CB Action

September/October 1994 $3.75

Pearce Simpson AM-300 Handheld review

- Novice test questions
- AOR 8000 scanner preview
- GX290 marine radio review
- NSW Government radio network
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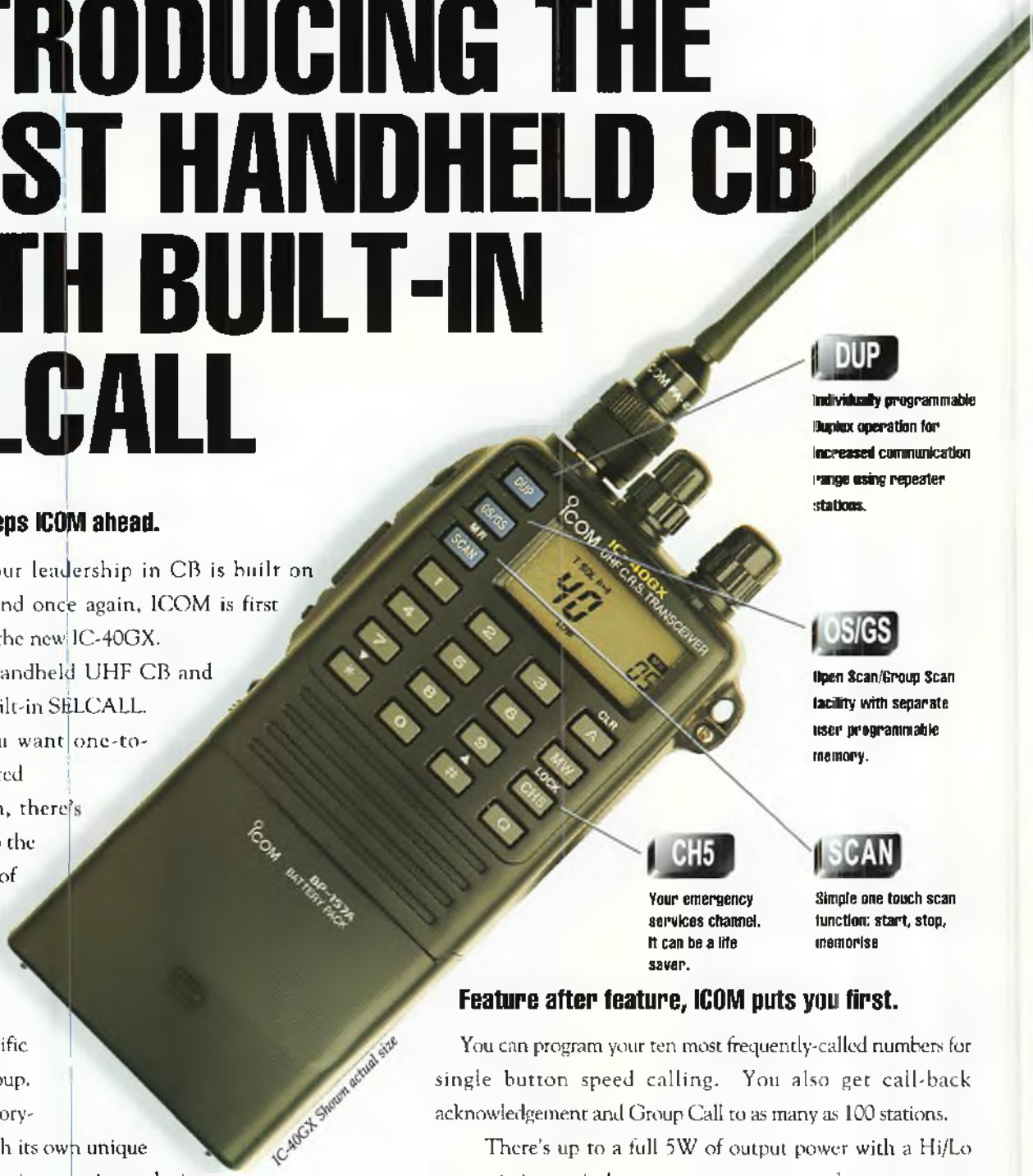

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ON CHANNEL

LICENCE FEES TO GO..?

For some months now there has been a solid rumor that CBRS licence fees would be dropped as part of the DoTaC/SMA restructuring. With the change to a new regulatory body, it became obvious that communications in general were in for a lot of revision in the commercial CB and Amateur areas.

Some time back the SMA conducted a number of meetings inviting input to a proposed "Class Licencing" and/or "Apparatus Licencing System" and an "advice" received by CBA in mid-July reads as follows.

INTRODUCTION OF CLASS LICENCING FOR CB AND HANDPHONE SERVICES

Following public consultation relating to the inquiry into the apparatus licencing system, it is the intention of the SMA to proceed with Class Licencing for non-repeater Citizen Band and Handphone services before the end of the year.

Further investigation will be undertaken over the next year regarding the possible introduction of Class Licencing for Amateur and 27MHz Marine services.

Class Licencing authorises the operation of equipment without the need for individual user licencing. However, the operation of such equipment will still be subject to the conditions contained in the Class Licence and equipment will still be required to comply with the relevant equipment standard.

The above is a fine example of appearing to say something without actually saying very much at all and the SMA would not be drawn further on the likelihood of CB licence fees being dropped.

On the day following our receipt of the above "advice", Alan Jordan of the SMA flew to Adelaide and met with various representatives of CB organisations including ACBRO. This group was given much the same story, however, I think it is safe to say that CB licence fees will vanish in the near future - our guess is "as from October 1 of this year".

In the meantime, however, nothing has changed.

Licence fees must still be paid...

As for the no-code amateur licence - yes, it is still under discussion and expected to happen - but probably not this year.

SURVEY RESULTS

I am absolutely staggered at the response we received from the readers survey in the last issue.

There was literally post bags full of replies and the one thing that has become abundantly clear is that our readers have many and varied interests in radio hobby communications...and certainly not just HF and UHF CB.

Given the volume of replies, however, it is going to take some time to work our way through them and establish the priorities of the various aspects of communication.

Another thing that has become very clear is that a large percentage of our readers own both scanners and computers with two of the most popular sections being the Listening Post (nee SCAN '94) and ONLINE (communication type software reviews) and this will be reflected in coming issues.

Incidentally, Patrick McDonald, our contributor for the popular ONLINE section was called overseas unexpectedly and was unable to supply his regular column. Richard Jary has helped out with this issue's ONLINE but Patrick will be back in print with our next issue.

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Published and printed by Richard Walsh for ACP Syme Magazines Pty Ltd, A.C.N. 004 765 164, 250 Spencer St., Melbourne 3000. Telephone (03) 6012259; facsimile (03) 642 0852.

Printed at Hannanprint Victoria, 504 Princes Highway, Noble Park, Victoria 3174.

CB Action is distributed in Victoria by Magdiss Pty Ltd. 250 Spencer Street, Melbourne, 3000; in SA by John Fairfax & Sons Limited; in Tasmania by the Mercury, 93 Macquarie St, Hobart 7000; in NSW, Queensland, WA by Newsagents Direct Distribution Pty Ltd., 180 Bourke Road, Alexandria 2015.

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NEW OVERSEAS SCANNERS

Is the AR8000 is getting as close to the perfect scanner as is humanly possible?

A sort-of retired Russell Bryant, who can't keep his ears from the scanner, his eyes from the latest thousand-channel temptations or his fingers from the keyboard (for all of which we're extremely grateful) offered us his low-down on scanners and such from the UK. Last issue we detailed in the briefest possible terms, a new hand-held scanner from AOR.

Is the **AR8000** is getting as close to the perfect scanner as is humanly possible?

On first examination the AR8000 looks like any one of the myriad of compact amateur handhelds available on the market today. Its physical size, rounded design and overall ergonomic layout denote its ham radio origins. This newest AOR measures 152 X 69 X 40 (mm, hwd) and weighs a little over 300 grams, including the rechargeable NiCd cells and fitted aerial.

Turn on the AR8000 and the LCD readout displays the message '**WELCOME TO THE WORLD OF AR8000 RECEIVER**'. It's trying damned hard to be a new concept in scanning, as opposed to just another hand-held dressed for the occasion.

Frequency coverage extends from 500 kHz to 1900 MHz, although it's fair to say that the 16cm flexible rubber duckie aerial would cease to be effective beyond 1000 MHz or so.

To effectively receive frequencies above 1000 MHz, conical antenna or dishes would be more effective, however they're a little less practical to lug around. Six reception modes gives the AR8000 unparalleled versatility — AM, LSB, USB, CW, NFM and WFM open the door to most voice transmissions and several non-voice systems.

To assist in resolving SSB, AOR has employed a 2kHz filter as standard. SSB uses a true carrier re-insertion with a correctly-calibrated frequency readout. What all that means is the frequency displayed and received is offset by 1.5 kHz, either plus or minus depending on the whether upper or lower sideband is required.

The AR8000 uses the traditional LCD display, but departs from tradition by employing a dot matrix format comprising four lines of text, thereby allowing multiple facilities to be provided and displayed at the same time. A signal strength bar graph forms part of the display and, even though these meters are not always a true indicator of signal strength, they are extremely handy for tracking a frequency source. The display also permits two VFO frequencies to be exhibited simultaneously. Alphanumeric comments may be entered into the memory along with frequency, reception mode, attenuator setting and other relevant data.

To add to this already feature-packed radio, AOR has installed password protection, computer control and cloning from one scanner to another: perhaps almost every feature you could possibly ask for in a hand-held.

Sensitivity and selectivity across the bands, especially below 30 MHz where these super-scanners tend to become undone, were not detailed in our information; nor could we determine the number or frequency of IF stages, or intermod and image readings.

We'll know more about this when the AR8000 arrives in Australia, either through its official distributors or one of several independent agents; the price is expected to be around the $1200 mark, give or take a bit depending on our exchange rate and the strength of the Yen at the time. But for every scanner like this that we will see, there are several we will *not*. Why is it so?

In the overall scheme of things, Australia is a small, almost insignificant, market. Compared to Europe and, to a surprisingly lesser extent, the US, Australian scanner sales don't amount to much, so we tend to get the 'off-cuts' of models designed and destined for other parts of the world.

This may change to a small extent with the introduction of US legislation which prohibits the manufacture, importation and sale of any scanner capable of receiving cellular telephone calls. Not only must this band be 'locked out' of the scanner, there cannot be any provision for it to be reinstated (along the lines of adding or removing a diode, for instance). This will force makers and suppliers to re-evaluate their involvement in the American market, and in the short term it may mean that scanners previously destined for US consumption will be shipped here instead (similar to the way that shiploads of millions of newly-manufactured 23-channel CB sets were diverted from the US to Australia when the American FCC decided to ban 23-channel rigs upon the introduction of the 40-channel service). It won't make up for the temporary drop in sales from the US market but it will help supplement the sales figures and stop the banned scanners from collecting dust in the warehouses. Anyway, let's take a quick look at the UK offerings to illustrate my point:

The United Kingdom has some of the most restrictive scanner and radio laws in the English-speaking world. The sort of frequency details like you're used to seeing in CBA would have landed me, David Flynn, Robert Peel and many more CBA writers (along with editor Len Shaw) behind bars, without room for argument or appeal. The laws are all in place, although considering the quantity and open availability of scanners in the UK, they seem out of place! Many of the brands we have come to know and love are on display. Yupiteru has the MVT 7100 portable and the MVT 8000 base/mobile in its catalogue, along with the VT225 and VT125. The what? These are airband-only radios for the domestic UK market.

The VT225, covering 108-142 MHz, 149-160 MHz and 222-391 MHz in either AM or FM mode, with 100 channels and all the usual mid-range features, sells for the equivalent of $350 (the AM-only 108-142 MHz VT125, with 30 memories and not much else, sells for about $250). Ever heard of the **Trident** brand? For $500 you get the TR-2400, with an amazing 100 kHz to 2060 MHz, 1000 channels and all-mode reception (AM, NFM, WFM and SSB). The budget-minded Trident TR980 ($360) covers 5-1300 MHz in 125 memory channels, with AM, NFM and WFM.

Another unheard-of-brand is **Comtel**. Choose from the 205 desktop model (25-1300 MHz, 400 channels, $450); the 204 hand-held (68-1000 MHz with a few gaps, 200 channels, $325); the 203 hand-held (68-960 MHz, 200 channels, $260); or the baby of the family, the Comtel 102, with 10 channels across 66-512 MHz (with some gaps) for just $130.

These are just a few of the dozens of models on sale through Europe. For every model available in the US there are *two* on the shelves in the UK. We, on the other hand, get half or a quarter of the numbers...


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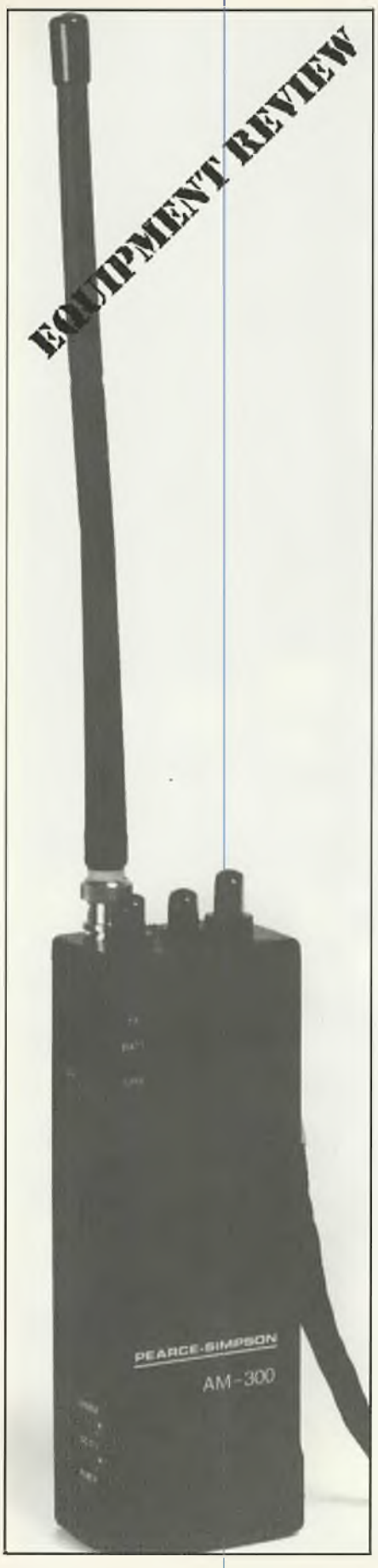


Here's something different from Hatadi...

PEARCE SIMPSON "AM ONLY" 27 MHZ *AM-300* PORTABLE

By Ken Reynolds

Although we don't appear to be seeing much in the way of revolutionary new gear for 27MHz CB these days, there are definite signs, subtle though they may be, that things are still on the simmer out there in CB-land.

Take the new AM-300 27MHz AM-only portable from Pearce Simpson for instance. Gone is the usual fragile, chrome-plated, telescopic antenna — every operator's nightmare which plagued 27 meg hand-helds forever! How many thousand of these whips got slammed in the car door? What about when the corona button 'fell' off the tip and all the skinny bits dropped into the guts of the antenna never to be seem again?

Or the one that just got a little kink in one section and refused to go either up or down ever again? All this sound familiar? How about when you tried to get it fixed and all you could get was an impotent floppy-dick thingy that sort of wobbled and rattled over the remains of your once proud, shiny antenna.

The AM-300 solves this problem by employing a 'rubber ducky'-style flexible, loaded antenna measuring about 26 cm long — and what's more it *IS* tuned for the 27MHz CB band so it actually *works*. Because of the antenna's small size its efficiency is a bit limited, however the general performance is quite good.

The antenna is fitted to the radio control face using a BNC (bayonet style) connector which opens your scope for coupling the little rig to a whole range of antennas.

Connected up to our new Stationmaster slimline base antenna the AM-300 really began to 'humm'. We've had a few comments about the use of a BNC connector instead of the standard CB SO-239 aerial receptacle. The only reason we could come up with for the manufacturer's choice was the space saving achieved with the smaller size of the BNC.

From the antenna connector down, the transceiver is sheathed in a matt black plastic case which measures 174mm high excluding controls, 60mm wide excluding side projections and 42mm thick excluding the clip on/off tough plastic belt clip.

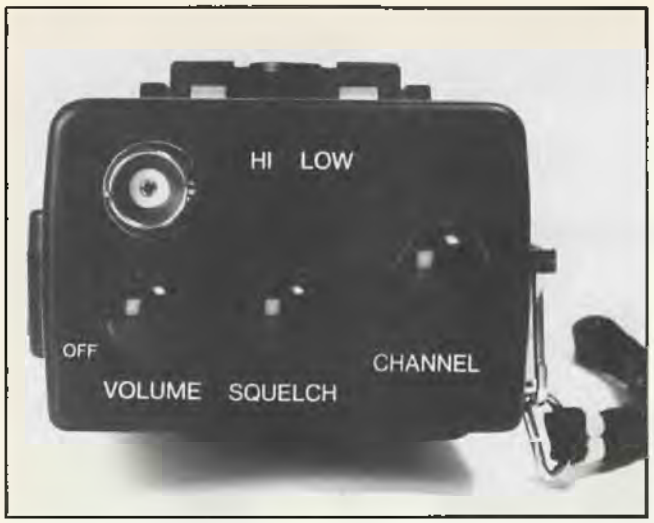
The unit is quite light without its nine AA size (penlite) cells which produce 13.5 volts of operating power for dry cells or 10.8 volts for NiCds. A 'charger' socket provides for recharging a NiCd battery while a second coaxial power socket permits the use of an external 12 volt power supply to run the radio.

The top-mounted control panel carries a combined off/on power switch and volume control, a rotary squelch control, a rotary channel switch, a slide switch for high or low transmit power and the previously-mentioned BNC antenna socket.

There's nothing unusual to mention about the volume control, and the squelch circuit remains about average for a basic AM-only rig with the SET threshold opening at a quite low level of 0.2 µV (microvolts) and the 'tight' condition requiring more than 1,200 µV to prise open the gate. The threshold level can be reliably set for tiny signal levels but, as with most AM squelch circuits, little bursts of noise tend to be a nuisance, unexpectedly 'popping' random crashes of audio out the speaker.

The high/low RF output power switch varies transmit power between 1 watt and about 3.5 watts when operated from an external 13.8 volt power source, while internal batteries alter the power levels in relation to their charge condition. On maximum transmit power the current drain is about 1.5 amps.

The channel switch has a satisfy-



ing, firm detent 'click' when turned, with a similar feel to the old style, expensive 40-channel, multi-wafer selector switch which has served well for the past two decades.

The reality now is that a couple of contact pairs send 'step' pulses to a custom CPU which interprets the signals as UP or DOWN (increment or decrement) commands to the Phase Locked Loop (PLL) which responds accordingly.

A comment about the channel selection process in the AM-300: it's back to bloody front, according to *my* sense of logic anyway.

When I turn a current model CB channel switch in a clockwise direction I expect the channel numbers to rise in numerical value from the lowest (Chan 1) up to the highest (Chan 40) where the process simply begins again. When turned anti-clockwise the reverse process is expected.

The AM-300 has a new convention and has turned the process arse-about. If it weren't for the other controls being according to convention I would think the rig was intended for you lefty-handed Molly-dukers out there.

I can't imagine how it ever got off the assembly line like that when the cure is simply a wiring reversal or, maybe, our test rig was simply having a bad day...

It seems forever that 27 meg CB rigs have used a big, clumsy two-pole changeover switch for PTT (press-to-talk) operation which greatly affects the size of the rig and the scope for remote Tx/Rx facilities like the familiar combination speaker-microphones so popular with UHF CB portables.

The AM-300 is nearly all new technology and it uses a tiny, positive click microswitch to achieve the transmit-to-receive function which is activated in the usual manner via a side-mounted, low profile lever arm.

A rectangular button protruding through the lever arm is labelled CH9 and offers channel 9 priority operation for emergencies.

Last but not least is the red LED channel display which is clustered on the front panel alongside a separate red LED signifying transmit and a green LED indicating the channel 9 priority function is selected. The channel display is quite dim by normal standards — obviously intended as a power-saving feature since there is no means of turning off the display for battery conservation — aside from the obvious, that is.

The tiny loudspeaker produces plenty of crisp audio level for most purposes, but, as with most hand-helds, it tends to rebel a bit under flat-strap conditions. The receiver is a dual-conversion superheterodyne with the standard 10.695MHz and 455kHz intermediate frequencies.

continued on page 11....☞

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Here's something different from Hatadi...

PEARCE SIMPSON "AM ONLY" 27 MHZ *AM-300* PORTABLE

Continued from previous page...

Transmit audio is clean and crisp, peaking up to 100 per cent modulation thanks to the electret condenser microphone mounted behind the lower portion of the front case panel.

The whole rear of the case unclips and slides off to reveal the battery compartment which has nine, side-by-side divisions to neatly house the complement of dry cells.

Attached to the back of the sliding section is a tough plastic tab about 90 mm long and 30 mm wide which serves as a belt/utility clip for mounting the radio. The clip appears quite strong... but, I really dunno about using those plastic clips...?

Internally the AM-300 is a breath of fresh air when compared to its ancestors of some years past.

The components are all good quality items neatly laid out and precisely assembled with hardly a 'floating' wire to be seen anywhere.

The circuitry is a hybrid of conventional hardware and surface mount technology which provides for speed, automation and economy of construction.

The power transistors are firmly mounted to neat, pressed form steel and aluminium heatsinks which provide a type of perimeter frame around the large, double-sided circuit board. The whole assembly is desirably quite rigid in its construction.

Even a trimmer is provided for accurate reference crystal frequency alignment — a nice touch frequently overlooked in AM-only CB transceivers.

SUMMARY

If you are looking for a cheap but effective means of personal radio communications this could be the rig for you. The AM-300 is compact and well-built, and offers the full 40-channel complement. It can be operated from internal battery power or a suitable external supply — about 10 to 14 volts should suffice. Remember, however, when you want to change channels to make sure you zig when you think you should zag. Now isn't that a back-handed compliment.

CONTROLS AND FUNCTIONS

1. Antenna: Extend Fully.
2. ON-OFF/VOLUME: Controls audio output volume and ON-OFF the power. The extreme counter-clockwise position is power OFF state.
3. LED Display: LED Display indicates the channel selected by 40 position rotary switch.
4. RF Power HI/LOW Switch: Switch to Low when transmitting a short distance and or to conserve batteries.
5. Channel Switch: This rotary switch selects one of 40 channels for transmit and receive operation.
6. CH9/OFF Switch: In the CH9 position, the unit will be fixed only to CH9 for emergency call/monitor operation.
7. Push to Talk Button: Press to transmit. Release to listen.
8. Built-in Dynamic Speaker: Listen here.
9. Power & Charge Jack: While the Cigarette Plug is connected with jack, external D.C. Power is supplied with external charge. Optional AC to 12-volt DC Power Supply connects here.
10. Built-in Condenser Microphone: Depress Push-to-Talk Transmit Button. Hold microphone approximately 2-3 inches from mouth.
11. Squelch Control: Used to quiet the receiver during absence of receive signals. Sensitivity to incoming signals is fully adjustable.
12. CH9 Lamp: This LED will be on when "CH9" switch is on.
13. Battery Low & TX Lamp: Indicate condition of batteries when receiving. This lamp will be on when transmitting mode.

Bandspread

By Greg Towells

REALISTIC SCANNER HINTS

Firstly, I have had a lot of mail from readers wondering if their model of Tandy scanner can be modified for extra channels, scan speed, and that sort of thing. As a general rule, most of the models released in recent years have at least a few extra features waiting to be brought out or at least changed from standard.

Unfortunately I have bad news for the many people who want to modify their PRO-2020s. The only mod I have heard of involved an awful lot of butchering for a relatively minor change to the radio. Thanks anyway to all the people who asked...

Some owners of PRO-43s may have had the misfortune to discover a bug of sorts in their radios. The PRO-43 will allow you to lock out *all* the channels in a bank.

If that bank is the only one selected and you switch to the scan mode or turn the radio off, then it's gone. That's right, all 200 of your memory channels have gone west. The only solution if this has happened to you is to reset the scanner and re-enter all the frequencies again.

Just wonderful.

It turns out that the Program Mode is the reason for this situation. In Manual or Scan modes the radio will not allow you to lock out the last channel in a bank, but *will* permit it in program mode.

The morals of the story when you are programming your PRO-43 are a) leave another bank enabled for scan or b) make sure at least one channel is left unlocked or c) leave the #$@###@ lockout key alone!

ADDING A TAPE RECORDER JACK TO YOUR RECEIVER

If you are at all serious about your radio monitoring, be it shortwave or scanner, then the time will come when you will require some sort of recording facility to capture that rare station or transmission on tape. Unfortunately, many shortwave receivers and most scanners do not come with a dedicated tape recording jack as standard.

An easy and simple way to get good quality recordings without having to use the headphone or external speaker jacks is to open up your radio and locate the three lugs on the volume control.

One of the two end lugs goes to ground somewhere. Don't worry about that one, and forget the middle lug too.

Solder a 0.1 µF ceramic disc capacitor to the remaining end lug of the volume control. Solder the center lead of a mini-coax or similar shielded cable to the other end of the capacitor. Run this cable to a new RCA jack installed somewhere conveniently on the exterior of the radio.

Ground the shield of the mini-coax to the radio's ground trace. Also, connect the shield of the mini coax to the ground or outer shell of the newly installed RCA jack.

That's it. It is not a good idea to use the headphone jack for recordings because the signal at that point is too strong for the recorder, and additionally it has lost much of its fidelity due to the receiver's narrow audio bandpass sections. Tapping the signal at the TOP lug of the volume control will provide just the right amount of signal for most recorders.

Try it... you will really appreciate the quality of the recorded signal.

This mod will work for any receiver that does not have a tape record output jack.

UHF PERSONAL RADIO SERVICE FOR NEW ZEALAND

The following information was summarised from *Spectrum Views* Vol 3 No 4, published by the Ministry of Commerce of New Zealand in June 1994.

The possible introduction of a **Personal Radio Service (PRS)** was one of the key issues discussed in a review of the radio spectrum between 470 MHz and 518 MHz. A Ministry discussion paper was issued in July 1993, which invited public submissions on options it presented.

Public response showed considerable interest in the concept of a personal radio service. Modelled on Australia's UHF Citizen Band, the PRS could have wide applications in community and sporting events, small businesses and in rural communities where telephone services are limited.

