CB Action

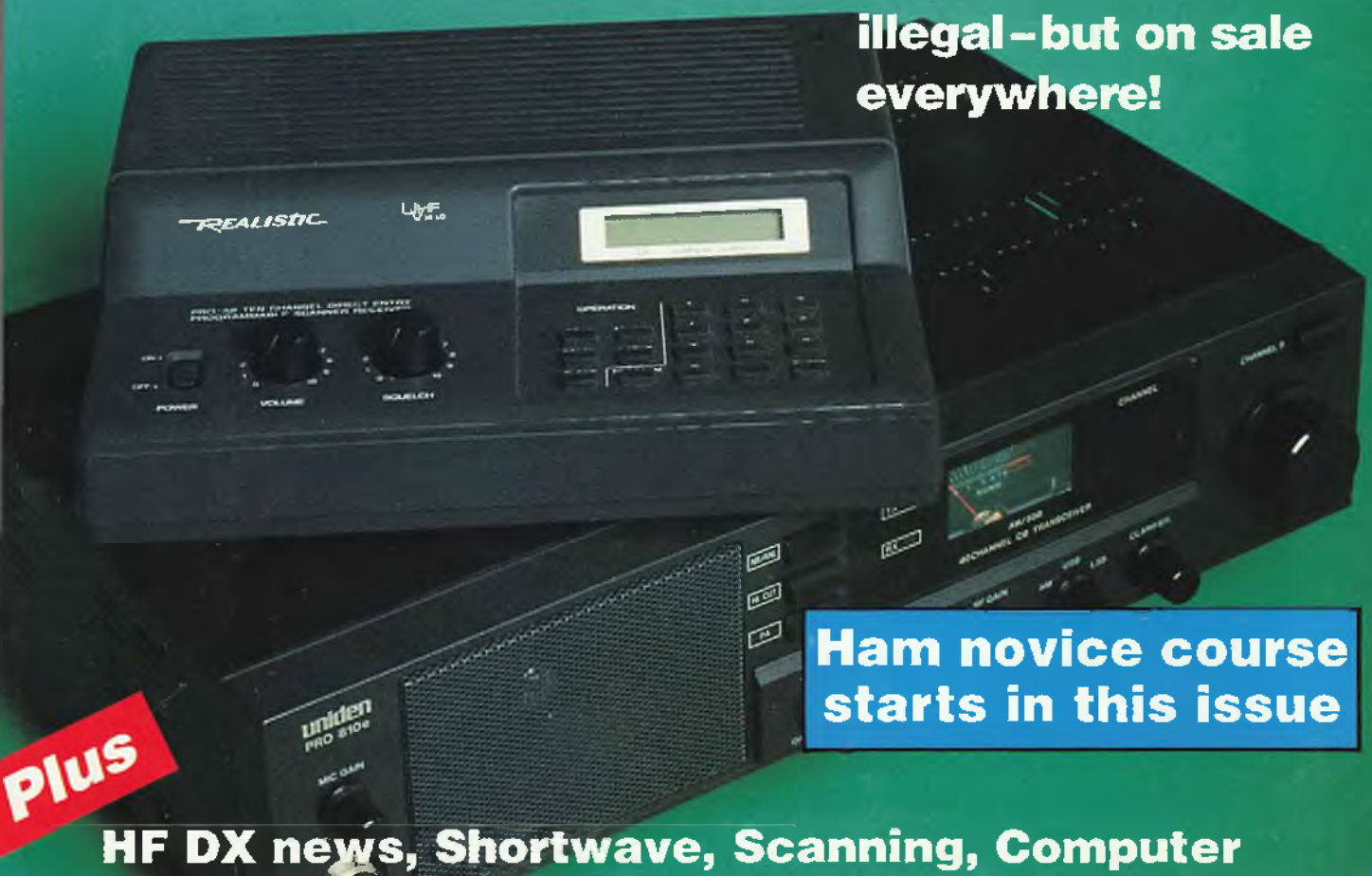
AUSTRALIA'S ONLY CB MAGAZINE

July/August 1992 $3.75

UNIDEN'S NEW PRO 810e BASE UNIT–IT'S GOOD!

- PRO58–The $200 scanner
- SWR–and mobile antennas
- More on the "No code" Ham Licence
- Heaps of scanning frequencies
- Alfa Tango cops a blast

Power microphones–illegal–but on sale everywhere!



Ham novice course starts in this issue

Plus

HF DX news, Shortwave, Scanning, Computer Programs... you name it... it's in here somewhere.

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IC-R7100

IC-R100

IC-R72

IC-R1

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Telephone (03) 529 7582 A.C.N. 006 092 575

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REGULARS

REVIEWS

FEATURES

The September/October issue will be on sale August 18

ROAD RUNNER

RR477X UHF CB TRANSCEIVER

The Roadrunner compact, full power handheld UHF CB transceiver offers high performance at an affordable price. Advanced microcircuit design, rugged construction and surface mount technology allow maximum legal output power with small size.

NEW MODEL
IMPROVED
PERFORMANCE

Functions not found on other transceivers include:

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- Electronic channel control - avoiding hard to turn miniature channel switches
- User selectable simplex/duplex for repeater operation

Units are fitted with plug connections for external speaker, speaker microphone, antenna, and battery charger.

Supplied with quarter wave antenna, Nicad battery, AC charger, carry case, and belt clip.

A full range of accessories including:

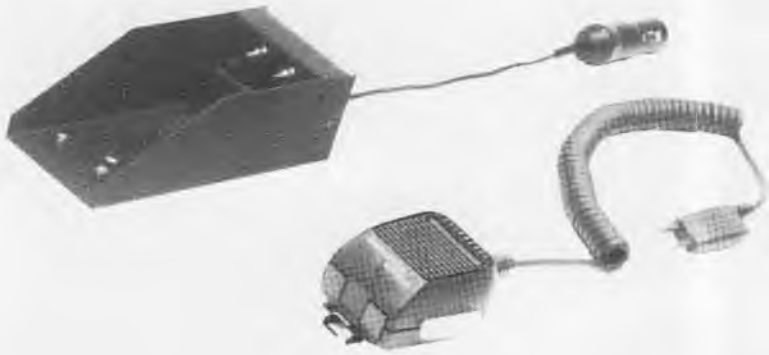
- Speaker Microphone
- Drop in Desk Charger
- Vehicle Adaptor
- Communications Headset
- Glass Mount Antenna
- Communications Headset
- CTCSS Board
- Spare Batteries are available
- DOTC approval # 2500079

SPECIFICATIONS

TRANSMITTER
Output power: 5 watts
Spurious Emissions:-65db
Current Drain:1.6 amps (high power)
0.45 amps (low power)
Hum and noise: 40db or better
Frequency tolerance:1 KHz or better

RECEIVER
Sensitivity: .25uV for 12d8 sinad
Audio output power: 0.5 watts
Hum and Noise: 45dB or better
Current drain: 20mA (power saver mode)

GENERAL
Power source:10.8 V DC 450mAH Nicad battery
Operating temperature:-10 to +60 degrees C
Number of channels: 40
Frequency range:476.425MHz-477.400MHz
Microphone:Electret
Antenna Impedance: 50 OHMS
Size:130(H) 5 63 (W) 5 44(D) mm
Weight: 470 grams (incl battery pack)



Customers are urged to check the compliance plate of all transceivers to ensure they are purchasing DOTC approved equipment from the authorised importer. Ring us for the name of your local dealer. Access Communications will not warrant imitations of this product.

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ON CHANNEL

NOVICE NOTES IT IS...

When we said in our last issue that we would consider running a novice section if there was sufficient interest we certainly expected a positive response, but, we didn't expect a deluge of mail.

It seems that there are one helluva lot of our readers who are intent on moving on from CB to amateur and they expressed their keenness in no uncertain terms.

As a result of this solid input, for which I thank you, we have started "novice notes" in this issue and it will be a regular feature on an indefinite basis.

The author of our notes is Paul Butler, a full call amateur and physics lecturer, and he has kicked off with five pages in this issue. Paul has the ability to explain things in simple terminology and after reading this issue's article I think most everyone should be able to grasp the basics. Obtaining an amateur licence, even the up-coming no-code licence, is not something you can achieve overnight, however, with the assistance of novice notes, you will eventually be a strong position to sit for either the no-code or novice level examinations. Paul will be running a number of multi-choice questions with each lesson and these are pretty much the type of questions you will encounter when you sit the exam - in fact, some of the questions are likely to be identical to those used in the theory exam itself.

I would love to know the percentage of current amateurs who started off as CBers. They would certainly comprise a large percentage and the dozen or so 'on air' CB mates I made way back in the 1970s are now all amateurs.

All of us passed the novice theory with a relative degree of ease and most of us passed the Morse code requirements at either the first or second attempt.

Some are now full calls and having recently passed the AOCP level theory I now have only to pass the CW 10 wpm to obtain a long awaited full call. My first try at 10 wpm was a total disaster as I suffered instant brain-fade on the receive section and my hand was shaking so much on transmit that all I managed to send was a series of totally unreadable di-dahs. Bloody ridiculous really as I can both send/receive 10 wpm when sitting at home in the shack.

No wonder students crash and burn when they sit Year 12 exams.

...and just to make you keener still, ARA editor Chris Edmondson has provided an update on the no-code licence.

As always, this issue hopefully has something for everyone.

HF operators will find plenty to keep them interested with the novice articles, part one of a series by Ken Reynolds on antennas and SWR and another by the same bloke on power microphones.

Ken also reviews the new Uniden 810e base rig while David Flynn looks at the low cost entry to scanning - the PRO 58 - at a price of around $200. There are of course all the regular sections on scanning, SWL, HF utilities, computer communications, DX activity...and more.

There's even a crossword which could earn you a free subscription.

Have fun and enjoy the read...

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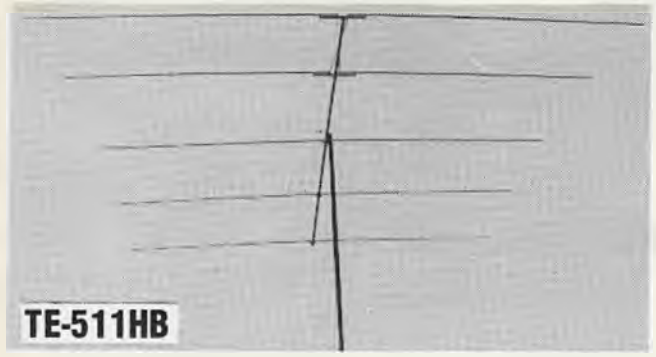

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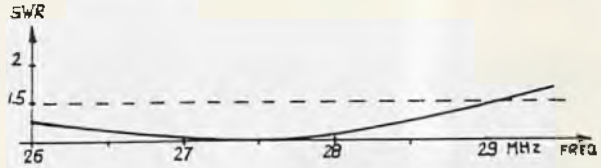

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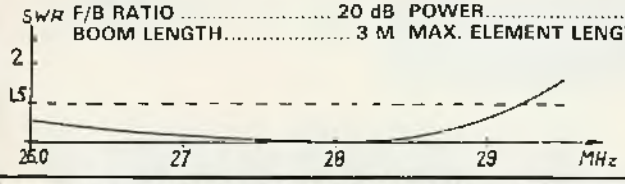
F/B RATIO	20 dB	POWER	2 KW
BOOM LENGTH	3 M	MAX. ELEMENT LENGTH	5.3 M



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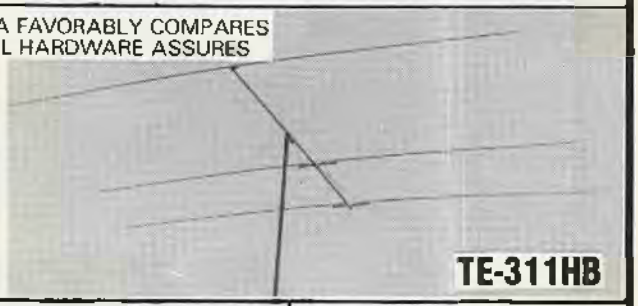

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Newcomers Start Here

It should be stated right now that there is no special CB language.

Many newcomers believe that they require a lecture on the basics of CB language before they can operate on air. This is simply incorrect. While some stations use esoteric CB jargon, all Australian CBers understand English and this is all you need to go on air.

A half hour spent listening before going on air for the first time will be time well spent as you will hear how to initiate a contact and how pass the conversation back to the other station and, really, that's about all there is to it.

Even so, while it is not essential that you know and understand some of the various abbreviations used and/or the amateur 'Q' code, it can be helpful to you.

That is what this introduction is all about. One of the first things you will hear is a **QSO.**

A QSO is simply a contact with another station. It derives from the amateur radio operator's **'Q' code** - a form of abbreviation used by amateurs when sending **CW** (continuous wave transmission) which is simply another way of saying morse code.

Morse code is not used in CB, however, a number of 'Q' code abbreviations are ...

A QSL is a card sent from one station to another confirming that these stations have been in radio contact. It is not sent after every contact, but, is usually exchanged after a DX contact. **DX** means long distance, usually overseas but often just interstate. If the station to which you are talking asks whether you QSL the operator is asking whether you will send him a QSL card to confirm the contact.

A QTH is the 'Q' code for location so, if you're asked **"what's your QTH?"**, the station is asking where your station is located. It's just as easy to ask in plain English, but, it adds a bit of glamour if you say QTH instead.

You'll hear many stations talking about **SWR (usually pronounces swer - which is incorrect - it is SWR spoken as letters) and this stands for Standing Wave Ratio.** This is essentially a measure of the antenna's effectiveness and is read off an **SWR meter.** You will learn what SWR is from this magazine or from a CB store. When you hear a station calling **CQ** CQ it means that he is looking for a contact with another station. CQ means **'seek you'** while CQDX CQDX is different (seek you long distance) in that the station only wants a long distance contact - not a local one.

AM stands for amplitude modulation while **SSB** stands for single sideband. If you have an **AM only rig** it's nice for everyone if you stay on the lower channels and, conversely, if you are using SSB you should restrict your activity to the upper channels.

QSB means that the signal has a tendency to fade - that is, it goes from strong to weak and back to strong again, sometimes over a period of seconds and other times over a period of minutes.

It is not a fault of the station, but, of atmospheric conditions. If a station says there is QSB on your signal it means that your signal is fading and when this occurs it is best to keep your **OVER** short or you are likely to lose the other station while you're talking.

SKIP is essentially the same as DX - if the skip 'is running' it means that there are interstate and/or overseas stations being heard.

BEAM, YAGI and ARRAY all mean much the same. They mean that the station is using an antenna system which effectively (and legally) increases the restricted power output of the CB rig and can be pointed at the other station for improved communication.

A ROTATOR is used to turn a beam, **Yagi** or array. Incidentally, **Yagi** is spelt with a capital Y as Yagi is the name of the inventor of the beam.

LINEAR, BOOTS, AFTER-BURNER, LITTLE HELPER, etc mean that the station is using illegal equipment to increase the power output and will eventually receive a call from DoTac.

DoTaC is used in this magazine as an abbreviation for the Department of Transport and Communications - the authority charged with the regulations of CB radio.

A POWER MIKE is an after-market accessory which can also improve your station's 'talk power'. Whether or not they are legal is open to question, but, they probably aren't.

QRM is when another station is making it difficult to hear due to being too close to your own station, having a rig in poor condition, running illegal power, etc. **QRN,** however, is noise made by atmospheric conditions or, more likely, static caused by poorly installed electrical power lines out in the street.

A SWL is a Short Wave Listener but an **XYL** is usually the wife - an ex-young lady. **YL** is of course young lady and a **DOUBLE BUBBLE** is a police vehicle. **GOOD BUDDY** is a somewhat derogatory term applied to operators who still use American style CB jargon such as, "what's your 10-20?" or "that's a big 10-4".

This **10 code** originated in America, but, is now rarely used as it indicates that the operator has what can be best termed a 'juvenile brain'.

A BREAKER is an operator who wants to get into an existing conversation and there's nothing wrong with **BREAKING** providing that you only call in the pause between overs.

If you break between overs one of the stations will probably say **ACKNOWLEDGE THE BREAKER** which means that you have been heard and will be invited to join in when the stations are ready - in other words standby and don't keep shouting.

An **ALLIGATOR** is another derogatory name which is applied to an operator who talks too much but doesn't listen - in short, all mouth and no ears. **SANDBAGGING** means to listen to a conversation but not join in yourself.

A DUMMY LOAD is a device which should be used when testing or tuning your rig. It can be purchased from any CB store and should be a must in your list of station equipment.

UHF stands for Ultra High Frequency and is the 477 MHz CB service.

LONGPATH means that you are pointing away from a station you are speaking with rather than **SHORTPATH** which of course means the opposite. Different atmospheric conditions mean that at certain times you can communicate with (usually overseas) stations by sending your signal right around the world rather than by the most direct path. An operator who works out of the legal channel frequencies or runs illegal equipment is referred to as a **PIRATE.**

An **ATU** stands fro an Antenna Tuning Unit which is used to tune your antenna to a good match with your rig if the SWR is a little too high. It won't cure any major SWR problems, but, it can adjust a slightly high SWR reading to a 1:1 match with the transceiver. If you receive a visit from the **RIs** you're probably in trouble for causing **TVI** - Television Interference - or - **BCI** - Broadcast Interference. RI stands for **Radio Inspector** - the gentlemen from DoTaC who call around if there are any complaints about your station. RIs are also often called **RED INDIANS. COAX** stands for coaxial cable, the link between your rig and the antenna while a **WHIP** is not something wielded by a leather-clad lady but is rather a generic tern for mobile antennae.

A REPEATER relays a UHF CB signal from one point to another so giving much greater range of communication and a repeater list is published in every second issue of this magazine. After all of the above we reiterate - it is not necessary to learn CB jargon to go on air. Sure it helps, but, it will all come in time - for now though just use commonsense English and if you don't understand something don't be afraid to ask - remember everyone you hear also had a first time on air.

We hope you enjoy CB and CB Action.

Welcome to CB Action magazine - the only regular CB publication in Australia and also the oldest, having been first published in 1977.

CB is a form of radio communication which is popular around the world, however, unlike amateur radio, it is not necessary to pass an examination to go on air. All that is needed is a licence and the equipment.

CB Action, though, is a little more than just CB. While CB is the backbone of the magazine, it also has reports and reviews on scanners, antennas, shortwave radios and other areas of general interest to radio communicators and listeners.

In the course of reading the magazine (and on air) it is probable that newcomers will encounter words which mean nothing to them. This short introduction is to help these readers understand CB terminology and its application.

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bandspread

FROM DC TO DAYLIGHT *with Greg Towells*

Welcome to Bandspread, the column that covers items of interest from all areas of radio communication. I need to know what you want to see in this column so write to P.O. Box 577, St Marys, NSW 2760, with ideas, comments or requests.

A LOOK AT THE ALINCO 2M DJ-F1

With the no-code amateur licence looking to be a certainty, I thought that I'd check out a piece of amateur equipment of the type that no-code amateurs are likely to be using - the Alinco DJ-F1- a 2 metre (144-148 MHz) handy talkie transceiver.

Like many others around, I instantly found an attraction for it, simply because it fitted the hand so well.

My own handheld is more than twice the size of these modern radios and after a little while carrying it around, the hand starts looking for a place to hang the radio, not so with the small Alinco.

Right,it is small with a standard battery pack, but what happens when you swing a big capacity pack on it.

Many other radios almost immediately double in size with the addition of a large battery, simply because the battery extends the length of the radio.

The Alinco DJ-F1 difference is, the battery pack locks onto the rear of the radio, and adds very little to the overall size, so it still fits the hand.

What else did I like about the Alinco straight away? Available as an option extra is a well padded,durable carry case which wraps around the radio and is fastened by a large velcro strip.

It is easy to both slip the radio into and take it out of the carry case as well,and is quite unlike others I have seen anywhere.

What does it do? It is a transceiver covering 144 to 148 MHz transmit, so therefore for use of licensed radio amateurs only.

Some of its many features include 40 memories, which store frequency, shift direction, CTCSS information and offset frequency for repeater operation.

There is a one touch reverse function to check if the station you are listening to through a repeater is within simplex range.

The back light for the LCD display and the keyboard can be programmed to go off automatically after a user selectable time period or can be switched on and off manually.

The keyboard lockout function on this radio is taken one step further.

You have the choice of locking the frequency, so that a press of the keyboard cannot change frequency, offset or other operating parameters, or locking the push-to-talk function, so that the radio cannot be made to transmit until the lock function is released - or both can be invoked at the one time.

This is a rather flexible arrangement.

Power output can be varied from high to low and an intermediate power level.

Power out can be up to 5 watts out with 13.8 vdc or the 12 volt battery pack.

Once the easy to follow instruction book is scanned through, operation is a breeze.

The dual functions on the keyboard are sensibly placed and the whole operation flows smoothly.

The LCD display is easy to read, even in low light conditions, important for such a small radio.

Programming in the local repeaters in the memories took only a few minutes and I was off and running.

Most of my contacts found it hard to believe that it was a HANDY that I was using, with quite a few good reports of received audio.

Nice to hear that my voice sounds good!! Receiver sensitivity was quite good, even with the supplied attenuator (whoops, stubby antenna).

Adding a 5/8 wave 2 metre antenna really had things up and moving, still that antenna is something like three times the length of the radio and looked quite a sight.

My main area of concern with 2 metre radios is that they cope with the numerous pager systems that blot the landscape around capital cities, and make communication on the 2 metre amateur band less than enjoyable at times.

In order to check the Alinco, I hooked it up to the discone on the roof and compared it to another radio that does not suffer too much.

The DJ-F1 came out rather well, with only the very high end of the band being affected.

A bonus inclusion that comes standard with the Alinco DJ-F1 is wideband receive - like from 138 to 174 MHz.

Still with the radio on the discone,I tried programming frequencies up and down this range.

The radio gave a very good account of itself right up to the band edge at 174 MHz.

I gave it a run scanning through the VHF high area, and its use as a scanner in this area of the spectrum is just as good as within the amateur band.

Certainly all those empty memory channels left after putting in the local repeaters came in for good use with the wideband receive.

I took the radio on the train to work a number of times, and receive performance impressed me the whole time.

Supplied with the radio is the antenna, and battery charger.

The charger is a drop in type, and I would recommend getting hold of a spare battery, so that one can be on charge while the other is in use, and not be left with a dead one in the middle of an over, unlike many stations I hear daily struggling with communications as the battery is expiring.

Still, the standard supplied battery lasts for ages with normal communications, even with my overs.

The Alinco DJ-F1 is covered by a two year warranty which is a major point to consider when making your choice of radios, and the review unit was supplied by Andrews Communications Systems Of Greystanes, Sydney.

I would recommend this radio especially for Novice Radio Amateurs, and indeed for any licensed amateur one who is after a good, small HANDY type transceiver.

STRANGE SOUNDS ON UHF CB

I have noticed an upsurge in the number of CBers using all manner of sub-tone, phone patch and remote control via radio type devices on UHF CB channels.

The hobbyist types naturally only use simplex channels so to attract less unwanted attention to themselves, however commercial users seem to dump their new toys and devices onto more popular channels, such as call and emergency channels, or the input or outputs of repeaters.

Naturally, this makes them easy targets for anyone who cares to jam them out of existence or try to tap into their system if it is a phone patch or sub-tone setup.

Obviously, the message to anyone who intends to use UHFCB

for anything other than voice communications or signaling had better use unused or unoccupied frequencies.

The variety of devices being experimented with on UHF CB is astounding, to say the least.

Talking to some of the people behind some of the setups generally shows that most of them are highly technical people, and I think that amateur radio would be ideally suited to many of them, indeed most would probably past at their first shot.

Some of the more interesting systems lately in use are phone patches with various types of security coding, high speed packet and RTTY stations, and one guy with a system that he uses via DTMF to control appliances at home from his car ranging from turning on the video recorder to record programs, turning on heaters and air conditioners, and outdoor lights from several kilometres away.

It can be quite interesting listening out on the UHF band for strange sounding signals, and just asking on the channel what is going on.

I've often found the person responsible is more than happy to brag on about his achievements and latest projects on the band.

Give it a try!!

CONTROL YOUR RADIO BY COMPUTER

Here is another idea for the radio and computer enthusiast whose computer just sits idle while the radios are in use.

Why not use the computer to control frequency selection, memory input and use, change VFOs and mode and then log the action at the same time.

There are a few programs around that are capable of doing this, however many seem to only control specific brands of radios.

I must point out here that I am referring to amateur band transceivers, or HF communications type receivers.

If that is your scene, and you have an idle computer with VGA screen, read on.The program is called Procat/HF and can be customised by the user.

What the program enables is keyboard control of your transceiver, along with user defined command keys, contest callsign duplicate checking, and transceiver memory loads for the Yaesu FT747, although memory loads and many other capabilities for Icom and Kenwood radios are available after registration of the program.

The main features of the program can be enabled to control and Kenwood, Icom or Yaesu radio that has provision for computer control, and that includes most modern transceivers these days.

You need an IBM compatible computer with hard drive, VGA screen and graphics card and serial port.

An interface is required to connect the computer serial port to the transceiver, which is available from the transceiver manufacturers, and are generally compatible between manufacturers, with some modification.

A Yaesu FIF232 interface works fine with Icom transceivers by connecting Yaesu DIN # 1 to Icom remote connector ground.

Once interfaced, the program allows instant QSY using the numeric keypad on the computer keyboard.

The control keys are grouped to make tuning the transceiver EASIER than it would be by using the transceiver VFO knob.

You can also add other commands to the transceiver, and assign any key you wish to perform that command.

You can change the on screen colors to suit, and the working screen is a spectacular piece of work, very easy on the eyes and easy to read.

The on-screen GMT clock is also adjustable to whatever timezone you live in and looks good.

I found it quite useful with an Icom IC-735 and the logging facilities are great.

The program is shareware, is found on phone BBSs as PROCAT.zip and most definitely can be found on Shortwave Possums BBS on (02) 651-3055.

POWER MICROPHONES
Illegal - but very available

By Ken Reynolds from POWER BAND COMMUNICATIONS

Banned by the Department of Transport and Communications as a source of considerable evil, the Power Microphone finds its roots way back in the dark ages of illegal CB in Australia.

Over the years, DOC and now DoTaC, have cursed power mikes and banned them and 'busted' operators for using them and even discouraged importers from importing them.

However, a rule apparent of Government bureaucracy is "never let the right hand know what the left hand is doing", and, in a typical demonstration of this philosophy, DoTaC is now actively promoting the use of Echo Power Mikes as you will read elsewhere in this issue of CBA. Is it for real that DoTaC's full-color poster promotion for CB licensing features a bunch of kids having fun with their 'Echo Power Mike', or is this just another faux pas akin to when the Post & Telegraphs Department first legalised CB but banned CB radio signals from travelling more than about 30 miles? Stay tuned folks.

Back to the plot. It has never been quite clear to me why a microphone with a simple audio pre-amplifier built into the package is known as a Power Mike. There are two fairly obvious explanations. Firstly, power mikes usually contain their own separate power source in the form of a battery which supplies the electrical energy to operate only the mike amplifier circuit, or secondly, the word 'Power' is an adjective intended to describe the effect the microphone will have on the transmitter circuit of the CB radio to which it is connected - to boost the output power.

The simple block diagram in figure 1 illustrates the main elements in a power

Just about everybody has heard of the infamous Power Mike and how it can enhance or degrade your signal. This is the story of how a Power Mike can do either, or both of the above, and how it compares with a real Speech Processor.

It's all very well for the good folk at DoTaC to tell us that we should all possess CB licences, however, are they also telling us that power microphones are acceptable - after all, that's what the nice young lady on their poster (opposite page) is doing !

microphone circuit consisting of a microphone insert and small audio amplifier used to increase the signal voltage appearing at the output connector. The audio output level from the mike is usually controlled by a variable 'gain' control - like a volume control for the microphone. The microphone element might be a dynamic insert (using a coil of wire and magnet to produce the speech output signal) similar to the mike supplied with the rig, or a condenser-type microphone insert known as an 'electret' element (a Piezo electric type that requires a small operating voltage).

At the outset the principle of a power mike sounds quite reasonable - just amplify the microphone signal to improve the audio efficiency and thus give your transmission a good head start. The principle is indeed quite sound, however, the designers of the transceiver already took this into account when they produced the product and most CB rigs on the market have more than enough built-in amplification to run the transmitter audio circuits to their optimum. The addition of more amplification can easily overload the existing, sensitive microphone amplifier and that can cause considerable unwanted distortion of the audio signal and in turn it can seriously degrade the final transmitted signal in the form of gross distortion resulting in radio and television interference.

So why the big rave about power mikes? You might well ask.

Well, with careful use of a power mike there are many instances where your communications power can be improved. I mention communications power as distinct from RF output power.

In early CB rigs there may have been a direct link between power microphones and eventual RF output power, however, to meet present-type approval requirements each CB rig contains some pretty 'serious' limiting circuitry, which when functioning correctly, exercises almost total control in restricting the rig from exceeding the RF output power limits.

