MAY/JUNE 1990 $3.20

CB Action

AUSTRALIA'S ONLY CB MAGAZINE

TWO NEW ROADRUNNER SCANNERS.

SANGEAN ATS802 REVIEWED

WIN! an ICOM IC-40G

WASHINGTON BASE RIG REVIEWED.

DX ALPHA TANGO COUNTRY LIST
GX558 VHF MARINE — HOW GOOD?
WE QUESTION DOTAC.
TECH SPECS — WHAT DO THEY MEAN?

PLUS ALL THE USUAL COLUMNS — SCANNING, UHF, 27 MHz, SWL, NATIONAL REPEATER LIST, DX INTERNATIONAL, DX FORECAST .... AND LOTS MORE.

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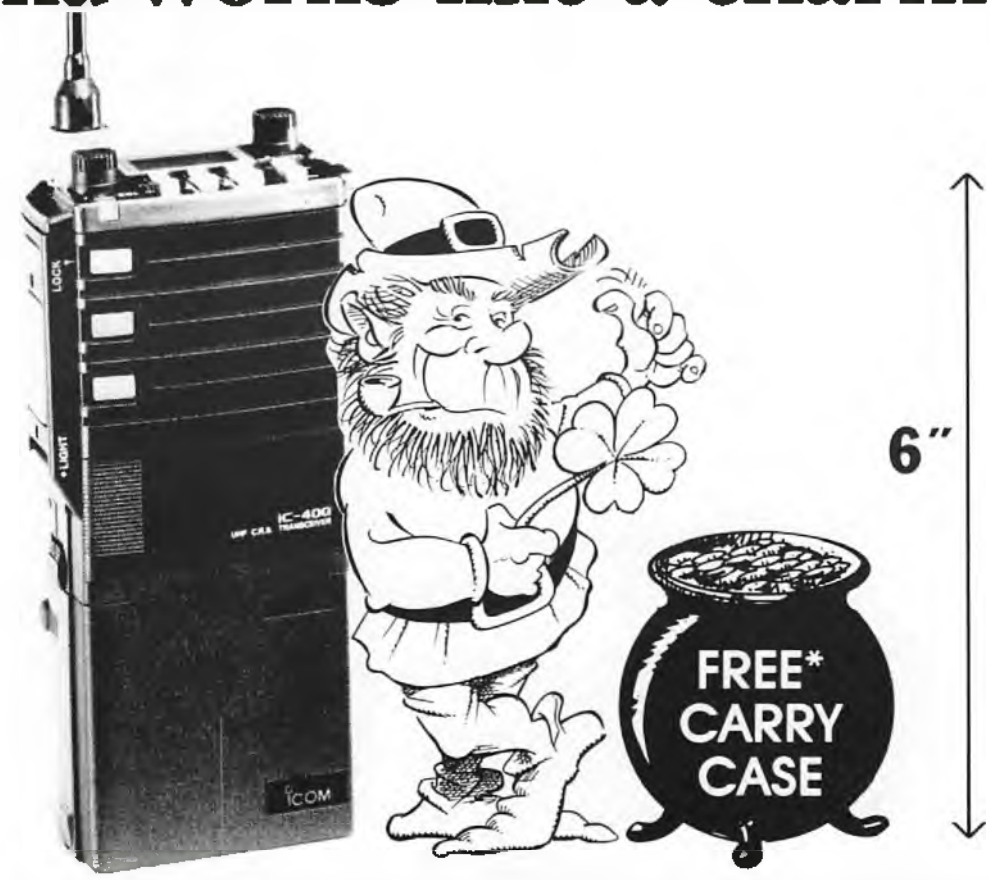
What's six inches tall and works like a charm?



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ON CHANNEL

IT'S TIME DoTaC LIFTED ITS GAME

It appears that the Red Indians of the well known DoTaC tribe have turned their attention to Melbourne 'out-of-band' operators during the past few weeks with some outstanding catches — including several of the Alpha Tango brigade.

We have personal knowledge of four 'busts' and rumor has it that the total in the Melbourne metropolitan area is closer to 15. Certainly the higher frequencies on 11 metres are somewhat quieter than normal with a couple of regular high-output operators currently fresh out of equipment and looking forward to a court case in the not too distant future.

One particular operator that we know of is down about $7,000 worth of state- of-the-art equipment, including would you believe an HL-2K (2 kW for Chrissake) linear amplifier which alone cost just on $3,000. Still, as they say, if you do the crime you've gotta be prepared to do the time (or in this case suddenly plunge into the financial mire)....and he's still got the fine to come !

While it's obviously illegal to operate out-of-band, it continues to be very disappointing that the authorities appear able to find staff to police these sort of activities but are unable to knock off the 'foulmouths' and 'braindead' who confine their action to the legal channels. Complaints to DoTaC invariably bring the totally unsatisfactory answer of,'we do not have the resources to police this type of activity and the CBRS is a self- regulating system anyway'. To which everyone replies...crap. A better (and more honest) answer would be,'it is much easier to catch and bring successfully to court an out-of-band operator than it is to catch and successfully prosecute someone for anti-social behavior'.

The unfortunate part about the whole situation is that while operating above 40 channels is patently illegal, most of the operators up there are 'straight- up' DX chasers who cause no inconvenience to other operators, are aware of marine and other service's frequencies and stay away from them, do not indulge in foul mouthing or harassment, use good operating techniques and generally go about their hobby in a sensible, albeit illegal, manner.

The same can't be said for all the 'braindead' who clog up the legal channels with their dull, usually obscene, always annoying and totally boring drivel. Yet, these cretins (defective idiots) often seem to have a charmed life and you can back it in that an out-of-bander will be busted in preference to the idiots.

Come on DoTaC, don't you think that it's about time you lifted your game, got off your collective bums and started to clean up the airwaves rather than taking the easy way out by concentrating almost solely on out-of- banders...you'd certainly win a lot of friends and even a degree of respect if your attentions were turned on the deserving rather than on the unlucky.

Think about it.

CB Action

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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.

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.

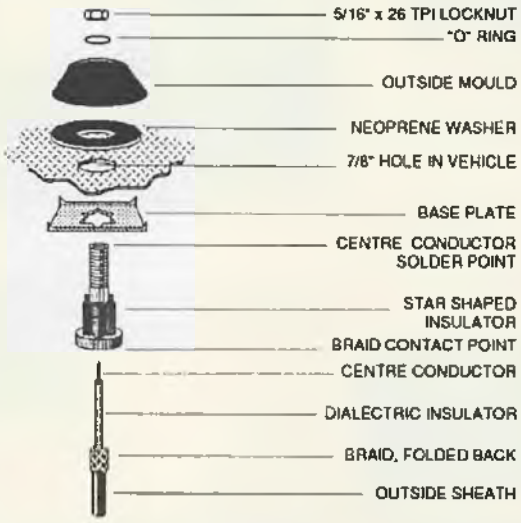
The sturdy 1.25mm diameter stainless steel whip will remain vertical at high speeds and is ideal for applications that require a rugged and durable antenna, such as farming, industrial, mining, heavy-transport etc. All component parts of the S474 are of Brass and Stainless Steel for total protection 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.

S474

BASE UL UHF Mobile Antenna Base Mount

Ordinarily, UHF antenna bases are difficult to terminate and cumbersome to install. However, the Mobile One UHF Base UL's patented design overcomes any difficulty in this regard without sacrificing the needed qualities of strength and weather resistance.

Made in Australia to exacting specifications for the UHF Band, the Mobile One Base 'UL' is an antenna mounting system for UHF whips with the Australian Standard 5/16" 26TPI female screw thread. The Base UL is suitable for use with Mobile One's patented Boot Mount.

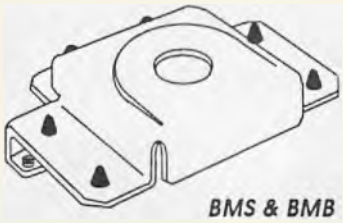


UHF Base UL

BMS & BMB

Stainless Steel Mobile Boot Mount

The unique feature of the Boot Mount is that it can be used to install antennas without drilling any holes in the vehicle.The Mobile One Stainless Steel Boot Mount is an Australian made antenna mounting system, designed as a substitute for front or rear guard mounting and will fit the bonnet or boot of most vehicles. Constructed in stainless steel, it can be obtained in either black finish *(BMB)* or plain *(BMS)*. The Boot Mount has been designed to utilise all of mobile One's standard antenna mounts such as the UHF Base UL, HF/VHF Base A and the Mobile Dipole Mount. All Mobile One products are covered by Trademark, Patent, Design and copyright protection.



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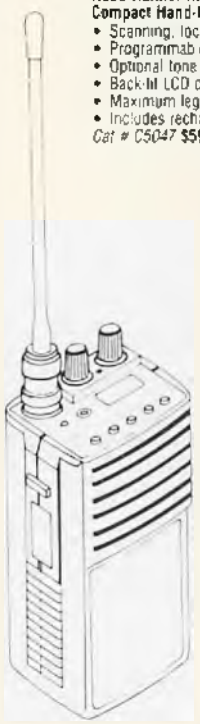
SHORTWAVE, UHF, CB, SCANNERS, MARINE



Road Runner RR-477 Compact Hand-Held UHF Transceiver:
- Scanning, lock out, Hi-Lo power controls.
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- Optional tone squelch available
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- Includes rechargeable ni-cad battery.

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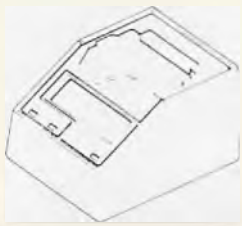

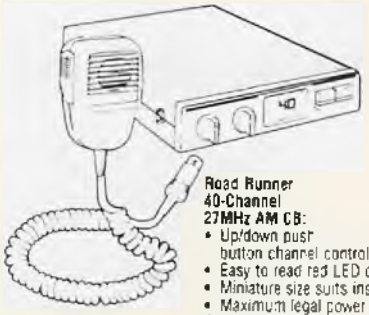

Road Runner 40-Channel 27MHz AM CB:
- Up/down push button channel control
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- Miniature size suits installation in modern vehicles
- Maximum legal power output.

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SPECIAL INTRODUCTORY OFFER — SAVE $10.00

Road Runner AR-880 Hand-Held Scanner:
- Scan, search, lock-out, hold, delay functions.
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- Audio output: 120mW.
- Size: 140mm (H) x 55mm (W) x 44mm (D).

Cat # C5020 **$299.00**
- Optional AC adaptor 6V DC 200mA

Cat # T0620 **$19.95**

Seamaster International VHF Marine Transceiver:
- High/Low power switch.
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- Auto seaphone compatible
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- DOTC Approval # 274B009C

Cat # C7000 **$299.00**
SPECIAL INTRODUCTORY OFFER

Auto Seaphone Microphone: (to suit above):
Cat # C7005 **$159.00**
Wired to suit C7005 transceiver.

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- Includes 4-way polycarbonate UV stabilised base and coaxial cable.
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Mobile Scanner AR-950:
- Suits mobile or desk-top installation.
- Frequency coverage. 60MHz-90MHz 118MHz-174MHz 430MHz-512MHz. 830MHz-950MHz.
- Search increments: 5KHz, 10KHz, 12.5KHz, 25KHz, 30KHz.
- Search, scan, priority, lock-out, delay/hold, AM/FM functions.
- Supplied with 2 antennas for optimum UHF and VHF reception
- Inbuilt 20dB local/DX attenuator.

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NEWCOMERS START HERE

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 necesary 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.

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 uaully 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* ***S****tanding* ***W****ave* ***R****atio. 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* ***S****hort* ***W****ave* ***L****istener 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* ***U****ltra* ***H****igh* ***F****requency 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 for an* ***A****ntenna* ***T****uning* ***U****nit 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 — T****ele-****V****ision* ***I****nterference — or —* ***BCI — B****road-****C****ast* ***I****nterference. RIs stand for* ***R****adio* ***I****nspector — 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 term 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.

Mobile and handheld

SCANNERS FROM ROADRUNNER

Possibly the first pigeon pair, the RoadRunner 900 handheld scanner and 950 mobile scanner complement each other with frequencies extending into the 800 MHz range.RUSSELL BRYANT looks at these unique scanning receivers.....

It's not very often that you have two scanners which feature identical functions and specifications, yet, give you a choice of either a mobile unit (RR 950) or a handheld scanner (RR 900).

In fact I can't think of a brand name past or present that offers this selection.....until now that is !

Access Communications, the company marketing the RoadRunner 900 and 950 scanners in Australia, list the following as standard: 100 memory channels, extended frequency range, selectable AM/FM and search increments. Other common features include five user programmable search banks, channel lockout, delay, and for night use, an internal back-light for the LCD display.

Programming sequences are identical for both sets as is the keyboard layout. Memory back-up is via a non-volatile method, in other words, you don't require a battery to keep the program. Unlike competitive units the memories will not drop out if the scanner is left without power for an extended period. The 100 memories are divided into five groups of 20, this allows scanning of between one and five banks. A further five temporary channels can be 'programmed' with frequencies found while searching.

The sensitivity across the frequency ranges of 60-90 MHz, 108-174 MHz, 406- 512 MHz and 830-950 MHz varies from .4 of a microvolt for VHF to 1 microvolt on 800 MHz. Image rejection is superior to other units by virtue of the 21.4 and 54 MHz IF. Search increments of 5, 10, 12.5, 25 or 30 kHz provide the correct step rate for the band being searched.

Both handheld and mobile scan at 15 channels per second, taking just under seven seconds to complete a cycle.

The frequencies listed are for the standard models of the 900 and 950, however, available on advance order from Access, are two versions that have frequencies set to attract the air band enthusiast. The mid band VHF has been deleted as have the

frequencies from 470-512 MHz, replaced by the UHF airband 222-380 MHz.

Overall access (pardon the pun) is available to any frequency from 118-174, 222-380, 406-470 and finally 830-950 MHz.....at no extra cost I might add.

The 900 is powered by five AA ni-cad batteries and the battery pack is supplied with the set as are two antennas. One is the familiar rubber duckie standard to most handheld scanner owners, the other is a cunning move by Access, a flexible 400 MHz quarterwave which doubles as a half wave whip at 800 MHz. Accessories accompanying the 950 mobile include auto mounting bracket, DC power lead and battery eliminator for operation at home. The 950 has two aerials for use in the shack, a telescoping whip and a 800 MHz flexi — quarterwave. Both models have BNC connectors.

The rear panel of the 950 supports not only the BNC, but also the DC socket, extension speaker jack and an attenuator switch. Set to the DX position the attenuation is zero, toggle to LOCAL removes 20db from the incoming signal. This feature is a benefit if you are located near a strong source of RF energy.

The casing for both RoadRunner models is brown ABS plastic, the function and numeric keys are of a grey rubberized material. There is no acknowledgement of contact with a key, that is, no beep when you press a button. The LCD display provides all the necessary information such as receive mode, search increment and so on. A spring steel belt clip comes with the 900, it's strong and won't give up after extended use.

Available audio from both units was more than adequate, however, on the 950 the audio can be increased by using the mobile bracket as a stand thereby tilting the front panel off the desk. The extra tilt also allows better viewing of the LCD display.

Sensitivity, selectivity and adjacent channel rejection are good although in a few heavy RF areas they suffered from inter-mod on the UHF bands from the 500 MHz telephone.....but then, what scanners don't? Similarly, while some birdies are present within, they appeared to be no more than any other scanner, possibly less than some similarly priced units.

I have only two criticisms of the 950.

While it is possible to turn the backlight on and off with the 900, the light is on continuously with the 950. My second complaint is applicable to the 900 also — the delay does not operate on individual channels and the entire memory is affected.

Apart from those two annoyances, the RoadRunner 900 and 950 are quality scanners that will complement any shack.

Recommended retail of the 900 and 950 is $599 and the units were supplied by Access Communications.

HF LINK

WITH ROB WILLIAMS

Welcome back to HF LINK. I hope you've been successful with the loggings I gave you last time. This issue I have the usual dose of news and frequencies for all those frequency junkies out there, so let's get going. Remember all frequencies are in kHz and all times are UTC unless stated otherwise. Utility station use SSB.

Radio Sweden Expansion Plans Get Go-ahead

According to a report over Radio Sweden $US9 million has been allocated from the Swedish budget for three new shortwave transmitters to replace aging equipment at its HF sites. These units are almost 20 years old and need to be replaced as soon as possible as they contain the highly dangerous chemical PCB. The new high-efficiency transmitters will have the capability of broadcasting in SSB if required, something broadcasters have been playing with for many years. The project is to start immediately with the first due on-line in 1992. The second and third will follow in 1994. These senders are expected to last 20 years and will bring Radio Sweden into the next century with modern facilities.

News From Italy

News from Radio Sweden indicates that the Italian Radio relay service has completed the installation of a new antenna for the 13 and 21 MHz bands. Test transmissions will be conducted on Sundays between 1345 and 1500 on 21500 to north and eastern Europe and Africa. At 1345 it carries a program in Russian and at 1400 English. At 1430 French is then broadcast. Listeners' response is requested. Its other broadcast on Sundays at 0800 in English is on 9860 with a United Nations program at 0830. Reception reports together with two IRCs can be sent to PO Box 10980 I-20110 Milan, Italy.

More News On SES

Continuing from my last column on the SES the Namoi (NSW) division conducts radio tests on Tuesday nights at 1945 EST on 3729 using the standard callsign VL2ZQ. Other towns heard are Boggabri, Manila and Wee Waa.

Coast Guard Update

More news on the Coast Guard, at 2200 you can hear its station at Portmouth, Virginia, callsign NMN on 13113.2 with an offshore weather forecast. Other frequencies in parallel are 6506.4 and 8765.4. Another report is given at 1500 on the same frequencies and at 0400 and 1000 on 4428.7, 6506.4 and 8765.4. High seas forecasts are heard at the following times and frequencies: at 0530 on 4428.7, 6506.4 and 8765.4; at 1730 on 8765.4, 13113.2 and 17307.3, and at 1130 and 2330 on 6506.4, 8765.4 and 13113.2. All transmissions are in SSB. NMN uses a synthesized voice generating system to broadcast weather details after experimentation by the Coast Guard began a few years ago.

A good 'volmet' (weather) station to look out for is the RAF station at West Drayton in the UK. I'm hearing a good signal around 2000 on 11200 in USB.

Seasonal Changes For Radio Netherlands

Effective from 25/3 Radio Netherlands makes the following changes, 0730 to Australia and New Zealand on 9630 and 9715. At 1130 to Asia on 21520, a move from 21615.

Another Voice From New Zealand

We've all heard about Radio New Zealand's upgrade but did you know that by the time you read this there will be another shortwave service originating from New Zealand? Its callsign is 2XA and the station is being run by Print Disabled Radio. According to a report from Arthur Cushen over 'Sweden Calling DXers' they have brought a 1 kW shortwave transmitter and will operate on 3935 on Sundays, Mondays and Thursdays between 0630 and 1000. This schedule will be gradually extended to 2100-1000 and they may even increase the number of days to have a daily service.

The address for reception reports is PO Box 360 Levin New Zealand.

Department Of Education On HF

Updating Nov/Dec CBA concerning plans for the NSW Department of Education (DoE) to use HF radio for its Distant Education centres, anticipated trials are expected to start in June, however its has run into some problems with frequency selection. There will be seven sights and will need a total of 28 frequencies. DoTaC has told DoE that it can have six channels distributed among the seven centres, with the possibility of another four. Knowing what HF is like, DoE can see problems with using only a limited number of frequencies not only because of propagation but also due to the size of the areas to be covered, and so further investigations are being undertaken to try and solve the problems. All types of possibilities are to be looked at. Satellite is not only too expensive a service but if an interactive system is used there can be a long delay in signal return due to satellite delays. Another alternative is the installation of a VHF network, but with such a large area to cover and a limited budget this proposal also seems doomed.

Where the telephone exists using Telecom's Digital Radio Concentrator System (DRCS) there would be too many technical problems, not only for DoE but also for Telecom as it would hold up too many DRCS circuits to allow others to use the system. At the moment the idea of using a split frequency network between centres may be the way out. Hopefully I should have some more for you in the next edition.

HF Link Expands To Make More Friends

Keeping in line with our policy of working with DX clubs around Australia and New Zealand I can announce that HF LINK now has access to the monthly magazine of the Southern Cross DX Club, based in Adelaide. From time to time I'll be using material from the magazine to help you in your DXing as well as keeping you informed of what the club is doing. Its monthly magazine 'DX POST' continues a fine example of providing members with the latest DX notes and articles, catering for those interested in shortwave, mediumwave, utility DXing and VHF/UHF scanning. If you want to know more, write to the club at GPO Box 1487 Adelaide SA 5001.

OZ DX News

And while on the subject of clubs, OZ DX has sent in its latest magazine with heaps of loggings. Here is just a small sample for you ... at 1420 on 3235 All India Radio from Gauhati can be heard with a strong signal carrying English news. This appears to be due to a new 50 kW transmitter recently activated. For the early starters Trans World Swaziland is on at 1922 on 3240 in English with music program. The Voice of Myanmar, Yangon is using the new outlet of 5990 ex 5985 with English on from 1430 to 1600. For those who can only listen at night try 5025 at 1000 for Radio Rebelde in Spanish using a new high-powered transmitter. Radio Reloj has reactivated its frequency of 4832 and is heard at 0848. And finally one for me to try for, 11870 at 2259 AWR/Radio Lira in Costa Rica with a multilingual Spanish/English ID and program in English. My thanks to Peter Bunn for sending OZ DX.

A Freebie Contest For All

Through the kindness of Jack Glazenburg at Captain Communications, I have one copy each of the 1989 Australian HF Frequency Register and Aviation Register to give away. These will be won by the best reader's letter to reach me before the next edition of CBA, but it is quality of loggings, and not quantity, that I am after. To see what is in these books look for the review elsewhere in CBA. Go to it.

New Schedule For RCBS

From March until August the Red Cross Broadcasting Service broadcasts to Australia between 0740 and 0757 on 9560, 13685, 17670 & 21695; to the Far East at 1040 through 1057 on 13635, 15570, 17830 and 21770 all via transmitters in Switzerland. Another transmission from Beijing is aired at 1310 to 1327 on 9620; to south and southeast Asia between 1310 and 1327 on 13635, 15570, 17830 and 21695. A relay from China is also carried on 11695 at the same time. All the above transmissions are in English and are on the following dates: 30/4, 3/5, 28/5, 31/5, 25/6, 28/6, 30/7, 2/8, 27/8 and 30/8.

Each program contains news and information concerning Red Cross activities from around the world. Reception reports are welcomed to RCBS, 19 Avenue De La Paix CH-1202 Geneva, Switzerland. An IRC for return postage would be appreciated.

Expansion Plans For Africa No 1

According to a report over Media Network, Africa No 1 in Gabon has recently commissioned a new 500 kW shortwave transmitter. It currently has 4 x 500 kW senders at its site at Moyabi, however this fifth transmitter is at a new site called Moyabi 2. It also has future plans to install another 500 kW unit at this site in the near future.

Well it's time to leave you again, just one quick point before I go. As winter is approaching we should be able to hear more of the Latin American stations at night, and in the early morning the Africans. See what you can hear and let me know so that we can share it in this column. That's all for now, you can reach me at PO Box C-111 Clarence St, Sydney NSW 2000 or via Shortwave Possum on Fidonet 3:713/605 (where I place regular updates to the column). If you want a personal reply to a question please enclose a SASE.

26 APRIL
27 APRIL
28 APRIL

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051101 Colt 55 Supa Deluxe 27MHz
051103 TX830 E/Phone Deluxe Aust AM
051202 Super Cougar MK2 40 Channel AM
051307 Uniden Pro 500D 27MHz AM CB
051308 Uniden Pro 510e Deluxe AM
051401 3-5808 GE AM Compact 27MHz
051618 Cobra 18 Plus AM CB

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ICOM

27MHz AM/SSB CB "We won't be undersold"

052104 TX840 AM/SSB Electrophone
052203 Super Tomcat MK2 AM/SSB
052301 PC-122 Uniden Compact AM/SSB
052302 AX-144 Uniden Classic AM/SSB
052303 Uniden Grant Deluxe AM/SSB
052306 Uniden PRO-640E Deluxe AM/SSB
052601 Cobra 148 GTL Deluxe AM/SSB

27MHz Base Station

054301 Washington AM/SSB ST

477MHz Mobile Transceivers

055104 TX472S Electrophone Scan 477MHz AUS
055301 UH-001 Uniden Sundowner UHF
055307 UH-007 Uniden Sundowner

477MHz Handhelds

056104 TX475 Electrophone 40 ch handheld
056301 UH-005 Handheld 40 channel 477MHz
056305 AR477 UHF Handheld
056940 IC40 UHF H/held ICOM Deluxe 477MHz
056945 ICOM IC 40G UHF Handheld
059230 PR30 CB RF Signalizer

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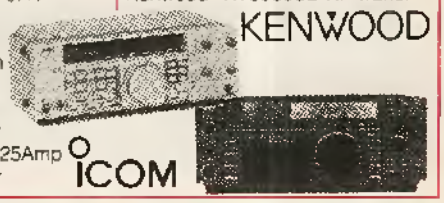
Uniden HR2510
ICOM IC48A UHF 70cm Trans.
ICOM IC20 Air Band Trans.
ICOM IC228A 2M Mobile 25W
ICOM IC24AT 2M/70cm Mobile 40W
ICOM IC2A 2M FM Handheld
ICOM IC2AT 2M Handheld
ICOM IC2GAT 2M Handheld
ICOM IC2SAT 2M H/Held Micro
ICOM IC4SAT 70cm Handheld
ICOM IC725 HF Amateur Trans.
ICOM IC735 HF Amateur Trans.
ICOM IC765 HF Amateur Trans.
ICOM IC900A Multiband
ICOM ICAH2A Digital ATU
ICOM ICAT120 ATU
ICOM ICAT150 ATU
ICOM ICBP3 Battery 8.4V 270Mah
ICOM ICBP5 Battery 10.8V 425Mah
ICOM ICBP8 Battery 8.4V 800Mah
ICOM ICPS30 Power Supply 13.8V 25Amp
ICOM ICPS35 Power Supply 13.8V 20 Amp
ICOM ICPS55 Power Supply 13.8V
ICOM ICU2AT 2M FM Handheld
Kenwood KMA5 10-80M Mobile Antenna Kit
Kenwood KMC60A Desk Mic.
Kenwood KTH25A 2M Handheld
Kenwood KTM231A 2M Mobile
Kenwood KTM2570A 2M Mobile
Kenwood KTR751A 2M Multi Mode Mobile
Kenwood KTR851A Mobile FM/SSB Transceiver
Kenwood KTS440S HF Trans.
Kenwood KTS790A All Mode Triband
Kenwood KTS950SD HF Trans.