The Ministry has decided to establish a PRS in the range of frequencies 476.4 to 477.425 MHz. The 40 channels are the same frequencies as already used for Australian CB, so equipment would be relatively cheap and readily available.

The PRS band will be established under a General Licence which will eliminate administration costs and licence fees, as for the 26 MHz Citizen Radio Service in New Zealand. The PRS General Licence was expected to be granted effective July 1, 1994.

While there would be no individual licensing, each mobile, hand-held or portable must have a declaration of conformity and meet the required technical standards. The Ministry also intends to licence PRS repeaters and is already working on licensing guidelines for these. Repeater licences are likely to be limited to being issued to non-profit incorporated societies or user associations. Repeaters are intended to be operated with open access.

Thanks to ZL2CA for distributing that information.

A number of interesting points come up from that announcement:

Firstly, would the introduction of a Personal Radio Service in New Zealand using identical frequencies and mode of operation to Australia's UHF CBRS allow for reciprocal licensing agreements? It would be interesting to be able to take your UHF CB with you on your holiday to New Zealand and check out the locals during your visit.

Maybe the Kiwis mightn't be too keen on establishing their own UHF CB service if they had a listen to what it has degenerated to here in Australia, particularly on repeaters in capital cities. Also interesting is the situation of no individual licensing for operation.

Does this mean one license for as many radios as you have in New Zealand, or no license at all? Whatever way it is, the no license fee bit certainly appeals to me.

Way back in the history of Australian CB a license allowed for up to five radios, a far more economical situation than the present $18 for ONE radio.

As a result of the current review of radio licensing in Australia by the SMA, the operator license with unlimited radios may also come about in Australia soon — we can only hope. Considering our original CB radio service in Australia was modelled most of the way on the situation in the US of A, I think it is high time we caught up with them and abolished CB licenses in Australia also.

The bureaucracy that maintains the CB licensing system here probably costs as much revenue as the service generates, not that that argument has ever contributed to the removal of government taxes and charges before...

SETCLOCK

Do you rely on the clock inbuilt in your computer for your applications?

Some uses that spring to mind are satellite tracking programs, logbook-type programs and, especially, programs that display a clock on or in the corner or the screen.

Most programs that I come across seem to have a clock tucked somewhere on the display, and it is annoying to have a wrong time looking at you.

An incorrect time can play havoc with things such as the satellite tracking, since even a small error can mean the difference between monitoring the transmission or not.

If the clock in your computer is incorrect, then you can either type in the right time yourself, if it is at hand, or use the program **'Setclock'**.

Setclock is a program which accesses the Telecom Australia Speaking Clock serial time service via a modem attached to an IBM-compatible type computer and will show the current local time and date on the screen in text mode. Setclock will also update the internal clock of the computer to the exact current time.

Setlock can be found on most "communication type" BBSs.

The program can be configured to dial any number to gain access to any of the Speaking Clock installations located throughout the capital cities of Australia.

The program should work with most common modems.

Features of the program include an auto-dialling facility, fully automatic mode of operation requiring no user input, the ability to use COM1 or COM2, and support for batch files with any fatal errors generating exit error level codes.

Like just about 100 per cent of the population, I have used Telecom's Dial It talking clock before to update my watch or clock to the correct time 'at the third stroke'.

So that your computer is not left out, the Telecom Dial-It speaking clock service has been upgraded in each capital city to provide a serial time code as an output.

Auto answering modems have been installed to provide an RS232 time string which can be used to set the clocks in computers.

The time string is transmitted at 1200 baud, 8 bits, no parity 1 stop bit.

The modems will automatically disconnect 20 seconds after connection.

One other bit of important information would be the phone numbers:

Sydney (02) 267 4648; Melbourne (03) 600 1641; Brisbane (07) 221 7033; Darwin (089) 41 3423; Perth (09) 221 5457; Adelaide (08) 410 0143; Hobart (002) 24 1905.

EXTENDING BATTERY LIFE IN MX-4000

The **Regency MX-4000** is a 20-channel battery-operated hand-held scanner which was sold a number of years ago, and a fair few are still in operation now.

The MX4000 has a low battery warning circuit which disables the scanner when the battery voltage falls below a preset level. The problem with this is when the preset battery voltage level is set at too high a level and there is still useable battery charge left below this. Quite a few users were finding that the time between recharges was coming in at around two hours or less before the low battery circuit disabled the scanner. Not a good situation — and one about to be rectified. A way to sort out this problem would be to adjust that preset voltage level to a level where there is still useable battery power left.

Many units returning unsatisfactory periods between charges have the preset to shut down the scanner when the battery voltage fell below 4.7 volts. Adjusting this down to just 4.0 volts increases the period between charges dramatically.

You will need the following equipment to achieve this: an adjustable, regulated DC power supply, capable of delivering between 3 and 5 volts at 500mA or more, and an accurate means of measuring voltage from the power supply.

The best instrument for this would be a digital voltmeter with an accuracy of ±5 per cent or better,

A #1 Phillips screwdriver, and a small slotted screwdriver or alignment tool — and be competent enough to carry out this type of work on electronic equipment.

In other words, be careful and if you are not sure, don't do it.

The low battery sensor threshold is controlled by a pot. This is how to adjust it to 4.0 volts:

- Turn the scanner off.
- Connect your digital voltmeter to the regulated DC power supply and adjust the supply to 5.0 volts.
- Connect the power supply to the snap terminals on the scanner which normally connect to the battery.
- Check and *double* check the polarity, connect the positive lead of the supply to the female snap, and the negative lead to the male snap. Turn the scanner on.
- As you watch the scanner's LCD display, gradually reduce the power supply voltage until the scanner's low voltage warning begins to flash.
- Read the digital voltmeter. If it reads between 3.9 and 4.0 volts, then no further adjustment is required. Disconnect the supply and reconnect the battery pack.
- If the voltmeter reads above 4.0 volts, turn the radio off and disconnect the supply and continue:
- Turn the scanner upside down and place it on a soft cloth to protect the case.
- Remove the bottom tilt foot and the battery pack from the scanner.
- Remove the four Phillips screws holding the case bottom, then remove the case bottom.
- Reconnect the power supply to the scanner and set it to 4.0 volts.
- Turn the scanner on.
- Locate a small, grey potentiometer on the PC board. The pot looks like a grey plastic Phillips screw head. If the scanner front panel is facing you, the pot will be just behind the keyboard on the left side. Do not confuse it with the three pots along the right side of the board; the battery voltage level pot is not near any other pots.
- Slowly adjust the potentiometer to the threshold at which the low battery indicator begins to flash. That's all there is to it.
- Re-assemble the radio.

You should find that you will get an increase of anything up to six hours from a recharge, a big improvement from the two hours that some people mentioned to me.

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Fax. (03) 583 0846
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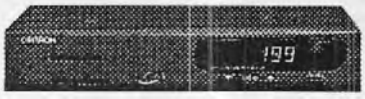

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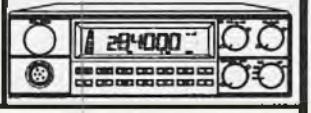

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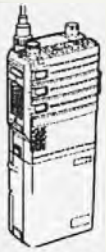

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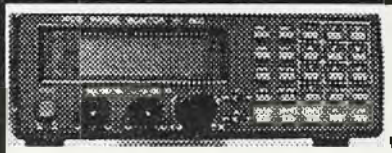

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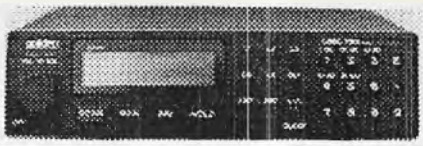

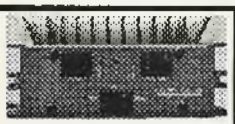

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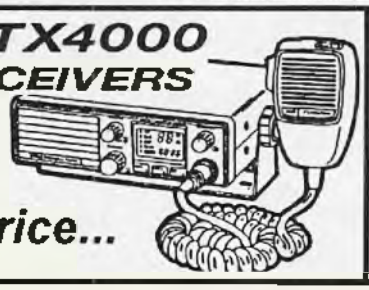

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High gain, foam filled antenna with 5 year replacement Warranty.
$120
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WHY BECOME A RADIO AMATEUR?

By Neil Duncan, VK3ND

Gaining knowledge in a hobby involving two-way radio is a very compelling thing to do. The trouble is that the more you get involved, the more you want to learn. With radio, the more you learn, the more you want to increase the quality of the equipment you own and the antennas you have, to reach further afield and to achieve new goals.

The early stages of a hobby interest in CB radio are relatively simple — it is really a matter of working out what you are going to say to whom — and how to achieve this at the least expense. The further you go into the hobby, the more the technical challenge grows.

As you progress, you make some definite discoveries. It becomes clear, for example, that single sideband is the better way to go compared with AM — it 'has a better range' and gets through when conditions are difficult. Why should that be?

Similarly, you discover that some antennas are better than others and that you can buy beams, better mobile systems and so on. How do you find out what is theoretically available? Then of course there is UHF CB with its own challenges. Repeater operation, mobile use and 'line of sight' operation can be fascinating. How do you learn the 'tricks of the trade' here?

Chasing DX (long distances) on the 27 MHz CB band when the band opens up is a real thrill too. Working into the USA is a regularly heard 'brag' of the CB operator. One by one, various challenges like this unfold and make themselves obvious. Now, probably *the* major aspect of CB radio is the 'people' one. The prime motivation for most CB operators when they get started is communication with people. There is another side to radio communications though — the never-ending technical one. What happens in effect is a bit like building up a hi-fi system. The better your gear is, the better the gear you want.

Once you have reached a stage where the challenge of radio communication has really taken hold of you, the constraints of the CB service start to create absurdities. The ceiling on transmitter output power and the number of channels available to the CB operator are two of the main limitations. Having hit the brick wall with respect to the ability to improve things, it may well be time to consider amateur radio ('ham radio') as the next step up in your hobby.

Amateur radio

In a nutshell, amateur radio is a formalised, expanded and enormously enhanced version of CB radio with an immense emphasis on the challenges of the technical side of things. An upgrade to amateur radio brings the following rewards with it:

- you can run up to 400 watts of SSB output power compared with only 12 watts PEP on CB (120 watts FM instead of 5 watts on UHF).
- nine 'HF bands' and four major VHF and UHF bands are available to you (there are some super high frequencies too). These bands have more than ample room to hold *hundreds* of simultaneous conversations each. There are no 'channels' as such. Continuous 'dial space' is used in these very wide open spaces.
- antenna systems become limited only by local council regulations and suburban height restrictions. Some excellent antenna designs are just waiting to go on the air at your place too!
- there is total and relatively simple access to world-wide communication as well as chatting with the amateur radio crowd around your own area. Indeed, there are several million radio amateurs around the world.
- highly-sophisticated 'modes' are available if you want to dabble in them. As well as voice modes (SSB, FM and AM), there are computer modes galore, as well as Morse Code, fax, and even slow and fast-scan television.
- there are people to talk to with a very different set of 'reasons for being on the air' compared with those you tend to meet on the CB bands. We'll return to

....☞

WHY BECOME A RADIO AMATEUR?

(continued...)

a radio amateur is gained by sitting some examinations and yes, you must pass very well, as the pass mark is 70 per cent.

There are three aspects to these exams. The radio theory examination is probably the main part, but there is an examination about the rules and regulations of the use of the hobby and a third (but optional) examination on the use of Morse Code. If you choose not to take the Morse exam, your licence will restrict you to VHF and UHF use (although new Regulations, yet to be proclaimed, will allow the use of 10 metres FM, just above the 11 metre CB band, for the 'Limited' grade of licence).

this point in a moment.

• some special challenges exist if you want them. EME ('moonbounce'), satellite, picture transmission, rare countries to contact, contests and certificates to gain, and more. And, of course, learning to build your own equipment is a *special* challenge.

All of these good things come at a price — there are some hurdles you must cross first. The licence to become

As an amateur, and dependent on the exams passed, you get to use a wide variety of frequencies - including 2 metres. Given a decent antenna, you can work the space shuttle...

Listening around

On the air, there is a whole new set of jargon for the budding radio amateur to learn. The code 'QSO' means conversation, and ask an amateur 'what is your handle' and he'll know what you mean! But despite that, very little of the lingo of the CB bands is commonly used on the amateur radio bands. In fact, it is sometimes felt to be inappropriate. So how do you get a feel for the 'style' of amateur radio and how can you find if it is for you?

Listening in on the amateur bands is a good way to assess what goes on in the on-air aspects of this hobby. A very good place to start this would be in front of a short-wave receiver — one equipped with single-sideband reception capability. Listening around 3.6 MHz at night, 7.1 MHz in the mornings or 14.2 in the afternoons (that last one being where you will hear heaps of overseas DX contacts taking place) would be a very good idea.

When conditions are good, those overseas stations can often be heard coming in with signal strengths almost the equal of local stations — in fact , stronger on some occasions! There are over 300 different countries around the world with their own amateur radio prefixes. (the callsign prefix VK is for Australia, and the number indicates the state. So VK3 is Victoria, VK2 New South Wales, and so on. ZL is New Zealand.) The art of working into these countries revolves around knowledge of band conditions, beam headings and appropriate times of the day, what prefixes go with what countries and a lot more. English tends to be the dominant language.

What sort of things do amateur radio operators talk about on the air? Well, the hobby carries with it an immense amount of common interest. There is always the technical side of the hobby to discuss. The range of equipment available to the hobbyist is quite staggering. There are receivers, transmitters, transceivers, multi-mode adaptors (for the special non-voice modes), antennas, towers, rotators and other technical items to exchange ideas about.

Non-technical discussion seems often to center on band conditions, local area description (where they live and so on) and, if all else is lost, a discussion of the weather is always in order! It is usual to exchange signal reports with the other station, too. A 5x9 report means 5 out of 5 for readability and the 9 indicates excellent signal strength — pretty much as on CB.

One formality sometimes undertaken at the conclusion of a contact with another station (especially overseas ones) is to arrange the exchange of QSL cards, also something like on CB. These are envelope-sized cards with one's call sign printed on the front and details of the particular contract in question handwritten in the appropriate places.

A wall filled with rare QSL cards is sure to impress visitors to the shack. The completed QSL card is either posted off directly to an address (which you can find in a directory of amateur radio stations called the 'call book') or can be sent through a bulk-mailing system (the QSL bureau) operated by the appropriate hobby organisations. That beings me to the next point.

Amateur radio groups

The Wireless Institute of Australia (WIA) is the biggest of the set of amateur radio clubs to which you may wish to belong in this country. A speciality of the hobby is the sheer enjoyment its devotees have in speaking with and meeting with others sharing the hobby both on the air and in person. There are dozens of clubs around the country, and joining up with one pretty much ensures you of all kinds of technical and personal exchanges. No, you don't have to be a licensed amateur to join. The WIA offers its members a wide range of representation with the appropriate government bodies as well as activities, courses and

a magazine for its members. They have been responsible for a great deal of change and improvement over the years.

Activities offered by the clubs include fox-hunts (when someone says 'go', you use your direction finding gear to find a hidden transmitter), demonstrations, equipment 'white elephant stalls' where you can buy gear at bargain prices, lectures on new activities and more general but simple get-togethers. Whilst the WIA is probably the best starting point if you want to obtain information on becoming a radio amateur, the local clubs are also an excellent source of help. You will find their members have superb understanding of and enthusiasm for the hobby and their commitment to helping the newcomer is always a hallmark. Look up the WIA in your capital city telephone book, or for its advertisements in the pages of 'Amateur Radio Action' (ARA) to get you started in the right direction. Overseas readers are encouraged to locate their own local clubs too. The pages of 'ARA' contains club details on many occasions (ARA is highly-recommended reading in general!).

To obtain a licence for amateur radio, there are a number of steps to take. First, you must study theory, regulations and optionally, the Morse Code. The clubs and the WIA in particular will be the best source of finding your way to reference material for such study. They can help you to find your way into Morse Code (CW), and can tell you about the procedure for the examination itself.

Licences

There are three grades of licence. The Novice (NAOCP) licence is designed to provide an entry or beginner-level status. A lesser set of requirements in the theory examination and a slow Morse Code speed lead you to a licence with a limitation on power and some restrictions on the frequencies you can use. Both interstate and overseas contacts are possible with this licence. Its legal output power is presently 30 watts, but this is set to increase to 100 watts.

The Limited (AOLCP) licence requires full knowledge of theory and regulations but completely excludes the Morse Code requirement. Holders of this licence are restricted to the VHF and UHF bands where local and interstate contacts are the usual way to go, but access to the intriguing six metre band also brings international contacts. Add to this an exam in morse code and you have the full amateur licence (the AOCP) where all privileges are offered.

As we said, the call sign you receive starts with VK in Australia, adds a number (2 for NSW, 3 for Victoria and so on, and this is followed by a unique three letter call such as ABC or XYZ. Call signs are reissued in this country some time after cancellation, so the odd two letter calls come available from time to time. In Australia, the first letter in the three letter calls can be interpreted to tell you what class of licence the station owns. All two letter calls are unrestricted 'full' calls.

Equipment

Sadly, the days of home-made equipment in amateur radio seem to be dwindling. There are myriads of designs around the place for equipment to build, but it has become unconventional to build anything but accessory level gear. The VHF and UHF amateurs seem the best in the home-made stakes.

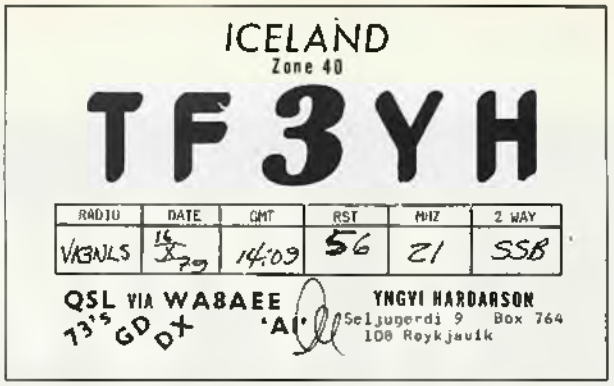
Commercial gear costs from $500 upwards. That price will buy an FM box for two metres. $1500 will buy you a basic but highly-effective HF transceiver suitable for interstate and overseas work. $5000 seems to be the figure around which the really classy gear starts. There is also a very active second-hand market for amateur radio equipment. Antennas can be almost cost free, but then, towers, beams, rotators and expensive 'add-ons' all become temptations. Put it this way, you would be up for quite a few bob if you set yourself up with the very best station and antenna from the word 'go'. More sensible is the idea of building up little by little as time passes.

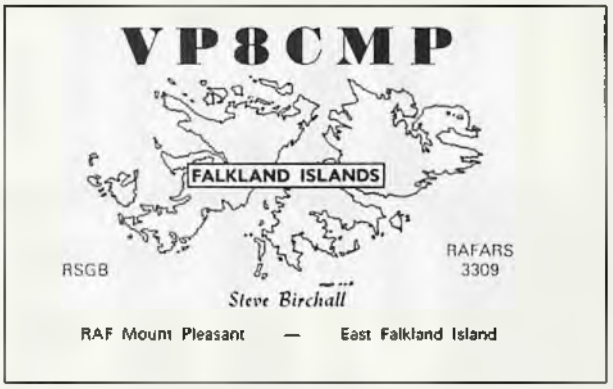
Who becomes an amateur?

This brings me to my final point. For me, it is the people aspect of amateur radio which has kept me enthralled and fully 'radio-active' for well over 20 years. Sure, I have loved building and buying gear and constructing antennas. While I find Morse Code to be my favorite mode (many others *never* use it!), I find the other modes to be a great joy too. Finally, though, it is who you meet that makes this hobby so alive.

On air you find people with immense interest in the hobby itself, whose reasons for being on air is to experiment, to learn more and to meet *you*, the fellow hobbyist. There is a calmness, warmth and a formality about the on-air contacts you tend to have. It is extremely rare to find any coarseness or untoward language in amateur radio and the high standards you meet (and the regulations you must obey!) apply right across the spectrum of the hobby.

Those hurdles you have to cross to become a radio amateur represent hard work but they also naturally lead to very high levels of reward. The challenges, friendliness, courtesy and compatibility of the people you meet make it worthwhile. Investigate amateur radio — you will be amazed at its depth and vitality.





While you can certainly work DX on 11 metres, you can work a helluva lot more on the many bands available to amateurs.

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L.L. BROWN ADVERTISING 4805

THE NSW GOVERNMENT RADIO NETWORK

It's a new dimension in scanning, says our emergency services expert Robert Peel — but what does it mean to you?

In last issue's Listening Post column you read about the Victorian Government's statewide trunked radio network, designed to establish a single communications system for use by a wide variety of government and possible private sector organisations.

Now it's the turn of NSW.

The state's **Government Radio Network (GRN)** will bring the communications responsibilities of most state government departments under the control of a single communications authority.

In March 1993, the NSW Minister for Administrative Services, Ann Cohen, commissioned a joint Motorola/Telecom Australia consortium to construct, maintain and operate a radio network to service various NSW government departments and instrumentalities.

A management board was formed with representatives from the Telecommunications Unit (TCU) of the NSW Government Commercial Services Group, plus Telecom, Motorola and some of those government agencies targeted for conversion to the GRN.

Limited coverage area

It was proposed that the south-east corner of NSW (approximately one fifth of the state) would first be serviced by GRN.

The early timetable expected to have the greater Sydney metropolitan area covered by mid-1994.

The second phase will extend coverage to Newcastle (including the New England Highway to Scone), Wollongong, the Great Western Highway to Orange and the Hume Highway to Queanbeyan. (That's funny. The Hume doesn't actually *go* to Queanbeyan.

Now there's an indication of the power of government — they'll *make* it go there!)

Eventually the GRN will not only provide radio communications, but also Computer Aided Dispatch (CAD), transmission of more complex data over radio channels and vehicle location systems. Initially, the majority of services will be voice, with digital transmissions now expected before the turn of the century.

Motorola wins, Australia loses?

The basis of the GRN system is Motorola's Smartzone trunking protocol.

Because Smartzone is a proprietary system owned by Motorola, all users are locked in to buying Motorola equipment — this provides obvious advantages to Motorola, and none to the local radio manufacturing industry.

The NSW Government has, in effect, handed this valuable monopoly to a foreign company.

Many users targeted for conversion to the GRN are against the proposal due to a lack of information being distributed by the GRN team, as well as perceived technical and operational difficulties.

Motorola, on the other hand, is convinced that its system will be able to supply reliable and high-quality radio communications not only to the current standard, but in excess of present levels.

Some of the issues the New South Wales Government looked at before deciding to implement a wide area network included the growth of existing conventional mobile radio systems, the congestion and interference to current users and that ever-present 'bottom line' — the cost.

By pooling a number of frequencies and allocating them on a priority basis with a higher user loading, Motorola maintains that the GRN will provide greater efficiency, increased privacy, better security and more flexibility.

Provision is made for a user to communicate across the entire network without having to change channels.

The GRN will also allow for interconnection with the telephone system and the exchange of data between portable PCs, which coincidentally are also being sold by the GRN authority.

Danger signs...

As a Victorian who lived through the tragic Ash Wednesday bushfires, I clearly remember the communications problems associated with fighting the blaze.

There was a veritable media storm whipped up over what the press called "a lack of compatible radio systems".

This same problem hampered the fighting of the NSW fires at the beginning of this year.

The GRN promises to allow all GRN-compliant emergency services to communicate with each other, removing the duplication of services and resources.

But what about brigades or units from outside the GRN region?

To date, only the Sydney Water Board appears to have accepted the GRN almost without question.

The police, fire and ambulance services are withstanding the pressure to convert, basically arguing that the system will not support their unique needs.

The police have an extra problem to deal with, this being their commitment to the current 64-channel allocation via the now-defunct **Interstate Police Communications Co-ordination Committee (IPCCC)**.

After 1974 when Cyclone Tracey all but removed Darwin from the map, the Department of Communications and

continued on page 20 ....☞

THE NSW GOVERNMENT RADIO NETWORK

(continued from page 19)

Australia's police forces moved to allocate 64 channels between 467.850 MHz and 469.425 MHz for the exclusive use of the state and territory police services.

What the GRN and the Victorian equivalent will do is to take things back to the days before 1974, by establishing specific radio networks with no commonality with any other state — surely a major obstacle to any coordinated emergency services plan.

Lessons from the USA

Let's look at what happened in the US state of Florida when its bureaucrats and technocrats installed a similar Motorola system some 10 years ago.

This 800 MHz network didn't work anywhere *near* the promises of Motorola, and has cost the taxpayers of Florida in excess of US$400 million.

As a result of the on-going problems, the entire system is this year being dismantled — an expensive lesson indeed!

Frequencies

The New South Wales GRN will utilise frequencies from the 410 MHz 'T band' and the 460 MHz 'U band'.

Signals will switch between allocations in both these bands, presenting a unique challenge for monitors.

Being able to keep track of a single conversation as it switches channels will mean some hard work.

Gone will be the days when programming a single frequency in your scanner meant you could listen to all the police activity in your local area.

To date the following NSW Government departments will subscribe to GRN services:

The Sydney Water Board
State Sports Stadium
NSW Sheriffs Office
Department of Bushfire Services
State Emergency Service
Prospect Electricity

Department of Administrative Services (including Technical Repair Service and State Mail Service), and
Government Security Service.

There's still a question mark over the participation of the NSW firies, ambos and police.

I've managed to compile a list of some of the GRN frequency allocations which appears below.

As these frequencies (and those which are as yet unassigned) are bought on-line, many of the conventional systems will disappear.

They will, in my opinion, be replaced with an inadequate, inappropriate and esoteric radio communications network.

Whatever the outcome, CBA will as always keep you informed.

All I ask is that when you're monitoring the emergency services (regardless of the radio system!) stay clear and stay safe.

NSW GRN — WHERE TO LISTEN...

