-330e is a full power 40 channel CB built into a push-to-talk microphone. Its small cradle acts as a wiring block to your outside antenna and power source, and can be mounted on the dash or on the hump between the seats (requires a standard mobile telephone mount).

- Push-button tuning
- All 40 AM channels with switchable Ch. 9 selection.
- Selectable automatic noise limiter to reduce engine noise
- Bright LED channel display and Tx indicator
- Separate Squelch and Volume Controls

2 Year Warranty

Fits In Your Pocket

uniden

70 XLT Handheld Scanner

Listen to the fascinating air waves around your city! This lightweight handheld VHF/UHF scanner has 20 memory channels, 8 band coverage (Covers 66-88, 136-174, 406-512MHz) and track tuning for improved performance. With rechargeable NiCad battery pack, AC charger and carry case. As received by CB Action.Frequency

Coverage:	66-88MHz
	136-174MHz
	406-512MHz
Sensitivity:	0.4uV 66-88MHz
	0.5uV 136-174MHz
	0.7uV 406-512MHz

Cat D-2740

$269

2 Year Warranty

Exclusive to Dick Smith Electronics

With Auto Tuning!

Compact 45 Memory Shortwave Receiver

Listening to the world on shortwave radio has never been easier! The super compact compact ATS-606 from Sangean makes finding your favourite shortwave (and local) stations as easy as pushing a button. Let it scan through the bands for you or, with the new Auto Tuning System (ATS), it will locate and put the nine strongest signals on both the AM and FM bands into memory. You can also key in a stations frequency directly from the keypad or put up to 45 frequencies into memory for instant push-button access. It gives continuous shortwave coverage from 1.715 -29.995MHz, and 13 international SW band divisions can be directly accessed. You can also get a dual alarm clock, sleep timer, dual time settings so you can preset any two time-zones, DX/local switch which allows you to set the sensitivity to suit differing conditions, and a lock switch to prevent accidentally changing stations. Comes with stereo earphones for FM stereo operation and has an antenna socket for connection of an external antenna. Requires 3 x AA batteries.

Frequency Ranges:
FM: 87.50 - 108MHz
LW: 153 - 513kHz
MW: 522 - 1710kHz
SW: 1.715 - 29.995MHz
Includes 13 pre-set shortwave bands

Cat D-2847

$249

SANGEAN

digitor

Hands-Free 55MHz FM Transceiver

Cat D-1095

$69.95

This hands-free FM transceiver is ideal for local-area users such as sporting clubs, schools, farmers, antenna installers and bush-walkers and can provide up to 500m range (line-of-sight). Because it operates on a 55MHz VHF frequency, you're less likely to experience noise or interference from CB or other transmitters. It comes complete with belt clip and an earpiece/tieclasp microphone for voice-activated hands-free operation. Features include selectable push-to-talk or voice activation and a sensitive dual conversion receiver for clearer reception. No license required. Requires a 9V battery.

Portable Shortwave Antenna

Want to boost the performance of your portable shortwave radio? Then you need one of these:
The Sangean ANT-60 is a wind-up reel-style antenna that extends to a full 7 metres (23ft), yet fits in a shirt pocket! It connects via a 3.5mm mini plug or the supplied adaptor that clips onto your portable's telescopic antenna.

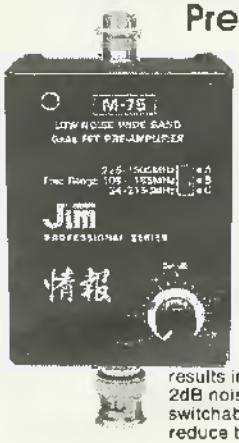
$19.95 Cat D-4400

250MHz Frequency Counter

This versatile 5-digit frequency counter can be used as a standard bench-type unit or can be directly connected to a CB or other low power transmitter for measurement of its transmit carrier frequency. The unit provides two ranges (1-99MHz and 1-250MHz) and can be used with transmitters of up to 20W output. Uses SO-239 sockets for tranceiver connections and an RCA socket for low-level inputs. The counter uses a solid metal case for shielding and is supplied with a mounting bracket. Input sensitivity is from 50mV to 20V RMS. Requires 13.8V DC.

$99.95 Cat D-2400

Wideband Receiver Pre-Amplifier



The Jim M-75 is a quality wide-band Japanese GaAsFet pre-amp designed to improve the sensitivity of most scanners. It connects between the scanner and antenna, and provides variable gain (-10dB to +20dB) over the 24 to 2150MHz range. Using surface-mount devices and a GaAsFet amp results in a very low 2dB noise figure, while the switchable band-pass filters reduce the chances of interference from strong out-of-band signals. It's 59 x 80 x 30mm (WHD), and requires a 9V battery or external AC adaptor.

Cat D-3820

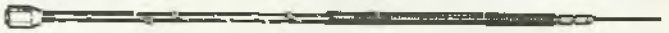
$199

VHF/UHF Power/SWR Meter

$199 Cat D-1370

A high quality SWR/Power meter suitable for UHF CB, amateur and commercial applications. High-quality Japanese construction assures you of maximum reliability. It has an all-metal case, large meter display, 140-525MHz coverage with less than 0.3dB insertion loss, and 4W, 20W & 200W power scales. Revex model W540.

1.45m 'Monster Stick' Helical Antenna



There's only one way to handle a monster signal, and that's with a Monster Stick antenna! It's constructed with multi-stranded insulated wire on a sturdy fibreglass rod and coated with a tough polyolefin impregnated heatshrink coating. The Monster Stick provides excellent performance in an antenna that's not too long. Uses the adjustable tip tuning system. Standard 5/16" female termination.

Cat D-4414

$39.95

5 Year Warranty

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B 1540

Reader's Letters

RADIOCOMMUNICATIONS ACT

Dear Sir,

Your article on the Radiocommunications Act 1992 was very interesting to say the least. Many parts of the new Act I agree with totally, but others seem a bit harsh. It is about time that the Spectrum Management Authority (formerly the Department of Transport and Communications) does something to stop the out of band transmissions, the unique way that some people use the English language and idiots jamming the emergency services frequencies, but I disagree with the Act when it comes to receivers (yes I own a scanner), yet I can understand the Spectrum Management Authorities (SMA) point of view.

The biggest problems I see with the Act is it's policing and how strict they will be in following the Act. If a person is transmitting, jamming, etc. then it is relatively easy to find their location, but using a receiver is totally different unless you go out of your way to be caught (example - stand near a police, fire or ambulance patrol on a job with the receiver/scanner up full blast). Will we see persons from the SMA walking down street in order to see what antennas the residents have in their yard, ready to pounce with the `booking' book for anything that looks different from a standard TV Yagi.

The sale of receivers is also going to be quite fun to watch under the new Act. For example, I walk into a shop and wish to purchase an Icom IC-9000 (I wish) which has a range of 100 kHz - 1999.8 MHz, the person selling this piece of equipment will then ask for my licence required to make this purchase. At this point in time I do not possess any licences so under the Act I could not be sold this piece of equipment, but how far would I have to go in order to obtain this equipment - a HF CB licence, UHF CB licence and a Ham licence thrown in for good measure would cover it would it not, as long as it was only used to monitor these specific frequencies!

From what I have read though the real reason to implement these changes has been to give more power to the prosecutors. For a long time a number of persons and companies have been abusing the communications system and getting away with it. Now I hope they will think twice before abusing the system knowing that they face imprisonment and equipment seizure. Hopefully some of these questions that I have raised will be answered in the next few months as the Act becomes law, meanwhile keep up the good work in CBA and keep tuning around those bands while you can!

S. Masters
Woodville West
South Aust. 5011

As explained in the On Channel page, the Act is not to likely to affect anyone other than BIG offenders, nor are receiver licences likely and there is no intention to ban scanners - so stop worrying.

Editor

WHAT'S ALL THIS "DX" ABOUT?

Dear Sir,

I purchase and read C~B Action and ~Amateur Radio Action magazines. I do feel a bit cheated when quite similar articles appear in both, but I can accept that you are catering for different but ~overlapping gr~oups of readers .

The main purpose for this letter is the DXinternational column. I can't fathom its purpose. The information in the column is so esoteric that those of us who are just "plebs" in the DX sense don't understand what is going on, and, it appears, are not about to be told, eg "This is one major reason why I will not publish the DX frequencies on 11 metres" (CBA March/April column). There also appears to be some confusion over whether we are discussing DX on the CB (Australian) frequencies or some other band(s) including amateur. I believe your magazine should only be discussing the CBRS band legally allowed in Australia and that other bands (amateur) should be discussed in separate context - eg `advantages of', `equipment differences', etc.

I have been reading this column for quite some time now and am none the wiser for it, except for knowing that other people are having a great time at it. It is the role of a magazine such as CB Action to teach and inform its readers. How about telling us what DXCC means, how the international number codes work and who controls them, which CB clubs participate in international DX, hints and tips, where to listen, etc. Please don't keep it to yourself.

Bob Bristow
Gidgegannup 6083

Bloody hell Bob, you're not a happy little vegemite are you? We find ourselves in a difficult situation with international DX. Whether you personally hear it or not the fact is that probably 70% of the contacts mentioned in Jack Haden's column are worked within the legal 40 HF channels and yes, the remainder is heard elsewhere on 11 metres - but not out of band. While we cannot applaud DXers working out of the legal 40 channel boundaries, the simple fact is that many serious (addicted?) DXers work in the region of what would be channels 41-70 of 11m and Jack's column is largely directed to them. He, like me, also possesses an amateur licence and I can assure you that, again like me, there is no way that he would countenance CB activity on amateur bands. I guess that all you can do is to listen and learn and, candidly, that's what we try to offer in CBA.

Editor

RADIOCOMMUNICATIONS ACT - STILL MORE

Dear Sir,

It is obvious that Judicious Rex has limited legal experience by the way that he has interpreted the new Radiocommunications Act 1992. There is so much untruth in that article it is not worth the effort to read it. And especially the front page eye-catcher, namely, "$150,000 Fine or 2 years gaol". This is NOT the correct interpretation of that Act at all. Well, as a woman with some legal background, and a CBer (what a combination), I would like to point out his major error and also make some further comments myself.

If Judicious Rex knew anything about Commonwealth Law, he would be aware of Section 4B (2) of the Crimes Act 1914 which provides a monetary penalty, worked out by a formula, instead of a term of imprisonment. This must be read in conjunction with the Radiocommunications Act penalties. The formula is: (Term of Imprisonment, expressed in months x $3000) divided by 6. (Can you believe they actually use a mathematical formula to determine your penalty!) In other words, when the Radiocommunications Act 1992 says in Section 46 e.g. that the penalty for being unlicensed, if the offender is an individual, is imprisonment for 2 years, by use of that formula, the court can also consider (and I would suggest they would adopt, especially in such minor offences), a monetary fine, in this case $12,000 MAXIMUM. (In reality, a lot less, especially for a first offence~. It is simply untrue to frighten people into thinking that if they either refuse to or simply forget to, licence a simple CB, and if caught, that they will go to gaol. IN OTHER WORDS, THERE IS NO MANDATORY IMPRISONMENT UNDER THE RADIOCOMMUNICATIONS ACT 1992.

Talk about overstating something as minor as unlicensed CB operation. And the rest of the comments in that article are just as much in error or exaggerated.

There is, though, some truth amongst all the untruth and exaggerations. The new Act will take affect on July 1. There are lots of increases in maximum fines. The information about modified, high power etc. equipment is almost correct. Most of this new Act actually copies the old Act as far as offences and CB is concerned.

But, more importantly, a real possibility MAY be the way the new SMA deals with, or doesn't deal with CB problems. They MAY very well say that they will no longer regulate the CB frequencies. "Do whatever you like as long as you stay within the 40 channels between 26.965 to 27.405 MHz inclusive or the UHF equivalents, and use totally standard equipment". That is an unknown at this time. What I would suggest is that if we CBers want the SMA to keep regulating (in some states, it appears it's currently done with more vigour than in others), then we had better get off our backsides and write letters and many letters to our Federally elected representatives and the SMA and whoever else you can think of. If you don't, well you can't scream when whatever happens, happens.

There are still provisions in the new Act, almost exactly as in the old one, to prevent operators from verbally attacking or harassing others, swearing and using filthy language directed towards other good operators, jamming UHF repeaters etc., etc. They've always existed even in the present Act. But it appears it's been at the discretion or guts or ability of the individual DOTAC office or officer whether or not to use them against any person. And aren't we all just sick of receivin~g the typical public service letter from DOTAC, like the one I received recently stating, as I think all their letters state: "The department endeavours, within the limited resources available to investigate all written complaints received. Identifying an offender is a complex and time consuming task..... and is very difficult. etc., etc., etc."

It appears to be the generic type of letter someone decided on years ago.

And the reason, in most cases that these provisions seem to never or rarely get used against CB operators, appears simply that the DOTAC (as an overall organisation) don't believe that the CB bands are worth doing anything about. We are, to them, just a bunch of hobbyists, just a bunch of hoons, just a problem they would rather not have. Has anyone ever rung the Brisbane office e.g. to get told quite abruptly by some British accented fellow that they won't do anything about the complaint. As long as words such as "self regulating" (not found in the Act, old or new~ and other similar terms are bandied around in DOTAC (SMA), they will always find a reason to do nothing for us, except providing a portion of the radio spectrum for us to "play around" in.

I also get so mad when I read the articles in CB Action about ACBRO. All they seem to complain to DOTAC about are license fees. I have never read anything sensible come out of that mob. And I doubt if DOTAC has ever read anything sensible that has come out of ACBRO. Instead, they should now be at the forefront of letter writing to Federal Members of Parliament etc., etc., to urge them to make sure the future SMA continues to at least give us CBers some sort of protection against the idiot users of the bands, instead of worrying about refunds of license fees etc.

Australian CB doesn't have to become a mess like it is apparently in the US and other countries. SMA officers don't have to spend ALL their time on us small fry and I think we all accept that. We also understand that the radio spectrum is large, and that CB is only a small part.

But at least recognise that we exist (in ways other than simply collecting $18 from each of us), and ensure that at least the worst-case trouble makers are effectively dealt with. We don't want to be treated like criminals ourselves when we ring up to complain about issues affecting us. CB will never be squeaky clean, but it should not be allowed to become an unusable radio system either.

We, as CBers, cannot and should not be expected to "police" the CB channels ourselves. We cannot take the law into our own hands. And if the SMA will not police the channels, well then there must be some other Federal agency or department that must be doing it to fill in the hole created by the SMA's reluctance or decision (maybe) not to do anything.

But I doubt very much that such an alternative will exist. But, ACBRO, and all of us good CB operators, whether we use the channels for private, business (dare I say it), or whatever (as long as it's legal), let's start a concerted letter writing campaign. If they won't listen to us, well at least we tried. To give you an example. I heard from friends in the know in the UK, that they tried to completely deregulate CB over there.

But due to an overwhelming backlash from the CB public, the proposal was changed. We can do it here too. We must ensure that the SMA and our Federal politicians will take note that there are about 500,000 to 1,000,000 operators (= voters) in this country who would like some sort of active policing of our part of the radio spectrum. Surely, managing the spectrum, as is the objective of the SMA, includes managing what actually goes on inside the CB band. If DOTAC (SMA) d~idn't have the legislative backing of t~he offences sections of the Act, well then we'd understand that they would be powerless to act. But the provisions do exist in the Act (new and old). So what's their excuse?

By the time this letter gets into the next edition of the CB Action, the new Act will be in force. But it will still NOT be too late to start writing a~nd letting them know what we need and expect and to ensure that their policy makers understand that too.

Cathy Watts
(Address Supplied)

G'day Cathy and thanks for a well worded response to the new Act. You are quite incorrect, however, in thinking that "Judicious" knows not a lot about the law. He is in fact a practicing QC and no, despite the accusation of "untruths" the simple fact is that any Act is open to interpretation and the article in the May/June issue was just that - a well qualified, legal interpretation.

Common sense, however, says that it's bloody unlikely that a CBer will be sent to gaol for a minor offence. The follow-up article in the July/August issue with DoTaC/Judicious comments has probably cleared the air somewhat, at least we hope so.

Sadly, CBA is in the unhappy situation of "being shot by some readers because we carried the message". However, had we not directed the attention of our readers (and retailers) to the Act we could be accused of taking little interest in what was happening in the radiocommunications area...it's a no win situation.

As a legally unqualified citizen, I certainly can't make pronouncements of what a court of law might or might not do, nor whether DoTaC (SMA) might or might not introduce sundry assorted licences either now or sometime in the future. Common sense again says that neither a gaol sentence and/or licences for scanners/receivers are likely to be introduced but the Act allows for both and that's all we've said.

Let's face it, when the first CB 'pirates' hit the air in the early 70s it was about illegal as you could get, however, to the best of my knowledge the 'busts' were few and far between and that's when the Department was at least serious in its attitude to illegal radio operation.

Our articles were printed to provide our readers with information of what was happening (which DoTaC was not about to tell them) and a legal interpretation of the Act. That this upset some readers and retailers is unfortunate but their argument lies with the DoTaC - not us.