KENWOOD



ICOM

SCANNERS & RECEIVERS AT STAGGERING SAVINGS

08105 100XL Bearcat H/Held Scanner
08106 200XL Bearcat Super Handheld Scanner
08112 BC760XTL Uniden Scanner
08201 SR15 Cobra 100 Channel Scanner
08205 MVT5000 Handheld Scanner
08303 MS101 Short Wave Receiver
08401 BJ200 Challenger Handheld Scanner
08502 AR2002 Scanner 25MHz – 1.5GHz
08520 Saiko SC8000 Mobile Scanner "Special"
081CR7000 Receiver UHF/25-30MHz 99 memories, scan 240V
081CR71A Receiver HF/VHF/UHF 1MHz–2GHz 1000 memories, scan
081CR9000 Receiver HF/VHF/UHF 1MHz-2GHz 1000 Mems scan

uniden

cobra

MARINE RADIO/ELECTRONICS

GME GX287 AM 27MHz Deluxe
Uniden Seawasp 27MHz Deluxe
Pearce Simpson Sea Simba 27MHz AM
GME GX558 VHF
Auzzie SeaPhone
Uniden MC610 VHF Seaphone

ICOM

GME Electrophone

"Seaphone" Microphones

ICOM ICM11 VHF H/Held
ICOM ICM12 VHF H/Held
ICOM ICM5 VHF H/Held
ICOM ICM55 VHF Marine
ICOM ICM700 HF SSB Marine
ICOM ICM80 HF SSB Marine
Kenwood TM207 VHF Handheld
Kenwood TM407 VHF Marine Deluxe
DM2000 Video Sounder
Marinetek Depth Sounders
Uniden MC800 Echo Sounders
Fuso MF302 Echo Sounders
Fuso MF310 Echo Sounders
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COURT CASE UNCOVERS LOOP-HOLE

At the Frankston Magistrates' Court on Thursday, 29 November 1989, a CB operator successfully defended a charge of causing deliberate interference to Melbourne's ch 1/31 repeater.

The defendant was charged under the Radiocommunications Act with interfering with radio communications. The court heard that the alleged interference occurred for approximately 12 hours on the night of 30 May and early morning of 31 May, 1989.

During the case, which lasted all day, a DoTaC Radio Inspector presented evidence including items of radio equipment. There were five other witnesses for the prosecution.

It was alleged that a Royce UHF CB Transceiver, with its press-to-talk button locked on, was connected to a converted TV antenna pointing in the direction of the repeater. The power supply to the set had a clock timer connected, the court was told.

The defendant was represented by legal counsel who successfully mounted a defence case which centred on interpretation and definitions of the wording of the Radiocommunications Act.

After some deliberation, the magistrate dismissed the case due to a technicality within the Act.

However, in summing up the case, the magistrate admonished the defendant and severely condemned his actions. He also suggested that the Minister for Communication should remove the defendant's CBRS licence and never have it re- issued.

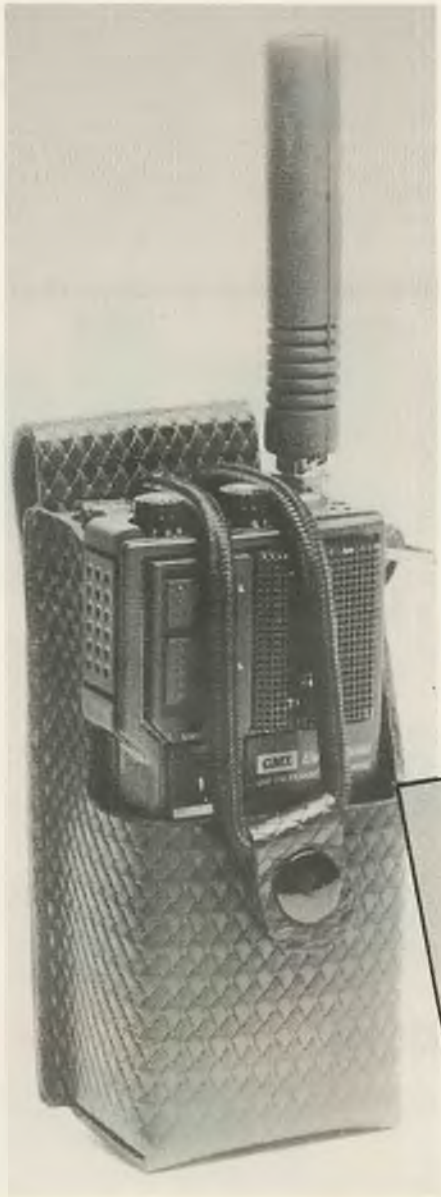
Now that a loop-hole has been found in the Radiocommunications Act, there is every probability that serious consideration will be given to having it amended.

So it seems, even with the new Radiocommunications Act, that Radio Inspectors are still being frustrated.

NEW SCANNERS FROM ICOM

Icom is about to release two new scanning receivers with almost "DC-to- daylight" coverage. The R-1 handheld is identical in size and appearance to the two-metre IC-2SAT transceiver, which Icom calls a "micro-handheld" — it is just 50mm wide, 102mm high and 35mm deep and weighs less than 300 grams. The R-1 will receive 100 kHz to 1.3 GHz continuous, with 100 memory channels. Unfortunately it will only have AM, FM narrow and FM wide, so monitors of the HF band will miss out on the SSB utility services. Frequency steps are selectable, from 500 Hz to 50 kHz, and the radio will include a power save circuit to extend battery life.

The mobile R-100 receiver will cover from 100 kHz to 1.8 GHz, and is quoted as having 121 memory channels — 100 for normal frequency storage, 20 for memorizing "scan edges" of different bands, and a priority channel. The R- 100 has a built-in 15 dB pre-amplifier, but, like the R-1 forfeits SSB reception. The R-1 and R-100 are expected to sell for below $1000, and we hope to have a full review of both in the next issue.

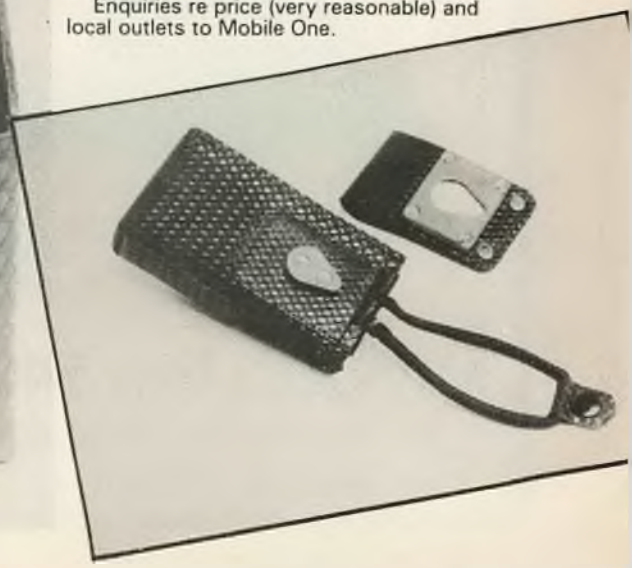


VERSATILE CARRY-CASE FROM MOBILE ONE

Arguably the most prolific CB (and sundry other interests) entrepreneur in Australia must be Greg Ackman, boss of Mobile One. The latest product to hit the shelves is this great multi-use carry-case complete with patented 'snap-on' clip. The case is ultra heavy duty and will suit many various makes/models of UHF rigs, scanners, etc. The separate part of the clip slips over your trouser belt and the case is locked into place with the 'cam' type mount. In the photograph it is holding an Electrophone TX-4758 UHF rig, but, because of its unique design it is suitable for many different units.

It's a great idea and will find plenty of takers.

Enquiries re price (very reasonable) and local outlets to Mobile One.



BAND SPREAD

FROM DC TO DAYLIGHT

WITH GREG TOWELLS

Welcome to all readers of Bandspread for another edition. I am pleased to report an overwhelming response to my comments about the emergency monitoring service, and the long suffering volunteers still about the channels. I have put my thoughts and observations regarding the situation, so now I will throw it open to readers comments and info.

I must say to some readers that it might be a good thing to carefully read before launching into the old time-worn comments such as "why don't you have a go at monitoring....you wouldn't know because you don't monitor" because I pointed out to start with that monitoring a channel jam-packed with ratbags, noise and skip wasn't my idea of a great time, so my sympathies went out to those still with it.

One other observation. One main point of my comments was that CB users should know which areas were still serviced with emergency monitors, and at what times. Clearly, since I am based in Sydney, my main question was aimed at this area. From the response received (more letters in one month than for the last 12!), there seems confirmation that little or no monitoring service exists in Sydney or surrounding districts (not that I blame people for not monitoring here!) simply because there was not one comment from anyone around here. However, on with news and comment from the rest of Australia's emergency monitors...

NEWS FROM ILLAWARRA

The Illawarra district Australian Citizens Radio Monitors have advised of their service covering the Wollongong and Illawarra district of NSW. Illawarra ACRM assures users of 27MHz and UHF CB that the emergency channels are monitored by volunteers 24 hours a day, seven days a week (this is what I was after, an idea of what times an emergency monitoring service is active, in as many areas as possible).

ACRM first started in Wollongong in 1985. Calls for assistance have been received for NRMA service, car accidents, and even boating mishaps off the coast as far away as Cooktown QLD. The secretary of Illawarra ACRM, George Bourke, writes that he has been a member for eight years, and since he is considered 'too old' to be employed, he uses his radios to help others. ACRM in the district is involved with the Royal Volunteer Coastal Patrol, has a monitoring base at the Police Citizens Youth Club, and have set up a base for handicapped children at Figtree High School. Anyone who wishes to become involved in Illawarra ACRM or find out more information should contact the secretary, Illawarra ACRM, PO Box 195, Dapto NSW 2530. A letter from M J Howells, from CREST at Charlestown NSW, regarding emergency monitoring contains some interesting points about the service, and is as follows... "I have owned and operated CB radios since legalisation, and have had dealings with numerous Emergency Services, including various Citizens Radio monitoring groups, in various areas. I agree that SOME monitors may be 'big- headed', and SOME groups may seem untrained and unprofessional, but in no way do I blame any group for the lack of on-air monitors.

"All emergency monitors on CB are VOLUNTEERS, and therefore rely totally on public support to continue. How can anyone expect a perfect service to be available if no-one is willing to help? I have nothing but praise and support for the majority of emergency monitors throughout Australia. They devote their time and money to help people like you, but what do they receive in return? "The problem of no monitors on air is not the fault of the various groups. It is the fault of each

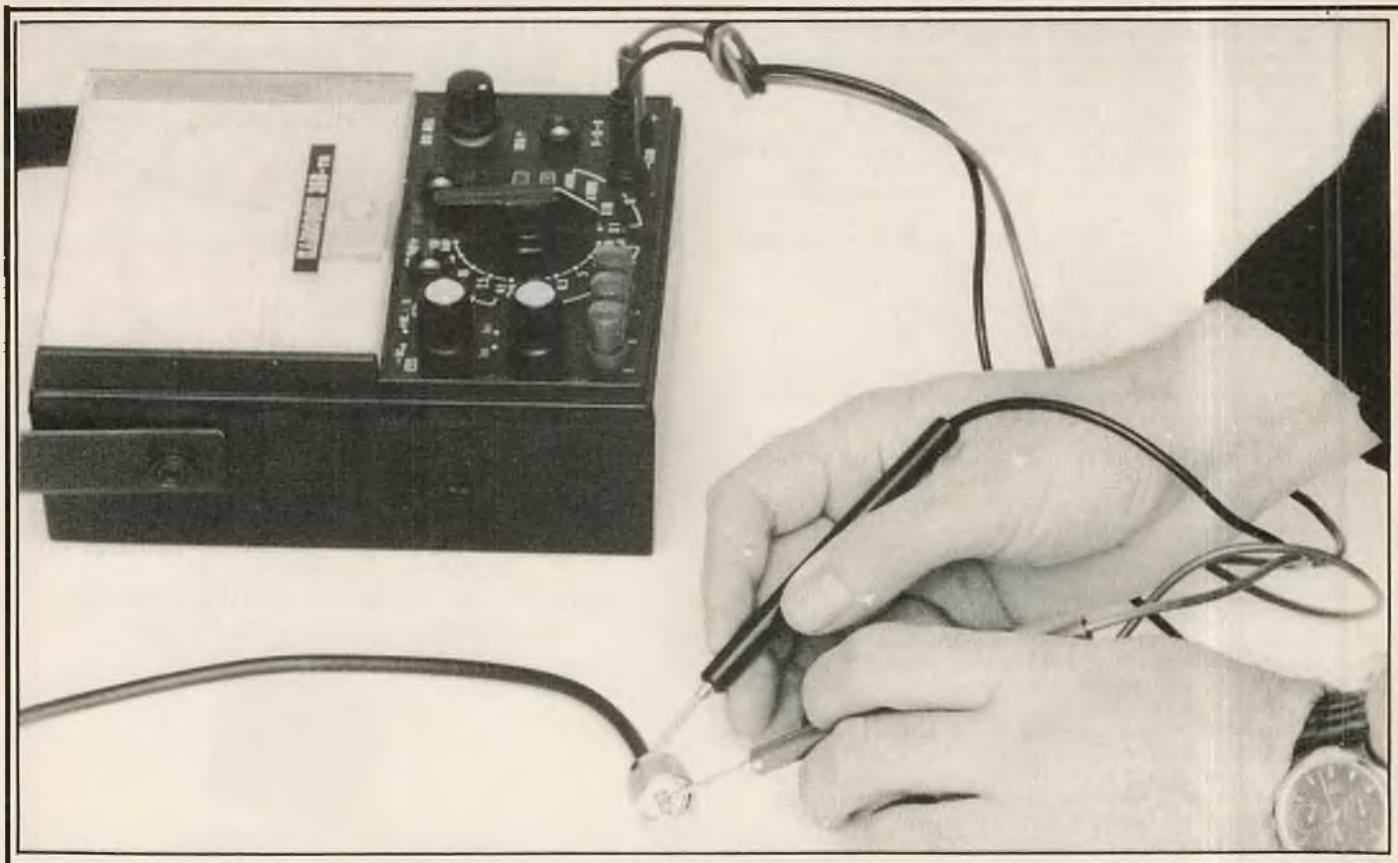
and every CB operator not somehow involved. Emergency monitors are people, just like you or me, the only difference is that they don't sit back and complain about no service, they GET UP AND HELP. How many of you, including CBA staff (my answer to the coming question, rarely since I'm trying to rattle up news for the next column!!!! GT.) are willing to devote two or three hours a day, three or four days or even five or seven days a week to monitor? Or, how many of you are prepared to donate even just a couple of dollars to your local CREST or ACRM or whatever, so that they may buy more equipment, or set up a 5/35 repeater, or train new monitors? To those few who answered 'YES, I WILL' — my congratulations. You are fine, respectable human beings, willing to help others, or to help those who help others. To the rest, who probably said 'no way, they're no good anyway, who needs them', remember that when you're lying injured in a car, on a dark lonely stretch of road, calling for help, but getting no answer because people like you were too selfish to donate a few lousy dollars to help save lives.

"On the subject of UHF channel 5, I believe that 5/35 emergency repeaters are valuable. The local Newcastle division of CREST has recently commissioned a 5/35 repeater for Newcastle, and I personally have obtained assistance via this repeater, after being REFUSED access to the other repeaters by chatting truckies (I can verify this type of incident, after a number of times I have been denied access to Newcastle area repeaters, by truckie and commercial type operators and the 5/35 Newcastle repeater was also found useful during the Newcastle earthquake, when CREST was called in to assist police with communications — GT). Once again, the lack of 5/35 repeaters is the same as the lack of monitors problem, no support-no service. Repeaters cost money, right? And money is something that most voluntary emergency groups don't have. Sponsors and donations come rushing in the minute someone decides to erect a new repeater, unless that repeater is for 5/35 (well...maybe sometimes, but point taken — GT). "To sum up, if you are not prepared to chip in and help in some way, then DON'T COMPLAIN. The service you'll get is the one you'll deserve (something like governments — GT). Everyone on CB expects these groups to be there and help them when needed. If they're not, it's the worst. But, where are you when they need your help? There is no way a dozen or so people can operate a 24 hour a day, seven day a week service, no matter how small the town may be. But with everyone's help, in whatever way you can help, it can be done. It's up to you. It's your service, you decide its fate, but don't keep passing the buck.

"Remember the motto of the CB emergency service CREST: 'CREST saves lives, THE NEXT ONE COULD BE YOURS'." That letter sums up a lot of aspects of the emergency monitoring service, so how about seeing if you can help your local club or monitoring group in some way. Thank you to M J Howells, of Charlestown, for the info and please keep me informed of happenings up your way. Keep those letters concerning emergency monitoring, areas covered and what times, and any other info you might have regarding emergency monitoring in your area. It is an important aspect of CB and it concerns all who operate CB. It is a good sign that there people that care out there, the rush of letters in reply to my comments prove that. I have many more letters from monitors around Australia, and space stops me from including more this month. I promise more next month. The last Amateur exams were held by DoTaC during February 1990. The next exams will be held by a number of groups, clubs and individuals that expressed their interest in this area to the Department. Further info on exactly who will be holding theory, regs and morse exams for intending radio amateurs is available from DoTaC.

For those who were successful at the last sitting, congratulations. Exam results were received by most sucessful candidates within a week of sitting, very quick for a government department, and I imagine most made a beeline for DoTaC for their licence the very next day, I know I certainly did! So if you hear VK2KNP around the bands, be sure to give me a call.

One unusual thing was, after years of operating on CB bands, I was actually nervous to take to the amateur bands. Reminded me of my first foray onto CB all those years ago!



CHECK THAT TRANSMISSION LINE . . .

— or it could check YOUR transmission!

Over the past few years there have been a million words written on the subject of coaxial cable — its selection and installation — with due regard to the frequency it is to be used on, environment and cost, therefore we intend to assume that the operator has followed the recognised procedures but now finds himself unhappy with the performance that he is getting from his station, and has been able to discount the possibility of the problem being in the rig itself or the antenna.

Where does he go from that point?

A quick visual inspection of the coaxial feed line between the antenna and the rig may give the impression that all is in A1 condition, but is it?

The first approach to the problem should be made in a logical manner. Obviously there has been some change in the signal being transmitted or received, but was the change a gradual one, or did it occur suddenly? Is the problem intermittent?

If the change was a gradual one, then it would be well within the bounds of possibility that water in the transmission cable is the cause of the problem. Neither the basic PL 259 or N series connector are weatherproof, and if the initial installation was not carried out with care, and sufficient precautions taken to prevent the ingress of moisture, then the odds are even greater that water will be the cause of the change in performance.

To check for moisture in the line, remove the connector from each end of the coax — even if there is no sign of moisture in the connector itself. If the outer braid or the inner conductor are tarnished at all, or there are definite signs of moisture, you can try cutting a few feet off the line and re-installing the connector. This may not be a sure cure, because the water may have migrated some distance down the cable — the braid actually acts in a similar manner to a sponge and wil even "suck" the moisture up against the force of gravity!

If the ends of the cable appear to be OK, then inspect the whole line for signs of physical damage which may have resulted in a hole in the outer skin of the cable. If such a hole is found, it would be advisable to replace the whole section of cable, as taping over the hole will only trap the moisture in the cable, and the trouble will remain.

There is also a possibility that close inspection of the outer sheath of the cable will reveal no damage whatsoever, and the VSWR check is satisfactory. If this is the case, don't discount the possibility that cable aging may have occurred, especially if the cable is of the "bargain basement" type.

Some of this cheaper cable exhibits a very short life when exposed to sun and weather and the attenuation of the signal increases slowly. If the cable has no identifying brand or specification on it then replace it with a new one.

Short cuts in inspecting the cable for damage can be the downfall of the impatient CBer. One gentleman of our acquaintance, who had a sudden drop off in signal strength went through the above procedure — sort of that is. He inspected both ends of the coax to see whether they were satisfactory, which they were.

Because the cable was anchored to a tower and then spanned a gap of some forty feet before entering his shack, he made the assumption that there could be nothing wrong with the forty feet between the tower and the shack, because it was out of reach, secured at both ends and touched nothing in between.

Wrong!

His offspring had managed to do the cable a mischief during a skirmish with an air gun and an elusive starling which had perched on the cable. It took him about three weeks to find the damage, just because he was too complacent!

If the cable appears to be in good order and no physical damage can be located, there are several checks which can be carried out to check out the electrical properties of the cable.

If the problem which you are experiencing is intermittent, then this is where you should start. What you are looking for is an open or shorted centre to outer conductor condition, which can occur in the cable or the connector, which may show up as a high VSWR reading.

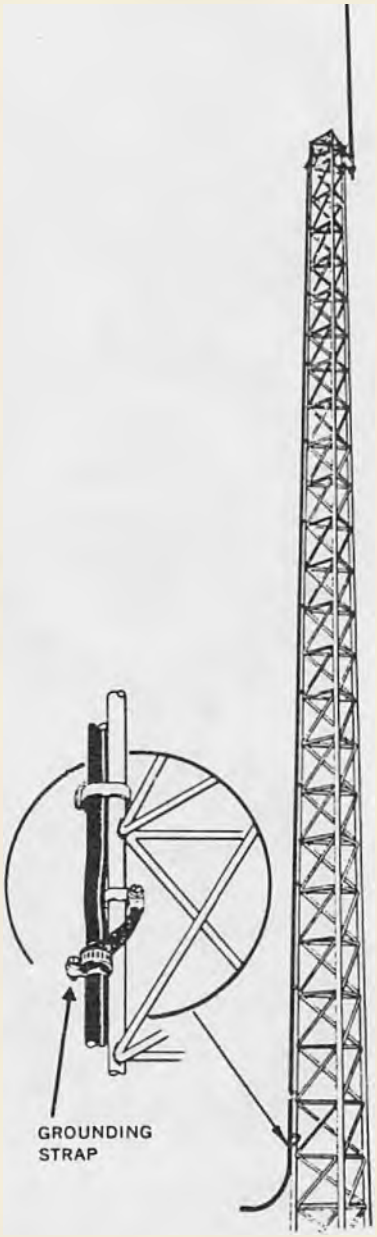
When first installing any transmission line it is always good practice to check the VSWR of the transmission line with a dummy load at the antenna end of the cable, and note the reading for future reference.

If the VSWR now checks out a higher than when installed, again with a dummy load in place of the antenna, then there is probably a short, or partial short or an "open" connection between the inner and outer conductors. An ohmmeter should be used to check out the line, both with the line open and then shorted at the top.

With the top end of the cable shorted — the cable ground should be removed — the meter should indicate a very low resistance between the inner and outer conductor.

If the meter shows a very high resistance then there is a break in either the centre or outer conductor. Be careful if you are carrying out this check with the cable in situ on a tower or other metal structure — if the outer sheath is damaged you could be reading the continuity between the tower and the inner conductor, not the outer and the inner conductors.

With the top end of the cable open the meter should indicate very high resistance between the conductors. If the meter shows low resistance, then there is a short between them, and you should check carefully for signs of crushing or other damage.



When checking the transmission line for shorts or continuity, make sure that the outer skin of the coaxial cable has not been damaged by overtightening securing wraps, and that all grounding straps are disconnected.

One of the tricks employed by a local group of desperadoes was to push a pin through the coax and snip the ends off so that the damage was almost impossible to detect. Guaranteed to get the poor unsuspecting operator to the hair tearing stage in ultra quick time!

With the top end "open", the meter reads less than 1000 ohms, but not zero resistance, then the problem is most likely moisture in the line which has not been detected. One thing that you should bear in mind is that although there may not be any sign of moisture at the connectors during the day when the temperature is high, the moisture will most likely vaporise, and move away from the connector and thus not be evident. During the night when the temperature drops, the water vapor condenses and may show up as water at the connector again.

The same thing can happen if you check the connector after using the transmitter, which will generate heat in the line when transmitting.

Finally, don't overlook the workmanship of the connector and it's installation, especially if you are using N type connectors for UHF. The centre male pin can easily push the female centre pin out of alignment or even break one of the small fingers — resulting in a short — if the connectors are pushed together at a slight angle.

Good installation procedures will minimise the need for maintenance but periodical checks should be carried out. Sunlight, wind, rain, salt etc. are natural enemies of any antenna and coaxial cable system, and depending on your individual environment — and your exposure to good old fashioned vandalism — a sensible program for checking should be instituted.

We have found that it is also good practice to carry out a check on the whole system following thunderstorms and periods of high winds or heavy rain.

Your antenna system is not a "set and forget" situation — it needs a constant eye kept on it.

For those of you who were not concentrating at the beginning of this article, we will point out again that these checks are designed to help the operator find the cause of possible problems in transmission lines which have been installed for some time and were originally giving satisfactory performance.

Other tests should have been carried out to ensure that the fall off in performance is not due to an equipment malfunction. The fact that a dummy load is used in place of the antenna removes any element of doubt in that regard, so in effect the procedures outlined in this article should enable you to isolate the problem.

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David Flynn advises that there's a big spectrum

REVIEW COMING UP!

The Committee considers that, because of changing technology and changing community needs, there is no absolute right of any radiocommunications service, including the CBRS, to remain permanently in any portion of the spectrum. The Committee reaffirms the recommendation ... that operation of the 27 MHz CBRS should be reviewed again in 1990 — (Government Review of the CBRS, 1981).

1990 is here, and with it Australia's widest enquiry ever into the radio spectrum. A combined all-party committee has recommended to the Minister that a review of the spectrum take place this year. If CBA sources are correct this will encompass selected bands from MF and HF through to the microwave region and higher. And, along the way, that one and a half megahertz allocated to the Australian citizens band radio service. There is little risk that CB is about to be dumped. Despite paranoid rumblings of doom from some of the UHF anti-commercial lobbyists, the 477 MHz band is too well established for such a fate. It is well-patronised, supported by and in return supports industry, and — the bottom line — is one of Australia's most cost-efficient radio services. Any government would stand to loose far more than it could gain from closing 477 MHz. As for 27 MHz, like UHF CB it is simply a part of Australia today, and there's nothing to lose but goodwill in ditching it. Besides, who else would want it? It is "nature's garbage dump" for electrical and atmospheric noise, suffers from interference which we call 'skip', and is almost a world-wide standard, if only by default. Australian hams were overjoyed to swap 11 metres for the 10-metre band back in '77, if the truth were to come out, and the government was happy to have someone else who not only was willing to put up with the problems of 27 MHz but would pay for the privilege. So on the face of things we're not about to lose anything, but nor do we stand to gain. There will be no more channels, no 27 FM, no out-of-band repeater inputs, no increased power or sideband-only allocation. And let's be realistic, we don't really need anything more, in fact we've been pretty lucky to date in material terms at least. There are however a number of other issues which the review is likely to address in relation to the CBRS. The first of these regards licence arrangements. Despite the enormous revue which the CBRS provides (some $3 million, an estimated 10 per cent of annual DoTaC income), the amount of paperwork this produces has been a matter of concern to some. Two solutions are being considered in tandem — the establishment of licence 'agencies', and the introduction of station licences. Licence agencies involves the facility to issue and/or renew selected communications licences at an authorised 'agent' of the DoTaC, typically any post office. This has already been trialled in WA and SA, and although it only covered the renewal of CBRS licences it could easily be extended to issuing new licences, with callsigns allocated from blocks assigned to post offices through their existing regional or area hierarchy. This move wouldn't have an enormous effect on the overall paperwork, it would at least shuffle much of the workload in a different direction — the biggest advantage is that due to the ease of issuing licences, it is predicted that more CBers would take out licences and revenue would rise. The larger advantage is that of 'station licensing', which has each CBRS licence cover all rigs instead of only one. As it stands, DoTaC is missing out on quite a slice of revenue because many CBers only hold one licence, one callsign, for a variety of radios — some have both 27 MHz and UHF, others a number of rigs operating base, mobile and handheld. At the same time, those that do hold a number of licences are increasing the paper that DoTaC must deal with, and subsidising those who have one licence or none at all. The station licence being proposed results in one callsign and one record being kept for every CBer, rather than two or three. The fee itself will possibly rise, to cover the fact that many users have more than one radio — a figure of $20 has been mentioned as the maximum, although another option (government proposals are full of options) is for maintaining the current level. Also on the agenda may be the continuing question of emergency channel repeaters in the UHF CBRS. CBA has looked into this over the past months and it is clear that 5/35 repeaters split the CB community down the middle — some praise them as examples of true 'citizens band radio' at work, others believe they are a good idea that just didn't work. We intend to run a feature article on this issue. Whatever the outcome, 1990 promises to live up to that old blessing-in- disguise: May you live in interesting times!