Base tx	Base rx	Base callsign	Base site
415.6250	406.1750	VKN802	Sydney
415.6375	406.1875	VKN797	Pennant Hills
415.6750	406.2250	VKN796	Belrose
415.6875	406.2375	VKN798	Glenbrook
		VKN773	Lawson
415.7500	406.3000	VKN801	Chullora
415.7625	406.3125	VKN781	Berkeley Tops
		VKN791	Bilgola Plateau
415.7875	406.3375	VKN789	Cowan
415.8000	406.3500	VKN770	Hassans Walls
		VKN782	Maddens Plains
415.8750	406.4250	VKN802	Sydney
415.8875	406.4375	VKN797	Pennant Hills
415.9125	406.4625	VKN787	Mt.Elliot
		VKN780	Mt.Murray
415.9250	406.4750	VKN796	Belrose
415.9500	406.5000	VKN788	Kariong
		VKN779	Mt.Gibraltar
415.9625	406.5125	VKN800	Heathcote
415.9750	406.5250	VKN799	Razorback
415.9875	406.5375	VKN798	Glenbrook
		VKN790	Wyee
416.0000	406.5500	VKN801	Chullora
416.0125	406.5625	VKN791	Bilgola Plateau
416.0375	406.5875	VKN772	Explorers Tree Hill
416.1250	406.6750	VKN792	Brokenback
		VKN776	Mt.Gray
		VKN768	Mt.Panorama
		VKN802	Sydney
416.1375	406.6875	VKN775	Chaton Ridge
		VKN783	Gan Gan
		VKN797	Pennant Hills
416.1750	406.7250	VKN796	Belrose
		VKN778	Freestone
		VKN784	Mt.Arthur
416.1875	406.7375	VKN773	Lawson
		VKN786	Mt.Sugarloaf
416.2500	406.8000	VKN801	Chullora
		VKN767	Mt.Canobolas
		VKN774	Mt.Jerrabomberra
		VKN785	New Lambton
416.2625	406.8125	VKN781	Berkeley Tops
		VKN791	Bilgola Plateau
		VKN769	Mt.Lambie
416.2875	406.8375	VKN789	Cowan
416.3000	406.8500	VKN770	Hassans Walls
		VKN782	Maddens Plains
416.3750	406.9250	VKN792	Brokenback
		VKN776	Mt.Gray
		VKN768	Mt.Panorama
		VKN802	Sydney
416.3875	406.9375	VKN775	Chaton Ridge
		VKN783	Gan Gan
		VKN797	Pennant Hills
416.4125	406.9625	VKN787	Mt.Elliot
		VKN780	Mt.Murray
416.4250	406.9750	VKN796	Belrose
		VKN778	Freestone
		VKN784	Mt.Arthur
416.4500	407.0000	VKN798	Glenbrook
		VKN788	Kariong
		VKN779	Mt.Gibraltar
416.4625	407.0125	VKN800	Heathcote

416.4750	407.0250	VKN786	Mt.Sugarloaf
		VKN799	Razorback
416.4875	407.0375	VKN798	Glenbrook
		VKN790	Wyee
416.5000	407.0500	VKN801	Chullora
		VKN767	Mt.Canobolas
		VKN774	Mt.Jerrabomberra
		VKN785	New Lambton
416.5125	407.0625	VKN791	Bilgola Plateau
		VKN769	Mt.Lambie
416.5375	407.0875	VKN772	Explorers Tree Hill
416.6250	407.1750	VKN792	Brokenback
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The LISTENING POST

If you're into scanning, you have really hit the jackpot in this issue. David Flynn has, with the help of scanfans throughout Australia, compiled a list of frequencies ranging from the police in Cairns to Formula One racing cars in Adelaide....have fun...

Callings Cairns...

Scanning in the sunny far north of Queensland? Update your little black book with the these top offerings from Steve Bottom. These are all quite active and can be heard most days of the week, says Steve.

Try for the police on 76.520, 76.550, 77.540, 77.600 with links on 457.700, 459.180 (a police-fire link) and 460.200 (Steve recommends this as giving better signals than the 76 MHz band); Federal Police on 488.450; ambulance on 79.650, 82.150, 82.260 and 82.980 (this last one is also used by the local hospital); fire brigade 71.380. Paging services at Port Douglas are on 148.560 and 148.630; 468.625 and 468.650 for the SES; the SMA on 163.760; 168.570, Queensland Railways; 169.420 for B&W Marine and 169.690 for a local tour boat operator.

And how's this for a complete airband list? 119.750 for en route weather; 121.200 Brisbane control; 121.700 Cairns ground; 123.800 Cairns control; 124.600 Brisbane flight information service; 124.900 Cairns tower; 127.600 Brisbane control; 129.700 Air Nuigini; 129.900 airport office, 130.600 and 463.680 Ansett ground channel; 131.100 ATIS; 131.600 police air wing; 131.800 Japan Airlines; 131.900 QANTAS; 135.550 flight west; 464.730 for QANTAS ground; 465.750 fire services; and 485.525 for the Australian Protective Services (they patrol the local airport in 4WDs and Commodores; the callsign Alpha is the ground base, with vehicles signing on as Alpha 1, Alpha 2 and so forth). 489.625 is Cairns Customs Service (callsign is Kilo Base; this frequency is heard referred to as 'ch 4' by Customs vessels; Kilo 40 is one such ship often heard on the air) and 489.600 is the airport customs.

By much attentive listening and a little detective work, Steve has come up with details of the following Cairns ambulance service callsigns and the types of vehicles:

1333 is a Clinic Bus and 1232 is a white Toyota Hi-Ace mini bus; 1230 and 1231 are used by a yellow Ford panel van, which appears to be a spare unit used for relief staff in out-lying stations; 1124 and 1125, a white Ford F250 'first response vehicle'; 1127 and 1128, a yellow Ford F250 'first response vehicle'; 1126, a yellow Ford F100 'first response vehicle'; and 1035, a white Ford station wagon for the use of staff officers. From the Smithfield base Steve logs 1150 as a white Ford F250 for 'first response' and 1251 as a Ford station wagon for 'second response'.

Ambos in Adelaide

Jim Atwell, our man in Adelaide, provides this whopper of a list for the festival city's Metropolitan Fire Service (MFS): 168.820 (ch 1), 168.850 (ch 2), 168.250 (ch 3, metro), 168.340 (ch 4, fire ground), 168.880 (ch 5, country).

Codes:

K1	Responding to alarm
K2	Arrived on scene (backup unit)
K3	At incident, available to run
K4	Mobile and available in home area
K5	Off and clear at home station
K6	Available in area
K7	At station
K8	Delayed response (appliances)
K8	Available at home (on call staff)
K9	Vehicle unattended (appliances)
K9	On pager (appliances)
K10	Activate hyperbaric chamber
K11x	Ambulance required (x indicates the number of casualties)
K12	ETSA required
K13	GasCo required
K14	Police required
K15	Fire cause investigator required
K16	SES required
K17	CFS required
K23	Specialist advice required
K24	Dangerous goods info required
K24 - 2	Dangerous goods info to follow
K25	Unable to proceed
K26	Proceed to and stand by at...
K27	Arrived at...
K28	Return to station
K29	Return other appliances
K30	Cancelled (?)
K31 - 2	Available on radio
K31 - 3	Radio check
K32	Request alarm status
K32 - 1	Alarm has not cleared
K32 - 2	Alarm has cleared
K32 - 3	Alarm in test mode
K34	Details to follow
K35	Request map reference
K36	Verify address
K37	Change to channel...
K38	Initial control
K38 - 2	Initial control centre
K38 - 3	Incident control centre
K39	Change of command (Name).
K40	Bomb alert
K41	Fatality or fatalities
K42	Persons reported
K43	Persons accounted for.
K44	Appliances involved for extended time
K45	Appliances still involved
K46	Relief crews required
K55	Arrived on scene: special services incident
K66	Arrived on scene: rubbish, grass etc on fire
K77	Arrived on scene: no sign of fire
K88	Arrived on scene: property fire, small
K99	Arrived on scene: Property fire, burning well
K100	Clear of all relays (controlled traffic lights)

Newcastle hit-list

More for Newcastle monitors, courtesy of Martin Howells and Michael Dobbins: Shortland Electricity (callsign VL2CS) can be heard on 75.290 and 75.775; 75.725 (Maitland), 75.755 (Upper Valley), 76.340 (Upper Valley), 80.520 (Newcastle, customer service), 80.640 (Newcastle, general traffic) and 79.360 (Newcastle operations) and 471.775 (hand-held simplex).

And what a surprise — the Newcastle ambulance have changed channels again! Martin Howells has the latest list:

Ch 1	463.575	New Lambton Heights
Ch 2	463.275	Hamilton
Ch 3	464.075	Gan Gan
Ch 4	463.875	Wappinguy Hill, Mount Sugarloaf
Ch 5	463.700	Mount Richardson, Putty Rock
Ch 6	463.925	Broken Back, Middle Brother
Ch 7	465.100	Cabbage Tree
Ch 8	465.875	Berrico
Ch 9	463.575	Mount Arthur, Gan Ghat
Ch.10	463.650	Mount Helen, Charlestown
Ch.11	412.850	Scaddens Ridge

Ch.12	412.650	Catherine Hill Bay
Ch.13	466.925	Mount Sugarloaf
Ch.14	467.675	NSW-wide

Channels 1 and 9 use the same frequency but a different sub-audible tone.

So how's it going? "Terrible!", according to Martin. "The network has many coverage problems and holes." Can we expect still more changes, or possibly new transmitters and frequencies, in the months head? Stay tuned...

On the road again...

Bob Haile (Ermington, NSW) says he finds buses, hire cars and limousines very entertaining listening, and suggests that Sydney readers try it for themselves with this list:

Airport Shuttle, 163.660, 163.390, 161.410; Ambassador Limousines, 488.350; and WestBus, 487.675; Astra Limousines, 157.450; Budget Chauffer Drive, 473.950; Busways Blacktown, 488.550; Castle Hill Limousines, 493.350; Clipper Tours, 173.73; CNR Limousines, 164.800; Combined Limousines, 160.030; Crossways Coaches, 158.200; Cumberland Hire Cars, 160.330; Fairfield Hire Cars, 167.080; Forest Coachlines, 172.200; Glenorie Coaches, 162.970; Hadfields Coaches, 170.130; Holroyd Bus Lines, 490.800; Hopkinsons Coaches, 488.175; Hurlestone Park Hire Cars, 165.550; Imperial Hire Cars, 158.890; Kingsgrove Bus and Coach Co, 486.925; Leighton Hire Cars, 168.700; Liverpool Buses, 160.000; Metrolink Buses, 163.975; Midshore Busways, 152.563; Murrays Coaches, 462.100; Nevilles Bus Service, 494.350; North & Western Coaches, 494.525; Premier Limousines, 470.250; Punchbowl Coaches, 466.900; Shorelink Buses, 164.050; South Western Coach Lines, 168.040; St Ives Buses, 164.200; STA Bus Inspectors, 486.500; STA Ferries, 157.480; Westway Coaches, 173.010.

What a selection, Bob — well done indeed!

Bob also notes that Hopkinsons Coaches appear to be sharing 488.175 MHz with another user which sounds like a road crew who are kept busy repairing roads, replacing signs and so forth. This could be either the RTA (Roads and Traffic Authority) or, quite likely over the past few years, a contract maintenance crew doing work on one of the main highways, freeways or tollways. Can anyone shed some light on exactly who this is?

That also brings up another issue: with private companies running the M4 and M5 'motorways' (the government's voter-friendly word for 'tollway'), it's about time we added these to our little black books. Anyone have listings for the companies, their roadwork gangs, toll booths and so forth? Let's hear from you!

Tuning in to Telecom

Darren Crick advises of the following frequencies used by Telecom's Technical and Lines Staff in Victoria. Users can also dial into the phone system, so remember that monitoring any telephone conversation on any frequency is illegal.

500.050/510.050 (channel 1): Dandenong Base; 500.075/510.075 (ch 2): Melbourne metro (Bay Rd) and Borung; 500.100/510.000 (ch 3): Mt Dandenong and Kerang; 500.125/510.125 (ch 4): Mt Dandenong, Swan Hill, Murrayville, Warracknabeal, Ararat, Edenhope, Mt Richmond, Tower Hill, Geelong, Apollo Bay, Bendigo, Mansfield, Korumburra, Sale, Orbost, Genoa, Mildura; 500.150/510.150 (ch 5): Walpeup, Nhill, Minimay, Stawell, Mt Dundas, Casterton, Portland, Beach Forest, Lorne, Maryborough, Riddells Creek, Healesville, Shepparton, Yarram, Mt Moornappa, Omeo, Bright/Mt Buffalo, Beauchamp; 500.175/510.175 (ch 6): Horkalla North, Robinvale, Sea Lake, Horsham, Hamilton, Greenwald, Ballarat, Bacchus Marsh, St Arnaud, Echuca, Wangaratta, Seymour, Alexandra, Morwell, Mt Nowa Nowa, Arthurs Seat; 500.200/510.200 (ch 7): Melbourne metro (St Albans); 500.225/510.225 (ch 8): Maidstone, Mt Victoria; 500.250/510.250 (ch 9): Mt Hickey; 500.275/510.275 (ch 10): Melbourne city area; 500.300/510.300 (ch 11): Melbourne metro (Balwyn Rd); 500.000/510.000 (ch 20): Moe South radio tower (this is referred to as Channel 2 on most sets in the Latrobe Valley.)

Formula One frequencies

Anthony Galante, from Templestowe in Victoria, writes of his attempts to gather F1 frequencies at Adelaide... last year saw Anthony and his Bearcat 100XLT snooping around the bands from a vantage point which was unfortunately directly beneath a TV microwave dish operated by Channel 9!

Despite this Anthony logged fire marshals, race control, Damon Hill's Williams and Jean Alesi's Ferrari, plus several other teams he couldn't identify. Anthony also discovered many other spectators armed with scanners, and they all met up for a frequency swap later on the day! The hunt is now on for frequencies likely to be used in November's race.

Anthony also lists some transport frequencies used in his local area: 462.7 (Deer Park Towing); 465.050, 466.2 (Silverdale Transport); 473.050 (Brambles Cranes); 470.325 (unknown user, transmissions deal with tow-trucks and tilt trays); 473.425 (The Daily Juice, wholesale fruit juice deliveries); 486.275 and 490.050 (local driving schools); 489.275 (Budget Couriers); 490.625 (buses); 491.725 (TNT car-carrying); 492.175 and 492.2 (TNT couriers); plus coffee deliveries of unknown origin on 507.900. Great stuff, Anthony!

Narrowcasting

Want to start your own radio station? Got a spare $5000? The Australian Broadcasting Authority is opening up the FM broadcast band to 'narrowcast' services, with many spare channels being sold via auction with a $5000 reserve.

"Narrowcast services are limited either by being provided only for a limited periods or to cover a special event," said ABA spokesperson Anne Hewer. "They are intended for limited locations, providing programming of limited appeal or being targeted to special interest groups."

Narrowcast services cover tourist radio stations (which broadcast info for tourists to a particular region), road safety (advising of roadworks and delays), special events (speedways, motor racing, auctions), real estate (a loop tape with a description of the house, the For Sale sign telling you what frequency to tune into), 'talking billboards', TAB and sporting broadcasts and, of course, foreign language programs.

These are often *very* low-powered services, and the digital tuning accuracy and sensitive receivers of those 'super-scanners' which cover the 88-108 MHz FM band can make for some surprising catches. Wander through the band at 100 kHz steps (the minimum FM broadcast separation) and see what you discover.

Most of the low-powered tourist stations are operated by Tourist Radio, which welcomes reception reports from listeners and has even issued a special QSL card for your efforts — write to Keith Ashton at Tourist Radio Pty Ltd, PO Box 98, Corrimal, NSW 2518.

Quick catches

Readers offer their favorite frequencies from around the states...

Mark Walker offers the following for Bendigo: 71.330 (Dept of Conservation Forests & Lands), 76.670 (Ambulance), 80.820 (Bendigo City Council), 157.8875 (Bendigo Taxi Cabs), 163.330 (Country Fire Authority), 168.520 (Bendigo Police), 468.600 (State Emergency Service), 480.975 (Bendigo Prison), plus 500.125 and

....

The LISTENING POST

500.275 (Telecom technicians).

Just what do those librarians talk about, besides overdue books? Staff at the RMIT Library are now using hand-helds on the job, but on what frequency? Adrian Walace suggests you try the listed RMIT channel of 474.625 — let us know what you hear, or if these book-ish broadcasters turn up elsewhere.

Where to tune for airfield fire-fighters? In Tasmania, at least, there's a selection of channels according to the usually-reliable Jason Reilly. At Launceston airport they use the local tower frequency, or 123.200 (AM), or the repeater split of 456.875/466.375.

Michael Evans provides us with a list of likely places to find TV and film production crews using temporary allocations, either those which come with rented production crews (the most popular being Hoyts Television on 471.150, 471.775 and 471.925) or any of the short-term frequencies (his recommendations are 415.450, 415.475, 415.500, 415.525, 415.550, 471.475, 471.625, 471.900, 471.975, 493.500, 495.050 and 495.175).

A little eavesdropping on these Adelaide security services, courtesy of Jim Atwell: 450.200 (AN railways); 463.000 (SACON); 465.900 (Adelaide University); 466.025 (Australian Detective Services); 467.300 and 486.400 (Wormald); 473.150 (FAC Security, Adelaide Airport); 485.475 (Ample Security); 486.175 (STA); 487.125 (National Guardian); 487.575 (ADT); 487.725 (Mitsubishi); 487.825 (car park security, location unknown); 491.475 (State Protection Services); and both 494.150 and 494.840 (MSS).

Jim also notes that 463.400 is used by a city escort agency for girls working hotels, motels and making 'house calls'!

Rally radio

Richard Jary reports of communications logged during a recent car rally on the NSW Central Coast.

"Most communications were coordinated by one of two groups," says Richard, "the local amateur radio fraternity and the SES.

"The amateurs were mainly heard on 147.125 MHz with a special repeater (no Morse ID heard at any point). At the beginning most callsigns related to the locations, such as 'Special Stage 2', 'Control' etc, but over the weekend the callsigns returned to the official licensed calls of the amateurs involved. Some general chat between the operators involved was also heard on the Gosford UHF repeater, 438.075 MHz.

"SES comms were on the usual Wyong channel of 468.850. 'Forward Control' was the net controller, with others bearing callsigns of 'Liaison', 'Wyong Team Leader', 'Wyong Rescue Officer' or of specific rally checkpoints."

Large-scale community events such as rallies, fun runs and triathlons often make use of the volunteer services of amateurs and the SES, and Richard's report proves that if you're just listening to the local police and council channels in such events you'll miss out most of the action.

Q & A

Glen Mackintosh, of Jindalee in Queensland, has a few questions which other readers may also find of interest.

Firstly, he's off to New Zealand in September and is after the local police frequencies for Christchurch and Dunedin. I don't have any regular correspondent from NZ — and I really would welcome some NZ readers to write to me so I can get pass on some of the hot frequencies for these lovely islands — so, with the warning that these frequencies are a few years old, I suggest the following: 75.425 (ch 1) through to 75.725 (ch 7) in 25 kHz steps; then 75.750 (ch 7A), 75.775 (ch 8), 75.800 (ch 8A), 75.825 (ch 9), 75.850 (ch 9A), 75.875 (ch 9) and 75.875 (ch 10).

These are all AM transmissions and were widely used throughout NZ, especially in the larger cities, according to my slightly-dated sources, and were usually linked to the UHF-FM band, which is probably your best bet for catching the action. Try 488.000 (ch A1) through to 488.100 (ch A3, all simplex) spaced at 50 kHz, then the repeater channels from 485.200 (ch A4) to 485.350 (ch A10) at 25 kHz intervals. Other simplex channels are 488.025 (B1), 488.075 (B2), 488.150 (B3) and 488.225 (B4).

Glen also asks about the Queensland Police: he's hearing a Charlie callsign prefix which is new to the bands, and wonders if anyone can shed light on this; and has noted the callsign 'Comco' which appears to be the police radio dispatcher, and would also like to know if this is correct.

Finally, Glen offers this little catch to whet our appetite: he's logged 467.750 with transmissions belonging to Channel 9's Today Show and Brisbane Extra. Things heard include presenters chatting with interviewees before they go to air, pre-recorded segments and 'coming up next' links, along with all the other stuff which never makes it to air.

Heads or tails...

Michael Evans hit the tables at Melbourne's new Crown Casino (all in the line of duty, of course) to check out the radio system used by casino staff. After several hours of low odds and high stakes (hey, it's a tough job but someone's gotta do it) Michael reports that staff are using the 800 MHz Motorola trunked radio network high rolling. They're very active, he reports, so it shouldn't be too hard to lock onto them.

Fighting fire with fire

A reader asking for NSW fire brigade frequencies gets the following hit list from Richard Jary: 78.130 (ch 1), 78.070 (ch 2), 78.040 (ch 3), 78.010 (ch 4), 78.055 (ch 5, used in Gosford); 78.160 (ch 6); 78.100 (ch 7); 78.115 (ch 8); and 78.280 (ch 10, used in the NSWF's Chullora Workshops). Channels 1 through 4 are used across Sydney, and 5 through 8 in regional and country areas.

If you're closer to the scene of a fire you may also hear the hand-helds — 471.350 (ch 1, used by the Senior Officer at the 'fire-ground'); 471.525 (ch 2, used for VHF-UHF cross-band); 471.700 (ch 3, breathing apparatus); 471.725 (ch 4, this is a back-up to UHF ch 1) and 471.850 (ch 5, used for non-emergency traffic).

Listening in at Latrobe

Here's a handful of frequencies from Darren Crick, who takes the interesting approach of telling not only what he's monitoring, but how he has these set up in the channel banks of his Realistic PRO-35 hand-held scanner. You can see how intelligent use of channel banks make your scanning even easier, especially when you're in an active area or trying to manage a hundred or more frequencies.

Bank 1 (Latrobe Valley police/fire): 168.400, Police at Morwell; 168.520, Police at Sale/Bairnsdale; 467.875, Police, local; 163.300, CFA Region 10; 162.970, CFA Aircraft; 163.180, CFA; 163.660, CFA; 164.170, CFA; 163.820, CFA; 163.330, CFA Region 11.

Bank 2 (Latrobe Valley ambulance and SES): 76.730, Ambulance at Morwell; 76.670, Ambulance at Morwell; 76.250, Ambulance at Morwell; 76.910, Ambulance at Sale; 468.600, SES; 468.625, SES; 468.650, SES

Bank 3 (Latrobe Valley miscellaneous frequencies): 500.000, Telecom Australia, Morwell; 500.175, Telecom Australia, Morwell; 162.970, Southern Cross TV, Traralgon; 146.800, amateur radio two metre repeater; 467.325, Traralgon Taxis; 476.450, UHF CB; 476.500, UHF CB Radio; 461.650, Vic Roads, Gippsland; 124.000, Aircraft FIS, Latrobe Valley; 145.550, Soviet Space station Mir and US Space Shuttle amateur radio liaison channel.

Bank 4 (RAAF, East Sale): 124.000, Aircraft FIS, Latrobe Valley; 123.300, East Sale Approach; 135.900, East Sale Traffic; 118.300, East Sale Tower; 128.950, Interpilot; 126.350, Interpilot; 167.800, East Sale Security (?); 133.600, East/West Sale Clearance; 133.900, Roulettes (Primary); 133.700, Roulettes.

Bank 5 (Esso Longford/Bass Strait): 70.160, oil rigs, primary channel; 463.000; 71.570; 129.750, helicopters; 427.000; 126.400,

helicopters; 129.700, helicopters; 167.770, technical staff; 463.950; 464.500

Note that some frequencies appear in more than one bank: the local FIS (Flight Information Service) on 124.000, for instance, is in both the miscellaneous and RAAF banks. This is a smart approach to using banks — there's no reason you can't have a frequency in several banks, if it's appropriate.

You might have the local police channel in a 'police' bank, an 'emergency' bank and a 'favorites' bank. Let's face it — if you own a hundred-channel scanner it's unlikely you'll have every channel allocated. So, leaving aside a few spares, why not sit down and work out how to allocate those banks into groups, select the appropriate frequencies for each (don't be afraid to double-up) and make your listening a little more streamlined?

That's it for another issue... more frequencies, codes, callsigns and quips next time around.

Thanks to Jim Atwell, Russell Bryant, Michael Evans, Martin Howells, Jason Reilly and the rest of this month's contributors. If you've got some stuff to share, write to The Listening Post at PO Box 24, Glenbrook, NSW 2773.

Expert Tip

If you're taking your hand-held scanner out and about in the car, especially to stay informed (and entertained) on long-ish trips, the high level of road noise can sometimes over-power your scanner's simple in-built speaker; and even if you wind the volume up to full bore you'll probably find the speaker distorts and the audio becomes unbearable to listen to, anyway.

Victorian scanner buff Paul McFarlane discovered that you can buy a nifty little CD 'walkman' adaptor which provides an audio plug on one end and a cassette-type 'shell' on the other — designed to transfer the audio from a portable CD player into the car's cassette deck and then through the speaker system.

And, says Paul, it works just as well for scanners. These adaptors cost around $50 from Dick Smith Electronics and other audio stores, so if you do a lot of mobile monitoring these are definitely the go. Thanks for the tip, Paul!

NSW SES the first to move

Further to the NSW Government Radio Network (GRN) detailed elsewhere in this issue, Rick Jones suggests that the NSW SES will be switching from their varied VHF and UHF channels to the GRN in the near future, acting as 'guinea pigs' to allow real-world evaluation of the network for emergency service use.

Ready, willing and Abel

Earlier this year the Abel Tasman Victoria-Tasmania ferry was replaced by the Spirit of Tasmania, although the same channels appear to be in use: primary service channels are 156.750 and 156.850; also likely to be in use are 157.1, 457.525/467.025; 457.550/467.050; 457.575; 467.075; 458.025;467.525; and 458.050/467.550. 161.350 and 161.450 are listed as being low-power on-board services, possibly for wireless microphones, paging or other two-way services, so these are also worth a shot if you're travelling on the Spirit of Tasmania or can monitor her at any point along her route.

Contributed by Jason Reilly

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Readers write...

ADVERTISING AND CLUB COMPLAINT

Dear Sir,

Since my recent retirement, I have been encouraged by a relative to become interested in CB Radio. I have purchased a CB base station along with a mobile set for my car and I am now in the market for an aerial/antenna. The relative I have referred to suggested that I subscribe to your magazine, CB Action as he has found it interesting and felt I might do the same.

I have purchased the last two copies and found that both seemed to carry information for raw beginners such as myself.

But unfortunately I have cause to be more than a little disappointed. I contacted one of your advertisers re antennas. This was done by mail and a stamped self-addressed envelope was enclosed as requested. No contact was made. I then rang the Queensland company. They denied having received my letter which they and myself put down to a postal problem. I reiterated my original request for information regarding their product but met with no enthusiasm whatsoever. The upshot from their end being, send us a cheque and we will send you the product. No instructions, no brochures, nothing. One wonders why the need for the stamped self-addressed envelope.