In short - don't shoot the messenger.
Editor

Online 1993

By Patrick McDonald

**`Wheeeeeeeee! Wooooooooo!
Whoooooooooooooooosh! Recognise that sound?
Well, you should. It's my very best journalistic approximation of a modem connecting with another modem on a computer bulletin board!
Silly way to start a magazine column, huh?
But it's just "mood music" to preface another little chat about how to use your computer in the radio hobby, and in a few more paragraphs I'll be turning to just this topic . . . setting up your computer with a modem so that you can track down radio-related software.**

MY ALL-TIME FAVOURITE

But first, let's look at one of my all-time favourite software packages,which just got better.

I'm talking about Tom Sundstrom's "*English Language Shortwave Broadcast Schedules*" database, version 2.1 of which was reviewed by yours truly in these very pages. At that time, I told the story of how I answered the SWL's age-old lament for a good "TV Guide" type booklet for the shortwave radio bands by discovering an electronic version of the long-defunct "International Listening Guide".

Sure, there are a few paper-bound frequency booklets out there in the radio marketplace, each laborious updated every few months, but why not utilise your PC to make perusing these ever-changing schedules much easier?

Sundstrom's program complements the well-known "*World Radio and Television Handbook*" and the "*Passport to World Band Radio*" (both large, comprehensive guidebooks published only annually and therefore chronically out-of-date) by providing an excellent computer database program that can be kept current manually by the user, or automatically updated quarterly by Sundstrom's own shortwave-schedule-on-a-disk program.

You can browse through a database of more than 550 entries from more than 70 countries airing English language programming, search for a particular country, or see what is on the air at any time of day.

You can also page electronically through a file of DX shows for the SWL, either by country or by day of the week.

You can also seek out broadcasts by frequency.

As an added bonus, and with the appropriate hardware interface, you can even load the program's frequencies directly into a range of popular Kenwood and JRC receivers and transceivers, including the R-5000 and the NRD-525 and NRD-535. With a printer attached to your PC, generating hard copy of four types of reports is easy: schedules by country, schedules by time, DX shows by day of the week, and a full list of programs by frequency.

Schedules can also be directed to another computer file or to a diskette for electronic messages or word processing.

Sounds pretty useful, doesn't it? Indeed, the first version of the software won the *WRTH's* 1988 award for "Best Computer Accessory" and the 1991 *WRTH* noted that "the program has been further improved, and in our opinion still sets the standard in its category".

Why I am raving on like this? It's because this is truly one of my favourite software packages, one I have purchased with my very own money (nope, I got no freebies on this one!) and one that I update regularly as new versions appear.

And I know that most SWLs who try it will agree with me.

Now, Sundstrom's latest version has several interesting new features: the main database menu screen allows fields for "transmitter site", "azimuth" (direction from which the signal will arrive), and "mode" (AM, USB or LSB).

A "screen number" feature now permits more than record per station at any given time slot, and a sorting facility allows random entry of data in any schedule, with automatic sorting by the program. There are a number of other improvements in version 3, and many other features I could write about, but I think I have taken up enough CBA space now, even for this excellent program. Sundstrom's database is commercial, not shareware, but costs less than $50 Australian (at this time of this writing), and so is a good bargain.

TRS CONSULTANTS, Attn. Tom Sundstrom, PO Box 2275, Vincentown, NJ 08088-2275, USA is the relevant mailing address, but I deal with Tom via FAX and a credit card for super-fast delivery: *+1-609-859-3226.*

Telephone him (voice) if you like on *+1-609-859-2447.*

TRS also markets "*Receiver Control PC Software*" for the JRC and Kenwood receivers mentioned above and a "Utility Logbook" software package for utility DXers, but I'll review these another time. However, if you're contacting Tom in any case, you might want to ask about them. Like the database software, they're low-cost and high-quality.

OK, now let's turn to another program, shareware this time, which I have mentioned several times over the past couple of years.

GEOCLOCK - VERSION 5.0

This is the GEOCLOCK world time/grayline DXing program, now newly issued in version 5.

First, you may ask, "What in the heck is grayline DXing"?

This refers to listening to your shortwave radio at either sunrise (in the case of really keen DXers) or at sunset (us lazy folks) to try to log those hard-to-hear stations located along the "line" of sunrise/sunset that extends right round the planet earth. At this special time of day all sorts of ionospheric weirdness can ensue, and great DX can be the result.

For example, at around 0600 UTC (4pm AEST) I often listen for "long path" African stations in Nigeria or the Cameroons on the 60 and 90 metre bands. Such signals have to go around the earth the long way, across the Atlantic, across the Americas, and then all the way across the Pacific.

Normally, you listen for such tropical band stations in the early morning, from 1900 to perhaps as late as 2200 UTC, when they travel the relatively quick and easy way via the Indian Ocean.

But the "grayline" phenomenon sometimes allows a window of reception in the 0600-0700 UTC period as well, and this is what the GEOCLOCK program shows you graphically.

Although the older versions of the program will work on all screen types, you have to have a either an EGA or a VGA screen for GEOCLOCK, v5.

And only the VGA screen will give you the full whiz-bang impact of this program. It's as if you're observing the earth from about one third of the way to the moon, watching it slowly turning, seeing the band of sunlight creeping slowly along, from continent to continent.

continued over page...

It's very hypnotic, in fact!

Lots of other data is displayed too, and you can zoom in on certain parts of the globe for a closer look.

A certain number of these detailed "zoom maps" are included in the free shareware version of the program, but you have to register your package with author Joseph Alhren in the US to buy (at very low cost) some 200 other regional maps, including several of the Australasian region.

The current sun zenith position is always displayed, and the parts of the earth in sunlight and twilight are highlighted, with local sunrise/set and times listed.

Version 5 allows easy mouse control of most functions and the display of country names.

The basic map set which comes with formal registration consists of over 40 maps covering the whole earth.

In addition, there are four supplemental map sets covering North America, Europe, South America and Africa, and Middle East/Asia/Pacific, in great detail.

All maps incorporate the latest political changes, including the division of the former Czechoslovakia.

Finally, a greatly improved setup program is included, which customizes GEOCLOCK for both your location (by picking from a list of over 3400 cities) and your computer hardware.

Again, if I seem to rave on a bit about GEOCLOCK, it's because I have been trying it out myself rather intensively over the past month and like it a lot.

I've also received lots of enthusiastic feedback from users of my SHORTWAVE POSSUMS computer bulletin board.

You can download the GEOCLOCK software as the compressed file GEOCLK50.ZIP for a free shareware trial from SWP BBS (see info at the end of this column) and from a number of other BBSs in this country that cater either wholly or partly to the radio hobby.

PROPHET BBS in Sydney on (02) 835-1122 or (02) 835-1169 is another good bet.

Remember that if you plan to use a shareware program regularly, the fair and honest thing to do is to register the program and send the author his small fee.

This ensures that future shareware keeps on coming.

This might be a good time to mention as well that *SPECTRUM RADIO BBS* in Melbourne, one of the best such computer bulletin boards you can frequent, will soon be changing its telephone number.

In fact, given the delays inherent in magazine publishing, the new 24 hour modem number should be in place by the time you read this: *(03) 455-1309.*

Sysop Michael Evans offers an exceptionally wide range of shareware software for radio enthusiasts, with a speciality in packet radio packages and UHF/VHF frequency data.

Why not give him a ring if you live in the Melbourne area?

MODEMS - HOW, WHY AND WHAT

OK, now let's have our little talk about using a modem.

I know many of you CBA regulars have long since assimilated telephone modem use and basic computer skills into your radio knowledge, but keen newcomers are arriving all the time and may need some tips on how to contact bulletin boards in order to access the above mentioned software.

I was spurred into action, in fact, by Mark from a NSW country area who got started in modem use after reading ONLINE here in CB ACTION some months ago.

Very proficient in the radio hobby, Mark nevertheless struggled with his first modem and nearly despaired at one point before finally connecting successfully with SWP BBS.

Now quite conversant with BBS use, he wrote me recently suggesting that I tell others how to start out and what the first steps are, as using a modem can be very confusing.

He especially wanted to know "which parameters" to use when trying to connect with a computer bulletin board system.

Well, Mark, I'm glad you wrote.

And be sure you're not the only one to have a few initial battles with the beloved modem.

I sure had some mental re-adjustments to make in 1986 when I first connected my 300 baud plastic box to my single floppy (no hard disk) XT and plugged into the phone line.

Of course, many aspects of modem use are much easier today, and everyone need not have the troubles Mark and I faced, as long as a few simple guide lines are followed.

But let's start at the beginning. First you need a computer, right? This is obvious, I know, but it may interest PCers to know that modems can be connected to Apple MACs, Amigas and other types of computers as well as IBM compatible PCs. Check with your computer dealer to see if your computer has the required serial port and you will quickly find out about this.

But I'll assume for the purpose of this description that, like the majority of radio/computer hobbyists, you have an IBM compatible computer, whether it's an old XT, a 286 AT, or one of the newer 386 or 486 models.

All are completely suitable for modem use.

Next you need a modem, a little box that connects to your computer's serial port at one end and with your telephone socket at the other end. These are very widely available and many are even made here in Australia. Apart from price, the main question is the speed of the modem.

Yep, the faster the better, as is often the case in our modern world! Absolute slowest speed these days is 2400 baud (or bps) but 9600 or 14400 speeds are becoming common.

Even 14400 bps modems can be found, brand new and with warranties, for under $500 and this speed is my recommendation, if you can afford it. Otherwise, look for a used 2400 baud modem to start out with. Step three is to get communications software to run on your computer.

This is what allows your computer to talk to the modem, getting it running properly, and what eventually allows you to communicate with computer bulletin boards.

Again, the best idea is to ask where you buy your modem.

It's usually automatic for the modem dealer to supply shareware "comms software" for beginners, and some even run their own business bulletin board services. All such software comes with documentation or "docs" that you should read so that you'll know how to install it properly on your computer.

Sure, I know damn well you're not going to read that software first, don't I? But you'll eventually read it when you fail to get the comms package running properly! Not to worry, for this is the norm for computer users around the world.

IT JUST SO HAPPENS

It so happens that I've just moved up to a 9600 bps modem myself and in consequence have a 2400 bps fax/modem for sale at $250 - note that it's a fax/modem, not just a modem. This means that you are also able to send and receive faxes on your PC. It's an external modem, small enough to fit in your

VOLUNTEERS WANTED TO READ *CB ACTION* FOR THE BLIND

The Royal Victorian Institute for the Blind needs volunteer readers with a strong interest in CB radio to record *CB Action* for the blind and print handicapped. You don't have to be Laurence Olivier or Vanessa Redgrave, but you do need

*** a clear, pleasant voice**
*** the ability to read aloud fluently**
*** a regular commitment of 3-6 hours per week.**

All enquiries to:
Shaun McCarthy
Co-ordinator of Narrators
Royal Victorian Institute for the Blind
85 High Street
PRAHRAN 3181
Telephone (03) 521 3400

continued from previous page

pocket and it requires just two connections - one to the PC and the other to the 'phone line. It comes with the necessary software and manual. First in gets it...drop me a line to P.O. Box 622, Mount Eliza 3930...Len Shaw (Editor)

Now, here's where the tricky bits come in, and where Mark went astray. The comms software will usually install pretty automatically, but will ask for what is called the "modem initiation string" or simply the "init string". This is the command that turns your modem on and configures it properly.

These days, most modems are more or less configured as soon as you turn on the little switch round the back, and so require only the legendary "AT&F"init string (without my little " " of course). This is modem language for "wake up" (AT) "and set yourself to the factory default settings" (&F).

In your modem manual you will find exactly what init string is required, I'm sure. Sometimes it's a little longer than this, but I'd suggest giving the above a go if you don't want to read that manual. It'll probably do the trick.

Now comes the final step, actually connecting with the computer bulletin board of your choice.

But how do you find a BBS phone number? Well, you've got three good ones to start with right in this column, haven't you? And you might find a few more in CB ACTION in other columns and articles.

Your modem store will probably give you some more, and you always can buy one of the Australian computer magazines, most of which have a "BBS" section with lots of contact phone numbers.

Patrick's Recessionary Money-Saving Hint: try one first that isn't an STD call! Your comms software will now be running and will have made evident its screen where BBS name, phone number, parameters, and speeds should be entered.

If you can't find this screen, dig out those docs right now!

SETTING THE PARAMETERS

The only other problems arise in the areas of parameters and speeds. Let me make it easy for you: set the parameters to N for Parity, 8 for Data and 1 for Stop Bits, or N-8-1.

Don't ask me what this means.

I'll write about it another time. This is simply the standard setting for nearly all computer bulletin boards worldwide.

Then set your speed to the fastest speed your modem can handle. This should do the trick.

Rev up the comms software, watch it twinkle the highly entertaining coloured lights on your modem's smiling face, and bingo, the little beastie should immediately dial the BBS of your choice! What?! Your new modem didn't do all this stuff? OK, here are a couple of common causes of such failures.

First, make sure everything is plugged in and properly turned on. Next, did you remember to connect your modem into your telephone line?

Is the telephone handset still attached to the phone line as well (or to an extension) and off the hook?

Did you correctly set your comms software for TONE or PULSE dialing, as is appropriate for your telephone line?

If your PC has more than one serial port, have you got your comms software correctly looking for COM1 or COM2?

I'll bet these tips solve many of the more common problems.

Anyhow, after you've got your software automatically dialing and connecting with a BBS, you should be OK.

When you do make contact with the BBS, its own software will ask you certain questions in order to get you registered for regular usage, and you should simply follow directions.

If you don't, or if you hurry along without reading the instructions given by the BBS ...don't say I didn't warn you!

Most computer bulletin board systems have very ample "help screens" and lots of information available about how to use them properly.

But eager first-time modem-users tend to skip along a little too fast.

One final possible problem, and one probably faced by Mark, is that you have "locked" your modem to a very fast speed, such as 14400 bps, but the BBS in question only handles, say, 9600 bps.

This will result in "rubbish characters" appearing on your screen.

If in doubt, start with 2400 bps, as practically all systems accept this speed, and then work your way up to your modem's top speed after a couple of familiarization calls.

Most modems will "auto-range" and automatically connect you and the BBS at your mutual top speed.

You will eventually read the modem manual and find out all about this.

I did! Boy, that was a long story, wasn't it? I hope all the above proves useful to newcomers to modems and computers, and not too boring for you professionals.

Anyhow, it hasn't left me with much space for anything else.

I know I promised to review two new Morse code teaching programs and the latest SCANBASE v2.2 radio database for WINDOWS, but I will have to leave these til the next issue.

Let me take a sec, however, to mention that the "temporary" SWP DISK OFFER continues, for those of you who haven't yet taken the modem plunge.

In an untiring effort to keep modemless computer/radio freaks in touch until everyone in the whole world (or at least Australia) finally owns a modem, I will still provide radio-related software by snail mail. Please send your cheque or money order for $35 plus six formatted floppy disks (of any size) to the same famous addressat the foot of the cvolumn.

Make your cheque payable to *SHORTWAVE POSSUMS BBS*, and I'll zap you back by Australia Post a big selection of the latest shareware software for IBM compatible computers, radio-related programs of all sorts!

I really don't think you'll be disappointed.

If you have your heart set on one or two special favourites, please mention these when you write.

But remember...it's to your advantage to get that modem ASAP and tap into tons of free and/or cheap radio software as close as your phone line.

And that's it for this issue! I really gotta go now.

Keep in touch with me electronically on (02) 651-3055, 24 hours daily, seven days a week, at modem speeds up to 14400 bps.

I'll look forward to hearing from ya!

SHORTWAVE POSSUMS BBS,
PO Box 357,
Round Corner
NSW 2158

RADIO DIRECTION FINDING ON 27MHz:

by Ralph Parkhurst (VK3LL)

Whether you're interested in locating hidden radio transmitters just for fun, or want to track down nuisance radio operators, the DF loop antenna is probably one of the simplest breeds of 27MHz antenna that a home constructor can make.

In the first of this series of articles, you'll learn just how easy a DF loop can be to construct.

But we'll also look at how to get the most out of your loop by examining the various techniques for direction finding, as used by the experts.

THEORY OF OPERATION

DF loop antennas consists of a single turn of wire, the dimensions of which are not overly critical. In fact the antenna can even be square, rectangular, diamond, or any symmetrical shape. But circular in most commonly used as it allows the design to be very "portable" whilst still providing good mechanical rigidity.

For those technically minded, the loop antenna needs to be much less than one wavelength in size as this means that the currents induced into the antenna may all be considered to be in phase.

The result is that, in all instances, the magnetic field will become perpendicular to the loop.

But of particular importance to us is that when the loop diameter is less than one-sixteenth of a wavelength, the antenna will exhibit a sharply bi-directional radiation pattern, effective over a fairly wide range of frequencies - perfect for "DFing".

The DF loop is not a high "gain" antenna.

In fact, it's quite lossy - but this is a good thing because when we are close to the transmitter, we want to avoid overloading our receiver since this will make identification of the direction very difficult.

When the loop is rotated through 360 degrees, two signal peaks and two signal null's will be observed on the receiver's signal-strength meter.

The null's are normally used to indicate direction as they are usually very sharp and easy to identify, although in certain circumstances (such as when the signal is very weak), the peaks may be more appropriate.

The loop will enable us to determine the direction of a transmitter, but not its distance.

For that, we'll need at least one other direction from another point.