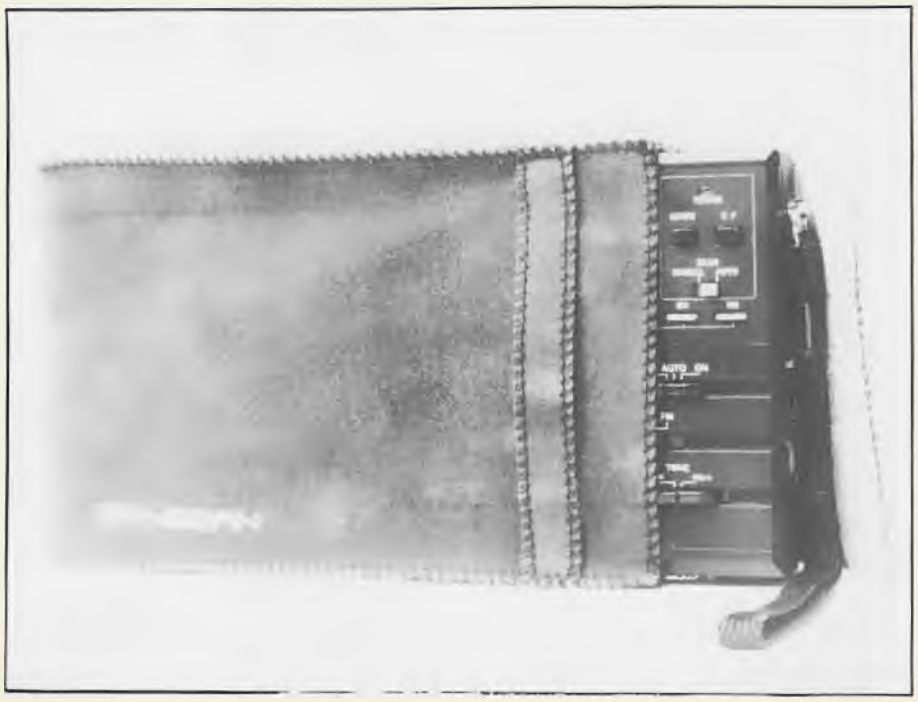
REVIEW
SANGEAN ATS-802 — HOW GOOD?

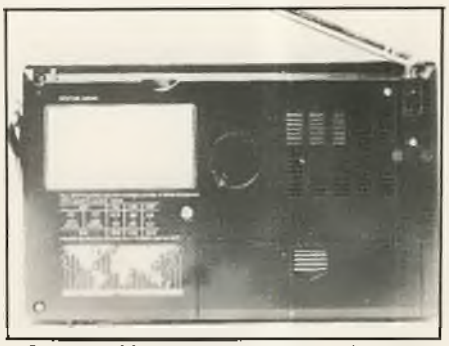
In the last edition of CB Action ROB WILLIAMS introduced us to the extensive range of radios available from Sangean. This time Rob looks at its latest model to arrive on the Australian market and finds things are not as good as they should be.....

Sangean, manufacturer of a wide range of radios to suite everyone's needs, has released a receiver which has taken away some of the fun from DXing. This is an unfortunate side effect of advances in technology which give the microprocessor more control over the radio than the person using it.

The ATS-802 is a superheterodyne portable receiver, and has done away with conventional tuning of stations by operation of either dial or keyboard entry. Instead, two buttons control frequency selection, stepping up or down through the band. The problem with this is that you have to sit and wait for the radio to reach a particular frequency, you cannot enter it yourself.

With the scan switch in manual mode each press of the key each step is 5 kHz. Keep the button depressed and the increment becomes 50 kHz, which takes around a minute to move from through the 802s shortwave bands, from 5 MHz to 15 MHz. With the scan switch set to auto the receiver moves in 10 kHz steps and requires just over three minutes to cover the bands. The only way of moving from one end of the HF spectrum to the other is by using the 10 available memories to store frequencies at or near each band you intend listening to, but this takes away the true function of the memories. While changing frequencies there is a rapid series of beeps generated by the radio, which are independent of the volume control. As you jump between channels the audio output from any station is muted, making it hard to tune between stations, and the tuning LED is the only indication that there is something on that frequency.





Rear panel has world time chart and station memo card

The ATS-802 covers 5800-15500 kHz, so it misses out on services like the low frequency Latin American stations and the ABC's short-range 'shower' services in the Northern Territory. It also does not cover the 17 and 21 MHz bands, which are becoming more important as the sunspot cycle reaches its peak. Nor does it offer SSB tuning or an external antenna socket, and only has moderate performance on shortwave. One very clear image I found was on 8865 kHz, from Radio Nederlands broadcasting on 9770. The 802 also covers the longwave, mediumwave and FM stereo bands. While offering the ability to store 25 preselected stations in the memory you can only store 10 stations on shortwave and five on each other band, automatically storing the last frequency tuned on each band.

Except for the volume control and AM channel selection switch, all controls are located on the front panel. Some of the controls are hard to operate if the radio is sitting upright and resting on its unusual set of metal feet, which extend from the bottom of the radio to act as support. The volume control is located on the side of the radio and the channel selection

switch (for choosing 9 kHz or 10 kHz spacing on mediumwave) is located inside the battery compartment at the back. I found the keyboard lock switch too hard to operate as it's recessed too far into the panel. Powered by four AA size batteries or an external 6v DC supply makes the unit ideal for portable use, however Sangean advises users that the radio draws a high current and where possible it should be used with a mains adaptor to conserve battery life.

I also found an error in the instruction manual concerning the use of the optional AC power adapter. The specifications page recommends a 6v 300 mA supply, while the battery installation and power supply page recommends using a 200 milliamp source. So to be on the safe side buy an AC adaptor that delivers at least 300 milliamps to make sure it doesn't overheat or cause the output voltage to drop.

The LCD display shows both frequency and time in 24-hour format, and when used in conjunction with the built-in alarm indicates the on and off times to which the radio can be set. This can be used in conjunction with a voice- operated cassette to record programs while you aren't in attendance. You can also use the sleep function which will turn the radio off up to 60 minutes later. You can also select either stereo or mono reception, and high or low tone.

Shortwave reception uses an inbuilt seven-segment telescopic whip and by carefully positioning both this and the radio itself you can generally find a spot where maximum signal strength can be gained. To improve on this I suggest you attach a long piece of wire to the unextended antenna.

If you follow the instructions provided with the radio you'll have no trouble in being able to set the clock and store frequencies. All programmable functions are selected via four clearly marked push buttons.

Access Communications sell the ATS-802 for $199. This includes a neat little carry pouch and a set of stickers on which you can write down details of what frequencies are in the memories, and stick on the back of the radio. The 802 weighs 580 gms with batteries installed and is 180 x 110 x 30 mm (l x h x b) in size. These dimensions make the radio an ideal portable which allows you to take it anywhere you go.

Slimline styling makes the unit an ideal portable.

CONCLUSION

The Sangean ATS-802 is adequate for general HF listening. LW, MW and FM are nice extras but if you are buying a shortwave radio then the additional bands are unnecessary. 'Power House' stations such as BBC, VOA and Deutsche Welle offer no problems but weaker stations which may not be broadcasting directly to Australia could present some difficulty.

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Scanning Speed	Minimum 20 channels/second
Audio output	130mW into 8ohms 10% THD
Size	70(W) x 170(H) x 39 (D) mm
Weight	370 grams without antenna

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SPECIFICATIONS

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Weight	250 grams
Tuning	Pretuned
Frequency	450-500 MHz
Impendance	50 ohms
Max Power	50 watts
Termination	5/15" x 26 1PI female
Pattern	Omni directional vertical
Application	Mobile
VSWR	Less than 1 5 1 over 20 MHz

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Ken Reynolds (Power Band Communications) says . . .

Uniden's Washington Base Rig is

BIG AND BEAUTIFUL . . . IT ALSO WORKS WELL!

It has been quite some time since we reviewed a base station transceiver in these pages, in fact some years. This has got a lot to do with the shortage of base station equipment...no kidding you say!

Like many UNIDEN models, the Washington base station rig has been around nearly as long as CB radio and in that time it has enjoyed great popularity. Many readers will be aware that UNIDEN used to market much of their range under the name of President thus the rig was known for some years as the President Washington along with other models like the President Grant which is still with us under the UNIDEN banner.

We often get asked whatever happened to President...so now you know, the brand hasn't disappeared at all, just changed back to the original company name.

The Washington is a big rig measuring 34cm across the front, about 13cm high and is almost as deep as it is wide, about 30cm — not the sort of radio to go mobiling with, but just for the optimists among you, UNIDEN has supplied a set of mounting

brackets and a 13.8 volt power socket and cable in case you get the urge.

It is also quite heavy by CB rig standards weighing at just over 6 kilos.

The styling and colors (as far as I know) have not been altered since the rig was introduced and black and anodized matte silver plus bright silver predominate.

In fact the styling is a bit dated by today's standards and the round multi-function meter is so old hat that it is back in fashion again.

The Washington has its own built-in speaker and power supply but also offers facilities for an extension speaker which, when connected, disables the internal speaker. There is of course a low voltage input plug with a changeover switch to swap power from the mains to the external DC supply. A PA speaker socket is also supplied.

The channel selector control, channel display and signal strength/power output/modulation meter are grouped together on a panel where LEDs labelled to indicate channel 9, transmit/receive and the operating modes of AM, USB and LSB are provided.

The rest of the controls are set out in a line across the lower front of the rig and from left to right they are — microphone socket (shown in the owner's manual as a four pin connector but appears in Australia at least as a five pin unit).

Control can cause grief

Next is a headphone socket, the standard type phone jack followed by the on/off combination volume control and a similar second combination control for the squelch and PA switch. This control can cause a bit of grief when you first get your hands on a Washington base station because all the controls are usually turned fully anti-clockwise which means the PA function is activated and most of the other functions are inoperative.

A look at the controls indicates that the squelch is in the off position which is ok, but, when the knob is turned back that little bit further the switch 'clicks' the rig into the PA mode.

As usual with the more sophisticated rigs the squelch threshold is easy to set for a weak signal of about 0.3 microvolt and at the other extreme nearly 950 microvolts of received signal strength are needed to 'open' the audio circuit.

The microphone gain (as with most rigs) is not really necessary and most operators find that they usually operate the control 'flat chat' and then some even add a 'power mike' as well....personal choice I guess but needless really.

The control, however, can be quite useful on sideband if you only require a low power transmission for local work — just turn down the gain until the RF output meter moves only slightly and you have cut back your 12 watts PEP back to about 0.24 watts PEP.

Even in this reduced power mode many will be surprised how much performance is available from less than one watt output. The RF gain control has a range of 28dB which allows more than adequate attenuation for most applications, but, unlike the AF gain (volume control) the RF gain should not be used to replace the function of the audio control.

What happened?

We often encounter CBers who complain about the poor performance of their receiver and in some cases find that suddenly their rig has lost its hearing almost completely. A quick check often reveals the RF gain control is partly 'backed-off' and even turned to minimum on some occasions.

There is obviously some confusion about the difference between AF gain and RF gain, so I will take this opportunity to briefly clarify (pardon the pun) the situation.

The AF gain controls only the audio amplifier circuit and therefore the level of power to drive the loud speaker. In this case the amount of audio available is usually adjustable from zero to full audio power level — in this rig about 4 watts RMS. By contrast, the RF gain controls only the sensitivity of the receiver, that is, the tiny amount of RF signal entering the rig through the antenna socket.

The confusing part about the audible effect of the two controls is that when there is plenty of signal entering the receiver reducing the RF gain will appear to have the same effect as the volume control and it can therefore be easy to assume that both controls have the same effect. However, on a day when the band is relatively inactive the result of the reduced RF gain input level can be that you have to strain to hear anything at all and even with the volume turned up to maximum the performance of the receiver is dismal.

No signal — no audio

Turning down the RF gain can be akin to disconnecting the antenna from your radio — if there is no signal coming into the radio then no amount of audio amplification will improve the situation. On the other hand, if you always keep the RF gain at maximum the AF gain control is all that is required to adjust the speaker to a comfortable listening level.

If you experience a 'super' strong signal that overloads the receiver and may cause the resultant audio to distort, turn down the RF gain to compensate, but, don't forget to restore it to maximum afterwards otherwise you might miss the signals you really want to hear.

The three position rotary mode switch is next in line and its function is indicated by designations on the panel as well as the LED indicators directly underneath the channel number display. The clarifier (fine tuning for SSB) has a range of slightly more than plus or minus 1 kilohertz which is generally enough for most incoming signal frequency error.

I can't help thinking that most rigs could do with a greater clarifier range, more in the order of 3 kilohertz or so would be comfortable. It's alright to complain about the other guy being so far off frequency that you can't clarify him. Sure, he or she might then have their rig serviced but that is no compensation at the time when they are just out of your tuning range.

A pressbutton controls the meter functions changing from an RF power output meter which is remarkably accurate in our test rig if you have a low VSWR (SWeR) to a transmission modulation meter which we found to be not so accurate.

The signal strength meter gives quite a good account of itself — although there is always some debate about what level should equal 'S9', etc. — with our test results indicating the meter needle follows a roughly logarithmic curve requiring over 1000 microvolts to 'pin' the stop.

The NB/ANL (Noise Blanker/Automatic Noise Limiter) works like all the UNIDEN noise reduction circuits — very efficiently with most types of noise.

The channel 9 priority button is (in my opinion) a waste of time and for the Australian market the customer would be better served with a channel 8 button — if you need that function at all.

The mechanical construction of the Washington is nothing short of excellent — for a consumer grade appliance that is — and all the internal steel panels are straight and accurately fitting with machine screws instead of the 'cheapie' style self-tappers so common these days. The cabinet 'feet' raise the rig a couple of centimeters to allow good ventilation for the power supply and cooling of the RF output stages.

The controls are spread out logically and there is plenty of operating space even for the largest fingers.

The channel selector knob is large and easy to use without 'bumping' other controls off the desired settings. Internally, the metal pressings have a few sharp edges but if you do accidentally cut yourself it probably means you've had your fingers somewhere they should not have been in the first place !

As usual, the circuit board is well laid out and it is securely attached to the main chassis, again with machine screws. We should note that the electronics assembly is dated in construction and execution....but who cares, the performance is excellent and let's face it...why change a good product just for the hell of it?

The transmitter gave us a healthy AM output power of 4.2 watts RMS with both upper and lower sidebands equitting themselves in excess of 15 watts PEP.

AM modulation according to our test gear could, with little difficulty, 'leap' over 100 per cent mark even with the Mic. Gain backed off to about half way, but, the rig's internal meter denied that any such thing could happen.

'On air' tests were just the same as the last time we tested the Washington...'sounds great'. It is a shame that UNIDEN only supplies a standard 'fist' microphone with the transceiver.A neat little desk microphone would nicely set off the whole station, but then again, ICOM only supply a 'fist' mic. with their $9,000 plus IC-781 so we can't complain.

Better than spec

The receiver has good sensitivity and with the RF gain set at maximum the AM performance was better than specifications — they say less than 0.5 microvolt, we found less than 0.35 microvolts.

On sideband the spec. is less than 0.25 and that was how it appeared to us too. The filtering in this rig is superior to most of the mobile transceivers — except the Grant — resulting in 'smooth' transmitted and received audio.

Unfortunately, the interference problem of strong adjacent signals still persists and a powerful neighboring station can wipe you right off the map — a problem common to all CB rigs.

SUMMARY

UNIDEN's Washington base station 27MHz CB transceiver has everything to offer that you would expect in a console style transceiver — except perhaps a built-in SWR meter. The overall performance is very good and the quality of workmanship and materials is also good. The styling could be updated a bit, however, any misgivings one might have about the appearance is more than offset by the quality and performance of the transceiver.

UNIDEN offers a Two Year warranty with this product. The unit is readily available at the moment but we can't even guess at a typical price because there is such a great deal of variation.

In short, a good AM/SSB base station transceiver....but you ain't got all that much choice anyway.

RUSSELL BRYANT'S

SCANNING ACTION

Data bases at the ready, frequency guides opened, pens poised.....here we go again with another bumper crop of frequencies, information and news.

When UHF was introduced to Australia in the early '70s, the licensing authorities designed a band plan that would allow maximum use of this limited resource. Until that time UHF was not considered suitable for land mobile allocations, being short range and strictly line of sight.....it was grossly underestimated.

Nonetheless certain rules would be followed when allocating UHF frequencies.

The rules would apply to frequencies in the Land Mobile Services between 400 and 1000 MHz and were to dictate repeater frequency offsets, power levels, and even which frequency would be used as input and which would be the output.

Here is a guide to follow when scanning the UHF bands:

BAND MHz	REPT. OFFSET MHz	OUTPUT FREQUENCY
400-420	9.45	HIGHER
460-470	9.50	HIGHER
470-480	5.20	LOWER
480-490	5.20	HIGHER
490-500	5.20	LOWER
500-520	10.00	LOWER
800-900	45.00	HIGHER

Simply, if you are monitoring a frequency 464.000 MHz, deduct 9.5 MHz from that figure and you have the input frequency (454.500 MHz). Unfortunately no rules apply to the VHF bands when it comes to allocating frequencies used in repeater operations.

A reader in Sydney sends along a list of some of the callsigns and users on the Qantas engineering channel 166.660 MHz.

Callsigns Engineering:

Engineering Administration — Alpha Base; Duty Engineer — Lima Base; Duty Engineer ITB — Echo Base; Engineer Communicator ITB — Tango Base; Flight Control — Foxtrot Base; A/C Interior and Services — Uniform Base; Electronics and Radio — Kilo Base; Sheet Metal — Golf Base; Major Maintenance Controller — Zulu Base; Equipment Base — Sierra Base; Aircraft Furnishings — Juliet Base; Operations Services & Flight Libraries — Oscar Base; Ramp Superintendent — Romeo Base; Support Shops — November Base.

Callsigns Vehicles: A/C Interior and Services; Tugmaster — Red Alpha; Tugmaster — Red Bravo; Tugmaster — Red Charlie; Fox — Red Foxtrot; Fox — Red Golf; Fox — Red Juliett; Abbey Skyscraper — Cherry One; Abbey Skyscraper — Cherry Two; Vans — Mike One, Two, Three, Four; Base Servicing — Rover One, Two, Three, Four, Five; Servicing Foreman — Lima One; Major Maintenance — Quebec One; Sheet Metal — Golf One; Electronics — Kilo One; Radio — Kilo Two; Equipment Maintenance — Sierra One, Two, Three; A/C Interior and Services — Uniform One, Two.

Steven in Whyalla SA, checks in with some of the frequencies from the steel city.....159.190 Ambulance, 168.640 Australian National Railways, 77.630 Spencer Gulf Television, 170.100 Radio Station 5AU and finally the Metropolitan Fire Service on 168.880. Thanks Steve.

Moving to Mildura VIC where Robert tunes into the State Electricity Commission on 72.500, the SES use 76.790 and 76.910 is where the North West Ambulance Service can be found, plus his favorite, VKC on 168.370 and 168.100.

Never let it be said that Scanning Action doesn't tell both sides of the story.....Alex from Bondi NSW thinks the 'Secret Republican' is a bit out with some of his State Transit Authority bus channels. Alex says 485.600 is used by Burwood, Leichhardt and Tempe depots, 485.900 at Waverley and Randwick depots, 486.200 for North Sydney and 486.500 is the Inspector's channel.

I let you, the reader, sort this one out.

A mixed bag from Scanning Action regular, John of Shepparton VIC. The ' local 'nick' Dhurringile Prison uses 485.250 for its day-to-day operation. Shepparton CFA can be heard on 163.150 and 163.330 for pager use. Moving to the media, John says 162.760 is used by the local TV station GMV6 and radio station 3SR has 492.975 for outside broadcasts back to the studio. Still on 3SR, its feeder channel 957.410 MHz carries an FM signal to the transmitter site which in turn is retransmitted in AM stereo. Now you can listen to FM on AM, or is it AM on FM ?

Back in NSW, almost, with the ACT Fire Brigade frequencies, channels and locations. Channel 1 465.025 transmitter at Black Mountain, Channel 2 466.850 at Bald Hill, Channel 3 located Isaacs Ridge and Channel 4 465.650 atop Tuggeranong Hill.

Steve in Perth WA says in addition to 167.020 for the Fremantle Port Authority, listed in a recent column, it also uses 167.770 and 166.810. These are in addition to 156.600 channel 12 VHF marine. A part of Steve's job with a WA media organization is to keep track of frequencies programmed into its scanners. One method he uses is an alphabetically indexed counter book.....organizations are listed in alphabetical order and accessed quickly, plus, the book is small enough to carry in the car or pocket.

A complaint from Joe in Epping NSW about scanner antennas and their application by hobbyists who live in units. Within 24 hours of erecting a discone, the body corporate ordered its removal. Since then, he has been looking for a good dipole to replace it, without success. I believe MOBILE ONE has designed and built a number of different scanner dipoles, maybe you would like to give them a ring, and check out their products.

Troy in Sydney's Eastern Suburbs uses a Realistic 2011 to monitor the local police on 468.525 and Legion taxis on 486.725. Listening to taxi services can prove interesting as taxi dispatchers have a radio manner like no other group. Sydney Radio on 156.375, channel 67 is another of Troy's favorites.

Martin from Gateshead NSW is the winner of a PROSCAN conversion kit with his list of frequencies for the Newcastle area. Some of these are: 76.670 and 76.730 Hunter Valley and Newcastle ambulance, 76.760 ambulance Port Macquarie. The big Australian, BHP uses 473.725 for its colliery operations, 78.655 by the Geology Department and 83.100 for locomotive movements. The Roads and Traffic Authority can be heard on 167.530 Newcastle and 168.910 in the Maitland area.

Dennis in Donnybrook WA sends in a list of emergency services frequencies for the South Western part of the state, starting with Donnybrook police 79.195, Bunbury police 79.225, Busselton police 79.255 and Collie police 79.135. Donnybrook ambulance 80.085 and 469.675 and Bunbury ambulance 79.990. How about it scanner users in WA, not much mail coming from over there. Just the main services in your town will do, police, fire and ambulance.

John in Melbourne says the amalgamation of the VicRail Investigation Branch and the Victoria Police was completed about six months ago. Now known as the Transit Police, all officers are equipped with standard Vicpol radios. The base station has the callsign 'Transit 900'. He goes on to say that all previous equipment, frequencies and callsigns have been abandoned.

Several readers have sent in the radio codes for the South Australian Police. Because there are so many of them I will list the 100 and 200 series here and the others in future columns:

101 — Disturbance; 102 — Intoxicated person; 103 — Willful damage; 104 — Potentially violent; 105 — Unlawful entry; 106 — Domestic violence; 201 — Motor vehicle accident; 201A — MVA persons injured; 202 — MVA fatal; 203 — MVA hit and run; 204 — MVA police involved; 205 — MVA government vehicle; 206 — Industrial accident; 207

— Person collapse; 208 — Domestic accident; 209 — Dangerous gas/substance.

Thanks to all who wrote regarding VKA and their codes.....I hope the South Australian Police don't consider their radio codes a secret. They may be disappointed if they do.

Ian in Campbelltown NSW sends along a group of frequencies that may prove interesting. The Shell Oil refinery in the Sydney western suburb of Clyde uses the following: 475.025 for its Catalytic Cracking Unit; 475.125 for Maintenance — electrical and mechanical; 474.525 is for Utilities; 474.900 is used in the Crude Distillation Unit; 479.725 is for Shift Controller, Security and Fire Brigade.

PRO 2004 MODIFICATION

For $2 and a stamped self-addressed envelope Roger Rose, 15 Willow Grove, Wendouree VIC 3355 will send you a set of instructions to further modify your PRO 2004 to the extent of more memory channels.

Roger sent me a copy of the instructions and although I have not tried the mod it appears simple enough. The only parts required are the 400-channel conversion kit (available from PROSCAN Distributors, PO Box Q365, QVB, Sydney 2000 for $9.95) and a single pole (normally open) switch. For more information write to Roger Rose at the above address.

Phillip in Nowra NSW, would like to be able to receive transmissions from Goulburn, approximately 200 kms to his west. With a mountain range behind him his present scanner can't make it. He asks which antenna may help him reach his goal. Phil, I would recommend the ATN Antenna's log periodic, it has plenty of gain and if you pointed it at Goulburn you may be lucky. Without knowing exactly where you live I can only guess as to its performance. The telephone number for ATN is (054) 92.2224 and the man to speak to is Ray Naughton.

MORE MODIFICATIONS

I have received a number of letters from readers asking if I know of modifications for a variety of scanners. Bob in Bonnells Bay NSW would like to increase the scan speed of his AR 2002. Unfortunately Bob the scan speed of a scanner is dictated by a chip (often a 555 timer IC) and only a few can be changed by altering the value of a resistor.....I don't know if the 2002 comes within the category.

In answer to your second question, the police in the western town of Bourke use 83.940 MHz and 83.895 MHz at Brewarrina. 468.050 MHz is a link for UHF cars.

The second letter asking about modification is from Graham in Wendouree VIC, who would like to know of any mods for his Saiko, unfortunately, I don't know of any, especially an external BFO. There are BFOs boards available for the FRG 9600, but, I don't know if they would adapt to your SC 7000, somehow I doubt it.

THANKS FOR THE SURVEY

A thank you to all those readers who responded to our Reader Survey in the JAN/FEB issue of CBA. I am particularly grateful for the responses praising Scanning Action. As a direct result of your answers, the column will be increased to three pages, thereby giving you more frequencies and information.

On that note, frequencies are only part of the monitoring scene, radio codes, callsigns and locations are all part of the jigsaw that goes to make up the complete picture of radio users.

Now it is your turn.....how about a short note advising what you are listening to and where. I like to hear from scanner enthusiasts in Papua New Guinea, New Zealand or wherever you are reading this column. Mail can be sent through Shortwave Possum's BBS (02) 651-3055 or to:

SCANNING ACTION
PO BOX R16
ROSELANDS, NSW 2196

ONLINE

With PATRICK McDONALD

Hello again to all you radio folk who dabble with computers and modems! This issue's column will look at a couple of MS DOS programs that will make your IBM clone a more useful radio helper and will, I fervently believe, add lots of fun to your radio listening hobby!

First of all, as I promised in the last ONLINE, let's scrutinize the issue of radio wave propagation. That's right.....the old but ever-new question as to how and why radio signals travel from one end of the earth to the other. Or, more frustratingly, why they don't!