A strange way to run a business indeed.

My second problem stemmed from my efforts to contact my nearest CB club. From a list published in the magazine, I attempted to contact the "Oscar Romeo" CB Club, which was listed as PO Box 203, North Geelong 3215 in the ACBRO club list...but again to no avail.

I checked with Australia Post to ascertain whether the box was still rented to the CB Club but found that they cannot divulge that type of information.

I then rang your subscription office (008 032577) who in turn gave me another number to ring (03 601-4240). This I did and spoke to a gentleman who assured me he would try and sort out the problem with the ACBRO club list...I have heard nothing further.

This is a frustrating situation. I have tried my hardest to comply with the request of supporting my nearest club as mentioned in the leader to the club list, but, once again, nothing.

After citing two examples of a poor reaction from a contributor and an advertiser, it draws into question the veracity of your other contributors and advertisers. I would have thought that a magazine belonging to such a well known and respected group would not allow such a poor quality of service to be given space in what could be a helpful publication for CB enthusiasts.

Having noted your disclaimer in the business column re responsibility under the Fair Trading Act 1985, I think that a person in your organisation should be responsible to ensure that articles, advertisments, etc, meet a standard one would expect of a publication from a group such as your own.

Failure to do so is a reflection on top management.

The fact that I have brought these anomalies to your attention gives me hope that the standard of your publication will improve in the future.

L. R. (Mick) O'Neil - VFW825, Corio, Vic.

It is a pity that you have had these problems Mr O'Neil, however, the fact of the matter is simply that you cannot expect this magazine (or any other for that matter) to check out the actual service provided by someone who advertises his products in our pages...it is not possible.

Firstly, unless an advertisement is blatantly obscene, a rip-off, or whatever, we are legally obliged to publish it.

If we later receive a complaint (and we probably only average half a dozen a year) about a non-arrival of paid for goods or similar we can then do something about refusing any further advertising from the company in question.

As regards the address contained in the ACBRO listing...again, there is nothing we can do if the club chooses to not respond to your enquiry. This list is updated in each issue by ACBRO and I suggest that you should forward your complaint to them at the address shown in the listing....Editor

CB OR COMMUNICATIONS?

Dear Sir,

In a recent edition of CB Action you say that the magazine has not been strictly a CB magazine for about two years and I would like to briefly comment on that. One night while I was at work burglars took my CB transceiver, amateur band transceiver, HF receiver, scanner, computer and a lot of other equipment. I stopped reading CB Action and anything else to do with the hobby in which I could not longer indulge. Eventually I purchased another scanner.

By then CB Action had changed to cover topics other than just those concerning citizen band radio. It had become rather more interesting, thus I started reading it again. Although at the present I still do not have a CB transceiver I look forward to each new edition. While CB Action continues to have articles on CB radio, scanning, and HF monitoring I will continue to read it. My particular interest in HF monitoring are the utility stations. Computer related subjects are also an interest. I have been listening recently to the Newcastle fire brigade on 78.100 MHz. Has any body heard the fire engines calling the control room, using their colour codes? They call in saying 498 pumper yellow, or 260 pumper green. Sometimes they tack "over" on the end; 357 pumper blue "over", 500 pumper blue "over".

I will be getting another CB rig before much longer.

D. Irving, Hamilton, Vic.

As is obvious from the contents of CBA, it has developed over recent years into a "communications" magazine rather than "just CB" and will continue along these lines as new and different methods of electronic communication are released onto the market.

There will of course continue to be reviews on HF and UHF CB rigs along with those on scanners, shortwave radios, etc.

Russell Bryant has dealt with "color coded" fire brigade commands in past issues and we will try and get around to them again in an upcoming issue....Editor

Readers write...

SMA REPLIES

Following is a letter from the SMA in response to an enquiry by us as to what, if anything, was happening in Tasmania in respect to repeating jamming, etc. We have changed the names of the people involved but the rest is as we received it.

Dear Sir

I refer to your recent facsimile concerning correspondence received from a number of Citizen Band Radio Service (CBRS) operators in relation to problems experienced on CBRS repeaters in Northern Tasmania.

The Manager of the Agency's Hobart Area Office has advised that the antisocial activity experienced on the repeaters in the Northern Tasmania has been under investigation for some time. Prosecutions have been initiated against several offenders, including one case which has been ongoing for over two years. Investigations are continuing into a number of other complaints including those made by the CBRS operators who contacted your magazine.

As I am sure you appreciate, when the Agency receives complaints alleging antisocial behaviour by a particular operator, such circumstantial allegations must be confirmed by independent investigation. This practice has been adopted in the interest of faimess to all operators and conforms with the accepted legal principle that guilt must be proved beyond reasonable doubt. Unfortunately, the collection of evidence acceptable to a Court is a protracted process which can cause complainants to gain the perception that the Agency is not actioning their complaint. It is also important to recognise that the Agency's resources are finite and that they must be shared equitably between all the many categories of services using the radio spectrum.

I am informed that the Manager of the Agency's Hobart Office has advised the complainant that the matters about which he expressed concern are under investigation and where evidence is obtained to substantiate a breach of the legislation, appropriate action will be initiated against the offenders.

I also understand that the complainant has been supplied with information on Agency procedures for processing CBRS repeater applications.

I trust that this information addresses the concerns on these matters.

D Clarkson
Executive Manager
Customer Services Group

The above is a pretty typical SMA reply to any and all complaints about the CBRS. Yes, they are doing something, no they cannot do much immediately, and the end result could take years anyway.

I believe, however, that in this incident there is a court case underway as this issue goes to press...we'll try and keep you posted...Editor

CB PACKET

Dear Sir,

We of the Australian CB Packet Radio Group, would like to know if you have had any further information from SMA re your inquiry into the use of Packet Radio transmissions on the CBRS bands.

As Secretary, I have written to your magazine before explaining about the Packet stations that are already up and running, what callsigns they are using and how the callsigns are allocated.

We are operational on channel 28 on the 27MHz band on freq 27.285 LSB and can also be found on the UHF channels 28 or 39 most of the time. Some, like myself, have both running at the same time using a dual port system from my FBB Y5. 15b Program.

The callsigns are as follows;

AUS or AU is for Australia.

1 is for Canberra, 2 is for NSW, 3 is for VIC, 4 is for QLD, 5 for SA, 6 for WA, 7 for TAS, 8 for NT and 9 for the islands around Australia while the last 2 or 3 letters are the first letter of your (2) First name, Surname or (3) first name, middle name, surname.

This is an EXAMPLE:

The callsign AUS3PB is made up as follows;

AUS for Australia, 3 for Victoria, P for Peter, B for Brennan.

AUS 3 P B

The reason for the AUS or AU call is that some of the software programs will not allow the use of 3 alpha let-

ters at the start of the callsign, so we are allowing the AU callsign and even a callsign which was brought up at our last meeting.

This was the OZ callsign in place of the AU callsign and the reason for its acceptance is because we have a network for our mailing and message service called OZ-net. This is for messages for Australia ONLY!

All of the stations on air at this time are running stock standard CB radios using 12 watts on SSB

We are looking forward to hearing from readers interested in operating packet on the CBRS bands and I can be contacted by mailing to;

Peter Brennan, Australian CB Packet Radio Group (ACBPRG), PO Box 230, Horsham, Vic 3402

DISAPPOINTED NEWCOMER

Dear Sir,

I am a newcomer to the CB community. I bought two TRC-217 Walkie-Talkie sets in June as added insurance for a proposed caravan holiday.

I have no experience with CB or the people who use it, so as part of the learning experience I bought a copy of your magazine which I found to be informative and, from the letters and feature articles I gained the impression that I was joining a group of people with whom I could share a new interest.

When I received my licences, callsign, and copies of the Rules & Regulations relating to the operation of CB Radio I happily switched on to find out the practical aspects of CB Communication.

WHAT A SHOCK !!.

People were yakking away on the emergency channel 9 and it had nothing to do with any emergency. I then tried the calling channel 11 to find out the correct procedure for initiating a contact only to find another conversation conducted by two people whose vocabulary mainly consisted of "obscenities" and "grunts".

At this point my XYL, who is also interested in learning how to use our emergency communication (CB) and was observing my efforts, made a very pointed comment.

"If you think we are going to travel around the country with a radio tuned into that filth, you can think again".

I became a subscriber to CB Action and when I read your very helpful and informative "Beginners Start Here" page I tried again using your information as my guide.

My efforts were a flop! No one responded to calls on ch 11.

The other channels were mostly quiet and those conversations which were in progress did not inspire me to strike up an acquaintance with those participating. In summary I think we will keep the CB for emergency use and hope that we never have to try making a contact. As for radio communication as a hobby, I am through the theory for the AOLCP and expect to complete the requirements for an amateur licence soon.

Having said all the above, I think that CB Action is a very good magazine and I look forward to each new issue. Your contributors seem to be a great bunch of people and they can make even complex topics very readable. It is a pity that I could not contact people like them.

CB radio appears to have been infested to some degree by cretins and morons who either don't, or can't, read the rules (probably the latter judging by their vocabulary).

W.(Bill) McEvoy, Nunawading, Vic.

I'm afraid that most of what you say is true. CB has almost as many "brain-dead" operators as it has mature, sensible operators, however, if you perservere for not all that long you will find the channels to avoid and the ones being used for a sensible contact.

The "brain-dead" tend to regularly congregate on a specific channel which they then claim as "theirs" by the simple expediency of forcing everyone else off it by either jamming or obscenities. There are a lot of pleasant contacts to be made on CB, but as I say, you need a degree of patience.

Try tuning around the channels until you hear a conversation you would like to join, then put in a "breaker" call between overs and you will probably be asked to join in. Incidentally, the channels are much worse during school holidays when the "junior brain-dead" brigade are looking for something to amuse them...Editor

If you've got something you want to say, write to CBA Mail, PO Box 622, Mount Eliza 3930.
Please provide your letter in typewritten form if possible.

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Cat D-2755

$469

Frequency Ranges	Step size, kHz
66.0 to 87.995MHz	5.0
108.0 to 136.995MHz	12.5
137.0 to 173.995MHz	5.0
406.0 to 519.995MHz	12.5
806.0 to 824.00MHz	12.5
824.010 to 848.970MHz	30.0
848.975 to 869.035MHz	12.5
869.040 to 893.970MHz	30.0
893.975 to 956.000MHz	12.5
Sensitivity:	
FM (nom. 12dB SINAD)	
66-88MHz	0.3uV
137-174MHz	0.4uV
406-520MHz	0.5uV
806-956MHz	0.8uV
AM (nom. 12dB S/N)	
108-137MHz	0.5uV

2 Year Warranty uniden.

As reviewed in CB Action

Wideband Scanner 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 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**

Also available: M-100 Wide-band Transceiver Pre-Amplifier

Offers all the great features of the Jim M-75, plus it can be used with hand-held transceivers (5W max).

Cat D-3822 **$249**

NEW

Yaesu FRG-9600 VHF/UHF Scanner

The sensational FRG-9600 VHF/UHF receiver carries an impressive array of features and offers exceptional value. Frequency selection is by keypad or dial, and the many selectable scanning functions allow you to sweep across the bands in a variety of ways: Busy channel, clear channel, audio scan (avoids 'carrier only' channels), specific band scanning, scanning of the 100 memories and more! It covers the 60-905MHz VHF/UHF spectrum in the FM, AM, and CW modes, with SSB to 460MHz. Plus, with the optional CAT (Computer Aided Transceiver) interface and suitable software, you can control the FRG-9600's many features through your computer. Cat D-2625

Specifications

Frequency:	60-905MHz (up to 460MHz for SSB)
Bandwidth, -3dB:	FM narrow 15kHz FM wide 180kHz AM wide 6kHz AM narrow 2.4kHz SSB 2.4kHz
IFs:	47.754MHz, 10.7MHz, 455kHz
Sensitivity:	FM-n (12dB SINAD) 0.5uV FM-w (12dB SINAD) 1uV AM-n (10dB S + N/N) 1uV SSB (15dB S + N/N) 1uV
Audio Output:	1 watt into 8 ohms <10% THD
Voltage:	DC 12-15V
Dimensions:	180 x 80 x 220mm

YAESU

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2 year warranty

BONUS OFFER ***Diamond D-130J Discone antenna, valued at $179.95. Hurry! Offer extended to 30th Sept 94 only.***

Yaesu HF Receiver

Advanced Features For High Performance!

YAESU

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$999

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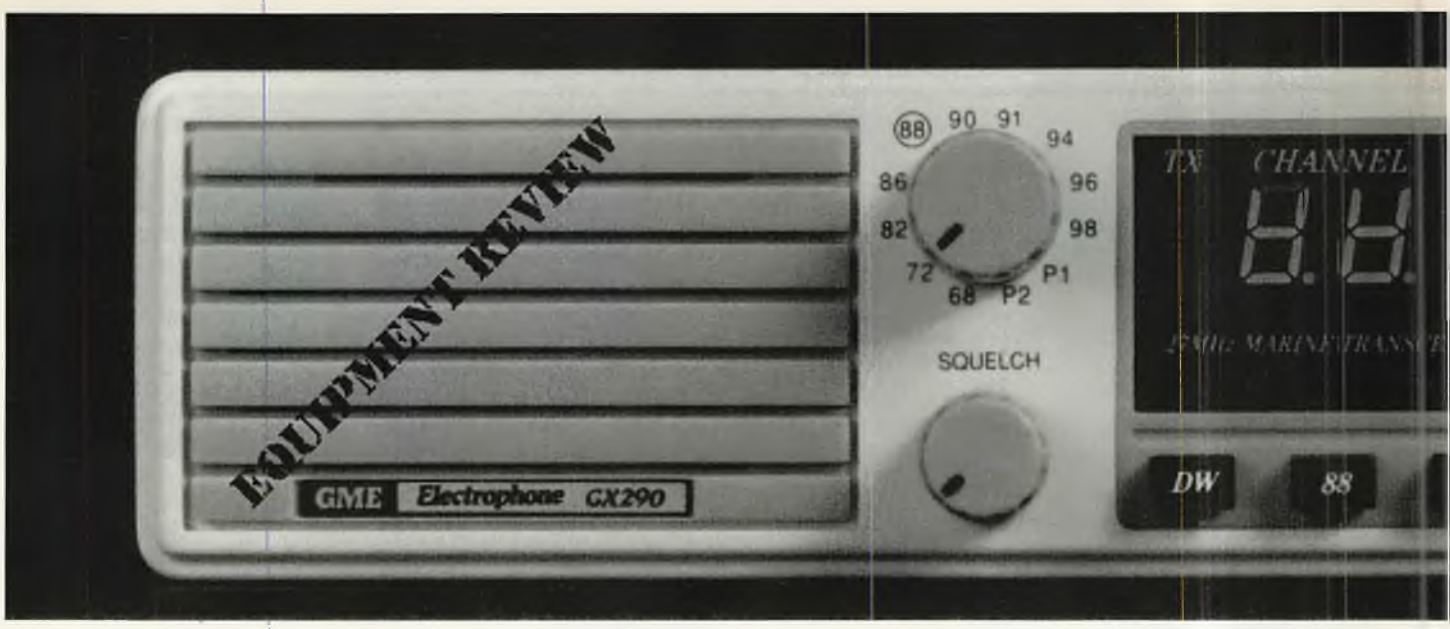


27 MHz Marine Transceiver

GX-290 SETTING THE PACE FOR THE NINETIES

By Ken Reynolds

Since the year dot it seems that 27MHz marine radios have been pretty boring and ordinary when it came to class. In fact, I can only remember one unit that ever came close to exciting, and that was a SAWTRON unit whose high price was probably the prime factor which led to its untimely demise.

Most 27MHz marine transceivers, including the GME range, could, in one way or another, be considered spin-offs from the AM CB market. Most of them began life as standard CB sets in the early years, gradually evolving to their present-day designs. The only thing separating them from their CB counterparts is their marginally higher operating frequency and the restriction of just six or ten channels instead of 23, 18 or 40 channels for CB.

Until now, so-called marine CB transceivers have been supplied in the same moisture-vulnerable format as their landlubber cousins with manufacturers making no effort to protect them from the harsh, corrosive, marine environment in which they were expected to operate.

The release of the GME GX-290 10-channel 27MHz marine transceiver heralds a new era in affordable marine radios. This new model is arguably the most desirable rig of its type on the market today, and I predict it will become the market leader, staying in that position for the foreseeable future.

It is not the blistering performance of the GX-290 that sets it apart from its rivals. Neither is it the attractive price tag, because GX-290 costs more than its competitors. It has to do with a certain common sense reckoning that says a marine radio transceiver case should protect its delicate electronic contents from a deadly (to exposed electronics) marine atmosphere which can quickly reduce the life of a transceiver to months instead of years.

Protection from a harsh environment was obviously the main design target of the new GX-290, and GME has completely broken tradition (thankfully) with this model by discarding the unsuitable pressed steel case halves and replacing them with a single, tough, plastic moulding which envelops the circuit board assembly and mates together with the cream-colored plastic control panel using a soft synthetic rubber gasket as a sealant. The resultant joint appears almost impervious to air and moisture.

A rectangular cut out in the rear of the case (also cream-colored plastic) allows for interface connections of power, antenna, external speaker and heat sinking for the transmitter, and this is also sealed against contamination with a second soft gasket. Four retaining screws pull the mating surfaces firmly together.

The speaker jack is closed from the environment by a soft rubber plug with a retaining strap which means you won't lose it when the speaker socket is in use. The back panel has a plastic clip which holds two spare fuses so you don't have to use 'silver paper' in emergencies.

The old familiar four-pin microphone plug and socket — a constant source of trouble from corrosion — has been replaced with a modular telephone-style connector recessed snugly into the front panel and protected behind a soft, pliable rubber grommet which closely hugs the microphone cable. An interesting point is raised here by the use of a modular telephone plug and socket. How many readers have been frustrated by intermittent microphone problems where conventional microphone cables and connectors are used? Now, hands up those who have experienced similar problems with telephones that use modular connectors?

Can't see too many hands!

You might be excused for thinking you have seen the GX-290 somewhere before, since the front panel bears a remarkable similarity to the GME TX-4000 UHF transceiver with its identical placement of controls, display window

and front panel-mounted loudspeaker.

The channel display employs a dual, seven segment, high-intensity LED module which produces about five times the usual LED light output. This gives the readout excellent legibility even under quite bright ambient lighting conditions. Clustered around this centerpiece are five single LEDs serving as indicators for Transmit, Receive, Dual Watch, Channel 88 priority and ISC.

What is an ISC? You may well ask. ISC is an abbreviation for Interference Suppression Circuit, a term recently introduced to GME 27MHz marine radios in preference to the familiar, and certainly more sensible, NB/ANL which indicates the presence of a combination Noise Blanker (NB) and Automatic Noise Limiter (ANL).

All is revealed however, when you read the GX-290 instruction manual, but to occasional users, who are not so enlightened, it could just as easily mean *I Suffer Constipation* or even worse.

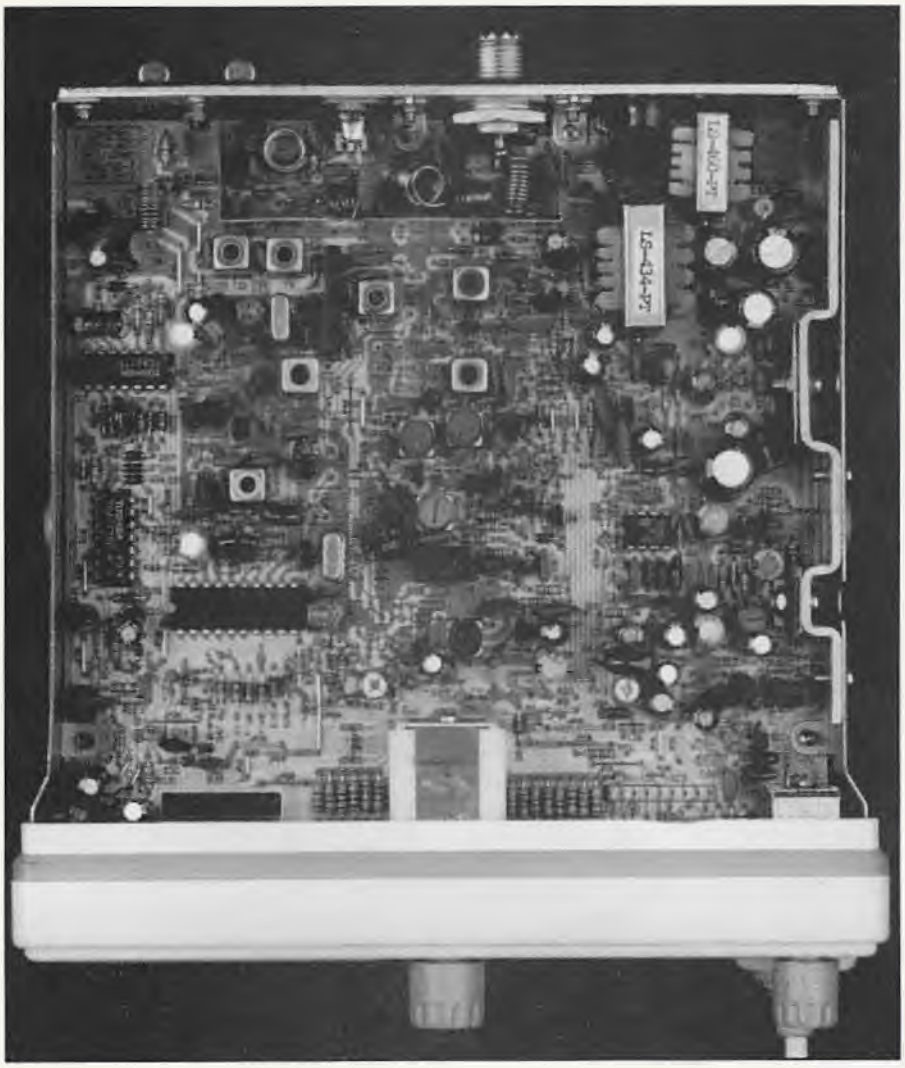
Without explanation, the only way an unknowing operator can establish the meaning of ISC is to ask someone else or operate the control in the presence of received electrical noise... thus discovering that an ISC is a very effective noise limiting circuit which almost totally removes high-intensity outboard motor hash from the received signal allowing quite weak signals to be heard effectively. Sure, it's great to be the pace-setter but why discard a familiar, industry-standard term like NB or ANL with a mouthful like Interference Suppression Circuit which is hard to get your mouth around even if you don't have a lisp. In the immortal words of our Prime Minister, "If

continued on page 35....

it ain't broke, don't fix it".The front-mounted loudspeaker even has a waterproof plastic 'cone' so it won't go soggy when subjected to a bit of sea-spray atmosphere — just another feature that sets the GX-290 apart from its competitors. Internally the GX-290 has a large, busy circuit board about 150mm square loaded with good-quality conventional components neatly inserted through the appropriate holes. The circuit board is fixed firmly into a steel and aluminium perimeter frame which attaches to, and gains rigidity from, the front panel moulding. A couple of afterthoughts scratched out of the circuit board foil side detract a little from the overall professional appeal of the transceiver and the soldering leaves a bit to be desired compared with the local product.

Apart from the cheapish-looking, cream-colored microphone, the transmitter performs quite well with its 3.5 watts AM output and the modulation is as good as any other similar type transceiver.

The receiver is a bit down on sensitivity at a claimed "...better than 0.65 microvolts for 12dB SINAD...", but our test rig only turned in about 1.0 microvolts for the cited reference. For curiosity's sake we realigned the receiver, producing a considerable improvement in performance which brought the sensitivity up to a more acceptable 0.3 microvolts without any noticeable degradation in recovered audio. After talking with GME's John Turner, it appears our test rig was one of the first few units off-the-line and it may have been aligned to a less sensitive receive specification that is not likely to recur in normal production. The squelch threshold level begins at about 0.5 microvolts (after fiddling) and the tight condition requires nearly 30 microvolts to open the door.



SUMMARY

Apart from a few minor points, the GME GX-290 is set to revolutionise the economy marine radio market in no uncertain terms.

While the product falls short of military specification water-proofing, so too does the price. GME has made a substantial contribution to a previously neglected area of the communications market and should reap the considerable rewards for its efforts. The GX-290 is a real winner.

If you are about to buy a 27MHz marine rig be sure to consider this unit.

DXinternational

By Jack Haden

Decent DX on 11 metres these days is rather a scarce commodity and, judging by the lack of calls being made on the prominent calling frequencies, I am not the only one aware of this situation! The only real significant DX about these days seems to come from the Asia/Pacific region and, from time to time, the Americas, both Latin and northern.

Alas, for we are not alone, the 10, 12 and 15 metre amateur bands are also in the proverbial doldrums propagation-wise, with most big DX guns moving to the low bands — 80 metres, for example.

However, those of us who are stuck on 11 metres are left to ride out the dip of Cycle 22 and ponder the future of our entire radio hobby.

Central/South America and the Caribbean

As with DX to most parts of the globe, conditions to this region have been quite poor to non-existent at times.

The best time to look for an opening to this region would be from 2200z onwards through to your sunset. Don't expect big signals though, and beware of fade — in other words, keep your overs short!

Guatemala appeared at 2345z by way of Carlos operating as 72-G-01, and at the time was a very poor three by one peaking two at the best. Carlos was having power problems, and his modulation was all wobbly and on the verge of breaking up.

Costa Rica was noted at 0144z with station HR-99 operated by a young lady. At the time the YL was a poor four by one and subject to heavy fade. Other details unknown.

Ecuador was noticed on the call frequency at 2359z by way of ERS-101, name unknown. A five by two report was the best I heard the station and was amazed he received no reply to his call, being the only station heard for near an hour!

Cuba was the only station heard out of the Caribbean of recent by way of lone UNIT-5 operated by Senor Carlos from Havana, the capital.

Carlos called and called on the call frequency at 0050z and didn't receive a single reply despite being a fair and readable four by one peaking two at the most. It being a weekend I thought he would have at least received a couple of replies, but then again, it all depends I suppose on what football game is live on Channel Seven at the time!?

Middle East and Arabia

Signals from the Arab world are becoming quite rare but hopefully should pick up as we emerge from our winter. The best time currently to look is around 0500z or so onwards, depending on conditions. Again, be prepared for rapid fade, so keep calls and overs short.