To understand what happens when the Radio Frequency part of the signal is modulated in an AM (Amplitude Modulation) transmitter, Figure 2 shows the RF component of the signal in 2a and the audio component in 2b. In 2c the audio or Modulating signal is impressed on to the RF component thus causing the 'amplitude' of the RF component to vary in exact sympathy with the audio variations. The waveshape shown in 2c is known as a modulation envelope and when displayed on an oscilloscope it provides a graphic means of determining the percentage of modulation - the strength with which the audio signal is varying the amplitude of the radiated RF signal.

(continued on page 15...)

fig 1

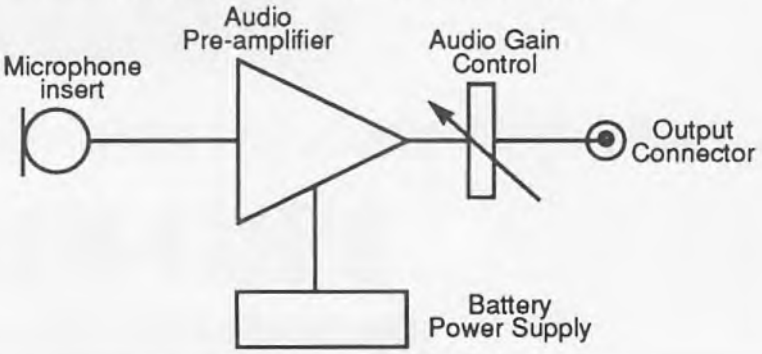
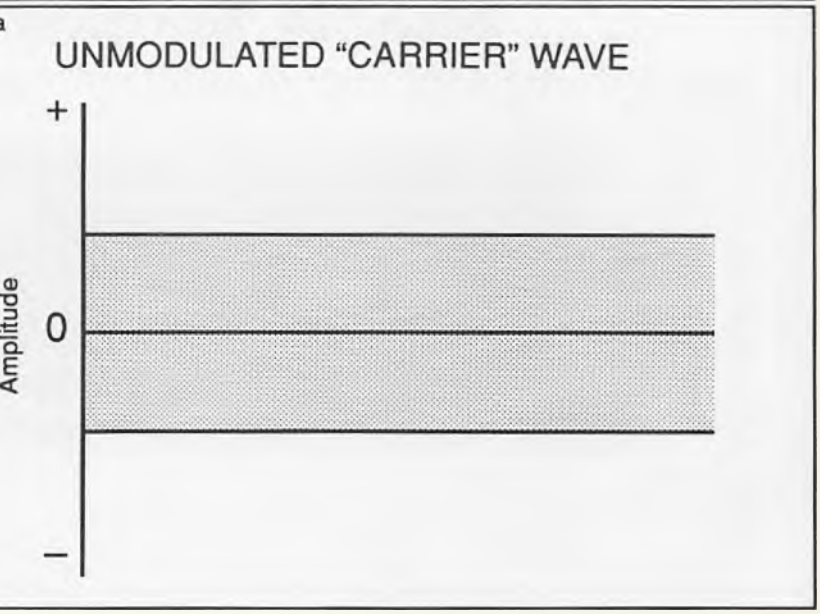
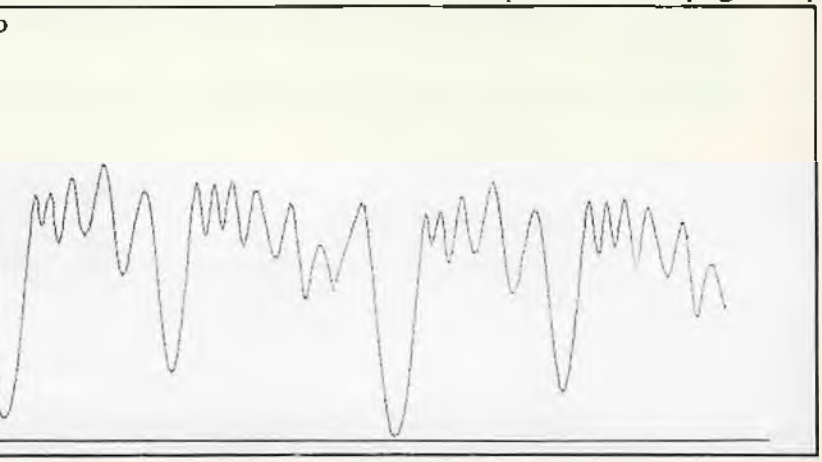


fig 2a

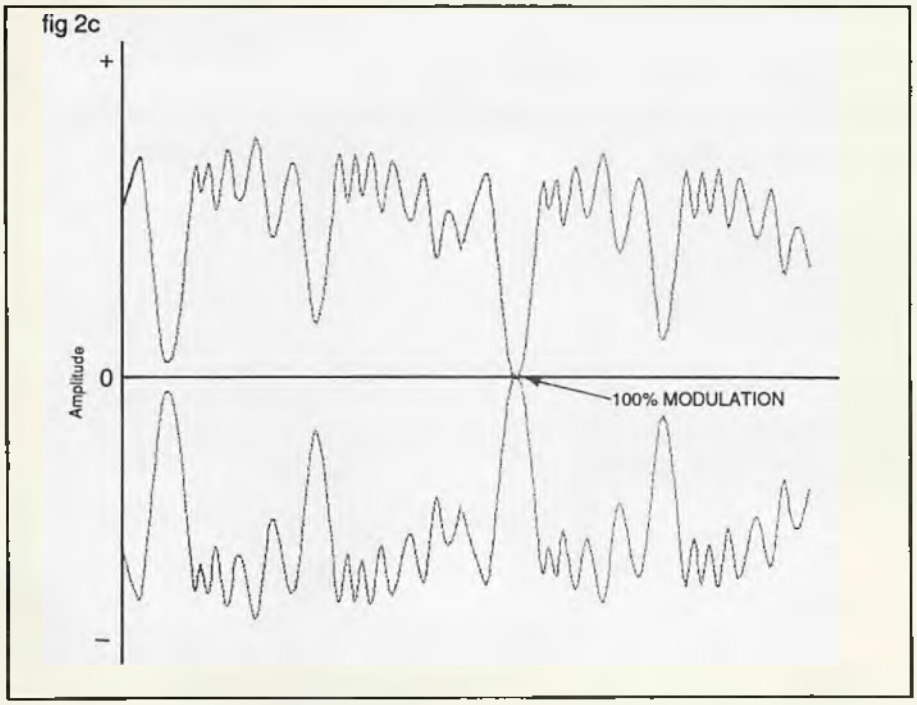


Above: Graphical representation of an unmodulated transmission or carrier wave. At this point no information has been impressed onto the basic radio signal. Below: This graph represents the audio waveform that will be used to modulate the RF transmission.

fig 2b

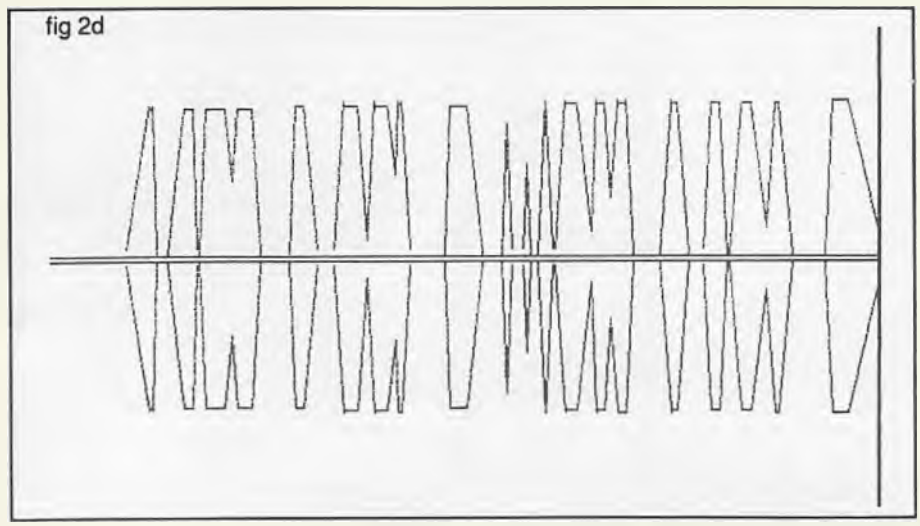


You will notice in the **diagram (2c)** that the amplitude of the modulation envelope moves toward and away from the central horizontal 'zero' line in direct relationship to the audio voltage in 2b. The envelope on the + side of the zero line is a replica of the audio signal while the lower part of the envelope graph is a kind of mirror image of the audio. At one point in the diagram (100% modulation) both sides of the modulation envelope quickly converge toward the 'x' axis and just meet with the zero line. This is the maximum level of modulation obtainable without actually shutting off the transmitter and is therefore known as the point of 100 per cent modulation. Some other troughs in the diagram reach about 90% to about 95% modulation as they closely approach but do not quite touch the zero line axis. Generally speaking, exceeding 100 per cent modulation in an AM transmitter badly distorts the signal and can be responsible for serious television and radio interference.



The RF carrier wave in fig 2a has been modulated with the audio signal in fig 2b to produce the modulation envelope depeicted above. Note that a mirror image of the audio signal is produced in the modulation process.

Overmodulation causes serious distortion, seen here as 'flat-topping' (bottom diagram) of the signal and periods when the modulating signal causes the transmitter to be 'strangled' and complete cut off for short periods. Both or either of these effects can produce audible distortion and can cause severe radio and television interference.



There is an exception to this rule, that doesn't apply to CB radio, where the modulation peaks can be considerably increased in amplitude while the dips are carefully processed so that they never actually quite reach the zero line. This is a type of asymmetrical amplitude modulation which could offer greater performance while minimising noticeable audio distortion. It is not often used these days.

In figure 2d you will see that the audio signal from 2b has been amplified so much that the RF carrier signal is actually 'turned-off' for periods of time causing extreme distortion of the modulating signal and the RF signal too. You will also see that the signal peaks have exceeded the capabilities of the radio's circuitry to faithfully reproduce the original audio signal and the amplifier stages are forced into an operating mode known as 'saturation' where any increase in the level of the modulating signal will be 'clipped off' because the amplifier can no longer respond to any increased audio signal strength. This signal peak clipping off effect is also known as 'flat-topping'.

In fact it is undesirable to reach 100 per cent modulation and most rigs are limited to between 90 and 95 per cent as a modulation limit. This provides a margin for error when the transmitter is subjected to strong modulation peaks. In this way the transmitter is never actually 'turned-off' completely for any period of the transmission and so radio and television interference should never occur as a result of 'over-modulation'.

We covered the subject of over-modulation interference in the past so we won't review it again now.

A similar effect of degradation occurs to sideband signals when the modulating force is too high and an over driven SSB transmitter will suffer all the classic symptoms of a 'dirty' AM transmission.

Referring again to figure 2c, you will notice that the modulation level is directly proportional to the audio level of the modulating signal. In other words, when the modulation level is decreased so too is the modulation percentage. Softer sounds are impressed on to the carrier wave in proportion to their audio 'volume' thus softer sounds will cause the transmitter to produce 'softer' modulation on the signal which will in turn be received by another station as lower level audio signals. This is all very well if the received signal is strong and in that case there is a lot to be said for Hi-Fi signals.

(continued on page 17...)

The Leson base microphone - retails around $115 and is a very popular unit.

The 'roger beep' handheld retails at around $59 with a base mike at $120.

The Electrophone base mic costs around $98.

Unfortunately, in the realm of radio communications - especially mobile CB - the super signal strength stations are often NOT the object of one's desire. To further complicate the situation the listening environment is frequently less than ideal and those 'softer' sounds emanating from the loudspeaker often get lost amid the cacophony of road and engine noise, electrical interference, station interference and weak received signal strength.

I can't think of a better argument for the use of some type of modulation enhancement than the circumstances outlined above. And, there lies the appeal that attracts thousands of CB operators to the legendary, infamous Power Mike.

Contrary to popular belief, the use of a power mike (amplified microphone) should not increase the RF output power of your CB transmitter. In a rig that has not been tampered with the output power level is a function of the internal limiting circuits which closely monitor the power and modulation levels and restrict high level excursions to within tight limits.

So why does the use of a power mike 'get you out better'?

Simple. When you drive the limiting circuits of your rig to the verge of insanity by pumping a huge audio signal into the microphone socket, your rig, to the best of its ability, limits the peaks to within its prescribed values and reduces severely the highest input levels. However, being unable to discriminate between the modulation values, it now sees the previous 'soft' sounds (from a standard microphone) as 'loud' sounds (raised in level by the mike amplifier) which it also limits to the preset values of the circuitry. What has been achieved should now be fairly obvious. The 'loud' sounds that would have seriously over-modulated the transmitter have been restricted while the 'softer' sounds have been raised to a similar level thus driving your modulator and in turn the transmitter to the maximum performance available. The result is a type of reluctant audio compressor that brings all the modulating audio to the same maximum level. Since you weren't looking for Hi-Fi in the first place, but rather a highly understandable signal in the face of adversity the result can be impressive if careful control of the microphone output level is observed.

In most cases, only a tiny amount of microphone gain is required to produce the most desirable effect. Any more and the input level to the transmitter will quickly overload producing the most bastardised audio you have ever heard usually followed closely by bags of transmitted distortion and interference you have probably experienced often before.

So be warned, if you see fit to use a power mike, go easy on the level control and you may even improve the readability of your signal.

Some power mikes include echo and other features like Roger Beep. I have reservations about the value of echo, but the Roger Beep facility can be useful on SSB signals where the Beep is transmitted at the termination of a transmission to advise the responding operator that your transmission has concluded.

The best type of modulation enhancement device you can get your claws on is a RF speech processor. This type of unit is quite sophisticated in its operation and is worth a paragraph or two in conclusion.

In creating a RF speech processor several desirable features are combined in the basic design. We wish to achieve, in a more technically acceptable way, a similar result to the power mike example discussed previously where the audio input signal is compressed and clipped to reduce most of the audio level variations to a similar value so that we can get the most efficient use of the RF output power available. It is also known that only a relatively small range of voice frequencies carry the most intelligible part of the modulating signal. So, if we filter out the undesirable speech frequency content - containing the least useful frequencies - all of the available transmitter power can be concentrated into the narrowest speech bandwidth.

In the real product, the incoming microphone level is amplified and passed through a 'compression and clipping' circuit where the peaks and troughs are brought to the required level. The resultant signal is introduced to a balanced modulator where the signal is converted to a sideband RF signal which is passed through a narrow bandwidth crystal filter to remove the unwanted range of audio frequencies. This signal is then demodulated which converts it back to a carefully shaped and processed audio signal which is injected into the rig's microphone socket ready to be transmitted in the most efficient way. ...and that's really about all you need to know about power mics.

AMATEUR RADIO

No-code Novice licence at last

By Chris Edmondson, VK3CE, Editor, Amateur Radio Action

I guess there's a fair few CBers out there who view the amateur service with more than a tinge of jealousy. After all, they get all those acres of channels, all those wonderful modes, all of the most delicious DX bands- and all those nasty examinations that even Einstein would have had to study for. To get onto the HF bands - the desirable world-coverage bands - the aspiring amateur sits through no fewer than four examinations!

The DoTC was kind enough to introduce a new grade of licence - the Novice, or NAOCP - a few years ago, and this offered a real chance for many with its simplified theory examination. The regulations, of course, could be learned by rote, so they weren't really a problem. You didn't have to be clever to learn them, just patient.

The Novice grade of licence brought the prized amateur ticket within the reach of many, but there remained one small problem for some: Morse Code. Even the ,half-price, five words-per-minute Morse Code used in the Novice exam takes quite a bit of work to master.

Heaven knows, the Morse can be a frustrating beast at best for some. Your editor has been known to loose off the occasional tirade about it, and I spent 20 maddening years with it hovering just out of my grasp. Some people don't have a moment's trouble with the code, but me? I just couldn't make the mental cogs mesh long enough to get through the full call's 10 words-per-minute test. Perhaps part of it was the fear of being examined - but I get knots in the stomach each time I look at a straight key, far less try to actually use the accursed thing. That nice two-letter callsign you see in the byline is my new full call, and it didn't come without effort, I can tell you. We won't get into the discussing the philosophy of having Morse Code as a compulsory requirement of an HF amateur licence, let's just say I'm glad my test is finally over. I've - lost - my Morse key already. By the way, do yourself a favor when learning how to send the code - don't learn using anything but a straight key. You can't sit for the exam with an automatic keyer, a bug or even a paddle (which has two levers, one for the dits, and one for the dahs). I learned with one of these gadgets, and found out only two days before the exam that I couldn't use it in the test.

Theory was a big problem

Until the announcement of the Novice licence, that full theory test had been a real stumbling block for many prospective amateurs. (Mind you, Australia was a world leader back in 1956 when it introduced a grade of amateur licence which required no Morse Code qualification. The Limited (AOLCP) licence today accounts for around one quarter of all VK licensees. Basically, the Limited is similar to the Full Call, and using the same theory and regulations tests, but has no test in Morse Code. This ticket gives its owner access to all non-HF amateur band, ie six metres and above. It took until last year for both the Poms and Yanks to catch up). In comparison to the Full and Limited

Australia is to get a new class of amateur radio operator's licence, based on a Novice grade of test with no Morse Code qualification. The new licence, to be called the Limited Novice, looks certain to give amateur radio operating privileges to many people who thought they had no chance of passing the licence tests.

theory, the Novice (and, now, the Limited Novice) theory examination tests your understanding of the more fundamental principles of electricity and electronics. The full theory goes quite a bit further, and passing that test is quite a feather in the cap for many.

But soon - at long last - you will be able to sit for just the Novice theory and regulations and get on the air. No, not on HF (yet), but on the air nonetheless. The current Regulations don't permit it, but from the beginning of 1993 a number of changes aimed at further de-regulating the amateur service will come into effect, and the proposed new grade of licence is just one of them.

You might wonder at the relevance of having to demonstrate your proficiency in Morse Code to get on the HF bands as an amateur.

Obviously, early this century, when Morse Code was the only way to communicate by radio, the operator had to be able to use the code.

Nowadays we have voice modes like AM, FM and SSB, as well as all sorts of clever digital modes like Packet Radio, RTTY and AMTOR. Even the commercial services like the marine, aeronautical and military are deserting the humble code, and other digital modes are growing in popularity. The impact of communications satellites is hitting home, it seems.

Dyed-in-the-wool Morse-users, meanwhile, used to argue that Morse would get through when literally everything else had long since given up the ghost. But that's not really the case these days.

The newer digital modes had to compete with the most advanced computer of them all - the human brain - and, until recently, those pundits were quite right. There wasn't a machine devised which could hope to compete with a well-trained Morse operator.

But some of today's developing modes are at least the equal of the humble code, and recent (and future, for that matter) developments are hitting new heights, with new modes able to communicate reliably on little more than the smell of an oily signal.

Morse remains

But Morse must stay in Amateur circles for the time being at least. Australia is a signatory to the rules and regulations of the ITU, the International Telecommunications Union, which decides the position in the frequency spectrum of all radio users.

These decisions are fought over at World Administrative Radio Conferences (WARCs), and the most recent of these was held earlier this year in Spain. While the ITU requires a proficiency in Morse Code for an HF amateur licence, so will our own DoTC. No change in the status quo was mooted at WARC-92, and the decision-makers cannot re-examine the question until the next WARC, tentatively expected in around 1998.

In passing, it's worth noting that there are some exceptions to the mandatory Morse requirement for service operating below 30 MHz. Your own 27 MHz allocation is a prime example, as is the Remote Outpost allocation for the outback bushy type. So if you simply cannot wrap your fist around a Morse key, be patient - you're already on HF!

Limited Novice

Let's take a closer look at the new 'ticket' and some other changes to the regulations: The new grade of licence is officially dubbed the Limited Novice. It will require passes in Novice-level theory and regulations examinations, and will allow its holder to use up to 30 watts of FM (only) in the frequency range of 146 to 148 MHz. Hey, that's no misprint: under the new rules, both Novices and Limited Novices will be able to use 30 watts on two metres (up from 10 watts), while the Novices will be able to use up to 100 watts on their HF bands (up from 30 watts).

And people holding both Novice and Limited calls (when combined as a 'K' call) will be able to run up to 400 watts on HF, rather than their existing 30 watts! Those are very significant power increases which should extend those stations' range considerably. Remember, you read it here in CB Action first.

The Limited Novice, then, will be granted access to the same half of the amateur two metre band as existing Novices. There are many good repeaters around the country in that portion of the band, as well as excellent simplex coverage which can extend to thousands of kilometres when conditions are favorable.

Two metres also carries specialised modes of communications including Packet Radio, RTTY (radio teletype) and other interesting modes although, as things presently stand, Limited Novices, in common with their Novice cousins, will not be permitted to use any digital modes whatever. In some ways, then, the Novice operator limited to operating on VHF has a somewhat, well, limited is probably the best word for it, access to the hobby, with the choice of modes limited to FM voice transmissions only.

We need more amateurs

As editor of Amateur Radio Action, I think the regulators are partly missing the point and potential of the new amateur licence. We need more licensed amateurs on the bands, and people like you are just the ones we need. But we also need the communicators of tomorrow, the youngsters who are being buried in computer technology in the schools of today. The best way to draw on these bright young minds is to allow them a relatively simple entrance to a hobby where they can pursue their interests in computers and computing. Having access to the digital modes would be an obvious drawcard for these people (just as the Morse examination is a turn-off) but both the Novices and Limited Novices are denied access to any of the digital modes. In fact, in a peculiar twist of fate, the Limited licensees - who have not sat for the Morse - are allowed to use Morse Code on two metres, while the Novices - who have passed a test in Morse - are not allowed to use Morse on VHF! You make sense of it. (There are quite a few other changes proposed for the regulations, but we've dealt with the major ones, the ones dealing with entry to the hobby by Novice-level operators.

In Amateur Radio Action's June 1992 issue the complete draft regulations for 1993 are presented and, in a really unique opportunity, you are invited to pass your comments to the regulators in Canberra who wrote them. A form is even provided in the magazine for just this use. I'm going to be asking for a couple of changes:

*** access to the 420-450 MHz 70 cm amateur band for Novice and Limited Novice operators. Limiting these operators to merely two megahertz is too restrictive, and detracts from the attraction of the Limited Novice in particular;**

*** allow Novice and Limited Novice operators access to Packet Radio on the 70cm band at least, and preferably also between 147.5 and 148 MHz as well. Packet Radio is an extraordinary mode, in which operators are able to connect their personal computers together via radio. In a sort-of parallel to a telephone bulletin board system, operators may exchange files, collect news and items of interest, or send messages across town or around the globe. It is this mode in particular which stands to attract younger newcomers to the hobby.**

Amateur Radio is a fascinating hobby. It takes the concept of personal communications to an exciting new high for a CBer. If you feel the theory or regulations may be beyond you, your local amateur radio club may be able to help you learn the skills you need.

Amateur Radio Action regularly publishes lists of radio clubs in Australia and the Pacific region, and a copy of this list may be ordered from the magazine at GPO Box 628E, Melbourne 3001, for $5 posted by air to anywhere.(..sounds like a free plug to me - editor)

online

by Patrick McDonald

ALL ABOUT COMMUNICATION RELATED COMPUTER PROGRAMS

Yup, once in a very great while we do make mistakes around here, dear CBA readers! No-one won a prize for noticing that we printed the wrong phone number for the Shortwave Possums computer bulletin board in the last issue, though! (See the tail end of this column for the right number.) The last mistake I recall making, in fact, was in June, 1982... that was when I bought my first computer! Seriously, and typographical errors aside, this column is the place in CB ACTION mag to get the real scoop on computer and radio info... so read on.

☐ Satellite-Tracking Software

Let's get stuck into some radio software straight away. Regular ONLINE readers will, I trust, remember the recent review of the Instant Track satellite tracking program in these hallowed pages.

A couple of helpful phone calls have reminded me that this excellent program is a commercial one and not shareware and must be bought from the distributors, whereas shareware software can be 'downloaded' from computer bulletin boards with payment made on an 'honor system' if you decide to use the program regularly.

The Australian contact for IT is Graham Ratcliffe VK5AGR at AMSAT Australia, GPO Box 2141 Adelaide, SA 5001

The total cost for the Instant Track package is something in the order of $30, so it's very good value for money if keeping an ear on satellites and space-based communications is your thing.

The latest version of the shareware TrackSat program reviewed last year, TRK270.ZIP, remains available through good BBS systems everywhere, and is also highly recommended.

Like all programs reviewed in ONLINE, IT and TrackSat are designed for the IBM compatible family of computers and runs on the MS-DOS operating system.

☐ For Scanner Buffs...

Okay, let's move right along and look at some more software.

For several months we've all been anxiously expecting the new version 4 of the extremely popular Scanbuff radio database program, which allows you to keep all your logs and other radio records at your fingertips in easy-to-find formats.

Impatience finally got the better of me and I braved the dreaded ISD charges from our mates at Telecom to ring Scanbuff author **Bob Ricci's BBS in the US on (818) 355-4871** and download the latest release of this fabled program.

But, lo and behold and indeed alas, Ricci has so far only completed a minor upgrade which goes by the name of SCANR368.ZIP.

Version 4 is still only "vapourware"!

Don't get me wrong here, gang, Scanbuff is already great the way it is and many Australian radio enthusiasts are using it happily as their main frequency database both for shortwave and scanner purposes.

....it's just that the new version sounded even better.

Anyhow, SCANR368 is now available on SWP BBS for those who think the slight changes from the older version are worth the downloading time.

I'll keep in touch with developments in the US and get the whizz-bang Scanbuff 4.0 online at SWP BBS as soon as it is released.

☐ Shortwave Schedules Online

One eagerly awaited software update which has been released is Tom Sundstrom's latest combined frequency database, receiver memory programmer, version 2.1 of the English Language Shortwave Broadcast Schedules.

The main purpose of this commercial program - which has won an award from the World Radio and TV Handbook people - is to allow the viewing and manipulating of international shortwave broadcast schedules and 'DX show' information.

Records may be added, modified or deleted to the database and schedules may be printed by country or by transmission start time.

On-air DX programs for the shortwave listener may also be printed out by the day of the week. The database comes already supplied with all the very latest English language frequencies and DX show schedules.

As well, the ELSBS program will quickly load frequencies into a VFO or the memories of the Japan Radio Company NRD-535 or NRD-525 receivers or the JST-135 transceiver, the Kenwood R-5000 receiver and the TS-950S, TS-850S, TS-450S, TS-940S, and TS-440S transceivers.

An appropriate serial hardware interface, a properly wired serial cable and a serial port on the computer are required.

Useful features added since the last version include a by-frequency breakout of the schedules file and a printed report facility.

You can now also view all entries for a user-selected frequency, or print a partial or complete listing by frequency.

This all makes ELSBS a very flexible database indeed. The database links into your computer's internal clock, and I particularly like the ability to call up and display only those stations on air at the current time.

I've been a happy user of the earlier version of Tom Sundstrom's ELSBS for more than a year now and can recommend it highly to anyone looking for a good, regular and reliable listing of international shortwave schedules.

New schedule data disks come out like clockwork from TRS about four times a year and easily load into the program in seconds.

Needless to say, if you own one of the receivers or transceivers listed above the memory loading feature is an added bonus.

As I listen and DX regularly with an Icom R71A and a venerable but effective Kenwood R1000, I haven't myself used this potentially highly useful feature ... but when I win the lottery next month I'm getting one of those NRD 535s, so I'll let you know then!

The cost of the ELSBS program is US$35 and upgrades (including new data files) are only US$20. The latest data files by themselves, on a single floppy disk, are only US$5. Add another US$5 to these prices for air mail postage.

Since the demise of the German-based DX Listeners' Guide by Bernd Friedewald many shortwave radio enthusiasts have been asking for an alternative listing of English language international shortwave broadcasts, and the ELSBS is it, folks.

It's quicker and easier than the old-fashioned paper magazines and is cheaper to boot, although you can always print the whole damn thing out on paper, if you want! I always order by fax and charge my credit card.

You can fax Sundstrom in the USA to (609) 859-3226, call his TRS Consultants computer BBS on (609) 859-1910 to order the ELSBS and other products online, or ring Tom direct on (609) 859-2447 (but don't forget the time difference!).

For your interest, other TRS programs (again untried by yours truly) are apparently state-of-the-art receiver control programs for the NRD-535 and NRD-525 and the Kenwood R-5000, and

Utility DXer's Logbook program. US reports rate the receiver control programs highly so NRD or Kenwood R5000 users might want to look into these... if you buy one, let me know what you think of it.

Shortwave Log

Moving right along, a new and hitherto unknown shareware radio database program from the US has just made its appearance on our sunburnt shores. SWL114.ZIP, or Shortwave Log to give it it's full title, has a most unusual feature.

Software authors at Lee Consulting in Pittsburgh write:

'There are many listeners to shortwave and international radio log broadcasts, and with personal computers now affordable to almost everyone they can store their logs in a database such as dBASE or Paradox or a flat-file database.