Most grizzled shortwave hands know that the condition of the earth's outer atmosphere, the ionosphere, together with the daily apparent circuit of the sun around the earth (and, please, no electronic mail pointing out that it's really the other way around) create the constantly varying electromagnetic conditions that determine which frequencies travel best at which times of the day. Sounds sorta complicated, doesn't it? Well, it is indeed a bit involved, unless you only want a rough 'ballpark' idea of what you can hear when. But if you aspire to ascertain exactly which frequencies should propagate best at any definite time of the day or night, at a given sunspot level, between your beloved rig and some distant transmitter.....then you need MINPROP2!

This super MS DOS software, like others mentioned in previous ONLINE columns, is 'shareware'. This simply means that you are free to try it out for a couple of weeks, make copies for friends, see if you like it, and then, only then, are you required (Scout's honor), to pay the author.....and it's usually a price considerably lower than that charged for most commercial programs nowadays.

WHAT'S IT DO?

So what does MINPROP2 do? Well, it performs 'Ionospheric Propagation Predictions'! In a nutshell, this means that if you supply the program with the parameters needed, say, the longitude and latitude of the area in which you live and listen, that of the area you want to hear, the relevant time of day, and the current sunspot count (or 'solar flux'), then MINPROP2 tells you which frequencies should carry a decent signal between the two geographic spots. Any ham radio operators out there? Yep, this program would suit you right down to the ground, wouldn't it? A great help when you have to decide on a sked with your US ham mate living in a condo at Miami Beach!

Now, MINPROP2 has the essential 'docs' included to give you step-by-step instructions. This means that there is a text file bundled in with the executable program that can be turned into 'hard copy' on your printer, so that you have a permanent manual to consult. And (I hear you whine plaintively) where do you get the current sunspot count? This happens to be cheap and easy too, especially in Sydney. Just ring the information service of Chatswood-based 'IPS Radio and Space Services' on (02) 414-8330 and a recorded message will tell you all you want to know!

Those of you more knowledgeable about the technical side of propagation might note that MINPROP2 can produce predictions of signal levels relating to the F-layer MUF (maximum usable frequency) and the E-layer cut-off frequency. Not sure what this means? Well, the 'docs' with the program will give you a nice little intro to the whole topic of Mother Earth's ionospheric behavior as it relates to radio propagation. So this is a good chance to learn more, both theoretically and practically, about a fundamental part of our radio hobby.

WHERE DO YOU GET IT?

Where do you get this stupendous program? No prizes for the answer to this one, radio nuts! Ring Shortwave Possums BBS on its data line: (02) 651-3055, register for usage (at no cost, though donations are most welcome), and you can 'download' MINPROP2 to your very own little computer in a few minutes.

Another useful program needs to be mentioned at this point, the latest RECOM or 'Electronic Radio Logbook' from Robert Nagy, reviewed in an earlier ONLINE. Indefatigable Robert has issued yet another improved, full-color version and is even planning further updates. If you are tired of your old, dog-eared logbook and want a modern computer 'database', especially designed for radio enthusiasts of all stripes, then RECOM is for you. Naturally, SWP BBS carries this program as well.

Now, if you are familiar with computer bulletin boards like the above, and have learned the value of quick user-to-user communication regarding new frequencies, helpful equipment modifications, propagation conditions, and the like, you will have discovered that the various files available there, such as MINPROP2 and RECOM, come in unique 'compressed packages'. In fact, you may at first despair as to how the devil you begin to run the program in the first place!

YOU'LL NEED COMPRESSION FILES

Pull not your graying hair, shortwave junkies, but rather download first the two ubiquitous 'file compression' programs, PKZ102.EXE and LH- 131C.COM. When run, these essential utilities magically 'decompress' themselves and turn into PKUNZIP.EXE and LHARC.COM, important tools for the radio/computer enthusiasts. Note that most programs available on BBSs have extensions such as .LZH and .ZIP. For instance, the name RECOM071.ZIP indicates that the 'Electronic Radio Logbook' requires PKUNZIP.EXE in order to make it ready for running. Sure enough: the MS DOS command PKUNZIP RECOM071.ZIP will instantly produce the required runable files for RECOM. LH- 131C.COM is used in a similar manner for compressed files with .LZH extensions. Sounds a bit complicated at first, but the process only takes moments and soon becomes second nature. And compressed files sure save on downloading time and make it possible for BBSs to store many more programs for their users to choose from.

You know, I could go on and on about all the great stuff you can do when your radio and computer start operating as a team, but.....hey, some other people have to have a little space in this magazine too! So I'll catch you again in the next issue of CBA.....

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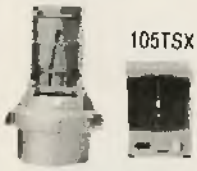

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YOUR GUIDE TO THE ALPHA

At long last here is the 11-metre band DXCC country listing and, as you may have guessed, it is based on the popular Italian-based Alfa Tango DX group's listings.

Over the past three years the Alfa Tango group has grown with thousands of members worldwide and no doubt it is now the largest 11-metre band DX group in the world. It is for this reason that I have based the listing on the prefix numbers allocated by Alfa Tango to each country, however, there is some slight variation to prefix numbers adopted by other smaller, but prominent, DX clubs who have modelled their prefixes on the Alfa Tango allocations.

To those of you who already have pre-1989 Alfa Tango DXCC listings, you will notice some changes implemented by the headquarters in Asti early in October, 1989. These changes have been incorporated into this 1990 listing, which is exclusive to the readers of CB Action, and those who are not current members of the Alfa Tango group who will especially find this listing both useful and informative.

Prefix	Country	Worked	Confirmed
1	Italy		
2	USA		
3	Brazil		
4	Argentina		
5	Venezuela		
6	Colombia		
7	Neth Antilles		
8	Peru		
9	Canada		
10	Mexico		
11	Puerto Rico		
12	Uruguay		
13	West Germany		
14	France		
15	Switzerland		
16	Belgium		
17	Hawaii		
18	Greece		
19	Holland		
20	Norway		
21	Sweden		
22	French Guyana		
23	Jamaica		
24	Panama		
25	Japan		
26	England		
27	Iceland		
28	Honduras		
29	Ireland (Eire)		
30	Spain		
31	Portugal		
32	Chile		
33	Alaska		
34	Canary Islands		
35	Austria		
36	Rep of San Marino		
37	Dominican Rep		
38	Greenland		
39	Angola		
40	Liechtenstein		
41	New Zealand		
42	Liberia		
43	Australia		
44	South Africa		
45	Yugoslavia		
46	East Germany		
47	Denmark		
48	Saudi Arabia		
49	Balearic Islands		
50	European USSR		
51	Andorra		
52	Faroe Islands		
53	El Salvador		
54	Luxembourg		
55	Gibraltar		
56	Finland		
57	India		
58	East Malaysia		
59	Rodi Dodecanese		
60	Hong Kong		
61	Ecuador		
62	Guam Island		
63	St Helena Is		
64	Senegal		
65	Sierra Leone		
66	Mauritania		
67	Paraguay		
68	Ireland (Northern)		
69	Costa Rica		
70	American Samoa		
71	Midway Island		
72	Guatemala		
73	Suriname		
74	Namibia SWA		
75	Azores Islands		
76	Morocco		
77	Ghana		
78	Zambia		
79	Philippines		
80	Bolivia		
81	San Andres Island		
82	Guantanamo Bay		
83	Tanzania		
84	Ivory Coast		
85	Zimbabwe		
86	Nepal		
87	North Yemen		
88	Cuba		
89	Nigeria		
90	Crete Island		
91	Indonesia		
92	Libya		
93	Malta		
94	United Arab Emirates		
95	Mongolia		
96	Kingdom of Tonga		
97	Israel		
98	Singapore		
99	Fiji Islands		
100	South Korea		
101	Papua New Guinea		
102	Kuwait		
103	Haiti		
104	Corsica Island		
105	Botswana		
106	Ceuta Melilla		
107	Monaco		
108	Scotland		
109	Hungary		

TANGO INTERNATIONAL PREFIX LIST

Prefix	Country	Worked	Confirmed
110	Cyprus Island		
111	Jordan		
112	Lebanon		
113	West Malaysia		
114	Pakistan		
115	Qatar		
116	Turkey		
117	Egypt		
118	The Gambia		
119	Madeira Island		
120	Antigua		
121	Bahamas		
122	Barbados		
123	Bermuda Island		
124	Amsterdam Island		
125	Cayman Islands		
126	Nicaragua		
127	US Virgin Islands		
128	British Virgin Islands		
129	Macquarie Island		
130	Norfolk Island		
131	Guyana		
132	Rep Marshall Islands		
133	Mariana Islands		
134	Rep of Belau		
135	Solomon Islands		
136	Martinique Island		
137	Isle of Man		
138	Vatican City		
139	South Yemen		
140	Chilean Antarctica		
141	St Pierre & Miquelon Is		
142	Lesotho		
143	St Lucia Island		
144	Easter Island		
145	Galapagos Islands		
146	Algeria		
147	Tunisia		
148	Ascension Island		
149	Laccadive Islands		
150	Bahrain		
151	Iraq		
152	Maldive Islands		
153	Kingdom of Tonga		
154	Islamic Rep of Iran		
155	Taiwan ROC		
156	Cameroon		
157	Montserrat		
158	Trinidad & Tobago		
159	Somalia		
160	Sudan		
161	Poland		
162	Zaire		
163	Wales		
164	Togo		
165	Sardinia		
166	St Maarten, Saba & Eustatius Is		
167	Jersey Island		
168	Mauritius		
169	Guernsey Island		
170	Burkina Faso		
171	Svalbard Island		
172	New Caledonia		
173	Reunion Island		
174	Uganda		
175	Chad		
176	Central African Rep		
177	Sri Lanka		
178	Bulgaria		
179	Czechoslovakia		
180	Oman		
181	Syria		
182	Guinea Republic		
183	Benin		
184	Burundi		
185	Comoros		
186	Djibouti		
187	Kenya		
188	Madagascar		
189	Mayotte Island		
190	Seychelles Islands		
191	Swaziland		
192	Cocos Island (C. America)		
193	Cocos Keeling Is		
194	Dominica		
195	Grenada		
196	Guadeloupe		
197	Rep of Vanuatu		
198	Falkland Islands		
199	Equatorial Guinea		
200	Shetland Is (Sth America)		
201	French Polynesia		
202	Bhutan		
203	China		
204	Mozambique		
205	Cape Verde Islands		
206	Ethiopia		
207	St Martin Island		
208	Glorioso Island		
209	Juan de Nova Island		
210	Wallis & Futuna		
211	Jan Mayen Island		
212	Aland Island		
213	Market Reef		
214	Congo		
215	Gabon		
216	Mali		
217	Christmas Island		
218	Belize		
219	Anguilla		
220	St Vincent & Dependencies		
221	South Orkney Islands		
222	Sandwich Islands		
223	Western Samoa		
224	Western Kiribati		
225	Brunei		
226	Malawi		
227	Rwanda		
228	Chagos		
229	Heard Island		
230	Federated States of Micronesia		
231	St Peter & St Paul Rocks		

YOUR GUIDE TO THE ALPHA TANGO INTERNATIONAL PREFIX LIST

Prefix	Country	Worked	Confirmed
232	Aruba Island		
233	Romania		
234	Afganistan		
235	Andaman & Nicobar Islands		
236	Bangladesh		
237	Myanmar		
238	Cambodia		
239	Laos		
240	Macau		
241	Spratly Island		
242	Vietnam		
243	Agalega & St Brandon Is		
244	Pagalu Island		
245	Niger		
246	Sao Tome & Principe Is		
247	Navassa Island		
248	Turks & Caicos Islands		
249	Amsterdam & St Paul Is		
250	Cook Islands		
251	Albania		
252	Revilla Gigedo Island		
253	Andaman Island		
254	Mount Athos		
255	Keguelen Island		
256	Marion/Prince Edward Is		
257	Rodriguez Island		
258	Tristan da Cunha Island		
259	Tromelin Island		
260	Baker & Howland Islands		
261	Chatham Islands		
262	Johnston Atoll		
263	Kermadec Island		
264	Kingman Reef		
265	Central Kiribati		
266	Eastern Kiribati		
268	Kure Island		
269	Lord Howe Island		
270	Mellish Reef		
270	Minami Tori-Shima		
271	Rep of Nauru		
272	Niue Island		
273	Palmyra Island		
274	Pitcairn Island		
275	Tokelau Islands		
276	Rep of Tuvalu		
277	Sable Island		
278	Wake Island		
279	Willis Island		
280	Aves Island		
281	Ogasawara Islands		
282	Auckland/Campbell Is		
283	St Kitts & Nevis Is		
284	Saint Paul Island		
285	Fernando de Noronha Island		
286	Juan Fernandez Island		
287	Malpelo		
288	St Felix & St Ambrosio Is		
289	South Georgia Islands		
290	Trinidad & Martin Vaz Is		
291	Sovereign Base Cyprus		
292	Abu Ail & Jabal At Tair		
293	Guinea Bissau		
294	Peter 1st Island		
295	Southern Sudan		
296	Clipperton Island		
297	Bouvet Island		
298	Crozet Island		
299	Desecheo Island		
300	West Sahara & Rio de Oro		
301	Armenia		
302	Asiastic USSR		
303	Azerbaijan		
304	Estonia		
305	Franz Josef Land		
306	Georgia		
307	Kaliningrad		
308	Kazakhstan		
309	Kirghizia		
310	Latvia		
311	Lithuania		
312	Moldavia		
313	Tadzhikistan		
314	Turkmenistan		
315	Urkraine		
316	Uzbekistan		
317	White Russia		

ADDITIONAL NOTES

The following DXCC countries have yet to be allocated numbers in the 11-metre band DXCC listings: (1AO) Sovereign Military Order of Malta, (3D2) Rotuma Island, (T33) Banaba Island, (4J) Malyi Vysotskij Island, (4U) Itu-Geneva, and, last of all, (4U) UN Headquarters New York.

By the time this list goes to press it will be highly likely that Walvis Bay will be nominated as a new DXCC country also.

While compiling this DXCC list for CB Action, I found an error — 235 and 253 are the same countries. Perhaps the Alpha Tango group will rectify this in a future list update.

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Specifications — What do they mean?

By Ken Reynolds

(Powerband Communications)

What rig do you own and why did you choose that particular model? Did you rely on a CBA review, was it recommended by a friend or someone else you know, did you just pick one by appearance or, were you just sold a CB by a sales person in a shop? Maybe you just went by price. Whatever your motive, how many readers actually checked out the Technical Specifications in the owner's manual before parting with the currency?

TX472S SPECIFICATIONS

GENERAL

Frequency Range:	476.425 477.400 MHz
Frequency Control:	Microprocessor Controlled Synthesised single loop phase locked loop
No. of Channels:	40
Channel Spacing:	25 kHz
Antenna Impedance:	50 Ohms
Antenna Connector:	PL259 Plug
Voltage Range:	10.5-15.2 Volts D.C.
Polarity:	Negative Earth System
Temperature Range:	– 10°C to + 70°C
Dimensions:	171mm(W) x 175mm(D) x 52mm(H)
Current Protection:	3 Amp on line fuse (32mm, 3AG)
Reverse Polarity and Over Voltage Protection:	Shunt 18 Volt Zener Diode
Speaker:	2 Watt High efficiency front mounted
Scan Rate-OPEN:	0.2 seconds (5 channels/second)
-GROUP:	0.4 seconds (2.5 channels/second)

TRANSMITTER

RF Output Power:	5 Watts RMS @ 13.8 Volts
Frequency Stability:	Better than ± 3 ppm
Modulation Mode:	F.M.
Frequency Response:	500 Hz – 5dB 2000 Hz + 4dB
Modulation Deviation:	± 5 kHz (+ 20dB limiting @ 1 kHz)
Hum and Noise:	Better than – 45dB
Modulation Distortion:	3% @ ± 3.0 kHz Deviation
Microphone Sensitivity:	3 mV RMS
Spurious Emissions:	Better than – 70dB
Current Consumption:	1.9 Amps

RECEIVER

Circuit System:	Double Conversion Superheterodyne Direct Injection Method
I.F. Frequencies:	1st 21.40 MHz 2nd 455 kHz
Frequency Stability:	Better than ± 3 ppm
Sensitivity:	0.35 uV for 12 dB SINAD 0.5 uV for 20 dB NOISE QUIETING
Selectivity:	– 6dB @ ± 7.5 kHz. – 70 dB @ ± 25 kHz
Image Rejection:	1st I.F. – 66 dB 2nd I.F. – 84 dB
Spurious Rejection:	Better than – 70 dB
Blocking:	Better than – 80 dB @ ± 200 kHz
Intermodulation:	Better than – 70 dB
Hum and Noise:	– 40 dB
Frequency Response:	500 Hz 0 dB, 2000 Hz – 6 dB
Squelch Range:	Threshold = 0.2 uV. Tight = 0.6 uV
Audio Output:	5 Watts RMS @ 4 Ohms
Current Consumption:	Squelched 280 mA Full Volume 550 mA

TX840 SPECIFICATIONS

GENERAL

Frequency Range:	26.965 MHz to 27.405 MHz
No. of Channels:	40 A.M., 40 L.S.B., 40 U.S.B.
Channel Spacing:	10 KHz
Frequency Control:	P.L.L. Synthesiser
Frequency Stability:	Better than ± 20ppm
Temperature Range:	-10°C to + 60°C
Operating Voltage:	13.8V D.C. Negative or Positive Ground System
Dimensions:	172W x 175D x 52H (MM)
Antenna Impedance:	50 ohms
Antenna Connector:	PL259 Plug
Current Protection:	3 Amp In Line Fuse (30mm)
Reverse Polarity and Over Voltage Protection:	Shunt 18 Volt Zener Diode
P.A. Socket:	4 ohms, 4 Watts Maximum
Ext. Speaker Socket:	4 to 8 ohms
Controls:	Channel Selector, Volume On/Off Power, Squelch, Clarifier
Switches:	Mode A.M./U.S.B./L.S.B., P.A./C.B., Noise Blanker/A.N.L., Local/Distance, Channel 8 Memory, Microphone P.T.T.
Connections:	Microphone Socket, D.C. Power Input, Ext Speaker Socket, P.A. Socket, Antenna Socket

TRANSMITTER:

Power Output:	A.M. — 4 Watts R.M.S. : S.S.B. — 12 Watts P.E.P.
Transmitter Modes:	A.M. — Amplitude Modulated, High Level Class B : S.S.B. — Side Band, Carrier Suppression more than -40dB, Unwanted Side Band Suppression more than -60dB
Harmonic Suppression:	More than -70dB
Power Consumption:	A.M. — Full Modulation 1.6 Amps : S.S.B — 2.4 Amps

RECEIVER:

Circuit System:	Superheterodyne V.C.O. Direct Injection Method, Single Conversion
IF Circuit:	10.695 MHz AM/SSB High Quality Crystal Filter
Sensitivity:	A.M — 0.6uV 12dB SINAD : S.S.B. — 0.25uV 12dB SINAD
Selectivity:	A.M./S.S.B. ± 10 KHz better than -75dB
Squelch Range:	Threshold = 0.3uV Tight = 100uV
Intermodulation:	Better than — 65dB
Clarifier Range:	± 1100Hz
Image Rejection:	Better than -90dB
A.G.C. Range:	Less than 10dB change in Audio Out from 1uV to 50uV
Audio Output:	3.5 Watts into 4 ohms
Current Consumption:	270mA Squelched 560mA Full Volume

The truth of the matter is most CB owner operators are more likely intimidated by the 'specs' and even if they had glanced at them, they would not derive much useful information from a 'bunch of numbers'.

Do these so called Technical Specifications really mean anything useful? The answer is YES.

The aim of this discussion is to arm the reader with enough extra information to interpret the specs in a CB rig owner's manual so that he or she might make an informed judgment about the performance of a transceiver.

Reproduced here are specification sheets for two CB transceivers — the Electrophone TX-472 UHF CB and the GME Electrophone TX-840 AM/SSB 27MHz CB rig. Two radios operating more than 400MHz apart in frequency and using widely different types of modulation. The FM-620 uses FM (Frequency Modulation) where the audio signal is impressed on the radio wave as small variations in frequency of the actual transmitter, while the TX-840 employing AM and SSB (Amplitude Modulation and Single Side Band) modes impresses the audio signal on the carrier wave as variations in transmitted power level.

Even with these major differences in characteristics, the specifications of both rigs are remarkably similar in many ways as you will see.

Publishing a set of specifications with each different brand and model of CB radio is the only real way we have of describing the performance of a particular unit offering its own peculiar set of characteristics.

Consider for a moment the basics of everyday life and you can find that just about everything you buy is subject to your own imposed set of specifications. Take for example buying an apple for lunch. Which variety would you choose and would the color be red, green or yellow? Should it be firm or soft and what size attracts you most? What price will you pay? Will you buy the best or settle for a lesser grade? Is it a fresh fruit or one that has been kept in 'cool storage'? Without consciously thinking about it, you automatically sift through the information to make the ultimate selection of the product that fits your set of specifications.

Once you get through the basics of CB selection like color, price, shape and mode of operation, why not take a look at the list of features that describes the most important parameters of the transceiver....how effectively it operates. The specs in fact detail a number of stringent evaluation tests placed on the equipment by the manufacturer to convey to the end user just how good is his product.

GENERAL SPECIFICATIONS

Let's begin with the general specs. These are the basics usually describing the physical and basic electrical characteristics of the rig.

Heading the list is frequency range and the number of channels, all pretty self explanatory, however, with the sideband set the list of 40 channels is accounted for three times. Don't be misled into thinking that you are getting an extra 80 channels thrown in. You get the 40 channels only once but they are used differently to separate the two AM sidebands into single sidebands. For example, in AM transmissions, the sidebands already exist along with the carrier wave which occupies both the single sideband positions. More about these surprising developments later.

Channel spacing is next on the list and the AM/SSB rig specs tell us that the spacing is in 10kHz (kilohertz) steps. This is not quite accurate. In fact the channels from 22 upwards are in 10kHz steps with the exception that the frequencies for 23, 24 and 25 have been transposed. All the lower channels follow a different plan where they increment in 10kHz steps for the first three channels and then skip 20kHz for the fourth channel with this sequence repeated through the first 20 channels. What a blow to logic ...eh?

Frequency control of nearly all CB rigs these days is by PLL (Phase Locked Loop) which is mainly responsible for containing the price of CB transceivers to a reasonable level. A phase locked loop synthesizer uses only a minimum number of frequency controlling crystals — usually one or two — to produce or synthesize the whole 40 channels. The early rigs used two crystals per channel, one for receive and one for transmit. The next stage of evolution was Crystal Synthesizers where the frequencies of a smaller number of crystals were mixed together to produce the range of desired frequencies. More economical to produce than the former rigs but still far more costly than the present day PLL.

Frequency stability of the TX-840 is specified to be within +/- 20ppm. Here is our first technical gobbledygook. It is really quite simple compared with some of the specs yet to come. Frequency stability obviously relates to the ability of the radio to hold accurately a given frequency, say channel 20 for example which corresponds with a frequency of 27.205 MHz (megahertz). The 20ppm of the specification simply means 20 Parts Per Million. Therefore if we apply the information to the operating frequency we can easily calculate how far the radio might possibly wander off frequency either above or below the nominal frequency of 27.205 megahertz. For ease of calculation let's round off the frequency to 27,000,000 Hertz or if you prefer, 27,000,000 cycles per second which is the old way of expressing radio and audio frequencies.

Plus 20 parts per million equals 20 Hertz for every million Hertz, so if we multiply 27 by the spec value of 20, we know that the manufacturer has allowed for the rig to drift high in frequency by — this will come as a shock to many — 540 Hertz and on the low frequency side by the same amount. Of course the specification calls for better than this value so the outcome will be something less than a total of 1.08 kilohertz frequency variation all-up.

Temperature range is also another important specification and when you consider the extremes of temperature some operators ask their rig to operate under, perhaps some will understand why their radios do strange things when mounted on the dash of a four-by-four in full 'sun' through the windscreen.

The operating temperature range of the TX-840 is stated to be from -10 degrees celsius to +60 degrees which is a pretty fair range. This simply means that if the operating environment for the rig is maintained within these limits the radio will perform according to all the other specifications stated elsewhere in the document. For example, the previous spec of frequency stability will hold true for the whole temperature range of 70 degrees C.

Operating voltage is next and is also self explanatory. No range is given for operating voltage so it must be assumed that the tolerance here is quite small and 13.8 volts direct current is these days accepted as an international standard for mobile radio equipment. The voltage is related to the use of lead acid secondary cell storage batteries and the charging systems which are used in almost all mobile motorized plant.

Most rigs will tolerate small variations in supply voltage but the transmitter specifications can change very quickly with the variations.

You need no help with the dimensions so we move on to Antenna Impedance which is equal to 50 ohms. Defining antenna impedance is a bit beyond the scope of this article but it is sufficient to say all CB rigs I have encountered nominate the antenna impedance as 50 or 52 ohms which has become an industry standard along with 75 ohms equipment which predominates in the television industry. Some radio

Specifications — What do they mean? (continued)

equipment still uses 75 ohm antenna impedance but the trend in the last 20 years has been toward the 50 standard. The antenna impedance is very important when you consider that you must rely on this value being correct when you attempt to tune your antenna. When you tune or SWeR your CB antenna you are actually tuning the impedance of the antenna to match the value of the rig's impedance at the antenna socket and to the impedance of the co-axial cable that connects the two together. If you fiddle the tuning of the transmitter output stage of your rig chasing more power, chances are that you have tuned the output impedance to something other than the proper output impedance and the proper corrective measures will need to be taken before you can bring the system into equilibrium again. The cable here also becomes important. Coaxial cables are unique in that while the impedance nominated may be 50 ohms for example, this specification only holds true if the correct load appears at either end of the transmission line. That is, 50 ohm cable is only 50 ohms impedance if both the transmitter and the antenna (load) are both also 50 ohms impedance. Any variation in either component throws the whole system out of balance so to speak. Lack of understanding about these points is responsible for a lot of the rubbish talked about tuned transmission lines and cutting your coaxial to a specific length. The facts are simple. Cut your coax to a half wavelength if you must, however, if the antenna socket of your radio is 50 ohms and your cable is 50 ohms and your antenna is also the proper 50 ohms, then the transmission line length is of no importance other than by using a short length of cable you reduce the cable losses and get more power in and out of your antenna.

Antenna connector and fuse rating are also important but speak for themselves, however, always use the correct value fuse. Under no circumstances should you insert larger value fuses than recommended on the spec sheet. If your rig continually blows fuses it is a sure sign that a fault condition has developed, which leads us to the next point on the list, the protection circuit. Reverse polarity and over voltage protection as it is described in the book offers valuable protection against possible damage caused to your rig by reversing the power connections to your radio or connecting it to too high a voltage. The protection Zener diode is a sacrificial component and usually destroys itself in protecting your radio from potentially serious damage.

If you reverse polarize the power to your rig the protection diode appears to be a short circuit to the power supply and in an attempt to draw a very large current, the fuse 'blows'. Usually the fault condition remains and every time you connect up the rig with a new fuse, it too blows. In this event your rig will need to have the diode replaced....DO NOT insert larger value fuses in the hope that this will fix the problem. Very large fuses can cause the Zener diode to be physically destroyed which leaves the way open for severe damage to your radio. Incidentally, if this should happen to your rig, make sure that the repair shop replaces the diode with the right type of diode. It must be a suitably rated Zener diode or you have lost all your voltage protection. A number of repairers simply replace the Zener with a conventional power diode which is a cheap, but less effective way out.