Kuwait, usually one of the strongest from the Gulf region, was barely audible at 0710z as I listened to two Kuwaitis chatting on the Middle East call frequency in Arabic. They were a poor three by one on the beam, and disappeared altogether when I switched to the vertical for a reading.

Saudi Arabia was noted around the 0655z mark by way of Mr Ali, callsign and actual location in Saudi Arabia unknown. When first heard he was a fair five by one to two and was talking to someone in northern Western Australia before fading out quickly at 0658z.

Abu Dhabi in the United Arab Emirates (UAE) was heard at 0715z by way of HDZ-1 operated by Khaled. At the time Khaled was a weak four by nothing and was giving his QSL information to a station I could not hear at all.

Africa and the Indian Ocean region

As with the Middle East, DX has been poor in regard to the majority of the African continent, although some of the islands in the Indian Ocean have been coming through to break the boredom. From 0230z onwards is an ideal time to start the search for this region... if propagation permits, that is! The once-popular long path openings to Africa have long since departed, however be on alert from springtime onwards.

Mauritius was coming through quite well at 0300z by way of Jean-Louis, signing simply as the 64, and at the time was a good five by two to four. Jean-Louis was looking for a mate of his sailing about the Indian Ocean on a yacht and thus was not too interested in anyone else calling him at the time.

Reunion Island, as usual, is around for those easily entertained, still having a reputation as one of the black holes in the QSL stakes.

Many Australian DXers tend to give these stations a miss when heard. However, there are one or two people on Reunion who do in fact QSL, but it is still a matter of patience being the virtue. At 0511z I noted 173-GG-1001 operated by Michel at a four by two calling for New Caledonia.

Mayotte Island was just heard through the noise at 0645z by way of 189 Division calling CQ on the call frequency, but further details are unknown as the station in question faded out rather quickly. The signal was a very poor three by two at the time logged.

Europe

European DX has all but vanished from 11 metres in the past few weeks, although some of the more powerful stations from the eastern sector of Europe come through now and again. Hopefully the conditions will pick up as we come near to warmer weather in the southern hemisphere.

Ukraine signals are very poor these days owing to the downturn in propagation. 315-UK-02 operated by Alex was just audible above the noise at 0845z but had faded away by 0847z making any chance of contact slim.

Around 0900z I also faintly heard a 315-AT-?? calling CQ Asia on the call frequency, but virtually unreadable here in the Pacific.

Russia, like the Ukraine, is struggling to make it through the noise, and again it is only the big gun signals running hefty linear amplifiers that are making it into Australia.

At the rather early mark of 0401z I noted 302-AT-1?? calling CQ Pacific on the DX call frequency, but so weak was his signal that he soon became buried under the static and noise.

Just a few kiloHertz up I could hear 302-RR-01 operated by Oleg calling a station in the Middle East at 0455z and was a three by one to two at the best.

Turkey, on the crossroads of Asia and Europe, was logged at 0545z by way of TA-01 with Sam at the microphone. Sam was a weak but readable four by two here and was calling for small islands in the Pacific at the time. Sam, however, managed to link up with a Japanese station only to lose him in the frequency change!

Byelorussia was heard around 0900z by way of regular DXer Vlad, the 317-BY-101.

Vlad was a just readable three by three and was rather distorted, suggesting he had everything wound up full blast at the time.

Asia and the Pacific region

Even the big signals from our very own region have declined somewhat in past weeks. I noticed on Nauru during mid-to-late-July that signals from Australia and New Zealand, once very strong, were now mostly below the strength five mark.

Also, a lack of activity on the DX call frequencies indicates many operators have given up the ghost, so to speak, and have turned to other activities in their spare time.

However, during daylight hours, the Pacific and Asia still offer some propagation paths for the persistent DXer.

Hawaii still presents a fair 'bargain' signal wise on 11 metres when conditions are right. At 0206z I logged Jack, the 17-AT-112, a good strength six at the time.

Not long after I heard the 565 mobile with David at the wheel somewhere on the big island a fair five by three. Popular DXer, and well-known as that, is Kevin, the 17-AT-106, who at 0245z was a good five by four report.

The **Republic of the Marshall Islands** appeared on the band by way of 132-AT-105, name unknown, at 2336z, who was an audible five by one report.

Also noted was KZU-002 mobile on Majuro, the capital of the Marshalls, with Denny at the wheel and was a fair four by one to two at 0036z.

Saipan in the Northern Mariana Islands was heard a number of times around the 0020z mark by a mystery station simply calling CQ from the 133 Division. However, no one answered his call so he thus moved on.

Tonga appeared on the band by way of Wardle, operating as the AP-106 aeronautical mobile just north of Vavau, the capital of Tonga.

At 0335z Wardle was a good healthy five by seven and was flying to Nuku'alofa, the capital.

Papua New Guinea was heard for a moment or two by way of 999-PIG-565, name unknown at 0149z. At the time, the station was a five by two and by the time I had turned the beam had taken leave of the call frequency.

Hong Kong appeared on 11 metres by way of Bob, who signs as the RB-2, at 0601z. Bob was five by five and chatting to a northern Queensland station at the time. I seem to remember sometime back someone complaining about QSL cards not coming from the RB-2, so just exercise a little caution.

Japan is *always* about, whatever the band conditions are like, so it appears. The 25-SEO-101 from Ibaraki was five by six at 0110z. Also noted was 25-CW operated by Yoshi from Osaka with a five by seven report at 0506z. Another good signal was 25-AT-116 and at 0326z was near the five by nine mark but fade was beginning to take its toll on the path.

The **Federated States of Micronesia** was logged at 0400z by way of Paua who operates as the EZY-1 from Palikir, the capital of the FSM on Pohnpei Island.

Paua was heard gossiping to YX-69, run by Manto from the island of Chunk (ex Truk), a well-known diving spot for Australian tourists these days.

Both stations were between five by three and a six. Later they were joined by YAP-RADIO operated by Chris from Colonia, the capital of Yap, and Chris was five by three at the time.

As usual, **Taiwan**, the **Philippines** and **Indonesia** are about from time to time just to let us all know the band is open to somewhere in the world! Also the odd good signal out of Guam and Hong Kong have been noted, mostly from the regulars resident there.

It was surprising to receive a number of letters here regarding the hanky-panky going on during the **Lord Howe Island** DXpedition a few months back. It appears quite a few DXers were also quite peeved at the relay of progressive numbers in particular. One DXer wrote and said he was one who received a rubbery progressive number but refrained from entering it in the log due to the ethics of the whole thing. Another from Melbourne said he was disgusted with the relay of the progressive numbers and if he was in Alfa Tango would have resigned as a symbol of protest.

What amazed me was the fact that many AT people were apparently there listening to the events taking place, but none broke in to expose the whole affair and thus terminate it then and there!

Anyway, what's past is past now, and I cannot be bothered with the matter any further. Thanks again to those who took the time to write in and express their opinions...

73 de Jack.

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DX Logbook

By Rob Williams

Well, here we are again. Plenty of news to keep you stuck in front of your radio as we move into the warmer months. Remember, all frequencies are in kiloHertz and all times are in UTC unless I say otherwise.

Wartime survival hints

As I write the column there are plenty of world events making the front pages of the newspapers, so just because you don't hear the station you are after don't give up. Check some of the smaller international broadcasters scattered around the bands.

Tension between North and South Korea continues (see my last column for KBS schedule), Rwanda is in turmoil — and two stations have been reported, by Jorma Mantyla from Finland, from this country on SW. On 6285.2 kHz is a semi-clandestine station, opposed to the government, calling itself **Radio Muhabura**. Its transmission ends at around 2007, while the government station, **Radio de la Republique Rwandaise** has been heard around 1830 to 2100, with QRM from **Radio Moscow.**

Both stations have been erratic, but nevertheless worth trying for. The internal war between North and South Yemen continues, Middle Eastern troubles haven't gone away. If you can't hear broadcasts directly from these countries check their neighbors.

Pirate radio lives on

David Miller from **Southern Music Radio (SMR)** has dropped a letter to me with some **Free Radio** news. Dave has provided details on the history of the station, too much to include here, but I can give you its current sked.

SMR is aired as part of **SWR Switzerland** which goes out over **IRRS**, in Italy on the following date and time: October 15 and December 17 between 1500 and 1600 on 7125. I believe another broadcast is scheduled for February 1995 too.

Apparently, broadcasts are used as test transmissions which are aired on Saturday/Sunday from 2100 for one or two hours once again on 7125.

If you hear the station you can send for a QSL card to 55 Falcon Street, Dunedin, NZ. One US dollar is requested for return postage but I guess he would be happy to receive one or two NZ or Ozzie stamps. SMR plays Australian and NZ music with the occasional Top 40 or Oldie song included.

So if you are after one of these rare stations here's your chance.

Amateur radio helps SW DXers

I know you all listen to *DX Partyline* over HCJB every Saturday night, but did you know that HCJB also helps amateur radio listeners with their hobby? *Ham Radio Today*, hosted by John Beck, includes useful info on electronics and radio propagation.

The best time for Australian DXers is Wednesday nights on 9745 kHz in their English broadcast to Australia and the Pacific. Even if you aren't an amateur, there are several useful hints that can help DXers, so add this broadcast to the weekly list of stations you must listen to.

BOOK REVIEWS

Beginners book now available from Southern Cross...

Many of the books and publications available to newcomers originate in the US. This means we get the hobby slanted from an American point of view. But now, thanks to the effort of the **Southern Cross DX Club** and Peter McMillan, there is an all-Australian book with a 100 per cent mixture of Australian DX material for beginners. When you venture out on the DX road you come across many strange and new terms and a book like this is ideal.

An Introduction to Radio Listening contains a wealth of information on all aspects of radio communications. The book is based on articles from past and present members of the Southern Cross, which have been printed in the club magazine *DX Post*.

Many of the articles have been updated and added to and presented in a very professional publication. The book is easy to read and is written in a non-technical manner making it easy to read and comprehend. While most of the book concentrates on SW, other aspects such as FM and TV DXing and medium wave listening are covered, giving you a complete overall picture.

Peter has done a good job of explaining what can be heard on the bands at various times throughout the day, and with an impressive 46 pages in A4 format, there is plenty of information to get you started.

Congratulations to Peter and the team at the Southern Cross. The price for a copy of the book is $9 including P&P.

Another publication from the Southern Cross is ideal for the DXer who is looking for a shortwave radio but doesn't know where to start.

Receiver Guide — a non-technical look at new and second-hand receivers has been put together by Stephen Newlyn. Steve has written several reviews on receivers that provide a good starting point when one is looking for a shortwave radio.

Picking up a receiver brochure with all the technical jargon is only half the job. Getting reviews on the radio and finding out what the radio is capable of is just as important as choosing an antenna, and with the price of radios these days the more informed you are the better value for money your buy will be.

As a regular reader of DX Post, I know how much Steve enjoys finding out about shortwave radios.

He is one of the first to tell DXers about new radios and has a strong passion when it comes to learning about a new receiver.

As Steve points out, electronics stores are more interested in selling radios than helping you out, so with his experience he can help point you in the right direction. Included within the reviews are some ball park prices you could expect to pay when buying a new or second-hand radio. The price is a reasonable $3.50.

Both publications are available from;
Southern Cross DX Club,
GPO Box 1487,
Adelaide,
South Australia 5001.

Ferrell's ute book available now...

Fax, Volmet, CW, Fixed, maritime — they're all terms 'ute DXers' are familiar with no matter where they are. Another

continued over page....☞

DX Logbook

term your hear throughout the world in ute circles is **CFL**. CFL is the abbreviation for a book which has built up a very reliable reputation among DXers. This is the Handbook for ute DXers, a must to keep next to your radio. The **Confidential Frequency List** is your window into the world of Utility stations, those weird sounds found between the broadcast bands. The ninth edition of the Confidential Frequency List has just arrived from the printers and brings you up to date with all the changes across all modes of broadcasting. The front of the book is made up of a channel-by-channel listing of all the known stations from 1602 kHz right to the end of the shortwave band at 29,713.5 kHz. This book is more than just a frequency list. It is a comprehensive manual covering all aspects of the hobby. The green pages at the back of the book are filled with valuable, need-to-know data which you'll be constantly referring to.

A list of international callsign ranges, international airports with abbreviations and GMDSS channels starts the green pages, followed by a complete reference listing of all stations in the book based on callsigns.

For those who take an interest in 'number' stations, you aren't left out. There's a large list of known frequencies which number stations use, shown in language order.

For beginners the useful frequency allocation summary tells you where to expect to find things across all the ute bands, and then there's the ICAO HF area frequency list together with a world maps of ICAO zones.

Geoff has put a lot of effort into the latest book and deserves all the credit in this first-class publication. Unfortunately, Geoff informs me that this will be his last edition of the book as he intends retiring from the hobby. It will be up to Gilfer to see if a new author can be found to continue the highly-regarded publication into the next century.

A copy can be yours for $49.95 (first class airmail to your door) from Arthur Cushen, 212 Earn Street, Invercargill, New Zealand.

Light Latin entertainment

Gabriel Ivan Barrera from Argentina reports in *DX Post* the current sked for **Radiodiffusion Argentina Exterior**, or RAE.

Broadcasts are daily expect on Saturdays and Sundays:

1000 to 1100 in Japanese on 11,710 to the Far East

1100 to 1200 in Portuguese on 11,710 to America

1200 to 1400 in Spanish on 11,710 to America

1800 to 1900 in Spanish on 15,345 to Europe and North Africa

1900 to 2000 in English on 15,345 to Europe and North Africa

2000 to 2100 in Italian on 15,345 to Europe and North Africa

2100 to 2200 in French on 15,345 to Europe and North Africa

2200 to 2300 in German on 15,345 to Europe and North Africa

2300 to 0000 in Spanish on 9690 and 15,345 to Europe

0000 to 0100 in Spanish on 9690 and 15,345 to America

0100 to 0200 in Portuguese on 11,710 to America

0200 to 0300 in English on 11,710 to America and, finally,

0300 to 0400 in French on 11,710 to America.

The best opportunity to catch this station in English is in the 1900 to 2000 time block. On weekends local time LRA1 programs are transmitted on SW.

Alexander Ageenkov from Russia has posted the sked for a Russian station which is worth trying for. **Radio Nadezhda**, **Non-Governmental Women's Radio Station** broadcasts in Russian to the following target zones as follows:

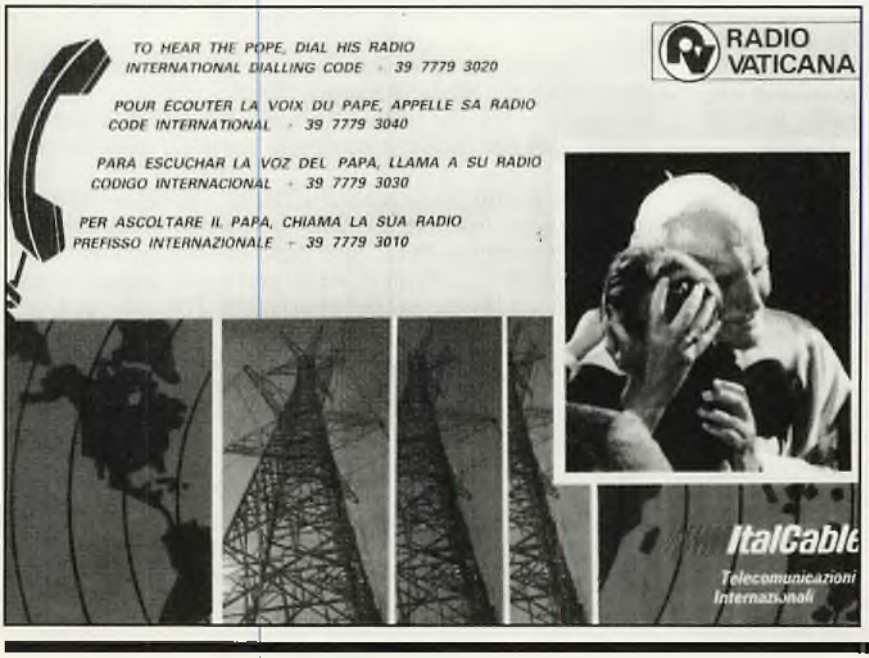
To the Far East:

0300 to 0600 on 5935, 11,740, 11,805, 11,670

0600 to 1000 on 5935, 9635, 11,805, 11,740, 11,670, 15,120.

1000 to 1400 on 5935, 9725, 7420/11,740, 9590, 11,705, 11,665 and 15,230

1400 to 1900 on 7420/11,740, 9590 and 11,705



To Asia:

0300 to 0600 on 9490, 9725

0600 to 0700 on 9490, 9725, 11,665, 15,230 and 17,560

1000 to 1400 on 9490 and 15,230

1400 to 1900 on 5935, 9490, 9725 and 11,705

To East Europe:

0300 to 0600 on 5915, 6015, 7140 and 9730

0600 to 1000 on 5915, 7140, 9730, 9725, 11,965, 11,665

1000 to 1400 on 5915, 9730, 9725, 9490, 11,665

1400 to 1900 on 6015, 9490, 9725, 11,985, 11,885, 15,340, 17,675

To West Europe:

1900 to 2300 on 6015, 11,985 and 15,340.

Radio Nadezhda's address is:
25 Pyatnitskaya Str.
113326 Moscow
Russia.

Vatican broadcasts to Australia

English broadcasts aimed at Asia, Australia and New Zealand, valid through to the end of September, are as follows:

1345 on 12,050, 15,585 and 17,525.

2245 on 9600 and 11,830.

The Pope will be visiting Asia and Australia in January, so you can expect his tour to be covered extensively via **Vatican Radio**. Keep an eye out for extra broadcasts and frequencies.

Oh no, not another religious station from the US!

There has been talk of a new religious shortwave station planned for Arizona. Well, George Thurman has been doing some snooping around and, according to a well-placed FCC phone call, a construction permit has been issued for a new station in McCaysville, Georgia — not Arizona as rumors had suggested.

The station is licensed to Rosanne Frantz and the transmitter will be a 50 kW compatible SSB unit with a rotatable antenna aimed to Canada at 30 degrees and to Mexico at 238 and 250 degrees.

George expects construction to be finished within one year. I wonder what programs it will carry? Unfortunately, religious broadcasters can afford to hire air time *en masse*!

TIDBITS

• The US House of Representatives has voted US$10 million towards to creation of **Radio Free Asia**. However, trying to build transmitters in regional countries might pose a problem. It seems many countries aren't too pleased with the intentions of Radio Free Asia. It may force the broadcaster to use VOA transmitters on US territory.

• **Telstra** (Telecom Australia) has won a contract to design, install and commission a new 50 kW transmitter in Laos. The new sender is to be used as a vertical incline service to cover the Laotian region.

The contract, valued at over US$1 million, calls for training and ongoing support after commissioning, which should be up and running within a year. Antenna foundations were expected to have started in July.

• A report in the July edition of *DX Post* from the **Southern Cross DX Club** says that **Arthur Cushen** has decided to discontinue his very popular publication service at the end of this year. Arthur has been providing specialist publications to the DX fraternity for many years, and has been offering the annual WRTH since 1946.

• The third transmitter for **KSDA** has arrived in Guam and is due on air early August, with the start of a new sked.

• *Patrick McDonald* provides the latest sked for **Radio Yerevan**, from Armenia. French is aired at 0830 to 0843 and English from 0844 to 0855 on 15,170 and 17,770. Now there's some commendable brevity for you!

• In an official press release from the White House, the Czech Government has made the former Parliament building in Prague available for **Radio Free Europe/Radio Liberty** and associated research activities. Congress needs to approve the move as the stations' current offices are in Munich, Germany.

And that ends another column.

If you want the answer to your shortwave questions or want to contribute to the column, you can contact me at PO Box 108, Minto, NSW 2566.

If you require a personal reply please include a stamped, self-addressed envelope.

Latest WEWN sked

Thanks to Marc Vissers and Paul Brems for making the latest sked for **WEWN** available:

Tx	TIME (UTC)	FREQ	TARGET LANGUAGE
A			
0000 to 0200	7425	NA	English
0200 to 0300	7425	NA	Spanish
0300 to 0800	7425	NA	English
0800 to 1600	9350	NA	English
1600 to 2400	13615	NA	English
B			
0000 to 0100	9985	SA	English
0100 to 0200	9985	SA	Spanish/English
0200 to 0400	9985	SA	Spanish
0400 to 0800	9985	CA	Spanish
0800 to 0900	7425	SA	English
0900 to 1000	7425	SA	Portuguese
1000 to 1200	9985	SA	Spanish
1200 to 1300	9985	SA	English
1300 to 1400	15695	SA	Spanish
1400 to 1800	18930	SA	Spanish
1800 to 1900	18930	SA	Spanish/English
1900 to 2000	18930	SA	Spanish
2000 to 2200	18930	SA	Portuguese
2200 to 2400	11820	SA	Portuguese
C			
0000 to 0100	9410	EU	English
0100 to 0200	13710	ME	Arabic
0200 to 0300	9350	EU	Russian
0300 to 0400	9350	EU	Belarus
0400 to 0500	9350	EU	Czech/Slovakia.
0500 to 0600	9370	EU	Dutch
0600 to 0700	9370	EU	Polish
0700 to 0800	9370	EU	Hungarian
0800 to 1000	12160	EU	English
1000 to 1200	9370	AS	English
1200 to 1300	15695	EU	Lithuanian
1300 to 1400	13710	AS	Mandarin
1400 to 1500	17510	ME	Arabic
1500 to 1600	17510	EU	English
1600 to 1700	15695	EU	English
1700 to 1800	15695	AF	English
1800 to 1900	15695	EU	English
1900 to 2000	15695	EU	Serbo-Croat
2000 to 2100	15695	EU	Italian
2100 to 2300	15695	EU	German
2300 to 2400	9985	EU	English

WHATEVER HAPPENED TO...?

Jack Haden wonders about some of the old-time CB clubs

When propagation declines, so too does membership in the big DX clubs. People lose interest when there is no regular DX to work and thus often opt out to save a few dollars rather than renew the annual club membership. Lean times mean that the lesser DX clubs are prone to folding up operations as membership falls below the basic operating numbers.

Speaking of radio DX clubs, I received quite a bit of mail concerning the comments I made in the last DXI column concerning Australian-based DX clubs — or, rather, the lack of them. Most letters supported my comments with the main problem being the lack of sufficient Australian-based members to propel the club in to the proverbial DX world spotlight.

The big clubs like **Sperimental Radio** and **Alfa Tango** provide some comfort in regard to the needs of Australian DXers by way of DXpeditions, member directories, newsletters and pre-printed QSL cards, etc. However, due to our geographical isolation and small population, especially on radio, we could never generate a DX club large enough to capture the interest of potential overseas membership.

Peace International DX Group (PIG)

Just a few weeks back I received an interesting information package from Ian the 43-PIG-099 promoting the **PIG International DX Group**. Anyway, this is what Ian has provided in the package:

The PIG DX group was started back in 1971 and boasts that it has been around longer than the once well-known **Earth DX Group**. The PIG club was formed by a group of police officers and their families who all had an interest in communicating by way of 11 metre DXing.

The main aim of the PIG group was to promote friendship and world peace and, in the early days, had a membership of around 6,000. The club was actually founded by an Australian policeman, who signed as the 43-PIG-001, but this gentleman has since passed away and now his son Doug has been passed the callsign.

The PIG group makes it clear that it is not into making money from members nor is it a group of call-channel 'junkies' who just wish to chase DX and DX only. A fair percentage of the club membership is made up of disabled people from a variety of countries around the world. The club prides itself on promoting goodwill to those less fortunate than ourselves and, over the years, has been involved in the donation of radio transceivers and other equipment to third world countries.

The club also operates a penfriend network and has annual radio contests as do most of the major DX organisations active these days. The group also has an active Shortwave listeners (SWL) section with the club providing made SWL report sheets amongst other stationery items. The PIG group is proud to be Australian born and bred, so to speak, and boasts over 50 members who are high-profile people, with The Anglican Archbishop of Cape Town, The Most Reverend Desmond M Tutu being one of the most prominent. The Archbishop holds the callsign 777-PIG-000 which is a special issue.

Membership of PIG is free. The only thing you pay for is the mailing costs for club materials, for which no charges are levied. The club is a non-profit organisation and promotes good operating protocol along with peace and goodwill to fellow man.

Interested in further information? Then why not drop it a line, along with two 45 cent stamps for return postage to:

Peace International DX Group,
PO Box 28,
Fawkner,
Victoria 3060

More clubs

It is always good to hear from young upcoming DXers, so I was most pleased to receive a letter from young Ben in Sydney who is around 15 years old. Ben wrote to tell me about one of the clubs he is in, and that is the Australian-based **Tweed Radio DX Club**.

However, Ben wasn't clear whether the club was in fact founded here or if it is a branch of an overseas group, maybe Scotland the home of tweed coats? Ben, who signs as the 43-TR-116 goes on to say that the DX group has around 3,000 members worldwide in some 200-odd DXCC countries. Australian membership of the organisation has been limited to 450 members, and Ben mentions that this figure is often reached, so there is often a wait list of potential members!

The club boasts various DX awards to encourage members to achieve and stay active and thus involve themselves in club activities. The Tweed Radio group also conducts DX contests and publishes an annual callbook listing current members and their QSL routes. In Sydney alone there are some 20 members of the Tweed Radio Group.

In all Ben's excitement to pass on this news he forgot to include the club's contact address for any possible membership enquires to be directed to. Perhaps, for further clarification, such as membership fees, if any, and other requirements that may be needed to join the group. Possibly the club secretary could drop me a line? However, special thanks should go to Ben for being considerate and motivated enough to take the time to promote his club to others.

One thing is for certain — we have never had a shortage of radio clubs on the good old 27MHz band, and they have been with us from the very start. Some offered us virtually the world for a price, others just the sheer basics, sometimes consisting of a callsign and a sheet of paper called a current members list! If you wanted anything extra then you just had to go about it yourself although generic QSLs and other odds and ends were not far around the proverbial corner!

Yes, DX clubs have most certainly come a long way since the heyday of 11 metres from the mid 1970s onwards. Many of the well-known DX clubs of that era have now all but become faded memories for some of us. Who can remember the Earth DX group? In the '70s it was indeed fashionable to sign with an 'echo' callsign. I myself hailed from Hawaii as the 17-E-1695 for a time in this period.