However, this requires the listener not only to purchase a commercial database but also to learn the database language.

The Shortwave Log program allows the international radio listener to enter logs directly into a database and harness the power of a database without the cost and time of purchasing and learning a database language.'

OK, fair enough. So what exactly does the Shortwave Log program do?

Each record of the on-screen logbook corresponds to a record in a database table.

The table is indexed so that the listener can sort and print his logbook by date and time, frequency, station name or transmitter location, whichever order is desired. In addition to storing the log entries, SL also retains station frequencies and addresses, which are used to speed up the entry of logs and QSL requests.

Of course, you have to supply all this data yourself, unlike Sundstrom's commercial program which comes complete with up-to-date frequencies when the program is purchased. In other words, SL is basically a very competent, run-of-the-mill radio enthusiast's database program, much like others reviewed here in ONLINE over the past couple of years, with the added benefit that the records are dBASE-compatible.

But, get this: SL also includes a built-in 'QSL writer' feature. This unique function actually helps you write reception reports (QSL or verification requests), and not just in English but in a variety of languages including French, Italian, German, Spanish, Hungarian, Finnish and Swedish.

The only important DX language missing is Indonesian, and the authors say that more languages will be added to the next edition of SL.

How does this work? When this special SL function is selected the user is presented with two on-screen "forms" to fill out. In the first form you enter your own name and address, the name and address of the radio station, the date/time/frequency of the broadcast, and it's overall transmission quality.

Then, you select the desired language for the reception report. In the second form you enter specific details about the program that you've heard - music played, topics discussed, announcers' names, advertisements and so forth - to prove your really caught the transmission.

If a report language other than English is desired, the chosen details are then automatically translated for you into the appropriate language!

When both forms have been completed the reception report is written to an ASCII disk file which can then be further edited, if desired, and printed out for posting to the station. Boy! This does sound useful, doesn't it? It might even be worth more to many QSLs hounds than the program's main database feature. I have spent many, many weary hours myself writing up foreign language reception reports over the past decade and I wish I'd found SL and its QSL writer sooner!

SPECTRUM BBS gets hooked up!

Finally, some late news just to hand... I'm happy to report that Melbourne-based radio bulletin board system SPECTRUM BBS on (03) 819-9167 now is hooked into the FidoNet OzRadio Forum and International Shortwave echomail conferences and also to several UseNet radio conferences as well!

Some of these international message networks also cater to amateur radio operators, so give this new BBS a ring and see what SPECTRUM has to offer!

I think this is just about it for this issue, guys and girls, but if that proverbial bus doesn't roll over me next time I cross the road I'll be back again in two months' time with yet more computer and radio news.

As always, I'm happy to hear from anyone anytime with constructive suggestions of radio software to review for this column.

You can also fire off questions you may have about using computer software in the pursuit of your radio hobby.
Your best bet, as always, is to fire up your modem and ring
Shortwave Possums BBS
24 hours daily on (02) 651-3055.
This is also where you'll find all the shareware radio/computer programs reviewed in this column.
If so inclined, you can also launch handwritten, lo-tech scribbled queries to me
c/- Shortwave Possums,
PO Box 357,
Round Corner,
NSW 2158

SO YOU WANT TO BE AN AMATEUR ?

Part One of a regular series by Paul Butler VK3DBP

(Paul Butler teaches physics at Mentone Girls' Grammar School in Victoria)

This is a great time to consider joining the many thousands of amateur radio operators around the world, people who gain a great deal of pleasure and satisfaction from their hobby. The path into amateur radio is now so much easier to follow, because of the introduction of simple licence classes which act as stepping stones towards the "full call". The Morse code, once a real barrier for many people, is not required for certain classes of licence. And the examination procedure itself, now in the hands of the Wireless Institute of Australia (WIA), is simpler and more flexible than it used to be. It certainly is a good time to get started.....

But why should you bother? What is to be gained by slogging through a theory course, reading textbooks, boning up on regulations? Well, the simple answer is that YOU CAN DO SO MUCH MORE when you're an amateur operator! There are more bands and frequencies for you to work, more modes with which to communicate, more organised activities to take part in, more of the world waiting for you. The amateur radio service serves communities worldwide in times of disasters and in the good times, too.

Several classes of licence are available to you as a potential amateur radio operator. The simplest way in is through the Novice Amateur Operator's Certificate (NAOCP), for which you will sit a multiple-choice theory exam, a regulations exam and a 5 words-per-minute Morse test. With the proposal for a no-code licence now being considered, your entry into amateur radio could be even easier. This series will concentrate initially on the Novice exam.

There are essentially two ways to tackle the Novice syllabus. The bottom-up method starts with AC and DC circuits and the discrete components end of things, gradually building up the picture to include whole systems such as receivers, transmitters and so on.

The alternative, and the way we will proceed in this course, is from the top down. First we will meet whole systems, beginning in this issue with receivers and transmitters. Over the next few months, we will pull these systems apart (not literally) and see what makes them tick. The exam you will take, in the not TOO distant future, will require you to understand amateur radio at both levels.

Before we begin, a quick word of warning. A lot of new ideas will be introduced at each stage of this course. DON'T PANIC if everything seems too much. As the whole picture emerges, each part will make more and more sense. Don't expect to find ALL the answers here, either. You will need to read around the subject a bit - try some of the Wireless Institute of Australia books or those put out by the American Radio Relay League (ARRL).

So, here we go, with a look at TRANSMITTERS and RECEIVERS, without which there would be no amateur radio service.....

The major focus in this section is to do with MODULATION and DEMODULATION, the processes by which information (speech, computer data, TV images and so on) are impressed upon and removed from a radio wave. As an amateur operator, you will have the privilege of using one or more modulation MODES, and so you will need to know something about each of them.

The easiest way to convey information by radio is to switch a radio signal on and off in a sequence determined by the Morse code. First you need to generate a radio wave, or CARRIER, in that part of the radio spectrum set aside for amateur radio operations. This is achieved using a radio frequency (RF) OSCILLATOR, which may be 'locked' onto a single frequency using a CRYSTAL, or tunable through a range of frequencies.

Now KEY the oscillator, or simply turn it on and off, to form short and long pulses of radio energy corresponding to the dots and dashes of the Morse code. At the other end, half way across the world if you're lucky, the bursts of radio energy, or what's left of them, arrive at an antenna and are turned into audible tones in a receiver. Your message has been carried by INTERRUPTED CONTINUOUS WAVE, usually referred to simply as CW. The international designation of this modulation mode is A1A. Note that you WILL need to know commonly used terms like this for the exam, although it is doubtful whether you will ever use them!

The receiver must have sufficient SENSITIVITY (good enough "ears") to hear the weak incoming signal. This should be coupled with enough SELECTIVITY to separate out the wanted signal from all the other signals on nearby frequencies, since some of them may be stronger than the signal you're after.

FREQUENCY STABILITY at the transmitter and at the receiver is very important, too, since the two units must agree about what frequency is being used. And clean keying of the transmitter is essential, to minimise KEY CLICKS and CHIRPS which tend to generate undesirable radio signals all over the place.

Even at this simple level, then, sending a radio signal is not as straightforward as you might hope. It's possible, of course, to go out and buy yourself a "black box", or even a modern silver one, which will solve all these problems for you. But it's better to know what is going on inside the "black box", especially if you end up building your own.

Some thoughts on CW transmitters

The simplest form of transmitter is shown in block diagram form in Figure 1.

The oscillator generates the radio frequency energy, often at the final frequency but sometimes at a lower frequency which must be multiplied to its final value. The power amplifier boosts the level of the signal to a usable level for transmission. In the simplest low-power (QRP) transmitters, one or two

transistors are all you need to achieve the desired effect!

A CW transmitter is switched on and off, or "keyed", at one point in the circuit. Keying the oscillator itself is simple but will often produce chirps.

This can be minimised by the use of a crystal oscillator, but this arrangement has the disadvantage that it may be used on one frequency only. A variable frequency oscillator is preferable but is more complex.

The middle or INTERMEDIATE STAGES can be keyed, particularly if the frequency of the oscillator signal is increased using multiplier stages before it is presented to the antenna. Or the output stage or POWER AMPLIFIER may be keyed, completely cutting off the RF energy between pulses.

This is a common method of keying but requires care in circuit design when high power is used.

Some problems with CW transmitters

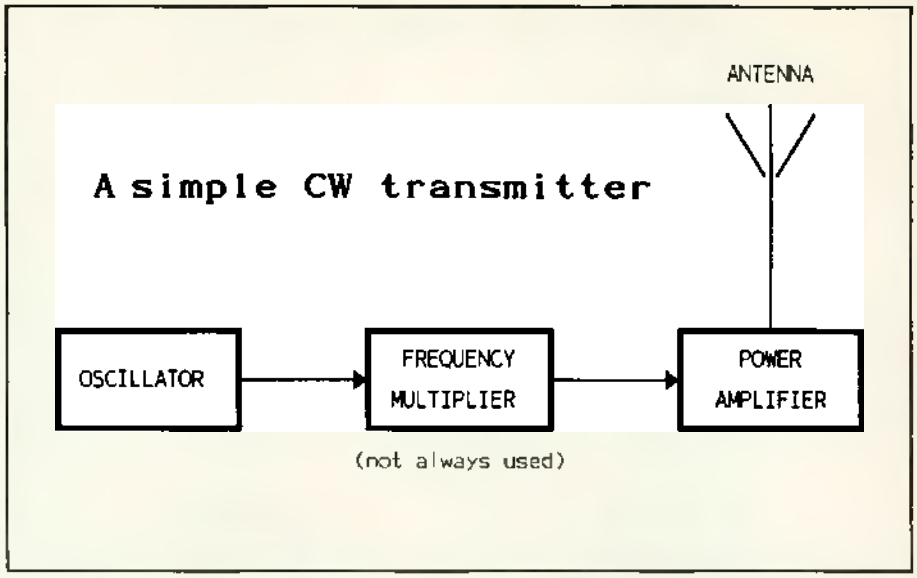
The ideal transmitter produces a carrier which rises rapidly but steadily in intensity (AMPLITUDE) when the Morse key is closed, stays at constant amplitude for the duration of the dot or dash and falls steadily to zero at the end.

"Hard keying" results from rises and falls which are too rapid. It causes distortion of the radio wave and "key clicks" on frequencies above and below the actual transmission frequency. "Soft keying" has rises and falls which take too long, and produces rather woolly pulses which are difficult to copy at the receiving end. "Chirps" result from a change in frequency as the transmitter is keyed, because of poor oscillator switching or variations in the power supply voltage as the keying takes place.

An alternative - amplitude modulation (AM)

If you would rather communicate by talking into a microphone, you are going to have to do more than simply turn your transmitter on and off. One alternative is to use AMPLITUDE MODULATION or AM.

To produce an AM signal, you take an RF radio wave, or carrier, and change its size or AMPLITUDE by modulating it with the output from a microphone. The transmitter output power then varies in step with the AUDIO FREQUENCY (AF) signal from the microphone.



At the receiver, these variations are demodulated to reproduce the original AF signal.

Amplitude modulation can be achieved by changing the output from the final power stage of a transmitter, as shown in the block diagram.

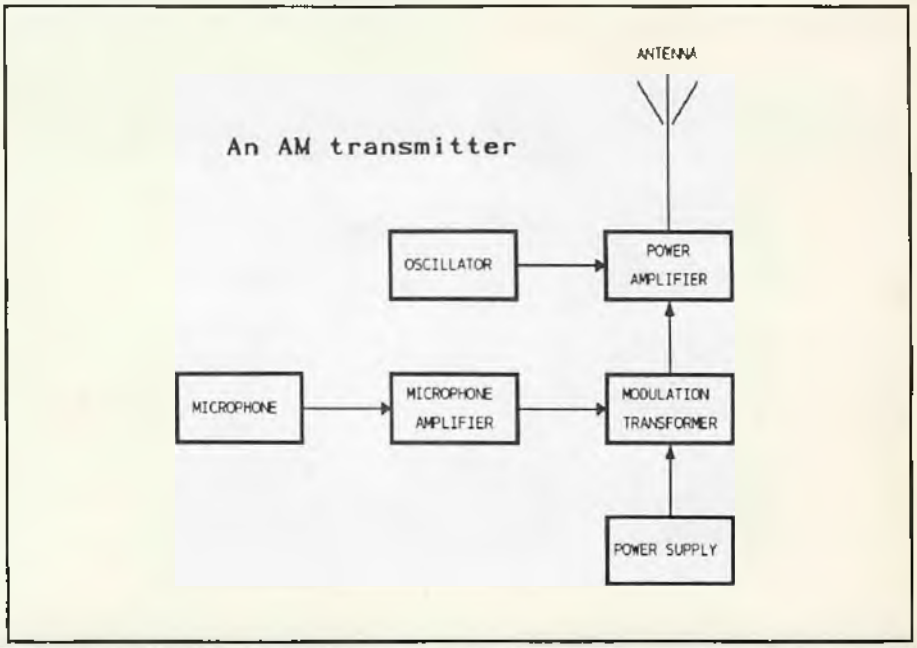
The AF signal is used to vary the output of the power supply feeding the RF power amplifier, modulating the voltage and so modulating the output of the power amplifier.

A quick look at sidebands

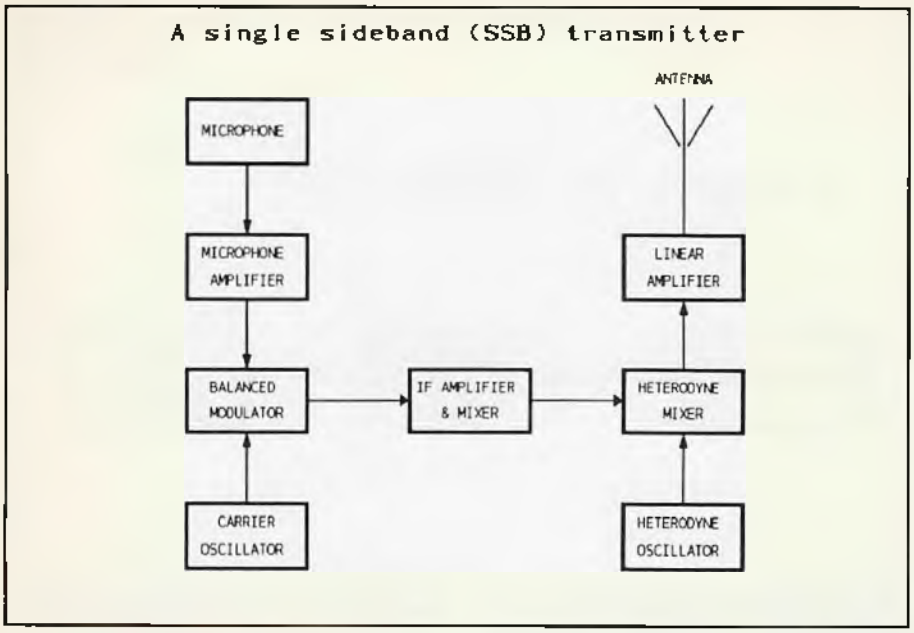
An RF carrier has a fixed frequency f. When it is modulated by an AF signal of frequency f1, some of the RF energy is transmitted at the sum and difference frequencies (f + f1) and (f - f1). These new frequencies are known as SIDEBANDS. For example, a carrier of frequency 14.1 MHz modulated by a single audible tone of frequency 1 kHz (1000 cycles per second or 1000 Hz) will produce an upper sideband at a frequency of 14.101 MHz and a lower sideband of frequency 14.099 MHz. Speech is a mixture of many audio frequencies, and so the sidebands will be correspondingly wider than in this simple example.

The upper and lower sidebands are always a mirror image of one another and thus duplicate the information carried.

Strictly, AM should be called "double sideband full carrier amplitude modulated telephony" but we tend to stick to calling it AM or use its international designation, A3E.



NOVICE NOTES.....(continued over page)



Problems with AM transmitters

If too little power is available from the modulator, the audio at the receiver will be too weak. If the modulator produces too much power, however, over-modulation takes places and the RF signal disappears completely at times. This results in distortion of the signal and "splatter" (spurious sidebands), or, in other words, undesirable transmissions. Typical speech contains frequencies up to about 3 kHz (3000 Hz) so each sideband will be about 3 kHz wide and the whole AM signal will be at least 6 kHz wide, or have a BANDWIDTH of 6 kHz.

A better alternative - single sideband (SSB)

In an AM transmission, as much as two-thirds of the RF power is in the carrier, which contains no information at all, and one sideband is an exact duplicate of the other and so is redundant. Clearly, the way to go is to get rid of the carrier and send only one sideband. The carrier is easily replaced at the receiver using an oscillator called the BEAT FREQUENCY OSCILLATOR or BFO. Using SINGLE SIDEBAND (SSB or J3E) mode, all the available RF energy can be concentrated in one sideband, and the resulting signal takes up half the spectrum space of the equivalent AM signal.

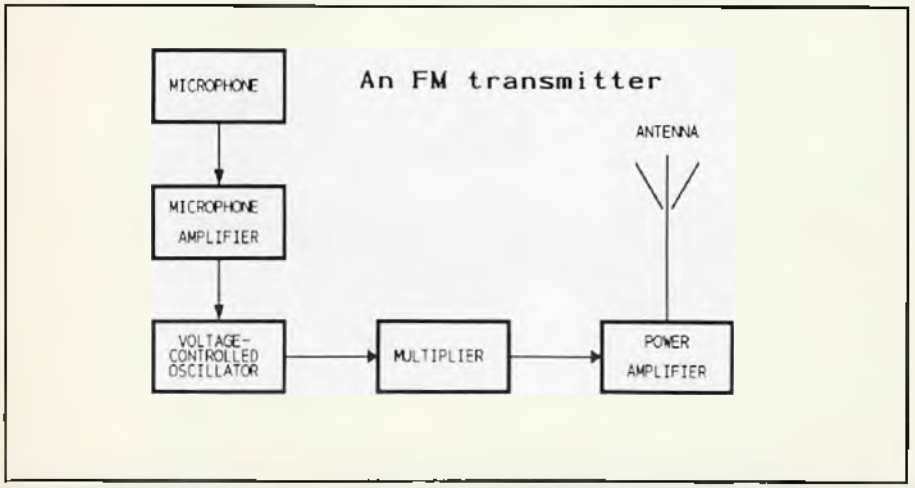
An SSB signal is generated using a BALANCED MODULATOR. A signal from an RF oscillator is fed into one input of the balanced modulator, which is a kind of mixer. The signal from the microphone is boosted by a microphone amplifier and fed into the other input of the balanced modulator. The output from the modulator is almost AM, as in the AM transmitter, but with one important difference - the carrier does not appear! This is not really magic, although it seems like it; the term "balanced" refers to the way the AF and RF signals are mixed so that sum and difference signals f + f1 and f - f1 emerge as the two sidebands, while the carrier is "balanced" out.

How do we get rid of the sideband we don't want? We simply filter it out. A high-pass filter lets through high frequencies and stops the rest, a low-pass filter lets through only the low frequencies, but a BAND-PASS FILTER lets through a narrow band of frequencies. In the case of the SSB transmitter, the filter has a passband just wide enough to let through one sideband and not the other. If the upper sideband is suppressed, the transmission is LOWER SIDEBAND or LSB, while suppression of the lower sideband produces, logically enough, UPPER SIDEBAND or USB. Transmitters and receivers may be switched to one or the other, and the two operators must agree which is to be used. By convention, LSB is generally used below 10 MHz, and USB is used above that frequency.

In order to transmit over a range of frequencies, the oscillator feeding the balanced modulator could be made variable. But then a problem would arise - the filter itself would have to be made variable, too, and this would not be an easy design task. This problem is avoided by fixing the CARRIER OSCILLATOR at an INTERMEDIATE FREQUENCY (IF) and mixing into it, after modulation and filtering, the output of a second oscillator, which is variable. This is the HETERODYNE system of generating RF; the variable oscillator is known as the HETERODYNE OSCILLATOR, while the mixer is called the HETERODYNE MIXER.

The final step is to amplify the output of the heterodyne mixer to a suitable level for feeding to the antenna. Since the final output must be an exact copy of the input, except larger, of course, the final RF amplifier must be LINEAR. A linear amplifier in theory does nothing more than increase the power of an RF signal; it should introduce no distortion. An automatic level control may be incorporated into the circuit to reduce the amplification for large input signals and so prevent overloading and distortion.

Finally, before we get on to looking at receiver circuitry and find out how the information is retrieved from the carrier in each of the modes, we need to have a quick look at FREQUENCY MODULATION or FM. The novice syllabus is quite specific here, and states



that elementary knowledge ONLY is adequate.

FM is produced not by varying the amplitude of the RF carrier wave, but by varying its frequency; hence its name, frequency modulation. The audio signal from the microphone amplifier is used to vary the frequency of the oscillator in step with the AF signal. The resulting frequency-modulated intermediate frequency (IF) is then heterodyned to the final frequency, as described above, and amplified for transmission. FM signals take up more spectrum space. so they are only used at higher radio frequencies. Their main advantage is an immunity to noise, so not only does the signal sound clearer but background pops and crackles are very much reduced.

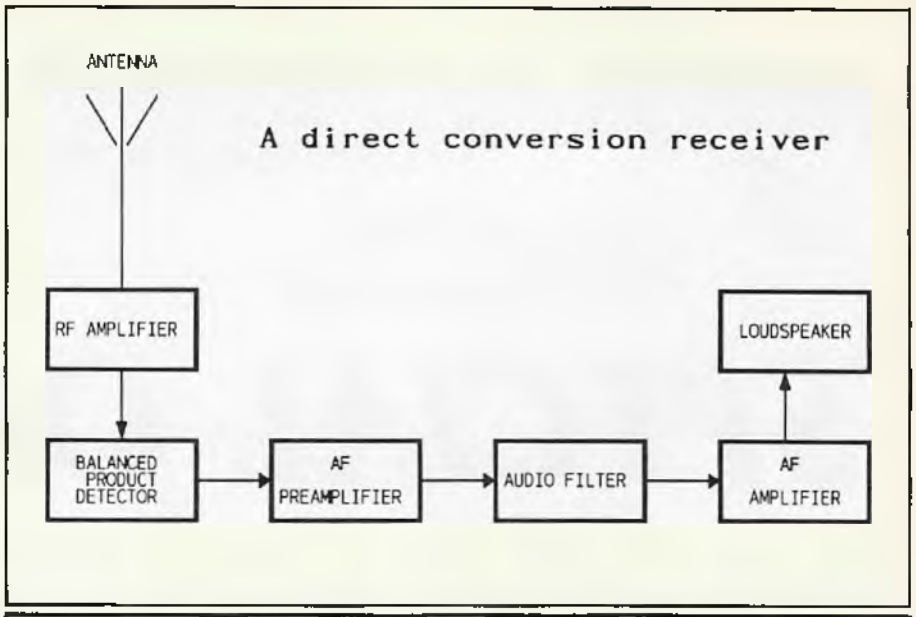
For the purposes of the Novice Course, you need to be able to recognise the various stages in AM, SSB and FM transmitters shown in BLOCK DIAGRAM form. You do not need to delve into the intricacies of electronic circuitry at this level, but you should be able to recognise the stages found in each kind of transmitter.

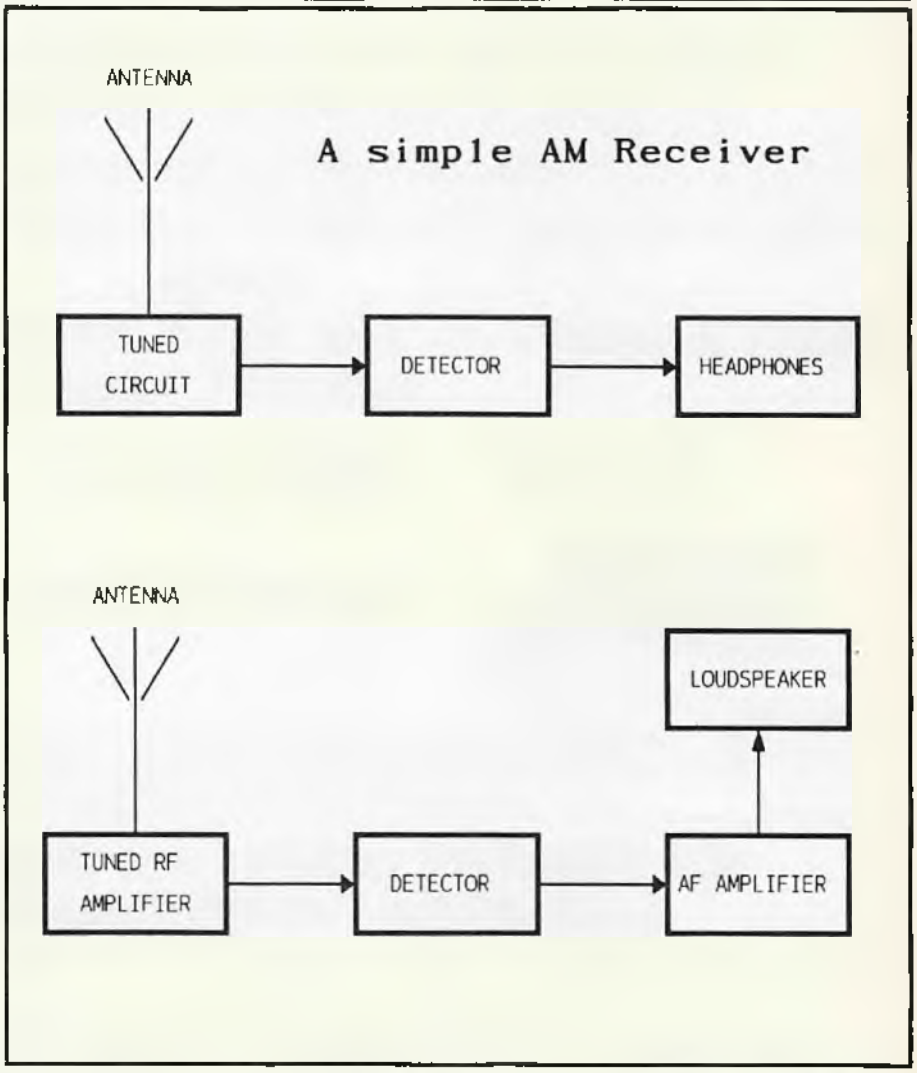
Now for receivers....

The key to the design of a good receiver is the FRONT-END, that part of the circuitry which picks up tiny radio signals and makes boosts them to a suitable level for the rest of the receiver. Your knowledge of front-end design need only be elementary at this stage but you should know enough to be discriminating when buying your own equipment.

The simplest receiver is shown in block diagram form in the diagram. Frequency selection is achieved using a RESONANT TUNED CIRCUIT, a combination of components which selects a narrow range of frequencies while rejecting the rest. The audio signal is extracted from the radio signal in the DETECTOR, which may be as simple as a single diode for AM reception.

A simple receiver like this is a little 'deaf' and relies on strong radio signals. Its output will only drive headphones. Some stages of amplification can boost the RF signal before it reaches the detector, and further audio amplification can be used to drive a loudspeaker. Some of the limitations of the simplest receivers are overcome in the DIRECT CONVERSION (DC) design.The incoming signal may first be amplified. It is then passed to the balanced product detector stage, out of which comes an audio signal. This is amplified and filtered before being passed to the loudspeaker. The DC receiver gets its name from the direct conversion of an RF signal into an AF signal in the product detector.





NOVICE NOTES.....(continued on page 27)

The most commonly used design for modern receivers is the superheterodyne or SUPERHET. The middle stages are based on a fixed frequency, called the intermediate frequency (IF). More advanced receivers use two or even three intermediate frequencies, with a corresponding increase in performance and, of course, cost.

The input to the IF stages comes from a mixer which combines the amplified RF signal from the antenna with the output of a variable frequency oscillator (VFO). Its operation is best understood by following an example.

A typical IF is 10 MHZ (megahertz). To tune into a signal at 14 MHz, the VFO could be set to 24 MHz. The mixer would then produce sum and difference frequencies, which in this case would be 24 + 14 = 38 MHz and 24 - 14 = 10 MHz. Filters in the IF stages of the receiver are tuned to pass the 10 MHz signal, while rejecting the 38 MHz signal.

AM detection or SSB demodulation occurs after IF filtering and amplification.

The missing carrier in the case of SSB is replaced by the use of a beat frequency oscillator (BFO) which is carefully tuned to clarify the audio signal. An audio amplifier then drives the loudspeaker.