The rest of the list of General Specifications is quite self explanatory.

See you next issue when we examine the transmitter specifications and find out about PEP (Peak Envelope Power), RMS (Root Mean Square) power, how many parts to an AM transmission and learn how to interpret dB (decibels) and modulation percentage.

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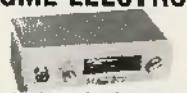

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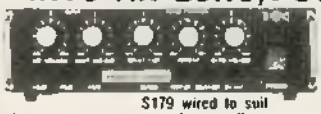

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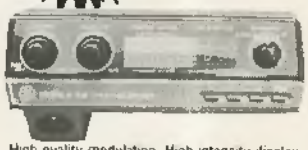

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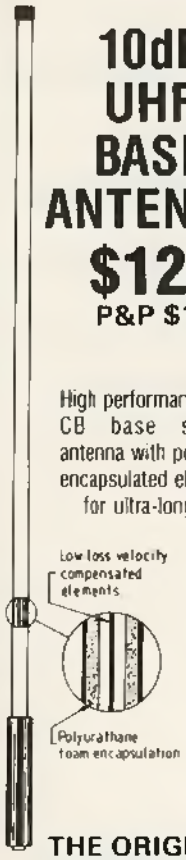

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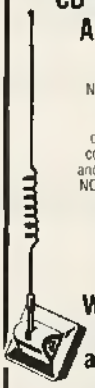

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NATIONAL SPECTRUM ANARCHY

— FURIOUS FEWSTER TELLS IT AS IT IS —

MORE ON SPEEDING TRUCKIES.....

A couple of days after I wrote last issue's column, Queensland Police spokesman Sergeant John 'Bluey' O'Gorman, in a television interview, said he felt that most truckies were responsible drivers but that their image suffered through the actions of a few 'cowboys', which is what I've been saying for years.

I'm starting to have my doubts about there being only a 'few' cowboys, however. I've been paying particular attention to the driving styles of truckies for the past few months, and unfortunately it seems that the cowboys are increasing in number. Some of them aren't fit to drive a nail!!

The most common 'bullying' tactic seems to be lane-changing regardless of other traffic. Obviously some truckies think that ***INDICATING*** a lane change gives them the ***RIGHT*** to change lanes whether there's a vehicle alongside or not. Truckies ***KNOW*** that in the event of a sideswipe with a car ***THEY*** are not likely to be injured, and a dangerous 'I've got my indicators on so bugger you' attitude seems prevalent on both city roads and country highways. (Maybe they've been influenced by Brisbane's ridiculous 'give way to buses pulling away from the kerb' regulation).

Already this year I've seen several car drivers brake suddenly, or take violent evasive action, to avoid being hit by trucks ***FORCING*** their way into other lanes on crowded suburban roads. In one incident on the Pacific Highway a poor old bugger had to take to the trees to avoid being sideswiped by a loonie truck driver, who flicked his indicators when the car was right alongside him and immediately changed lanes. (I stopped to make sure the old guy and his wife were OK. In hindsight, I should have followed the truck and taken it's rego number and reported the driver to the police).

I still think that most truckies observe the speed limits and drive courteously but the kill-and-maim potential of those who ***DON'T*** is frightening. Their numbers seem to be increasing, and they are the ones who stick out like the proverbial dog's gonads and give ALL truckies a bad name.

Obviously the police can't be everywhere all the time, so it's down to responsible road users to do something about the problem. Motorists and DECENT truckies should forget the great Australian 'never dob anyone in' ethic and report ratbag truckies who blatantly disregard the safety of others.

It's in everyone's interests to get these dangerous bastards off our roads!

MORE ON THE 90 KM/H TRUCK SPEED LIMIT IN NSW.....

I'm not on my own in thinking that this is sheer stupidity.

Toowoomba truckie Bob McMillan, from the cab of his truck, has photographed dozens of cars crossing double lines or overtaking on blind hills or corners since the 90 km/h truck speed limit was introduced, and he blames this on impatience with the slower-moving trucks.

Several of McMillan's photographs were published in the February issue of 'Queensland Transport News'. Personally I think he should have handed them over to the NSW Police.

It's in everyone's interests to get these dangerous bastards off our roads!

If my information is correct, by the time you read this column every Police vehicle in NSW will be equipped with the means to monitor Channel 8 as part of a savage crackdown on truckies and other motorists who use CB radio to flaunt the traffic regulations in that State.

My sources tell me that NSW Police have been ordered to 'pull out all the stops' to reduce the carnage on the roads. Part of the stepped-up activity is that, in future, anyone caught transmitting radar or breathalyser information will be prosecuted.....***IN EVERY INSTANCE.***

MORE ON MISTER DORK.....

The day the last issue hit the streets in Brisbane I had a call from the president of the emergency monitoring group, to which Mister Dork belonged, asking me to make it known in 'CB Action' that Mister Dork was expelled from the organization following several complaints about his on-air behavior during the 'Fraser Island Incident'.

2/32 Brisbane is now firmly established on the UHF-CB scene.

The repeater hasn't been totally annexed by commercial users .... YET!!

I've already crossed swords with one commercial user who thought he should be given priority, "because we've got a business to run and you blokes are just talking shit".

The same clod then told repeater owner Mark Kyle to "go and get rooted" (maybe he's a keen gardener) when Kyle broke in with a few comments about on- air courtesy.

Guess who might find it hard to make a call on 2/32 from now on?

BONUS FOR BRISBANE UHFERS

Brisbane UHFers had the opportunity to try out a simplex repeater first- hand recently when I hooked one up to a 12dB vertical on channel 15 for a few days on an experimental basis.

It ran hot for the first three days then, when the novelty wore off, it went quiet apart from calls from a few dedicated hobbyists and one commercial user who found it so useful he complained when I closed it down.

The repeater board was fitted inside a Commex Bushranger UHF-CB. The unit was delivered as a stand-alone system complete with rechargeable porta-pack and antenna and I even had it running (with reduced range) while carrying it around the local shopping centre.

I didn't get a chance to try the free-standing solar-powered unit as it still had a couple of minor bugs which needed sorting out. It's now off the drawing board and, even as I write this column, a working model is on display at an agricultural show at Pittsworth.

Some Brisbane users found the 'double transmission' a bit annoying after a while but a few UHFers in fringe areas found that being able to talk 'simplex' to stations well outside their normal range made up for the slight inconvenience, which is what it's all about.

The experimental repeater had a storage capacity of around 50 seconds of speech, burping, farting or whatever (yes, I copped my fair share of burps, farts, whistles and Zap Attacks). The quality of the re-transmitted speech was quite acceptable and voices were easily recognizable even though slightly ragged around the edges, but that's the price you pay for trying to cram too much information into such a small space. Speech quality on the production model has been improved (by reducing the storage capacity to around 20 seconds) to the extent that you'd need test instruments to detect the difference between the original and duplicate transmissions.

As I said, when I first mentioned it a few months ago, the 'store-and- forward' facility makes the simplex repeater an ideal way of extending communications range. While I can't see much application for it in a city environment it would be a boon to anyone wanting to increase point-to-point coverage in the bush without the expense of a full-bore duplex repeater system.

Now for the bad news.

At present it is quite legal to use one of these simplex repeaters almost anywhere in the spectrum.

Moves are afoot by DoTaC to ***PROHIBIT*** their use, but ***ONLY*** in the Citizens Band Radio Service, and it's got me buggered why.

Perhaps someone in DoTaC has deluded visions of a diminishing pile of dollars as existing UHF-CB repeater licensees tear down their equipment and switch to simplex repeaters enmasse and fail to renew their licences.

Oh well .... it was fun while it lasted.

TRAGEDY ON THE GOLD COAST

An elderly Coast Guard volunteer drowned and two others were injured when a freak wave capsized their rescue craft during a training exercise off the Gold Coast on 10 March.

They could just as easily have been out there chasing down one of the all-too-common hoax Mayday calls which plague rescue organizations.

This tragedy was front-page news in Brisbane newspapers and was covered in TV news broadcasts Australia-wide, but what's the bet that it doesn't slow hoax Mayday calls down one little bit?

I still reckon the courts are too bloody soft on hoax callers. They should be charged with attempted manslaughter in every case.

BIG BUST FAILS IN ITALY

I'm told that Italian regulatory authorities recently came up almost empty handed in a raid on the headquarters of 'Gruppo Radio Italia' (more commonly known as 'Alfa Tango') and are now clandestinely offering a no- questions asked reward of over $A2000 for an up-to-date world-wide membership list and total amnesty for any member who provides them with this information.

This is a complete about-face from the apparent 'couldn't give a stuff' attitude they seem to have had towards the flagrant abuse of the electromagnetic spectrum by Italian radio pirates for the past 20 years or more.

It goes without saying that, if they get hold of the list, the names and addresses of foreign members will be given to regulatory authorities in their own countries.

1990 could go down in CB history as The Year Of The Big Bust .... perhaps even outclassing the FCC's 'HF International' sweeps of the late 1970s and early 1980s!!

McSCANNING

WHAT DOES IT ALL MEAN

BOB LOPAKA is back — this time with the full story on monitoring the "hamburger" bands!

Have you ever visited a McDonalds Family Restaurant drive-through bay, when it was either inconvenient or too time-consuming to lock up the car and go eat inside ?

You probably have. And being the keen-as-mustard (on a sesame-seed bun) radio enthusiast you are, you probably could not help but notice the nifty little portable transceivers and lightweight headsets worn by the McDonalds drive-in staff.

If you've eaten McDonalds in the US, as I have from Los Angeles to the Grand Canyon and back, you will have noticed that their drive-in radio equipment is identical to ours. More surprising is the fact that even the frequencies used by McDonalds in the US are the very same as here in Australia — 35.020 MHz in the VHF low band, and 154.6 MHz in the VHF high band, both duly licenced for such use here Australia-wide.

At this point, let me point out that absolutely no assistance was obtained from McDonalds in the preparation of this article. Not that we didn't ask, and very nicely too, but, the head honchos at Hamburger House decided that being involved with CB Action was a little below their dignity and just wasn't the sort of controlled and sanitised publicity they were after. This situation existed despite constant rumors that Ronald McDonald himself is a CBA reader and possibly owns a scanner!

A very strong and salient point to remember is that many thousands of CBA readers across Australia make a strong and loyal core of McDonalds happy hamburger customers. Considering this left me bemused why the company refused, and very strongly at that, our requests for co-operation. So we went ahead anyway, and if any of the senior Ronalds are reading this then I hope we got all the frequencies and procedures right, guys! (if not, please drop me a line care of CBA).

When McDonalds in the good ole US of A decided to install drive-through bays, a prominent communications company was approached to design and construct a suitable system for to operate on what were to become the "hamburger bands". They came up with a unit limited to 50 milliwatts output, ample to cover the very short range required. The transceiver has the size and appearance of a handheld, but,

is worn horzontally on the user's waist, attached to a special battery belt. This belt contains a number of rechargeable nicad cells which provide up to two full days use at a stretch, and there are always spare battery charging units on hand and ready for use.

A lightweight headset, with earpiece and an electret condenser microphone, is paired to the radio for totally hands-free operation. The belt-worn transceiver unit has two transmit positions, the first (154.6 MHz) for conversation with the drive-through customer at the order point and the second (35.02 MHz) for communication with other McDonalds staff who prepare the order. Receive frequencies in both cases are 35.02 MHz.

Here's how the system works ...

As each customer drives up to the order point an automatic warning alarm alerts the responding drive-through operator. With their McRadio on channel one they welcome the driver, then open the microphone at the driveway box so the customer can place the order. At this stage the McStaffmember can be heard on 154.6 MHz, and the customer on 35.02 MHz.

The operator then confirms the order and directs the customer to the drive- through window, and then switches the McRadio onto position two so they can communicate with the cooking staff in relation to the order, items missing from same, or extra items the customer has decided to ask for. In reality operators are more likely to QSY to the inter-operator channel and say: "You oughta see the jerk I'm serving now, he's covered in pimples!" And that's what happens all the time on the hamburger bands — but, more on that in a minute!

Even though the transceivers are very low in output power, McDonalds have deluded themselves into thinking the signals travel no further than the perimeter of each restaurant. With a half-decent antenna you can monitor Ronald's little helpers and their antics many blocks away. I am not at all located high in relation to my local Maccas, yet my own modest personal record is almost a kilometre. Depending on the elevation of the restaurant and surrounding land there could be some good McDX around — but, somehow I don't think they'll send you a McQSL card!

When I began monitoring the fast food frequencies I would cleary write down every word uttered on both channels — no message would escape me! And like all McMonitors I hear not only the food orders but, also the small talk, arguments, gossip and gripes of the drive-through crews and other staff! It's fascinating listening. As many of the operators are school-age kids at work after a day in the classroom or reving up for a Saturday night out there are frequent discussions

among female crew members about "that cute guy working on the front serving counter", swapping of opinions about various parts of other crew (and customers') anatomy and so on. There is also a lot of practical joke playing, and when things are quiet the practical jokers rise to the surface and the fun begins. Some very enjoyable and occasionally malicious stunts can be heard in planning and progress as these playful and fun-loving kids go about the un-serious business of killing time!

What do you need to go McScanning? Although most scanners will receive the higher frequency of 154.6 MHz this channel won't bring you much of the action taking place in and around every McDonalds drive-through. You will need a scanner with the VHF low band (30 - 50 Mhz) in order to hear it all and receive a few hours free entertainment courtesy of McDonalds Family Restaurants. Models such as the Realistic PRO-2004 and PRO-2005 and the AOR- 2001 and 2002 will do, as will handhelds like the Yupiteru MVT-5000 and early low-band versions of the Cobra SR-15 and Uniden Bearcat 70XLT. Some handhelds suffer from a reduced range on low band which is nothing short of drastic, it is entirely due to the helical whip antenna not resonating well on that band. The best solution is to listen as close to the restaurant as posible. The real advantage of a handheld is that you can take it with you and listen to what the young Hamburger Honeys have got to say about you when you order!

Here is a parting story, and it's true ... I monitored a young girl working the drive-through of my local McDonalds, and from the chit-chat between crew over their radios on channel two I quickly learned the names of the drive-in crew on duty that evening. Unable to suppress my desire to enjoy a good laugh I jumped into my van and headed for McDonalds. On my arrival at the drive- though bay I was invited to place my order, and recognised the voice of the same young lady I had been listening to. I was told to drive to the first window to pay and collect my order. On my arrival, as the window opened, I greeted the girl with: "Hi Sally, are you and James and Cassie having a good shift?" The look I received as Sally dropped the cardboard tray, hamburgers and all, was truly worth the drive!

Happy McScanning!

Jack Haden asks DoTaC some . . .

QUESTIONS ON YOUR BEHALF

Q1. Approximately how many CB radio stations are there in the Sydney metropolitan area, both on 27 MHz and UHF?

Q2. What is the ratio of 27 MHz CB stations to that of the UHF CB service?

A. Within the operating district of the Sydney metropolitan area, there are 10,976 licensed UHF CBs and 21,446 licensed 27 MHz CBs.

Q3. Out of the overall stations, what percentage of them are actually licensed?

A. Calculation of the numbers of CBs on which sales tax is paid compared to that number of CB licences for all CBs was calculated in 1985/86 and showed a ratio of one licensed CB : four unlicensed CBs. There is little reason to suspect that this ratio has changed significantly.

However, the recent introduction of a trial agency arrangement with Australia Post for Western Australia has resulted in many more CB licences being issued in that state. In addition, Departmental Inspectors are now able to issue on-the-spot fines. It is expected that the overall ratio of licensed to unlicensed CBs will be reduced substantially as a result.

Q4. Are there more licensed operators on UHF than 27 MHz?

A. Based on the latest published information, there are 173,646 licensed 27 MHz CBs and 118,493 licensed UHF CBs throughout Australia, an approximate ratio of 3:2.

Q5. Is it true that the UHF service is not as popular as you would like it to be, and that the service is actually stagnant and unwarranted?

A. The service is neither stagnant nor indeed unwarranted, as our licensing statistics show an increase in UHF CB licences over the 12 months to March 1989 of 17,859, or 18.7 per cent; while increases over the same period for 27 MHz were 9,559, or 5.99 per cent. UHF CB is a valuable facility for the farming community in particular.

Q6. There has been some concern expressed by UHF CB radio operators that commercial-type stations have been allowed to overrun the service, is this true?

Q7. Does the Department (DOTAC) tolerate the presence of commercial stations on the UHF CB allocation?

A. The Departmental licensing processes do not distinguish between commercial speech telephony and other users of CB services. As the name implies, the Citizen's Band Radio Service was created to allow full public access to the radio frequency spectrum. The Department is aware of some concern about the level of commercial operations, however there is no intention at the present time to change these arrangements.

Q8. There have been numerous rumors about the 27 MHz service, one of these being is that it will be eventually phased out in favor of UHF, is this so?

A. There are no plans to make any changes to the existing 27 MHz/476 MHz allocations at this time.

Q9. It has been said that if 27 MHz is allowed to stay then the Department will opt for a change to the FM mode only, is this true?

A. There are no plans to introduce FM mode of operation at 27 MHz.

Q10. Approximately how much of the revenue generated by CB radio licences is actually ploughed back into the running of the system?

A. All revenue received from every radiocommunication licence (including CB) is paid into consolidated revenue. Licence processing costs by this Department are paid to this Department from the Department of Finance. The Department receives no direct revenue from licence fees.

It is important to realise that the licence fee also represents a tax for being given access to a scarce national resource — the radio frequency spectrum.

Q11. Do you think that the licensed CBer is getting value for money so-to-speak, by way of your Department's policing of the system?

A. It is fair to say that, on a dollar-for-dollar basis, the Department devotes more resources to administering the CBRS, than to many other categories of service, all of which attract higher fees. As explained earlier, there is no direct link between the revenue gained from licence fees and the cost to the Department of managing the spectrum.

Q12. It has often been mentioned that your Department does not do enough in the policing of both the 27 MHz and UHF CB allocations, in other words, the ratbag fraternity goes on seemingly undetected. Is this so?

A. It must be recognised that CB was intended to be self-regulating, and was introduced with the intention of offering the general public easy access to the radio frequency spectrum with a minimum of control.

For the CBRS to function as intended, it is essential that all operators and clubs share the responsibility to control many of the anti-social practices that have developed in the community. It should only become necessary for the Department to become involved in the more serious cases concerning persistent offenders who disrupt the enjoyment of the community as a whole.

At present a high proportion of the complaints involving anti-social activity received by the Department are of a relatively minor nature. Nevertheless considerable time and effort is devoted to investigating these matters, the majority of which are often found to be the result of local disputes between individuals.

From a practical point of view it should be recognised that it is not possible for the Department to monitor all frequencies at all locations. There is also a limit to the resources available to police the spectrum.

As a result of changes scheduled to take place later this year, it is likely that the Department will be in a position to devote more resources to the regulatory activity. As mentioned earlier, Departmental Inspectors now have the capability of issuing on-the-spot fines for offences against the Radiocommunications Act.

Q13. Would you personally like to see a set-up for CB radio licences where applicants are compelled to sit an examination, dealing with rules and regulations and proper operating procedures?

A. No, I think that this would be contrary to one of the fundamental concepts on which the CBRS was founded, that is to provide the general public with easy access to a short range communication resource. I also recognise that, remembering that there are over 300,000 operators involved, it would be impractical and costly to administer such a system, and those costs may well have to be passed on to the consumer through increased licence fees.

Q14. Are you happy with the CB radio system as it is? If not, what improvements would you like to have introduced?

Q15. Overall, are you and the Department pleased with the conduct of the majority of operators, both on UHF and the 27 MHz system?

A. The Department is generally happy with the manner in which the majority of responsible operators use the service. In any service which is accessible to the community at large and involves a large number of operators, there will, unfortunately always be some members who will bring discredit to the service.

It is regrettable that all users do not behave responsibly for the greater benefit of all operators.

The Department would prefer that, in a self-regulatory environment, the CB community does more to control the undesirable elements. For example, if nobody ever communicated with users who were abusive, they may very well change their attitudes.

Q16. Do you think that CB radio, in general, still represents a stepping stone to Amateur radio?

A. I think that the CBRS has acted and is still acting to foster the interest of people in communications. For many, Amateur radio is a natural progression.

Q17. Would you agree that the majority of CBers are put off Amateur radio because of the morse code requirement and the high level of technical knowledge that is required to pass the licence?

A. It is agreed that many people are discouraged from obtaining an Amateur operator's qualification because of the perceived high level of technical knowledge required and the morse code requirement. However, there are reciprocal arrangements with other nations regarding the required level of competence for Amateur operators. It is therefore important that Australia maintains

an appropriate standard of qualification which is consistent with that applied overseas.

It is important to recognise that a graded Amateur licence structure exists whereby persons can gradually advance at their own pace to full Amateur status. An entry point into the Amateur service is provided by the Novice licence category which requires only a moderate level of technical competency. Similarly, the Amateur Limited grade of licence provides for those persons who do not wish to learn morse code.

Q18. In future, do you see the possible expansion of the present 40 channel 27 MHz service to perhaps 50 channels?

A. Should Departmental monitoring show at some future time that the existing allocation is congested, an increase in the number of channels may be considered. It would, however, be difficult to provide further spectrum, as numerous other users utilise frequencies above and below the present CBRS allocation.

Q19. What is the Department's view on the operation of "non-standard" power microphones, common with base stations in particular, are they in actual fact illegal and do they cause undesired interference?

A. Ancillary devices such as power microphones may be used in conjunction with CBRS transceivers provided the equipment performance parameters are not degraded. For example, it is quite easy to cause interference because of over modulation.

When overmodulation occurs, the width of the transmitted signal spreads causing interference to operators on adjacent channels. It also results in a reduction of the strength of the signal due to the transmitter power being spread across several channels.

The practice is particularly not recommended where the equipment is not designed for use in such a manner.

Naturally, operating equipment in a manner which contravenes the licence conditions can attract a penalty under the Radiocommunications Act.

Q20. Is the Department concerned about Australian CB radio operators speaking to overseas stations via propagation on the legal 40 channels on 27 MHz?

A. The Department recognises that propagation characteristics will enable intermittent communications with overseas channels at various times. The Department is however concerned that this has encouraged some operators to operate illegally by using high power and frequencies outside those which are approved for the service. The Department will take action against these unauthorised activities wherever possible.

Q21. Is the Department concerned about the so-called "DX fanatics" who operate out-of-band but conduct themselves in an orderly manner?

A. Yes, regardless of how you describe such activities "out-of-band operators" are breaching the law and risk severe penalties. The Department will take action against such offenders.

Q22. Do you agree that the main reason for out-of-band operation is that the lower or in some cases upper legal 40 channels on 27 MHz present too much of a problem by way of congestion and anti-social type operators?

A. While this may be partly true, a more likely motivation is the desire to contact overseas stations and, because of the weak signals involved, operators seek to find quieter sections of the spectrum. It is most apparent that the majority of out-of-band activity appears coincident with "skip" conditions.

Of course it cannot be argued that more spectrum should be made available so that CB operators can avoid irresponsible users, since there is every reason to believe that irresponsible operators would expand into any new allocation.

Q23. It is often mentioned that out-of-band operation causes interference to services established on the frequencies used by these DX operators, what services are actually on the band from say 27.405 MHz through to the marine allocation of 27.730 MHz and up?

A. The frequency band 27.405 to 27.730 MHz is occupied by a large number of low powered services which are distributed throughout Australia. The channels are being used for activities which include medical alert systems, maritime operations, oceanographic data collection, aeronautical operations, fire fighting, hospital paging and alerting systems, police activities, defence purposes and interior paging systems.

Many of these services were transferred to these frequencies to accommodate the expansion of the CBRS to 40 channels.

Q24. I have been told by reliable sources that the Department has launched a so-called vendetta against out-of-band DX stations using the Italian-based Alpha Tango callsigns, is this true?

A. It would be inappropriate to make any comment about specific regulatory action which may or may not be being undertaken by the Department.

However, in terms of general observations, the Department does not conduct vendettas, either against particular groups or individuals. It should be recognised that when a group or an individual engages in illicit practices it will naturally attract regulatory action.

It is true that the Department has received complaints from overseas administrations regarding out-of-band DX operations, and a number of people are facing prosecution as a result of their activities in this area.

Q25. Is the Department concerned about the activites of leading CB radio retailers, who unlawfully modify standard CB radios for out-of-band operations and what is being done to prevent this?

A. The Department in fact regularly investigates these types of illicit practices. Many are drawn to our attention by advertisements and reports from other reputable retailers. Where sufficient evidence is collected to substantiate a case, action is taken against the retailer concerned, and the Department welcomes the assistance of the public in these matters.

Q26. Can the Department prosecute known "backyard" technicians as well as the prominent retailers who do such illegal modifications thus enabling the radio to be operated out-of-band?

A. Any person or company that modifies equipment and causes it to depart from the relevent Ministerial Standard is in breach of the Radiocommunications Act 1983. Where found guilty of the supply or possession of "sub-standard" equipment, offenders face penalties of up to $50,000 fine and/or five years gaol.

Additionally, action may be initiated under the Crimes Act where retailers or persons actively encourage others, through advertisements etc, to commit an offence against the Commonwealth.

Q27. Is the Department concerned that Amateur radio equipment can still be procured from some retailers without the production of an official licence, and also that the said Amateur equipment for the sake of a "few dollars more" is modified by the retailer to operate on the 27 MHz CB band?

A. There is no requirement under the Radiocommunications Act for a purchaser to demonstrate that they are appropriately licensed when purchasing equipment.

The Department is aware that irresponsible retailers are engaging in the practice of modifying equipment and placing other reputable firms at a commercial disadvantage. Where such activities come to the attention of the Department, an investigation is conducted and appropriate regulatory action initiated.

Q28. Why is it that sub-standard linear amplifiers are allowed into the country and also the said amplifiers are allowed to be advertised with suggestions aimed towards CB usage?

A. The import of linear amplifiers is allowed because they may be used legally by a wide range of services other than the CBRS.

Any person who frames an advertisement suggesting that the devices can be used in the CBRS risks prosecution.

Q29. Now that on-the-spot fines have been introduced, will the radio inspectors police the anti-social operators to a greater extent than previously?

A. Introduction of on-the-spot fines has increased the range of regulatory options available to enforce the radiocommunications legislation. Furthermore, the scheme permits more effective and efficient use of the resources devoted to regulatory activity. It is expected that an increased level of regulatory activity will result from the introduction of on-the-spot fines.

Q30. How serious is the Department when it comes to policing anti-social operators?

A. The Department is very serious about the "policing" of irresponsible operators. However, there is a practical limit to the amount of resources that can be devoted to the activity. Furthermore, views on what actually constitutes irresponsible behavior differ — Departmental Inspectors enforce the Radiocommunications Act.

Regrettably, a degree of anti-social activity will always exist. However, these problems can be minimised with the assistance of responsible CBRS clubs and individual operators. After all, CBRS is intended to be self-regulatory, and irresponsible operators are a part of the CBRS community.