Then it is a simple process to plot the information on a map, and where the two lines intercept, there will be our transmitter.

Three, four or even five directions, each from a different location, will improve the accuracy of our "find". But more about the technique in a moment - let's get on with building...

CONSTRUCTION

The loop is made from a 750mm length of 3.2mm (1/8") brass rod, commonly available from engineering or welding suppliers.

Its support handle is made from a 750mm length of PVC electrical conduit which is readily available from most hardware stores.

Start by cleaning the rod with steel wool. This will make soldering much easier later on.

Then bend the rod into a circle by gently wrapping the rod around some convenient object with a diameter of about 24cm, like a saucepan or bowl etc.

The loop should then be passed through hole "A" within the PVC conduit (see diagram) until an equal length is protruding from each side of the conduit.

The insert each end of the rod into holes "B" so that the ends are 5mm apart from each other.

Being careful not to melt the conduit, solder the trimming capacitor between the two ends of the rod. Orientate the trimming capacitor such that its adjustment slot is facing towards the open end of the conduit, as this with permit easy tuning of the loop later on.

Pass the coax cable through hole "C" and down the "handle" of the conduit until it emerges from the bottom. Pull the coax through until about 20cm of it remains. Strip back 20cm of the insulation, and separate 15cm of the braid from the inner conductor.

The braid is then twisted together, and trimmed back to 3cm. Then wrap the twisted braid around the brass rod, just as it enters the conduit at hole "C". Carefully solder the braid to the rod, then pull the rest of the coax back down through the handle.

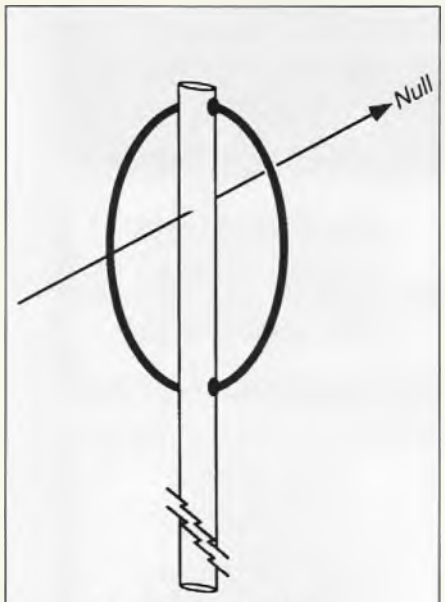
Trim the inner conductor length from 15cm back to 10cm, and remove 2mm of the insulation from the end. Solder this end of the cable into the rod as shown in the diagram. In other words, you should finish up with 10cm of the coax inner-conductor, between hole "C" and the point where it is soldered to the brass rod.

To make the loop mechanically rigid, apply epoxy glue (eg Araldite) to each of the holes to keep the brass rod in position. Finally, put a PL259 coax plug on the other end of the coax to complete the loop antenna's construction.

ALIGNMENT

Most of the time, the DF loop will probably used from a vehicle, and so this is the place where alignment of the loop should take place.

Locate CB transmitters on 27MHz with our new, easy to build "DF Loop"



Direction of Null

Plug the DF loop into the rig, and remove any other 27MHz antennas from the car, since these can alter the directivity or "pattern" of the loop antenna and thus distort the readings the are taken.

Find a fairly-strong local station, and tune the trimming capacitor for a peak in signal strength.

The trimmer must be tuned to make the loop antenna "resonate" on 27MHz, otherwise the directivity pattern of the loop will cause unpredictable results.

Make sure you don't touch the antenna when you tune it, and hold it at least 30cm from your body (the human body really upsets the characteristics of any antenna!)

There are two important facts which you need to be aware of.

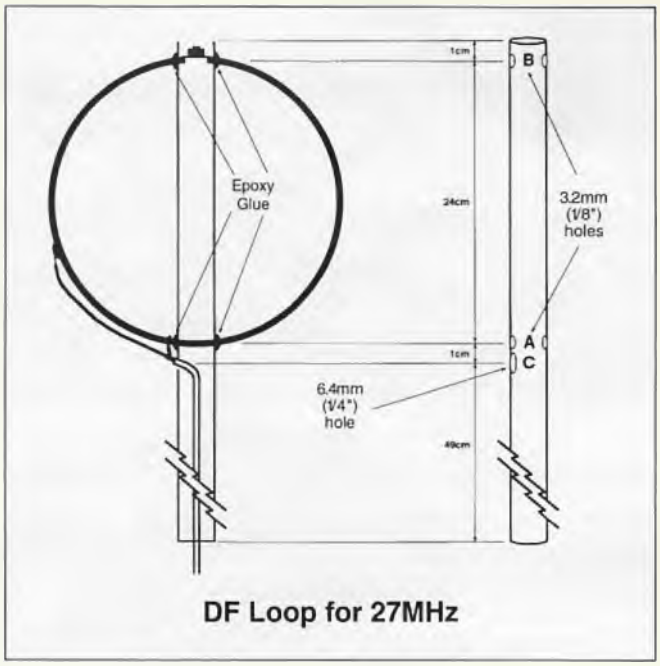
The first is that the trimming capacitor must be tuned with a **NON-METALLIC** screwdriver or a plastic alignment tool. If you don't have a suitable tool you can fabricate one easily from a plastic knitting needle with a file or sharp blade. I keep a "knitting-needle-tool" in my glovebox compartment, just in case I need to realign my loop on-the-fly.

The second point to note is that the rig you use with this loop should have an easy to read signal-strength or "S" meter, not LED's.

Trimming Capacitor Mounting
(viewed from above)

When we get close to the transmitter, the null's can be less pronounced.

And unless you have an S meter with a moving needle, you won't be able to spot those inconspicuous "needle-width" null's. By the way, the signal "peak" is very sharp, and you'll need to adjust the trimmer v-e-r-y s-l-o-w-l-y to get the loop into proper tune.



DF Loop for 27MHz

As you rotate the loop, you'll notice that the signal changes in strength quite markedly. Spend some time in getting used to this, as is important to understand that rotating the loop through a full circle will provide TWO signal peaks and two signal NULL's. (It is this bi-directional response that makes DFing so much fun!).

The direction of the transmitter when the loop is nulled is always the direction as you look "through" the loop, whilst the direction when the loop is peaked is as you look "along" it.

The two null's are the easiest to identify, and so they are the bearings that are used most often. I call one the forward-bearing, and the other the back-bearing. Just which is which is nearly always impossible to tell on the first bearing that you take - that's why you'll need a good map and compass to plot your results onto.

But as you get better at DFing, you'll probably learn by instinct which is which.

Actually, I have noticed under certain conditions that you can tell - but more about this will be revealed later in the next issue of CB Action.

For now, here are five cardinal rules of DFing:

*• **When DFing** from your mobile ALWAYS stop the car before taking a bearing. If the null is a bit "wishy-washy", move the car a few metres, and try again. It is likely that your bearing is coming from a reflection such as a hill, or building. So only accept bearings that offer clear and distinct null's.*

*• **ALWAYS** keep well clear from metallic objects when taking bearings. Hold the loop well clear from the car, and never take a bearing when you are near a "Cyclone" wire fence - these are always causes of distorted readings, and will reap havoc with your bearings.*

*• **NEVER** take a bearing whilst the car is moving. Apart from being unlawful, it's also obviously very unsafe and puts yourself and other road users at risk.*

*• **ALWAYS** take at least two bearings from two different, clear, and reflection-free locations, and plot onto a map to give yourself a pretty-good idea where to start localised DFing from. This will prevent you from heading off on a "back-bearing" and will save heaps of otherwise wasted time.*

*• **NEVER, EVER** transmit whilst the DF loop is connected. Not only will the trimming capacitor within the loop go "up in smoke", but the RF "final" transistor in your rig could be destroyed if you hold the button down for too long.*

Until next issue, happy DFing!

About the author:

Ralph Parkhurst is a veteran of the CB world. Having started out in the good old "pirate" days of 27.240MHz in the early 1970's (long before CB was legalised), he has always been fascinated with the technical design concepts of communication systems.

He has designed a number of specialist radio communication systems for Australian businesses and foreign governments, and experimented with dozens of different types of RDF equipment. Ralph is an active amateur radio operator, and runs his own communications consulting company in Melbourne.

Next issue: ***The DF hunt continues....Build yourself an RF-Attenuator for getting in close to the transmitter.***

We've got phone-patch, encryption and Selcall...

SO WHY NOT PACKET?

Now that we have slipped over the peak of Solar Cycle number 22 and find ourselves inescapably moving into the doldrums of the "quiet sun" with its associated sharply decreased surface activity (fewer sunspots) it seems that most of the channels on 27MHz are deserted for lengthy periods.

Listening around the band for the past few months - around Melbourne at least - has seen the gradual decline in activity in both AM and sideband transmissions and from most reports the retailers are doing it hard as a result, as also are the dedicated 11m DXers.

Even before the latest "scare" tactics of a new Communications Act threatening to cramp our collective styles, 27MHz activity was already in decline except for unpredictable bursts of skip to break the monotony of impending boredom. There are still quite a few short DX openings across the pond and as I write now - about 7am E.A.S.T. - a lowly ZL station is calling CQ DX alternating between channel 35 and channel 16 Australian. A quick check of 26MHz finds the Kiwis in full swing with even readable AM stations "making-the-trip" unimpeded. Either no-one in VK-land is listening or they are just not interested. (Not listening I think as, believe it, there is still a lot of international DX being heard and worked.

If in doubt, check out DXinternational and, just to be sure, I've sighted quite a few very recent QSL cards which back up the reports. Problem is, DX is becoming very unpredictable and usually with only short openings...editor).

WHAT'S HAPPENING?

What has happened to the concentrated activity on HF CB that has characterised the band for the last two decades? Have the majority of operators lost interest and turned to other activities, or has the stagnant economy finally dealt a death blow to the hobby?

Perhaps it is just boredom and CB radio needs the spark of something new and exciting to restore the vitality which has for so long been its strength.

Even UHF CB appears to be in recession for the first time in years and the repeaters in and around Melbourne which are usually "jumping" with activity now remain idle for lengthy periods.

For the first few years of legalised CB in Australia the laws of physics were suspended by the regulating authorities and CB radio transmissions were banned from travelling greater distances than 32 kilometres.

No, it's not April 1st and neither is it a joke. The controlling body at that time, the Post & Telegraphs Department, actually surpassed all previous governmental lunacy and declared that operators could not make contacts with stations at a greater distance than 32km.

They also banned the use of beams.

At least they allowed five rigs on one license for $22 those days... but that's another tale to tell.

Packet radio is almost identical to using a 'phone BBS except that instead of using the 'phone to check into the board, you use your radio. It's an exciting hobby and is very popular with amateur operators - so why shouldn't it be available to CBers?

In the ensuing years the "Department" has generally become more liberal, sensible and even congenial, allowing the installation and use of repeaters on UHF CB along with tricky devices like CTCSS (sub-audible tone squelch calling), SELCAL and scramblers.

It has even deregulated the use of high gain antenna arrays so that CBers can use virtually any antenna system the local councils will permit.

Even phone patching is legal these days and this still comes as something of a nasty shock to amateur operators.

But what is needed now, and the suggestion is not going to come from the "Department" (who would really like CB and everything connected with it to quietly go away) is something new - and I'm not talking about morse code.

Look around and see what's happening in associated industries. High definition and digital television is looming remarkably close and VCR never cease to offer new enhancements.

Cellular phones are advancing in leaps and bounds with world coverage digital soon to be available.

Even "white goods"- 'fridges and washers - are under concentrated research and development with manufacturers fighting to produce the most "intelligent" product. Thanks to GME Electrophone, UHF CB had a recent injection of interest with the introduction of the excellent TX-4000 and the effort has paid big dividends to this Sydney based company, but when was the last time we saw some innovation in 27MHz.

In recent times we have even had difficulty finding new rigs to review. The Uniden Grant was big and heavy and more expensive than most sideband rigs but it was also probably one of the nicest little packages in the history of CB. Its flame is now extinguished in favour of smaller rigs with a couple of models that even have trouble remaining stable.

In the 1990s there is a blurring of boundaries in all areas of electronics where traditional analogue technologies like radio, television and audio are blended with digital technology to produce superior results throughout the collective industries.

(continued over page...)

SO WHY NOT PACKET?

(continued from previous page)

In fact, many CB radios are now controlled by a microprocessor not all that different from the one that inhabits your VCR or PC.

Amateur radio operators have been using this combined technology for yonks with one of the most popular pursuits being a practice they call Packet Radio.

THE PRIME OBJECTIVE IS THE TRANSFER OF DATA

A closer view of "packet" reveals that radio has become a secondary factor with the prime objective being the transfer of data from one PC (personal computer) to another using radio transmissions in the amateur bands as the connecting link.

Many readers will admit that this sounds like a pretty good idea, however, a closer look at amateur packet radio reveals an international network of immense proportions spanning the globe.

What they have really done is combined the power and advantages of computer bulletin boards, which contain monumental volumes of information, with the economy and ease of ham radio transmissions.... not all that different from CB really.

FOR A MODEST FEE YOU CAN INTERFACE YOUR PC TO A CB

In fact, for a modest sum just about any CBer could interface a PC to a CB transceiver and be on the air in no time without making any illegal modifications to the rig.

Hmmm, sounds interesting? Well, let's examine the concept a bit more closely.

At the moment coded transmissions are not permitted on either 27MHz or UHF CB, however, scramblers are permitted on the grounds that, if required the "Department" must have access to a deciphering device which will reveal the contents of "scrambled" messages. No limit appears to have been placed on speech security devices and the present technology makes available reasonably priced devices which have billions of codes and are virtually uncrackable.

The top shelf units firstly perform an analogue "scramble" and then convert the result in to a digital code which is then broken up into a predetermined sequence with the "key" code being changed perhaps five times per second. So, even if you manage to decipher one tiny fifth of one second fragment of information, it is not long enough in duration to be a complete word so you can never be sure if you have really cracked the code before it is changed.

Makes it pretty tough and that's why this type of DVP (digital voice processing) is so secure. There are lots of stations using scramblers these days and I have yet to hear of SMA (Spectrum Management Authority) asking an operator for a deciphering device.

I use the above paragraph to illustrate an important point.

Scramblers are devices which effectively produce coded information that is legally transmitted over the citizens bands. All known types of DVP systems are apparently legal. They are disliked by some operators because DVP prevents "sticky noses" from eavesdropping on private conversations which are none of their business in the first place. However, they are legal to use and, hopefully, we still live in a sufficiently democratic society where freedom of choice prevails.

IT CAN BE DONE FOR $100

If you own or have access to a PC and a UHF CB, for less than $100 outlay you could be exchanging information, programs and leaving "mail" with similarly equipped stations. If there was a suitable bulletin board available "on-air" you would potentially have access to volumes of valuable information. You could contribute information and receive other data in return. This is the basic formulation of packet radio - to send and receive information between computer terminals often direct between two stations and other times via "digipeaters" which is just another name for a repeater that deals in digital traffic rather than voice transmissions.

Data transmissions would be easiest on UHF CB with its inherent lack of noise and interference but with a little care good results would be had on 27MHz AM and single sideband provided the received signal is carefully clarified.

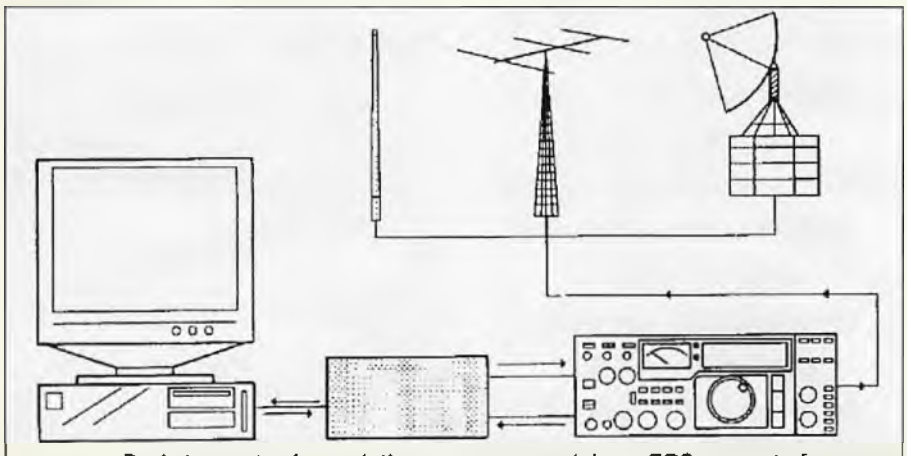
PACKET MEANS JUST THAT

The name PACKET radio sounds a bit strange to the uninitiated, however, the title is drawn from its own characteristic style of transmission. When two computers are exchanging information the format is usually arranged in lengthy transmissions of tone encoded data that may last for minutes and even hours. This is ok when terminals are directly connected together and there is little likelihood of error. Even telephone lines are a reliable link in most cases and lengthy transmissions usually go without error.

Using a radio link on the other hand leaves transmissions open to interference from various sources and there is no point to sending a five minute data transmission if the data becomes corrupted at the beginning of the transmission. This would also unfairly tie-up a channel, excluding other operators with equal rights from fair participation.

