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THE PROPAGATOR

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The Newsletter of the Illawarra Amateur Radio Society

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Priceless.

EDITORIAL

The fifth Propagator in this current series owes much to the contributors who have so kindly given material for inclusion. Not all items submitted have been included. Some have had to be held over for the sixth issue in this series, some others made it - with appropriate editorial amendments. Others yet await to see the light of day and will be handed on to the next editor, whoever that happens to be.

Perhaps the single greatest resource this club has is the skills of its members. We are far less than a hundred in number, yet amongst us we number some pretty diverse skills. We have teachers and truck-drivers, self-employed people and employees of one of the biggest corporate organisations in the country as well as small businessmen and retirees.

This well of skill and knowledge is frequently drawn upon by the IARS when things need to be done or organised. It may be something as simple as some welding to repair or manufacture an antenna-mounting bracket for a repeater to something as complex as the design and construction of microwave equipment. No matter what the task, within our ranks we generally seem to find someone who either can do the job themselves or knows of an organisation or

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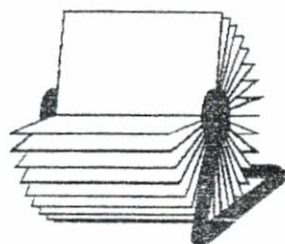
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●DISCLAIMERS: Opinions expressed in the editorial and other parts of this publication are not necessarily those of the IARS or its committee. Contributions may be edited for layout or other compositional/editorial requirements. Registered Trademarks are the property of their owners. There is a one-in-seven chance you're reading this on a Monday.



Coming Events:-...

☺ Club Meetings: Tuesday 9th June 1998, Tuesday 14th July (American Independence Day), as usual in the SES Headquarters, Montague Street, North Wollongong. Be there! (August meeting - see below)

☺ Temporary Escapees: Our very capable Canteen Manager, Vic Hee (VK2KVH), is departing for a number of months. Also departing for some marine cruising is our Treasurer, Rob Skelcher (VK-2TNK). These vacancies will require some selfless member(s) of the club to come forward and assume the duties during these periods of absence. The committee would be ecstatic to hear of your desire to fill these temporary vacancies.

☺ The Annual General Meeting of the IARS will be held on Tuesday 11th August in the SES building, Montague Street, North Wollongong. Your presence is kindly requested.

individual who can do it for us. We have indeed been fortunate that various requirements for particular - or peculiar - skills have usually been met from within our ranks.

However, things will not always be thus, nor indeed can they continue to be so without one very important thing - new members. We as a group are not self-perpetuating, nor is our hobby. Our average age must surely be somewhere towards 55, probably more. Whilst the older of our members can look back with justifiable pride and satisfaction on many decades of wireless and radio developments, the view looking back is a historic one and, in a sense, a futile one. It is fascinating and amazing to see how the technology of communications has developed, but the view backwards offers little insight into the future of amateur radio and even less of the IARS as an organisation.

We need new members! It's been written before in these pages but that does nothing to diminish the fact that our club is not growing - except for the average age of the membership. Perhaps one of the problems in attracting members is that club membership for our activity is not compulsory. Pause for a moment and compare this to the situation with shooting clubs where membership is for most a prerequisite for retention of a shooting licence and a specific number of events have to be undertaken each year to keep that licence. I can tell you that shooting clubs are experiencing an influx of new members which, were it to be repeated in the IARS, would put a smile on the Treasurer's face to rival that of a Cheshire cat! What has driven the shooters to become members of established, approved organisations is government regulation. I very much hope we as amateurs never find ourselves in the sort of situation the shooters are currently facing, but it has undeniably fostered a significant boost to membership of their clubs - and their strength.

We too need numbers, both within the IARS and in the hobby as a whole. As amateurs, our problems are not (yet) political inasmuch as it seems unlikely governments will ever place such stringent requirements on us - at least I fervently hope so. If amateurs cannot be compelled to join our club, then they must be enticed. For this to happen we need something to offer: something whose benefits far outweigh the cost of membership per year. We are an organisation of integrity, so whatever we offer has to be straight up with no hidden liabilities or "strings attached".

I have not the faintest idea what we can offer - apart from the fellowship which exists within our club by virtue of its existence - but we need to find something which will swell our ranks with new members or the IARS as we know it - and eventually the hobby itself - will wither and die. There is nothing intrinsically wrong or politically-incorrect with our hobby yet it doesn't have the appeal it used to have. How did we lose that appeal, and when, and why? Unfortunately, there are no easy answers - and plenty of "red herrings". For example, don't think getting rid of Morse Code is going to make any difference. It's not Morse Code that discourages people from getting their licences and ultimately joining the IARS. You could get rid of Morse *and* the theory examinations entirely and it still wouldn't make any difference to our numbers. The malaise is much, much deeper. How many times have we had a visitor to a meeting who has never come back or even got his licence? Even once was once too often. He didn't come back because we failed to follow up his interest. We failed and because of that we lost a potential new member. So why did we fail...