Q31. How are the Department's Inspectors coping with the new powers, are there still occasions where the police have to be called in to gain access to premises?

A. As a result of extensive training courses, radio inspectors are familiar with the provisions available to them under the Radiocommunications legislation. These powers include the right to gain access to premises whether by way of a search warrant, or in some special situations, without a warrant.

The assistance of state or Commonwealth police is usually only sought where there is likely to be a breach of the peace, other offences are involved, or the case is of a very serious nature.

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AUSTRALIA'S CB SPECIALISTS

DAVID FLYNNS'

477 Report

UHF NEWS AND HAPPENINGS

A VOICE FOR UHF Last month saw the formation of a new national group for UHF CBers. The Australian CB Repeater Association (Inc.) is not just about repeaters, but about the 477 MHz band and the people who use it — individuals, clubs, farmers, small businesses, community groups and more. ACBRA claims it will act as a forum for everyone to have their say in the continued growth of the UHF CBRS. I am glad to say that the ACBRA didn't start out with the intention of becoming a national representative group. Rather, it began late last year when a number of repeater sponsors from southern NSW and northern Victoria got together to discuss some relatively local matters. Seeking to discuss issues further with DoTaC, they were invited to Canberra to meet with Minister Ros Kelly and Departmental representatives. The upshot was an open and encouraging discussion in which DoTaC expressed its pleasure at having someone to talk to regarding the UHF CB repeaters and the 477 MHz service in general. It became clear that there may well be advantages in forming a group to represent UHF users and repeater sponsors. In liaison with DoTaC, ACBRA will act as a sieve between the thousands of users and the Department itself, so that common problems and matters of interest could be raised and addressed on everyone's behalf. The Association believes that with enough support it can act as an effective spokesperson for all users of the 477 MHz band — individuals, clubs, repeater sponsors and the industry. There is also much to be said for the sharing of information which ABCRA will encourage. Almost every repeater sponsor has been through the same ordeals in funding, licencing, obtaining a suitable site and equipment — not to mention everything that goes on even after the repeater is commissioned. And most have done it the hard way, re-inventing the wheel because they knew of no-one from whose experience they could benefit. This is one very good reason why sponsors should consider supporting the Association.

ACBRA has decided from the outset that it will not be mimicking the structure of the WIA, NCRA or other such bodies. There will be no discrimination between individual and club membership — a $10 per year contribution will give the same rights to everyone. And there will be no state or regional councils, sub-committees or any other levels of bureaucracy. As a first public step, ACBRA has announced that it simply wants to look at where UHF CB is headed, at how the UHF users feel about the band and in which direction they want it to head, and it wants to hear from YOU. You don't have to be a member to have a say in the future of 477 MHz ... just write to The Secretary, ACBRA, at PO Box 83 Wangaratta 3687.

WHAT'S NEW FOR 1990 ...

Plenty of UHF gear will hit the shelves this year, and the emphasis will be on mobiles — expect to see up to six new models, ranging from facelifts of current units to some totally new radios and brandnames. There are also another two or possibly three handhelds yet to come, but none will be the 'all singing all dancing' type — just good solid portables with a few useful features for good measure. This will be a positive boon for the secondhand market as users upgrade to new gear. If you are after a rig for the second car, or perhaps the cost of new UHF gear has kept you from joining the 477 MHz crowd, you'll soon have a wide choice of radios at very agreeable prices. Another new item is the Powerband PB-14e, a 14-element yagi beam based on the same design and construction that made the 11-element PB-11e a long-running success. Quite a few UHFers have co-phased a pair of 11es together to give an effective output of some 500 watts (and perfectly legal at that) for accessing distant repeaters noise-free, and I am sure the 14e will meet with a similarly enthusiastic approval. We hope to review this antenna in the next issue. One sour note over recent months was the abuse of repeaters by truckies involved in the NSW blockade during March. The usual mindless minority of would-be-if-they-could-be heroes decided that as Talangatta 7/37 covered most blockade points along the border, they would commandeer the repeater. Too bad if you wanted to use the repeater, or even were listening to it in the office or home — these 18-wheeler ego trippers subjected everyone to a barrage of foul language, intimidation and threats. This was not restricted to just the public — fellow drivers who supported their union's decision to return to work were also harassed and abused by deadbeats with delusions of 'Rubber Duck' grandeur. For some time now truckies have used UHF CB repeaters to speed at well above the limit and avoid police radar. In the past, the police and RIs have co- operated in blitzes, combined with turning off repeaters along the highway for a weekend. Within the next few weeks numerous repeater sponsors along this route will receive letters from the Victorian Police Commissioner requesting that they voluntarily shut down their repeaters from around 10pm to 6am, when most of the trucks make their UHF-assisted fast runs. Sponsors are under no legal obligation to comply, and each must carefully consider the issue on their own terms. Sponsors, users, truckies and drivers — how do you feel about this? Write to me and let others, through CBA, know your thoughts.

WORDMAZE

As you may have already noticed there is no Wordmaze in this issue. The reason is simply that we think the ICOM IC-40G Contest is sufficient for this issue, however, the Wordmaze will be back in the next one. The winner of our last Wordmaze was Mr V. Walker of Dapto, NSW.

Congratulations Mr Walker, your u-beaut Sangean ATS-803A — courtesy of Access Communications and CBA — will be on its way to you within the next few days. The answers we were looking for were 1 Yaesu, 2 Electret, 3 Australia, 4 GARC, 5 John, 6 Sangean, 7 CRS, 8 Hatadi, 9 Galaxy, 10 Baxter.

Don't forget, the Wordmaze will be back in our next issue.

RECEIVERS – ALL YOU NEED TO KNOW

Want to go a bit beyond CB radio? Why not try some short wave listening? The bands below 27 MHz, right down through the broadcast band to the aeronautical beacon frequencies, provide some new areas of interest for people like us who are hooked on radio. So dust off that radio, dump the mic for a while and hook up the antenna!

You can pay *thousands* of dollars for a really swish communications receiver, or you can pick up a used older model for a couple of hundred — or even less. There's really no excuses any more for missing out on the fun of short wave listening (SWLing)

But you need to know what you're doing. To get the very best from any receiver you have to be aware of a few facts and techniques which we'll get stuck into right here and now

Single side band (SSB) is generally capable of 'getting through' under pretty awful conditions. While not all general coverage receivers are able to resolve SSB signals you'll find most of them are

OPTIMISING PERFORMANCE

Upper sideband (USB) is used by most point-to-point communications services; **lower sideband** (LSB) is generally restricted to CB and amateur use. It is essential that you tune the signal *exactly* on frequency; then you can use the *other* controls to optimise performance on that channel

The **RF gain** control can be used to minimise substantial noise between transmissions. It should be possible to find some setting of the RF gain where the noise is made insignificant, but the transmissions come through loud and clear. Your S-meter reading will probably suffer, but that doesn't matter as long as the signal is made more readable

So don't always aim for the highest-possible S-meter reading — just adjust the controls for the clearest signal

Closely related to the RF gain control are the **preamp** switch and **attenuator** switch. These increase or decrease the sensitivity of your receiver in the stages *before* the RF gain control takes effect. Many people leave the preamp on all the time, but in many cases the receiver performs much better *without* it. The preamp is only really necessary on the higher frequencies, or when the band being used is 'dead'

SOMETIMES IT'S BETTER WITHOUT THE PREAMP

At lower frequencies, at night, or when the band is hopping, you're better off without the preamp. The signals you want will be strong, but so will the interfering signals and noise, and the preamp raises *all* their levels simultaneously. If signals are *reeeeeally* big, the attenuator will keep the radio's IF and filters from busting a gut

You can use your receiver's **Squelch** or **Mute** control to totally eliminate noises between transmissions. If the noise isn't too bad, and signals are moderately strong, you can set the Squelch control just past the point where the receiver is silenced between transmissions, but any incoming signal 'opens it up'. The trouble is, though, that noise bursts may open it up as well

Now to the **AGC** control, which is the automatic gain setting of the receiver. It usually has a switch marked 'fast' or 'slow', where the speed refers to how long it takes for the receiver to return to full sensitivity after a strong signal disappears. It is normal to use the slow position during SSB reception, since the signal effectively disappears even between speech syllables. With fast AGC, the receiver tries to crank up the gain between every word, giving the signal a kind of unpleasant

Yaesu's FRG-8800 — a well respected communications receiver — covers AM, SSB, CW and FM bands and has sufficient 'whistles and bells' to keep most SWLs happy.

'chuffing' sound. 'Slow' makes the gain stay put between words, and fade up only slowly when speech stops

The fast AGC position is meant for AM or FM signals, where there is a 'carrier' for the AGC to latch onto, even when speaking stops. In the fast position the AGC can follow fast fades, even those that occur several times a second. Fades of this nature are very common on the AM broadcast band in the evening and at night

Some receivers have a gadget called a **noise blanker** which attempts to get rid of man-made noise. The effectiveness of this circuit varies remarkably from receiver to receiver. Note that *no* noise blanker is designed to cope with what is generally referred to as 'static', the crash-bangs of thunderstorms or other natural noises. Noise blankers rely on the regularity of a stream of pulses from such things as car ignition, but they just don't know how to handle the random nature of static

PASSBAND TUNING CAN HELP

Many SSB receivers have a **passband tuning** control which is designed to 'squeeze off' the IF response on the high or the low side of the passband centre. The idea is to shear off an interfering signal if it is on the edge of the passband. This feature may be more effective on some receivers than others, depending on the quality of the IF filter

Getting a bit technical, eh? Okay, here's the rub: the *passband* is simply the width of the signal allowed into the receiver. The **intermediate frequency** is the final frequency which *all* signals coming into the radio are converted to before being amplified. The reason for this is that radio circuits have to be 'tuned' to a frequency in order to receive it. So the real frequency you're after first gets converted to the so-called IF so the receiver can make the most of its sensitivity. Some receivers offer 'single conversion', the majority have 'double', and a few — the most expensive ones — have *triple* conversion stages. Within reason, the more the merrier..

A **notch filter** attacks an interfering signal in the center area of the IF passband. It does this by allowing you to change the IF itself over a slight range which means you may be able to filter the unwanted signal out. It effectively removes a slice of the response but lets everything else pass

AM OPERATION

Most of the above comments were written with single sideband reception in mind, but many of them apply equally to AM. And there are a few *extra* tricks you can use to make AM listening as pleasant as possible, even under the crowded conditions of the international broadcast bands, or on local AM broadcast bands at night

If you have a receiver handy, perhaps you should fire it up and give these ideas a try as we discuss them. Begin by tuning in a good 'listenable' international broadcast station. Now set your AM filter to 'wide' (if you have a choice), AGC to 'fast', RF gain full on, and preamp or attenuator (which reduces the signal strength rather than amplifying it) on or off depending on signal strength. You should now hear the station normally, perhaps with a bit of fading and/or distortion

If you now try the *narrow* AM filter the signal will sound badly muffled. What you are getting is the carrier, and the low frequency parts of both sidebands (higher frequencies are furthest from the carrier, so the high tones furthest away are what you filtered out).

Now, move the receiver's tuning slightly off frequency, one way or the other. You will notice the audio contains more high frequencies as you move away. What you are doing is shifting the receiver's frequency to favor most of one sideband, which contains all the audio information your radio needs to reconstruct the signal

NOW TRY SIDEBAND

Using the same AM station, now switch your receiver to either upper or lower sideband. You should still hear a fair representation of the signal, although you might have to retune slightly to properly resolve the single

Up to 1300 megs in the palm of your hand

Icom recently announced the release of their new IC-R1 communications receiver, with a frequency range of 100 kHz to 1300 MHz. (Specification is guaranteed from 2 MHz to 905 MHz.)

So what? Another communications receiver? Imagine holding such a communications receiver in your hand, or putting it into your shirt pocket?

You can with the Icom IC-R1: the world's smallest super wide band communications receiver. The complete receiver measures a miniscule 49mm wide, 103mm high and 35mm deep, and weighs just 280g.

For those still thinking in the old money, that's about 2 x 4 x 1-1/2 inches!

Packed inside this tiny technological marvel is a full-featured receiver offering such advanced benefits as:

★ *Triple conversion superhet circuitry*

★ *FM, AM and wide-band FM reception*

★ *High AM sensitivity of 0.79uV (2-905MHz, 10dB S/N)*

★ *100 memory channels*

★ *Multiple scanning modes, including memory, band or range*

★ *Dual frequency selection — keyboard or rotary tuning*

★ *11 selectable tuning steps*

★ *24 hour clock and timer with auto power on/off*

★ *LCD display with 'S' meter*

★ *Built-in NiCad, or external DC supply (6-16V)*

Its size means it can be taken anywhere: travellers will find it invaluable to keep up with worldwide news on the shortwave bands as well as local broadcasts.

Businesses will find it perfect for monitoring purposes — anywhere — and radio hobbyists will find it the ideal choice because it combines all the requirements for shortwave listening, broadcast listening and monitoring and VHF/UHF scanning.

And, unlike many receivers in the VHF/UHF area, it offers continuous coverage, so no-one will miss out. Even aviation enthusiasts will find the ICOM IC-R1 covers their frequencies in full.

RECEIVERS - ALL YOU NEED TO KNOW

(Continued)

sideband. If you're hearing a steady tone you've not yet got that tuning quite right. You will find the audio response is much narrower, sounding more like a SSB signal, and the S-meter will probably jump up and down with speech peaks, again like an SSB signal. This is because you are now receiving an SSB signal (one sideband of the AM signal), making the receiver ignore the other sideband and the carrier

This technique is called **exalted sideband** reception, and is very useful for copying an AM station under conditions of noise or bad interference. If you select the opposite sideband to the one used above, you will again be able to produce a properly-resolved signal, but the important thing to realise is that the two sidebands are effectively two separate transmissions. You can select the one with the least interference and noise, and ignore the other

Why bother with all this AM business, anyhow? Well, some people are into DXing, seeking QSL verifications from rare international broadcasters. But others are finding 'shortwave' a good alternative to the tightly-structured and highly automated broadcast stations serving the mass markets in our cities. **Radio Australia** is one good one to listen to when you're sick of football and Kylie Minogue. In fact the ABC now relays Radio Australia on the broadcast band for domestic consumption in the middle of the night

Other goodies come from **Radio Moscow** (which is now producing more and more music programs), and lesser-known services such as the fairly new **Christian Science Monitor** overseas radio service. Despite the name, there's minimal religion on this station. The Christian Science Monitor is, in fact, a newspaper much respected for its independent views and unbiased reporting. CSM's radio news is produced from the same sources, and is well worth listening to when there's a big stoush on in the world somewhere and the 'national' broadcasters are generating their own versions of the truth. CSM Radio also produces lots of little 10 minute feature documentaries about many diverse subjects, and one of its main strengths seems to be in subjects related to current trends in music. The station plays its share of interesting music as well

Another good 'alternative' radio service on shortwave comes from some transmitters in Central Australia on 2310, 2325 and 2485 kHz. These all run the same program, beamed in different directions, and they're meant to service outback areas. Many nights the stations carry a relay of the CAAMA Radio FM station in Alice Springs. If you like good country music, by both white and Aboriginal artists, you'll love this one

MORSE CODE (CW)

Righto, troops, here's where we separate the men from the boys. (How's *that* for a good sexist start-off?!!)

We are going to try to listen to some **Morse Code** signals, and fiddle the receiver to make them sound like they're coming down a phone line, instead over the radio. Clear as a bell! You don't understand Morse Code? Well, now's the time to start learning!

Any radio that can receive SSB can also receive CW, although the filter bandwidth will be much wider than needed. In the CW mode, some radios shift the IF response slightly to narrow things a bit. The best thing of course, is a special narrow filter for CW. This is offered as an option for many radios, and you can even specify how narrow the filter is to be, usually from 200 to 500 Hz

Really good CW reception depends on proper use of the RF gain control, and the AGC time constant. If you just turn up the RF gain all the way, you'll hear your Morse Code all right, but there will be lots of noise coming up between the dots and dashes as the AGC searches for the signal that just went missing. If the code is fast, say above 15 words a minute, you can set the AGC on slow and the gain will nicely ride along on the 'average' signal level

But, on receivers where it can be done, the best quality CW will generally result if you can switch the AGC *off* altogether and use the RF gain to manually control the gain of the receiver. Once you get it set for a reasonable level, there will be no attempts at all by the receiver to bring the noise up between dots and dashes, even if they stop altogether. There may be some fading on the signal, resulting in the signal sounding louder and softer, but it will still be very easy to copy unless it disappears completely, at which time you probably won't hear very much at all... (Eh? Yeah, I guess that's logical.)

BETTER WITH THE AGC OFF

If you're using a computer to read Morse, it will probably perform best with the AGC off and the gain controlled manually, especially if the signal is pretty good to start with. If you'd like to experiment with optimum detection of Morse Code, there is a station in Italy on 12,997 kHz which sends out an hour's worth of news items from 1600 hours (4pm) Eastern Australian Time. This station, run by a news service called ANSA, must be one of the last Morse Code news stations left in the world. The rest went over to radioteletype (RTTY) *ages* ago

The entire transmission appears to be machine-sent, possibly by a computer. It starts by sending a test message, much like other services using RTTY, and then rips into the news at around 25 or 30 words a minute. If you can copy this by ear you can consider yourself a Morse and linguistics expert, because the transmission is fast, it's in Italian, and it contains lots of special non-English characters

By now you should have a pretty good idea of how a receiver does what it does, and what you can do to squeeze the most out of it. With a decent antenna and a bit of intelligent enthusiasm, you're going to have lots of satisfying hours of listening

The Icom IC-R7000 is a communications receiver which conforms to Icom's well established standard of top quality equipment.

BOOKS WORTH READING

ARTHUR CUSHEN'S RADIO LISTENER'S GUIDE

When you start out in DXing you become hungry for information about the hobby and want to learn more about stations. That's what makes the hobby fun. But apart from the WRTH, which is mainly made up of broadcasting schedules, there aren't too many books around. Well things are changing, more and more DXers are putting pen to paper and writing about their hobby.

Well-known DXer Arthur Cushen has been busy with a selection of some previously-printed articles from 'Electronics Today' magazine, and further notes to help you get more out of shortwave listing.

The 'Radio Listeners Guide', as Arthur says, "is not a book, and I haven't set out to write a second edition of The World In My Ears" (Cushen's first book on the subject). This publication has eight sections designed to interest any DXer and will provide hours of enjoyable reading. You'll find 110 pages of articles on shortwave, mediumwave, equipment and history to give you a well balanced look at DXing.

Several photos and pictures break up the stories which enable readers to become a part of the story and understand what is being said. The articles are easy to read and give a good insight into radio communications, past and present. Cushen also informs me that he has recently been given approval to reproduce a report on his secret wartime listening activities. The booklet is based on 230 pages of material he gathered and sent to the New Zealand Security Intelligence Service during World War Two.

The Radio Listeners Guide is priced at $A22 SAL and the booklet of 'Arthur Cushen's Secrets of Wartime Listening' is available for $4.00. Both books can be bought together for $22.00. Cushen's address is 21 Earn St, Invercargill, New Zealand.

BOOKS FOR UTILITY DXING

HF Frequency Register: It was five years ago that DoTaC made available for general use the public version of AMFAR, which is now called SMIS. This was great as for the first time it meant DXers could obtain a more accurate listing of stations in use in Australia. The only catch was that you had to buy, or have access to, a microfische reader. "Okay," I said to myself, "I can live with that." However over the years the microfische sets of SMIS have risen in price from $20 to $70, putting it out of reach of the average DXer. So as a keen reader of CBA, I noticed that Captain Communications sells the 'Australian HF Frequency Register' and 'Aviation Register'. Through the resources of Jack Glazenburgh, at Captains, I've been given a copy of the very popular Aviation Register and the 1989 edition of the Australian HF Frequency Register to review.

The HF Register comes in two forms, one contains records in frequency order and the other in the name of the user. The HF Register is based on DoTaC records and where possible expanded on, to overcome shortcomings in their files.

To solve the problem of layout, wide use of abbreviations has been used which helps make the information available in a simply presented form. The quick reference page at the front of the book made it easy to follow any abbreviation used. The book contains 313 pages neatly packaged in a small ring-bound folder and covers the range from 2 to 27 MHz.

My copy was in name order and was laid out under the headings of user, Tx freq, Rx freq, callsign and location — very simple and easy to follow. Although comprehensive (over two pages of listings for NSW Police alone), like any frequency guide it does contain some errors which users should be aware of. Amateur radio frequencies, transmitters below five watts and all non-voice services have been deleted. As the monitoring of telephone conversations is illegal they too have been removed and while DoTaC records for government users are simply listed as 'Government' every effort has been made to identify which government department are on what frequency. Each edition costs $49.00.

Aviation Register: The Aviation Register is a positive attempt to provide DXers and aviation enthusiasts with a source of data for aeronautical communications on LW, HF, VHF and UHF. A wealth of information has been included within this 192-page publication. Not only are frequencies listed but the information is also presented in name and function order. An important section, I found, is the Australian military callsign listing, which is very handy for tracking military aircraft. The HF frequency data is well displayed, unfortunately the editor has decided not to include times that airports use their HF frequencies. As they don't change much they could have been included with little effort. LW beacons and VHF company frequencies can all be found in a easy, presentable form.

VHF frequencies are displayed in state order making it easy to check usage in your own state. Aeronautical stations which operate their own frequency are also listed under the 'Company Frequencies' section, which is then broken down into state order. Another good point with this book is that as aircraft move around I can follow them from HF to VHF and back again.

Aircraft registrations are displayed in callsign order, making it easier than using microfiche copies from DoTaC. All this information comes from one source. The main advantage with any reference like this is the ability to find and digest a particular piece of information quickly, and this guide does that very well.

The Aviation Register retails for $27.90, and like the Australian HF Register can be purchased from Captain Communication at 28 Parkes St Parramatta — telephone (02) 633 4333.

1990 World Radio TV Handbook

Most people have a holy book of some form or another. It needn't be the Bible or Koran or Talmud. A budget-conscious visitor to Sydney wouldn't be without 'Cheap Eats', no more than would a connoisseur part with their copy of Leo Schofield's 'Good Food Guide'. There's Jane's annual guide to aircraft, Scarne on cards, and 'Europe On $25 A Day'. For shortwave enthusiasts, in fact many radio hobbyists and professionals too, there is no replacing The Handbook. Ah yes, it's that time of year again — when the sacred scrolls of shortwave come down from a mountain which looks rather like a squat office block in Hvidovre, Denmark. This is the 44th edition of the 'World Radio TV Handbook', and there's not much else to say that hasn't been said before. The WRTH is not a book you read as much as one you devour, thoughtfully, over months and months, constantly diving between the covers for some obscure snippet of information.

Perhaps the editorial says it best ... your personal 24-hour passport to the world of shortwave listening. It's all there — stations, callsigns, station ID announcements, addresses and contact phone/fax/telex numbers, key staff, frequencies, schedules, languages, power output, transmitter sites, maps. For local, national and international broadcasters. And not just shortwave, but AM, FM, TV and now satellites! And the sort of detail no atlas or database contains on each country — local time in relation to UTC, population, number of TV and radio receivers, languages, ITU country codes, electricity supply, TV systems, bandplans and channels. The WRTH's editorial features include articles on solar forecasts and propagation, antennas, satellite equipment, the 1990 WRTH Industry Awards, reviews of receivers, accessories and radio-related computer software, and a guide to SW clubs and other broadcasting organisations. The 1990 edition is, as in years past, a treasure-trove. For any SWL it is almost as essential a part of your station as the antenna or the radio itself! The WRTH is now available from your nearest Dick Smith Electronics store, and at $30 remains incredible value for your shortwave dollar.

ENTRY FORM
ON PAGE 62
COUPON TWO
(May/June)

Are you looking for a radio to take on your travels? ROB WILLIAMS discovers the pleasures of the Sony ICF-SW1 and finds this palm-sized radio is a delight to own.....

It may be small in size but

IT'S BIG IN PERFORMANCE

When you travel and want to keep in contact with what's happening back home, you need a small shortwave radio which doesn't take up much space in your luggage. Well, Sony have produced a compact 'travellers pleasure' called the ICF-SW1.

Renowned for producing radios which are at the forefront of technology, Sony produces this year what others usually follow the next year. Using all the latest tricks this radio is small enough to fit inside a shirt pocket. Through these innovative ideas, the avid shortwave listener can have at his disposal a compact, versatile SW monitoring station. At around $500 it's not cheap, but you are getting what Sony describes as 'a fully functional global listening post'.

This radio sells in two models. The SW1S includes an 'attache-type' carry case which houses the rceiver, the AN-101 active antenna and controller, external 3 volt AC power supply and a set of miniature stereo earphones. All together this is a bit too much to carry around but with the other choice, the SW1E, you get a soft touch carry-case, the radio and a compact antenna. Now you won't have to worry about excess baggage!

Don't let the size fool you, the SW1 uses phase locked-loop (PLL) circuitry to give you a stable drift-free signal. Even the nine-segment telescopic antenna packs away neatly inside the radio itself, out of harm's way, yet when extended is just over half a metre long. At a tiny 118.2 x 71.4 x 23.7 mm (w x h x d) and weighing in at only 230 grams, Sony has designed a winner.

The radio is literally covered in controls, most of these located on the front panel, with controls for volume, tone, external supply and earphones on the side. Inside the battery compartment, you'll find the MW channel selection switch. Typical of Sony's range of portable radios is the recessed power switch which prevents the unit being accidentally turned on when packed inside your suitcase. Readers familiar with Sony's ever-popular ICF-7600 will see that the SW1 controls are very similar in operation.