DATA IS BROKEN INTO SMALL PACKETS

Packet radio breaks up the full transmission into smaller "packets" of information - usually around 200 to 300 characters - and sends the data in short bursts of transmission. The process is electronically automated and control of transmit and reception is handed over to the two computer terminals which send



Packet operates in much the same way as a 'phone BBS - except of course for the fact that it communicates via the airways. Amateur packet involves sending data via satellite, HF, VHF, etc. CBers could, given DoToC's approval, use both HF and UHF.

This particular TNC is one of the many makes/models available from Stewart Electronics - retail price is $279.

and reply to each other until they agree the conversation is complete.

To use packet radio you need to follow a fairly standard protocol as for any legitimate two-way radio conversation and/or computer data exchange. You first need to "log-on" to a station by callsign and identify yourself so the computers and associated communications programs can establish who is talking to who.

Because it operates in short transmission bursts a packet radio bulletin board will often handle a group of stations simultaneously in what appears to be random sequence. The management software, which is readily available, cleverly separates out data intended for each individual user and displays only your messages on the computer monitor.

MAYBE 12 USERS AT ONE TIME

It is possible to view all the data transmissions if you really want to but when there are a dozen users at once the packets of information may be intermixed with data intended for other stations and your display could quickly resemble a screenload of assorted words and symbols - the traditional dog's breakfast.

Depending on the range of tasks set by the bulletin board users the management computer will allocate a table of station priorities and attend to each user in its preferred order. During busy times the computer may appear to desert one or more users for lengthy periods but this is not the case.

Mixed in with the sharp bursts of exchange data, the main bulletin board computer keeps track of each and every current user by occasionally interrogating the frequency to see who is still present and accounted for.

In fact most BBS (Bulletin Board Service) keep a lengthy log containing information about every user, like callsign, operators name, location and the time and date that each has previously accessed the facility - much like a normal telephone electronic BBS.

GROUP DISCUSSIONS ARE POSSIBLE

As you can see, a small user network accessing only one BBS can become a very powerful asset as more and more information becomes available to its users. Stations can communicate directly with each other or in group discussions by typing input to the main system where it is distributed in much the same way as a voice transmission repeater.

Some readers will already be active on telephone access BB Services which are now widely available throughout the world of technically advanced countries. Most of these BBS are subscription type devices that levy a user fee or donation via some means like paid subscription or on a times use basis. It is not so common, however, for the BBS to be connected together in a time/information sharing arrangement.

Packet radio adds a new dimension to computer operating because hundreds, no probably more like thousands, of BBSs are linked together, ultimately producing probably one of the most comprehensive data bases in the world.

NEED A SERVICE MANUAL?

For example, imagine you require a service manual for an old or obscure item of equipment. You simply create a bulletin of your own requesting an answer from any operator who might wish to cooperate with your request.

A little more mundane, but still appropriate, might be a request for a recipe to make genuine Italian bolognaise sauce. Each country has its own Packet radio callsign - much like ISD telephone prefixes - and you could direct your request to Italy, or some other individual country that seems appropriate. As a last resort you might use the "area code" "WW" which simply stands for World Wide. And BINGO!, within a matter of days, sometimes just hours, your message will be available for BBS listing throughout the world.

The list of possibilities is almost endless providing you observe the rules incumbent with such a versatile, important system.

HOW COULD PACKET RADIO APPLY TO CB?

Almost the same way it is used by the "amateurs". The introduction of "packet" to CB would soon see the first BBS and then the second, and, if it catches the imagination of operators like UHF CB repeaters did, we would soon see the birth of a whole new dimension in public access data that could provide a valuable tool and service.

We might even witness the dawn of a new industry that would encompass education, employment and even computer games. Unlike amateur radio operators, the interests of CB enthusiasts do not just centre around radio and associated topics, therefore the potential range of data would probably be much more diverse and of interest to a large cross section of the population.

IT IS POSSIBLE.

We could make it work. Greg Towells has information about Packet boards that are already up and running on 11m in his Bandspread column, however, it is a very moot point whether it's legal. If you apply DoTaC (SMA) thinking to the subject then common sense says that it's probably not, however, because data input is via the microphone socket it just might be that it is...

We intend to check the situation out with DoTaC Given even a probationary okay from the SMA we could soon see a range of imaginative technologies interfaced with a new generation of information hungry Australians.

WHAT DO YOU THINK?

CB Action is anxious to hear readers' opinions on the matter and even new ideas and submissions from parties interested in participating and/or sponsoring a BBS.

UNIDEN PRO-330E

"A SHEEP IN WOLF'S CLOTHING"

By Ken Reynolds
Power Band Communications

It's great to see the manufacturers still out there trying out new concepts, however, many of the new products sadly fall short of "brainstorm" designs these days.

Possibly the limited scope of CB radio performance constraints has a bearing on the overall situation, plus of course a price conscious market expecting luxury for pennies and not prepared to pay for top shelf equipment.

It stands to reason then that companies like Uniden must make the most of their existing designs and the PRO-310e is one such example. They have transformed the PRO-310e from a portable, sometimes mobile rig, into a full-time mobile "stuffeverythingintothehandset" PRO-330e 27MHz CB transceiver.

This concept was exciting when it first appeared some 15 years ago when LED displays were new and stylish and most CBs still used little round dial plates with engraved numbers viewed against a small round window illuminated by a tiny incandescent lamp bulb. This era didn't have the luxury of miniature SMDs (Surface Mounted Devices/components) technology so they kept the electronics in a separate box and used a bulky "curly-cord" cable to interface with the control-head-microphone-display-speaker assembly. This was complicated and horrible stuff but it was "hi-tech" for its time and demonstrated imagination.

A few years ago Uniden produced a similar unit named the PC-22. It was more compact than its predecessor and employed a box of electronics joined to the control-head-microphone-display-speaker assembly by a heavy, horrible, bulky curly-cord cable.

EVOLUTION HAS DONE ITS "THING"

Jumping a decade to the new PRO-330e we observe evolution has done its "thing" and transformed a clumsy discreet component technology into a hi-tech, compact format where all the electronics are now contained in the control-head-microphone-display-speaker assembly that is still too heavy and you guessed it, this time it is connected to the antenna and power supply by a bulky, horrible, heavy curly-cord cable. This time the curly-cord only carries 13.8 volt operating voltage to the transceiver and transmit and receive signals to and from the antenna but the cable size is about as bulky as in the older models - you would have expected Uniden to at least include an external speaker outlet somewhere.

It sure needs something a bit more "gutsy" than the "chirpy" little 3.3 centimetre speaker fitted to the handset.

The do-everything handset is cleverly crafted from tough grey plastic and measures 140mm long by 67mm wide and is about 35mm thick. The rear of the handset carries a typical microphone hanger stud which allows easy attachment to a standard mike hook or alternatively fits snugly into the supplied moulded, matching plastic "station" that doubles as the antenna/power supply interface.

The 330e employs a large, bright yellow/green LED channel display set high on the front case with a pair of almost flush mounted rectangular press-buttons immediately below providing UP and DOWN stepping for the electronic channel selection. Beneath is a plastic grill protecting the already discussed loudspeaker. On our test rig the volume control displayed a marked "step" in audio level in the early part of its range about 15 degrees from the "off" detent position although this may have been a faulty potentiometer peculiar to this particular unit. At the top right hand side of the case is a small slide switch labelled CH 9 which provides, dare I say, the usual channel 9 priority facility. If in an emergency you couldn't use the press-button to summon the desired channel you would certainly have little chance of operating the almost recessed CH 9 switch, unless of course you were blinded in the accident.

Around the corner and located at the top left hand side of the case is a second similar slide switch labelled ANL which activates the noise limiter when switched in UP direction. The noise limiter circuit, as usual with UNIDEN CB transceivers, is very effective at reducing the harshness of a wide range of crackles and "bumps". In the PRO-310e "walkie-talkie" version this switch changes the RF output power level from high to low power setting.

UNIDEN, attempting to get more mileage from their hand-held portable PRO-310e, have released a hybrid with limited appeal to a niche market.

MORE CURLY-CORD

The on/off/volume control and squelch controls employ knurled sided plastic knobs that are part recessed into the right hand side of the case and are operated by finger friction across the exposed knob edge.

The clumsy, heavy curly-cord (by now you've probably guessed that I don't like it much) is strongly secured into the lower under-face of the control head by a complex plastic moulding that snaps together to retain both case halves, the curly-cord and the bottom cover plate.

THE MIND BOGGLES

The mind boggles at the die-making involved. While the cable is bulky and heavy it is also very flexible thanks to the use of high-tech soft polymers. It is not too restrictive if the mounting bracket that connects the whole electronics package to power and external antenna is mounted fairly close to the operator. This also reduces the mechanical stress placed on the curly-cord electrical conductors, especially at cable entry points where metal fatigue from continual movement is the biggest enemy.

CAN WE BUY A REPLACEMENT?

If the cable does fail - can we buy a replacement?

There is little chance of repairing such a cable with its unique moulded fittings and strain relief mechanism. Hmmmm.

Internally, the mind still boggles at the high-tech nature of the well laid out main circuit board and the multi-pin connectors that mate the two sections together. Although the PRO-330e is "only" a compact AM CB radio, the precision and hybrid engineering involved here is intricate to say the least.

CLEVER TECHNOLOGICAL BLEND

The transceiver is a clever blend of several technologies. One side of the main circuit board carries the larger conventional style components like integrated circuits, coils, crystals, mechanical items and transformers in little squarish metal cans. The flip side of the main circuit board is a maze of ultra tiny SMDs frequently measuring about one millimetre square and obviously not assembled or soldered by human hands...their placement is far too good.

While the attention to detail in this transceiver is impressive, for an economy consumer electronic product, one must consider the darker side of events if the unit becomes damaged and repairs are required.

(continued over page...)

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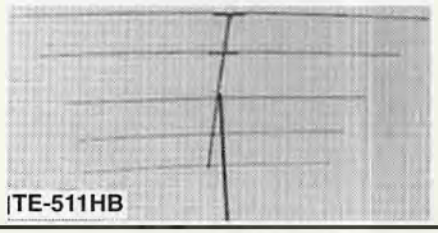

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UNIDEN PRO-330E

"A SHEEP IN WOLF'S CLOTHING"

(continued from page 49)

Surface mount technology seems to be remarkably reliable providing the assembly is not subjected to physical stresses like bending or twisting the circuit board. Uniden has gone to a lot of trouble to isolate the internals from these stresses, however, as an unfortunate fact of life, a mobile CB of this nature will be subjected to far greater abuse than a conventional mobile rig that is permanently mounted.

The 330e will suffer similar environmental outrage as does the lowly mobile CB microphone that seems to fare well considering its regular encounters with steering wheels, pedals, grit and grime - not forgetting the occasional trampling and shower of greasy crumbs from the last serve of potato crisps.

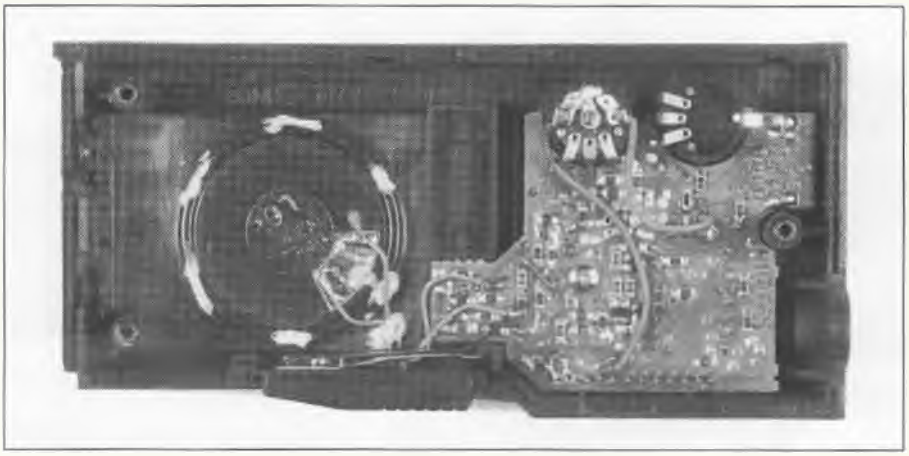
GOOD SENSITIVITY, POOR SPEAKER

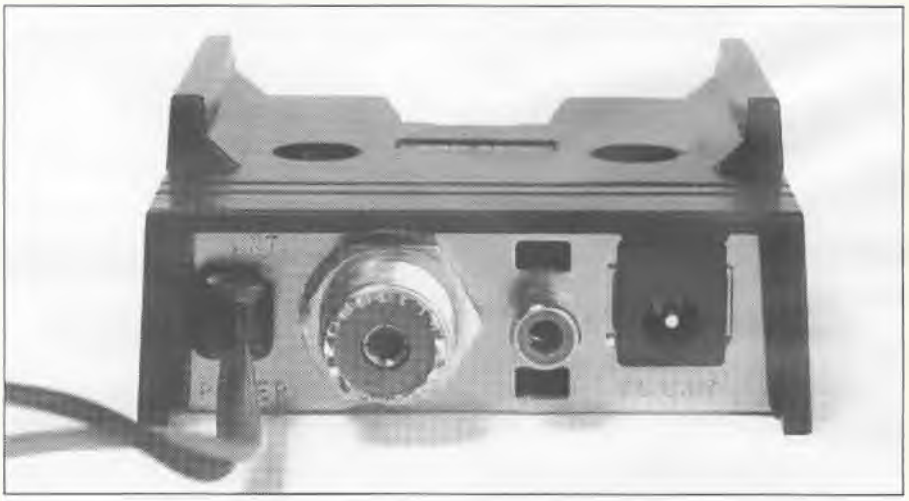
The PRO-330e receiver provides good sensitivity which is spoiled by its inadequate, tiny loud speaker whose audio output can only be described as harsh. It is regrettable that the maker did not foresee the need for a more effective loudspeaker, albeit an external unit, and provide an external speaker outlet.

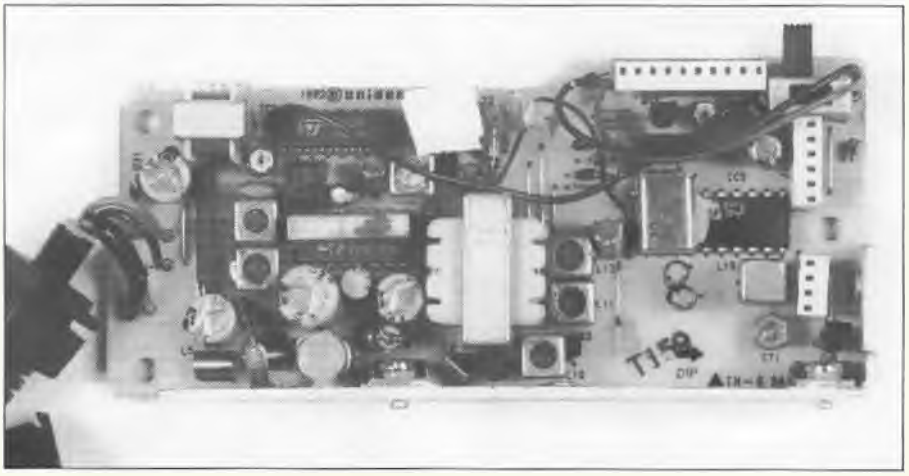
The squelch range was typical of a better "AM only" transceiver with the opening threshold easily adjusted for 0.3 micro volts ranging up to 850 micro volts in the tight condition. The transmitter performance is excellent producing crisp, clear modulation thanks to its electret condenser microphone. Output power was measured at 3.8 watts RMS and it showed little sign of fading after several minutes continued transmission. No over modulation was detected.

SUMMARY

The PRO-330 seems to be an engineering exercise that succeeds from a technical point of view but leaves much to be desired when applied to practical use in a human environment - which is after all where it is expected to "perform". It will appeal to a limited consumer group - like its predecessors - who need a well built, compact transceiver due to restricted space or personal taste. My own thoughts are that the role would have been better filled using the ideas developed for UHF CBRS transceivers by mounting a small transceiver connected to a speaker/mike, or other combination, by a light, flexible curly-cord that anyone can replace for minimum cost.







TOP: The small speaker does not do justice to the audio, however, there is no extension speaker plug. Good use is made of surface mounted components. CENTRE:: The unit slides into cradle. BOTTOM: Quality of construction is excellent and attention to detail is impressive.

SO YOU WANT TO BE AN AMATEUR?

THE PATH TO AMATEUR RADIO

Part Eight of a regular series by Paul Butler - VK3DBP

We are going to have a look at transformers and power supplies in this edition.

Power supplies may not be the most exciting part of any electronic project but without them we would be stuck with batteries, and think what a pain that would be! Anyway, the Novice syllabus says you have to know a few things about power supplies, including safety issues, so here we go.....

ELECTROMAGNETISM

Every electric current produces a magnetic field.

If the current is flowing in a coil of wire wound around a piece of iron, the magnetism becomes concentrated in the iron, which turns into a temporary magnet called an electromagnet.

The magnetism is present only for as long as the current flows.

Electromagnets are found in electric bells, in loudspeakers and, in much larger versions, in car wreckers' yards!

If a second coil is wound on the same piece of iron, the lines of magnetic field produced by the current in the first coil will pass through the second coil as well.

As long as the magnetic field is constant, nothing happens in the second coil.