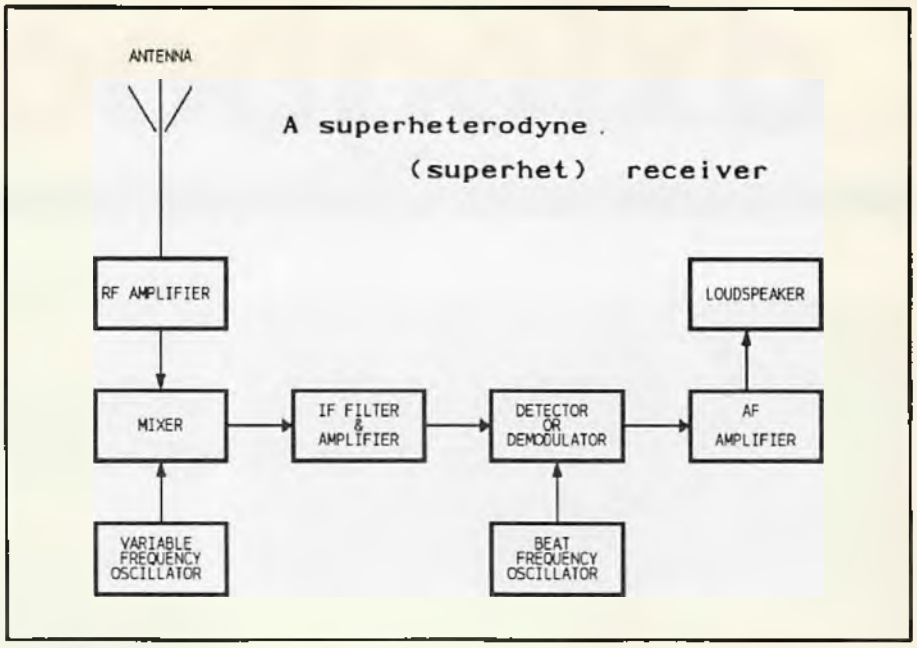
Two points need to be made here. In this example, a VFO frequency of 4 MHz could have been used instead of 24 MHz, since the sum and difference frequencies would have then been 14 - 4 = 10 MHz (passed by the IF stages) and 14 + 4 = 18 MHz (rejected). Choice of IF and VFO frequencies are important in good receiver design.

The other point to note is that a 6 MHz signal at the antenna and a 4 MHz VFO frequency would have produced sum and difference frequencies in the mixer of 6 + 4 = 10 MHz (passed) and 6 - 4 = 2 MHz (rejected).

The unwanted 6 MHz signal would have passed through the receiver as easily as the wanted 14 MHz signal and would appear in the output as an IMAGE. Top-notch quality receivers are designed to have good image rejection.

There is much more to transmitter and receiver design but we cannot do everything at once.

Here are some questions to keep you on your toes until next time. Coming up - a look at the maths you need to know for the Novice exam, a spin through AC and DC circuit theory and a look at semiconductors. See you next time. Cheers from Paul, VK3DBP.



Questions

1. The purpose of the balanced modulator in a single-sideband transmitter is to:
(a) separate the carrier and audio signals
(b) suppress one of the sidebands
(c) suppress the carrier
(d) change the frequency of the audio signals

2. 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

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

4. An AF amplifier is designed to amplify within a frequency range of about:
(a) 15 to 20,000 Hz
(b) 20 to 50 kHz
(c) 15 to 20 MHz
(d) 1.5 to 5 GHz

5. Crystal oscillators are often used for frequency control in transmitters because they:
(a) are more stable than L-C oscillators
(b) have more output than other oscillators
(c) radiate fewer harmonics than other oscillators
(d) generate more harmonics than other oscillators

6. The type of transmission which takes up the least bandwidth in the radio spectrum is:
(a) CW
(b) SSB
(c) DSB
(d) FM

7. In an AM transmitter, low-level modulation is usually applied to the:
(a) final power amplifier stages
(b) stages before the power amplifiers
(c) detector
(d) antenna

8. In a single sideband receiver, a product detector is normally placed:
(a) between the IF amplifier and the audio stage
(b) between the first mixer and the second mixer
(c) in the variable frequency oscillator stage
(d) in front of the first mixer

9. 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

10. In an AM receiver, demodulation normally takes place in the:
(a) radio frequency amplifier stage
(b) intermediate frequency amplifier stage
(c) detector stage

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

NOVICE NOTES (this series will be continued in the next issue)

dxlogbook

with Rob Williams

WHAT'S HAPPENING IN THE WORLD OF SHORT WAVE RADIO...

Welcome back to the world of shortwave radio. The last few months have been packed with news from all corners of the world. We've seen the BBC leasing air-time over Radio New Zealand, major changes in broadcasting from the CIS, another US religious broadcaster come on air and the return of Iraq and Kuwait to the bands. World shortwave events are moving fast, in fact too fast to report it all here in CBA. No one source of DX information can pretend to keep you up to date. What I try to do is fill in some of the gaps behind the scenes as well as pass on the news that crosses my desk. As always all times in DX Logbook are in UTC and all frequencies in kilohertz. So before we get left behind, let's hop on the shortwave merry-go-round with the latest news.

☐ Hear Canada on RCI

With the cutbacks to Radio Canada International's external programming behind us don't forget that the country's shortwave service now carries domestic programming from their national broadcaster the CBC, allowing outsiders like ourselves an excellent opportunity to listen to the real sounds of Canada as heard by the Canadians themselves. For English programming try the following sked (to the end of September): Mondays to Fridays at 0515-0600 on 11775 and 17840 (both via the Skelton tx site); 1900-1930 on 13670, 15260 and 17820; and 2130-2200 on 11880, 15150 and 17820. The Skelton transmitters have replaced RCI's former Daventry site, which closed at the end of March.

☐ A Cold Summer In Iceland

The Icelandic Broadcasting Company has always be an interesting catch here in Australia. Their latest sked goes like this: daily to Nordic countries, the British Isles and mainland Europe from 1215-1245 on 15790 and 13830, and at 1855-1930 on 11402 and 13855; and to Canada and the USA daily at 1410-1440, 1935-2010 and 2300-2335 all on both 13855 and 15790.

☐ Alaskan Shortwave Broadcast

More news from the cold north! KNLS broadcasting from Anchor Point Alaska has issued their schedule effective to 26/9, with English at 0800-0900 on 7365 and 1300-1400 on 9660.

☐ Changes at NHK's DX Corner

Bruce Macgibbon tells me that NHK has renamed their popular DX Corner program to "Media Roundabout". I wonder if we will see it move the way of Media Network, with a much broader collection of radio, TV and satellite news is presented? Bruce's own DX tips can be heard on NHK's Media Roundabout on the 3rd Sunday of each month and he is also a regular contributor on the Fidonet computer BBS International Shortwave Echo.

☐ VOA On Tap

Many times I've mentioned the various computer networks that carry shortwave news in one form or another. Access to these networks gives one first-hand information in a matter of days rather than the usual weeks.

A good example of this Dan Ferguson's efforts to make available the complete VOA schedule on the bulletin board system (BBS) network. If you are interested in obtaining the complete VOA sked and you have access to a computer and modem why not dial up the Shortwave Possums BBS (Sydney, 02 651-3055) or Spectrum BBS (Melbourne, 03 819-9167) and download this massive and informative listing free of charge. You'll find the information available both in frequency and language (it's just far too big to print here!). Both boards also carry the latest BBC sked, too.

☐ AWR Broadcasting For Z-92

KSDA has issued their sked for the "Z-92" shortwave broadcasting season with English programming at 0000 on 15610; 0200, 1700, and 1800 all on 13720 (Sat and Sun only); 1630 on 11980, and 2300 on 15610. AWR has also decided to ID all their stations with the same slogan, so the one to listen out for is now "This is Adventist World Radio, The Voice Of Hope".

☐ WJCR Makes It On Air

SWP BBS regular Michael Rolph tells me that he's just received a QSL from new religious SW station WJCR. The turn-around was 15 days, with 2 IRC's sent. The address to write to is WJCR Worldwide, PO Box 91, Upton, Kentucky 42784 USA. Information sent with Michael's QSL informs us that the station commenced transmission at 0245 on 15/3/92 using a 50 kW Armstrong transmitter with a curtain rhombic antenna array. Many DXers here in Australia have already reported the station, which is running 24 hours a day on 7490. Programming is Southern gospel music with some Christian teaching programs.

☐ New Shortwave Station On Air

By the time you read this a new shortwave station broadcasting from the island of Palau in the North Pacific Ocean should be on the air. KHBN, which is owned by KVOH (High Adventure Ministry) was due to start on April 19th with a 5 kW transmitter while they await the commissioning of their main sender. Their expected sked is 0800-1600 on 9830 and 2000-0800 on 11980.

☐ Radio Kiribati - Is It A Ute ?

There has been some interesting debate over the last few months about the status of Radio Kiribati. Is it a utility station or a broadcasting station ? If the latter then it can be counted as another country. Respected international SW commentator Andy Sennitt made some very interesting comments on this in the International Shortwave Echo as to why it is a broadcasting station. "Radio Kiribati used to feed a low power mediumwave transmitter in the Line Islands" says Andy, "but that transmitter went off the air some years ago and Radio Kiribati said that people living there should now tune in the shortwave frequency directly. I imagine from their remote location that many of them probably have a communications receiver anyway. I suspect there would be more than a few angry letters if I took this rare shortwave frequency out of the WRTH!" According to WRTH '92 the station operates on 14917.7 kHz with 250 watts. Reports are beginning to come in that they have indeed increased their transmitting power as stated in the handbook, making it an easier catch for DXers.

☐ New Sked For RNZ

For the latest from Radio New Zealand, try these: 9510 between 1206-1655 (used for occasional sports programs), 9675 at 1650-1900, 9700 from 0800-1206, 11735 at 1900-2130, 17770 from 0000-0800 and 2130-0000. Some new programs from RNZ include "Pacific Correspondent" (reports from around the Pacific region), "Talkabout" (a new South Pacific topical radio magazine show) and a relay of the BBC Newsdesk. Thanks to Ed Evans from WCSM for posting this sked on UseNet.

As previously mentioned the BBC has hired airtime over RNZ between 1100 and 1130 using the 9700 frequency to service the local area. Good signals have been reported on the east coast of Australia, a much better service that from their other relay stations. BBC World Service programs are also carried locally on mediumwave channels in NZ (1386 kHz in Auckland,

1233 Wellington and 1017 Christchurch. It's a pity we don't have the same type of service, I'm sure it could give our commercial stations a run for their money. But, if you're really desperate to listen in to the World Service you can try their special 0055 number, the satellite feed into Australia from London or the encoded VAEIS service - although it'd be far cheaper to buy yourself a good shortwave receiver!

☐ CIS Sked Updater

Radio Vilnus has English language programming at the following times: 2130 on 9675 and 9710; and 2330 on 9530, 9710, 17605 and 17690. Meanwhile the Ukraine offers English broadcasts to Europe at 2200 on 6020 and 9820, then again at 0100 on 7400, 11950, 15180, 17605 and 17690. Thanks to Derek Cooper reporting in UseNet.

☐ WARC Expands SW Bands

A total of 790 kHz has been added to the shortwave broadcast bands as a result of the recent WARC '92 meeting in Spain. Only SSB will be used in the new segments which are expected to be available from June 2007, however as with previous band expansions you can expect broadcasters to begin using the new channels before then. There are strong pressures to commence SSB broadcasting sooner on the allocated broadcast bands but there is considerable resistance by the established broadcasters. The new segments will be 5900 to 5950, 7300 to 7350, 9400 to 9500, 11600 to 11650, 12050 to 12100, 13570 to 13600, 13800 to 13870, 15600 to 15800, 17480 to 17550 and 18900 to 19020.

☐ HCJB SSB QSY

HCJB's well-heard SSB frequency of 21455 is on the move. HCJB has indicated that it will be relocating to new channels in the 17 MHz band. By the time you read this the move could have taken place, so if you're looking to QSL the SSB service but can't find it, check around 17 MHz.

☐ Mail Call For DW

How'd you like to carry this mailbag.? Last year close to 400,000 letters were received by German SW powerhouse Deutsche Welle. A rough breakdown shows 160,000 from Asia, 100,000 from Africa and 70,000 from Europe. I suspect that this increase was a result of their policy of sending out detailed QSL cards with the transmitter site on it. Many DXers were pleased to be able to verify DW sites which were taken over with the merge of East and West Germany. One unexpected result from the figures is that mail from North America increased by 20%, surprising the many officials who thought that shortwave DXing was declining in developed countries.

☐ New Sked From Prague

Radio Czechoslovakia (formerly Radio Prague) has English broadcasts on the following beams, current to 27/9 this year: to the Pacific at 0730-0800 on 17725 and 21705; to Europe at 0600-0630 and 1030-1057 on 6055, 7345, 9505, 11990, at 1700-1727 on 5930, 6055, 7345, 9605, 1830-1857 on 6055, 7345, and 2000-2027 and 2100-2130 on 5930, 6055, 7345 and 9605; to North America at 0000-0027 on 7345, 9580, 11990, 0100-0130 on 5930, 7345 and 9580, 0300-0330 on 7345, 9810 and 11990, 0400-0430 on 7345, 9810, 11990, 13715 and 15355. Their "DX-Special" is broadcast on Wednesdays and repeated in the European and North American services on Saturdays.

☐ Get Ready For WRMI

Here's another one to add to your hitlist yet-to-be-heard new SW station Radio Miami International has applied to the FCC to use frequencies in the 31, 41 and 49 metre bands in addition to 9950 kHz and have requested the callsign of WRMI. You can expect to hear this station on the air in the near future.

That's another column for your DX pleasure. If you have any DX material you wish to share with other CBA readers then drop me a letter to PO Box 108, Minto NSW 2566. Any questions or problems can also be answered through these pages, or if you require a personal reply include a SSAE.

scan

by Russell Bryant

FREQUENCIES, CODES and EVERYTHING ELSE YOU WANT TO KNOW ABOUT SCANNING

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

ALL CHANGE PLEASE

The most daunting task confronting the administrators of the radio spectrum, irrespective of the country, is finding the space to accommodate those who demand access to this limited public resource. One solution is to open up new areas of RF previously unused, however, it is a proposal of limited merit. The usable electromagnetic spectrum is finite and eventually we will run out of space.

A second and more sensible answer is to reorganise the bands already allocated.

Approximately four years ago the Department of Transport and Communications listed the 40, 400 and 900 MHz bands for rationalisation and sought public input for just that purpose. Services were reorganised and reallocated to meet with the demands of the twenty first century.

The latest portions of the RF spectrum to come under DoTaC scrutiny are the VHF mid and high bands.

When first introduced way back in the days after World War Two, the VHF mid band, (70-85 MHz), had mandatory channel spacing of 120 kHz.

As technology improved and radio transceivers became narrower in their band widths, so the channel spacing improved, 60 kHz, followed by 30 kHz and eventually 15 kHz, as found today.

While Australia has continued with 15/30 kHz spacing, the rest of the world has introduced 12.5 kHz increments.

Because of our isolation in respect to other radio users, the consequences of the odd channel separation had little effect on the rest of the world. The only real problem was the manufacture of equipment to suit our esoteric needs and the associated high costs. The United States, New Zealand and Great Britain have had 12.5 kHz spacing on the VHF mid and high bands, (America uses the frequencies 72-80 MHz for low power services and remote links), for a number of years. Australia is one of the last remaining high density radio users to switch over to 12.5 kHz.

Over the next ten years, DoTaC has mapped out the path that these two bands will follow, in respect to changes, that will bring them and Australia into line with WARC (World Administrative Radio Conference) policy.

The VHF mid band will largely remain as it is, the only change will be in the spacing between the channels.

Some may have already noticed frequency allocations filtering through with four figures after the decimal point, rather than the usual two or three.

It is the VHF high band, (148-174 MHz), that will undergo the most dramatic reformation with many previously under utilized portions of the band being opened up for Land Mobile use. Land Mobile consumes by far the majority of usable radio spectrum.

The timetable for change has been given a target date of 1st July 2001 by which time all services currently occupying space will have converted to the new channel spacing or vacated the band completely. For all metropolitan and some regional areas in New South Wales, Victoria and Western Australia, July 1996 is the conversion deadline. Queensland, South Australia and Northern Territory will follow one year later with Tasmania bringing up the rear in July 1998.

By July 2001 all rural and regional areas will have switched.

Just how dramatic is the change?

Here is a proposed (and I emphasise the word 'proposed') schedule of the band 148-174 MHz.

148.0000-149.4050 Exterior Paging Service-12.5 kHz spacing.
149.4050-149.9000 Base station transmit, Land Mobile-5 kHz spacing.
149.9000-150.0500 Radio Navigation satellite service.
150.0500-151.4000 Base station transmit, Rural Fixed and Land Mobile Services-12.5 kHz spacing.
151.4000-152.5000 Miscellaneous Services-12.5 kHz spacing.
152.5000-154.0050 Single frequency, Land Mobile-12.5 kHz spacing.
154.0050-154.5125 Base station receive,Land Mobile-12.5 kHz spacing.
154.5125-154.6625 Single frequency, Land Mobile-12.5 kHz spacing.
154.6625-156.0250 Base station receive, Rural fixed and Land Mobile Services-12.5 kHz spacing.
156.0250-157.4625 Maritime Mobile-25 kHz spacing.
157.4625-158.3000 Base station receive, Rural fixed and Land Mobile Services-12.5 kHz spacing.
158.3000-160.6250 Base station receive, Land Mobile-12.5 kHz spacing.
160.6250-160.9875 Maritime Mobile-25 kHz spacing.
160.9875-161.5000 Single frequency, Land Mobile-12.5 kHz spacing.
161.5000-162.0625 Maritime Mobile-25 kHz spacing.
162.0625-162.9000 One or two frequency base station transmit, Land Mobile Service-12.5 kHz spacing.
162.9000-165.2000 Base station transmit, Land Mobile-12.5 kHz spacing.
165.2000-168.2000 Base station transmit, Trunked Land Mobile Service -12.5 kHz spacing.
168.2000-169.8000 Single frequency, Land Mobile-12.5 kHz spacing.
169.8000-172.8000 Base station receive, Trunked Land Mobile Service -12.5 kHz spacing.
172.8000-173.3000 Single frequency, Land Mobile-12.5 kHz spacing.
173.3000-174.0000 Miscellaneous Services-12.5 kHz spacing.

The above table is subject to change at anytime by DoTaC. The changes, however, should not be great, just minor fine tuning.

Just when you thought it was safe to commit your frequency lists to concrete....

MAILBAG

QUEENSLAND AMBULANCE ON THE MOVE

Have Southport Ambulance and Fire Brigade changed frequencies? asks Paul of Nerang, QLD. A run down on the updated Queensland Ambulance channels can be found in the new Listening Post column elsewhere in this publication. Gold Coast Fire Brigades are on 466.950 and467.500 MHz. Westpac helicopter uses 484.950, 485.000, 488.650 and 489.225 MHz while the Life Guards can be monitored on 173.000.

There is a little more to the new Queensland channels than just simply fitting cars with another radio. This is some of the history of the system.

Cyclone Tracy did much more than destroy Darwin, it highlighted the need for compatible communications between interstate emergency and rescue services. Not long after Tracy, police across Australia were allocated a band of UHF frequencies for their use.

Most of Australia's State Emergency Services also gained common channels after the cyclone. South Australia is the only state that doesn't use channels 31, 32 and 33 of the sixty four channel Australia wide police allocations.

In an effort to conserve valuable RF spectrum as well as cater to the needs of emergency services, the Department of Transport and Communications have commenced allocating blocks of common frequencies for the exclusive use of rescue and emergency organisations.

A dozen or so 410 MHz frequencies have been set aside for the exclusive use of the country's ambulance services. At this stage only Queensland, ACT and Victoria have switched, either in part or full to the new channels. Other states are expected to follow as time and money permits.

The South East corner of Queensland has more people per square metre than the rest of the state combined, it is therefore the logical starting point for conversion from VHF to UHF.

Country Queensland will maintain its VHF and HF networks for some time to come. Whether or not the Brisbane VHF channels will be sent 'bush' is yet to be determined.

scan

While there are only thirteen paired frequencies allocated, the numbering system adopted by Queensland Ambulance suggests a lot more. The use of different CTCSS tones, however, together with duplication of frequencies at various sites, makes up the different channel numbers. Five tone selective calling and ANI (Automatic Number Identification) are included within QAS radios to enhance vehicle dispatch and control.

The transmitter sites selected by QAS are Springbrook (near the NSW border), Mt Cotton (north of Beenleigh), Mt Perserverence (west), Flinders Peak (south of Ipswich), Constitution Hill (aka Mt.Coot-tha near Brisbane), Black Mountain (near Cooroy), Wilkes Knob (near Maleany) and D'Aguilar Range (near Dayboro).

Through the transmitters at the above sites, coverage is maintained over the four district operational areas, Brisbane, Nambour, Ipswich and Southport. Each operational district is responsible for the control of units within its boundaries, however, 'intercom facilities' have been provided.

Radio calls are categorized as Accident, Emergency or Clinic. Specific channels have been allocated to the three types of radio operations conducted by Queensland Ambulance Service. The term 'Accident' relates to all casualty calls, including motor vehicle accidents, whether minor or serious and heart attacks, etc.

A 'Clinic' channel deals only with routine transport of persons to and from hospitals and doctors appointments. The 'Emergency' channels are for serious emergency situations, civil disasters, aircraft alerts and major medical evacuations, as well as providing total area coverage.

Certain ambulance vehicles have been fitted with cross-band radios, enabling cross system communications with the Queensland Police. Using cross-band mobile radio repeaters reduces the risk of missed or incorrect messages and enhances interservice co-ordination.

The Queensland Ambulance employs a radio code to assist in the dispatching of cars, as well as minimising air time.

The codes and their meanings are;

01 Clear frequency - urgent message for transmission.
1 Ambulance officer in trouble - requires police assistance.
2 Cardiac arrest.
3 Doctor required at casualty.
4 Dead On Arrival.
5 Manual assistance required.
6 Doctor required at location.
7 Undertaker required at location.
8 Unable to attend any further cases.
9 Ambulance required as back up.
10 Fire service required.
11 Live wire down - SEQEB required.
12 Noxious gases.
13 Danger of explosion.
14 Ambulance in collision.
15 Patient or officer injured.
16 Police required at location.

Common abbreviations used by ambulance personnel are;
BC Brisbane Control.
CVA Cardio Vascular Attack.
MVA Motor Vehicle Accident.

Job descriptions are;
Red Immediate - lights and siren.
Blue Pain and discomfort - ASAP no lights or siren.
Green Clinic transport.

NT LAW

RB, Malak NT is trying to make head or tail out of the Northern Territory Police radio. The NT police have access to the sixty four police channels. Channel 1 is 467.850 and channel 64 is 469.425. They have established a number of systems from the sixty four block. The frequencies in the 458 MHz range are the repeater inputs to the 467/468 MHz repeater output channels. The frequencies in the 489 MHz range are for liaison with the various federal authorities. The one sided conversations are from cars transmitting on 458 MHz. To work out which is which, add 9.5 MHz to the 458 frequencies, to the 467/468 subtract 9.5MHz. The channels for NT Police VKM are, Ch.5 467.950 C.I.B Darwin, Ch.22 468.375 simplex, Ch.25 468.450 Darwin, Katherine, Jabiru, Tennant Creek, Alice Springs, Nhulunbuy, Ch.26 468.475 Darwin-computer checks, Tennant Creek-phone patch, Alice Springs-pagers.

WE ARE MOVING

Andrew has moved from Adelaide to the Queensland coastal town of Mackay and would like to know the frequencies for a host of services around his new abode. They are; Police - try searching between 76.355-77.600, Mackay used to be on 76.355 however they may have moved.

SES-168.820, 168.850, 467.525, 467.250, 468.600, 468.625, 468.650.
Fire - 73.800/71.300.
Ambulance - 82.980/82.170.
Mackay City Council - 79.480.
Pioneer Shire Council 78.070/79.540.
Mackay Electricity - 78.175, 78, 235, 78.310, 78.340, 78.820.
I had nothing specific on file for Telecom - try searching 78.400-79.36 and 160-170.
QTV and WIN TV nothing on file.
Sunshine TV-472.750 and 4MK 474.550.
Department of Main Roads-159.565/158.935.

BIRD WATCHING

Steve, Berkeley NSW has monitored a number of new callsign on the US Navy Fleet Satellite frequency 261.900 MHz. These previously unlisted callsigns are Top Rock, Arctic Warrior, Harmony and Camay Gold. Steve asks if any reader has an idea who or what these users are and if so, could write to SCAN and air their theories.

MORE FROM UP THERE

Wayne, Busselton WA has been using his PRO 2005 to search for activity on the satellite frequencies. He has discovered a number of other users of the band, such as aircraft on 263.600 and 263.800. FLTSATCOM has been heard on 261.875 and 261.950. Some unusual transmissions have been monitored on 269.750 and 269.850, foreign language and music in FM. Any guesses? Wayne also mentions that the studio to site link for 96.5 GGG FM Geraldton is 958.800.

AND AFTER A HARD DAYS SKIING

Mark of The Gap QLD is planning a trip to New Zealand skiing He is seeking a few frequencies to dial up during apres-ski, as well as the legality of scanners in the Land of the Long White Cloud. Some services you may wish to monitor are;

Ambulance (AM mode) - CH.1 106.685 Auckland, Central & North Shore, CH.3 106.7125 Auckland South, plus 106.725, 106.425, 106.6625 106.6875.

Fire (AM mode) - CH.1 106.9125 Auckland City, CH.2 106.9375 South Auckland, CH.3 106.8625 Auckland Turn Out, CH.4 106.8375 Silverdale, CH.5 106.8875 Whangerei South, CH.6 106.7875 Warkworth and Wellsford, CH.7 106.7625 Hamilton, CH.8 106.8125 Hamilton South, CH.9 104.3750 Simplex NZ Wide, CH.1 455.1375 Simplex portables (FM), CH.2 457.4000 Repeater portables (FM).

Transport (AM mode) - 82.100, 82.1125, 82.125, 82.1375 Motorways, 82.150, 82.1625, 82.175, 82.1875, 82.200, 82.2125, 82.2250, 82.2375, 458.150 Auckland City Traffic, 458.225 Auckland City Traffic.

Police - (AM mode, however FM is being introduced)-CH 1. 75.420 North Shore (Auckland), CH 2. 75.480 Central, CH 3. 75.525, CH 4. 75.575 WEST, CH 5. 75.620 South, CH 6. 75.675, CH 7. 75.750, CH 8. 75.800, CH 9. 75.875 and 464.675 for beats.

Scanners in New Zealand are legal, however, it may cause concern if one is displayed in a vehicle or a similar.

(cocntinued over page)

scan

by Russell Bryant

CONTINUED FROM PRIOR PAGE.....

ENVIRONMENTALLY FRIENDLY FREQUENCIES

Andrew, Bacchus Marsh VIC passes on the frequencies for the Victorian Department of Conservation and Environment. Mildura Region - Ch.6 71.240, Ch.16 71.170, Horsham Region - Ch.12 71.615, Portland Region - Ch.5 71.390, Colac Region - Ch.18 71.225, Ballarat Region - Ch.17 71.150, Bendigo Region - Ch.1 71.330, Geelong Region - Ch.4 71.375, Benalla Region - Ch.8 71.165, Alexandra Region - Ch.6 71.240, North East Region - Ch.5 71.390, Dandenong Region - Ch.2 71.345, Central Gippsland Region - Ch.3 71.360, Yarram Region - Ch.11 71.600, Bairnsdale Region - Ch.1 71.330, Orbost Region - Ch.4 71.375, Melbourne Region - Ch.13 71.630, Fire Protection - Ch.2 71.345, Ch.16 71.170, Fire Protection Command - Ch.7 71.135, Ch.9 71.195.

There is no channel 10 in the system.

AIRBAND NUMBERS

A reader from Laurieton NSW is chasing the frequencies for aircraft that over-fly his North Coast location, plus the CB channels used by truckies. The airband is broken into two groups the first of which is 108-118. It is know as the navigation band. Beacons and navigational systems occupy the majority of the band. Little voice is found here. The second portion is the communications band of 118-136 MHz. Transmissions on both bands are in AM mode.

The frequencies used in the areas you mention are Coffs Harbour - Flight Service 122.1, 127.7, Tower 118.2, ATIS 117.0, Movements when airfield closed 127.7. Kempsey - 127.7 Flight Service.Port Macquarie-127.7 Flight Service.Taree - 121.6 Flight Service. Williamtown (Newcastle) - Approach 133.1, 135.7, Departures 135.7, PAR 133.9, 134.8, Tower 118.3, 121.8, SMC 118.3. SMC Vehicles 121.8.

Truck drivers use channel 8 or 27.055 AM and channel 40 477.400 UHFCB. An increasing number of truckies are using cellular telephones to communicate within their ranks.

SATELLITE NOTES NO.3

Allan, Eagle Farm SA has captured some interesting stuff while searching out FLTSATCOM.

He states hearing some odd transmissions on 255.550. Allan, your notes regarding the satellites are curious and I am unable to offer any explanation for the transmissions you are hearing. What may be of assistance is this...the band plan in America or Australia has little to do with other countries.

By some propagation fluke a telephone system in the Middle East is 'getting into' the USN bird. Likewise, interference from the UK is also breaking through.