There are three ways you can dial up your station. Firstly, by directly keying in the frequency on a simple keyboard. Each key has a good positive touch which helps ensure that you have actually operated the chosen key. Alternatively you can scan a particular SW band automatically. Once the top end of the band is reached, it restarts at the bottom and does the whole process again. If it finds a station it stops for 1.5 seconds before moving on. Or finally, by

GME Electrophone:::

27MHz CITIZENS BAND TRANSCEIVERS

AUTO RECALL OF TRUCKIES ROAD ALERT CHANNEL 8

TX821 AM

■ Ch.8 Recall ■ Compact Size ■ Last Channel Memory ■ Modulation & Signal LED Indicators ■ Digital Channel Display ■ Electronic Channel Change ■ Separate Volume & Squelch Controls ■ Local/Distance Selection

TX830 AM SUPER DELUXE

■ Ch.8 Auto Recall on Mic. ■ Powerful Front Speaker ■ Interference Suppression Circuit (ISC) ■ Variable RF Gain ■ Signal Level Indicators ■ Power/Modulation Indicators ■ Dimmer Control

TX826 AM DELUXE

■ Ch.8 Recall ■ Compact Size ■ Last Channel Memory ■ Modulation & Signal LED Indicators ■ Digital Channel Display ■ Rotary Channel Selector ■ Combined Variable RF Gain/Squelch Control ■ Built in Noise Limiting

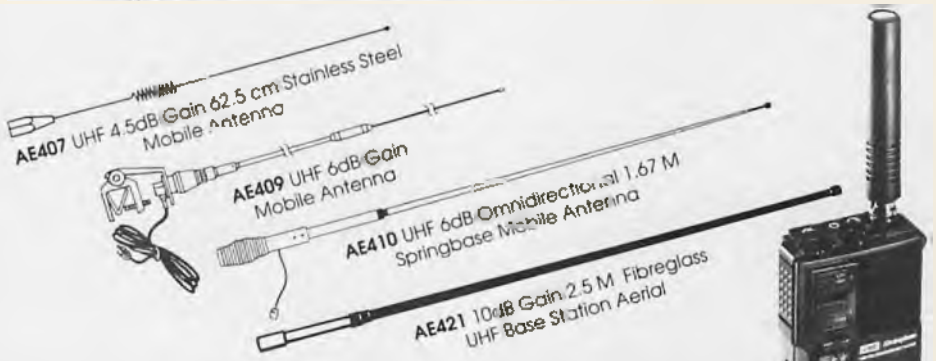
TX840 AM/SSB

■ Unique Auto Recall on Ch.8 ■ Separate Volume, Squelch & Clarifier Controls ■ Remote Speaker & PA Facility ■ LOC/DX & ANL Switching

TX472S 40 CHANNEL UHF/FM MOBILE TRANSCEIVER

AUSTRALIAN MADE

- Built-in Micro Computer
- Front Panel Field Programmable in 2 Modes
  - —Group Scanning
  - —Open Channel Scanning
- Memory Protection Circuit
- Hi Intensity L.E.D. Display with Dimmer Control
- Sel-Call Option



NOW WITH SEL-CALL OPTION

TX475S 40 CHANNEL UHF/FM HANDHELD TRANSCEIVER

- 450mA Quick Charge Ni-Cad Battery Pack
- 240V Electronic Wall Charger
- Inbuilt Electret Condenser Microphone
- Positive Thumbwheel Channel Selection

REGULATED POWER SUPPLIES

240V AC TO 13.8V DC
PSA123 3 AMP
PSA126 6 AMP
PSA1210 10 AMP
PSA1225 25 AMP

REGULATED VOLTAGE REDUCERS

24V DC to 13.8V DC

VR1-3 3 AMP	VR5-30 30 AMP
VR2-5 5 AMP	VR7-280 20 AMP
VR3-10 10 AMP	VR8-410 30 AMP
VR4-20 20 AMP	Single & Multi Circuit

Distributed via National Dealer Network by:

GME Electrophone:::

A DIVISION OF **STANDARD COMMUNICATIONS** PTY. LTD.

SYDNEY (02) 816 4755, MELBOURNE (03) 584 8099, BRISBANE (07) 273 4355, ADELAIDE (08) 363 1888, PERTH (09) 330 5322, AUCKLAND (09) 274 0955

operating one of two buttons marked manual tuning. In all tuning modes on SW the receiver moves up or down in 5 kHz increments.

Ten memories allow you to install your favorite stations whether they be on LW, MW, SW, FM or any combination. The radio actually covers from 150 kHz to 29995 kHz and then from 76.0 MHz to 108 MHz. This means you can also sneak in some VHF stations outside the FM band, which starts at 88 MHz.

The inbuilt speaker has plenty of guts and delivers a powerful 250 mW. Another useful feature is an output jack designed to feed a signal into a tape recorder, separate from the earphone jack. This is something not always found on portable radios. A push button labelled 'key protect' locks all keys on the keyboard and prevents accidental tuning off or away from a station. The inbuilt sleep facility can be activated so that it will turn the radio off after 65 minutes. While this is handy, and can be used in conjunction with a tape recorder when not in attendance, it would have been better for Sony to provide a facility whereby the clock can turn itself off, at a preprogrammed time, similar to a bedside clock/radio.

A carry strap attached to the radio has a small plastic disc which, when slotted into a grooved area on the back of the radio, allows you to rest the radio on its side.

Wide range active antenna

What grabbed my attention after seeing the radio was the active antenna. The antenna controller has a miniature male earphone plug which goes into the tape recorder output socket. This extends the record output socket out of the way of the control unit. When you plug the unit in, there is a small hole on the top of the unit which accepts the telescopic antenna when packed inside the radio. This provides electrical contact between the aerial and the control unit. The active antenna, which plugs into the control unit, can sit metres away from the radio. The antenna itself can then be located near a window for improved reception.

The unit, which has controls for power, signal attenuation and band selection control, is powered from the active antenna along the aerial lead into the control unit. Inside the active antenna are four AA size penlight batteries. The lead for the active antenna can be wound up inside the unit just like a fishing rod, making it easy to pack away. When extended the eight- segment aerial extends to 1.15 metres.

Performance — big things in a small package

What a surprise, Sony hasn't compromised on performance. Usually you find that as things get smaller, manufacturers are forced to leave functions off to keep within size limits, but not in this case. Included with the kit is a 'Wave Handbook' listing shortwave, mediumwave and FM stations around the world. The information provided is as of July 1987 and leaves a lot to be desired.

One final note to remember, not only with this radio but with any, is that if you intend to buy it duty-free overseas the warranty provided will not apply outside the country in which you bought it. There are also restrictions in some countries concerning band coverage, so a radio may not cover the same frequencies as that same model being sold in Australia.

If you are after performance, packaging and power for shortwave listening on the move, then put the Sony ICF-SW1 high on your shopping list.

Top: Smaller than a telephone, but, a top performer.

Above: Antenna controller has on/off switch, attenuator, band selector and tape recorder outlet.

Below: Active antenna unit can be sited away from rig (near a window etc) for best results.

WIN AN icom IC-40G UHF HANDHELD

David Flynn reviewed the brilliant Icom IC-40G UHF handheld in our last (March/April) issue. The answers to all the questions on this page are in that issue, along with 'coupon number one'. If you do not have (or cannot obtain) a copy of that issue you have a problem as this page must be sent — WITH BOTH COUPONS STUCK TO IT — to the address below — WITH THE ANSWERS — to be received here no later than May 14, 1990

The winner, who will be selected from all entries received, will win:
★ IC-40G handheld complete with ★ speaker/microphone (EM-46L) ★ carry case (LC-36) plus, courtesy of AP Imports ★ a high performance Larsen Kulduckie UHF whip — total value is approximately $1000.

NOTE: Coupon number one was contained in our March/April issue and coupon number two is contained within this issue. BOTH MUST BE ATTACHED TO THIS ENTRY FORM.

AFFIX COUPON ONE
(March/April issue)
HERE

AFFIX COUPON TWO
(May/June issue)
HERE

Name .....

Address .....

..... Postcode .....

Phone .....

The answers to all of the following questions appear in the March/April issue.

1. What is the power of the IC-40?

   .....

2. How many memory channels does the IC-40G offer?

   .....

3. Name two additional features of the IC-40G.

   .....

4. Name two accessories for the IC-40G.

   .....

5. Name two Icom dealers who advertise in this issue.

   .....

6. Icom's other UHF CB handheld is the . . .

   .....

7. Name one other field for which Icom manufactures communications equipment.

   .....

8. What position does Duncan Baxter hold in Icom Australia?

   .....

9. What is Icom's toll-free (008) telephone number?

   .....

10. "UHF" stands for . . .

    .....

Rod Fewster tests the . . .

VHF GX 558 MARINE RADIO

and says, "it's the only choice".

Although it's not a Citizens Band radio, my recent tests of Electrophone's new VHF marine rig impressed me so much that I just had to bring it to the attention of the hundreds of CB Action readers who own boats.

The GX558 was designed and manufactured right here in Australia, and it's a guaranteed winner with a recommended retail price of only $479.

Although I haven't tested EVERY VHF marine rig on the market I doubt if ANYTHING could perform better. We used a $1200 Icom IC-M80 as a 'control' rig and the GX558 shaded it.

The rig uses a splash-proof keypad to change channels. All current Australian and International channels are preprogrammed while DoTaC-approved 'private' channels can be added if required, also, any future changes or additions to the channel allocation won't make the transceiver obsolete.

The easy-to-read (even in brilliant sunlight) Liquid Crystal Display shows the selected channel, functions, modes, and power setting and is backlit (bright or dim) for use at night.

The keypad is also used to select the scan, dual watch, HI-LO power, Auto-Seaphone and channel 16 emergency over-ride functions (power automatically switches to HI when you select channel 16) and to program any combination of channels to be scanned or skipped.

Settings are non-volatile and the rig 'remembers' how you programmed it even when the power is disconnected. It's not your usual 'read the manual again because you forgot how to do it' type of keypad either. It's a SIMPLE system which even a small child could use. The GX558 is unique in that the keypad also incorporates an Auto-Seaphone dialer (the 'old' operator-connected Seaphone service can also be used) with last-number redial and a 'roger beep' end-of-transmission feature.

All other VHF marine rigs require an optional microphone (which costs around $250 extra) to access the telephone network and don't offer either last-number redial or the 'roger beep'.

A single button on top of the microphone doubles as the scan 'stop/start' button and the OTC 'cancel entry/disconnect call' button. While not absolutely 100% waterproof (Icom

VHF GX 558 MARINE RADIO

used to demonstrate its marine rigs submerged in a fish tank .... you wouldn't want to try this with the GX558) the little rig is VERY well-protected against moisture with rubber seals around all the case joints and openings and a splash-proof front-mounted speaker.

The mounting brackets included with every rig are a dream and once installed the GX558 sits in place rock-solid. There's even a flush-mounting kit with a neat plastic escutcheon and cut-out template. The well-illustrated 40-page instruction manual rates among the very best I've seen and covers the different installation methods, clearly outlines all functions and features, outlines the basics of normal and emergency operation and Seaphone operation, and even shows how to make an emergency antenna from co-axial cable.

A nice touch is the laminated quick-reference chart included with every rig. Removing the outer plastic case reveals workmanship second-to-none. The PC board is top quality and the component layout is brilliant, with extensive use of the latest surface-mount technology. Inner case sides are of plated steel and the rear panel incorporates a substantial cast aluminium finned heat sink.

The GX558, although brand new to the marketplace, has proven so popular that there's already a waiting list. They're so scarce that I could only obtain one unit from Electrophone and even that took some string-pulling. A bit of old-fashioned grovelling (that's ANOTHER carton of stubbies CB Action owes me) got me the loan of a second GX558 for a couple of days. Now for the nitty-gritty .... what can the GX558 DO !!

We ran the tests over two days, using the tried-and-trusted Icom as a 'control' rig both out on the water and from the shore at sea-level as well as from a full-bore base station with tower-mounted antennas well above sea-

SPECIFICATIONS

GENERAL

Frequency Range: Receive = 156.30 to 162.025 MHz
(DOC 274B): Transmit = 156.025 to 157 425 MHz
No. of Channels: All 55 International Channels plus AYF87A
Frequency Control Method: Single Loop PLL Synthesiser
Supply Voltage: 11.0 to 15.2 Volts DC
Rated Voltage: 13.8 Volts DC
Antenna Impedance: 50 Ohms
Frequency Stability: ±5 PPM
Operating Temperature Range: -10°C to +65°C
Channel Display: LCD Numerical Readout
Speaker: 55mm Round Front Mounted, 8 Ohms water resistant polypropylene
Microphone: 600 Ohm Dynamic with Skip/Hold Switch
Dimensions: 115mm (D) x 200mm (W) x 65mm (H)
Weight: 950g
Controls: ON-OFF/Volume, Squelch, Keypad Channel Selector, CH16 Recall Key, Dual Watch Key, 1W/25W Power Selector, Memory Key, Scan Key, OTC Auto Dialler Key (Aust. Version), Weather Channels Key (NZ Version)
Light & Indicators: LCD Channel Display, Scan, Dual Watch, Transmit, MEM, Hi Lo Power, Int. Channels, OTC Mode (Aust. Version), WX Channels (NZ Version), Orange Backlight
Connectors: Antenna, Microphone, External Speaker (3.5mm), DC Power
Standard Accessories: Plug-in Microphone, Mounting Bracket and Hardware, DC Power Lead, 2 Spare Fuses, Flush Mounting Kit, Instruction Manual

RECEIVER

Circuit System: Double Conversion Superheterodyne
IF Frequencies: 1st = 21.4 MHz
2nd = 455 KHz
Sensitivity: 0.3µV for 12 dB Sinad (Typically 0 28µV)
0.5µV for 20 dB Quieting
Selectivity: -6dB @ ±7.5KHz
: Better than -75 dB @ ±25 KHz
Spurious Response Att: -75 dB Typical
Image Response Att: -75 dB Typical
Intermod. Rejection: -70 dB Typical
Blocking Rejection: -90 dB Typical
Squelch Range: Threshold = 0.15µV Tight = 0 6µV
Audio Output Power: 3 0 Watts @ 10% THD into 8 Ohms
Ext. Speaker Imp: 8 to 16 Ohms
Audio Frequency Response: -6 dB per Octave within +1 dB and -3 dB
Hum & Noise Att: -55 dB
Current: Standby = 450mA
: Full Audio = 700mA

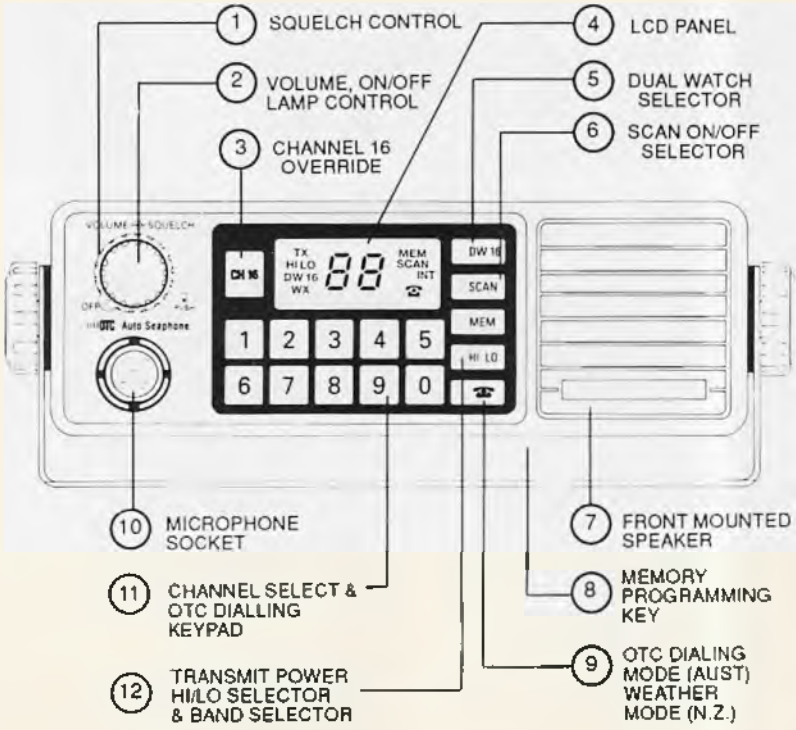
Scan Rate: 5 Channels/Sec (0.2 Seconds/Channel)
: Pause = 5 Seconds
Dual Watch: 2 Channels/2 Seconds
: Pause = 5 Seconds

TRANSMIT

Power Output: 25 Watts/1 Watt (Switchable)
Current @ 13.8 Volts: 4.5 Amps @ 25 Watts
: 1.5 Amps @ 1 Watt
Modulation: FM ±5 KHz Deviation (+20 dB Limiting @ 1 KHz)
Frequency Response: 6 dB per Octave within +1 dB and -3 dB
Hum & Noise Att: -45 dB
Modulation Distortion: Less than 3% @ ±3KHz Deviation @ 1KHz
Microphone Sensitivity: 70% Maximum Deviation @ 1 Pascal
Spurious Emissions: Better than -70 dBc
Output Power Stabilisation: Built-in Automatic Level Control
Fuse Rating: 10 Amp 30mm/32mm (3AG Type)

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE OR OBLIGATION

CONTROLS & FUNCTIONS



level about 8 kilometres inland.

We couldn't try the Auto-Seaphone facility as neither of the GX558s was registered with OTC Maritime. On the boat we used an old unknown-brand whip which had been sitting there getting uglier and uglier for years and a 3dB colinear from Antenna Agencies in Brisbane. At the base station we used a second 3dB colinear and a Scantenna-XLR discone from South Pacific Radio.

For the sea-level tests we pulled down the base station's 3dB and set it up on a length of aluminium tubing sticking about two metres out of the sand. This sounds a bit primitive but this was the only way we could think of to emulate ship-to-ship conditions in the absence of another boat.

The two 3dB antennas and the whip all showed a VSWR of under 1.3:1. VSWR on the Scantenna-XLR was zilch .... the needle didn't even flicker. Theoretically the operating range at VHF is line-of-sight between the two antennas. You can add together the square root of each antenna's height above sea-level (for ship-to-ship communications) in metres and multiply by 2.17 for the theoretical range in nautical miles, but, this is only a rough guide at best.

The old adage 'Height is Might' means exactly what it says .... the higher you mount your antenna, the further your signal will travel. The base station SLAUGHTERED the sea-level station in every respect. We used high power (25 Watts) for the serious work, although we did find that we were able to communicate on 1 watt out to between 4 nm and 6 nm at various times during testing.

We were able to communicate easily between the sea-level station and the boat on both days with any rig/antenna combination out to around 16 nm .... about what we expected even though the theoretical range is only around 10 nm. Beyond this point the old whip gave up the ghost. Switching to the 3dB on the boat extended the bothways range to around 22 nm between the two GX558s. From around 19 nm the faithful Icom was still RECEIVING beautifully but its transmissions were almost unintelligible due to background hash.

Thanks to favorable atmospheric conditions at one stage the two Electrophones really sprang into life and we were able to carry on clear conversations way out past 26 nm.

Signals were so good that the boat just kept on going until we lost contact, just to see how far apart we COULD get. VHF ship-to-ship communications over distances like this are very unusual unless both antennas are mounted high on masts.

Communications between the base station and the boat were something else again.

The discone/whip combination gave us clear audio both ways out to around 20 nm (plus the 8km over land) whether Icom-to-GX558 or between the two GX558s.

Another few hundred metres and everything deteriorated rapidly then dropped out altogether, both ways, on both days. Switching to the 3dB on the boat only added around 3 nm to the reliable communication range, but, running 3dB colinears on both the boat and the base station gave us clear,constant communication out to around 28 nm.

Again the Icom was RECEIVING everything but it just didn't have the little extra 'oomph' needed to make the trip back. As a further ad-lib test we called Redcliffe Coast Guard (VN4GX) several times on the way in and eventually received a 'loud and clear' report from around the 24 nm mark on the GX558. (We didn't try with the Icom.) As an added bonus we received a 'loud and clear' report immediately after we'd signed off from VN4GX from a trawler chugging up the coast north of Pialba. (This is well and truly outside normal VHF range ....no way it could be included as part of the test).

I must point out here that over 25 years worth of experience in radio tells me that the distances over which we were able to communicate during these tests were generally far greater than I'd be prepared to risk my life on if I needed to call for help in an emergency. Atmospheric conditions play a vital role in VHF communications and under poor conditions these distances could easily be halved. We didn't do any bench testing apart from 'ripping off the covers and poking around inside a bit' and checking output power and current drain, both of which were within a whisker of the manufacturer's specifications at just over 1 Watt (LO) and just over 25Watts (HI) with a current drain of 1.4 Amps and 4.3 Amps respectively at 13.8 VDC.

In my opinion the Electrophone GX558 is the ONLY choice if you're looking for a VHF marine transceiver, in both value-for-money and performance. Personally I'd hook one up to a high-gain antenna such as the excellent Antenna Agencies 3dB colinear even though high-gain antennas can sometimes cause signals to chop in and out a bit at close range.

ALSO THE GX 288 MARINE RIG

While we're on the subject of marine radios, don't forget the Electrophone GX288, 10 channel AM/SSB 27MHz rig. Released just prior to Christmas, the rig has proved popular and would make a good 'running mate' for the GX588 VHF unit.

Features includes:

Sophisticated Interference Suppression Circuit (I.S.C.): *Suppresses most on-board interference caused by pulse noises from outboard motors, ignition noise and external interference allowing only crystal clear audio signals to be received.*

Dual Watch Facility: *Allows the operator to monitor Emergency Channel (88) plus one other of the 9 channels available. It is ideal for yachtsmen and fishermen to monitor their club frequency plus the Emergency channel.*

Single Side Band Mode: *Using the SSB mode with increased power output and receiver sensitivity, the range of communication can be increased when talking with another operator on SSB. The new "clarifier" circuit on the GS288 allows crystal clear reception to be easily achieved.*

Public Address Facility: *When fitted with an external horn type speaker, the GX288 can be used for calling nearby boats, people ashore, or relaying directions between the Skipper and foredeck crew.*

The GX288 combines in L.E.D. channel readout as well as numerical indications around the selector knob allowing easy channel selection, either at night or in bright sunlight.

The GX288 features a highly sensitive receiver with excellent selectivity, ensuring the rejection of all strong, unwanted signals on adjacent channels whilst retaining the ability to receive the weakest distant signals.

NOTE: Skip conditions are virtually the same from Sydney as they are for all other East Coast areas — likewise Perth predictions can be taken as similar to those for other West Coast areas.

```
DATE              APRIL  1990                                                                                  ADDRESS NO. 8303
SYDNEY-JAPAN                7825  SYDNEY-MIDDLE EAST        12903  SYDNEY-CENTRAL EUROPE     16090  SYDNEY-SOUTH AFRICA       11036
27.0 MMMMMMMMMFF%%%..      MMMM  27.0  .%FFFFFFF%% ..        .   27.0      ...%%%%.......        27.0      .MMMM%%.
   MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !
      00   06   12   18   24         00   06   12   18   24         00   06   12   18   24         00   06   12   18   24

SYDNEY-C&E.COAST USA       15712  SYDNEY-WEST COAST USA     11951  SYDNEY-WEST INDIES        14950  SYDNEY-SOUTH AMERICA      13180
27.0 %%.                  %%%%%  27.0 MMMMMMF%%..     .. ..SMMMM  27.0 FFFFFF%%..           FFFFF  27.0 FFFFFFF%%              .%%FF
   MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !
      00   06   12   18   24         00   06   12   18   24         00   06   12   18   24         00   06   12   18   24

SYDNEY-NORTH AFRICA        17109  SYDNEY-PAPUA NEW GUINEA    2740  SYDNEY-ENGLAND SR         16993  SYDNEY-WEST AFRICA SR     16428
27.0 ..   %FFFF%.             ...  27.0 FFFFFFFFF%.. .        %FFF  27.0          ...%%%......  27.0 %%F%.  %F%.                .%%
   MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !
      00   06   12   18   24         00   06   12   18   24         00   06   12   18   24         00   06   12   18   24

SYDNEY-ENGLAND LR          23031  SYDNEY-WEST AFRICA LR     23596  PERTH-JAPAN                7923  PERTH-MIDDLE EAST         10077
27.0          ..           .%.   27.0 FFF%%. .F%%......    %FFFF  27.0 MMMMMMMMMMMFF%%%.     MM  27.0  .%MMMMMMMMMF.....
   MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !
      00   06   12   18   24         00   06   12   18   24         00   06   12   18   24         00   06   12   18   24

PERTH-CENTRAL EUROPE       13575  PERTH-SOUTH AFRICA         8315  PERTH-C&E.COAST USA       18614  PERTH-WEST COAST USA      14743
27.0      ..%%%%%%%....           27.0       MMMMMM%               27.0 %%.                 ...   %%  27.0 FFFFF%. .                 .FF
   MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !
      00   06   12   18   24         00   06   12   18   24         00   06   12   18   24         00   06   12   18   24

PERTH-WEST INDIES          18005  PERTH-SOUTH AMERICA       14569  PERTH-NORTH AFRICA        13941  PERTH-PAPUA NEW GUINEA     4073
27.0 %%FFFF%%.                %%  27.0 .%%%%%%%.  %.            .  27.0 ...  %FFFFFFF%.            .  27.0 FFFFFFFFF.                .F
   MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !
      00   06   12   18   24         00   06   12   18   24         00   06   12   18   24         00   06   12   18   24

PERTH-NEW ZEALAND           5255  PERTH-ENGLAND SR          14480  PERTH-WEST AFRICA SR      13804  PERTH-ENGLAND LR          25544
27.0 %MMMMFF%%.               %%  27.0          ...%%%%%....     27.0  F%%.  FFFFFF.          27.0                ....
   MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !
      00   06   12   18   24         00   06   12   18   24         00   06   12   18   24         00   06   12   18   24

PERTH-WEST AFRICA LR       26220  MELBOURNE-P.N.G.           3157  BRISBANE-P.N.G.           2090  HOBART-PAPUA NEW GUINEA    3711
27.0 %FFF%.  %FF%...          .%%  27.0 MMMMFFFFF%......     %FMM  27.0 FFFFFFFF%.            .FFF  27.0 MMMMMMMFF%....     %FMM
   MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !
      00   06   12   18   24         00   06   12   18   24         00   06   12   18   24         00   06   12   18   24

ADELAIDE-P.N.G.            2960  BRISBANE-NEW ZEALAND       2506  ADELAIDE-NEW ZEALAND      3214  DARWIN-NEW ZEALAND         5321
27.0 FMFFFFFFFF%.....        FFF  27.0 FFFFFFF%.              %FFF  27.0 FFFFFFFF%..          %%%F  27.0 MMMMMFF%..            FMM
   MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !
      00   06   12   18   24         00   06   12   18   24         00   06   12   18   24         00   06   12   18   24
```

These GRAFEX style predictions present in pictorial form the expected HF propagation conditions between Australia and a number of important DX areas. For each circuit, the "East" terminal refers to the eastern half of Australia. The horizontal axis of each graph represents the hours of the day in Greenwich Mean Time from 0000 hours to 2300, reading left to right. The vertical axis represents increasing frequency.

A GRAFEX symbol represents the predicted propagation conditions for a particular frequency at a particular time. The meaning of each symbol used is given in the key on the next page. The letter "F" designates the best conditions for HF communications.

Grafex prediction charts supplied courtesy of the Ionospheric Prediction Service, 162-166 Goulburn Street, Darlinghurst, NSW.IPS offers pre-recorded telephone information. To access the service, please phone (02) 259 8614.