But a **varying** magnetic field in the iron core has the effect of producing a voltage, called an **induced EMF** (electromotive force), in the second coil.

The varying magnetic field will be produced by a varying current in the first coil.

TRANSFORMERS

This is the basis of a transformer.

A varying AC input voltage applied to the first coil (the **primary**) produces a varying AC current.

This in turn generates a varying magnetic field, which gives rise to an AC output voltage, and therefore an AC current in the other coil (the **secondary**).

Note that DC applied to the input has no effect.

It is the variation in the magnetic field inside the iron core which counts.

So far, so good.

We have a device which takes AC and makes AC out of it! The importance of the transformer only becomes apparent when the number of turns in the primary coil is different from the number of turns in the secondary.

The transformer can **transform voltages**, from low to high or from high to low.

The **ratio** of the turns making up the coils of a transformer determines the **ratio** of the input and output voltages, according to a simple formula:

where A = primary voltage
B = no. of turns in primary coil
C = secondary voltage
D = no. of turns in the secondary coil

$$\frac{A}{B} = \frac{C}{D}$$

A **step-up** transformer has more turns in the secondary coil than it does in the primary coil and so produces an output voltage which is greater than the input voltage.

A **step-down** transformer, on the other hand, produces an output voltage which is less than the input voltage, because it has more turns in the primary coil than in the secondary coil.

For example, a 20:1 step-down transformer can reduce the 240V AC mains supply to 12V AC, for use in a low-voltage circuit.

Note that the higher voltage is not obtained for free.

According to the laws of physics, no more energy can leave the transformer than entered it; in fact, in a real transformer, energy is always lost as heat, so less energy leaves the transformer than enters it.

An **ideal transformer** would be 100% efficient (no energy loss) but any **real transformer** must have an efficiency less than this.

Losses result from heat generated in the coils themselves (resistive losses) and from currents in the iron core, called eddy current (Hi, Eddy!).

Eddy currents can be reduced, but never totally eliminated, by constructing the core as a series of laminations, layers of iron separated by layers of insulating material, to form a **laminated core**

Remember that power = voltage x current.

Looking at an ideal transformer:power in = power out so input voltage x input current = output voltage x output current.

It follows that an **increase** in voltage from input to output must result in a corresponding **decrease** in current.

A step-up transformer produces a higher voltage but a smaller current;conversely, a step-down transformer produces a smaller voltage but a larger current.

The ratio of primary and secondary currents is therefore the opposite to the voltage ratio:

where A = primary current
B = no of secondary turns
C = secondary current
D = no of primary turns

$$\frac{A}{B} = \frac{C}{D}$$

POWER SUPPLIES

Now let's put the transformer to work in a power supply.

First, for safety, the primary circuit must include the appropriate fuses.

Their rating, in amperes, should be 10% or 20% above the normal current value, to allow some "headroom".

A rating set too low will result in regular fuse-blowing episodes, while too high a value will not provide adequate protection for the equipment or its users.

Slow-blow fuses are used for applications in which surges might occur, for example when a motor starts up.

Fast-blow fuses are used to protect sensitive electronics from damage.

Remember, fuses are not there just to cause a nuisance when they blow.

If a fuse blows, it does so for a good reason - something's gone wrong.

Replacing a blown fuse by another of different rating, or by the traditional six-inch nail, makes the whole thing VERY unsafe!

RECTIFIERS

To turn an AC voltage into DC, a single **diode will suffice.**

As we saw in CB Action, January/February 1993, a diode has the property of conducting in one direction only, provided its peak inverse voltage (PIV) rating is not exceeded.

Positive half-cycles pass merrily through, negative half-cycles don't - half-wave rectification! We say that a diode conducts when it is **forward-biased, but not when it isreverse-biased.**

The output from this **half-wave rectifier (Fig 1) bears little resemblance to DC, except that the electrons always go the same way round the circuit.**

Smoothing helps (see below) but a better way to go is to flip half the cycles and let them all through - full-wave rectification!

Now we need two diodes which, in **this full-wave rectifier (Fig 2) , take it in turns to conduct.**

As the polarity of the transformer output flips first one way, then the other, **diode A conducts, then diode B, as shown in the diagram.**

The result is still rather lumpy DC but at least there are no gaps in the waveform.

The additional cost of a centre-tapped transformer, however, makes **the bridge rectifier (Fig 3) more popular.**

The bridge rectifier does not need a centre-tapped transformer but **four diodes are required, as the diagram shows.**

A common arrangement is to incorporate the four diodes into a single package, with two connections for the input and two for the output.

To understand the action of the bridge rectifier, first remember that the arrow head in the diode symbol indicates the direction of conventional current, from positive to negative.

This is the direction of current flow normally referred to in circuit diagrams but opposite to the direction the electrons move, i.e. from negative to positive.

When the transformer's upper terminal is positive and the lower terminal is negative, diode A conducts and the upper output terminal becomes positive.

When a load is connected, conventional current will flow from this terminal through the load and into the other output terminal.

(continued over page...)

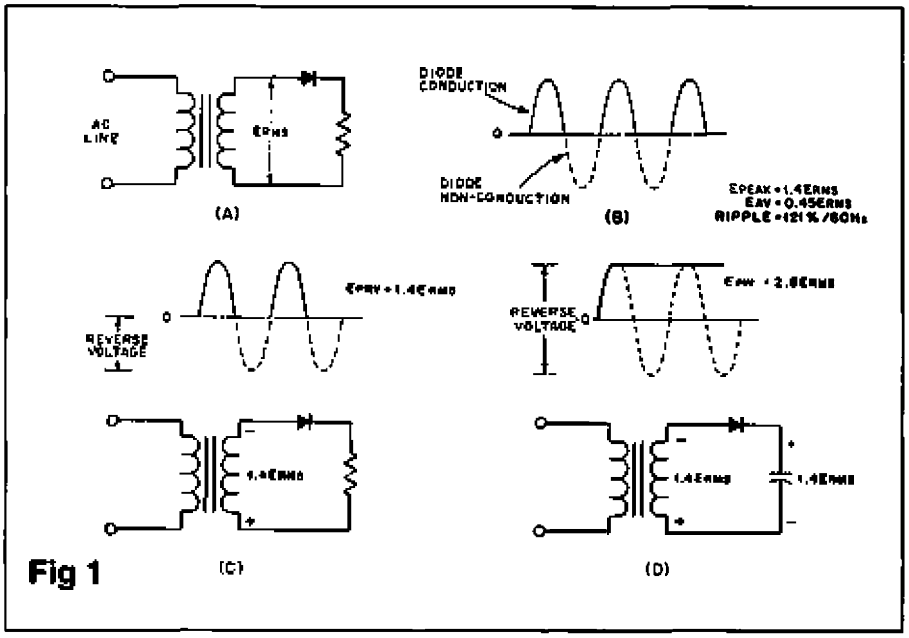


Fig 1

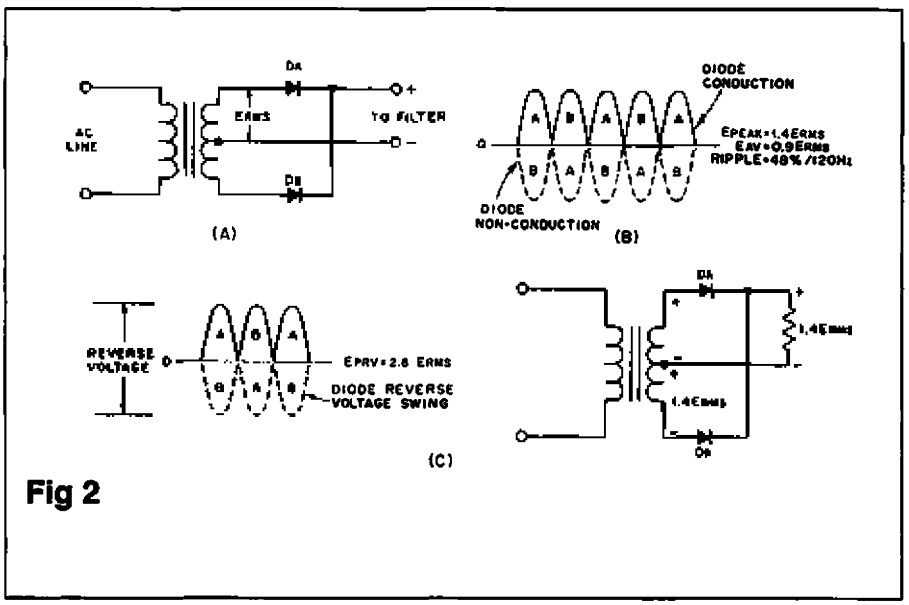


Fig 2

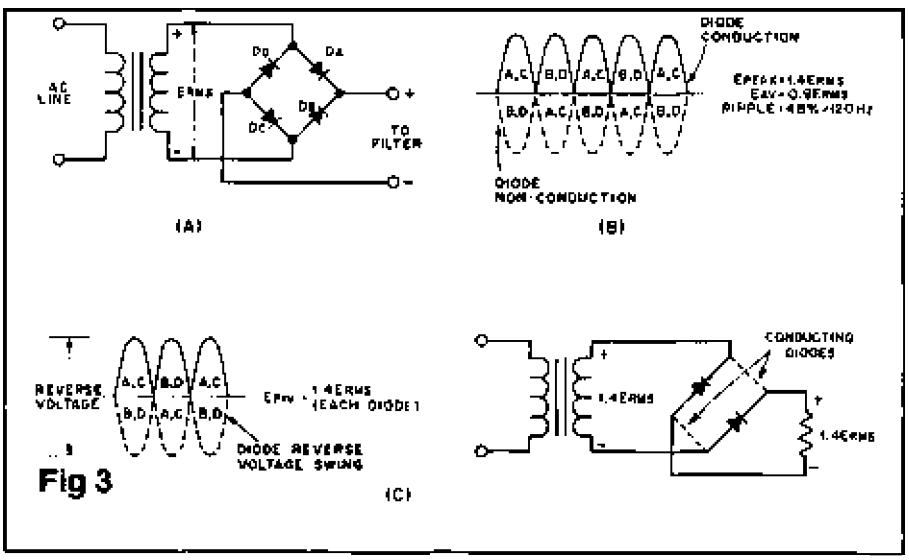


Fig 3

SO YOU WANT TO BE AN AMATEUR?

(continued from previous page)

The circuit is completed by diode C, which is forward-biased under these conditions.

During the other half-cycle of AC, the transformer's upper terminal is now negative and the lower terminal is positive.

This time, diode B conducts, again making the upper output terminal positive.

The circuit is completed through diode D, which is forward biased.

Because of the action of the bridge rectifier, the output polarity is always the same.

The output voltage still varies from zero to maximum, just as it did for the full-wave rectifier discussed above, so clearly some further processing of the output is required before it can be called DC.

DIODE RATINGS

The **current rating** of a rectifier diode is as important as its **peak inverse voltage** or **PIV rating**

The value usually quoted for the current rating of a diode is the **average** current value.

It should be remembered, however, that the actual current in the rectifier varies throughout the cycle.

Because each rectifier conducts at most for only half the time, the current it carries is at least twice the average value.

When a smoothing capacitor is used (see below), the actual period of conduction can be quite short, but during this time the diode supplies the whole load current.

This peak repetitive current can be as much as four times the average current rating before damage to the diode occurs.

In addition, when the power supply is first turned on, a large current flows to charge up the filter capacitor(s).

This initial surge current can be quite high.

As a guide, a typical diode can tolerate a surge current about 12 times its average rating.

SMOOTHING

The next stage in rectification is to smooth out the "lumpy" voltage produced by the rectifier stage.

Smoothing can be thought of as an **averaging** process, since the output is averaged over each cycle to a relatively constant value.

The smoothing circuit is actually a filter, since the periodic variations in voltage produced by the rectifier are removed to leave a non-varying output voltage.

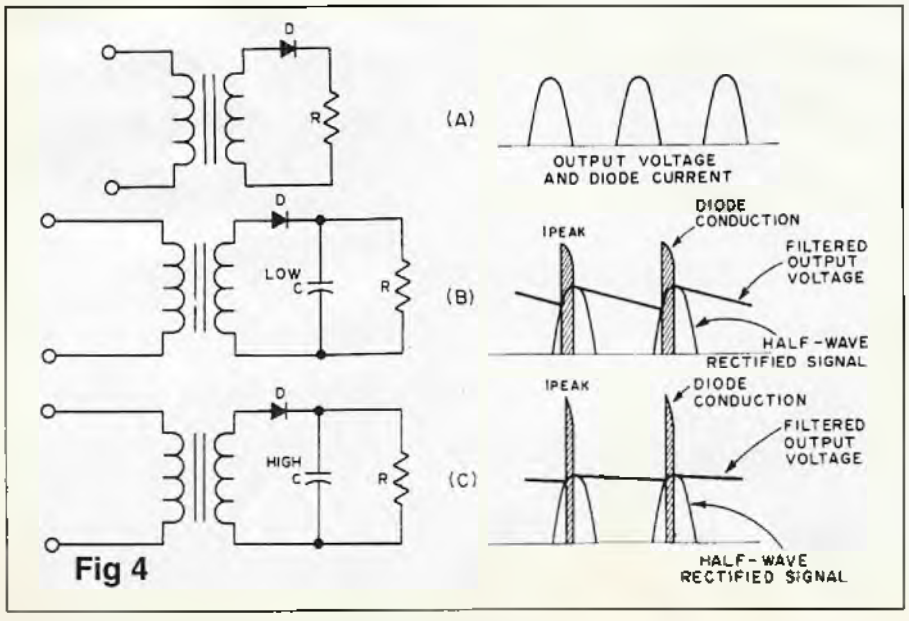


Fig 4

The action of the smoothing or filtering circuit can be analysed using the information in the diagram (Fig 4).

This shows smoothing of the output of a half-wave rectifier, but the same principles apply to full-wave and bridge rectifiers.

With a purely resistive load, the output is, as we have seen for this simple circuit, positive half-cycles with gaps between.

Adding a low-value capacitor in parallel with the resistive load improves the situation considerably.

When the half-cycle of voltage is present, it charges the capacitor with a pulse of current.

As the transformer output voltage drops to zero, the voltage on the capacitor will also drop as the capacitor discharges, but more slowly.

The rate of discharge depends on the time constant of the resistor-capacitor circuit, which is determined by the size of the capacitor and the resistance of the load.

In the low-value capacitance example, there is sufficient time for significant discharging before the next half-cycle of voltage arrives.

The output voltage purely resistive load. If the value of capacitance is increased, the time constant of the RC circuit is increased.

Now, in the time between half-cycles, the capacitor only discharges by a small amount.

The next half-cycle tops up the capacitor and so the output voltage is held almost constant.

Any residual voltage variation is known as ripple - a typical maximum allowable ripple is two percent of the output voltage.

The bigger the capacitor, the better the smoothing and the smaller the ripple, but often a compromise is reached between capacitor size (and therefore cost) and the degree of smoothing.

This kind of smoothing or filtering circuit is known as a capacitor input filter.

It is most often used with silicon rectifier diodes and produces a relatively high output voltage compared with the transformer output voltage.

With a resistive load, the peak voltage is approximately 1.4 times the root-mean-square (RMS) voltage, as is usual for any sine wave AC signal.

With a capacitor input filter, however, particularly when the load draws only a small current, the output voltage can rise to as high as 2.8 times the RMS voltage.

This must be taken into account when choosing components, so that the peak inverse voltage of the diodes is not exceeded.

The filter considered above is a simple capacitor filter. Further stages can be added to it to provide better smoothing. Each added capacitor is placed in parallel with the first but the stages are separated by either a resistor or a choke (a tightly wound coil).

An alternative is the choke input filter, in which the output from the transformer first meets a series choke,then a parallel capacitor, and so on through successive stages. Choke input filters provide better regulation than capacitor input filters and produce an output voltage much closer to the transformer output voltage.

This design permits a higher load current than the capacitor input design without exceeding the peak rating of the rectifier. There are further additions that can be made to the basic transformer-rectifier-filter arrangement to enhance its performance.

These fall under the headings of **protection** and **regulation**.

For many applications, these refinements are not necessary but for sensitive electronics, possibly costing large numbers of hard-earned dollars, a few extra components in the power supply are well worth it.

A **bleeder resistor** is a resistance connected across the output of the smoothing filter, to discharge the capacitors when the power supply is turned off.

This is a safety measure, since the stored charge could make its presence felt to an unsuspecting finger.

It also improves voltage regulation by the filter circuit by acting as a minimum load resistance. **Fuses** and/or **circuit breakers** have already been mentioned.

They protect the components of the power supply from damage if something goes wrong with the electronics it supplies. They also provide a degree of protection, although somewhat crude, against accidental short-circuiting of the output. A **pilot lamp** may be added to the circuit to indicate when it is switched on and operating normally.

A voltmeter and/or an ammeter may be built in to provide continuous monitoring of the state of the output.

Some degree of **thermal protection** may be provided to keep the rectifiers cool, typically a heat-sink, essentially a chunk of metal which may be finned to increase the surface area and so increase the rate of heat loss.

Some form of **overload protection** is often desirable, to prevent damage due to excessive currents.