I've had a number of letters from people across the country detailing weird transmissions from the band 225-400 MHz (see elsewhere in Mailbag).

One reader was able to receive domestic United States air traffic control by virtue of the satellite...another fluke. The frequency 202.1 is one of many assigned to low power wireless mikes. The military band starts at 225 MHz, just above the frequency you listed.

PRO 34 MODS

Errol, Proserpine QLD wonders what are the mods I mentioned in an answer to someone who purchased a PRO 34 in America. I probably didn't make it clear, however, American 34's don't have the cellular bands as standard, like Australia. A simple 'cut and tuck' can restore the locked out cell bands.

While I have seen various mods to increase the channel capacity of the 34 to 3, 200 channels. I have not witnessed the end result.

I don't know of anybody in Australia handling GRE products. Maybe a letter to GRE could prove fruitful. Errol checks in with some interesting frequencies for the FNQ area. Police link 460.275, Proserpine Council 70.235, Fire Brigade 74.060, Ambulance 82.980 and finally Telecom 500.125.

AOR vs MVT

Stephen, Stuart Park NT, is tossing up whether to purchase the AR 1000 or MVT 7000 scanner and he asks which is the better. Point for point the AR 1000 and MVT 7000 are equal.

Each has a number of drawbacks and each also has a number of features over the other. I would be waiting for the AR 1500 handheld to arrive.

The reports I have been getting about this little powerhouse make it something else. The pros and cons, handhelds versus mobiles? Little difference exists electrically between the two. The mobile would have better shielding of its RF areas, leading to less (or so the theory goes) interference. Features and functions to look for are frequency coverage - make sure it covers the bands you want to use. Sensitivity is normally given as a decimal, 0.5 or 0.35 or similar. The lower the decimal number the better the scanner can hear things. Memory channels - it is always better to have too many, rather than not enough. The best antenna for picking up FLTSATCOM is one that works. Seriously, hobbyists are using everything from purpose built Yagis to pieces of wet string. Experiment with a few different types and keep the best.

MELBOURNE AMBULANCE

Randal, Melbourne VIC has made some sense of the new Melbourne Ambulance channels. Here are his efforts and I welcome any correspondence as to whether they are correct or otherwise.

Vote Ch.2 CAR Div-413.025 Ch.20 Mt Dandenong, 412.750 Ch.21 City. Vote Ch.3 West-413.075 Ch.10 City, 412.500 Ch.11 Mt Cotterill, 413.225 Ch.12 Mt.Macedon. Vote Ch.4 East-412.850 Ch.13 Mt Dandenong, 413.350 Ch.14 City, 413.100 Ch.15 Mt Leonard, 412.475 Ch.16 Mt Victoria. Vote Ch.5 South-413.175 Ch.17 Mt Dandenong, 412.525 Ch.18 City, 413.125 Ch.19 Arthurs Seat. Total area coverage Ch.1 413.425.

US DX IN OZ

Colin, Murwillumbah NSW, who incidentally has a radio licence for nearly every band, captured some interesting DX from the States recently.

At 0050z on 33.060 MHz NFM he monitored what appeared to be road crews being dispatched to Olympus Drive Los Angeles in the southbound lane to repair potholes.

A check of my frequency lists for America indicates this frequency is one allocated to CALTRANS, which is short for California Transport Department, the body responsible for road maintenance. Other low band allocations for road workers are 33.020-33.1 with 40 kHz spacing, 37.90-37.98 with 20 kHz spacing and 45.68-45.84 with 40 kHz spacing.

THE HILLS ARE CALLING

Andrew, Windsor Gardens SA writes that SA Police frequency 73.190 is still on the air, long after the police have switched to their VHF highband system. He asks if Para Hills and Holden Hill both use Delta callsigns?

According to my records Region D (Delta) has its headquarters at Para Hills. Patrols in the Para Hills area use the callsigns D 10-D 19 while Holden Hill patrols use D 30-D 39. The answer to your other question is yes.

HOT AIRFORCE FREQUENCIES

A Queensland reader has provided SCAN with some hot frequencies for 35 Squadron which operates Iroquois aircraft out of Townsville (all are AM).

Ground - 264.6, Tower - 257.8, Approach - 307.8. Control - 328.5, GCA Finals - 270.6, 35 Sqn Tarmac - 275.9, 35 Sqn Air to air - 316.5, 9 Sqn Tarmac - 263.8, 5 Sqn Air to air - 308.0, 12 Sqn Air to air - 275.6, 36 Sqn Air to air - 316.9, Rockhampton Tower and Approach - 269.6, Amberley Approach - 363.8, RSO Air/gnd/air - 287.5, RSO Quadrants - 273.2, RAAF Marine craft - 279.2, Search and Rescue Scene of Action - 282.8, SAR Training - 245.1 and ATIS - 316.2

ST JOHN FREQUENCIES

Luke, Balga WA is seeking the frequencies for St.John Ambulance in Western Australia. St.John has an extensive VHF and UHF network covering the state. VHF repeater frequencies are 79.600/80.550, 79.630/80.580, 79.960/80.625, 79.990/80.670. VHF simplex 80.010, 80.025, 80.040, 80.055, 80.070, 80.085, 80.595, 80.670, 80.745. UHF 412.475, 412.575, 412.650, 412.750, 413.025, 413.075, 413.100, 413.125, 413.150, 413.175, 413.225, 413.300, 413.350, 413.375, 413.425, 463.275 and finally 469.525 and 469.575, both of which are simplex.

scan

CONTACTS

NAME : Wayne Larsen
CONTACT : PO Box 157 Busselton WA 6280
INTEREST: Satellites and anything from WA.

NAME : Errol Hurst
CONTACT : PO Box 608 Proserpine QLD 4800
INTEREST: Any state, any frequency.

NAME : Geoff Phillips
CONTACT : PO Box 175 Warooka SA 5577
INTEREST: Ham, utes, fire, police - prefer Adelaide area.
Geoff has a NT ESG for anybody that may what it.

PROPAGATION

NSW TO CHANGE VHF ALLOCATIONS

I am told through reliable sources that the NSW Police are to change their VHF mid band frequencies. They are currently operating on 82/83 MHz and the information to hand is that 78 MHz is the area to which they will move.

The police policy of installing VHF repeaters throughout the state will continue.

The move is a part of the re-organisation of the VHF bands and is likely to affect other previously longtime users of the lower frequencies.

The move is all a part of the rationalisation of the VHF bands. With that in mind, two questions...will the NSW Ambulance finally move up to the national UHF allocations and why have the NSW Fire Brigades been experimenting with 800 MHz trunking in Sydney?

THE LONG AND THE SHORT OF IT

A common question being asked is...what is the best internal aerial when using a portable as a base station? In my opinion a telescopic whip can improve your reception ten fold.

The aerial supplied with ALL portable scanners is a compromise and suitable for local reception only, few if any rate as good.

The telescoping whip can be 'tuned' to suit the band or bands being monitored. For example, you have a mixture of VHF mid and high bands as well as UHF in the scanner, a fairly normal scenario.

By extending the whip to 90 cms (a quarter wave at 80 MHz) you can effectively receive all of the above bands by using the harmonic effect of the aerial.

For UHF a quarterwave is approximately 15 cms, a sixth harmonic of 80 MHz or 90 cms. For high band VHF a quarter wave whip should be 45 cms, or a second harmonic of 90 cms. For a few extra dollars a BNC 90 degree male/female connector permits the use of the whip with the radio flat on its back.

DIAMOND-A GEM OF AN ANTENNA?

Something of a debate is taking place (in the nicest possible way) among a group of friends of mine. The subject for discussion is the pros and cons of the Diamond D 707 active antenna and whether it is the performer it is advertised as being.

I have used the 707 for many years and highly recommend it. One of the participants of the debate purchased a D 707 more or less on my say so and much to his dismay lost a lot of what he was listening to using his D 130 discone.

He has subsequently lowered the 707 and resurrected the 130. He experimented with a variety of cables yet could not improve performance to the desired level.

Another member of the Diamond club was having trouble with his unit until he replaced the RG 58 coax with RG 213. The result, an almost immediate noticeable gain (pardon the pun) in capture area and services heard.

So as I am now given to saying to anyone who asks, "Can I recommend the D 707 active antenna from Diamond?" "There are those who swear by the D 707's and those who swear at them." The debate continues.

FOR SALE

Elsewhere in this issue is my review of an AUSSAT receiver. Because it is not easy transporting these things back and forward across the country side the test unit is available for purchase. The setup includes the dish, receiver and cable. If interested parties will please drop me a line with your phone number I will get back to you.

The price is $750.

WHO OWNS A SCANNER?

Occasionally those who write to me mention their occupations. It surprises me just how diverse a pastime scanning is. Enthusiasts come from all walks of life inluding the unemployed, firefighters, police, clerks, doctors, barristers, laser physicists - even media personality Clive Robertson owns a scanner. I am told Clive reads this column. Steady my throbbing ego.

The postal address at Roselands is no longer operational. All mail, be it a technical question, a request for frequencies or whatever, should be sent to;

SCAN
PO BOX 344
SPRINGWOOD NSW 2777

Please remember to include a stamped self addressed envelope if you require a personal reply.

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MORE PEOPLE TURN TO US for uniden®

COMPACT PRO 510e AM CB

Very high quality and extra reliability make the Uniden PRO 510e a popular choice among avid CB'ers. You only have to use the PRO 510e once, to realise the outstanding performance and build quality. A full range of features are packed into this compact 155 x 35 x 167mm unit and you can pack it under your dashboard with ease. DOTC approved.

- Switchable noise limiter to reduce ignition noise
- Front panel mic socket for tight installations
- Bright LED channel display
- Signal/power output LED meter
- Complete with mic and mounting hardware

Cat D-1108

2 year warranty **$119**

UNIDEN PRO 640e AM/SSB CB

The very best in Citizen Band radio! Uniden's stunning modern design with a Digital Bargraph meter for SWR, Signal and RF output, pushbutton selection for many features and individual illumination for every control. DOTC approved.

- Pushbutton control of noise limiter, SWR, PA facility, Hi-cut and RF attenuation
- Mic gain, Volume, Squelch and Clarifier controls
- LED bargraph meter for Signal, RF output and SWR
- Direct access to emergency channel 9
- High power 7 watt audio amplifier
- Includes mic, mounting hardware and instruction manual

Cat D-1480

2 Year Warranty **$329**

EXCLUSIVE BONUS FOR CB ACTION READERS

Present this advertisement when you purchase a PRO 640e and receive a 5ft helical whip pack (Cat D-4076 valued at **$19.95**) at no extra cost.

Our Most Popular UHF CB

UNIDEN UH-001 CB

It's easy to see why the Uniden Sundowner UH-001 UHF CB is a prover long time favourite amongst UHF CB'ers. Not only is it incredibly durab and reliable, but it's amazingly easy to operate. As well, it comes complete with a quality microphone, mobile mounting hardware and Uniden's famous 2 year warranty.

- Straightforward mobile operation with easy to use controls and front panel mounted mic socket.
- Easy to read LED channel display with separate Tx/Rx indicator lights
- Duplex switch for repeater operation
- External speaker socket
- It's incredibly compact at just 150(w) x 50(h) x 190mm(d)
- D.O.T.C. approved

Cat D-1805

2 Year Warranty **$29**

Exclusive to Dick Smith Electronics

UNIDEN 70XLT HANDHELD SCANNE

Now here's value! This high quality handheld receiver from Uniden is a gem. It's very easy to operate, has 20 memorie 8 band coverage, receiver track tuning ar it comes with a rechargeable NiCad batte pack, approved AC charger and durable carry case. What's more it's lightweight a small enough to fit in the pocket.

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

Cat D-2740

$26

Remote Mountable Panel

UF-2020 SCANNING UHF CB

NEW '92

new Pearce Simpson UF-2020 is our most sophisticated scanning CB and has new features for greater convenience and enhanced ormance. A remote mountable front panel with an inbuilt speaker supplied extension cable allows you to mount the rig's panel on your iboard and have the main body of the rig relocated out of the way er a seat). In addition, its dual microprocessor design provides a ber of scanning functions (including open scan, group scan and a ity channel with 4 selectable modes) plus a repeater reverse mode, rammable one-touch recall CALL channel and digitally adjustable lch system. Specialised functions include a programmable timeout timer and selectable squelch hysteresis. All settings are stored in an internal memory located in the transceiver's front panel and automatically saved when the transceiver is switched off at its on/off switch. Comes complete with a microphone, mounting brackets (rig and front panel), extension cable and DC power cable.

Cat D-1802

PEARCE-SIMPSON

$449

THE BEST ANTENNAS IN THE BUSINESS

DIAMOND D-130J DISCONE ANTENNA

This quality Japanese discone antenna covers the frequency range 25-1300MHz and is easy to assemble and install. With extensive stainless steel construction it's extremely durable. A wide frequency coverage makes it ideal for use with scanning receivers, as well as transmitters for the UHF CB, 6m, 2m, 70cm and 23cm amateur bands. Complete with instructions and mast mounting hardware.

Cat D-4840

NEW '92

DIAMOND

Now Only **$159**

1.5m HEAVY DUTY ANTENNA KIT

MOBILE ONE

A complete, heavy duty 27MHz CB antenna kit in one pack! Comes with 1.53m 'Superhelical' medium to long range antenna, heavy duty stainless steel spring and heavy duty base with cable and plug. The economical way to buy!

Cat D-4088 *5 Year Warranty* *Only* **$69.95**

MEGATRON 27MHz BASE STATION ANTENNA

BENELEC

A superb 5.75m ground independent base station antenna, from Benelec. It uses a tuned matching network in a sealed, thick walled, base housing giving excellent protection from corrosion. As well, it allows high power operation (up to 1000 watts) while maintaining low SWR across the band. High quality T81 grade aluminium tubing and stainless steel screws ensure excellent reception and durability. The base section is water sealed with a DC ground path for static reduction and an SO-239 socket for easy coax connection. Complete with mounting hardware for connection to your mast.

5 Year Warranty

Cat D-4430 **$89.95**

1.8m SUPER HEAVY DUTY 'SKIPWHIP'

MOBILE ONE

We consider this our best 27MHz 4WD antenna... and most people agree. The rugged fibreglass rod features oversize helical windings (using copper braid rather than wire), 'Super Spring' assembly for extra strength and a high impact polycarbonate base with 1/2" bolt for bull-bar mounting. Comes with 3.5m coax cable fitted with PL-259 plugs.

Cat D-4078 *5 Year Warranty* **$149**

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Tandy's two-hundred dollar scanner The Realistic PRO-58

How quickly we forget. How easily we take things for granted. How simple it is for a scanner enthusiast to become blase about having hundreds of memory channels and millions of frequencies on tap.

No, I'm not about to launch into a "those were the good old days" spiel but, such a perspective does help you appreciate offerings such as Tandy's low-cost entry-point scanners.

The PRO-58 is Australia's most affordable desktop scanner. It ties with it's sister model, the mobile PRO-2028, as Australia's cheapest scanner bar none.

Think about this... a zac under $200 for a brand new scanner. Just plug it into the AC outlet, punch in your favorite channels, sit back and listen. That's damned good value.

And the above scenario is exactly the market which Tandy and the PRO-58 have in their sights.

It's a strategy of giving you what are considered the basics of scanning for a basic price, so any assessment of the PRO-58 has to focus on what you can expect for your money.

Features

You don't expect a few hundred channels, so the PRO-58 gives you ten.

You don't expect DC to daylight coverage, so this radio gives you the bare essentials - the 66-88 MHz VHF mid-band, 138-174 MHz VHF high-band (including the 2 metre ham radio allocation) and 380-512 MHz UHF, which includes the 70cm amateur band, a swag of government and commercial services and in short the bulk of two-way activity in most large cities.

Die-hard monitors will be in a right state about now, laughing at the PRO-58's meagre offering and casting loving eyes at their Super Tart Scan 5000 and her ten thousand channels and terrahertz coverage.

But, as much as we'd all love a Ferrari we don't all need one, and the same is true for scanners.

The PRO-58 does the job. It allows you to keep an ear on a handful of local two-way channels, and scans between them.

It can temporarily lock-out any number of channels from the scan sequence and put a two-second delay onto a channel so you can catch every over.

Feature by feature this is almost identical to the VHF/UHF receivers of the 70's which defined the term "scanner", and even if technology and the sophistication of the user has moved ahead in the years since there still remains a place and a buyer for this no-frills package.

Simplicity In Itself

Programming and operating the 58 is simplicity in itself, again in keeping with the rig's intended market.

There are no complex function keys, no double-use buttons or long keystroke sequences - just punch in the memory channel for direct listening or hit SCAN for scanning.

Anything else - search banks, priority channels, adjustable stepping or selectable modes - these are all frills on a $200 scanner, so don't look for them here.

The built-in antenna is a simple telescopic whip which screws into a neat recessed socket atop the scanner's casing and to the right of the speaker.

On the rear panel are jacks for the supplied AC adaptor and an external antenna, the latter using the Motorola car-radio antenna connector. Yes, the PRO-58 is built to keep costs right down to the affordable, however I just don't understand why they can't find the extra few cents in their production run to replace this accursed connector with a proper BNC socket.

Like the Pyramids and the PAL connectors on Philips UHF CB rigs, this will remain one of life's mysteries to me.

I very much liked seeing the ON/OFF switch separate to the volume control - very handy when you've found just the right volume for the environment, and doubly so because while this may vary from day to day in a mobile a desktop set is more a set-and-forget routine.

The manual is another of Tandy's well-illustrated and informative efforts, including a list of "birdies" or internally-generated signals within the PRO-58.

Whether the PRO-58 is for you will depend on why you scan, and the way you scan.

Ideal For Beginners

If you're a beginner (and not necessarily someone on a budget) but are uncertain about the wisdom of committing the thick end of a thousand dollars into what is essentially a hobby for sandbaggers when you're used to the two-way participation of CB radio - then yes, the PRO-58 is for you.

$200 is not a major sum these days, despite what the economists are telling us, and for this you can get a good taste of scanning and what it offers.

Value and Fun

If you like what you hear on the VHF/UHF bands you'll get plenty of value and fun from this desktop before you feel the thirst for more - and when you can wait no longer, buy yourself a feature-packed handheld (which I would strongly recommend to those intending to get the most from scanning)

David Flynn discovers Australia's most affordable desktop scanner...and surprise, surprise...it's from Tandy

and keep the PRO-58 for the workshop, the study or the bedside.

There's no reason you can't have more than one scanner, or so Russell Bryant keeps telling me!

It's Also Good Value For Money

If your listening habits are local in nature, clearly defined as being a handful of channels in any of the "big three" bands to which the PRO-58 tunes, then you'll also find that this model offers more value for money than the all-singing all-dancing rigs for twice the price.

The PRO-58's main limitation for most users will be the 10 channel limit. This makes it into more a tool for monitoring than for heavy-duty scanning, if you get my drift.

When I came to program the PRO-58 it wasn't the usual matter of throwing in the bulk of my frequency list - I had to stop and think of the frequencies I really couldn't do without, and be a little ruthless in the process (not at all a bad thing, sometimes...).

For instance, with a 58 destined to stay in one place rather than roam as might a handheld or mobile, the choice might come down to a selection of UHF police channels using the strongest transmitters for your location.

SUMMARY

"Value for money" is a disposable line these days, and an oft-over-used one, but here it is the only one that fits.

There are no pretenses to greatness with the PRO-58, and what you see is what you get. If you're teetering on the threshold of getting into scanning, but the dollars are holding you back, this might just be the rig for you.

Philips announces the new FM650SD UHF CB Radio.

If you're always on the move... your next move should be to a FM650SD from Philips.

Philips Mobile Communication Systems Pty. Limited

For further information contact your Philips State Office or local Philips dealer:
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PHILIPS

PHILIPS

WE'VE SAID IT BEFORE AND WE'LL SAY IT AGAIN

IF THE SWR's NOT RIGHT YOU'RE WASTING YOUR TIME

PART ONE

By Ken Reynolds from POWER BAND COMMUNICATIONS

You've probably read everything we thought you wanted to know about antennas and SWR but didn't know who to ask ... well, this time we are going to try and tell you everything you wanted to know about antennas and SWR because you decided to ask CBA.

In fact the reason this little piece came into existence is entirely due to the requests from a number of CBA readers and in particular, a letter from David Eyre of Lethbridge Park in New South Wales.

David tells that he is new to CB and just had his first attempt at SWRing his mobile antenna, however, he ended up a bit puzzled about some of the results he got.

David writes (in summary):-

"Believe it or not, I got between 1.1-to-1 and 1.2-to-1 SWR on one channel, but on the road the SWR went up to 1.8-to-1."

My set is an AM CB under-dash mounted. The antenna is mounted on a roof rack and has a one foot diameter ground-plane at the base and has an earth wire running from the earth side of the antenna mount clamp to the negative terminal of the car battery.

As a result he asks these questions...

Q1. What happened for the SWR to go up to 1.8-to-1?
Q2. Which is the best channel on which to tune the antenna?
Q4. Is there a maximum or minimum length for antenna cable?
Q5. If SWR goes up and down like a yo-yo, what is the problem?
Q6. Does signal go from the top of the antenna or the base of the antenna?
Q6. Which antenna is best suited for my needs?

Although David's questions are fairly simple in essence they really open a whole can of worms where the possible explanations could well become lengthy and complicated if a full understanding of some of the points raised were attempted.

Before I attempt to answer David's questions I would like to preface the explanations with these comments to put things into their proper and relative perspectives.

Writing articles for CB Action and other publications always poses a dilemma in trying to target the appropriate level of understanding of readers.

I am in no way criticising the readership of CBA, but rather alluding to the diversity of the magazine's readership.

Over the years it has become apparent that CB ACTION is read by people who range from those with absolutely no technical knowledge (and no desire to have any) through to tertiary educated, technically skilled persons, to those holding academic qualifications in the sciences and humanities who may just want to use CB as safety equipment while travelling the country or the outback, but who need to know some basic information about the workings of CB communications and its benefits and restrictions.

So, my intention here is to provide a reasonable level of explanation in common terms that I hope will be easily understood without approaching too closely subjects like the complex feed impedance of a roof-rack mounted CB antenna in terms of network analysis, where current and voltage distributions dictate that admittance is a more appropriate term than resistance and Smiths Crisps taste a lot better that Smiths Charts.

TO UNDERSTAND THE QUESTIONS ...

A pre-requisite to understanding the answer to a question is to understand the question, and some new readers of CBA (and some older ones too) could probably do with a brush-up on their antenna basics before we get started.

So, in this issue we'll attempt to outline the relevant parts of an efficient mobile antenna system for 27MHz CB while touching on the associated subject of base antennas. As we do so you will see some of David's questions evolve and probably even answer some of the questions before we get to them in the next issue of CBA.

THE MODEL or IDEAL ANTENNA

Somewhere in the mix between theory and reality we arrive at an antenna configuration that manages to fill most of our practical needs without

(continued over page...)

being given to 'antenna fantasy' as some would have you believe.

The shortest resonant antenna (or radiator) is one half of one wavelength long at the operating frequency. In the HF (high frequency) Citizens Band of 27MHz one half wavelength is very close to 5.6 metres or 18 feet long.

To calculate this figure simply divide the distance travelled by the radiation in one second by the transmission frequency in cycles per second.

The calculation for one wave (wavelength) in feet is:- (assume radio waves travel at the same speed as light) approx. 186,000 miles per second, divided by the frequency of 27,000,000 cycles (Hertz) per second, then multiply by the number of feet in one mile - 5280ft and the answer is 36.27 feet for one wavelength.

$$\frac{186{,}000}{27{,}000{,}000} \times \frac{5{,}280}{2} = 18.18 \text{ feet}$$

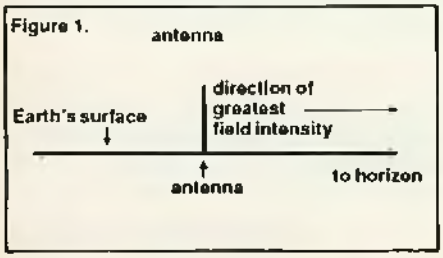
speed of radio waves = 186,000 miles per second

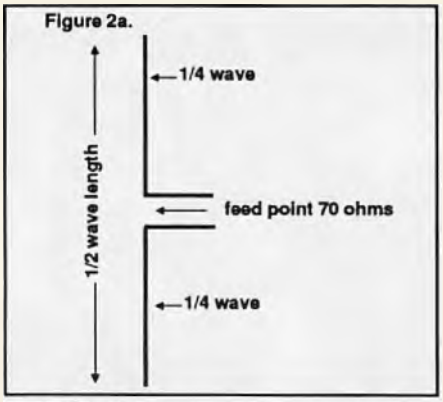
frequency in Hertz (27 megahertz) = 27,000,000 cycles per second

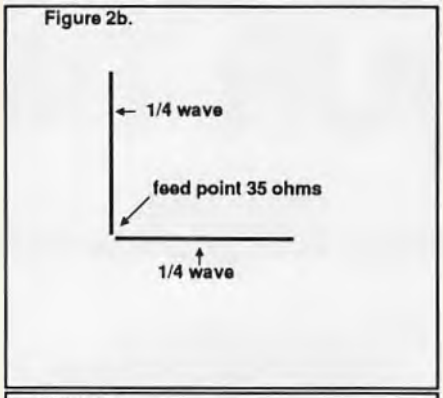
one mile = 5,280 feet

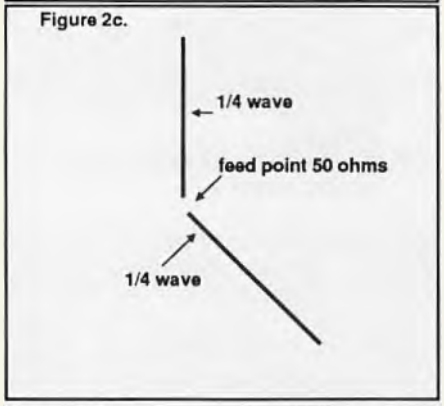
Since we only need one half wavelength simply divide the answer by two to arrive at 18.2 feet approximately.

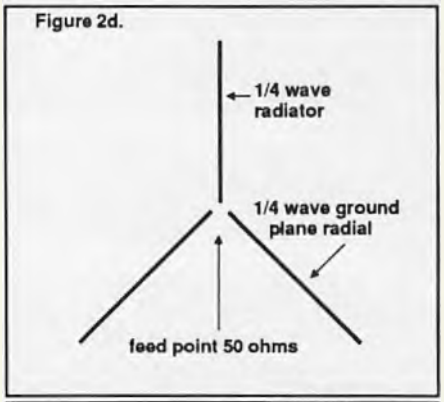
As you can see it's no coincidence that your average base station antenna is about 18 feet long - it just happens to be the most simple and efficient size for your station and is what we call a (you guessed it) a one half wavelength antenna or radiator - not to be confused with a marketing gimmicks that could lead you to believe you have a three-quarter wave antenna. A full size half wave antenna - assuming sensible design parameters - is about the most efficient way of transmitting your signal in a single element antenna. And if it is mounted in the vertical plane it should have an excellent radiation pattern for omni-directional operation, just what we need for good mobile to base or even mobile to mobile operation. As you can see in Figure 1, most of the radiation is aimed toward the horizon with the least radiation toward the overhead sky.

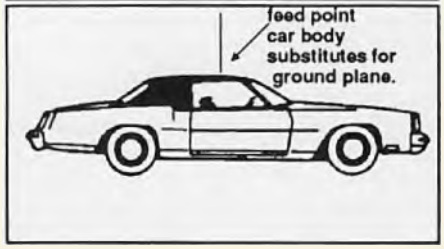












This antenna is usually known as a half-wave dipole and contrary to common belief, a dipole antenna does not have to be fed at its centre.

Your average 27MHz base antenna is a half-wave dipole that has been 'end fed' with a tuning network that converts the unusual end feed impedance to the nominal 50 ohm unbalanced feed from your co-axial cable which in turn is the same impedance that appears at your CB's antenna connector.

EVOLVING A MOBILE ANTENNA

Since we know a half wave antenna is the best choice for an antenna, it seems our only problem now is to produce a practical version to fit the family 'wheels'.

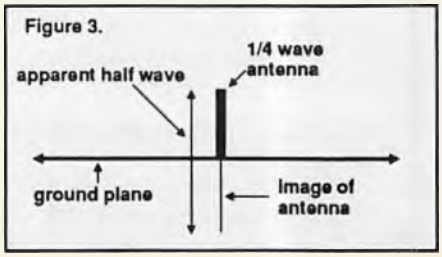
These are our design considerations:-

1. **The antenna must be a practical size.**
2. **The antenna efficiency must be as high as possible.**
3. **The antenna must be strong and flexible.**
4. **The antenna must be simple with a 50 ohm feed impedance.**

(All modern CBs are nominally 50 ohms antenna impedance).