Close on the trail of the Earth group success came the **World Sidebanders** known on air as the 'Whiskey' group, amongst other variants. Hence the origins of my old by-line (67-W-07) which I signed when this column first appeared in CBA in 1989. I had never held a call-

43 DIVISION

P.O.BOX 28
FAWKNER VIC. 3060
AUSTRALIA

P.I.G. DX GROUP

PEACE INTERNATIONAL DX GROUP

sign and used one for so long as the 67-W-07, and in the early 80s I was lucky enough to sign as 68-W-19 during my days on Guam in the western Pacific. As with the Earth crowd one doesn't hear the Whiskey calls around much these days if at all.

Another organisation which gained immense popularity on 11 metres in the old days was the American-orientated 11HF International group. This group became so large that at one stage an internal war within the club broke out and one, maybe two external factions were formed on similar guidelines. I never got the full story on this crowd as I never became involved with them.

However, I do know their membership at its peak swelled to many thousands and their club directory/callbook was around an inch or so thick! As with other groups just mentioned, you don't hear much of this mob any more, although there are some diehards still operating out of the USA so perhaps the 11HF groups, or 11HFers, as they like to be known, could be still operating?

Out of Japan in the good old days came the **International Wireless Association** (**IWA**) run by a terribly polite and affectionate gentleman by the name of Shoichi Sato who lived in Koriyama, a bullet train ride north of Tokyo. The IWA group through Shoichi's guidance didn't push the conquest of hordes of DX-orientated members. Instead, in my years as IWA-710, I found the club to be more of a network made up of good friends, most of us with an interest or fascination with Japan.

I spent a considerable amount of time with Shoichi parked on 27.150 or 27.045 MHz teaching him English and Shoichi teaching me Japanese in his halting English. In those days one could talk seemingly for hours without a single breaker interrupting, but if one did more often than not it was IWA-5302, Kenji Murata in Niigata, breaking in for a chat and a chance to practise his English too!

So the concept of IWA being a club to build friendship between radio enthusiasts of different nationalities, rather than be greedy DX-hunters exchanging QSL information, made IWA unique from other radio clubs of that era.

As mentioned in the last DXI, we in Australia had a few bursts of popularity with some real Australian clubs like **Kangaroo Territory** (**KT**), **Koala Bear Country** (**KBC**) and **Kangaroo Country** (**KC**) which come to mind. These clubs were extremely popular with the Australian/American chit-chat groups that were extremely popular a few years back.

Some other radio clubs that were once part and parcel to the 27MHz DX scene were the **Sugar Tango** (**ST**) group, **X-ray Tango** (**XT**) group, **Sugar Sugar Club** (American?), **Jack Daniels Whiskey Radio Club** (**JDW**), **ZL Sidebanders** (New Zealand), the **Whiskey-Whiskey Group** and the South Pacific mob that used to drift about the channels to name another.

Some of the clubs just mentioned were Australian born and bred, others were just spin-offs from American or other overseas groups. Other clubs were extensions of their 40-channel based 'brothers' and, as operators went out-of-band, they happened to take their callsigns with them!

FREQUENTLY ASKED QUESTIONS

CB Action receives many questions re. communication hobbies. Unfortunately, we are unable to answer all of them due simply to the number of hours in a day. Internet users will be aware of the many FAQ (Frequently Asked Questions) files which can be obtained from the various newsgroups and some of the answers to the most common questions asked both of us and the newsgroups will be found in this section - and credited to the respective newsgroup. Others will be answered by our staff. Please, if you have a question, keep it short and to the point. Mail it to: CBA FAQ, PO Box 622, Mount Eliza 3930. Each month we will answer as many as we can in this section of the magazine.

What is single sideband?

To understand single-sideband (SSB), one must first have a picture of what's going on in a normal AM (amplitude modulation) transmission.

For example, on Channel 21 (in North America, Australia, and Europe), a "carrier" is transmitted at 27.215 MHz. Your voice (or whatever you're transmitting) is used to change (modulate) the height (amplitude) of the signal so that it can be reconstructed as your voice on the receiving end.

Actually, the amplitude of the carrier does not change.

The addition (modulation) of another signal, like your voice, onto the carrier will increase the amplitude at other frequencies adjacent to the the carrier. A 300 Hz tone, for example, would add signals 300 Hz above and below the carrier. Every frequency component of your voice has the same additive effect. These modulation effects are the upper and lower sidebands of the transmitted signal.

Normal AM transmissions include the carrier signal, the upper sideband (USB) and lower sideband (LSB). The difference in frequency from the bottom of the lower sideband to the top of the upper sideband is called the bandwidth of the signal; it will be twice as wide as the highest frequency modulated onto the carrier. (For poorly filtered radios, this can unintentionally interfere with adjacent channels if the bandwidth is too wide. Poor filtering becomes easily noticeable at higher power levels.)

There is enough information in either sideband to reconstruct the original signal. Therefore, radios which can use single sideband are able to filter out the carrier and the opposite sideband before transmitting them, leaving either the upper sideband or lower sideband, as selected by the CB operator.

Obviously, for a conversation to take place, both the transmitting and receiving radios have to be on the same channel and sideband setting (i.e. Channel 25 LSB.) Some additional tuning will be necessary with a "clarifier" control.

Assuming proper filtering within the radios, it should be possible for separate conversations to occur on the upper and lower sidebands of a given channel without interfering with each other.

(Courtesy of rec.radio.info)

Is packet radio legal on CB - either HF or UHF?

Basically the answer is no, not really, well maybe....

There is an almost useless technical loophole which will allow legal operation at very low power (around one watt EIRP) and under certain conditions. I suggest that you obtain a backcopy of our Jan/Feb '94 issue for further information.

Legally or otherwise, however, there is a group calling itself the Australian CB Packet Radio Group whose members are claimed to number around 1,500 with about 112 actually using packet on 11 metres.

For information, contact the Secretary, Mr Peter Brennan, PO Box 230, Horsham 3402.

Do I really get 120 channels on a radio with single sideband?

This applies to the USA, Australia, Canada, and any other countries that use AM and SSB on the same 40-channel band.

Yes and no.

SSB does give you 120 different com-

What are some of the more common Q-codes?

Q-codes are used in many kinds of radio communications, including CB sideband but not typically on CB AM. (If your radio doesn't have sideband, don't worry about Q-codes.) Q-codes originated with amateur radio but their use in CB, even more so than 10-codes, can vary depending on who published the list.

The following is an abbreviated list of Q-codes borrowed from amateur radio:

QRM man made noise, adjacent channel interference
QRN static noise
QRO increase power
QRP reduce power
QSL confirmation, often refers to confirmation cards exchanged by hams
QSO conversation
QSX standing by on the side
QSY move to another frequency
QRL Busy, Stand By
QRT Stop Transmit or Shutting Down (same as 10-7 on AM)
QRX Stop Transmit or Standing By
QRZ Who is Calling?
QSB Receiving Poorly
QSK I have something to say or station breaking
QSM Repeat Message
QSP Relay Message
QTH My Location is... or What's your location?
QTR Correct Time

Q-codes may be used to ask questions (QTH?) or to answer them (QTH is corner of Wells Rd and Seedy Street, Manly, NSW).

Historically, the Q signals were instituted at the 'World Administrative Radio Conference' (WARC) in 1912. Because of their international origin, Q-codes may be more accepted outside English-speaking countries than 10-codes are...

munications paths (40 AM, 40 USB, and 40 LSB) but they are not free of interference from each other.

The upper and lower sidebands will interfere with the AM channel and vice versa.

With some radios, even the opposite sidebands can interfere with each other.

For example, (and this works for any channel - just fill in a different number from 1 to 40) Channel 17 has an AM channel that every radio can use. Radios with SSB will also be able to use the upper and lower sidebands. However, within a few miles of each other, you can't effectively use the AM channel if people are talking on either sideband.

Though not as strong, users of sideband will know if someone is using the AM channel but the higher legal power settings on sideband gives them an advantage.

(Courtesy of rec.radio.info)

UHF Repeaters - can anything be done?

One of the most regular complains received from readers is that their local repeater is being jammed, has some dill playing music on it non-stop, or has a resident foul-mouth who fires up every time someone tries to use it.

After having complained about it they ask if anything can be done to rectify the problem.

In theory, and it really is only in theory, the SMA (Spectrum Management Agency) should be in a position to police this sort of anti-social behaviour, but in reality they either can't or won't do anything worthwhile.

The usual reasons given are;

(a) we do not have the necessary staff or money to stop this sort of thing and/or

(b) It is very difficult to get a successful prosecution even when we do charge someone.

In consequence, most repeater abusers continue to plague the airwaves.

There are, however, exceptions to the rule and there have been a number of successful prosecutions over recent months in Melbourne, Sydney and Tasmania.

Could you explain the frequencies used for shortwave listening?

What's the 49 meter band, etc?

As you tune around, you'll notice certain kinds of signals tend to be concentrated together. Different services are allocated different frequency ranges. International broadcasters, for instance, are assigned to ten frequency bands up and down the dial.

What is SINPO/SIO?

The SINPO code is a way of quantifying reception conditions in a five-digit code, especially for use in reception reports to broadcasters.
The code covers Signal strength, Interference (from other stations), Noise (from atmospheric conditions), Propagation disturbance (or Fading, in the SINPO code), and Overall.

The code is as follows:

(S)ignal	(I)nterference	(N)oise	(P)ropagation	(O)verall
5 excellent	5 none	5 none	5 none	5 excellent
4 good	4 slight	4 slight	4 slight	4 good
3 fair	3 moderate	3 moderate	3 moderate	3 fair
2 poor	2 severe	2 severe	2 severe	2 poor
1 barely aud.	1 extreme	1 extreme	1 extreme	1 unusable

In recent years, many broadcasters have tried to steer listeners away from the SINPO code and toward the simpler SIO code.
SIO deletes the extremes (1 and 5) and the noise and propagation categories, which were confusing to too many people to be useful. In sending reports to stations other than large international broadcasters who are likely to understand the codes, it is better to simply describe reception conditions in words.

These are:

3900-4000 kHz (75 meter band)
5950-6200 kHz (49 meter band)
7100-7300 kHz (41 meter band)
9500-9900 kHz (31 meter band)
11650-12050 kHz (25 meter band)
13600-13800 kHz (22 meter band)
15100-15600 kHz (19 meter band)
17550-17900 kHz (16 meter band)
21450-21850 kHz (13 meter band)
25600-26100 kHz (11 meter band)

In general, lower frequencies (below 9000 kHz) are better received at night and for a few hours surrounding dawn and dusk, and higher frequencies (13000kHz and up) are better received during the day.

The frequencies in between are transitional, with reception being possible at most times.

In practice, these guidelines are not absolute, with reception on high frequencies being possible at night, and lower frequencies can provide decent medium-distance reception during the day.

Additionally, these numbers can change slightly with the changing of the sunspot cycle, which affects the ionization of the upper atmosphere, and hence the propagation of shortwave signals.

In times of lower sunspot activity, as is the case in 1994-95, higher frequencies are generally less useful than lower frequencies, and the range of frequencies used at any given time of day is generally shifted slightly downward.

Hams and point-to-point, or utility communications, fill most of the rest of the frequencies.

(Courtesy of rec.radio.info)

What make of CB should I buy?

Without argument this is the single most asked question - and it's one we cannot answer.

We know which ones we think are the best but our choice is not necessarily the same as everyone else.

As an example, the editor has a big (by current standards) chrome-plated front panel, heavy and old design HF CB which he swears by rather than at...

It is fitted in his four-wheel-drive vehicle and has never given a moments trouble - but, its sheer bulk makes it an almost impossible task to fit into today's plastic family car.

Most buyers would prefer a more modern, smaller and maybe even better performing rig and who is to say we're right and they're wrong.

The fact of the matter is that there are very few poor CBs, either UHF or HF, still on the market.

Today's radio is usually the result of steady improvement over the years although the old adage of "you get what you pay for" remains pretty accurate.

Read the review in CBA, check out where you can get the best price - and the best service - and buy it.

You won't go far wrong.

Online 1994

By Richard Jary

As I write this, Patrick has temporarily swapped his possums for some North American squirrels and, despite uploading various pictures of apple peel and nuts to the Shortwave Possums BBS, we haven't persuaded the possums to put paw to keyboard on his behalf. Patrick should be back next issue, with more from the world of radio software.

In Patrick's absence I thought we'd take a look at a couple of CD-ROM products available on the market for the radio enthusiast. For those who have yet to buy a CD-ROM setup for their computer, these disks (which use the same technology and format as a standard music CD) can actually hold around 650 megabytes of data. For those not that familiar with computers, that is 650 *million* characters of information, so it's obvious that a fair amount can be held. The medium isn't limited to text or music, but can be used to store video clips, computer animations, software, or virtually anything you could find on a PC.

Many CD-ROM packages also come bundled with SoundBlaster cards or similar, for prices between $400 and $1000 — this sound capability can be exploited by some software for inputting of audio from the radio for things like RTTY and fax decoding. While there are still many problems with some of these packages, things can only get better as they say. So if you've already bought that new radio and still have some spare cash, consider a CD-ROM.

The first CD-ROM would *have* to be the **Approved Frequency Assignment Database** (AFAD) mentioned this month in David Flynn's Listening Post column. This CD, put out by the Spectrum Management Agency in Canberra, contains every licensed frequency in Australia from a few hundred Hertz right up to many Gigahertz in frequency.

If you've ever wanted to know the frequency of the police radar units — well, even that sort of information is present. About the only thing you *won't* find is detail on various military and other top-secret assignments, in which cases *some* data is still shown but with very limited information.

So in front of us we have this massive database of frequencies, saved in standard dBase format. Approximately 250,000 lines of information. As you might guess, this is a touch awkward to browse through to find the information you want.

The two pics show what you can expect to see on your computer screen when using the data program.

Many spreadsheet programs will read database files, but only up to a certain number of lines. The popular Excel stops at around 16,384, not nearly enough for our needs.

Having bought the CD myself, I thought I'd tell the story of how I have managed to persuade the CD to give me the data I want, quickly and painlessly. I'd be interested to know if anyone else has found other methods.

When I first bought the CD late last year, I started by browsing through it in a dBase clone. I quickly realised that to extract all the frequencies listed for my home at Gosford, NSW would be a painful business, especially when one would also need to look at all the suburbs of Gosford as well.

The trick of fast database access is **Index** files which, as the name suggests, create an index on whatever you choose. Useful selections might be frequency, township, user etc. When you seek an entry, the program looks at the index, and knows exactly where to go in the large database quickly, much the same as the tortoise in the Telecom Yellow Pages advertisements. So the first step is to create an index. To do this you will need a working copy of dBase or one of its clones. Some of these index files can run around 10Mb for this file, but they do compress very well, so for those running Stacker, Doublespace, or sim-

CUSTOMER	LICCLL	ADDRESS			STATE	POSTCODE	TXFREQ
A & A TIMBER PTY LTD	VH3ASH		PO BOX 103	ELTHAM	3	3095	462.075
A & A TIMBER PTY LTD	VH3ASH		PO BOX 103	ELTHAM	3	3095	452.575
A & K BAILEY BROS PTY LTD	VH3IEL		PO BOX 100	YARRA JUNCTION	3	3797	169.12
A & K HIRE PTY LTD	VH4MDC		PO BOX 20	BURPENGARY	4	4505	492.8
A & K HIRE PTY LTD	VH4MDD		PO BOX 20	BURPENGARY	4	4505	498
A & L WALKER PTY LTD	VH2BPB		PO BOX 288	MIRANDA	2	2228	507.55
A & MJ MUSOLINO PTY LTD	VM5SY	20	TRAMINER WAY	AULDANA	5	5072	171.09
A BRIGHT PLUMBING SERVICES	VH3OJS	17C	SLOUGH RD	ALTONA	3	3018	462.55
A CLASS PLUMBING COY PTY LTD	VH2GKB		PO BOX 157	BAULKHAM HILLS	2	2153	161.08
A CLASS PROPERTY PTY LTD	VLN474		PO BOX 3	THORNLEIGH	2	2120	151.925
A DART & COMPANY PTY LTD	VJ4LY		PO BOX 70	HOLLAND PARK	4	4121	76.97
A GONINAN & COMPANY LTD			PO BOX 213	TAREE	2	2430	27640
A GONINAN & COMPANY LTD	VKN324		PO BOX 21	BROADMEADOW	2	2292	450.325
A GONINAN & COMPANY LTD	VH2RLQ		PO BOX 21	BROADMEADOW	2	2292	471.55
A JONES & SON PTY LTD	VJ7KV	385	BASS HWY	PROSPECT VALE	7	7250	160.48
A O'HARE FUNERAL DIRECTORS	VH2SBF	15/19	NORTON ST	LEICHHARDT	2	2040	509.25
A O'HARE FUNERAL DIRECTORS	VH2SBF	15/19	NORTON ST	LEICHHARDT	2	2040	519.25
A R T SERVICES PTY LTD	VJ3GO		PO BOX 602	CLAYTON	3	3168	487.15
A SAMIOS PTY LTD	VM4SX	50	DESHON ST	WOOLLOONGABBA	4	4102	RX ONLY
A SAMIOS PTY LTD	VM4SX	50	DESHON ST	WOOLLOONGABBA	4	4102	164.56
A W EDWARDS PTY LTD	VH4MIF		PO BOX 60	FORTITUDE VALLEY	4	4006	474.825
A-1 CONCRETE SERVICES	VH2OES		PO BOX 92	REGENTS PARK	2	2143	73.88
A'VARD	AXV382	2A	BOWEN ST	CRANBOURNE	3	3977	RX ONLY
AA COMPANY PTY LTD	VJQ328		PO BOX 1334	MOUNT ISA	4	4825	4517.5
AA SCOTT PTY LTD	VH5UC		PO BOX 504	MOUNT GAMBIER	5	5290	84.96
AA TEGEL PTY LTD			ROCKFORD RD	TAHMOOR	2	2573	40.68
AANUKA RESORTS LTD			PO BOX 266	COFFS HARBOUR	2	2450	40.75

ply blessed with lots of disk space, this isn't a problem.

Once you've generated the files, you can do a seek on **Location equals Gosford**. This is quick, and effective. Unluckily it won't catch misspellings like Gosfprd, or any of the suburbs around it. So I found a more useful index is generated by the map coordinates supplied, which relate to those found on the topographical maps available for bushwalkers.

While this method allows extracts of the data, more selection and an output for printing is necessary. The program I chose — because we use it at work and I was familiar with it — is called **R&R Report Writer**.

It is available for both DOS and Windows. It is a commercial product, and I'd like to know of any shareware equivalents. Both DOS and Windows versions work in a similar fashion. You start by choosing the database file you want to work with, and selecting the report layout. I chose to include fields on frequency, transmitter, user, input frequency, power, and map reference. For fast access we want to include the index file which I made on map reference, and set the range to be all records between two values, around 30 km north and south from my location. The program also allows further selection, so I can also say I want only stations in a certain east/west range of mapping coordinates, only transmitters, and only things in MHz (for the scanner). This sounds complicated, but in a few simple — and they *are* simple — commands I have told the database what information I want, and in which format I want it.

About 10 minutes later — the larger the selection the longer it takes — I have a nice text listing of all frequencies licensed to the Gosford area, which I can print and keep next to the scanner.

Don't be worried if you don't have access to topographical maps. I'm about to head to Cairns for a holiday and wanted the frequencies to program in for there. Using an index on township I simply looked up the coordinates for towns in the north, south and west of Cairns within a reasonable range, and noted their coordinates from the database itself. With a quick change of selections in my original report, I now have a list of frequencies to program in before I hop on the flight. The *AFAD* CD-ROM also contains an Record of Radio Frequency licensees, or RRL. This database contains an entry for every licence issued, with transmit frequency, power, username, callsign, and mailing address. While I don't use this myself, it would be a very useful reference for those wishing to send reception reports on some of the items they hear. (Can't you just imagine the shock at the receiving end!) The CD is available from the Spectrum Management Agency at a cost of $99. The SMA can be contacted on (06) 256 5394, or orders can be faxed to (06) 256 5384. Our copy of R&R Report Writer and Windows was purchased for $400 at Software Express, but it should be available at various stores.

The second product I bought was a CD-ROM simply titled **Ham Radio**. This contains a fairly wide-ranging selection of programs and text files, and retails for around $25. All the programs are freeware or shareware, and include things like logging programs, electronic and antenna calculations, packet radio, satellite tracking and the like. While there is some useful stuff, most of it tends to be a bit old. Most of the shareware available on bulletin boards such as **Shortwave Possums** in Sydney or **Radio Active** in Melbourne would be more up-to-date, and generally more useful. The text files include scanner frequency listings, amateur radio study and (US) FCC regulations, 'how-to' text files and other basic radio information.

Unluckily for us, it is just about all American-oriented and of limited use. I'd hesitate to recommend this CD to most people, unless they don't have a modem and this is their only way of obtaining some of the software.

FREQ		LOCATION	USER	POWER	INPUT
72.995	M	WATTAGAN	FORESTRY COMMISSION OF NEW SOUTH WALES	50	72.995
73.385	M	SUGARLOAF RANGE	NELSON BAY CONCRETE PUMPING SERVICES P/L	50	TX ONLY
73.655	M	KINCUMBER	POWER	50	73.655
74.090	M	MT SUGARLOAF	CSR THE READYMIX GROUP	50	74.090
74.125	M	AWABA	DEPARTMENT OF BUSH FIRE SERVICES	1	71.625
74.240	M	SUGARLOAF RANGE	EAST MAITLAND TYRE SERVICE PTY LTD	50	TX ONLY
74.240	M	SUGARLOAF RANGE	PGH BRICKS PTY LTD	50	TX ONLY
74.285	M	WYONG	CROSSLEY REAL ESTATE PTY LTD	50	74.285
74.375	M	AVOCA BEACH	BOWTELL	50	74.375
74.375	M	ERINA HEIGHTS	EAST COAST POOL PEOPLE PTY LTD	50	74.375
74.570	M	COORANBONG	CJ BOYD PTY LTD	50	74.570
74.570	M	MORISSET	CROOK	50	74.570
75.500	M	SUGARLOAF RANGE	K S EASTERNCLE PTY LTD	50	TX ONLY
75.560	M	BALCOLYN	VANDERPOEL H & P	50	75.560
75.560	M	MORISSET	VANDERPOEL H & P	50	75.560
75.635	M	MT ELLIOTT	CSR LIMITED	50	75.635
75.635	M	MT ELLIOTT	VAN DER POEL	50	75.635
75.725	M	MT HEATON	SHORTLAND COUNTY COUNCIL	50	75.725
75.845	M	SUGARLOAF RANGE	R&H TRANSPORT PTY LTD	50	TX ONLY
75.845	M	SUGARLOAF RANGE	S & W MILLER DISCOUNTS PTY LTD	50	TX ONLY
75.935	M	SUGARLOAF RANGE	DOTC NSW	50	TX ONLY
76.055	M	SUGARLOAF RANGE	GERRARD MURPHY PTY LTD	50	TX ONLY
76.280	M	WOY WOY	WILSONS ESTATE AGENCY PTY LTD	50	76.280
76.460	M	SUGARLOAF RANGE	PHILIPS CONSUMER SERVICE NEWCASTLE	50	TX ONLY
76.460	M	SUGARLOAF RANGE	WOY WOY FIBROUS PLASTER WORKS PTY LTD	50	TX ONLY
76.520	M	LONG JETTY	DP SMITH HOMES PTY LTD	50	76.520
76.520	M	THE ENTRANCE	PETER BRAND REAL ESTATE PTY LTD	50	76.520
76.595	M	SUGARLOAF RANGE	TOLL TRANSPORT PTY LTD (INCORP IN VICT)	50	TX ONLY
76.640	M	CENTRAL MANGROVE	AMBULANCE SERVICE OF NEW SOUTH WALES	50	76.640
76.640	M	KILLCARE HEIGHTS	AMBULANCE SERVICE OF NEW SOUTH WALES	50	76.640
76.670	M	MT PENANG	AMBULANCE SERVICE OF NEW SOUTH WALES	50	76.670
76.715	M	MT SUGARLOAF	AMBULANCE SERVICE OF NEW SOUTH WALES	50	76.715
76.970	M	ERARING	ELECTRICITY COMMISSION OF NSW	50	76.970
77.105	M	ERARING	ELECTRICITY COMMISSION OF NSW	1	82.155
77.105	M	MUNMORAH	ELECTRICITY COMMISSION OF NSW	1	82.155
77.255	M	SOMERSBY	PABERO PTY LTD	50	77.255

MOBILE ONE ANTENNAS

...more new products from this long established company

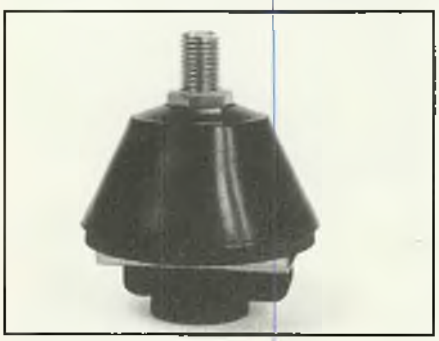
The long established NSW company, Mobile One, continues to be one of the major suppliers of CB mobile antennas in Australia.

The company has been around as long as this magazine, maybe even longer, and has built an enviable reputation for good quality at affordable prices.

It has also achieved a well-earned reputation for innovation and each year sees a number of additions and modifications to their wide range of equipment.

A recent addition to that range is the Shorloc "strain relief coaxial mounting clamp which enables quick, easy solderless installation to connect any RG58 coaxial cable without the use of a soldering iron.

I don't know what you're like when it comes to soldering but my own ability usually results in bulk solder over everything - except where I want it. I had occasion to use this new system a couple of weeks back and what normally takes me the best part of 20 minutes took me just a couple of minutes - and no soldering.



Another fairly recent release is the DX160SH antenna pictured at right.

These units cover an approximate range of 26.5 - 29MHz with an overall length of 1.53cm (60") and will accept 50 watts of power (not that you would be putting that up the stick anyway - would you)....