Do we suffer from the stereotypical image of an eccentric pottering about in a shed with valves and bits of wire? Are we still confused with CBers by the media? Are we perceived by potential new members as a group of radio-freaks talking their own special language? Has the ubiquitous mobile phone removed the mystique of two-way communication? Have computers and the Internet made communicating "long-distance" too easy? Are we just "boring old farts" to a public bombarded incessantly by, and fed up with, the electronic media? If you can think of any answers, please, please tell us because to survive (let alone prosper) we must get out and sell our hobby as a worthwhile, rewarding and vigorous activity with a bright future. Above all else, this hobby must - absolutely must - get new members, soon. Without them, we are finished. Over to you...

1998 - The Year that Howard Booth, VK2AMD, the Inaugural President of the first radio club in Wollongong turned 90 years old and VK2AMW enters it's 50th year as our club station callsign.

As we advised in the last issue of the Propagator, 1998 is the 50th Anniversary of the founding of amateur radio club activities in Wollongong and of the granting of club station licence VK2AMW. It is also the year of the 90th birthday of the Founding President, Howard Booth - VK2AMD.

As such it provides the opportunity for the present members of the Illawarra Amateur Radio Society to think about arranging suitable tributes to those who advanced organised amateur activity in the Wollongong area during the 1940s and 1950s. They may also wish to somehow commemorate the commencement of the 50 years of history associated with our club callsign - VK2AMW.

Taking current matters in chronological order - Howard, VK2AMD, had his 90th birthday on 6th March 1998 and it was decided by the members of the IARS at the February monthly meeting that the club should present to him some token of our recognition of the event.

At the following Committee Meeting it was decided that Brian, VK2UBF, should present to him, on behalf of the club, a birthday card and bottle of Scotch (which is his favourite addition to his cups of tea) These were duly delivered by Brian and Lyle, VK2ALU and handed over to Howard with the best wishes from the club, during a cup of tea ("brewed" according to Howard, "the way they make it in England") at his house, on the day prior to his birthday.

His birthday party on 6th March was a small family affair held in his back yard to which Lyle and Dot Patison (who have known Howard for some 30 years and who provided him with another bottle of Scotch) and Eve, wife of our late member John Simensen (VK2ANO, who was a close friend of Howard's for many years) were invited. During the short speeches following the party the opportunity was again taken to pass on to him congratulations and best wishes from the members of the IARS.

The following resume of the early days - both of Howard's life, his association with the club in the late 40s and early 50s, and also of radio club activities in Wollongong during that era - are set down to provide a background for any interest that the present members of the IARS may decide to take, at the appropriate dates in 1998, of giving recognition to events of 50 years ago.

The information comes either from talks with Howard and others who were involved at the time, or from early episodes of my 40-part series of articles titled "Way Back Then" in the September 1991 to June 1995 issues of "The Propagator".

Firstly, a bit of background. Howard Booth was brought up in the city of Sheffield, South Yorkshire, England, where he and his family lived up until the time that he, his wife and two sons, emigrated to Australia, arriving in Wollongong in May 1948.

Howard had been interested in radio as a hobby since his tender years. He sat for and passed an examination in Morse Code at 20 WPM, (which was required before he could qualify for an Amateur Licence at that time) on 26th January 1923 - at the age of 14 years!

It is believed that he went on the air about that time ("because I could not afford the cash to get a licence!") and it was about 1926 or 1927 before he obtained it, along with the callsign G2AS ("which I still hold"). He continued to operate an amateur station under this callsign up to and again after WWII until he came to Australia.

As a matter of general interest, Howard has been very much involved in the sport of weightlifting since he was a teenager and won championships back in England in his younger days. He conducted weightlifting classes until he was into his 80s and has trained some well-known weightlifters. He still lifts weights as a regular exercise and his physical condition at age 90 certainly attests to its benefits!!

From here on, Howard's early activities in Wollongong are closely linked with those of the local

radio club. Shortly after he and his family settled in the city he was approached by some of the (very few) local Radio Amateurs (of which one, Greville Dennys - an army officer - is known to have held the callsign VK2UK) and asked if he would form a club covering Amateur Radio activities in the area.