Figure 2a shows a half wave dipole configuration that is centre fed. Note the feed impedance at resonance is about 70 ohms. Figure 2b shows another type of half wave antenna where the lower quarter wavelength of the radiator has been set at 90 degrees to the top quarter wave. The feed impedance here is about 35 ohms or about one half the value in 2a.

Figure 2c shows a further variation of our dipole but with the lower quarter wave element angled about midway between Figs 2a and 2b. The feed impedance of 2c is about half way between the values of 2a and 2b and is very close to our target impedance of 50 ohms - if the antenna is fed at its centre. While it probably won't change your life much, it is important to remember that the impedance values given for figure 2 are only correct when the antenna is at resonance - operating at the natural resonant frequency which we



calculated earlier. Figures 2d and 2e illustrate the evolution of the 'ground plane' style antenna from a simple dipole antenna. Notice that very much the same conditions exist with figure 2e. The upper half (quarter wavelength) of the antenna has remained unchanged and only the lower quarter wave values have been redistributed by changing the shape of the GROUND PLANE by using the car's bulk to approximate the required ground plane conditions. In antenna theory we actually consider the ground plane antenna from a different perspective preferring to see the vertical quarter wave radiator as a mirror image reflected in the ground plane and appearing directly below the first quarter wave - exactly like attaching one vertical 1/4 wave to a horizontal mirror depicted in Figure 3. Some readers may prefer this concept to the ground plane 'radial' idea which the car body now becomes. I prefer the mirror image concept because it's easy to imagine the perfect reflection of the radiator in a perfect mirror, but it is also easy to imagine that substituting an imperfect ground plane like a car body is going to produce less than a perfect imaging medium.

In practice, this is the case, however, in most instances a motor vehicle body has sufficient size to be a very effective ground-plane. And, with our quarter wave antenna mounted in the centre of the roof of 'your average family sedan' the results can be quite good.

COMING DOWN THE STRAIGHT

We have evolved our full size half wave vertical dipole into a one quarter wavelength radiator and some type of image of our quarter wave reflected in our ground plane ... or, for those who prefer the other concept, the lower quarter wave portion of our dipole has been replaced by a metal motor car body which, conveniently, just happens to be about the right size to solve our problem. Fibreglass or plastic car bodies don't count in this equation because they don't conduct electricity.

Even if you have a fibreglass roof-top you will need to find an alternative ground plane, but more about this later, for the moment let's get on with resolving the quarter wave radiator problem.

As most readers will probably already know a quarter wave radiator at 27MHz is about 9 feet long and for some operators it does not pose a problem having a 9 feet length of stainless steel or fibreglass waving around in the sky as they drive about the world.

However, for most of us the recipe for daily life requires something a little more dignified that doesn't light up your rig on the overhead power wires or 'take-out' some poor sod's fluorescent lights every time you go for petrol.

So, we are now faced with reducing the length of our antenna while retaining the best level of efficiency we can get. Unfortunately, reduced antenna size and high efficiency do not go hand-in-hand, and in general terms the more you abbreviate your antenna the less efficient it becomes. You might liken the situation to shifting house when you really need a furniture van but you only have available a Holden Ute' ... you will be operating at reduced efficiency.

If you use a tiny substitute whip in place of a full size quarter wave you are not likely to go down in history as a big mover in the radio business either!

Obviously, the name of the game is compromise and with that in mind, most people settle for a 'LOADED' antenna somewhere between 3 and 5 feet in length. Longer antennas, around 6 feet in length, seem to be favored by many 4x4 drivers. A loaded antenna is usually a combination of mechanical and electrical deception designed to trick the radio and feedline into believing that a full size quarter wavelength antenna (on a proper ground plane) is connected to the other end of the cable - when in fact the loaded antenna might be only a few inches long mechanically but it appears much longer to the radio system.

More next issue.

27 Mhz Citizens Band

SUPERHELICAL

DX160SH, DX140SH →

The tapered "Cut -to-tune" DX160 (1.53m) and DX140 (1m) Superhelicals™ are precision made "Top Quality" Helical antennas for operators who want the best.

SKIPWHIP

← DX270SS

Mobile One's Super Spring Skipwhip™ is constructed by winding copper braid around a solid tapered fibreglass former to produce a similar radiation pattern to a standard quarter wave antenna. Covered in polyolefin heat shrink, the Super Spring Skipwhip™ will survive all of Australia and New Zealand's harsh weather conditions. The Super Spring will absorb some of the shock caused by Off Road Driving etc. This antenna has a high power rating and incorporates an anti-theft feature to protect your investment. Mounts to our 1/2" Super Antenna Mount.

S.A.M.

This robust 1/2" Super Antenna Mount is constructed of virtually indestructible Fibreglass Impregnated Nylon. A half-inch hole in a bumper or bracket is all that is required to mount the S.A.M. The weatherproof external SO239 RF socket allows easy installation of your pre-terminated coaxial cable from the base to your radio. Aust. Pat. No 588617 U.S. Pat. No. 4,804,973 Aust. Reg. Des. No. 1008115

Super Spring Skipwhip™ Antenna, S.A.M. Base and Coaxial lead sold seperately or as a pack.(Code DX270SAMPK)

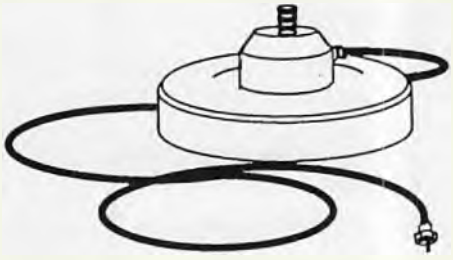
B.M.S. & B.M.B.

Mobile One's patented Boot and Bonnet Mounts are available in Stainless Steel or Black finishes. The Boot Mount slips over the lip of most boot or bonnet lids and is held in place with two stainless steel Allen screws. This mount is suitable for installing Mobile One Dipole Mounts, HF/VHF Base A and our UHF Base UL.

BMS & BMB Boot Mount

MAG12C

The MAG12C Magnet Mount is available in both bright chrome and black finishes. Mobile One's Unique Mount incorporates an "Enhanced Field Core" for better adhesion and comes complete with our Patented "Dipole Mount and leads assembly. Suitable for speeds of up to 100KPH with 40" antennas (150grms)



MAG12C

ULTRA HIGH FREQUENCY

6db Megablaster
Stacked Co-linear Mobile Whip

This 1.2mtr (48") stacked co-linear has been manufactured to provide maximum gain with minimum fuss providing a low angle pattern with a minimum 6db gain. The braided fibreglass whip can be mounted on any standard UHF mobile base without the need to incorporate messy plugs and springs. The special phasing incorporated in this design has been tested to provide a low angle of radiation and maximum output gain for 477 MHz. The extra length of this design has prooved a real winner amoung Scanner enthusiasts due to the Megablaster's ™ excellent receiving capabilities. Weatherproofing is accomplished by utilising the finest Polyolefin heat shrinks to give this unique antenna a finish that will protect it long into the future.

S474

M476

S474
Super Stainless Steel
4.5db Gain Mobile Whip

This rugged stainless steel co-linear whip represents the **"State Of The Art"** in mobile UHF whip technology, providing a low angle pattern with a minimum 4.5db gain.

The sturdy 1.25mm diameter stainless steel whip will remain vertical at high speeds and is ideal for applications that require a rugged and durable antenna, such as farming, industrial, mining, heavy-transport etc. All component parts of the S474 are of Brass and Stainless Steel for total protection against the elements. This product has been optimised for Magnet Mount (MAG36C) or Roof Mounting. It may also be used with Mobile One's patented UHF base mount (BASE UL) or with the Mobile Dipole Mount (DM36) which is suitable for Roof Rack or Mirror Mounting.

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Now for something completely different

THE M2100 SATELLITE RECEIVER FROM AV-COMM.

The first time the world heard of a satellite was when science fiction author Arthur C. Clarke wrote about them in 1945. He theorised that if a satellite was placed in space high enough above the equator, its orbit would be equal to that of the earth and thus would appear to all intents and purposes stationary.

Positioned at 36,000 kilometres above the earth's surface, these satellites are sometimes referred to as being in the 'Clarke Belt' which is of course named after the famous writer.

The technical term is geo-stationary.

In 1957 the Soviet Union launched Sputnik, the world's first satellite or more correctly the first man-made satellite.

Five years later Telstar, the first communications satellite, was launched by the Americans.

Thirty years on and there are now over 100 television and communications satellites orbiting earth in a geo-stationary pattern.

AUSTRALIA LAUNCHES AUSSAT

Australia was a belated entrant into the satellite technology race.

It wasn't until the late 1980s that our own communications bird, Aussat, was launched from the American Space Shuttle.

Since then, we, as a nation, have adopted the medium almost without reservation.

With few exceptions every club, hotel and motel is linked to Sky Channel. The largest user of satellite services, however, is the news media and particularly television stations.

News, program and promotional transfers (interchange between network stations) take place on an almost continuous basis.

Overseas news vision and stories are also sent out on the satellite transponders.

Now the opportunity exist for you and I to view this 'raw' material.

AV-COMM Pty Ltd is importing an Aussat Satellite system that opens the door on this previously hidden form of national and international communications, almost without restriction.

NOTE THE LAW

A note of caution however.

There is no harm and nor is it illegal, in viewing un-encoded programmes or material from Aussat.

It may be out of an interest in international affairs and news or simply curiosity as to how local and international television works.

Keep in mind, however, that the program material is copyright and protected by very stiff laws, including imprisonment.

Satellite reception is no longer beyond the reach of the ordinary man. For less than a thousand dollars you can get all the gear necessary to tap into space age technology.

Russell Bryant checks it out.

This means that you as an enthusiast are in a privileged position to be able to receive these signals without cost. Don't ruin or destroy that privilege by an unlawful or stupid act.

The AV-COMM systems comes complete with a 1.8 metre pressed steel dish, magnetic polariser and feedhorn plus LNB or low noise block converter, a 99 channel, infra-red remote controlled receiver along with all the cable needed to connect the segments together.

The dish is a departure from the 'normal' satellite antenna.

Instead of the usual single steel mounting pole, which has to be cemented into the earth, the AV-COMM dish comes with it's own supporting frame which allows for easy adjustment of elevation and azimuth.

Importantly, and should you wish to move the dish setup it can be done easily.

EASY TO SET UP

Once the various components are unpacked, take the time to read the accompanying literature and thus avoid errors. Don't be put off by the apparent complexity in setting up the system. It is no more complicated than erecting a TV antenna, plugging in a video 'look-a-like' black box and flicking a few switches.

From setup to tuning in took me approximately one hour.

Using an ordinary compass I noted north and positioned the dish approximately facing this direction.

A more accurate bearing will be established later on. The dish was located in an area free from over-head obstruction. Trees and buildings will degrade the in-coming signal so take care.

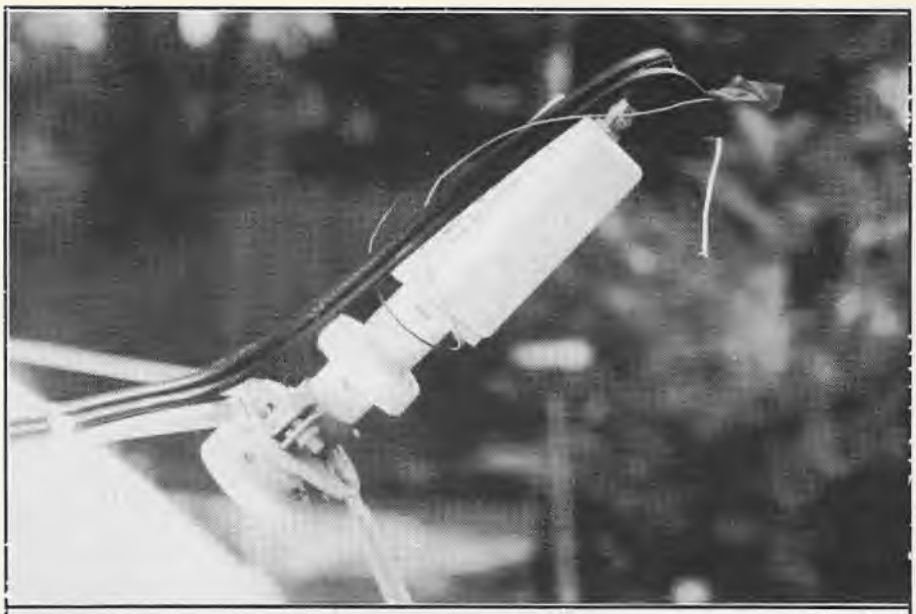
I decided that night would be the best time for the setting up. Using a narrow beam, high intensity torch, I placed it in the centre of the dish, the beam immediately indicated any obstruction. The process was repeated on the edge of the dish to ensure a completely free signal path.

From the various pieces of written material that accompany the AV-COMM unit, we established that a bearing of 8.89 degrees azimuth was required with an elevation of 50.07 degrees.

TOP: **The low noise block (LNB) is fitted to the receiving dish via three stand-off arms. Part of the dish alignment is done (by Russell anyway) by shining a torch (at night stupid) through the mouth of the LNB to ensure that it lines up correctly on the dish.**

CENTRE: **Setting up the system is no more complicated than plugging in the dish via a video 'look-a-like' black box and flicking a few switches.**

BOTTOM: **The dish - at home in Russell's garden - of a sufficiently small size to not attract unwelcome enquiries from the neighbours.**



To compensate for the magnetic variation of our location it was necessary to subtract 11.5 degrees (variation for Sydney) from 8.89 degrees. The ultimate bearing for the dish is 357.39 degrees.

A child's protractor was used to give an approximate elevation of 50 degrees.

Elevation of the dish is adjusted by telescoping a square length of steel tubing (which is hinged to the apex) inside another section of square steel tube affixed to the base of the stand. A large screw holds the sections in place once the elevation has been established.

ASSEMBLING THE FEEDHORN

The feedhorn is probably the most critical part of the setup.

If it is not assembled properly or mounted correctly, trouble is absolutely guaranteed. The AV-COMM feedhorn comprises two parts, the low noise block (LNB) and the magnetic polariser. The two must be fitted together to form one unit. Because the aperture at the mouth of the LNB is rectangular, it is readily aligned with the aperture of the polariser.

A rubber weather gasket together with four stainless steel screws are the only other parts that make up the feedhorn assembly.

At this stage the LNB was fitted to the dish via three standoff arms, again using the torch to establish that it was centered.

By placing the back of the torch against the mouth of the LNB, the beam clearly showed the centre of the dish.

The only remaining task was to run the dual cable from the LNB/dish to the receiver.

(continued on page 49...)

M1200 Satellite Receiver Review

(continued from page 47)

The cable includes a low loss double shielded 75 ohm coax which carries the DC supply voltage from the receiver to the LNB as well as transporting the converted 12.25-12.75 GHz frequencies back to the receiver.

The coax is terminated with 'F' connectors. Three separate wires are piggybacked onto the coax. These conductors are polarity (red), ground (black) and signal strength (white).

ALL SET UP AND READY TO GO

The dish was positioned as near as possible to the required azimuth and elevation with the cable then being connected between the LNB and receiver. It checked out okay and the time came to turn the whole thing on and adjust for a clear picture.

Do not expect crystal clear vision or hi-fi sound as soon as you turn to a transponder channel. Some fine tuning and alignment is necessary and although one person can do it, two makes it easier. As shipped from AV-COMM, the receiver is pre-tuned with all the channel information being stored in an EPROM chip.

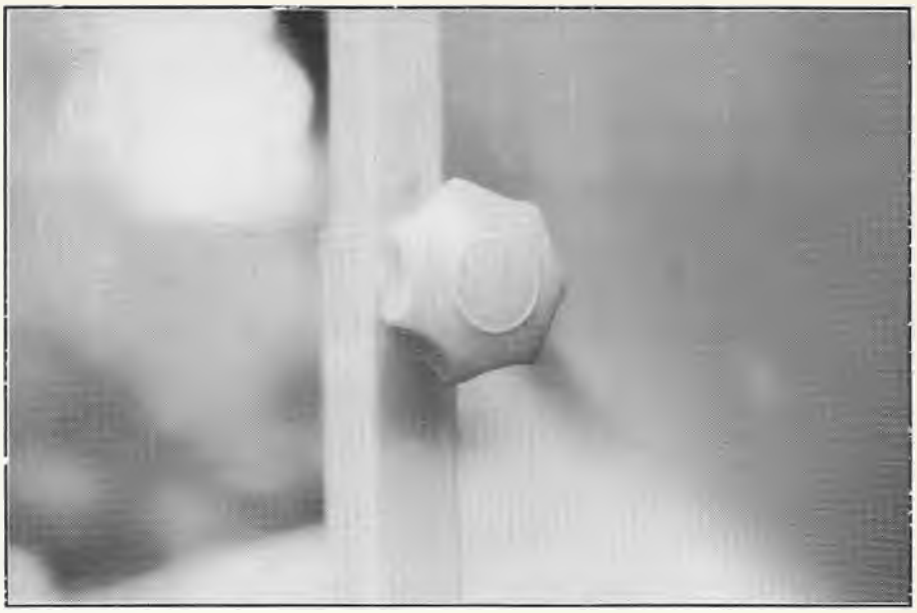
Connection to the television can be via the audio/video outputs on the back of the receiver to the video recorder then to the television or directly to the television using a splitter and patch lead terminated in 'F' plugs.

Using the video proved easiest, however, the patch cables must be disconnected if you wish to record from a source other than the satellite.

There are basically four transponders (T4,T8,T9 and T12) in use on AUSSAT One that have pictures in PAL which corresponds to Australian technology. The remaining 11 are encoded in different forms which renders them unwatchable.

SOME SMALL ADJUSTMENTS MADE THE DIFFERENCE

I selected T4 which had a barely discernible picture, however, with slight adjustments to the dish the picture became watchable, yet lacked definition. I eventually found that it was necessary to ensure that the vertical polarity of the feedhorn was in fact vertical and not something between that and horizontal. With a small twist to the right and an even smaller turn to the left the picture improved dramatically. A test pattern is the best way to adjust for picture clarity and definition.



Simplicity is the name of the game and azimuth adjustment is basically carried out by moving the rear support leg up or down and locking it in place.

Slight variations in picture quality are not always noticeable. Using the 'sparkles' that appear during test pattern/color bar transmissions makes the job easy. Basically you should have the same ratio of black sparkles in the light color bars to the white one in the dark color bars.

THERE'S A WHOLE NEW WORLD OUT THERE

Once you are satisfied with the picture and sound quality, a whole new world is available to the enthusiast. Exploration is the name of the game, not all that unlike using a scanner. Searching out different transponders from other AUSSATs can further enhance the excitement of using a satellite receiver.

Because the AV-COMM dish is light in weight and, more importantly, easily positioned, setting up for AUSSATs 1 (at 160 degrees east) 2 (at 156 degrees east) and 3 (at 164 degrees east) is not much of a chore.

Apart from television transmissions AUSSAT also carries SCPC, or single carrier per channel radio programs. To monitor these services you'll need a scanner capable of receiving 900-1500 MHz frequencies.

Most transmissions occur in the 1200 MHz band, are horizontally polarised and in wide band FM.

Before you connect your expensive scanner to the LNB, a RF/DC splitter will have to be fitted.

Because the satellite receiver is 'sending' DC to the LNB, damage **WILL** occur to the front end of your scanner if you do not install the correct splitter unit. Most satellite hardware suppliers can provide you with the appropriate product.

20 years ago scanners were considered a marvel of modern technology.

They provided an insight to previously hidden radio transmissions and while scanners have continued to improve with bigger memories and wider frequency ranges they are fast reaching their apex.

Little is left to startle the imagination when it comes to the scanning radio receiver.

Satellites are now in the position scanners were two decades ago. The are providing a keyhole to the unknown and previously unseen world of international information exchange.

By being sensible and not bringing adverse attention to the experimentation with home satellite receivers we can continue to explore space to earth communications for some time into the future. I must thank AV-COMM for providing the receiver system. It required a little more input from them other than just simply popping the thing in a box and sending it out.

If you are interested and would like more information contact AV-COMM on telephone 02 949 7417 or at PO Box 386, Northbridge, NSW 2063.

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hf utilities

with Richard Jary

WHERE TO LISTEN and WHAT'S BEING HEARD

Welcome to another month's version of HF Utilities. This month I thought we'd go back to basics and explain exactly what "ute" is all about. I'm sure there are many readers who have bought CB Action for news on CB or scanning, encountered this strange section with cryptic subjects such as RTTY and fax, shrugged their shoulders and moved on to the next page. So I hope the regulars will bear with me while we try and introduce some more people to this fascinating area of radio.

» What exactly are "utility" stations?

Fairly simple really, they are all the ones you hear on the shortwave or HF bands that aren't ham radio operators or international broadcast stations - the latter which Rob Williams does such a good job of talking about in his DX Logbook column. Shortwave broadcast stations are much the same as what you hear on mediumwave.

They are intended to be heard by anyone, for their entertainment and information, or in the case of certain countries, for a little bit of "brainwashing"!

Utility stations are quite different, and could be considered the HF equivalent of VHF/UHF "scanning". They are mainly designed to carry traffic between set stations or for a special purpose. This can include HF police signals, aircraft and marine radio, embassy traffic, news agencies, time signals and facsimile weather charts. All have a set target "audience" and most can be picked up with the basic gear required to hear any other shortwave broadcast, so don't let them scare you!

For the beginning utility DXer the easiest (and probably most boring!) targets are the time signal stations. Apart from Australia's own VNG, the first overseas one you are likely to hear is WWVH Hawaii and WWV in Colorado. These are easily copied from Australia dead on 5, 10 and 15 MHz. Other easy stations are CHU Canada on 3330, 7335 and 14670 kHz, and JJY Japan on 5, 8, 10 and 15 MHz. At least you've now proved you can hear overseas "utes", and these stations will also send you a nice QSL card if you forward them a reception report.

» Airband Traffic

Other common targets are the maritime and aeronautical channels. Marine frequencies are found in several bands and carry both morse code and voice transmissions. The traffic consists of weather and emergency updates as well as "radphone" (radio-telephone) and telexes to ships. Much of this is decreasing on bigger vessels that can afford a Marisat satellite link, but most smaller crafts still rely on the service provided by such organisations as Australia's AOTC Coast Radio Service.

Aero traffic is also well heard, and allows you to eavesdrop on incoming aircraft well before they get within range of the local VHF signals and your scanner. My first logging of President Bush's arrival earlier this year was on the Pacific air channel of 8867 kHz, where I could hear Air Force 1 approaching across the region well in advance of touchdown at Sydney.

Other modes are more specialised, such as the weather maps transmitted by a number of organisations.

These are destined for various users including ships and Australia's Antarctic bases. While a more specialised part of this hobby, picking up these signals requires very little extra equipment if you already own a sideband receiver and a computer of virtually any type with some form of graphics display.

Kits are available from a number of different electronics shops Australia-wide, or via mail order. The easiest signal to hear from the eastern states is the broadcast from the AXM Naval Base at Canberra on 5100 kHz.

Also available is radio teletype (RTTY) which in its simplest form is the old Telex-Over-Radio (TOR) facility used by ships. With modern technology the transmission speeds have increased and a number of different speeds and frequency shifts are observed. For example, if you see a logging described as 425/50 it implies a frequency shift between the two tones of 425 Hz, and a rate of 50 bits of information per second.

Each character contains between 5 and 10 bits, depending on the standard used for the signal. Again, a number of different software programs and kits are available to receive these.

» All The Good Numbers

What else can be heard?

One of the mysteries of shortwave are the so-called "numbers" stations. These transmit groups of numbers, and sometimes letters, in a variety of languages (Spanish being common), with no recognizable pattern. They are generally accepted as coming from the intelligence community, secret services and such, but it is very hard to know whether the numbers have any real meaning or are simply transmitted to confuse enemy spies.

Possibly most information is random numbers to confuse the enemy, with the occasional real message dropped in after the enemy has given up.

Much of this activity appears to come from such places as Central America. One such was recently heard by Brenton in Adelaide on 17975 kHz at 0204 UTC. Where to listen? As there are several utility bands spread throughout the shortwave spectrum, a quick start to the hobby is to try tuning outside the international shortwave bands anywhere between 2 and 20 MHz.

Now a quick bit of news that has been sent in. Remember that other people in Australia would like to hear your latest hot frequency, as well as the best way you've found to pull in the signals. So remember to send in tips and numbers!

From Cairns one of our contributors has noted some skip from the US on the VHF low band. While technically not HF, this band behaves very much like the top end of 29 MHz, so I'll sneak them in.

Our northern friend has noted a number of police channels on low channels, and with some from California coming through I hope they turned up during the recent trouble in Los Angeles. Anyway, California Police were noted between 42.068 and 42.840 MHz, New York between 39.240 and 39.760 MHz, and other southern police on 37.080 and 37.060 MHz.

By the time you see these it may be the wrong time of year for this sort of skip, but come next summer it could be going again, so have a listen if your radio covers these channels.

The aerial used was an old Channel 0 TV aerial (cut for about 50 MHz), turned by the age-old reliable "armstrong" method. Scanners were an FT650 and Bearcat 220, certainly nothing super special.

That's it for this issue - until next time around, good hunting!

If anyone wants to know more about HF utilities, remember you are welcome to drop me a line care of PO Box E160, St James, NSW 2000, or via FidoNet at 3:711/907.1. Please remember if you want a personalized reply via Australia Post's "snail mail", include a SSAE.

A new radio network for Queensland Ambulance

QUEENSLAND AMBULANCE ON THE MOVE

By Robert Peel

Cyclone Tracy did much more than destroy Darwin, it highlighted the need for compatible communications between interstate emergency and rescue services.

Not long after Tracy, police across Australia were allocated a band of UHF frequencies for their use.

Most of Australia's State Emergency Services also gained common channels after the cyclone.

South Australia is the only state that doesn't use channels 31, 32 and 33 of the 64-channel Australia-wide police allocations.

In an effort to conserve valuable RF spectrum as well as cater to the needs of emergency services, the Department of Transport and Communications has commenced allocating blocks of common frequencies for the exclusive use of rescue and emergency organisations.

A dozen or so 410 MHz frequencies have been set aside for the specific use of the country's ambulance services.

At this stage only Queensland, ACT and Victoria have switched, either in part or full to the new channels.

Other states are expected to follow as time and money permits.

The southeast corner of Queensland has more people per square metre than the rest of the state combined, it is therfore the logical starting point for conversion from VHF to UHF. Country Queensland will maintain its VHF and HF networks for some time to come.

Whether or not the Brisbane VHF channels will be sent 'bush' is yet to be determined.

While there are only 13 paired frequencies allocated, the numbering system adopted by Queensland Ambulance suggests a lot more (87).

However the use of different CTCSS tones, together with duplication of frequencies at various sites, make up the different channel numbering system.

The transmitter sites selected by QAB are:

Springbrook (near the NSW border)
Mt. Cotton (north of Beenleigh)
Mt. Perseverence (west)
Flinders Peak (south of Ipswich)
Consitution Hill (aka Mt.Coot-tha near Brisbane)
Black Mountain (near Cooroy)
Wilkes Knob (near Maleany)
and D'Aguilar Range (near Dayboro).

The boxed panel contains the repeater output and input frequencies, the QAB channel number and purpose for which the channel is used.

The initials that appear in brackets after the user are the transmitter site location. A key to the sites can be found at the bottom of the list.

The term 'Accident' relates to all casualty calls, including motor vehicle accidents, whether minor or serious and heart attacks etc.

A 'Clinic' channel deals only with routine transport of persons to and from hospitals or doctors appointments.

The 'Emergency' channels are for serious emergency situations, civil disasters, aircraft alerts and major medical evacuations.

Refer to the boxed panel for a breakdown on the system.

The Queensland Ambulance employ a radio code to assist in the dispatching of cars, as well as minimising air time. The codes and their meanings are:

01 Clear frequency-urgent message for tranmission
1 Ambulance officer in trouble requires police assistance
2 Cardiac arrest
3 Doctor required at casualty
4 Dead On Arrival
5 Manual assistance required
6 Doctor required at location

7 Undertaker required at location
8 Unable to attend any further cases
9 Ambulance required as back up
10 Fire service required
11 Live wire down - SEQEB required
12 Noxious gases
13 Danger of explosion
14 Ambulance in collision
15 Patient or officer injured
16 Police required at location.

Common abbreviations used by ambulance personel are:
BC = Brisbane Control
CVA = Cardio Vascular Attack
MVA = Motor Vehicle Accident.

The job allocation status codes are:
Red = Immediate, lights and siren
Blue = Pain and discomfort, ASAP no lights or siren
Green = Clinic transport.

As I have mentioned in my previous 'Triple 0' reports, these people have a job to do, DON'T follow them around or make trouble for them by attending the scene of accidents or the like.

Stay at home and just listen. My thanks to Darren Webster and Scan columnist Russell Bryant for supplying the frequencies and codes respectively.