This is usually incorporated into the final stage of quality power supplies, in the voltage and current regulation circuitry. Now, here come some questions to make you think a little....

Question 1

A 100% efficient transformer has a turns ratio of 2:1 and a power input of 100 watts.

The POWER output will be:

(a) 50 watts
(b) 75 watts *
(c) 100 watts
(d) 200 watts

Question 2

Power transformers usually have laminated iron cores in order to:

(a) reduce eddy-current losses
(b) increase the output voltage
(c) improve output voltage regulation
(d) reduce copper losses

Question 3

A power transformer has a primary winding of 100 turns and a secondary winding of 500 turns. An alternating voltage of 200 volts is applied to the primary. The secondary voltage is:

(a) 1000 volts
(b) 100 volts
(c) 500 volts
(d) 200 volts

Question 4

An 8:1 step-up transformer has 120 volts applied across the primary. The secondary voltage is:

(a) 15 volts
(b) 120 volts
(c) 180 volts
(d) 960 volts

Question 5

A laminated iron core has minimum eddy-current losses because:

(a) the laminations are stacked vertically
(b) the laminations are insulated from each other
(c) the magnetic flux is concentrated in the air gap of the core
(d) the magnetic flux is concentrated outside the core

Question 6

A simple device to protect a power supply from damage due to overload is called a:

(a) bleeder resistor
(b) filter capacitor
(c) fuse
(d) zener diode

Question 7

Bleeder resistors are included in power supplies to:

(a) discharge filter capacitors after the supply voltage is switched off
(b) prevent damage to filter during overload
(c) reduce ripple in the output voltage
(d) reduce the size of the filter choke

Question 8

When obtaining a replacement fuse for a power supply, care must be taken to ensure that it has the required:

(a) voltage rating
(b) current rating
(c) power rating
(d) resistance rating

Question 9

The purpose of a rectifier in power supplies is to:

(a) convert pulsating direct current into alternating current
(b) convert alternating current into pulsating direct current
(c) produce smooth direct current
(d) regulate the output voltage

Question 10

A full-wave bridge rectifier has:

(a) 1 diode
(b) 2 diodes
(c) 3 diodes
(d) 4 diodes

Answers

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

AUSTRALIAN ASSOCIATION OF CITIZEN and BAND RADIO OPERATORS Inc.

MEETING WITH THE MINISTER

On June 17th. 1993, that which may be looked upon as a historical event, took place with a meeting of representatives of ACBRO Inc. and the Minister for Communications, Mr.Beddall,

He was accompanied by his Senior Adviser Mr. Phillip Steven, and the ACBRO group of three included the President and the Public Relations Officer with the Assistant Secretary who prepared the agenda. This included three major topics, the "channel 35 Issue" (27 MHz), licence fee discrimination and possible segregation of AM and single side band operation in the HF band.

The agenda documents, taking up thirteen pages, outlined the issues with a brief history of events over a period that led to this time. It was established in the early part of proceedings that the Minister admitted to having little knowledge in the way of "hands on" experience of the CBRS as CBers would know it.

This was important to ascertain by those in attendance to avoid use of jargon that would only make sense to an experienced CBer.

RADCOM AND SMA

The agenda items were taken individually with oral comments becoming an additional form of explanation to the written text, with the Minister showing what appeared to be concerned interest and asking questions while his secretary pencilled many notes. Responses to many points raised appeared to come back to two of DoTC's current changes, the new "Radcom" Act and the formation of the Spectrum Management Agency established to commence operations on July 1st.

ACBRO was complimented on their timing of raising these issues, particularly that of license fees, as this newly formed agency would have the responsibility of setting them and such would be part of their early agenda. In fact, as explained by the Minister, this new agency would be the appropriate group to approach on all of the issues raised at the meeting, and he offered to put ACBRO in touch with the head of the SMA to further analyse the issues raised and to consider the need for recommending the changes suggested.

Agenda Item One

CHANNEL 35 ISSUE
on 27 MHz. HF Band CBRS.

HISTORY

I. There exists ample evidence of groups and individuals having made requests for channel 35 in the CBRS band being regulated as an official calling channel.

2. ACBRO's petition was presented to the Parliament on 11 Oct 1990.

3. Follow-up to this presentation since has not resulted in any satisfactory conclusion.

4. Question asked of previous Ministers - As to how many signatures on petitions were required to have request approved - was never really answered.

5. Last response from the Minister's Office related to new Act and re-organisation of operation being planned and consultation on CBRS matters being assured.

6. The request for this change as a "stop-gap" has been considered as a prerequisite to the formation of another agenda item, being segregation of "AM" and Single Side Band operation in the CBRS.

Following are some extracts from the agenda which were presented to those present, it being a neatly bound book of pages, a copy ofwhich will surely find a place in ACBRO's archives in time to come.

PETITION- 11 OCTOBER 1990

To the Honourable The Speaker and Members of the House of Representatives in Parliament assembled. The petition of the undersigned citizens of Australia respectfully showeth:

1. That the need for channel 35 lower sideband (frequency 27.355 MHz) in the allocated eleven metre band of of the radio spectrum occupied by the Citizens Band Radio Service (CBRS) is warranted to be regulated as an additional call channel.

2. Evidence by useage of this channel for establishing calls is adequately clear by observation.

3. The introduction of legalising by regulation such use of this channel as a community facility will greatly assist self regulation.

Your petitioners most humbly pray that the House of Representatives in Parliament assembled, together with the Senate, take action to instruct the Minister of Communications to introduce regulations to stipulate this exclusive use of channel 35 (CBRS) as an additional call channel.

by Mr Sawford (from I,332 citizens)

BRIEF PRESENTATION OF LOGIC AND REASONING

The petitioners are merely seeking an alteration to regulations, a demand that contrary to most requests upon the Government, requires but little expense.

The channel that is being requested to be regulated exclusiv~ely for "calling on" was historica1ly used for this purpose and traditionally has been used as such by the majority of users since the 40 channel CBRS was introduced.

The small effort made to gain ~support for this petition, resulting In 1331 signatures being appended to it, has been concentrated on to establish the interest of a cross section and the respondents are in varying numbers from all states of Australia.

The favourable acceptance of this petition by the Government in this instance, will obviate the need for continuing the campaign to build up further suppor~t by pursuing this matter with greater publicity and effort.

The importance of this matter is to aid self rgulation of operation of the CBRS, a system that previous Ministers of Communications and the Dept. of Transport & Communications have nominated should prevail.

The current circumstances presenting a problem for the orderly use of this service, is that in most areas (particularly built up areas, metropolitan and city) there exists a minority of operators who wil] not conforn to all established tradition.

The legal designating of this channel, will permit the majority of users to have the majority of users to have the support of such a regulation to counteract any troublesome non-conformists who currently have to be tolerated.

HISTORY

1. When "CB" was legalised in the late 1970 period, licencing was priced on the establishment of a station that could house up to five transmitters - fee $25. (1979) There was little evidence of this being unacceptable to those who chose to licence their stations.

2. A ministerial "fanfare" introduced alleged cheaper licenses being one tran~mitter for $9.00, (now $18.00 being double that fee). This resulted in the five transmitter stations paying nearly twice as much $45.00.

3. Despite such change, the current situation results in a CBer paying $18.00 per each tranmitter in a station, compared to the Amateur who pays just twice the price for an unlimited number of transmitters, besides having access to a greater part of the spectrum.

4. In proposing the Minister's consideriationto a more equitable system of charging for a service or privilege for CBers noteworthy point re asked to be considered.

(a) Licence fees on CBers have been abolished in United States of America for some years.

(b) Same has occurred in New Zealand as from the recent date of April 1st. 1993.

(continued over page)

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
Albany Communications Group	65 Hassell St. Elleker, WA 6330
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
Riverland CB Club	P.O. Box 742, Loxton, SA 5333
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 380, Blair Athol, SA 5084
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 1534, 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
Blue O Radio Group	P.O. Box 53, Monaro Cresc, ACT 2603
Sydney Radio Group	P.O. Box 185, Gordon, NSW 2072
UHF Assoc. of WA Inc.	P.O. Box 1238 East Victoria Pk, WA 6101
Ratbag CB Radio club	P.O. Box 227, Welland, SA 5007
Sun Centre CB Radio Club	P.O. Box 912, Swan Hill, VIC 3585
South Australia Radio	P.O. Box 162, Campbelltown, SA 5074
Port Adelaide Radio Club	P.O. Box 352, Pt. Adelaide, SA 5015
Cherokee Indian Aust. Group	P.O. Box 1679, Mildura, VIC 3502
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 112, Bentley, WA 6102
Naracoorte UHF Association	P.O. Box 465, Naracoorte, SA 5271
Gosford Citizens Radio Club	P.O. Box 447, Gosford, NSW 2250
Ultra-Lite Radio Club Inc.	P.O. Box 634, Wynnum, QLD 4178
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 313, Drysdale, VIC 3222
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 32
Coal Miners Wonthaggi CB Club	P.O. Box 420, Wonthaggi, VIC 3995

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SSB ENGINEERING ... VOLUME 2
Covers "second generation" PLL rigs, updated information on many of the early rigs and includes some build-it-yourself test equipment projects. Price $17.50, $1.50 P&P.
OUT OF STOCK

SSB ENGINEERING ... VOLUME 3
Covers the latest PLL-ICs, has a ham radio modification section and an AM to FM CB conversion section. Price $20, $1.50 P&P.

THE CB MODIFICATION HANDBOOK covers Australia's most common CB radios. Everything from a few extra channels to full house conversions covering hundred of channels. Skihzsteps, increasing power, slides etc. Price $15, $1.50 P&P.
OUT OF STOCK

THE CB PLL DATA BOOK is the CB modifier's Bible. This all-new international edition covers fifty specific phase-locked loop ICs, with manufactuers' cross-references. Price $15, $1.50 P&P.

THE SCREWDRIVER EXPERT'S GUIDE will enable the average non-technical CBer to locate and repair up to 95% of CB radio problems, as well as helping the advanced hobbyist to tune and modify his equipment for improved performance. Price $15, $1.50 P&P.

CB ANTENNA CONSTRUCTION, illustrated plans for quarter-wave and half-wave ground-planes, two-element quad, three-element beam and high-performance stacked beams. Price $3 including postage.

HAM AND CB ANTENNA DIMENSIONS 130 charts covering dipoles, beams, quads, vees, triangles and verticals. An essential reference work for any serious antenna builder, this book covers the CB band, HF bands from 160 metres to 10 metres and the 2 and 6 metre bands. Price $15, $1.50 P&P.
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AUSTRALIAN ASSOCIATION OF CITIZEN and BAND RADIO OPERATORS Inc.

(continued from previous page)

(c) The original fee structure may well be currently acceptable - five sets for $25.00.

(d) Alternatively - a modest fee for the initial station licence and a token fee for additional equipment requiring a licence.

(e) Modest licence fee to avoid discrimination mentioned for unlimited number of transmitters.

5. The CBer would like to see a practical service exhibited from the Department (now to be SMA) in return for any license fee payable, particularly in respect to policing flagrant abuse of use of the allocated frequencies.

ONGOING PROBLEM

The ongoing problem with operators in the CBRS being obliged to endure making a transmission which can legally be interfered with by either an AM operator transmitting on a channel used by a sideband operator or vice versa, warrants urgent action to result in the contentment of the citizen operator and provide the ability of those who would, to encourage a method of self regulation.

The differing views on the way in which the allocated forty channels can be fairly split may well warrant a call for submissions to establish a consensus of the users. This Association would be pleased to submit on this subject following consultation with its membership and provides here a suggestion that may appease the varied users, some on the old 23 Channel sets, others on the 18 channel sets, and the majority now using the currently approved 40 channel equipment on the HF Band.

Suggestion by application of logic.

AM Use Channels 1 - 18

Thus enabling call channel 16 to be used for AM calling.

Single Side Band use

Channels 19 - 40

Thus enabling old sets to still have access to a part of either band.

The agenda documents then included a sample of a current letter received by ACBRO from a member complaining on forms of unauthordox operation on the CB band with a copy of the reply sent. The Minister was shown that ACBRO appears to be carrying out a service that would be expected that his department handled, and it was pointed out that such reply was given with more compassion than is normally seen from the "stock standard" replies given to complaints directed to the Department.

The meeting may be said to have been of an amicable nature, and the final pages of the agenda acknowledged the Ministers indulgence with thanks, and on the pages provided for notes was a copy of ACBRO's objects included in its constitution.

The final outcome of this meeting, in addition to personally introducing the Minister to some of the CBers problems, was that he offered to arrange the appropriate introduction to the head of the new Spectrum Management agency who will now be empowered to consider recommending the changes that ACBRO are seeking.

A letter has since been sent to officially request this action, and only time will tell whether CBers find out if those called upon to analyse their problems, are their servants or their masters.

SIMPLEX REPEATERS

A letter sent to the Minister for Communications, published in the May/June issue, to do with the licencing of simplex repeaters in the CBRS, has resulted in the following reply.

Thank you for your letter of 5 May 1993 on behalf of your association concerning the use of simplex repeaters in the Citizen Band Radio Selvice (CBRS).

The Department of Transport and Communications is in the process of formulating guidelines relating to the use of these devices, and as part of that procedure views will be sought from organisations representing CBRS users. I encourage your organisation to take the initiative and make a submission to the Department about the possible use of simplex repeaters.

Again thank you for your interest in the matter. I appreciate your input.

The July meeting of the ACBR0 Committee resolved, as a result of the invitation to take the initiative, to seek as much comment from CBers who have feelings on the benefits or otherwise of the amenity that simplex repeaters can have in the CBRS. Current thoughts, without doubt, are that they could create more problems than benefits, whether used in the HF or UHF bands.

So ACBR0 invites readers to make a submission to the appropriate department or send their comments to ACBR0 to assist in the formulation of that which they will prepare.

As pointed out in ACBRO's members' magazine, it is important to establish the views of the membership that they represent, and not submit a "One Man's View" on subjects as this.

Your thoughts can be sent to ACBR0 Inc., P.0. Box 170, Walkerville, SA 5081.

DXinternational

By Jack Haden

A letter from a reader asks about the meanings of DXCC, DXAC and IOTA, all of which will be explained in CB ACTION very shortly.

I will also upgrade the DXCC countries listings for 11 metres in the neat future, probably next issue. There have been many changes in the past year or so and once I get them clarified I will compile a new listing.

Another matter that concerns some readers is the fact that they are not getting QSL cards back from overseas DX stations. As I explained a few issues back, most DX stations require you to send return postage.

You can do this by way of a "greenstamp" (one American dollar), or buy an IRC (International Reply Coupon) from your local post office for around $1.35. These are exchangeable in the overseas country concerned across the counter for one AIRMAIL stamp. It may also be a good idea to enclose a self addressed envelope. Don't forget to put your country on it too!

Not a great deal to report this issue as conditions on the 11 metre band have been pretty poor. However, for those with enough patience, there is still some DX about providing that you don't mind sitting around for hours on end waiting for that usually short, sharp opening. It is just a matter of being there, at the right time with the antenna in the right direction.

CENTRAL/SOUTH AMERICA & THE CARIBBEAN.

Quite a bit of activity has been coming from this region despite the poor propagation. As usual, the big gun signals have been coming out of ***Argentina, Brazil, Uruguay, Chile, Ecuador and Mexico.*** *However, you must be cautious when QSLing to these countries as their mail system is not the best at any time and often the stations themselves are very lax when it comes to returning cards sent by DXers.*

Haiti, in the West Indies was noted on the band at 0137z by way of 103-EL-DX, a DXpedition operation on 10 May. At the time the station was a poor five by one here, with a number of Australian stations in hot pursuit. QSL route was not announced when I heard them.

Honduras is still around the traps with the UNIT-142 leading the way, at 2256z he was heard calling but had no takers from the Pacific. The UNIT-142 is an American living in Honduras and by last reports he does in fact QSL - at the time he was a good five by five report.

Panama was logged at 2335z with 24-AT-130 flying the flag. He was a good five by six but subject to heavy fade at the time. QSL via AT Callbook.

Guatemala is still around for those who need this one, at 2310z Isaac, who signs as the 72-AT-104, was heard on the band with a fair five by one report. As 2340z Isaac was again noted and this time was a good five by seven and was calling for the Pacific but had no takers to the calls.

El Salvador was logged at 2342z by way of "SALVADOR STATION" operated by a lady, and at the time heard was a good five by five report and again there appeared to be no takers in the Pacific for her many calls.

Nicaragua appeared on the band by way of Carlos who operates as the UNIT-496 at 0011z. Carlos was a good five by five, but his English was very poor and he had quite a lot of trouble communicating with English speaking DXers - also his QSL route was very confusing.

Belize was heard in the noise at 2245z with a poor three by one report by way of 218-??-102. This sounded like another American operator but the signal was so poor that I soon lost him in the noise - QSL route was not known.

Providencia Island, which is part of San Andres Island group, was logged at 2241z by way of Manuel, signing as the UNIDADO-709. Manuel was a good four by two at the time and received quite a bit of attention from DXers in North America.

Paraguay was coming through loud and clear by way of "TUCOMAN" at 0101z and was a very strong five by seven peaking nine at times, again English was a problem and thus not too many in the Pacific worked this one, QSL route unknown.