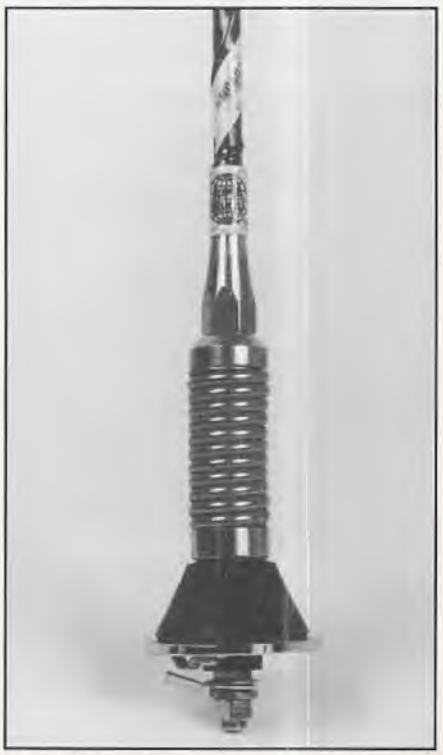
The 160SH is wound with a constant turn winding which exhibits a similar radiation pattern as a full-size quarter wave whip.

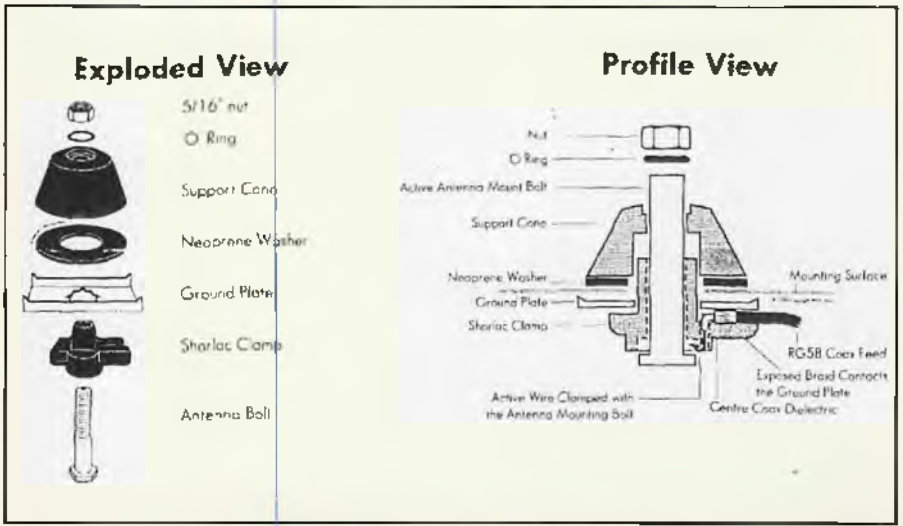
I am currently using one of these on my 4WD and to date it has taken plenty of punishment, particularly from low hanging branches and roadside bushes, without a problem.

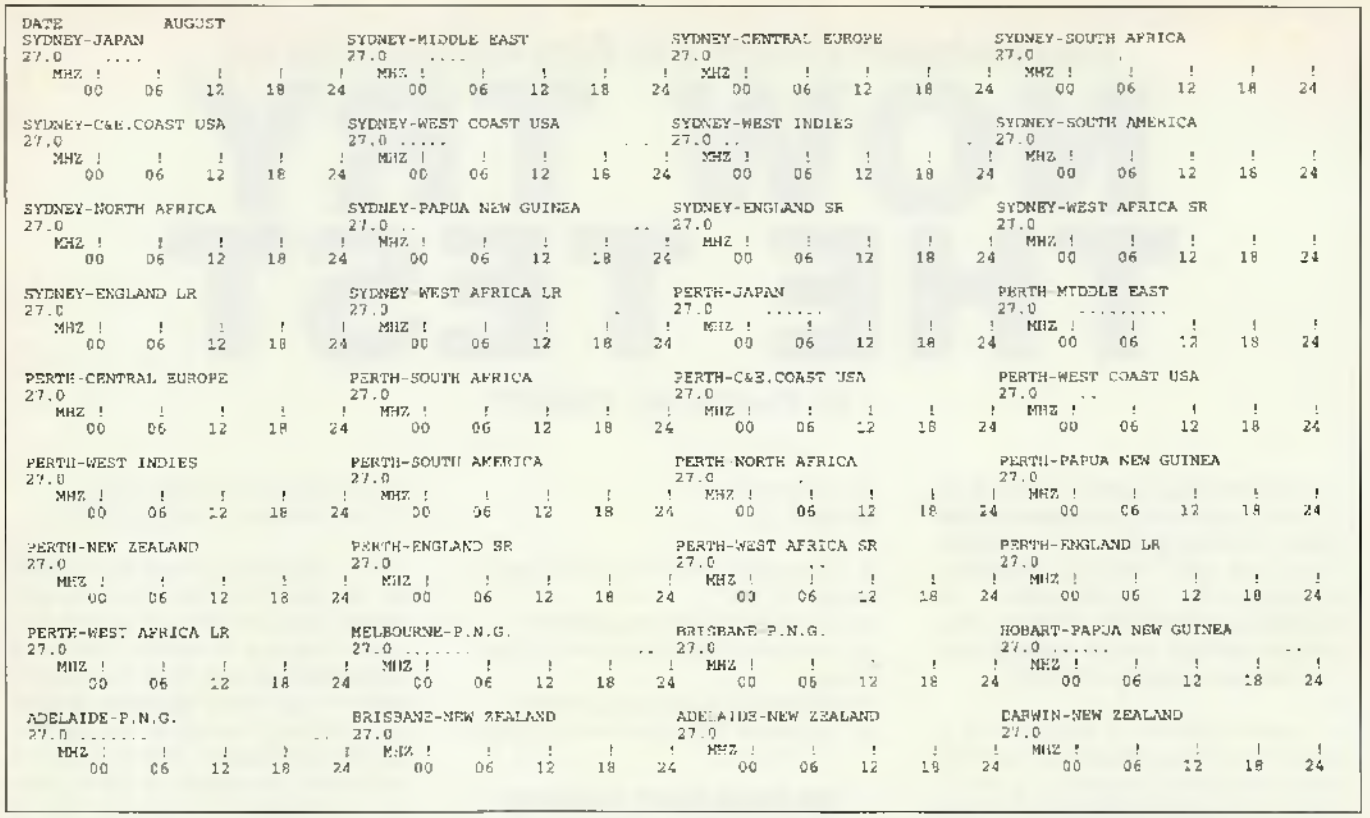
It has an SWR reading of 1.5:1 over a 1.7MHz range and came in at that straight off the shelf - no trimming was required.

At bottom right is the company's SAO stainless steel spring mount which is suitable for medium sized antennas up to 1.53cm (60") in length.

These are just a few of Mobile One's comprehensive range of antennas and associated equipment. If you're chasing something in particular, contact them on (046) 556677. Dick Smith Electronics also carry a wide range of the company's products as do most specialist communication shops.



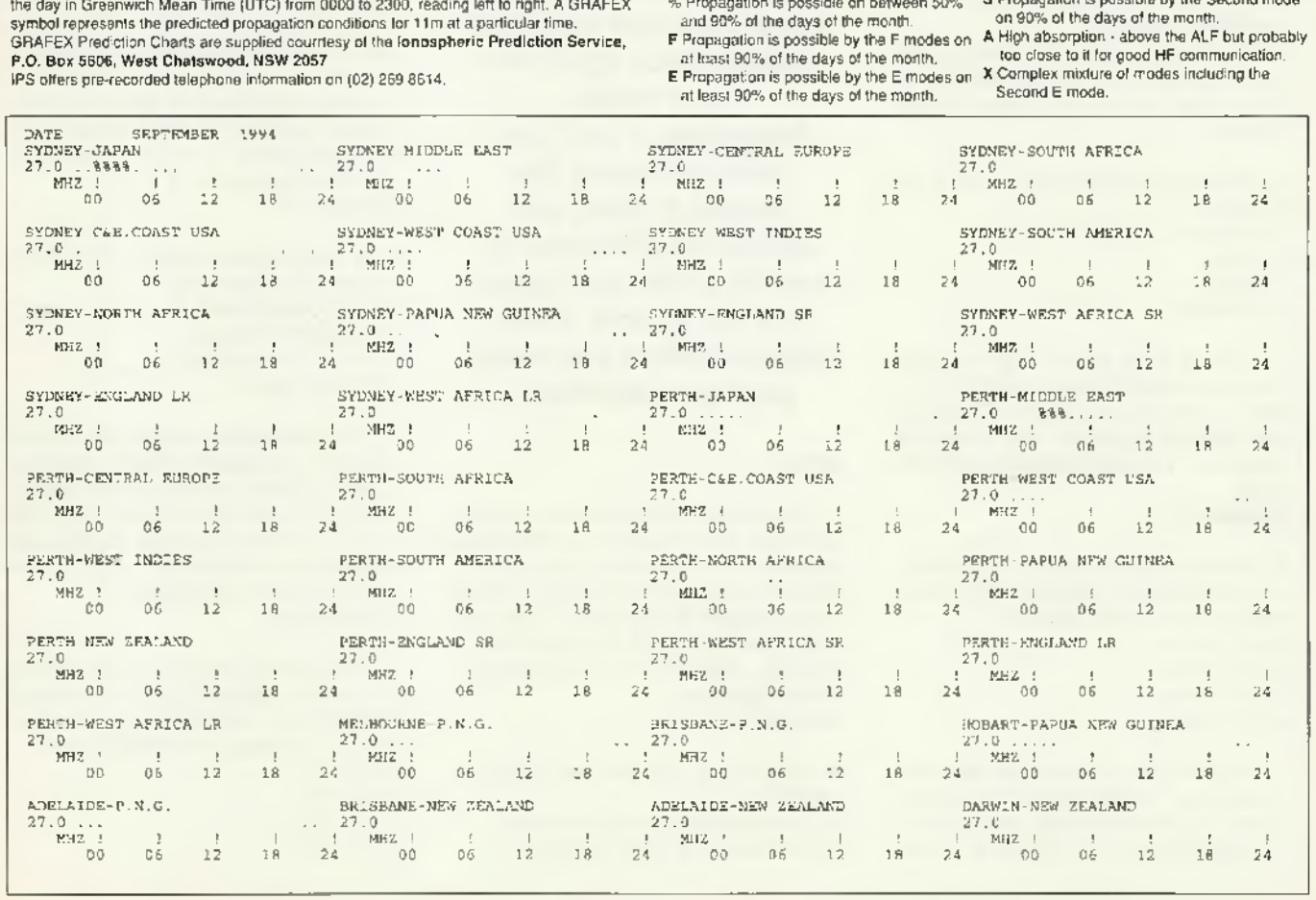




These GRAFEX style predictions present in pictorial form the expected HF propagation conditions between Australia and a number of DX areas. For each circuit, the "East" terminal refers to the eastern half of Australia. The horizontal axis of each graph represents the hours of the day in Greenwich Mean Time (UTC) from 0000 to 2300, reading left to right. A GRAFEX symbol represents the predicted propagation conditions for 11m at a particular time.
GRAFEX Prediction Charts are supplied courtesy of the **Ionospheric Prediction Service, P.O. Box 5606, West Chatswood, NSW 2057**
IPS offers pre-recorded telephone information on (02) 269 8614.

LEGEND TO GRAFEX SYMBOLS

. Propagation is possible but probably on less than 50% of the days of the month.
% Propagation is possible on between 50% and 90% of the days of the month.
F Propagation is possible by the F modes on at least 90% of the days of the month.
E Propagation is possible by the E modes on at least 90% of the days of the month.
M Propagation is possible by both the First and Second F modes on 90% of the days of the month.
S Propagation is possible by the Second mode on 90% of the days of the month.
A High absorption - above the ALF but probably too close to it for good HF communication.
X Complex mixture of modes including the Second E mode.



You're been doing the Novice course so ...

NOW TRY THE TEST

By Paul Butler, VK3BDP

It's time once again to have a go at a whole sample examination paper, similar to the one *you* might take for the Novice Amateur Operator's Certificate of Proficiency (NAOCP). This is, after all, the reason you're reading this column so regularly, isn't it?

Each question is followed by a short descriptive paragraph, together with the correct answer. Try not to look at the answer before you have had a go at the question. Old hands at amateur radio are not excused this one, either — can *you* answer all the questions correctly?

Here we go, then, with a trial paper which should give you something to think about as the long winter nights draw on...

1. Which of the following is the best insulator:
(a) carbon
(b) zinc
(c) gold
(d) ceramic

Take a look at any high voltage electrical installation and what do you see — ceramic insulators! Ceramics are used as insulators in a variety of situations, including antenna installations.
Answer: (d)

2. Three resistors, each of 90 ohms, are connected in parallel. The resistance of this combination is:
(a) 27 ohms
(b) 30 ohms
(c) 90 ohms
(d) 270 ohms

A quick tip — for identical resistors in parallel, simply divide the resistance of one of them by the number of resistors used. In this case, divide 90 ohms by three.
Answer: (b)

3. Capacitors may be connected in parallel to:
(a) increase the total capacitance
(b) decrease the maximum voltage rating
(c) decrease the total capacitance
(d) increase the maximum voltage rating

We have been running Paul Butler's "Novice Course" notes for quite some time now and they will continue again the next issue. Meantime, if you have been following the course to date, you should be able most (if not all) of this test paper. Try not to peek at the answer before you make your own decision...

Capacitors hold electric charge; buckets hold water. Connecting capacitors in parallel is like having lots of buckets side by side — their total capacity is the sum of the individual capacities. So for capacitors in parallel, add the individual capacitances together.
Answer: (a)

4. Capacitors may be connected in series to:
(a) increase the total capacitance
(b) decrease the total reactance
(c) decrease the voltage rating
(d) increase the total voltage rating

For capacitors connected in parallel, we add the individual capacitances (see previous question). But when they are in series, their total capacitance is less than the capacitance of each one separately. Answer (a) is wrong, therefore. As capacitance decreases, the reactance (equivalent to resistance for a resistor) increases, so answer (b) is wrong, too.

This means that we have to look at the voltage rating of the capacitors in the series circuit. When components are connected in series, they 'share' the applied voltage between them. So a series combination will tolerate a higher applied voltage than each capacitor alone — ie the voltage rating would be higher.
Answer: (d)

5. A capacitance value of 1000 picofarads is the same as:
(a) 0.01 microfarad
(b) 0.001 microfarad
(c) 0.0001 microfarad
(d) 0.001 farad

*The prefix **pico** means 'one million millionth' and **micro** means 'one millionth'. There are one million picofarads in one microfarad (okay so far?). This means that 1000 picofarads is one-thousandth of a microfarad, or 0.001 microfarad.*
Answer: (b)

6. The correct Ohms Law formula to use when determining the current flowing in an electrical circuit (I = current, V = voltage, R = resistance) is:
(a) $I = V/R$
(b) $I = VR$
(c) $I = R/V$
(d) $I = VR^2$

Know your formulae!
Answer: (a)

7. The arrowhead element in a bipolar transistor symbol represents the:
(a) emitter
(b) base
(c) collector
(d) shield

Know your symbols!
Answer: (a)

8. One kHz is the same as:
(a) 10 Hz
(b) 100 Hz
(c) 1000 Hz
(d) 10000 Hz

*The prefix **kilo**, expressed **k**, means 1000. So 1 kHz represents 1000 Hz.*
Answer: (c)

9. The approximate forward bias values required for germanium and silicon diodes to conduct are:
(a) germanium, 0.2 volt, silicon 0.6 volt
(b) germanium, 0.6 volt, silicon 0.2 volt
(c) germanium, 0.6 volt, silicon 1.6 volt
(d) germanium, 1.6 volt, silicon 1.6 volt

These are values to memorise. A diode conducts in one direction only but will only begin to conduct once the applied voltage reaches a certain minimum value. This value is different for each of the two common types of diodes, silicon and germanium. The germanium diode conducts at a lower applied voltage.
Answer: (a)

10. An increase of 1 mA in the base current in a common emitter transistor amplifier causes the collector current to rise by 100 mA. The beta is:
(a) 1
(b) 10
(c) 100
(d) 1000

Beta is the name for current gain, which in turn is the ratio of the base (input) current to the collector (output) current. In this case, the ratio is 100 to 1.
Answer: (c)

11. The collector current of a bipolar transistor is controlled by the:
(a) base current
(b) collector voltage
(c) base voltage
(d) emitter voltage

Bipolar transistors are conventionally regarded as current-controlled devices, so the input (base) current controls the output (collector) current. I personally prefer to consider the operation of a transistor in terms of input and output voltages but I suspect that I'm in the minority...
Answer: (a)

12. The amount of forward bias required to enable a silicon transistor to commence conduction is approximately:
(a) 0.2 volt
(b) 0.6 volt
(c) 1.2 volts
(d) 1.5 volts

A bipolar transistor is essentially two semiconductor diodes connected back-to-back. To make the device conduct, the base-emitter diode must be forward-biased at a high enough voltage to make this diode conduct. As we saw above, a silicon diode needs about 0.6 volts across it to make it go.
Answer: (b)

13. How many grids are there in a triode vacuum tube?
(a) 1
(b) 2
(c) 3
(d) none

The name 'triode' refers to the three electrodes in this type of thermionic vacuum tube. They are the cathode, anode and (control) grid, equivalent to the emitter, collector and base of a bipolar transistor.
Answer: (a)

14. In a mains power supply, the earth wire must be connected to the metal chassis to ensure that, in case of a fault, the chassis:
(a) does not develop a high voltage with respect to earth
(b) prevents fundamental frequency overload
(c) becomes insulated from RF interference
(d) develops a high voltage with respect to earth

The earth connection is a safety device which provides a low-resistance path for currents which flow as a result of a fault. If the metalwork (chassis) of a mains-powered appliance or device becomes 'live' (ie at a high voltage with respect to earth) when a fault develops, the earth connection dumps the fault current to earth. The large fault current will most probably blow the fuse or trip the circuit breaker. The user is therefore well-protected.
Answer: (a)

15. The ripple frequency of the output from a full-wave rectifier operating from a 50 Hz mains supply is:
(a) 25 Hz
(b) 50 Hz
(c) 100 Hz
(d) 240 Hz

The mains frequency in Australia is 50 Hz. A full-wave rectifier passes the positive mains half-cycles and inverts the negative half-cycles. Its output is therefore a regular pattern of half-cycles repeating 100 times a second, ie with a frequency of 100 Hz.
Answer: (c)

16. A feature of Class 'C' amplification is:
(a) linear operation
(b) non-linear operation
(c) low efficiency
(d) low distortion

A Class C amplifier is biased so that, when no input signal is present, no current flows at the output. When an input signal is present, it is very distorted. A Class C amplifier has the characteristic, therefore, of producing high distortion very efficiently! The production of a very distorted signal is known as non-linear operation.
Answer: (b)

17. A class 'C' amplifier has an expected theoretical efficiency of approximately:
(a) 20%
(b) 40%
(c) 65%
(d) 99%

Because a Class C amplifier does not conduct when no signal is present at the input, it is very efficient compared to, say, a Class A amplifier, which conducts even under no-signal conditions. All amplifiers have some losses, however, so an efficiency of 99% cannot be achieved.
Answer: (c)

18. The type of microphone which relies on the 'piezo-electric effect' for its operation is the:

....☞

(a) moving coil
(b) crystal
(c) dynamic
(d) capacitor

The central component in a crystal microphone is the piezo-electric crystal, which produces a voltage when distorted by the sound waves incident upon it.
Answer: (b)

19. If carrier is amplitude modulated by an audio signal of 1kHz, the bandwidth of the transmitter's modulated signal will be:
(a) 0.5 kHz
(b) 1.0 kHz
(c) 2.0 kHz
(d) 4.0 kHz

The bandwidth of a signal is the space it occupies in the radio-frequency band in which it occurs. Amplitude modulation produces upper and lower sidebands, distributed each side of the carrier, whose frequencies are equal to the carrier plus or minus the modulating frequency.
A 1 kHz signal therefore produces sidebands 1 kHz above and below the carrier, and the signal occupies a 2 kHz space.
Answer: (c)

20. Testing a telegraphy transmitter for key clicks would be most effectively done by:
(a) monitoring your transmission on an oscilloscope
(b) asking another amateur for reports
(c) using a frequency counter
(d) using a field strength meter

It is tempting to send out your signal and wait for someone to hear it and comment on its quality (presence or absence of key clicks, chirps etc.). Once you have sent your signal, however, if it is distorted, you have contravened the regulations about the expected quality of amateur radio transmissions! Always check before you commit your signal to the airwaves.
Answer: (a)

21. If a superheterodyne receiver with an IF of 455 kHz is tuned to receive a signal on 3555 kHz, the local oscillator frequency may be:
(a) 2645 kHz
(b) 3010 kHz
(c) 4010 kHz
(d) 4465 kHz

The signal coming into a superheterodyne (superhet) receiver is mixed with the output of the local oscillator and the resulting mixture is sent off to the next stage of the receiver. This is tuned to a fixed frequency, the intermediate frequency or IF. In this example, the IF is 455 kHz. The local oscillator must be set, therefore, to 455 kHz above or below the incoming frequency, ie at 3100 kHz or 4010 kHz.
Answer: (c)

22. A single conversion receiver has:
(a) no intermediate frequency
(b) one intermediate frequency
(c) two intermediate frequencies
(d) three intermediate frequencies

In a single conversion receiver, there is only one intermediate frequency.
The single conversion that takes place is from the incoming frequency to the intermediate frequency, as described in the previous question.
A dual conversion receiver has two IFs; a direct conversion receiver converts the incoming radio frequency (RF) signal directly into an audio frequency (AF) signal.
Answer: (b)

23. To make Morse Code audible, a receiver has a beat frequency oscillator, the output of which is normally fed to the:
(a) antenna coupling unit
(b) radio frequency amplifier
(c) detector stage
(d) audio amplifier

The output of the beat frequency oscillator (BFO) is mixed with the incoming signal once it has been detected, that is, when the information has been separated from the radio frequency carrier. This mixing of signals takes place at the detector stage of the receiver.
Answer: (c)

24. A product detector is:
(a) a half-wave rectifier used in oscilloscopes
(b) a full-wave rectifier used in power supplies
(c) a reverse biased silicon diode
(d) a mixing device used for the detection of SSB and CW signals

The product detector is another circuit in which mixing of frequencies takes place to remove information from the radio frequency carrier. It is used to detect and resolve single sideband (SSB) and carrier wave (CW) transmissions.
Answer: (d)

25. The main advantage of ground wave propagation is that it:
(a) reduces power requirements
(b) requires a small antenna array
(c) is not affected by ionospheric disturbances
(d) has highly directional properties

Ground wave propagation provides line-of-sight communication. This means that the ionosphere is not an essential part of the path from transmitter to receiver and so ionospheric variations do not affect propagation.
Answer: (c)

26. The most reliable amateur band for communications over a path of 160 kilometres during the daytime hours is:
(a) 10 metres
(b) 15 metres
(c) 20 metres
(d) 80 metres

Learn your bands! Propagation on 20 metres is not so good over relatively short distances but 80 metres does quite well in the daytime up to about 400 km.
Answer: (d)

27. A radio wave which travels to a receiver via the ionosphere is called a:
(a) surface wave
(b) ground wave
(c) sky wave
(d) direct wave

A radio wave which bounces off the ionosphere has been 'up to the sky' and back, hence it is called a sky wave!
Answer: (c)

28. Radio waves travel in free space at a speed of:
(a) 300 x 10^3 metres per second
(b) 3 x 10^9 metres per second
(c) 300 x 10^6 metres per second
(d) 3,000 x 10^6 metres per second

Radio waves travel at the speed of light, which is about 300,000 km per second or 300 million metres per second. One million is represented by 10 raised to the power 6 (10^6).
Answer: (c)

29. A dummy load:
(a) provides an artificial filter for har-

monics and parasitic oscillations
(b) is an antenna tuning unit (ATU)
(c) radiates in one direction only
(d) provides the electrical characteristics of an antenna and dissipates power without radiating

If in doubt, always choose the longest answer! A dummy load is excellent for tuning up, since it presents to the transmitter the electrical characteristics of a well-behaved antenna but does not itself radiate.
Answer: (d)

30. When testing a transmitter into a dummy load:
(a) the SWR is increased to infinity
(b) the radio-frequency source signals are reflected back to the source
(c) the radio-frequency signals are converted into heat
(d) radiation is increased

The dummy load does not radiate (see previous question). Instead, the radio frequency energy is converted to heat and dissipated in a liquid, often oil, in the dummy load.
Answer: (c)

31. The impedance of a center-fed folded dipole is approximately:
(a) 36 ohms
(b) 50 ohms
(c) 70 ohms
(d) 300 ohms

While an ordinary dipole has an impedance very close to that of coaxial cable, folding the dipole raises the impedance closer to that of parallel feeder, ie 300 ohms.
Answer: (d)

32. To extend the range of an ammeter it is necessary to use a:
(a) resistor in series with the meter
(b) resistor in parallel with the meter
(c) rectifier in series with the meter
(d) capacitor in parallel with the meter

If an ammeter is to be used to measure a larger current than it is designed for, some of the current must be shunted around the meter itself. This is achieved using a resistor in parallel with the meter, called a shunt.
Answer: (b)

33. A dip meter is commonly used to:
(a) check ionospheric conditions
(b) measure oscillator grid or base voltages
(c) check anode current at resonance
(d) determine the resonant frequency of a tuned circuit

A dip meter is a measuring instrument used to determine the resonant frequency of a tuned circuit.
Answer: (d)

34. An appropriate instrument to measure SWR is the:
(a) dip meter
(b) thermocouple meter
(c) radio frequency probe
(d) reflectometer

The measurement of standing wave ratio or SWR requires a comparison of the radio wave leaving the transmitter with that reflected back down the transmission line by the antenna. A reflectometer does the job.
Answer: (d)

35. TV interference caused by excessive harmonic output from an amateur transmitter is often due to:
(a) low SWR
(b) accidental resonant frequencies in the power amplifier circuitry
(c) over-driven or over-modulated stages
(d) poor neutralisation

When an amplifier stage is overdriven, distortion is introduced into the signal. A pure wave, once distorted, no longer consists of a single frequency but has added into it harmonics or simple multiples of the original fundamental frequency.
Answer: (c)

36. In an RF power amplifier, parasitic oscillations are most likely caused by:
(a) poor voltage regulation in the power supply
(b) stray circuit inductance and capacitance
(c) a low-gain transistor
(d) negative feedback

Parasitics or self-oscillations are produced when parts of a circuit oscillate when they should not do so. This is usually due to capacitances and inductances arising around the circuit because of poor layout or screening. The capacitances and inductances make up resonant circuits which oscillate and produce unwanted signals on top of the wanted signals.
Answer: (b)

37. The filter best suited to suppress the third harmonic from a 3.5 MHz transmitter which is connected to an antenna via this filter is a:
(a) low pass with a 5 MHz cut-off frequency
(b) high pass with a 5 MHz cut-off frequency
(c) low pass with a 15 MHz cut-off frequency
(d) high pass with a 30 MHz cut-off frequency

The third harmonic of a given frequency has a frequency three times the original, in this case 10.5 MHz. The filter must allow through the lower original frequency while blocking the higher harmonic.
Answer: (a)

38. RFI in the form of audio rectification may be cured by fitting across the speaker leads of an audio amplifier a:
(a) reverse-biased diode
(b) 10 ohm shunt resistor
(c) 20 millihenry inductor
(d) 0.047 microfarad capacitor

A capacitor of suitable value across the speaker does not affect the low audio frequencies but provides a short circuit for the much higher frequencies in the radio frequency interference (RFI).
Answer: (d)

39. Beryllium compounds are sometimes used in power transistors and heat sink paste. They:
(a) are highly inflammable
(b) are extremely dangerous to human health
(c) may explode if allowed to dry out before setting hard
(d) produce an inflammable gas when in contact with water

Beryllium is a poisonous heavy metal. Don't apply it with your fingers!
Answer: (b)

40. An amateur novice transmitter has blown a 5 amp, 12 volt automotive fuse. The correct replacement for this is:
(a) a 5 amp, 12 volt automotive fuse
(b) a 10 amp, 12 volt household fuse
(c) a 2 amp, 100 volt automotive fuse
(d) a 100 amp, 1 volt household fuse

Always replace a blown fuse with an identical new fuse, once the fault has been located and rectified. No six-inch nails, please!
Answer: (a)

That's all for this time. How did you go?
73s from Paul, VK3DBP.