"VH4AMB clear"

RPT OUT	RPT IN	CH.	USER
412.850	403.400		
		10	Noosa Accident (BM)
		14	Nambour Accident (BM)
		18	Maleny Accident (BM)
		22	Caloundra Accident (BM)
412.650	403.200		
		11	Noosa Accident (WK)
		15	Nambour Accident (WK)
		19	Maleny Accident (WK)
		23	Caloundra Accident (WK)
		26	Cabo'ture Accident (WK)
412.575	403.125		
		12	Noosa Clinic (BM)
		16	Nambour Clinic (BM)
		20	Maleny Clinic (BM)
		24	Caloundra Clinic (BM)
413.025	403.575		
		13	Noosa Clinic (WK)
		17	Nambour Clinic (WK)
		21	Maleny Clinic (WK)
		25	Caloundra Clinic (WK)
		28	Caboolture Clinic (WK)
412.475	403.025		
		27	Caboolture A'dent (DA)
		30	Dayboro Accident (DA)
		32	Brisbane N'th A'dent (DA
413.225	403.775		
		29	Caboolture Clinic (DA)
		31	Dayboro Clinic (DA)
		34	Brisbane Clinic (DA)
413.275	403.825	33	B'bane N'th A'dent (CH)
412.575	403.125	35	Brisbane Clinic (CH)
412.850	403.400	37	B'bane C'tral A'dent (CH)
413.100	403.650	38	B'bane S'th A'dent (CH)
413.125	403.675	36	Brisbane Clinic (MC)
		41	Redlands Clinic (MC)
		43	Wynnum Clinic (MC)
		46	Beenleigh Clinic (MC)
		68	Southport Clinic (MC)
412.750	403.300		
		39	B'bane S'th A'dent (MC)
		40	Redlands Accident (MC)
		42	Wynnum Accident (MC)
		44	Beenleigh Accident (MC)
		66	Southport Accident (MC)
413.300	403.850		
		47	Beenleigh Clinic (FP)
		50	Ipswich Clinic (FP)
		53	Boonah Clinic (FP)
		56	Laidley Clinic (FP)
		60	Rosewood Clinic (FP)
		64	Beaudesert Clinic (FP)

RPT OUT	RPT IN	CH.	USER
413.025	403.575		
		51	Ipswich Clinic (MP)
		57	Laidley Clinic (MP)
		61	Rosewood Clinic (MP)
412.650	403.200	49	Ipswich Accident (MP)
412.650	403.200	49	Ipswich Accident (MP)
		55	Laidley Accident (MP)
		59	Rosewood Accident (MP)
413.075	403.200		
		45	Beenleigh Accident (FP)
		48	Ipswich Accident (FP)
		52	Boonah Accident (FP)
		54	Laidley Accident (FP)
		58	Rosewood Accident (FP)
		62	Beaudesert A'dent (FP)
412.650	403.200		
		63	Beaudesert A'dent (SB)
		67	Southport Accident (SB)
		70	Coolangatta A'dent (SB)
413.025	403.575		
		65	Beaudesert Clinic (SB)
		69	Southport Clinic (SB)
		71	Coolangatta Clinic (SB)
		All below are emerg'cy channels	
413.425	403.975		
		01/72	Brisbane (BM)
		04/80	Sunshine Coast BM)
		01/73	Brisbane (WK)
		04/81	Sunshine Coast (WK)
		01/74	Brisbane DA)
		04/82	Sunshine Coast(DA)
		02/75	Brisbane (CH)
		05/83	Ipswich (CH)
		02/76	Brisbane FP)
		05/84	Ipswich (FP)
		02/77	Brisbane (MP)
		05/85	Ipswich (MP)
		03/78	Brisbane (MC)
		06/86	Southport MC)
		03/79	Brisbane (SB)
		06/87	Southport (SB)

TRANSMITTER SITE KEY
BM = Black Mountain
CH = Constitution Hill,
DA = D'Aguilar Range
FP = Flinders Peak,
MC = Mount Cotton
MP = Mount Per

REMOTE HEAD STILL AVAILABLE FOR SAWTRON UHF CB

Away back in the March/April issue of CB Action we made the statement, "Imark has discontinued the remote mount components from their range".

This was in respect to the Sawtron UHF CB.

We now understand this statement to be incorrect.

Imark management has advised us that the necessary components are, and always have been, available for the remote mounting of the control head from the main body of the unit.

The statement was contained within the report on the Pearce-Simpson UF-2020 UHF CB rig (which is the most recent local unit to offer this facility).

Our apologies to Imark for this error and we're glad to hear this Sawtron feature continues.

A NEW 27MHz BASE STATION FOR THE 90s

UNIDEN's PRO-810e

Sleek and Low with a Touch of Today

By Ken Reynolds from POWER BAND COMMUNICATIONS

With cold winter nights looming fearfully close, many of us will be taking our trusty mobile rigs inside for the evening and connecting up our power supplies to 'talk to the world' from the comfort of a warm room.

What a drag having a 'tangle' of wires draped around the room, especially when you catch a loop of wire with your arm or leg and pull the whole show off the table. Hands up all those who, in their haste, have connected the power wires in reverse... just for a fleeting moment though?

But it was too late.

I WAS BANNED...

I got banned from operating radios in the house nearly 20 years ago when the acid fumes from an old car battery (I was using to power an AM rig) did a bit of paint stripping and tarnishing in the kitchen, not to mention some incriminating scratches on the breakfast bar. I was pretty sure the scratches had been there for years.... but apparently I was wrong.

If I'd had a neat little base station rig like the PRO-810e in those days I reckon there's a chance I might have been 'saved' from 'going-out' for milk after dinner at night, and somehow finding myself (with almost everything frozen) calling CQ DX from a bleak hilltop.

"Take one AM/SSB success story, blend in a mains power supply and pour into an attractive, low profile desk console and, bingo.... you have the recipe for stylish, home-base DXing."

I couldn't believe I'd been gone three hours.

There have been base stations and there have been base stations, but the PRO-810e is the neatest, most attractive little base station package we have seen in many a long year.

The all-matt black cabinet measures 340mm wide by 80mm high and is about 200mm deep excluding the rear antenna connector and the control knobs of the front panel.

On the far left of the fascia is the microphone socket with its associated gain control mounted directly above.

The microphone gain control allows the modulation level to be adjusted between zero and full modulation - about 95 per cent on AM. On sideband the control permits adjustment of output power ranging between no signal and the maximum output level of about 13 watts PEP.

Directly to the right is an oval loudspeaker mounted behind a rectangular, perforated metal grill measuring 95mm by 65mm. The existing speaker sounds fine but a socket is provided for those who prefer to use an extension speaker. Three press buttons to the

This new rig is arguably the most attractive base unit currently available.

right of the speaker control the noise blanker/noise limiter, a high cut audio filter and the Public Address to CB function that may or may not be of use on a base station transceiver.

The noise limiting circuit is the usual Uniden good performer with the best results obtained on AM with slightly less effectiveness on sideband.

The 'High Cut' filter can be very effective at reducing the sharp 'click' sound from transient types of electrical interference and background 'hiss' is also reduced.

To the right again is the main display panel window containing LEDs for transmit and receive, a combination signal strength and power output meter and a large, bright green, seven-segment channel display.

On the far right of the front panel is the 30mm diameter channel selector knob and mounted above is a single press button for channel 9 priority - the standard unnecessary extra from Uniden.

On the lower edge of the fascia lies a row of knobs accounting for on/off volume control, Squelch, RF Gain, operating mode am/usb/lsb and, last but not least, the Clarifier.

Squelch threshold is 0.4 micro volts and at the tight setting the speaker is unmuted at around 1500 micro volts signal strength. This is fairly typical squelch range for most good, modern rigs. There is adequate hysteresis in the squelch circuit to cope with most levels of mobile flutter and fading. For example, the squelch, once opened at 0.4 micro volts, remains open until the signal strength fades below 0.14 micro volts. At the other end of the scale a 1500 micro volt signal can fade by 500 micro volts before the gate slams shut.

The RF gain control provides a giant 55dB of attenuation at minimum setting which in linear terms is in the vicinity of 500,000 times reduction of the incoming signal.

The Clarifier on our test rig was accurately centered at 12 o'clock and the corresponding transmit frequency was, to quote a well worn cliche, 'spot-on', although there was a slight but discernible frequency 'drift' with change in temperature - some rigs are a lot worse and the variation here was pretty normal. The combination power/signal strength meter reads the power quite accurately provided the antenna SWR remains low. On receive the meter indication offers a good representation of a real 'S' meter with the following levels indicated:-

Strength 1 = 1.2 micro volts
Strength 3 = 2 micro volts
Strength 5 = 8 micro volts
Strength 7 = 35 micro volts
Strength 9 = 100 micro volts

On transmit AM output power was about 3.5 watts and SSB turned in 14.3 watts.

On-air testing produced the expected results with all parties reporting clean audio and accurate frequency - except for one guy who just knew we were "way off mate!"

The 810e is strongly constructed from steel and aluminium sheet with the main cover protected by a tough, black vinyl veneer. A removable inspection plate beneath the main chassis permits easy service access to the main circuit board without the need to disassemble the whole cabinet.

The PRO-810e is the most compact base am/ssb station we have seen to date and the only one so far that we would consider for occasional mobile use. It is also the first such base station CB transceiver that has no DC power inlet provision and is strictly a mains-operated unit. This limits its suitability for some applications like caravanning and portable use situations where mains power may not always be available.

On the other hand, the power lead is two metres long which is adequate for most applications and would certainly reach the power outlet at a caravan park.

Internally the 810e is a good example of neat, thoughtful design which appears to be the coming trend in consumer electronics.

The main electronics circuit board is strongly mounted in an aluminium subframe which doubles as a mounting point and heat sink for the power devices. The heat sink is in turn firmly fastened to the main steel chassis.

SUMMARY

The new Uniden PRO-810e base station transceiver is a pleasant blend of performance and up-to-date styling in a compact, unobtrusive package with black being the order of the day. The transceiver portion of the rig is a cross between the highly successful PC-122 mobile transceiver and the PRO-640e adapted to operate a moving coil 'S' meter instead of the usual bargraph-style LED indicator.

This is a good rig and good value but you will need to shop around for price because your guess in $$$ is as good as ours.

The usual Uniden Australia Two Year Warranty applies.

POWER BAND COMMUNICATIONS

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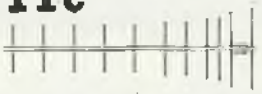
PB-11e UHF CB YAGI



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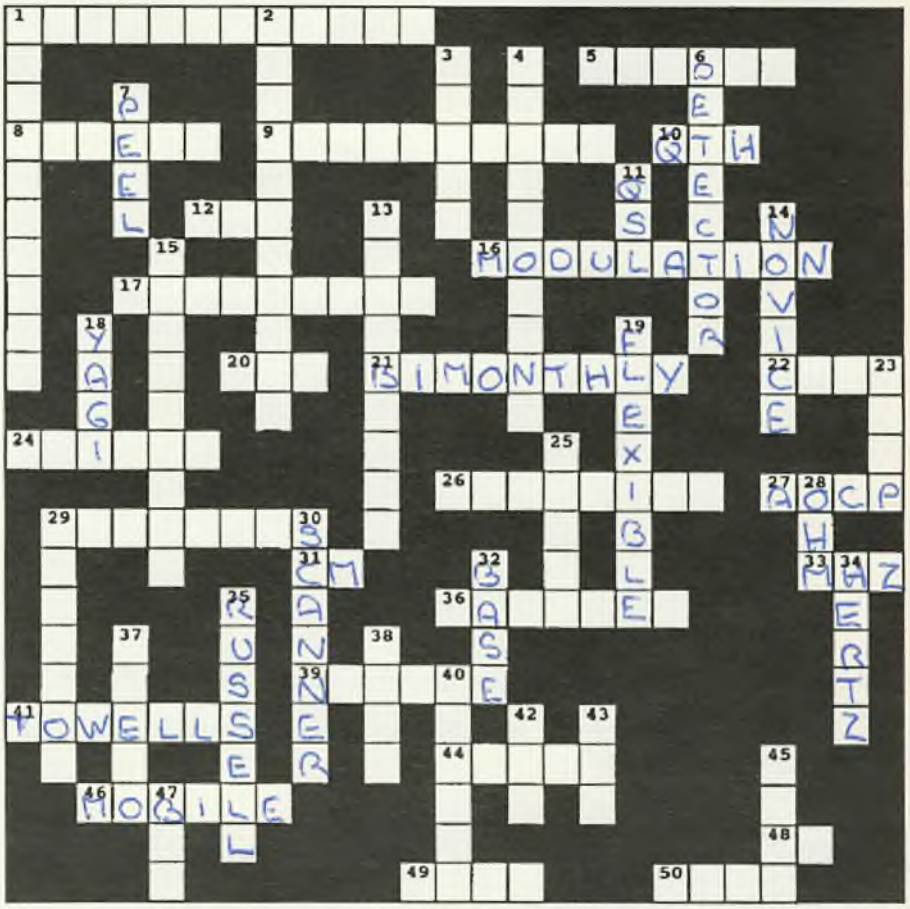
HOW MUCH DO YOU KNOW?

We've had a few grumbles from readers that we haven't run a wordmaze for some time and when are we going to do something about it. Well, just for a change, see how good you are at crosswords.
We'll throw in half a dozen six issue subscriptions for the first six correct entries opened after the closing date of 15 July.
You'll find most, but not all, the answers contained somewhere within the pages of this issue.
Address your entries to CB XWORD, P.O. Box 628e, GPO, Melbourne 3001.
Don't forget to include your name, and mailing address.
Good luck !



DOWN

1. This gentleman teaches physics at a Melbourne Girls's School (4,6).
2. The letters IPS stand for ..... Prediction Service.
3. A new shortwave broadcasting station should now be on air from the island of .....
4. This variable oscillator is known as a ..... which is not to be confused with a super one.
5. If you look at the block diagram of the simple AM receiver' on page 25 you'll note that both diagrams contain one of these.
6. His first name's Robert and he wrote about ambulances in this issue.
11. The courteous thing to do when confirming a contact is to send a ... card.
13. There's an upper and a lower and together you could call them..... .
14. This is currently the licence you receive for passing theory and regs exams and 5 wpm CW.
15. Paul of Nerang wants to know whether the ..... Ambulance and Fire Brigade have changed frequencies.
16. The .... is by far the most common type of directional antenna.
19. A mobile antenna should be both strong and ..... .
23. A CBer's term for DX.
25. As a generalisation, most Amateurs use ..... sideband when operating on 10 metres.
28. This is a unit of electrical resistence.
29. This rig has a remote connection which allows the control unit to be placed up front and the rest fitted into a vehicle's boot.
30. This device allows you to listen to many things - including aircraft and police transmissions.
32. Most people prefer to operate from here rather than from a car.
34. This 19th century German physicist's name lives on in radio communications.
35. The first name of our scanner expert.
37. A microphone insert known as an 'electret' is basically a ..... electric type that requires a small voltage.
38. If you want to sample a range of frequencies you would do this to them.
40. This is a basic sort of antenna.
42. If this ain't right you're wasting your time.
43. The acronym for effective radiated power.
45. This is something done to a mobile antenna to shorten its physical length - trucks also carry one.
47. A type of coax cable connection.

ACROSS

1. A power microphone has a simple audio ..... built into it (3,9).
5. The company that produces the 810e transceiver is ..... .
8. If you use a ..... amplifier on CB bands you'll eventually find yourself in trouble.
9. This is the last word of the acronym BFO.
10. Three letters which signify where you're broadcasting from.
12. The suffix of the person's callsign who is providing the new novice notes.
18. It often follows the word amplitude.
17. The better-known term for continuous wave transmission (5,4).
20. A generic name used by this magazine which means transceiver.
21. CB Action doesn't publish monthly but it does publish ..... (2,7).
22. The acronym for what the DoTaC people refer to CB as - no, it's not a rude word.
24. This word can result from a change in frequency as a Morse Code key is operated.
26. Compression and ..... circuits bring the troughs and peaks to the required level - read the power mic article.
27. This is the acronym for the Amateur Operators Certificate of Proficiency.
29. 'Splatter' is also known as a ..... transmission.
31. The common abbreviation for Morse Code.
33. The three letter abbreviation for megahertz.
36. You need one of these to generate a radio wave.
39. The new amateur licence discussed in this issue is becoming generally known as the ..... licence (2,4).
41. The surname of our Bandspread contributor.
44. Kerry Packer has plenty of this (no, it's not money). You also need it to use a radio.
46. If you're not operating base, you're probably operating ..... .
48. It's not USB and it's not LSB - it's the other one, much favored by children.
49. Policemen patrol one of these - it's also the first word of the acronym BFO.
50. This is a directional antenna and it's not a Yagi.

AUSTRALIAN ASSOCIATION OF CITIZENS BAND RADIO OPERATORS INC.

INC

AMATEUR verses CBer.

Without doubt, animosity between many of the Amateur fraternity and the CBers has been evident for a long time, but fortunately now appears to be reduced or overcome.

This animosity originated at the time when legalisation of CB occurred in 1977. It is said that many of the amateurs of the day felt that the part of the eleven metre band allocated then for CB use was robbing them of one of their valuable resources. Its value no doubt was enhanced in the period when there is prolific "skip" activity.

As the years rolled by and the CBers were given a little bit of the HF band (18 Ch. to 40 Ch.) further rumblings from some Amateurs indicated an air of discontent still existed. Over the more recent years, the previously known animosity seemed to be less and less. Either the Amateurs had come to accept their lot as being what it was, or a change was taking place. Part of this change may have been the older Amateurs passing on and their places were not being taken by others who were able to be easily qualified.

The Archives of ACBRO Inc. may show that they and others like them were involved in laying the foundation for changes to the CB - Amateur scenario. It was seen in the mid eighties that ACRBO as an affiliate of the Wireless Institute of Australia (S.A. DIV.) was attending such as their State Conferences and continued annually to follow this course.

In this part of Australia there was seen to be an air of cooperation between this CBer organisation and the Amateur hierarchy. This included sharing of facilities and joint participation in promotional activities. ACBRO and the WIA (S.A.) along with other of their amateur groups established a major focal point on the main stage of a large Hobby Fair at the Adelaide Showgrounds last year. More recently an Amateur Radio Club from the Barossa Valley area north of Adelaide in S.A held a major picnic and radio field day with which ACBRO cooperated in many ways resulting in ,for the first time perhaps, CBers out-numbering the "Hams" at an "Amateur" event.

AMATEURS AND CBers. JOIN FORCES

Among ACBRO's Affiliates, at least two groups are known to be fostering the interest of CBers into the world of Amateur Radio. These are the Sydney Radio Group and the Port Adelaide Radio Club in S.A. whose membership comprises of nearly as many C.Bers as amateurs. The Port Adelaide Radio Club is keen to foster CBers who have intentions of furthering their interest into the amateur field and their methods of assistance can be invaluable to those wishing to aspire into this extension of their present hobby. Evidence of the thinking of the amateurs about reducing any gap between their activities and the CBer is being shown in other areas.

A letter from a Victorian Amateur published in the amateur journal AMATEUR RADIO recently, confirmed this point and gives credit and encouragement for a change to the thinking that occurred when C.B. was legalised fifteen years ago.

ACBRO AFFILIATED 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 ccontacting the group of your choice from below.

ALPHA WHISKY ALPHA RADIO CLUB	*P.O. BOX 1457, ALBANY, W.A. 6330*
ALBANY COMMUNICATIONS GROUP	*65 HASSELL ST., ELLEKER, W.A. 6330*
RADIO CITY AUSTRALIA	*P.O. BOX 87, GREENACRES, S.A. 5086*
PIONEER RADIO ASSOCIATION (SA)	*P.O. BOX 58 , KINGSWOOD, S.A. 5062*
PLANTAGANET REP'R IN'TE OF W.A.	*PMB 306, CRANBROOK, W.A. 6321*
BURNIE CITIZENS RADIO CLUB	*P.O. BOX 655, BURNIE, TAS 7320*
TRANSWORLD C.B. RADIO CLUB	*DAW PARK , S.A. 5041*
CANNING RIVER RADIO CLUB	*53 PARKSIDE AVE, MT. PLEASANT W.A. 6153*
OVERLAND RADIO CLUB	*P.O. BOX 1010 , MURRAY BRIDGE, S.A. 5235*
EUREKA C.B. RADIO CLUB	*P.O. BOX 27, REYNELLA, S.A. 5161*
HACKHAM RADIO CLUB	*P.O. BOX 13, HACKHAM, S.A. 5163*
EAGLE RADIO GROUP	*P.O. BOX 302, MORPHETT VALE, S.A. 5162*
ROTTEN RADIO GROUP	*P.O. BOX 4, DRY CREEK , S.A. 5094*
BROKEN HILL UHF REP'R CLUB INC	*BOX 1023, BROKEN HILL, N.S.W. 2880*
RIVERLAND C.B. CLUB	*P.O. BOX 742, LOXTON, S.A. 5333*
GIPPSLAND REPEATER ASSOC. INC	*P.O. BOX 555, MAFFRA, VIC. 3860*
MURRAY BRI. AGRIC. & HORT. SOC	*P.O. BOX 315, MURRAY BR, .S.A. 5235*
SAMBA CLUB	*P.O. BOX 16, SALISBURY, S.A. 5108*
TWEED RADIO DX GROUP INTNL.	*P.O. BOX 773, MURWILLUMBAH, N.S.W. 2484*
THE PATHFINDER RADIO SOC. CLUB.	*P.O. BOX 24, WOODBRIDGE, QLD. 4114*
DIRTY DOZEN RADIO GROUP	*P.O. BOX 380, BLAIR ATHOL, S.A. 5084*
HOTEL ZULU RADIO GROUP INC.	*P.O. BOX 706, ELIZABETH , S.A. 5112*
WHITE FOX RADIO CLUB	*P.O. BOX 16, SALISBURY S.A. 5108*
MEGA MOUTH INTERNATIONAL	*P.O. BOX 1534, LAUNCESTON, TAS. 7250*
THE TRIPLE "R'S" GROUP	*43 CROSS KEYS ROAD, SAL'BURY, S.A. 5108*
TRU BLUE RADIO GROUP	*P.O. BOX 379, BLACKWATER, QLD. 4717*
BLUE O RADIO GROUP	*P.O. BOX 53, MONARO CRESC, A.C.T. 2603*
CHARLIE SIERRA RADIO CLUB	*P.O. BOX 27, MOANA, S.A. 5169*
SYDNEY RADIO GROUP	*P.O. BOX 185, GORDON N.S.W. 2072*
UHF ASSOC. OF W.A. INC.	*P.O. BOX 1238, EAST VICTORIA PK, W.A. 6101*
RATBAG C.B. RADIO CLUB	*P.O. BOX 227, WELLAND, S.A. 5007*
SUN CENTRE C.B. RADIO CLUB.	*P.O. BOX 912, SWAN HILL, VIC. 3585*
SOUTH AUSTRALIA RADIO	*P.O. BOX 135, PARA HILLS, S.A. 5096*
PORT ADELAIDE RADIO CLUB	*P.O. BOX 218, ALBERTON, S.A. 5014*
CHEROKEE INDIA AUST. GROUP	*P.O. BOX 1679, MILDURA, VIC. 3502*

CB and Amateur Radio

Just a few lines of encouragement for ...e Sydney Radio Group VK2SRG; at ...st one club is doing something con...ructive, combining CB and amateur ...idio activities together in the same ...ub.

I have spoken to my fellow amateurs ...any times that this sort of involvement ...ould be adopted by amateur clubs; ...owever, the Sydney Radio Group has ...arted in the reverse, but still with the ...ame objective. Congratulations.

This is most certainly a good move. ...or example, using the figures provided ...y VK6NE June issue, "DoTC statistical ...ummary for March 1992", 19,392 ...mateurs, 418,551 CBers. Now, if only ...ne half of a percent of licensed CBers ...ined the ranks of amateur radio ...perators, they would swell our ranks ...y 10 percent; not a bad increase. ...hese are only conservative figures.

Now, before all you knockers put pen ... paper, stop and think carefully, ...here did you and your close amateur ...iends progress from?

Chris Peake VK3XCP, VCJ342
3 Goulburn Court
St Albans 3021

The President of ACBRO Lloyd Rover ... Adelaide said after reading the above ...tter, "Well I don't know whether Chris ...as about in 1977, and was one of the ...knockers", but he's certainly got his ...ct into gear now in assessing the fu...re of the Amateurs and the part that ...an be played by today's CB radio en...usiast."

He went on to say how ACBRO's ...fforts of late have certainly broken ...own some of the barriers between the ...vo groups in the Adelaide area, and ...thers around Australia can only be ...ncouraged to follow in this way.

David Flynn in C B ACTION ...May/June issue) lifted the lid on a ...impler way for a CBer to become in...volved in amateur radio, in the article "The NO-Call Novice".

Credit should be given to the executives of the Wireless Institute of Aust. for pursuing a system of introduction to the amateur status, simplified by not requiring to pass the dreaded morse code requirement.

CBers who are keen to enter the upper echelons of hobby radio will await with interest this innovative approach to simplified entrance.

(see the article on this and other levels of amateur radio activity - written by the editor of Amateur Radio Action magazine Chris Edmondson elsewhere in this issue...editor)

In the mean time, ACBRO will continue to encourage the further breaking of any barriers between CBers and the Amateur fraternity to have them allied and supportive of each other without antagonism or jealousy on either part.

PEGASUS CB CLUB ADDRESS INCORRECT

I received a 'phone call from Graham Harrison of Broken Hill advising that the address given in the last issue for the above club was incorrect. Having received no amended address, this club has been dropped from this issue's ACBRO affiliated clubs.

Editor

March 16, 1992.

Dr. Neil Primrose,
Assistant Secretary, Policy,
Radiocommunications Division,
Box 594 GPO
CANBERRA A C T 2601

Dear Sir,

Following your response of Jan. 23rd. 1992, we offer thanks for the copy of the Government's interim reply to the report, and I comment now on two other matters.

One, for which is enclosed a copy of our members' magazine (March 92) in which is a reference to license free pricing, which you have indicated is under review. The details and concern expressed therein would be a part of any submission that ACBRO Inc. would make on this subject.

The other matter, and most important, relates to your statement in response to our request for a "Review of the CBRS".

Our committee is concerned regarding the vagueness of commitment to any timing date for such a review or discussions.

Could you therefore pursue, on our behalf, a timetable for such talks on CBRS matters at which change may be contemplated, and respond accordingly.

If such consultation is not expected in the very near future, we will return to our original position of requesting an answer to a question posed, to now, a new Minister of Communications.

Question related to asking the Minister - How many signatures on petitions would he require to accede to the request to have ch. 35 made into a legal call channel?

In a period when licensed callsigns are being changed on some unknown agenda, without consultation, we feel that a matter raised by Petition in October 1990, should not have been protracted over such a long space of time without satisfactory resolution.

That is, if one change can be made to a long standing tradition re callsigns, why is it so difficult to affect a change regarding that of an allocated 'call channel', viz channel 35, 27 MHz. CBRS.

In a history of this Association dealing with your Department/s over many years, evidence is abundant of our being "fobbed off".

In a period where changes are envisaged, as indicated by yourself and the Prime Minister, we feel it not unreasonable that changes that we promote, are considered and acted on to the satisfaction of those to whom the Government serves.

Yours faithfully,
for ACBRO Inc.
T.G. COLWELL. (Mr.)
on behalf of the Committee.

This ACBRO material was supplied to CB Action by the ACBRO Publication Team

dx international

DX - UP, DOWN and AROUND 11 METRES ...*with Jack Haden*

One cannot say that the humble 11 metre band hasn't been delivering the DX goods in recent weeks. Better than average band openings via both the short and long paths have in turn produced some excellent propagation.
Some outstanding openings to the Middle East and Africa have thus given many an avid DXers a good chance to pick up the odd new DXCC country or two.

A QUESTION OF CREDIBILITY (PART TWO)

In the last edition of CBA, I questioned the credibility of Mr Tom, 304-ES-1O1 in Estonia. In this edition I will deal with the credibility of Mr Victor who, recently signed as 314-AT-1O1 portable 154 prefix, which is the Islamic Republic of Iran.
What I heard the 12th of April was Victor working a huge pile up of mostly big gun signals from Europe, all understandably eager to secure Iran as a new country. What I also heard was Victor being bailed up by his QSL manager in Italy, Mr Mario the 1-AT-157, and from what I heard Mario also questioned the validity of Victor's Iran operation. Mario clearly told Victor and everyone else who was listening on the side that he would not QSL cards received for the 314-AT-1O1 portable 154 operation until he received valid documentation to substantiate his actual presence in Iran.
Mario asked for a passport stamp photocopy as proof that Victor was in fact in Iran as many prominent DX guns in Europe disputed the validity of the whole operation. Victor's response was that he was running out of "solid cash" and thus may not be able to FAX or telephone proof of his presence in Iran, but could possibly mail something off to Mario when time permitted.
Well and good so far.
Mario then went on to rake Victor over the proverbial coals so to speak with reference to his asking a two dollars American contribution for each card sent for the operation.
Mario lectured Victor again, for all to hear, about the protocol of the Alfa Tango DX group in that nothing in excess of one American dollar can be requested as contribution for the purpose of return QSL fundings.
To date I have not heard the outcome of all this and so cannot confirm as to whether Victor's operation, or so called operation from Iran is credible, another case of work it while you can and worry later!