LEGEND TO GRAFEX SYMBOLS

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

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DATE              MAY  1990                                                                                  ADDRESS NO. 8303
SYDNEY-JAPAN                7825  SYDNEY-MIDDLE EAST        12903  SYDNEY-CENTRAL EUROPE     16090  SYDNEY-SOUTH AFRICA       11036
27.0 MMMMMMMMMFF%%....     MMMM  27.0  %%F%FFFFF.            ..   27.0      ....%%.              27.0      MMMMM%
   MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !
      00   06   12   18   24         00   06   12   18   24         00   06   12   18   24         00   06   12   18   24

SYDNEY-C&E.COAST USA       15712  SYDNEY-WEST COAST USA     11951  SYDNEY-WEST INDIES        14950  SYDNEY-SOUTH AMERICA      13180
27.0 ...                  .....  27.0 MMMMMF%%%...     .   %%MMM  27.0 F%%%%%%%              .FFFF  27.0 FFFFFF%%               %FFF
   MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !
      00   06   12   18   24         00   06   12   18   24         00   06   12   18   24         00   06   12   18   24

SYDNEY-NORTH AFRICA        17109  SYDNEY-PAPUA NEW GUINEA    2740  SYDNEY-ENGLAND SR         16993  SYDNEY-WEST AFRICA SR     16428
27.0 ... .%%%%%.              ...  27.0 FFFFFFFF%.            .FFF  27.0          ......        27.0 FF%.  %F%                FF
   MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !
      00   06   12   18   24         00   06   12   18   24         00   06   12   18   24         00   06   12   18   24

SYDNEY-ENGLAND LR          23031  SYDNEY-WEST AFRICA LR     23596  PERTH-JAPAN                7923  PERTH-MIDDLE EAST         10077
27.0          ..            ..   27.0 .....  .%..          .F%%.  27.0 %MMMMMMMMMMMF%%...     .%%  27.0 ..MMMMMMMMM%.            .
   MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !
      00   06   12   18   24         00   06   12   18   24         00   06   12   18   24         00   06   12   18   24

PERTH-CENTRAL EUROPE       13575  PERTH-SOUTH AFRICA         8315  PERTH-C&E.COAST USA       18614  PERTH-WEST COAST USA      14743
27.0      ...%%%%%%.              27.0       FMMMMMF.              27.0 .                           .  27.0 %%%%%.                  %%
   MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !
      00   06   12   18   24         00   06   12   18   24         00   06   12   18   24         00   06   12   18   24

PERTH-WEST INDIES          18005  PERTH-SOUTH AMERICA       14569  PERTH-NORTH AFRICA        13941  PERTH-PAPUA NEW GUINEA     4073
27.0 F%%%%%%%..               .F  27.0 .FFF%%..                .  27.0 ... .%%%%%FF%            .  27.0 FFFFFFFFF                 .F
   MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !
      00   06   12   18   24         00   06   12   18   24         00   06   12   18   24         00   06   12   18   24

PERTH-NEW ZEALAND           5255  PERTH-ENGLAND SR          14480  PERTH-WEST AFRICA SR      13804  PERTH-ENGLAND LR          25544
27.0 FMMMMF%%.                .F  27.0          ....%%%%.       27.0  F%   FFFFF%            27.0                ...
   MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !
      00   06   12   18   24         00   06   12   18   24         00   06   12   18   24         00   06   12   18   24

PERTH-WEST AFRICA LR       26220  MELBOURNE-P.N.G.           3157  BRISBANE-P.N.G.           2090  HOBART-PAPUA NEW GUINEA    3711
27.0 ....   %F%                ..  27.0 MFFFFFFFF%.            .FFM  27.0 FFFFF%%%..            .FFF  27.0 MMMMMMMF%              .FMM
   MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !
      00   06   12   18   24         00   06   12   18   24         00   06   12   18   24         00   06   12   18   24

ADELAIDE-P.N.G.            2960  BRISBANE-NEW ZEALAND       2506  ADELAIDE-NEW ZEALAND      3214  DARWIN-NEW ZEALAND         5321
27.0 FFFFFFFFF%.             FFF  27.0 FFFFFF%                %FFF  27.0 MFFFFFF%.            .FFM  27.0 MMMMMFF%              FMM
   MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !      MHZ !    !    !    !    !
      00   06   12   18   24         00   06   12   18   24         00   06   12   18   24         00   06   12   18   24
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DX INTERNATIONAL

WHAT'S BEING HEARD ON THE DX CHANNELS — JACK-67-W-07

It is with deep regret that I have to announce the death of Ron, the 67-W-03 or better known as the KT-10. Ron passed away peacefully in early February and was well known around the world as a keen and dedicated DXer. He was always ready to help others.

Last year, Ron was supposed to have joined me in a mini DXpedition to Tuvalu to sign as 276-T1-01 but due to illness could not make it. Ron has been active on II metres for many years and was one of the original KT Club members and despite gaining his full call amateur licence he still managed to pop onto II metres and chat with old friends. I will miss Ron very much as he was a dedicated scribe who kept me posted to the DX happenings on the II-metre band. Having known him for around 15 years I can truly say that we have lost one of the best ambassadors we ever had on the 11-metre band.

Conditions on the band continue to be sporadic and unpredictable, but there still is ample DX for the offering. It's a case of being about at the right time to secure it. There have been some new countries appearing and this is a good sign as it keeps everyone interested. A rather noticeable increase in the amount of stations appearing from the USSR have kept us on our toes as well as the appearance of the odd station from eastern Europe. I think we will see more of the eastern Europeans as political reforms take place and thus DXers will be able to hear countries not previously heard on the 11-metre band.

Walvis Bay has been given the nod by the ARRL DXAC Committee as a new DXCC country, so there is another new one to add to your lists. In the past there has been some activity on II metres from this area, usually by way of visiting DXers from neighboring Namibia and South Africa, so it's official — Walvis Bay is now a new DXCC country.

AFRICA & INDIAN OCEAN REGIONS

Not a great deal to report from this area as band conditions to this part of the world haven't been really good although I did manage to log the 34-AT-108 operated by Peter in the Canary Islands at the rather late hour of 1622z. Peter was a rather strong five by six at the time and had his hands full working the Americans who I couldn't hear. Peter is located on Tafira Alta in the Canary Islands.

There has been a little activity from the Maldive Islands by way of Ali who signs as 152-NE-101. Ali was heard at 0540z with a rather poor four-by-one signal report and he may have been a little stronger had he not been beaming to Europe at the time.

A surprise on the band came by way of Jorge who was signing as the EXPRESS-21 maritime mobile off Morocco. Jorge was logged at 1655z with a fair five-by-four-report.

Some of the regulars from Re-Union and Mauritius Islands have been noted around 0300z onwards although their signals are down on what we are normally used to.

Amron, the JZ-02-BNU, operates out of Medan and puts a solid signal into the Eastern States.

MIDDLE EAST & ARABIA

A new one doing the rounds is III-NR-999 supposedly in Jordan. I logged this one at 1009z with an excellent five-by-nine signal and he had quite a pile-up, mostly Europeans, chasing him.

There have been some rather good signals from Kuwait with the strongest belonging to I-KA-52 operated by Omran who was noted at 1204z with a good five-by-nine plus report. He was closely followed by some fellow KA members with equally good signals.

ORION-92, operated by Ali in Lebanon, was logged at 1145z with a good five-by-six report and he had no shortage of takers in the Pacific region. Not long after I heard Ali, I noted a very weak signal from Saudi Arabia but it was too poor to be of any use at this end.

EUROPE

As usual the regular noise from Italy, France and the UK has been heard and at times with very strong signals. The 163-At-131 operated by Ken in Wales was logged at 1032z with a good five-by-nine report and he was immediately followed by the 163-AT-144 operated by Ian at 1056z with a signal of five by eight but subject to heavy fade at the time.

Guernsey Island has been about by way of the 169-AT-113. Ivan was busy working a number of Australian and New Zealand stations at 1133z and at the time he was a good five-by-five signal.

DX INTERNATIONAL

WHAT'S BEING HEARD ON THE DX CHANNELS — JACK-67-W-07

Luxembourg is still about for those who need it, and at 1229z I heard the 54-AT-108 calling with a good solid five-by-nine signal although he quickly faded out soon after.

Some big signals have been coming from Scandinavia with the strongest being the 20-AT-103 operated by Paul in Norway. Paul was five by nine at 0925z and was closely followed by well known DXer George, who signs as the 21-AT-127 in Sweden. Better known as the 'coffee cup' collector, George was five by seven at the time but was a victim of heavy fade.

A rather strong signal from the Shetland Islands was heard at 1145z by way of John who signs as the LB-200. John was five by eight and was using a Cobra radio into a Moonraker antenna and was chasing Japan, Korea and Taiwan at the time.

The odd signal from Iceland has been noted although the signals are very poor. A station was heard at 0833z signing as KILO BRAVO but he was barely readable at the time.

An interesting one to note was a station signing as MARCO POLO who was logged at 1130z. MARCO POLO is operated by Jean-Claude who is maritime mobile off the coast of Corsica on a yacht. Jean-Claude plans to sail to Malta.

Some more activity from the USSR has been noted by way of Kark who signs as the UA-004 from a location near Moscow. Karl was noted at 0952z with a fair five-by-three report and was looking for stations in Asia and the Pacific.

Poland has been about the band and at 1004z I logged station KILO KILO with a steady five-by-two report. He proved difficult to secure as his English was very poor but I understand that he was about 40 kilometres from Warsaw.

Quite a few Italian stations were heard calling a station in the eastern European country of Bulgaria at 1149z. There were so many of them calling I failed to hear the Bulgarian station at all so there is further proof of the increased activity from within the countries that make up eastern Europe.

CENTRAL/SOUTH AMERICA & THE CARRIBBEAN

There has been quite a lot of activity from this region recently giving many of us the chance to pick up the odd new country or two. The usual big guns from Costa Rica, Venezuela, Colombia, Panama and Guatemala have been there in force, and at times make it difficult to hear other countries.

A good strong signal was logged by way of Paul, who signs as the TROPIC-19 from Nassau in the Bahamas. Paul was heard at 0520z with a five-by-nine plus signal and was keen to work into New Zealand and the Pacific Islands.

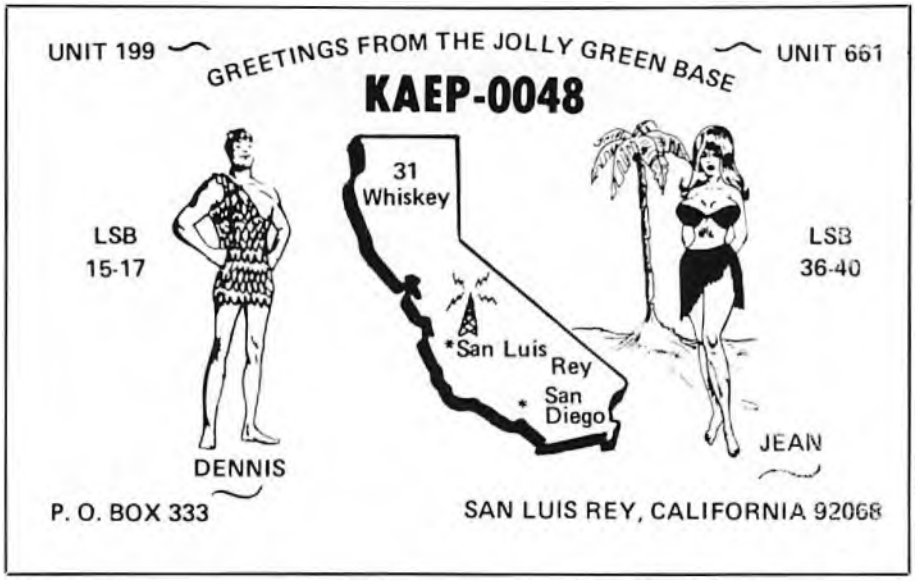
Barbados, in the West Indies chain, was noted at 0247z with Robert, the 122-AT-123, putting a rather solid five by nine into eastern Australia. Robert had no shortage of takers to his call and was still good one hour later.

Bermuda was also noted at 2310z with Robert, signing as the DT-408, being heard. He was a good five by five but faded out very quickly as conditions were very poor and sporadic at the time.

Quite a bit of activity has been noted from Ecuador with the 61-SL-08 operated by Pero most active. Pero was heard at 0408z with a five-by-eight report and was busy working into Indonesia and the Philippines.

Curacao in the Netherlands Antilles was represented by way of Ron who was signing as the 7-AT-102. Ron was a good five by seven at 0302z and was kept busy with a large number of Australian stations still

Sami, the 102-AT-115, is one of the stronger Kuwait stations — he obviously has a hobby of collecting bank notes from other countries as there's plenty of them on the wall behind his expensive equipment.



Jean, operating out of San Luis Rey in California using the KAEP-0048 callsign uses an FT101E into a Monnraker four element Yagi.

needing the country.

A very strong signal from the Dominican Republic was noted at 0242z by way of Miguel who signs as the 37-AT-110. Miguel was a good five by nine plus 20dB and the signal held quite well for nearly an hour before eventually fading out.

French Guyana was about the band by way of Jean, who signs as the IC-005 from Cayenne. At 2255z Jean was a five-by-three report and was using a President Washington base radio into a ground plane antenna at 35 feet. Jean works at the French Ariana rocket launch site as a technician and will be in French Guyana for around two years.

As usual the regulars from Brazil are still about along with Paraguay, Peru, Chile and Suriname, however signals from Argentina and Uruguay are still yet to improve and remain very weak for most of the time.

ASIA & THE PACIFIC REGION

A new station doing the rounds from Singapore is PR-01. He was noted at 1027z at a very poor five-by-two report and had no shortage of European callers.

A rare one worth looking for is the 105 from India who was logged at 0952z at a barely readable four by zero. There were quite a large number of Europeans in hot pursuit but I failed to hear if anyone managed to secure a contact.

There has been reports of an Italian station currently active in India signing as 57-AT-101. He was heard at 1050z with an unuseable signal.

Increasing activity from Taiwan has meant that this country is becoming relatively easy to work and by now most DXers should have at least two cards from Taiwan. At 0940z I logged the TW-029 operated by Tony in Taiwan. Tony was a five-by-seven report and had quite a pile-up on his hands. Another one doing the rounds is the TW-451 operated by Eric. At 0337z Eric was five by six and was looking for South America. Soon after I heard Eric I picked up a good signal from station COSMOS also from Taiwan. He was a good five by nine plus 10 at 0359z and gave his location as near Taipei.

Another Sakhalin Island station has appeared on the band by way of Ken who has been signing as the 303-SR-02. Ken was logged at 0444z with an impressive five by nine plus 20dB signal and he was quite busy with a pile-up of Australian and Indonesian stations wishing to make the contact. Shortly after, Ken was joined by the 303-SR-01 also on Sakhalin Island. I believe than Serjes is now the 302-AT-101, and by now most of you should have your QSL card from Serjes as most of the backlog has now been cleared.

West Malaysia has been about for the taking by way of regular DXer Deen, who signs as 113-AT-101. Deen was a good five by nine plus 20dB at 0305z.

Papua New Guinea is still about for those who still need this one. Patrick, who signs as 101-AT-101, was logged here at 2357z with a solid five-by-nine signal.

Some activity from Moscow was noted by way of Alex, the 50-AT-103, who was heard at 1131z but was a very poor five-by-one report and was dropping in and out of the noise level.

Sporadic signals have been heard from Easter Island with one of those being a 141-AT call. He was heard at 2234z working a station in Chile who gave him a five-by-nine report although he was barely readable here.

DXPEDITION NEWS

I failed to hear the rumored DXpedition to Djibouti, which was supposed to have appeared in the period 12-14 February although I believe that it did in fact appear, the call being used was 186-ICC-00.

The DXpedition to the Galapagos Islands appeared on time signing as 145-AT-0 over the period of 25 February to 3 March. QSL route is via 61-AT-112 in Ecuador.

The US Virgin Islands will play host to a DXpedition signing as 127-AT-0 commencing over the period of 24 to 25 March. At the moment the QSL route is unknown.

Guyana (ex-British Guyana) will be on air as 131-AT-0 from April. This one will be a popular exercise as many a DXer needs this country. QSL route to be announced.

It is rumored that a DXpedition to Czechoslavakia will take place on 26 March and will sign as 179-AT-0. I hope that this one does appear as there are quite a few who need this one. QSL route to be announced.

Desecheo Island is to be activated by way of an AT Group DXpedition over the period of 25 to 28 May and will be signing as 299-AT-0. At present QSL arrangements are unknown.

Still no news on the rumored DXpedition to Minami-Torishima at present so we will have to keep our fingers crossed for that one.

It is unclear as to whether Sture, the 212-AT-105, and the team plan to return to Market Reef this coming July to sign as 213-AT-0. Will keep you posted on that.

LATE DX NEWS

Marshall and Caroline Islands

Steve, the 43-AT-421 will be part of a DXpedition to the Marshall Islands from 13 to 19 May. He will be signing as the 132-AT-KX. The party will then move to the Caroline Islands and operate as the 230-AT-KC from 19 May to 25 May. He will be particularly looking to work as many Australian stations as possible and he advises that all QSLs should go to the 43-AT -421.

Once again that is it for this edition. Thanks as usual go to those who have kept me informed. 73 Jack.

AUSTRALIAN UHF REPEATER LIST

AREA	CHANNEL
ACT	
Canberra	2-32
Canberra	7-37
New South Wales	
Albury	6-36
Armidale	4-34
Bathurst	8-38
Bega	6-36
Belbora	1-31
Binya	3-33
Blue Mountains	2-32
Bombala	1-31
Booral	7-37
Bowral	6-36
Brewarrina	1-31
Brindabella Ranges	7-37
Broken Hill	4-34
Broken Hill	7-37
Buladelah	7-37
Casino	6-36
Cobar	8-38
Coffs Harbour	6-36
Coolah	6-36
Cooma	4-34
Coonabarabran	4-34
Corowa	2-32
Corowa	5-35
Corowa	7-37
Deepwater	5-35
Deniliquin	3-33
Dungog	3-33
Eden	2-32
Glen Innes	7-37
Grafton	8-38
Grenfell	1-31
Goulburn	4-34
Gundagai	7-37
Guyra	1-31
Harden	1-31
Hay	4-34
Inverell	2-32
Jindabyne	1-31
Junee	5-35
Lismore	2-32
Mururundi	3-33
Muswellbrook	4-34
Narrabri	2-32
Narrandera	8-38
Narromine	5-35
Narromine	6-36
Newcastle	1-31
Newcastle	2-32
Newcastle	6-36
Orange 3-33Port Macquarie	2-32
Sydney (south)	1-31
Sydney (west)	3-33
Sydney (outer-west)	4-34
Sydney (north)	7-37
Tamworth	1-31
Tenterfield	3-33
Tumbarumba	3-33
Tumut	6-36
Tweed Heads	4-34
Wagga Wagga	1-31
Wagga Wagga	5-35
Walbundrie	2-32
Walcha	8-38
Warrumbungles	1-31
Wingham	1-31
Wilcannia	1-31
Wollongong	8-38
Northern Territory	
Bushy Park	1-31
Darwin	1-31
Erlunda Station	3-33
Katherine	2-32
Maryvale Station	4-34
Mt Swan	2-32
Queensland	
Amiens	8-38
Atherton	8-38
Ayr	3-33
Barcaldine Downs	1-31
Bathurst Heads	1-31
Biloela	7-37
Brisbane	1-31
Brisbane	5-35
Brisbane	7-37
Bundaberg	1-31
Bundaberg	4-34
Caloundra	6-36
Cairns	3-33
Chinchilla	3-33
Chinchilla	8-38
Clermont	6-36
Clermont	7-37
Crows Nest	6-36
Dimbulah	6-36
Dingo	6-36
Dirranbandi	8-38
Disreali Mine	8-38
Drummond Range	2-32
Emerald	8-38
Gladstone	2-32
Gladstone	6-36
Goondiwindi	4-34
Gunalda Range	2-32
Gympie	3-33
Gympie	5-35
Gympie	7-37
Hayman Island	4-34
Hervey Bay	8-38
Ingham	2-32
Inglewood	1-31
Innisfail	1-31
Ipswich	4-34
Jericho	4-34
Kilcoy	3-33
Lakeland	2-32
Longreach	3-33
Mackay	1-31
Mackay	6-36
Marlborough	2-32
Maryborough	6-36
Monto	3-33
Moranbah	4-34
Moura	1-31
Mt Isa	1-31
Mt Kynoch	2-32
Mundubbera	6-36
Murgon	7-37
Port Douglas	6-36
Quilpie	2-32
Rockhampton	1-31
Rockhampton	4-34
Roma	1-31
Springsure	3-33
Sunshine Coast	6-36
Sunshine Coast	8-38
Tambo	6-36
Taroom	2-32
Thargomindah	6-36
Toogoolawah	1-31
Toowoomba	2-32
Toowoomba	4-34
Townsville	1-31
Wavell Heights	2-32
Wide Bay	1-31
Yaraka	7-37
South Australia	
Adelaide	1-31
Adelaide	3-33
Adelaide	5-35
Angaston	4-34
Blinman	3-33
Carrietown	1-31
Ceduna	1-31
Clare	7-37
Cleve	2-32
Coonalpyn	6-36
Coppuduruba Hill	1-31
Hawker	7-37
Kangaroo Island	4-34
Manum	8-38
Mt Bryan	8-38
Mt Gambier	5-35
Mt Gambier	7-37
Myponga	2-32
Naracoorte	4-34
Orroroo	2-32
Port Lincoln	8-38
Port Pirie	4-34
Renmark	6-36
Snowtown	6-36
Tarcoola	6-36
Wilkatana	8-38
Yorketown	7-37
Tasmania	
Burnie	8-38
Central Highlands	7-37
Devonport	1-31
East Coast	6-36
Fingal	3-33
Hobart	1-31
Hobart	5-35
Launceston	2-32
Midlands	4-34
North East Coast	7-37
West Coast	6-36
Victoria	
Alexandra	1-31
Ballarat	2-32
Ballarat	5-35
Bairnsdale	7-37
Beech Forest	3-33
Bendigo	4-34
Cavendish	8-38
Curranjung	4-34
Echuca	6-36
Euroa	3-33
Falls Creek	3-33
Foster	6-36
Geelong	4-34
Halls Gap	6-36
Hamilton	5-35
Harcourt	8-38
Hawkesdale	4-34
Horsham	3-33
Kerang	2-32
Mansfield	2-32
Melbourne (north)	1-31
Melbourne (metro)	3-33
Melbourne (metro)	5-35
Melbourne (south)	7-37
Mildura	3-33
Moe	2-32
Mornington Pen.	8-38
Mt Cann	8-38
Mt Concord	6-36
Mt Delegate	3-33
Mt Terrible	8-38
Myrtleford	8-38
Penshurst	1-31
Shepparton	7-37
St Arnaud	1-31
Swifts Creek	1-31
Talangatta	7-37
Wangaratta	6-36
Waubra	7-37
West Australia	
Albany	2-32
Albany	3-33
Augusta	7-37
Boyup Brook	4-34
Bunbury	2-32
Carnamah	2-32
Carnarvon	2-32
Coolgardie	7-37
Darkin	6-36
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NOTE: This list includes repeaters licensed but not yet operational. It is compiled from various sources, and relies upon reader input to remain accurate. Corrections and updates may be sent to: CBA Repeater Listing, PO Box E160, St James, NSW 2000.

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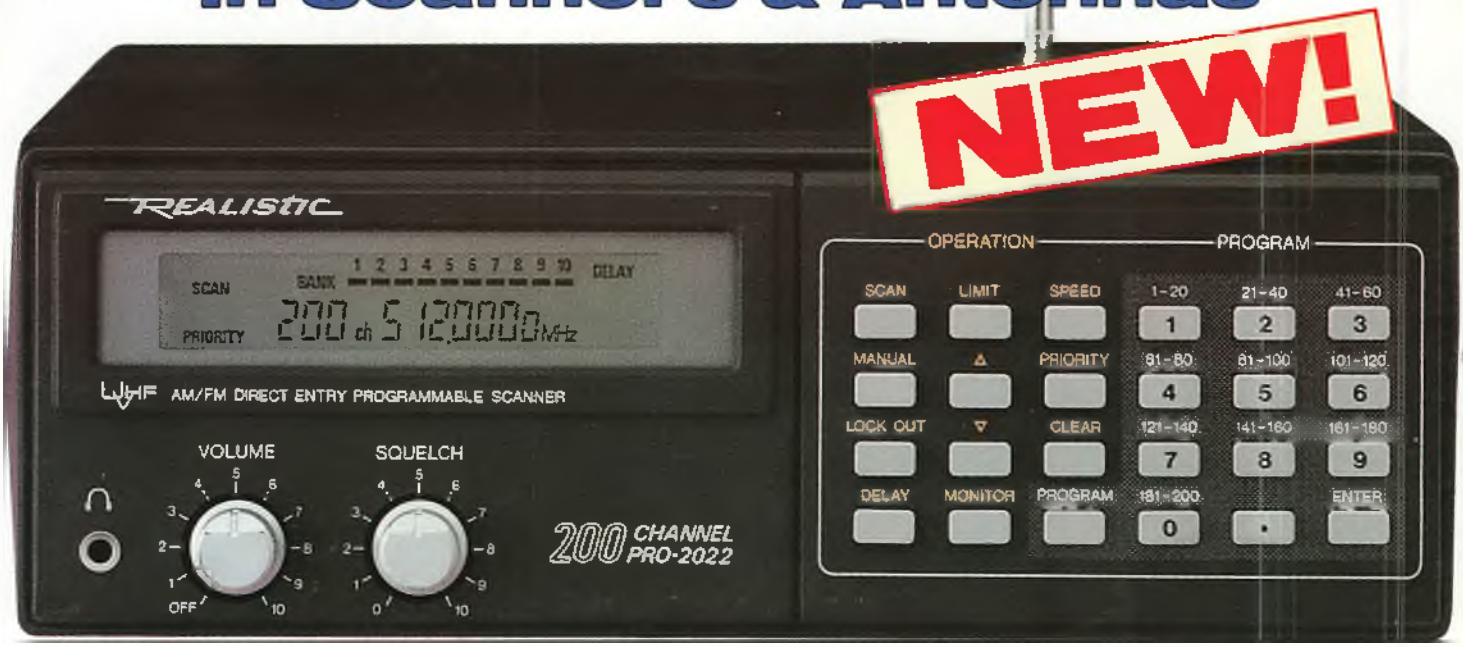

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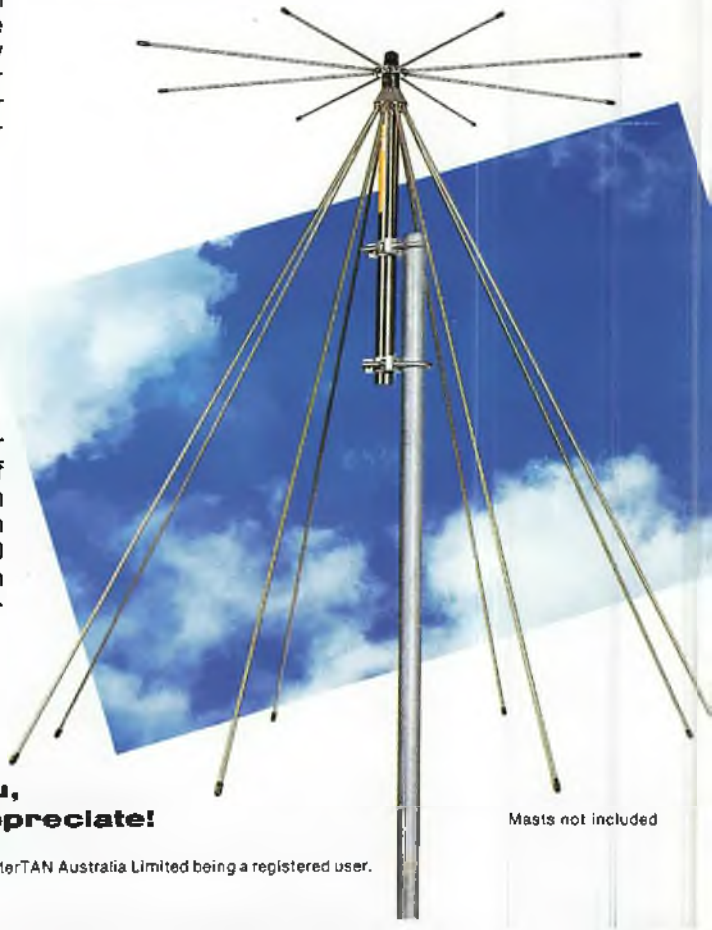

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