AFRICA & INDIAN OCEAN REGION

Not a great deal to report on from this region as conditions have been far from ideal. Most signals that do come through are extremely poor and fade-out is very quick.

Malawi was logged at 0659z with Noel, who operates as the MZ-10 doing the rounds. Noel was a poor three by one at the time - although a station he was working in Western Australia gave him a five by seven report. Seems that the west is still the best DX spot for Africa. QSL route unknown.

Swaziland made a brief appearance by way of Tom, signing as the SZD-101. Tom was a good five by two at 0701z and was not impressed by Australian DXers calling him as he was only interested in looking for his mate in the United Kingdom. At one stage I heard Tom tell one Australian station "bugger off old chap"!! So there you are - not all of us are interested in working DX.

Namibia in South West Africa was heard by way of a "truck mobile" station operated by Dirk signing as Flyer-99. At 0801z Dirk was fading heavily and at his best was a poor three by three on the meter. Apparently Dirk is a regular on the band as he hauls quite a bit of mining equipment about on his Oshkosh semi-trailer. Dirk doesn't QSL.

Reunion Island was noted at 0441z by way of DX-105 operated by Henrick. At the time, he too was looking for

continued over page...

French speaking stations in the Pacific and was a good five by seven. Be cautious when QSLing to this country as their QSL reputation is not the best.

South Africa is usually about when the band is open with quite a few regulars who "sit" on regular frequencies to talk to mates. I noticed in the time slot 0400z to 0730z about seven different stations active on the band with a variety of signal strengths.

Seychelles Island was heard weakly in the noise at 0707z by way of station "109" (name and location unknown). His signal was a poor three by one, but apparently he was being heard much better in Western Australia where an operator working him gave out a healthy five by six report.

MIDDLE EAST & ARABIA

*Very little has been logged out of this region. From time to time I have heard the odd weak signal emanating from **Kuwait, Saudi Arabia and Qatar** - but not strong enough to log any details.*

Again, the team in Western Australia seem to be better positioned to work into this region.

Then again, this region has always been a difficult one to crack from the Pacific. You need a good beam or quad to get the best results and also helps to check both long and short paths.

*There have been some reports about activity from **Egypt and Jordan** from time to time, but I haven't heard anything concrete to back this up. As usual, the regulars running big stations out of Israel have been about although their signals have not been too strong.*

EUROPE

*Again, poor conditions have meant not too much to report. As we all know, the big guns from **Scandinavia, Italy, France, Belgium, Spain and at times the UK,** often come in to keep us amused - some via the longpath in our mornings, although the reports have been very poor lately.*

Turkey was logged at 0945z by way of TA-100, operated by Kazimir near Istanbul. At the time, Kazimir was a poor three by one, but at 0956z peaked a five by two report. Also noted from Turkey around this time was A-06, name unknown, who was looking for contacts into "small Pacific islands".

Gozo Islands, a part of Malta, was logged at 0856z by of Andy, signing as the GO-313 and was a fair five by two at the time. Andy was only using 15 watts into a five element Yagi at thirty feet. QSL via his home address in the UK.

Greece was coming in quite well at 1006z with around three or four different stations heard across the band. The best signal belonged to 18-GCI-107 operated by Stefan. At the time he was a good five by five and was talking to another station in Melbourne in broken English and Greek.

Crete Island was also about the band for those who still need this one. At 0902z I heard TKZ-6, operated by Constan, using a groundplane and only 30 watts. Constan was coming through at a reasonable three by three report.

Rhodes Island was noted at 0846z with 59-??-106 coming in at a poor three by one and was buried under Indonesian crud at the time - although a DXer around the Darwin area was heard trying to establish a contact with him. Nothing came of it as he soon faded out and was lost under the Asian noise.

Gibraltar was around the traps at 0610z by way of "RADIO-155", operated by Terry. At the time Terry was a poor three by two report and was calling for Australia and New Zealand only, but had no takers to his calls, (perhaps everyone was watching the football?).

Corsica was also doing the rounds at 0655z by way of "STATION-TK" who was heard calling many CQ's but not getting any takers, despite being a fair five by one at the time. He eventually snagged a New Caledonian station and moved off to chat elsewhere.

A letter from 1-AT-157 tells me that the 305-AT-O DXpedition was documented as OK at the Alfa Tango headquarters in Asti and cards are valid for DXCC credits.

There was a rumour going about that this one was a shonky DXpedition, but now 1-AT-157 has cleared up the matter.

Also in the 1-AT-157 letter I was informed that 314-AT-101/154 DXpedition was also documented as OK by Alfa Tango headquarters in Asti and thus cards are good for DXCC credits.

Thanks again to Mario, 1-AT-157 for that news.

ASIA & THE PACIFIC REGIONS

Things in our own "neighbourhood" seem to be a wee bit better for DXers, but most of the stations I have heard are "old regulars" on the band and most of us should have them confirmed by now.

The **Northern Mariana Islands** are quite active with numerous stations being heard and/or worked. At 0444z I logged 133-CS-012 operated by Ken. At the time he was a five by three report and had quite a strange QSL address, so make sure you have it 100% correct before mailing off the card. Also heard was 133-CS-014 with Vince at the controls. At 0609z Vince was an excellent five by seven report.

Republic of Palau station "ROR" was noted on the band at 0203z with Hiki operating the station. Hiki was a poor three by three at the time and was running just eight watts into a half-wave dipole antenna which I guess is better than nothing!

Hiki hopes to upgrade to a homebrew quad in the near future, depending on the availability of broom handles!

Vanuatu is still doing the rounds by way of Gerry, who signs as the 197-At-101. At 0622z Gerry was a good five by five and despite two or three CQ calls, had no takers and thus disappeared to greener pastures, perhaps 27.355?

SNIPER

THE ULTIMATE VERTICAL BASE STATION ANTENNA
NOW ONLY $75 ... DELIVERED RIGHT TO YOUR DOOR!

Since 1975 ... long before legalisation ... the SPR-27 was the first choice of Australian CBers who wanted the best vertical base station antenna, and many of the original Mark 1 models are still in use today.
The SPR-27 Mark 2 was the ONLY base antenna ever rated "TEN-OUT-OF-TEN" by CB Action, and the design remained unchanged from 1976 until we ceased production in 1990.
We went one better with the SNIPER...a half-wave vertical "straight stick" with no rings or groundplanes or tuning coils or adjustable capacitors or gamma matches ... an antenna which NEVER needs tuning and doesn't go haywire every time it rains.
The SNIPER is the only base station antenna to ever get a BETTER rating from CB Action than our SPR-27 ... and "TEN-OUT-OF-TEN" was a hard act to follow. No other antenna has even come close!

WE'RE STILL NUMBER ONE!

Forget about "five-eighth wave" and "point six-four wave" antennas ... recommendations from satisfied customers sell more antennas than all our advertising and the SNIPER is the antenna everyone's talking about!
The more antennas we sell, the more aluminium we buy, and the more aluminium we buy, the less we pay for it. We recently purchased a mountain of aluminium, and until this runs out we'll be passing the savings on to our customers.
For a limited time, we'll send you a SNIPER right to your door by Express Courier for only $75.
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The Scantenna-XLR wideband discone antenna covers 25-1300 MHz and is ideal for use with all scanners, including "super-scanners".
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* 100% Australian designed and manufactured from top-quality Australian raw materials.
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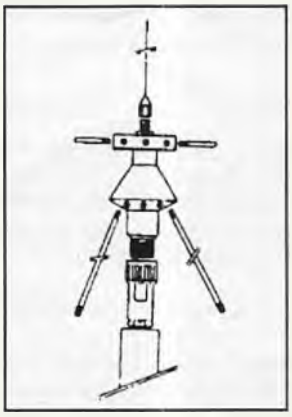
* Weatherproof low-loss N-type coaxial connector.

The Scantenna-XLR performs at least as well as any comparable antenna on the market and better than most, hno matter how much they cost...and the Scantenna-XLR is 100% Australian!!! If you're not using a Scantenna-XLR...you're not getting the most out of your scanner!



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Prices: 3-Element...$130 4-Element...$160 5-Element...$190 6-Element...$220
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DXinternational

Christmas Island was heard very briefly by way of station 266-LC-101 - name not heard - and at 2306z was a poor four by one here. This is the Christmas Island in the Republic of Kiribati, not the one in the Indian Ocean.

Western Kiribati was represented on the band by 224-PIG-101 operated by Tekena on South Tarawa. At 0246z it was a very strong five by nine report whilst working Ken, the 133-CS-102 on Saipan. Also logged was 224-RA-01 operated by Hang, also on South Tarawa. At 0245z

Hang was five by five working a small pile-up of Australians. Hang requests self-addressed envelope and return postage for all contacts.

Alaska had a big signal on the band by way of 33-AT-101 operated by Rick. At 0411z he was a five by nine, but seemed to experience some audio problems.

Pakistan, a much needed one for many, was weakly heard at 0936z by way of "Salim", callsign unknown - he was a weak three by one at the time and virtually unworkable.

South Korea is always about for those who still need this one. At 0549z I noted PU-106 operated by Sonny on the band and he was a five by four. At 0711z another South Korean station was logged by way of "KOREA STATION" operated by Paul. At the time Paul was five by six and said he doesn't QSL as yet.

Hong Kong is around from time to time. At 0459z station HKR-01 with Cheung at the controls was observed on the band with a good five by six signal. Cheung runs just 15 watts into a vertical from the 23rd floor of an apartment block on Hong Kong Island. QSL route unknown.

Taiwan, Republic of China, was well represented on the 11 metre band with the appearance of "TAIWAN RADIO" at 0744z operated by Mr Tsing. At the time Mr Tsing was a good five by seven peaking nine at times, although his modulation left much to be desired as he was using one of those dreadful reverb microphones and had it wound up to the limit. Mr Tsing operated from "near" Port Keelung.

Thailand was logged at 0802z with a station HS-06 operated by Tami making an appearance. At the time the signal was a reasonable five by two. Tami operates from the tourist district of Bangkok and has an excellent command of English and French.

Rumour has it that there is a French speaking station operating out of **Laos,** but I have heard nothing further to confirm its authenticity. Case of work it now and worry later. Anything is possible out of **Laos, Vietnam and Cambodia** with the ever-increasing number of foreigners being permitted to work in the country, as well as the United Nations presence in some of the latter countries.

That's all I have for this edition. Sorry the news is down a little, but poor band conditions and increasing work commitments have kept me away from the radio. So best of DX and 73's.....Jack.

WITH DECENT DX FAST FADING AWAY - WHY NOT GET INTO SHORTWAVE LISTENING?

...and maybe even for free!

As HF DX fades into the setting Sun, why not commence a new radio hobby - namely shortwave listening.

Working shortwave DX can be just as challenging as HF DXing - and most of the stations that you hear will QSL 100%.

Additional to that, many stations also provide free booklets on how, when and where to listen, station schedules, and plenty more to keep you interested.

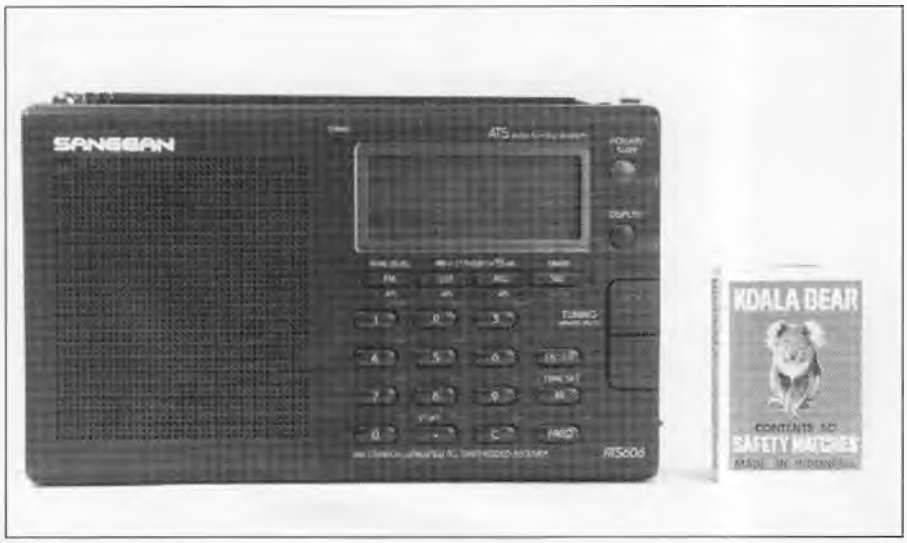
*To help one lucky reader get into SWL for free, **Dick Smith Electronics** have supplied a Sangean ATS-606 as the prize for the winner of this issue's Crossword. Almost all the answers can be found somewhere in this issue - all it takes is a little perserverence - and maybe also just a tad of luck in being the first correct entry opened.*

All entries will be held until 15 September when we will commence opening them. The first correct entry opened receives the Sangean ATS-606.

Keep in mind that entries must be on the page opposite and photocopies will not be considered. You can of course send as many entries as you like, provided they are all on an original crossword page.

The Sangean ATS-606 is one of the latest SW receivers to become available in Australia and you can read Rob William's review elsewhere in the magazine.

*Even if you don't win, the unit costs just $249 from any **Dick Smith Electronics** outlet.*



CONGRATULATIONS
Mr Mutch
YOU NOW OWN A JACKAROO UHF HANDHELD

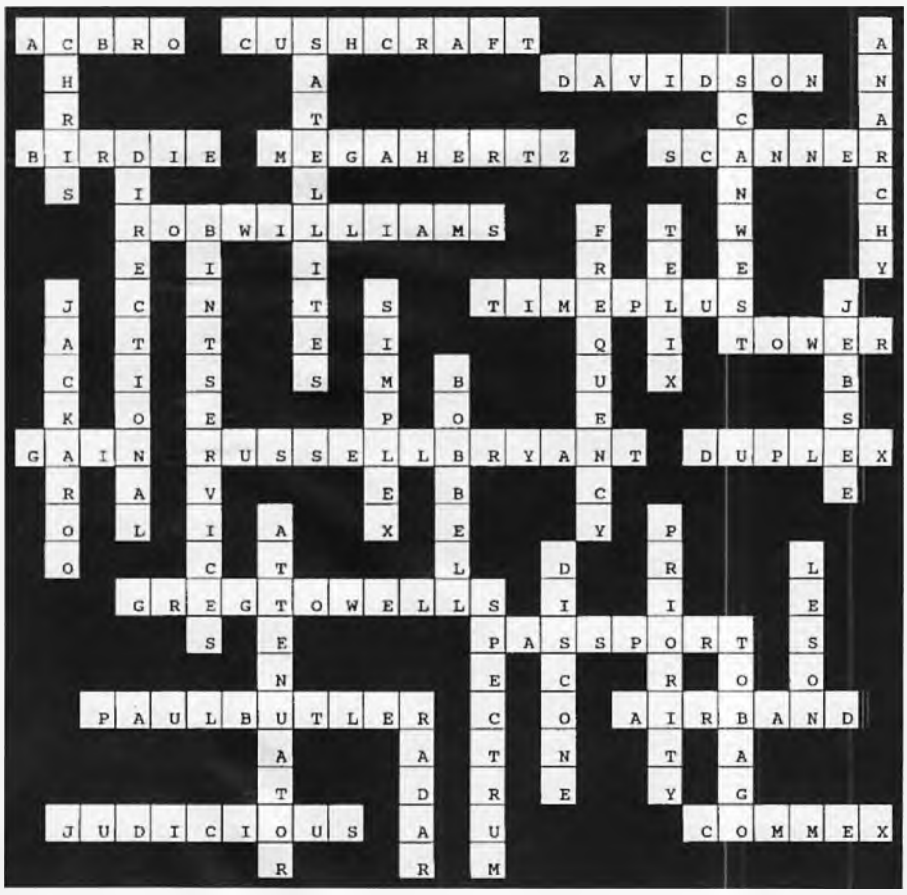
As they love to say on TV, "and the winner is" Mr Mutch of Warwick, Queensland, who had the first correct entry opened for our July/August issue crossword which had as its prize a Jackaroo UHF handheld provided courtesy of **Commex Communications.**

Commex Communications Corporation Pty Ltd are the importers of Commex radio equipment including scanners, UHF and HF CBs, among other things.