A QUESTION OF LOYALTY & COMMITMENT

Once again grumblings are being registered here about the way things are being operated by the Australian division headquarters of the Alfa Tango DX Group.
The end result has been the resignation of the New South Wales Director, the 43-AT-103 Phil who, frustrated at the lack of response to many important issues, chose to opt out, but not before volleying a broadside about the group's Australian problems direct to Aldo, the 1-AT-OO1 in Italy.
Copies of the letters from both Phil and Aldo in Italy have arrived at my desk and it comes as no surprise that Aldo in Italy also acknowledges that the Australian divisional headquarters in Victoria is not performing up to the previously high standard associated with Alfa Tango operations.
Most of the problems and criticism in Australia are related to the overall standard of some new members being admitted (too many brain dead types, etc.) through to the failure of supply and distribution to members of club materials that have been paid for in advance. Another rather touchy issue that has a lot of members angry concerns the apparent failure of the Victorian HQ to disclose the results of a charity raffle that was conducted during 1991 to aid the Sicilian Earthquake Appeal. At a cost of five dollars per ticket I too would think everyone has a right to know who won what prize and what amount was in fact actually raised.
According to the contents of the letter written by Aldo in Italy to Phil, they (in Italy) know problems exist here in Australia within Alfa Tango and Aldo states that each overseas division of the group is fifty percent self running and that Aldo in Italy does not have the power to control, or direct, all divisions and the way they are managed.
Aldo also states that if the situation in Australia does not change for the better then "we" have the intention to take control again in Italy.
Answering questions about some members' renewal monies apparently going "astray", Aldo acknowledges this as a "bad affair" and has suggested that members in Australia renew direct to Italy in the future to overcome this problem.
Within any large club there are always things that go wrong - but not to the extent that members claim they have here in Australia. It is heartening to see that Aldo in Italy is finally sitting up and taking notice and it will be interesting to see what he in fact does about the problems. Here in New South Wales there are quite a few disgruntled members with 43-AT-251, 241, 135 and 249 having ongoing problems with the Victorian headquarters.

AFRICAN & INDIAN OCEAN REGIONS

Excellent conditions have been available to these areas during the cooler months here in Australia with some of the rarer DX coming through at good strengths, with the added bonus of the occasional double treat of both longpath and shortpath openings to North Africa.

* **Tanzania** proved quite popular with Pacific region DXers when Mark the 93-TZ-O2 appeared on the band at O459z with a good five by five report. A manageable pile up kept Mark busy for near 30 minutes until band conditions changed.

* **Botswana** makes the odd appearance by way of Verl who signs as the 1O5-AT-1O1 and at O452z Verl was a good five by four peaking seven at times and was quite readable despite QRM from Asia.

* **South Africa** is still with us in abundance with the numerous regulars about. The biggest signal I noted was at O538z from Grant who signs as the BM-01. He was a good five by nine plus 10dB at peak while about one hour later his signal was matched by the NB-159 operated by Brian north of Durban who was also a hefty five by nine plus 10dB.

* **Mauritius Island** pops up from time to time with English speaking operators although there are many of them about speaking in French if you care to take the time to listen. At 0719z I logged 168-TG-1O1 at a five by two report working a station in Japan.

* **Reunion Island** still proves to be popular with most DXers and I noted a small pile up in progress at 0555z with stations working the 173-IOR-O2 operated by Yves. At the time Yves was a good five by seven.

* **Mayotte Island** was heard at O74Oz by way of Eric who signs as the 189-AT-1O6 and was having a field day working into eastern Australia. Eric was a good solid five by eight peaking nine at times.

* **Zimbabwe** is still about for those who need this one. I have noted quite a few of the Zimbabwe Flame Lily Club about the band from O4OOz thought to O730z on most days.

* **Ceuta Melilla** was logged at O825z by way of the 1O6-AT1O9 who was calling for stations in South East Asia at the time. Although the signal was a poor four by two here it was quite readable due to low noise on the band.

* **Canary Islands'** signals are quite abundant both via the long and short paths making this country an easy task for most DXers. I noted the 34-AT-115 at 0255z on the band with a good five by eight signal report.

* **The Madeira Islands** boast quite a lot of activity on 11 metres with a variety of stations about for the talking. At 2122z I logged the 119-AT-1O4 operated by Alves via longpath with a five by five report. He was followed by the 1-RJ-21 at 2127z with a five by six report. These were the only English speaking ones I heard although I logged two others speaking in the Portuguese language around the same time slot.

* **Cape Verde Island** was heard at 2155z via the longpath by way of Daniel, whose callsign I could not make out. Daniel was a poor three by one from his location on the island of Sal in the Cape Verde group.

MIDDLE EAST & ARABIA

Conditions to this part of the world have picked up quite a bit for those in the Pacific region looking for a chance to pick up some semi rare DX. Although the signals have been noted as poor to good, there has been no shortage of stations to choose from.

* As usual **Kuwait** seems to be the most dominant country from this region on the band. At 211Oz (again via the longpath) I noted the 1O2-AT-1O3 operated by Ali. He was a good five by seven signal from his location of Surrah in Kuwait. On the shortpath at O745z I logged 1O2-AT-112 operated by Khaled from Safat. Khaled was a good five by six at the time and was looking for Australian stations.

* The **United Arab Emirates** was well represented on the band by way of Faisal who signs as the 94-EA-111 from Dubai which is one of the Emirate countries. Faisal was a sturdy five by nine peaking 10 at O431z and had no shortage of takers to his DX call.

* **Qatar** is till about for those who need this one. I understand some DXers have expressed concern about the lack of solid QSL returns from this country. Alex, who was signing as the 115-AA-OO7, was about at 1O33z with a five by five report from his location of Doha, the capital of Qatar. QSL route for Alex is direct to P.O. Box 1482, DOHA, Qatar. Return postage and SAE essential. Another strong signal from Qatar belongs to Jessam, the 115-AT1O3. At O745z he was a good five by nine steady and was subject to a small pile up of eager DXers wishing to work him for a new one.

* **Saudi Arabia** has seen an upsurge of activity on 11 metres with the following stations being logged in recent weeks: 48-AT-1O3 operated by Yiannis who was five by two at O6O3z, 48-SPX-11 name unknown was four by two at O7O9z, the 48-SR-O2 was four by three at O733z and finally the 48-GIR-1O1 was five by five at O857z. All of these stations commanded quite a bit of attention proving that a lot of DXers are still after this one.

* **Lebanon** is always about when conditions are open to the Middle East and a variety of callsigns have been heard on the band. The strongest noted here belonged to the 112-AC-17 operated by Nassar who was a good five by eight at 2137z via the longpath. As with Kuwait, Lebanon seems to come in very well both via the long and shortpath openings thus giving you two chances of working into this region.

EUROPE

As usual the hurly burly of western Europe tends to dominate the band with the loud reverb microphones and the ever annoying whistlers abundantly obvious. Aside from this rabble, however, there is still some good DX to be found.

* **Malta** proved to be most popular on the band judging by the small pile up that Bernard (93-AT-1O1) was trying to control at O44Oz. Bernard was a good five by seven report which held for near one hour.

* **Sardinia Island** is the home of 165-AT-131 operated by Riccardo who had a powerful five by nine plus signal at O857z. Quite a number of Australian stations were worked by Riccardo over a period of about an hour.

* The **Republic of San Marino** appeared on the band at 1122z by way of popular resident operator Mr Guido, the 36-AT-1O2. Guido was a good five by nine at the time and was chatting to a mate in Australia.

* **Greece** still proves to be popular on 11 metres with a wide variety of stations from which to choose. I noted the 18-AT-112 operated by Tasos at 0455a with a good five by seven report from his home in Athens. Shortly after this I heard the 18-AT-118 operated by Bill with a massive five by nine plus signal from the port city of Pireaus. Later that evening regular Greek DXer from Tripolis, Mr Xenofon, the 18-AT-1O4, was logged at O916z with his usual five by nine signal.

* **Czechoslovakia** was noted by 1O35z by way of 179-GG-1O1, name unknown. At the time he was a fair five by three report, At 1139z I heard the 179-CZ-1O3 operated by Zig with a fair to reasonable five by four peaking five report.

* **Poland** is now host to many different callsigns on 11 metres and is now quite an easy one to secure for a new country.

* **The QSL record of Poland** is quite good so there shouldn't be too much trouble confirming this one. At the late hour of 1355z I logged the 161-PP-1OO operated by Tibor with a fair five by three report from Warsaw. Also, 161-EE-579 has been about and at 1O45z was a poor four by one.

* **Slovenia,** one of the new republics which was once part of Yugoslavia, has a host of operators on the band eager to give Slovenia out as a new country. The biggest signal I logged was from popular DXer Zivko, better known to most as the 1-KL-OO1. Zivko, at the time, was signing as 1-SLO-O1 and at 1114z was a good five by nine report. It still remains unclear as to whether these new breakaway republics will receive DXCC status and thus new prefixes.

* **Bulgaria** was heard on the band by way of Marco (178-SA-O3) and at 1127z was a quite readable five by five report. Marco had a small pile up on his hands at the time despite interference from a DXpedition station just up the band from him.

* **European USSR** has been quite active by way of Anatol who has been signing as the 317-AT1O1. At 1O39z Anatol was a fair five by three signal and had no shortage of takers to his call.

* **Greenland** was heard at O948z by way of 38-AT-1O2 and was a good five by six at the time. Later that night I also logged 38-AT-1O1 from Greenland at 1O55z working into South East Asia.

dx international

DX - UP, DOWN and AROUND 11 METRES *...continued from previous page*

* **As usual** the big signals are about from Scandinavia, Italy, France, Belgium, Germany and Great Britain to keep us amused although I think the majority of DXers have these regions well and truly confirmed by now.

CENTRAL/SOUTH AMERICA & THE CARIBBEAN SEA

Better than average conditions have kept signals up into the red scale of our signal metres for some time now and some good DX has been about for the taking.

* **Antigua,** in the Leeward Islands chain, was heard on the band at 0328z by way of Daniel (120-AT-101). Daniel was a reasonable five by three signal and had quite a number of Australian and New Zealand stations chasing him.

* **The U.S. Virgin Islands** have been about on a fairly regular basis with Art, who signs as the 001, being quite active from St Croix. Art was a steady five by eight at 0406z. I also heard STATION-535 from Saint Thomas at 0507z with a good five by seven signal which held for quite some time.

* **Bermuda** has been heard on numerous occasions giving many a chance to secure this one. At 0005z I logged the BR-235 operated by Paul with a fairly healthy five by nine signal. Paul made the mistake of chatting on the "call" frequency and thus incurred the wrath of some DXers and promptly went off air. Also from Bermuda is regular DXer Dave, who signs as the DX-608. He was logged at 2108z with a good five by seven report.

* **Martinique** in the French West Indies has a number of operators active from this once seldom heard area and at 0457z I picked up a rather strong signal from Jeremy who operates as the 136-AZ-101. Jeremy was five by nine plus at the time and was quite busy working into Australia and New Zealand.

* **Aruba** in the Dutch West Indies was heard by way of 232-AT-102 operated by Jacob At 0602z Jacob was a strong five by nine and was looking for small Pacific islands.

* **Barbados** appears from time to time on the band and it appears a few DXers still need this one confirmed. At 2322z I noted CB-37 operated by Ersken on the band with a five by eight report and he was kept quite busy with plenty of callers.

* **Saint Martin Island** has been about also by way of Ron (207-AT-102) and at 0138z he was a excellent five by nine report here. As usual Ron was kept busy with the many callers still needing this one confirmed.

* **Guadeloupe** is always about when the band is open with a variety of callsigns from which to choose. The biggest signal I logged came by ways of Christian (196-AT-103) who, at 0346z, was a solid five by nine signal.

* **Belize** was active on the band with Andrew (7-KP-72) leading the way. At 0853z he had a good five by six despite the band dropping out quite quickly. Quite a number of Australian and Pacific stations made it through before his signal drifted away as a result of changing conditions.

* **Guatemala** was well represented by Jose who signs as the 72-AT-115. ith the huge five by nine plus signal I noted he had no shortage of answers to his DX calls directed to the Pacific region.

* **El Salvador** is about from time to time by way of Celso the 53-AT-102 and despite his often shocking audio he was a good five by eight at 0433z from San Salvador city.

* **Bolivia** was logged at 2201z with a rather poor signal from 80-AT-101 who was only a four by one at the time, however, he made a couple of short contacts into New Zealand and Japan.

* **As usual the** big signals from Panama, Mexico, Costa Rica, Suriname, French Guyana and the regulars from South America are about, all too numerous to report. Remember to be cautious when QSLing with a lot of these countries as their track record in the returns department is not all that good.

ASIA & THE PACIFIC REGION

Excellent signals are still prevailing from our own region and a good selection of DX has been about although the noise from South East Asia can be a problem at times.

* **Okinawa Island** was represented on the band by way of Masa who was signing as the JR-603 from the capital Naha. At 0310z Masa was a good five by nine plus report. Masa was on vacation on Okinawa from his home of Morioka in northern Japan and used a small HR-2510 barefoot into a ground plane antenna at 30 feet.

* **Minami Torishima** Island appeared on the band and surprised many who were caught unaware. Nob, the KYD-100, gave many a chance to secure this for a new one even though his English was very poor. Nob was five by eight at 2306z and due to his poor command of English made slow progress working the pile up. Although not on DXpedition, I am sure many appreciated Nob's limited activity on 11 metres.

* **Ebeye,** a part of Kwajalein Atoll in the Republic of the Marshall Islands, was logged by way of Hara who signed as the 150-EBEYE. At 0035z Hara was a steady five by seven here. He was closely followed by Dan, the 118 maritime mobile off Majuro, the capital of the Marshall Islands. Dan was five by six at 0102z.

* **Chunk (ex Truk Island)** in the Federated States of Micronesia was about the band at 0546z by way of Kenny who signed as the KO-777. Kenny was a five by eight report from Moen, the capital of the Chuuk Island group.

* **Yap Island,** also in the Federated States of Micronesia, was heard many times on the band by way of HDX-3977 operated by Bart onboard a large ketch. Bart is from California and is travelling the islands looking for World War 2 relics in the region. At 0223z he was five by five here while off Mog Mog Island.

* **Hong Kong** was noted at 1035z calling for Europe by station 6O-SS-001 on Hong Kong Island. Although his signal was a poor four by two here he had no shortage of Europeans answering this call and a pile up soon developed.

* **Fraser Island** off the Queensland coast was active by way of Ron, the 43-AT-616, who was operating out of his four wheel drive vehicle. Ron was a good five by eight report and was looking for a mate of his. I think Fraser Island would rate a rare one in the IOTA points system and had the band been open to Europe at the time I am sure Ron would have had his hands full with the pile ups.

* **The Republic of Russia** was about by way of 3O2-AT-110 operated by Serge who at 0754z had quite a pile up on his hands with a good five by seven here. QSL route is to P.O. Box 577, PERM, 614022, Rep of Russia. Don't forget the SAE and return postage.

* **Also from the Republic of Russia** was the strong five by nine plus signal of Stan who operates as the 3O2-FF-098.

Heard at 1136z, Stan had quite a pile up going and requests that all cards go via P.O. Box 84, PERM, 614004, Rep of Russia. Again don't forget the usual trimmings for a return card.

Kazakhistan is now part of the C.I.S (Commonwealth of Independent States) and has been about the band with the emergence of Alex at 0540z signing as the 3O8-AT-1O5. Alex was five by seven at the time using his homebrew transceiver and antenna. Another Alex, this time the 3O8-ON-1O1, was also logged at 0836z with a five by eight report from Ustkamen in Kazakhistan.

Turkoman was noted on the band around 0631z with Victor the 314-AT-1O1 working a pile up of stations in the Pacific region. Victor was five by five at the time and requests that cards go via his manager Mario, the 1-AT-157 in Italy. It was only a couple of days after this logging that Victor suddenly emerged from Iran operating portable 154 prefix (refere earlier part of this report).

- **Uzbekhistan** appeared by way of Vasia who was signing as the 316-AT-1O1 from the town of Angren. At 0839z Vasia was holding a solid five by nine here and the signals held at this level for nearly one hour before dropping off.
- **Sercq Island** off the north west coast of France and close to Britain's Jersey Island was activated for IOTA points on 3 May and signed as 2-VE-00. At 0713z their signal was five by seven here although the modulation was poor due to power supply problems at the time. The QSL route is unknown.

That's all the DX news that I have for this edition. Special thanks to Phil up north who has kept me abreast of some important issues and thanks to those who dropped me a line with some information.

DXPEDITION NEWS

With the upsurge in band conditions, so too has the amount of DXpedition activity on 11 meters with a couple of semi rare ones making their debut.

- ☐ **Franz Josef Land** *was logged here on the 7th of April and was a good five by seven at 1047z signing as 3O5-AT-0 operated by Yuri, QSL cards go via 1-AT-157 in Italy.*
- ☐ **Clark Island** *in the USA was activated for IOTA points on the 11th of April signing as 2-AT-W1. It was operated by Guy who was a fair five by five here at 0057z, the QSL route is via 2-AT-115 in the U.S.A.*
- ☐ **Uzbekhistan** *was activated by way of Alex, signing as 316-SA-DX0 on the 15th of April. Despite transmitter drifting Alex was five by seven at 1037z and was also experiencing some antenna problems at the time - seems Murphy was present in his shack. QSL route: 1-SA-DX Group, P.O. Box 10816, MILANO., Italy 2011O.*
- ☐ **New Zealand** *Alfa Tango members activated their new Club Station 12O kilometers from the south island city of Christchurch over the entire Easter holiday period and signed as 41-AT-000 some. At 2120z on the 17th of April they were a good five by nine plus here. QSL route via: 41-AT159, 41-AT-113 or 41-AT-134.*
- ☐ **Mozambique** *was activated as 214-AT-1O1/2O4 and was logged on the 19th of April at 0620z with a poor four by two report. QSL route is via 1-AT-1OO2 in Italy.*
- ☐ **Morocco** *received quite a bit of focus as 76-AT-DX appeared on the band over the period 29 April to 1 May. This was a first class operation and many times I heard them ask for contacts outside of Europe. Many Australian and Pacific region stations made it through for a new one. One downside to this operation was that it appeared during our working week and the band was only open to Morocco around 06OO to 083Oz while many people are still at work in Australia. I noticed that the signal faded rapidly with our sunset here so no doubt a few missed out on this one. QSL via 14-AT-482 in France.*
- ☐ **Cyprus** *appeared on 1 May signing as CY1BS and was operated by Gus who proved to be quite popular. At 11O7z Gus was a solid five by nine at the time...QSL via P.O. Box 5646, LIMASSOL, Cyprus. Return postage a must for this one.*
- ☐ **Franz Josef Land** *will be reactivated again as the 3O5-AT-0 in the period July through to September but confirmed dates are not yet known.*
- ☐ **The Islamic Republic of Iran** *is planned for activation by prominent CIS. (Commonwealth of Independent States) DXer Yuri (3O2-AT-1O5) sometime in late May or during June pending the issue of a visa for the visit to Tehran. Yuri is expected to sign as 3O2-AT-1O5/154 and cards will go to 1-AT-157.*
- ☐ **Afghanistan** *has been the subject of many DXpedition rumors and now things have settled down somewhat in Kabul, the capital, we may hear some activity from this much needed country. Victor, the 314-AT-1O1, was originally scheduled to appear on 26 April but I heard nothing here and later learned that it was rescheduled for sometime during May. Victor is expected to sign as the 314-AT-1O1/234 with cards going via 1-AT-157 in Italy. All of this again hinges on the issue of the relevant visa for entry into Afghanistan.*
- ☐ **The Vatican** *was again the subject of a rumored operation to take place around the period 15 to 18 April but as usual nothing eventuated. Another rumor doing the rounds expects the station, signing as 138-AT-0, to be about in late May, a case of wait and see again, but I wouldn't hold my breath for it.*
- ☐ **Anguilla Island,** *signing as 219-HI-0 operated by George the 28-HI-117 failed to appear over the period 18 to 20 April as planned. No explanation to why it didn't come off has been noted to date.*
- ☐ *QSL cards are now coming through for the 1991 DXpedition to the Ogasawara Island by Japanese DXer 25-AT-1O3 Mr Tetu who signed as 281-AT-0 during his brief stay. Tetu reports that he only made 144 contacts into 21 DXCC countries, the poor tally was attributed to severe interference generated by the nearby maritime and weather station transmitters. Tetu hopes to go back to Ogasawara sometime this year and find a better location for the next operation.*
- ☐ **An Australian DXer** *who planned to activate Western Samoa (223 prefix) during a recent holiday found his plans go to water on arrival at the airport just outside of Apia, the capital. After failing to submit an appropriate amateur radio license to cover importation of his FT-747GX transceiver into the country it was promptly impounded by Western Samoan Customs officials to be returned to him upon departure. It is well known that the officials are most severe in Western Samoa when it comes to the importation of undocumented radio equipment and this includes communication receivers. Similar treatment in this regard can be expected in Fiji, Kiribati, Tuvalu, Nauru, American Samoa and the Cook Islands so don't say you haven't been warned. No valid license, no entry for radio.*
- ☐ **Nothing further** *has been heard on the rumored DXpedition by a combined Australian and New Zealand effort to activate Lord Howe Island (268 prefix) and Norfolk Island (13O prefix) planned for mid to late 1992. Actually there are already quite a number of CB radio stations operating within the legal 40 channel system on Norfolk Island as they are often heard with the Pacific Island Group who hang about channel 37 either USB or LSB most early evenings our time.*

AUSTRALIAN UHF REPEATER LIST

NOTE: Corrections and updates may be sent to: CBA Repeater Listing, PO Box E160, St James, NSW 2000.

ACT

Canberra	2/32
Canberra	6/38

New South Wales

Albury	6/36
Armidale	4/34
Barraba	6/36
Bathurst	6/38
Bega	6/36
Belbora	1/31
Binya	3/33
Blue Mountains	2/32
Bombala	6/38
Booral	7/37
Bowral	6/36
Braidwood	
Brewarrina	1/31
Brindabella Ranges	7/37
Broken Hill	4/34
Broken Hill	7/37
Buladelah	7/37
Casino	6/36
Cobar	6/38
Coffs Harbour	6/36
Coolah	6/36
Cooma	4/34
Coonabarabran	4/34
Corowa	2/32
Corowa	5/35
Corwa	7/37
Deepwater	5/35
Deniliquin	1/31
Dungog	3/33
Eden	2/32
Glen Innes	7/37
Grafton	6/36
Grenfell	1/31
Gundagai	7/37
Gunnedah	2/32
Guyra	1/31
Warden	1/31
Hampton	1/31
Hay	4/34
Inverell	2/32
Jindabyne	1/31
Junee	5/35
Kariong	6/38
Lismore	2/32
Manilla	3/33
Monkey Hill	6/36
Mt Lambie	2/32
Murrirundi	3/33
Muswellbrook	4/34
Narrabri	2/32
Narranderra	6/38
Narromine	5/35
Narromine	6/36
Newcastle	1/31
Newcastle	2/32
Newcastle	5/35
Newcastle	6/36
Nundle	7/37
Orange	3/33
Port Macquarie	2/32
Sydney	5/35
Sydney (south)	1/31
Sydney (west)	3/33
Sydney (outer-west)	4/34
Sydney (north)	7/37
Tamworth	4/34
Tenterfield	3/33
Tumbarumba	3/33
Tumut	6/36
Tweeds Heads	4/34
Wagga Wagga	1/31
Wagga Wagga	5/35
Walbundrie	2/32
Walcha	2/32
Walcha	6/36
Walcha	6/38
Warrumbungles	1/31
Wingham	1/31
Wilcannia	1/31
Wollongong	6/38
Northern Territory	
Bushy Park	1/31
Darwin	1/31
Eridunda Station	3/33
Katherine	2/32
Maryvale Station	4/34
Mt Swan	2/32

Queensland

Alpha	2/32
Atherton	6/38
Amiens	6/38
Ayr	3/33
Barcaldine Downs	1/31
Bathurst Heads	1/31
Bauhina Downs	4/34
Biloela	7/37
Blackall	6/38
Blackwater	6/36
Brisbane	1/31
Brisbane	5/35
Brisbane	7/37
Bundaberg	4/34
Bundaberg	7/37
Cairns	3/33
Chinchilla	6/38
Clermont	6/36
Clermont	7/37
Crows Nest	6/36
Dimbulah	6/36
Dirranbandi	6/38
Double Island Point	3/33
Edward River	3/33
Emerald	6/38
Gladstone	6/36
Gold Coast	3/33
Goondiwindi	4/34
Gympie	2/32
Gympie	5/35
Gympie	7/37
Hervey Bay	6/38
Hughenden	1/31
Ingham	2/32
Inglewood	1/31
Innisfail	1/31
Ipswich	4/34
Jericho	4/34
Kilcoy	3/33
Lakeland Downs	2/32
Longreach	3/33
Mackay	3/33
Mackay	6/36
Marlborough	2/32
Maryborough	6/36
Maxwelton	2/32
Miles	6/36
Monto	3/33
Moranbah	4/34
Moura	1/31
Mt Isa	1/31
Mundubbera	6/36
Murgon	7/37
Quilpie	2/32
Rockhampton	1/31
Rockhampton	4/34
Roma	1/31
Springsure	3/33
Sunshine Coast	6/36
Sunshine Coast	6/38
Tambo	6/36
Taroom	2/32
Thargomindah	6/36
Toowoomba	2/32
Toowoomba	4/34
Townsville	1/31
Townsville	4/34
Wavell Heights	2/32
Warwick	1/31
Wide Bay	1/31
Yaraka	7/37

South Australia

Adelaide	5/35
Angaston	4/34
Blinman	3/33
Carnetown	1/31
Ceduna	1/31
Clare	7/37
Cleve	2/32
Coonalpyn	6/36
Coppuduba Hill	1/31
Hawker	7/37
Kangaroo Island	4/34
Manum	6/38
Mt Bryan	6/38
Mt Gambier	5/35
Mt Gambier	7/37
Myponga	2/32
Naracoorte	4/34
Orroroo	2/32
Port Lincoln	6/38
Port Pine	4/34
Renmark	6/36
Snowtown	6/36
Tarcoola	6/36
Wilkatana	6/38
Yorketown	7/37

Tasmania

Burnie	6/38
Central Highlands	7/37
Devonport	1/3
East Coast	6/3
Flinders Island	1/3
Hobart	1/3
Hobart	5/3
Launceston	2/3
Launceston	6/3
Midlands	4/3
North East Coast	3/3
North West Coast	4/3
North West Coast	6/3
Sandfly	2/3
West Coast	2/3

Victoria

Alexandra	1/3
Ballarat	2/3
Ballarat	5/3
Bairnsdale	7/3
Beech Forest	3/3
Bendigo	4/3
Cavendish	8/3
Currajung	4/3
Echuca	6/3
Euroa	3/3
Falls Creek	3/3
Foster	6/3
Geelong	4/3
Halls Gap	6/3
Hamilton	5/3
Harcourt	8/3
Hawkesdale	4/3
Horsham	3/3
Kerang	2/3
Lavington	4/3
Mansfield	2/3
Melbourne (north)	1/3
Melbourne (metro)	3/3
Melbourne (metro)	5/3
Melbourne (south)	7/3
Mildura	3/3
Moe	2/3
Mornington Pen.	8/3
Mortlake	7/3
Mt Cann	8/3
Mt Concord	6/3
Mt Delegate	3/3
Mt Terrible	8/3
Myrtleford	8/3
Penshurst	1/3
Shepparton	7/3
St Arnaud	1/3
Swifts Creek	1/3
Talangatta	7/3
Wangarrata	6/3
Waubra	7/3

West Australia

Albany	3/3
Augusta	7/3
Bencubin	2/3
Boyup Brook	4/3
Bunbury	2/3
Carnamah	2/3
Carnarvon	2/3
Coolgardie	7/3
Darkin	6/3
Denmark	1/3
Esperance	4/3
Kalgoorlie	2/3
Kambalda	1/3
Kalanning	1/3
Kellerberrin	1/3
Kulin	4/3
Lancelin	4/3
Mandurah	7/3
Manjimup	6/3
Margaret River	6/3
Meekatharra	1/3
Merredin	2/3
Mia Mia	1/3
Mt Manypeaks	6/3
Mt Barker	5/3
Mt Barrow	7/3
Mt Saddleback	1/3
Mt Solus	4/3
Nannup	2/3
Perth	1/3
Perth	3/3
Perth	5/3
Perth	8/3
Ravensthorpe	8/3
Stirling Ranges	7/3
Wickham	1/3
Wongan Hills	8/3
Wyalkatchem	6/3
York	7/3

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