Meetings of the Wollongong Radio Club subsequently commenced at the Technical College in Gladstone Avenue in June - with Howard as Founding President.

As was usual in those days, the construction of a Club Station was made an early priority. Howard tells of building the transmitter and receiver at his place of work, which was H. G. Palmer's Electrical and Radio Store - where he was able to obtain the parts.

The transmitter - containing two 807 valves in push-pull in the final - was built over a period "of about 24 hours" It was, of course, crystal controlled (they ground their own crystals from watch glasses etc. in those days) - It operated on 40 metres and later, when a doubler stage was added, on 20 (and also at some time on 80?) metres. He says that "the parts of the original transmitter cost about ten bob"!!!

In order to be able to set up their equipment, the club had to move from the Tech to suitable premises, so Reg Waters, VK2WV (a club member and radiographer at Wollongong Hospital) offered the use of a shed at the rear of his house at 21 Bourke St, North Wollongong.

Club Station operation commenced with two test transmissions to VK2WV on 5th and 6th July 1948 - according to the first Logbook (which was passed on to us - and is presently held by VK2ALU)

At that time it was necessary to use the callsign of a licenced amateur who was present as the club station callsign had not yet been issued.

The first contact outside the Wollongong area was on CW, with Charlie Fryar, VK2NP, the President of the Gladesville Radio Club. It was most likely on 40 metres.

Although many of the early contacts were on phone, Howard urged that CW should be the only mode used, as he was concerned that new unlicensed club members may satisfy their urge "to get on the air" by operating on phone from the club station rather than study for their own licences, using the Morse and theory tuition being offered by the club. All amateurs in those days were "Full Calls" and had to first operate for six months on CW only, before being granted phone privileges and only after satisfying a Radio Inspector, when he carried out a station and logbook inspection, that they had actually used CW (and not phone) for those first six months!!

The station log shows that, (as a result of Howard's insistence,) all contacts from about the end of August were on CW. This continued for some time thereafter.

Howard received his Australian licence, under the callsign VK2AMD, in September - but it was 3rd December 1948 before the club received its station licence, under the callsign VK2AMW.

When Howard and his family moved residence out of town to Ocean St Windang (where he still lives) he relinquished the President's job in the Wollongong Radio Club to Eric Fisher, VK2DY, who remained in that position until the mid 50s.

Howard still kept in close contact with the club when, after about two years at Bourke St, it moved again so it would be at a more accessible position near the centre of the city. He offered them the part-time use of his gymnasium, which was in a room "behind Passlows shop" - then located at the lower end of Crown St. The rent of five shillings per week was shared between Howard and the club.

When the station was set up at this location it use an end-fed antenna with 300 ohm feeders.

The club was forced to move again in June 1952 because Passlows wanted to use Howard's Gym. for a stocking factory.

The next meeting place and club station location was at the home of Col Meering (a member who did not have a callsign) at 45 Rosemont St. West Wollongong. Some of the club members transferred there but others found it more convenient to gather on a Sunday at Howard's home in Windang - where they continued to meet - and receive Morse Code training etc., if required "for some years".

Others in the club went to Rosemont St where they could use the club station, which resumed operation under its VK2AMW callsign on 5th July. Tuition in Morse Code and theory was also available.

On 25th June 1953 the transmitter at VK2AMW was taken off the air for modification. Unfortunately this project was never completed - "and due to this and other factors, numbers dwindled over the next year or so" - meetings eventually ceasing.

Col Meering continued to renew the VK2AMW licence each year (it cost him one pound for renewal in 1956) up until about 1957 or 1958 - at which time, he tells that "I was contacted by a local amateur who was one of a group planning to reactivate the club" He passed the licence information on to them, but did not take part in any of their activities.

A large sheet-metal sign - received from Col Meering at Rosemont St in 1991 - is still in existence (at VK2ALU's place) - it reads:-

HEADQUARTERS
WOLLONGONG
AMATEUR RADIO CLUB
VK2AMW

Other details over this period are covered in Episodes 1 and 2 of my "Way Back Then" series of articles in the Propagator.

(contributed by Lyle Patison VK2ALU.)

The Briggs/Chase Law of Electronic Development:- To determine how long it will take to design, prototype, test and mass-produce a new electronic device, take your best estimate, multiply that by two, add one - and convert to the next highest unit.

TROUBLE-SHOOTING OLD VALVE RADIOS

Sooner or later someone's going to cross your path carrying an old mantle radio, or ask you to get their old valve-powered Motorola radiogram working again.