AUSTRALIAN ASSOCIATION OF CITIZEN and BAND RADIO OPERATORS Inc.

SETTING UP YOUR OWN CLUB

From time to time the ACBRO incoming mail brings an item requesting information on starting up a CB club. This invariably raises the issue that there appears to be no ground rules for so doing, so we do it by applying logic and the unknown quantity of whatever is described as 'common sense'.

To answer the how-to question of course would require writing a book with contents equalling that of this publication or more. So the following, for those contemplating starting a CB club, may be accepted as hints but shouldn't really be considered the hard and fast ground rules for such enterprise.

So where and how does it start?

Maybe two or three operators on the band, who may very well be new chums and have not established their own contacts, decide to continue their communications face to face. As their on-air 'clubs' become dominant on the frequencies in their area, they'll eventually decide to meet on a regular basis, and a formal club will be created.

Now, most people have had some exposure to committee activity in other organisations, and realise there needs to be some sort of a 'top cocky'.

Invariably the creator of the scheme will feel that it is appropriate then that he/she shall become such and they will look to having the title of President.

Others who have agreed that the idea of setting up a club is warranted will probably seek some other title to maintain importance — but from here, where do you go?

Well, initially in contemplating the scheme, the initiators should ask themselves what they want to achieve by setting up a club. The answers to this question will then become the objects of the organisation, and may even at a later date form part of an official constitution.

In writing a constitution, the objects of your club should be clearly defined. Without this, your club's future may be doomed.

The 'objects' may well be a direct guideline to your future, and reference to them as need requires will keep you on the right track if in time you stray from the original intentions.

So now, you have a small group of people with common interests, you've set out your objects and aims in writing, and it's now that the 'hierarchy' should be established.

If you need to, you can even pick straws for the position of President, but from the remainder of your small group, a Secretary should be chosen, based on the experience of the potential candidates in this sort of job. It is most important that this position is filled by one who is willing to put in a bit of time, because the Secretary will end up with most of the work. Many clubs have failed simply because they did not have an appropriate and effective secretary.

While the President and Secretary are invariably the mainstays of people organisations, subject to the size of the group, some others will need to be elected or delegated to other positions to form a committee. As to how many, you'll need to decide that at the time.

If the group grows — as is often the case — it is not unreasonable to think that more office bearers will be required.

These could be, for instance, Vice-President, Assistant Secretary, Treasurer, Public Relations Officer, Publicity Officer, Membership Officer, to name a few, who in turn need to be supported by a committee of so many members.

But in the initial instance your group may start with the two major principals, the President and the Secretary and, if the numbers of members are small, they could serve to be the committee.

Once you have this infrastructure in place, where should you turn next?

Possibly at your first official meeting it would be appropriate to endorse any preliminary arrangements that have been made then, to secure and promote your future, perhaps some ground-rules should be established.

In setting up your rules of operation, you should look back at your objects, and see what simple guidelines can be set to help you achieve them.

You may even learn something by observing how governments work.

Sometimes people don't do what you'd expect of them in a club, and your rules should cover such an eventuality. In establishing the rules for your newly-formed group, it may be an idea for you to ask another local club if you can see a copy of their rules, and use them as the basis for yours after a bit of adding and subtracting.

Your first meeting will also need to establish the frequency of your meetings and other such matters.

Most importantly, you will have to establish if any money is going to be involved.

If so, and it probably will be, as some form of financial subscription will be considered appropriate, then a Treasurer should be appointed or elected.

Maybe the Secretary can handle this job as well, but be aware now that you have established a bureaucracy with funds, the thorny question of money can be one of the greatest problems that may upset your club's future.

So watch this matter carefully — establish the minimum subscription needed to cover immediate needs, otherwise greed may play a part in diminishing any surplus funds that build up.

Of course, if your objects are in fact to make money to be distributed to a charity or be set aside for other reasons, then establishing a trust fund with a bank may be the answer to provide the protection that your obligations will require. Much could be said on the subject where money is involved, but to encourage care in this department will suffice for now.

Okay, you've done it. You have established a basic CB radio club. Presumably you have also given it a formal name, but if you haven't yet got that far, our advice is keep it short!

So now you continue talking on your rigs, but now with the exclusivity of being the 'Mickey Mouse #1' or whatever. This may provide you with the appropriate contentment that your foundations are laid, and that little more needs to be done. And this may well be the case.

If your 'on air' conduct is found to be exemplary, the attention of others may well be shown, and they may indicate a desire to become one of your group.

With pride you will accept a new member, and appropriately initiate him/her into the group.

A trial period before the membership is accepted may be part of your rules, but be careful that strict insistence on this prerequisite doesn't offend.

After all, you may create an enemy instead of a member! And who needs an

enemy on CB radio?

But if you win one or more new members, the handling of them needs to be done with kid gloves and diplomacy, because poor handling of newcomers may also be the making or the breaking of your club.

Only experience in operating on the bands will guide you in the right direction to be taken in this regard, but to ignore some of the troublemakers will assist your survival!

Your group may build up in numbers, which may delight you, and your activities may be extended to conducting social activities in addition to the 'on air' chit-chat that has previously pleased you.

Others who make up the additions to your membership will come with new and wonderful ideas. Let them be scrutinised (the ideas) in any appropriate way with your committee or hierarchy in a democratic way.

You may decide to have QSL cards printed, Tee Shirts made with the club logo on them or whatever.

All of this introduces more administration and, more importantly, more money changing hands.

Systems are now important to keep this matter under control, which can only be established with good office bearers.

You may see fit to publish a small newsletter for your members, needing still *more* money changing hands and added responsibilities.

Before entering into this stage, make sure that you can continue the commitment of your publication, because one of the first signs of your club going downhill, is its failure to serve the members in a way that they expect or have been promised.

Most club principals who have 'been there-done that' would agree that it is not all beer and skittles, but immense satisfaction can be derived out of building up a respected CB club with a multitude of members.

But some in reading these notes will wonder whether it is all worthwhile.

But do not despair — if in your neighborhood CBers appear to be a little disorganised and in need of direction, get them together in some simple fashion.

Let the togetherness of CB radio operation progress in a way that new friends can be made and your common interests served. If you create a club, to join the list of ACBRO affiliates appearing in these pages may be a wise decision.

To be kept informed in radio matters is important. CB Action and ACBRO membership are two of the few ways in which this can be achieved.

So while these notes are presented under the respected banner of ACBRO Inc, they are not intended to be strict guidelines but, as suggested at the start, just a few hints to prompt thought.

If setting up your own club now appears to be placed on the back burner, or in the too-hard basket, then consult one of the clubs near your station, ask about becoming a member, and if you're invited to take out membership, do so conscientiously, knowing that you can only get out of any enterprise that which you are prepared to put in...

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
Gippsland Repeater Assoc. Inc.	P.O. Box 555, Maffra, VIC 3860
Murray Bridge Agric & Hort Society	P.O. Box 315, Murray Br., SA 5253
Samba Club	P.O. Box 16, Salisbury, SA 5108
Tweed Radio DX Group Intnl	P.O. Box 773, Murwillumbah, NSW 2484
The Pathfinder Radio Soc. Club	P.O. Box 24, Woodridge, QLD. 4114
Dirty Dozen Radio Group	P.O. Box 426, Morphett Vale, SA 5162
Hotel Zulu Radio Group Inc.	P.O. Box 66, Elizabeth, SA 5112
White Fox Radio club	P.O. Box 288, Salisbury, SA 5108
Mega Mouth International	P.O. Box 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
Sugar Valley Radio Club	9 Martin Place, Edgeworth, NSW 2285
Blue O Radio Group	P.O. Box 53, Monaro Cresc, ACT 2603
Sydney Radio Group	P.O. Box 185, Gordon, NSW 2072
Ratbag CB Radio club	P.O. Box 227, Welland, SA 5007
Sun Centre CB Radio Club	P.O. Box 912, Swan Hill, VIC 3585
Port Adelaide Radio Club	P.O. Box 352, Pt. Adelaide, SA 5015
Cherokee Indian Aust. Group	P.O. Box 1679, Mildura, VIC 3500
Sth. West District CB Radio Club	P.O. Box 620, Warrnambool, VIC 3280
A.M.O.S. CB Radio Club Intnl	P.O. Box 351, Broken Hill, NSW 2880
Pioneer Radio Association Aust.	P.O. Box 1415, Mount Isa, QLD 4827
Naracoorte UHF Association	P.O. Box 465, Naracoorte, SA 5271
Gosford Radio Club	50 Pacific Highway, West Gosford, NSW 2250
Ultra-Lite Radio Club Inc.	P.O. Box 17, Strathpine, QLD 4500
Felix Radio Club	P.O. Box 78, Goodna, QLD 4300
Inlander CB Radio Club	P.O. Box 5712, Rockhampton, QLD 4702
Aust. Red-Heeler Soc. Radio Club	P.O. Box 8018, Wynnum North, QLD 4178
Central West CB Radio Club Inc.	P.O. Box 628, Orange, NSW 2800
Vic Red Heeler Radio & DX Group	P.O. Box 1802, Ballarat, VIC 3354.
Kilo Romeo Circle of Friends	P.O. Box 16, Cleveland, QLD 4163
Radio Hobart Group	P.O. Box 266, Glenorchy, TAS 7010.
Welsh Dragon Radio Club	P.O. Box 581, Belmont, VIC 3216
Oscar Romeo CB Club	P.O. Box 203, North Geelong, VIC 3215
Coal Miners Wonthaggi CB Club	P.O. Box 420, Wonthaggi, VIC 3995
East Coast Radio Club	P.O. Box 412, Bexley, NSW 2207
MBV 08 Repeater Assoc.	c/o Post Office, Charleston, SA 5244
Q'land Radio DX International Club	P.O. Box 586, Warwick, QLD 4370
Q'land Blue Heeler Soc. Radio Club	P.O. Box 1122, Castle Hill, NSW 2154
The 43 Australian Radio DX Club	P.O. Box 96, South Oakleigh, VIC 3167

CB UHF REPEATER LIST

NEW SOUTH WALES

Callsign	Town/Locality
	CHANNEL 1
BEL01	Belbora
BHI01	Broken Hill
BIN01	Bingara
BOB01	Harden
BRE01	Brewarrina
BRH01	near Broken Hill
BUN1	near Merriwa
CHT01	Charlestown
COR01	Corowa
DNQ01	Deniliquin
GRE01	Grenfell
GUY01	Guyra
JIN01	near Jindabyne
KGL01	Kyogle
MBI01	Moonbi
MRT01	Wilcania
MTE01	Mt Eagle
NEE01	Dubbo
NIM01	Nimitable
NYN01	Nyngan
RYL01	Rylestone
SYD01	Sydney
ULA01	Ulladulla
WAG01	Wagga
WGT01	Walget
	CHANNEL 2
BER02	near Gloucester
BRH02	Broken Hill
CAN02	Cangai - West of Grafton
EDN02	Bega / Eden
GDH02	Gunnedah
INV02	Inverell
KHN02	Khancoban
KOS02	near Thredbo
KUR02	Sydney - Blacktown
LGW02	Mt Lambie
LIS02	near Byron Bay
MAC02	Port Macquarie
NBR02	Wee Waa / Narrabri
NOW02	Nowra
PAR02	Parkes
WAL02	Walcha
WAN02	Wanaaring
WBD02	Walbundrie
VRB02	Urbenville
	CHANNEL 3
CAN03	near Orange
CAS03	Casino
COM03	Mt Kophi
DUN03	Dungog
GIL03	Braidwood
GTH03	Griffith
MDI03	Murrirundi
MNA03	Manilla
MOR03	Moree
MTI03	Tubramurra Shire
PLO03	East of Armidale
RWT03	Hay
SYD03	Sydney
TEN03	Tenterfield
	CHANNEL 4
ALB04	Albury
ARM04	Armadale
CBN04	Coonabarrabran
DRK04	Girard
GLB04	Goulburn
HAY04	Hay
MON04	Kandos - near Mudgee
MUS04	Muswellbrook
OGU04	Ogunbi - near Tamworth
RIV04	Penrith Area
SOU04	near Cooma
THA04	near Broken Hill
TUL04	Tullibigeal
TWH04	Bangra Point
WAN04	Mt Wandera
WAR04	Warialda
YNG04	Young
	CHANNEL 5
	EMERGENCY REPEATERS
BIN05	**Katoomba**
BKE05	**Mt Gunderbooka**
CAP05	**near Tenterfield**
CHN05	**Charlestown**
COR05	**Corowa**
FOR05	**Mount Tallabung**
GLB05	**Goulbourn**
JIN05	**Jindabyne**
MTS05	**Narromine**
MTU05	**S-West Slopes, East River**
OXY05	**Bourke**
ROB05	**Illawarra**
SYD05	**Sydney**
TAM05	**Tamworth**
TBO05	**Mt Talbingo**
	CHANNEL 6
BAR06	near Narrabri
BON06	Bonshaw - Q/NSW border
COF06	offs Harbour
COL06	Oakey
GGG06	Glengary
LGW06	Lithgow
MAL06	Mallanganee
MTG06	Bowral
MUM06	Mumbulla Mountain
NAR06	Narromine
NEW06	Sugarloaf Range
ROB06	Mt Robert
TUM06	nowyMountains
WAL06	Walcha
WEN06	Tolarno
	CHANNEL 7
BAL07	Buckombil Hill
BOM07	Bombala
BOO07	Booral - near Buledelah
COW07	Cowra
GLH07	Glen Lyon
GLI07	Glen Innes
MIL07	Milton
NUN07	Nundle - near Tamworth
SYD07	Sydney
WAL07	East of Walcha
	CHANNEL 8
BAT08	Bathurst
COB08	Cobar
CON08	Condoblin
FUC08	near Eucumbene
GLE08	Glen Innes
GRE08	Cresford - near Dungog
GRF08	near Grafton
KEM08	Kempsey
MER08	near Merimbulah
MUR08	Tomewin
NAR08	Narrandera
ROB08	Illawarra
TBC08	Tooleybuc
URA08	Uralla - near Armidale
WAL08	Walcha
WOY08	Kariong

NORTHERN TERRITORY

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

The following channels are the Input channels for a repeater:

Ch	Frequency (MHZ)	
1	467.425	
2	467.450	
3	467.475	
4	467.500	
5	467.525	** for emergency use only
6	476.550	
7	476.575	
8	476.600	

The output channels are listed below:

In	Out	Frequency (MHz)	
1	31	477.175	
2	32	477.200	
3	33	477.225	
4	34	477.250	
5	35	477.275	** for emergency use only
6	36	477.300	
7	37	477.325	
8	38	477.350	

QUEENSLAND

Callsign	Town/Locality
	CHANNEL 1
ANN01	St Annes Range
BAR01	near Barcaldine
BAT01	Bathurst Heads
BNE01	Mt Cotton
DEL01	Collinsville
HAN01	Hannaford
HUG01	Hughenden
ING01	Inglewood
INN01	Innisfail
MDT01	Middlemount
MOR01	Mt Hope
OWN01	Mt Oweenee
RKY01	Mt Archer
ROM01	Mt Bassett
SPC01	Windorah
TSV01	Townsville
TTH01	Twin Hills
WBB01	Mt Perry
WCT01	Charters Towers
	CHANNEL 2
GLD02	Gladstone
GLN02	Glenden
ING02	Mt Cordelia
JCK02	Julia Creek
LAU02	Laura
MAB02	Broadsound Range
MIN02	Glenlyon Dam
POR02	Drummond Range
SPC02	Bowen
TAM02	Tambo
TAR02	Taroom
TRN02	Quilpie
TWB02	Mt Kynoch
WAG02	Aranyi South
WAV02	Wavell Heights
WBR02	Mt Kanigan
WON02	Cogango Range
	CHANNEL 3
ABC03	Gold Coast
CHI03	Chinchilla
CTS03	Charters Towers
INK03	Mt Inkerman
KIL03	Kilcoy
LAI03	Mt Beau Brummell
MBO03	Tinana
MTQ03	Monto
MTW03	Mt William
PCC03	Edward River
SPR03	Springsure
VHO3	Mt Isa
	CHANNEL 4
BBG04	Sloping Hummock
DIP04	Double Island Point
EID04	Eidsvold
GDI04	Goondiwindie
HOP04	Rockhampton
IPS04	Ipswich
JER04	Jericho
MBH04	Moranbah
MOW04	Darling Downs
TSV04	Townsville
VHN4	Expedition Range
VHW4	Cannonvale
	CHANNEL 5
	EMERGENCY REPEATERS
ABC05	**Springbrook**
BNE05	**Mt Glorious**
CEM05	**Clermont**
FSB05	**Mt Goonaneman**
GEM05	**MtWolvi**

ING05	**Mt Cordelia**
MIL05	**Commodore Peak**
QBM05	**Darling Downs**
VHN05	**Charters Towers**
VHP05	**Biloela**
	CHANNEL 6
BLK06	Blackdown Tablelands
BRA06	Sea View Range
CBT06	Mundubbera
CHT06	Mt Janet
CLE06	Police Mtn
CNE06	Bergen
DIM06	Mt North Iron
GLD06	Mt Larcom
MIL06	Palardo Hill
MKY06	Gympie / Mackay
PRR06	Clermont
RIC06	Yan Yean
TAM06	Tambo
THG06	hargomindah
VHN06	Wilkes Knob
	CHANNEL 7
BIL07	Banana Range
BNE07	Toohey Mtn
CTR07	Towers Hill
DMD07	Clermont
ESK07	Esk
GEM07	Gympie
IND07	Fraser Island
ING07	Mt Mercer
MUR07	Mt England
VHO7	Mt Hutton
WBB07	Mt Watalgan
WRA07	Warwick
YKA07	Mt Slowcombe
	CHANNEL 8
AMI08	Amiens
AMP08	Monto
BAL08	Noondoo
BLL08	Blackall
CHN08	Mt Peanga
CHT08	Charters Towers
EMD08	Emerald
HBY08	Ghost Hill
MBR08	Mt Brisbane
NEB08	Nebo
ONV08	Ocean View
TLD08	Atherton
VHN08	Barkly Down

SOUTH AUSTRALIA

Callsign	Town/Locality
	CHANNEL 1
CDA01	Ceduna
MJN01	Oodnadatta
MTR01	Leigh Creek
PRC01	Carrieton (Nth of Orroroo)
PAR01	Adelaide (North)
TYN01	Oodnadatta
VLA3	Crystal Brook
	CHANNEL 2
BOR02	Bordertown
BRP02	Orroroo
CLV02	Cleve
MYP02	Myponga
VLA4	Kingoonya
	CHANNEL 3
ADL03	Adelaide (Central)
ALN03	Yunta
BLN03	Blinman, Flinders Ranges
CTR03	Moonta
KBY03	Port Elliot
UNO03	Port Augusta
	CHANNEL 4
BLF04	Port Pirie
BAR04	Nuriootpa
KOK04	Lake Gairdner West
NAR04	Lucindale
PKI04	Kangaroo Island
	Leigh Creek (North East of)
	CHANNEL 5
	'EMERGENCY REPEATERS'
ADL05	**Adelaide suburb**
BEE05	**Crystal Brook**
EUD05	**Eudunda**
MNT05	**west of Woomera**
MTG05	**Penola/Mt Gambier**
	CHANNEL 6
LST06	Elliston (Eyre Peninsula)
NON06	120 Km West of PtAugusta
REN06	Renmark
SNO06	Snowtown (nearPt Pirie)
TIN06	Coonalpyn
WKI06	Kangaroo Island
WLG06	Tarcoola
WLP06	Willpena
	CHANNEL 7
CLR07	Clare
MTG07	MtGambier
MUT07	south of Cockburn
UNO07	Kyancutta
VLA7	Streaky Bay
WIL07	Hawker
YKP07	Warooka
	CHANNEL 8
BRYY08	Burra
MBV08	Lobethal/Murray Bridge
MTA08	Quorn
PTL08	Tumby Bay/Port Lincoln
	Oddnadatta (200 KM SW)
	Yalata (187 Km N/W of Ceduna)

TASMANIA

Callsign	Town/Locality
	CHANNEL 1
DEV01	Devonport
FIS01	Flinders Island
SET01	Grasstree Hill
	CHANNEL 2
CHN02	Herring Back
LCN02	Launceston
TWC02	Mt Read
	CHANNEL 3
NEC03	Ben Lomond
	CHANNEL 4
MID04	Millers Bluff
	CHANNEL 5
	'EMERGENCY REPEATERS'
HBT05	**Hobart**
LTE05	**Fingerpost Hill**
	CHANNEL 6
REC06	Mt Paul
VJA6	Mt Lloyd
WCT06	St Valentines Peak
	CHANNEL 7
CHT07	Barren Tiet
TNE07	Mt Victoria
	CHANNEL 8
BRN08	Burnie
TBL08	Table Mountain
TNE08	St Marys

VICTORIA

Callsign	Town/Locality
	CHANNEL 1
ALX01	Eildon
APS01	Apsley
MEL01	Melbourne
OME01	near Omeo
ROU01	Penshurst
STA01	St Arnaud
WAL01	Walhalla
	CHANNEL 2
BAL02	Ballarat
KER02	Mt Kerang
MAN02	Mansfield
MOE02	Moe
PYA02	Pyalong
	CHANNEL 3
ABE03	South
DEL03	Bombala
HOR03	Horsham
FAL03	Falls Creek
JNR03	near Dartmoor
WBT03	Mt Wombat
WPH03	Weeaproinah
YLA03	Yelta
	CHANNEL 4
ANA04	Mt Anankie
ARA04	Ararat
BEN04	Bendigo
CRJ04	Traralgon
HAW04	Hawkesdale
MCA04	Marambingo Hill
	CHANNEL 5
	'EMERGENCY REPEATERS'
BAL05	**near Ballerat**
MAN05	**Mansfield**
MEL05	**Melbourne**
RFY05	**Ruffy**
	CHANNEL 6
FOS06	Mt Fatigue
HLV06	Healesville
ECH06	Echuca
BRN06	Mt Concorde
MSS06	Mt Seldom Seen
SWH06	Swan Hill
WAN06	Wangandry
WIL06	Mt William
	CHANNEL 7
BOL07	Mt Bolton
BND07	near Bendigo
MEL07	Melbourne
MOR07	Mt Shadwell
MVL07	Mt Gordon
SHP07	Shepparton
TAL07	Mt Granya
	CHANNEL 8
ART08	Safety Beach
DUN08	Cavendish
HAR08	Mt Alexander
MCN08	Mt Cann
MYR08	Mt Porepunkah
TER08	Mt Terrible

WESTERN AUSTRALIA

Callsign	Town/Locality
	CHANNEL 1
COL01	Collie
DEN01	Denmark
GER01	Geraldton
KAM01	Kambalda
KAT01	Katanning
KLB01	Kellerberrin
LEN01	Leonora
MIA01	Mia Mia Station
MKT01	Poison Hills
PER01	Perth
WAR01	Warakuma
WIK01	Wickham
	CHANNEL 2
BIN02	Bindoon
BUN02	Near Bunbury
CAR02	Camamah
KAL02	Mt Charlotte
LYN02	Lyndon Station
MRD02	Menredin
VLN5	Mt McLure
WLP02	Walpole
	CHANNEL 3
ALB03	Albany
CLA03	near Carlotta
NOR03	Nannup
PER03	Roleystone
VET03	near Bardoc
	CHANNEL 4
BYB04	Dinninup
ESP04	Esperance
GNG04	Lancelin
KUL04	Kulin
MTB04	Cranbrook
NEW04	Newman
	CHANNEL 5
	'EMERGENCY REPEATERS'
PER05	**Orange Grove**
MTR05	**Mt Barker**
VLN5	**Perth**
	CHANNEL 6
DAR06	Darkan
JUR06	Mt Lesueur
MGR06	near Margaret River
MNP06	Albany
MTS06	Mt Solus
VKM06	Wyalkatchem
	CHANNEL 7
BDG07	Bridgetown
C0007	Coolgardie
MGR07	Augusta
MTB07	Stirling Ranges
PIN07	Pinjarra East
VRK07	Mt Bakewell
	CHANNEL 8
MAN08	West Manjimup
MSA08	t Saddleback
NCM08	Kalamunda
QUN08	Quinorlup
RVT08	Ravensthorpe

A.C.T.

Callsign	Town/Locality
	CHANNEL 1
CBA01	Canberra (Portable)
	CHANNEL 2
CBA02	Isaacs Ridge
	CHANNEL 7
GIN07	Mt Ginini
	CHANNEL 8
CBA08	Isaacs Rid

REPEATER UPDATE

To maintain the UHF repeater list in an up-to-date manner requires the co-operation of repeater owners and local users. Please ensure that when an error is found, or an update is required, that you contact:

Trevor Colwell, ACBRO Inc.,
PO Box 170,
Walkerville 5081, South Australia

who will ensure that this information is included in the next repeater list.

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