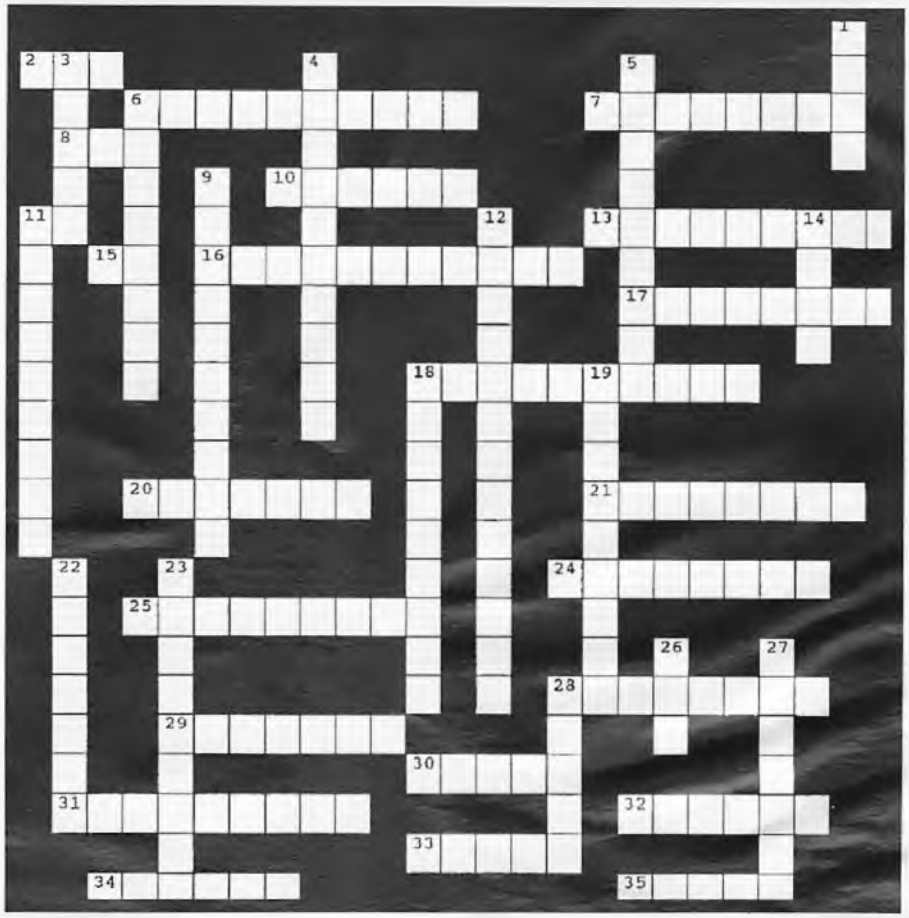
The Jackaroo is a high performance handheld radio which naturally enough comes with repeater offset, high and low power switches (.25/2.5 watts), antenna, carrying case, wrist-strap, wall charger and battery pack.

All in all not a real bad prize.

If you're not Mr Mutch, but would like to own a Jackaroo, contact Commex on (07) 357 7122 for the name of your nearest supplier.



WIN A SANGEAN ATS-606 RECEIVER
COURTESY OF DICK SMITH ELECTRONICS



Devised by Wurds-r-Us

CLUES ACROSS

2. The initials of the new "agency" taking over from DoTaC in respect to CBers.
6. Who, in Rob William's column, is described as a "DX Dynamo"?
7. In what country is the UNIT-142 located?
8. Initials of the company providing this issue's crossword prize.
10. In the term GPS, what does the "G" stand for - check out our July/August issue if you don't know.
11. A common transmission mode (initials).
13. Name the gentleman who recently made a successful balloon trip from West to East in Australia, (4,5)?
15. What is the suffix of Ralph Parkhurst's VK3 callsign?
16. An article in this issue, written by Rod Fewster, is titled - what, (5,6)?
17. If you were listening to marine channel 63, what service would you be hearing?
18. Commex make this model UHF CB.
20. The editor of CBA, (3,4).
21. The regular CBA advertiser located in Sydney Road, Brunswick, (4,4).
24. Russell Bryant's SCAN column looks at "scanning the VHF (word?) band" in this issue.
25. CBA's long-time advertiser of antennas, (6,3).
28. Jack Haden's DXinternational column makes mention of "Salim" - in what country?
29. Regular contributor Russell Bryant authored the publication "The Handbook of Australian (word?) Frequencies".
30. The major CB "club organisation" based in South Australia.
31. According to Greg Towells, what did a UHF CB Repeater do recently?
32. What make is the PRO 330e?
33. Another way to say "the 27MHz band" is "11 (what?)".
34. The generally accepted abbreviation for the Radiocommunications Act.
35. The Christian name of the Royal Victorian Institute for the Blind's Co-ordinator of Narrators.

CLUES DOWN

1. The CBA advertiser located in Whitehorse Road, Mitcham is named (what?) Communications.
3. The electronic connection between your computer, the telephone line, and a BBS.
4. What's the name of our contributor who has the callsign VK3DBP, (4,6)?
5. Who wrote the HF Utilities column in this issue, (3,6)?
6. What computer program (version 5) gets a good mention in this issue's Online column?
9. Who wrote the report on the Midland handheld in this issue, (5,5,)?
11. In the term "AM" (in respect to transmission modes) the "A" stands for what?
12. What broadcasting station has the address D-50588 Cologne, Germany, (8,5)?
14. Name the company that makes the IC-40 and IC-40G?
18. In Russell Bryant's column, "WP has just moved to (city?) QLD".
19. Radio (country?) is having trouble with its antenna switching in Shepparton (Victoria).
22. The surname of the person who signed the ACBRO petition dated 11 October 1990.
23. Which communications company markets the PB range of antennas?
26. The Wireless Institute of Australia.
27. What make of radio is the ATS-606?
28. What sort of "patch" does Greg Towells refer to in his column?

The solution to this crossword will be published in the next issue.

ADDRESS YOUR ENTRY TO:
CB XWORD, PO BOX 628E, GPO, Melbourne 3000

NAME _____
ADDRESS _____
_____
TELEPHONE ( ) _____
Entries must be on this page - no photocopies

AUSTRALIAN UHF REPEATER LIST

NOTE: Corrections and updates may be sent to:
CBA Repeater Listing, P.O. Box E160, St James, NSW 2000.

ACT

Canberra	2/32
Canberra	8/38

NEW SOUTH WALES

Albury	6/36
Armidale	4/34
Barraba	6/36
Bathurst	8/38
Bega	6/36
Belbora	1/31
Binya	3/33
Blue Mountains	2/32
Bombala	8/38
Booral	7/37
Bowral	6/36
Braidwood	3/33
Brewarrina	1/31
Brindabella Ranges	7/37
Broken Hill	4/34
Broken Hill	7/37
Buladelah	7/37
Casino	6/36
Cobar	8/38
Coffs Harbour	6/36
Coolah	6/36
Cooma	4/34
Coonabarabran	4/34
Corowa	2/32
Corowa	5/35
Corwa	7/37
Deepwater	5/35
Denliquin	1/31
Dungog	3/33
Eden	2/32
Glen Innes	7/37
Grafton	8/38
Grenfell	1/31
Gundagai	7/37
Gunnedah	2/32
Guyra	1/31
Warden	1/31
Hampton	1/31
Hay	4/34
Inverell	2/32
Jindabyne	1/31
Junee	5/35
Kariong	8/38
Lismore	2/32
Manilla	3/33
Monkey Hill	6/36
Mt Lambie	2/32
Murrurundi	3/33
Muswellbrook	4/34
Narrabri	2/32
Narranderra	8/38
Narromine	5/35
Narromine	6/36
Newcastle	1/31
Newcastle	2/32
Newcastle	5/35
Newcastle	6/36
Nundle	7/37
Orange	3/33
Port Macquarie	2/32
Sydney	5/35
Sydney (south)	1/31
Sydney (west)	3/33
Sydney (outer-west)	4/34
Sydney (north)	7/37
Tamworth	4/34
Tenterfield	3/33
Tumbarumba	3/33
Tumut	6/36
Tweeds Heads	4/34
Wagga Wagga	1/31
Wagga Wagga	5/35
Walbundrie	2/32
Walcha	2/32
Walcha	6/36
Walcha	8/38
Warrumbungles	1/31
Wingham	1/31
Wilcannia	1/31
Wollongong	8/38

NORTHERN76 TERRITORY

Bushy Park	1/31
Darwin	1/31
Erldunda Station	3/33
Katherine	2/32
Maryvale Station	4/34
Mt Swan	2/32

Queensland

Alpha	2/32
Atherton	8/38
Amiens	8/38
Ayr	3/33
Barcaldine Downs	1/31
Bathurst Heads	1/31
Bauhina Downs	4/34
Biloela	7/37
Blackall	8/38
Blackwater	6/36
Brisbane	1/31
Brisbane	5/35
Brisbane	7/37
Bundaberg	4/34
Bundaberg	7/37
Cairns	3/33
Chinchilla	8/38
Clermont	6/36
Clermont	7/37
Crows Nest	6/36
Dimbulah	6/36
Dirranbandi	8/38
Double Island Point	3/33
Edward River	3/33
Emerald	8/38
Gladstone	6/36
Gold Coast	3/33
Goondiwindi	4/34
Gympie	2/32
Gympie	5/35
Gympie	7/37
Hervey Bay	8/38
Hughenden	1/31
Ingham	2/32
Inglewood	1/31
Innisfail	1/31
Ipswich	4/34
Jericho	4/34
Kilcoy	3/33
Lakeland Downs	2/32
Longreach	3/33
Mackay	3/33
Mackay	6/36
Marlborough	2/32
Maryborough	6/36
Maxwelton	2/32
Miles	6/36
Monto	3/33
Moranbah	4/34
Moura	1/31
Mt Isa	1/31
Mundubbera	6/36
Murgon	7/37
Quilpie	2/32
Rockhampton	1/31
Rockhampton	4/34
Roma	1/31
Springsure	3/33
Sunshine Coast	6/36
Sunshine Coast	8/38
Tambo	6/36
Taroom	2/32
Thargomindah	6/36
Toowoomba	2/32
Toowoomba	4/34
Townsville	1/31
Townsville	4/34
Wavell Heights	2/32
Warwick	1/31
Wide Bay	1/31
Yaraka	7/37

SOUTH AUSTRALIA

Adelaide	5/35
Angaston	4/34
Blinman	3/33
Carretown	1/31
Ceduna	1/31
Clare	7/37
Cleve	2/32
Coonalpyn	6/36
Coppudurba Hill	1/31
Crystal Brook	1/33
Hawker	7/37
Kangaroo Island	4/34
Murray Bridge	8/38
Mt Bryan	8/38
Mt Gambier	5/35
Mt Gambier	7/37
Myponga	2/32
Naracoorte	4/34
Orroroo	2/32
Port Lincoln	8/38
Port Pirie	4/34
Renmark	6/36
Snowtown	6/36
Tarcoola	6/36
Wilkatana	8/38
Yorketown	7/37

TASMANIA

Burnie	8/38
Central Highlands	7/37
Devonport	1/31
East Coast	6/36
Flinders Island	1/31
Hobart	1/31
Hobart	5/35
Launceston	2/32
Launceston	6/36
Midlands	4/34
North East Coast	3/33
North West Coast	4/34
North West Coast	6/36
Sandfly	2/32
West Coast	2/32

VICTORIA

Alexandra	1/31
Ballarat	2/32
Ballarat	5/35
Balmsdale	7/37
Beech Forest	3/33
Bendigo	4/34
Cavendish	8/38
Currajung	4/34
Echuca	6/36
Euroa	3/33
Falls Creek	3/33
Foster	6/36
Geelong	4/34
Halls Gap	6/36
Hamilton	5/35
Harcourt	8/38
Hawkesdale	4/34
Horsham	3/33
Kerang	2/32
Lavington	4/34
Mansfield	2/32
Melbourne (north)	1/31
Melbourne (metro)	3/33
Melbourne (metro)	5/35
Melbourne (south)	7/37
Mildura	3/33
Moe	2/32
Mornington Pen.	8/36
Mortlake	7/37
Mt Cann	8/38
Mt Concord	6/36
Mt Delegate	3/33
Mt Temble	8/38
Myrtleford	8/38
Penshurst	1/31
Shepparton	7/37
St Arnaud	1/31
Swifts Creek	1/31
Talangatta	7/37
Wangarrala	6/36
Waubra	7/37

WEST AUSTRALIA

Albany	3/33
Augusta	7/37
Bencubin	2/32
Boyup Brook	4/34
Bunbury	2/32
Carnamah	2/32
Carnarvon	2/32
Coolgardie	7/37
Darkin	6/36
Denmark	1/31
Esperance	4/34
Kalgoorlie	2/32
Kambalda	1/31
Katanning	1/31
Kellerberrin	1/31
Kulin	4/34
Lancelin	4/34
Mandurah	7/37
Manjimup	6/36
Margaret River	6/36
Meekatharra	1/31
Merredin	2/32
Mia Mia	1/31
Mt Manypeaks	6/36
Mt Barker	5/35
Mt Barrow	7/37
Mt Saddleback	1/31
Mt Solus	4/34
Nannup	2/32
Perth	1/31
Perth	3/33
Perth	5/35
Perth	8/38
Ravensthorpe	8/38
Stirling Ranges	7/37
Wickham	1/31
Wongan Hills	8/38
Wyalkatchem	6/36
York	7/37

IF YOU SELL MOBILE PHONES YOU SHOULD BE A MEMBER OF C.D.A.A.

CELLULAR DEALERS ASSOCIATION OF AUSTRALIA

This advertisement explains why you should join the Cellular Dealers Association of Australia and become part of the united dealers voice in the industry. The CDAA is a non profit organisation working on behalf of its members Australia-wide.

Following over three years of hard work, and growing support, the CDAA is a respected and important entity within the mobile communications industry. Close working relationships are maintained with Austel, Mobile Net, Optus, Arena GSM, manufacturers/suppliers of mobile phones and accessories plus other industry organisations.

VALUE ADDED FACTORS FOR YOU AND YOUR CUSTOMERS

IDENTIFICATION

All financial members receive "CDAA Authorised Member Dealer" window and wall stickers plus hand calligraphied and signed certificate of membership. These items properly displayed act as customer identification points for CDAA Member Dealers with the copy line "The sign to see before you sign."

This gives customer confidence in knowing the dealer they are considering doing business with is a member of the industry's national association.

ANOTHER STEP IN VALUE ADDED CUSTOMER SERVICE-A VITAL PART OF THE FUTURE FOR DEALERS

AUTHORISED MEMBER DEALER

CELLULAR DEALERS ASSOCIATION OF AUSTRALIA

The sign to see before you sign.

RAISING THE STANDARDS IN MOBILE COMMUNICATIONS SALES AND SERVICE

MARKETING INITIATIVES

THE CDAA REPORT

This publication continues to attract the highest praise from all sectors of the industry. The current issue is the biggest so far and continues to uphold the standard.

All CDAA financial members receive the CDAA Report every two months.

FAX STREAM INFORMATION

It is intended that this form of communication with financial members of CDAA will be used frequently in future.

CONSUMER ADVERTISING

Plans are currently underway in the development of a CDAA/Consumer advertising campaign in newspapers nationally. CDAA Dealer Membership name, location and telephone number will appear in the ads for all financial members.

SALES PROMOTION

It is also proposed to run another "Win a Mobile Phone" sales promotion as an integral part of the advertising campaign. This proved to be so successful last time it was run.

SPECIAL OFFERS

Suppliers of a number of goods and services of interest to CDAA members will be making exclusive special offers throughout the year.

008 INFORMATION LINE

This service is advertised in the telephone directories and constantly receives a variety of enquiries from customers and dealers on a full range of subjects.

All customers with purchase, rental or repair enquiries are referred to CDAA members in their area.

THIS RESULTS IN MANY DIRECT SALES.

CDAA Dealer Members are encouraged to use this service to talk to the CDAA Chief Executive Officer Mr Alfred Robison for information on all industry issues.

HELP THE CDAA TO HELP YOU!

BECOME AN AUTHORISED CDAA MEMBER DEALER TODAY!

Simply fill in the application form at the bottom of this page and post it with your cheque to the address provided.

NEW MEMBERS $250 PER OUTLET (Annual renewal $50)

NAME: .....POSITION .....

COMPANY NAME; .....

COMPANY ADDRESS; .....

PHONE: .....FAX: .....

I wish to apply for membership of the CELLULAR DEALERS ASSOCIATION OF AUSTRALIA Inc.

Enclosed is my cheque for $ being the fee for the period July 1st 1993 to June 30th 1994.

SIGNATURE: .....Date: .....

If you require any further information, please do not hesitate to contact the C.E.O., Alfred Robison on Phone: (03) 898 7476, (03) 890 2081, (Mobile) 018 377 786 or (008) 337 472 or Fax: (03) 898 7476

Please make cheques payable to: CELLULAR DEALERS ASSOCIATION OF AUSTRALIA Inc.

Post to: CDAA - C.E.O. - Alfred Robison, 5 Carrick Street, Mont Albert, Victoria 3127

RAISING THE STANDARD

AUSTRALIAN DESIGN AND MANUFACTURE

GME Electrophone

TX4000 SERIES UHF CB RADIO

WITH BUILT IN MULTI-TONE CCIR SEL-CALL

TX4000 LOCAL

FEATURES:

- 40 CHANNEL – 476.425 TO 477.40 MHz
- 5 SEGMENT BARGRAPH SIGNAL STRENGTH METER
- LARGE BACKLIT LIQUID CRYSTAL DISPLAY
- USER SELECTABLE DUPLEX FUNCTION
- POWERFUL 3 WATT FRONT MOUNTED SPEAKER
- 2 EASY TO USE PROGRAMMABLE SCAN MODES
- RUGGED ELECTRET MICROPHONE

ALL CB'S ARE NOT CREATED EQUAL

Distributed via National Dealer Network by:

GME Electrophone

A DIVISION OF STANDARD COMMUNICATIONS PTY. LTD.

SYDNEY (02) 816 4755, MELBOURNE (03) 584 8099, BRISBANE (07) 273 4355, ADELAIDE (08) 234 2633, PERTH (09) 330 5322, AUCKLAND (09) 274 0955