(mantle radio, n.: radio receiver popular in 40s & 50s fitted with tuning dial showing Australian AM radio stations identified by callsigns - all in the wrong place since the AM station bandwidths were reduced a couple of decades ago. Uses thermionic valves. Case either a cream or brown bakelite, with similar knobs for on-off, volume and tuning. Real cloth covers the speaker which will be somewhere in the middle of the unit.)

Your neighbour will say it has worked perfectly for forty years but recently it's begun to fade a bit. Beware! If he gets the thing inside your front door, you're stuck...there is no way out. As the local radio ham you're the expert and if you value your



reputation then you'd better get some sounds coming out of the old handwarmer - or else!

Begin with the easiest tests first - voltages. If you've forgotten, valves have a source of electrons (called the cathode and heated by the filament), a grid (to which is applied a controlling voltage which may also be the voltage to be amplified) and an anode (which attracts electrons due to a relatively high positive potential applied to it). So, our friendly valve needs at least two distinctly separate voltages. On the filament (the little bit that glows) it needs a low voltage, usually about 6.3 volts. Although the voltage is low, the current drawn can be surprisingly high. Each filament can draw a couple of amps. With several valves, expect a total current on the heater supply of anything up to fifteen amps or more. The second voltage is applied to the anode (i. e. the plate) and it's generally several hundred volts. On a radio receiver it probably will not exceed six hundred volts. On a valve transmitter, especially one which outputs a moderate level of power, it may be a couple of kilovolts - or more. WARNING! These voltages can bite. How do you find them?

Are the heaters glowing? Good. They're probably working fine. Testing for heater voltage is easy - just find a valve base diagram for the particular valve (old ARRL manuals are excellent sourcebooks for this stuff), find where the heaters are connected and apply multimeter probes. Got 6.3 volts? Even better.

Testing plate voltage requires a little more finesse - and possibly a high-voltage probe as well. The good news is although the voltage may be high the current capacity is low - milliamperes is the norm. Actually, you may not need your meter, especially if the valve is a bit gassy or "soft". You'll see a faint blue glow in the envelope around the anode. Terrific! (The voltage is all right but the valve is due for replacement). If there is no glow, get the HV probe and measure it. If you suspect the valve is loading down the plate supply, disconnect the plate lead (or pull the valve out of the socket) and measure open-circuit plate voltage. Got several hundred volts? Fine. Some valves (6DQ6s, for example) have a metal tip at the top of the valve for the plate supply, others have it connected at the base. You may need to look up the base diagrams to see which pin has the EHT on it. Don't forget your high-voltage probe, and it's a good idea to work with one hand behind your back rather than risking the whole EHT going across both arms (and your heart, on the way though) if you accidentally slip. Another caution is to remove any rings and your watch when working on this sort of gear. I'm not joking about this. Once bitten, twice shy.

If you haven't got these voltages then the power supply is the problem. Valves don't magically *make* power out of thin air - they simply control the release of power from a power supply. (You knew that.) So, expect to find a fairly hefty old-fashioned transformer, with some heavy-duty rectifiers and high-voltage capacitors. Check you're getting HV AC from the transformer secondary (there will probably be several secondaries but they will usually be labelled and you're looking for the plate voltage which will be the highest). If you're not, check for mains AC at the primary terminals. None? Check the ON-OFF switch, the cable and the plug. If you've got primary voltage but no secondary voltage on one (or more) of the secondaries, the transformer is crook (either open-circuit or shorted-turns if it is running very hot) and on old gear you can often haul them out and get them rewound. Let's hope so, because you probably won't get a new transformer anything like it.

If you have all the right sort of voltages from the transformer but nothing out of the rectifier then either the rectifiers or the filtering capacitors are shot. You may have to hunt around a bit for high-voltage replacement components but they can be had although they will be comparatively pricey compared to more modern components.

All right, let's say all the supplies are correct and the valves have heaters and plate voltage. Check the speaker isn't crook - after all, you won't hear a damn thing unless the speaker is working. Also, look out for hidden "stand-by" switches. I recall a valve guitar amplifier which had an On-Off switch on the front panel and a Standby switch hidden at the rear. The function of the standby switch was to

switch off the plate voltage whilst leaving the heaters on. This meant the amplifier was ready to go instantly just by switching from standby without switching heaters on and off and on again (which is very stressful for filaments and explains why valves switched on and left on generally out-last valves which are repeatedly turned on and off).

Got some noise now? Do your testing on the AM broadcast band where signals are strong. Hook up an antenna and check the leads from the internal ferrite antenna are connected. Alternatively, force a 455Khz signal into the IF. Wiggle the valves in their bases - it helps clean the pins and remove any tarnish or corrosion. If you haven't got a sig gen, rig up a 555 running at about 100Khz as an astable and put a DC-blocking capacitor (rated at 240V or better) on the output. It will generate square waves and the harmonics will get into the IF. If there is any life in the radio, it will squeal! You would normally inject the signal at the grid. If you want to inject at the plate, choose a high-voltage DC blocking capacitor or risk losing your 555 signal-injector. (Warning: abused 555s can explode!)

This is a good time to give the bandswitches, other switches and pots a good shot of one of those beaut products made by companies like Electrolube - contact cleaner, switch cleaner etc. Work the switches vigorously and likewise the pots to clean wipers and contacts. Pots that have been left in one position for years can be very noisy initially but a good squirt and a couple of minutes of vigorous exercise works wonders. Do this now. A crook switch or dud pot may advertise itself by falling apart or breaking during this process. Don't worry - you're making progress!

If you can get a signal through the radio on the AM band you can align the IF by ear. Find the highest fidelity station you can tune to optimise the bandpass and remember it is possible to align the IF at the wrong frequency and if you do the BFO (if there is one) won't work for snoot. If you have a signal generator it is best to use it initially for IF alignment as well as using it for calibration of the band edge.

If you're getting signs of life now but they are not all that strong, it's time to look for "organic" problems. About all that's left is the signal path and that's *usually* to a valve-grid via a grid-biasing resistor with DC-blocking capacitors where necessary. Many valves have multiple grids - one for signal, one for AGC voltage and so on. All the components for this part of the signal path are normally found underneath the chassis. Speaking of the chassis, it will probably be pressed zinc-plated steel or aluminium and may be "live" with mains voltage. *Mains voltages can be fatal.* Always remember you are dealing with much higher voltages in valve equipment compared to solid-state. It could save your life.

Turn the receiver (or whatever) upside down. Chances are you'll find all the resistors and capacitors and wiring are point-to-point and directly soldered to the terminals on the underside of the valve bases (or sockets). You'll also find a lot of electrostatically-attracted dust (the thickest coating frequently indicates the components carrying the highest voltages - beware!) and much of the wiring may be cotton-covered rather than plastic-coated. Vacuum away the dust (top and bottom of the chassis) and you will be surprised to see the resistors are big, mahogany-coloured jobs with coloured rings or actual values painted on them. These are not puny little half-watt jobs. These are two-watt and five-watt, probably carbon types and pretty generous in tolerance.

Visual inspection can now uncover a multitude of sins. Look for burnt resistors and capacitors which are showing signs of heat-induced stress...discolouration and dry soldered joints are dead giveaways. Found some? Haul 'em out and either find replacements or learn to parallel lower power ones to get the required rating. Any dodgy soldered joints? Fix 'em. See any leaking capacitors? Replace 'em.

Okay, so you've tarted up the underside, replaced the three burnt resistors, re-connected the frayed wiring from the tuning capacitor (that thing with interleaved aluminium plates driven by the thin dial-cord running around a clever system of pulleys which hopefully move when you turn the tuning

dial) and wiggled the knobs and switches. Either music or crackling sounds are now emerging from the speaker. You're well on the way to success.

Turn the receiver right side up and, with the unit powered and volume turned up, gently tap each valve in turn. What you're after now are any valves which are microphonic. Don't belt the daylights out of the little bottles, a gentle tap with a pencil (or the eraser on the end of a pencil) will soon show which valves are mechanically sensitive. Find replacements and put them in. (Hint: audio valves are available at shops selling electric guitar amplifiers. They're usually American-made and tend to be rather expensive these days but they can still be found.) By this stage you will be very tired of the warm-up time after you turn the old thing on and you will be seeing transistors in a new light.

Once you've replaced the dodgy valves, crook resistors and all that other stuff you should be getting recognisable sounds from the unit because there isn't really all that much left to fix. There may be some trimmer capacitors (possibly mica compression types) in the IF strip and you can try to peak up the audio by adjusting them to minimise the sibilance in speech (easier than trying to do it on music) but these are generally pretty stable and adjustments may be minimal. Alternatively, coils inside aluminium cans can be tweaked, but listen to the radio first before you go merrily twisting alignment tools. If it sounds OK, or passably good, leave the damn thing alone and don't fiddle any further.

Now it's time to pretty it up a bit. Get out the Armor-All, clean up the old bakelite case, vacuum the dust off the speaker grille-cloth, put the whole thing together, push the knobs back onto the exposed shafts and watch the look of amazement on the face of your neighbour as he or she carries their old Stromberg-Carlson mantlepiece radio back home. You're now an official valve guru. (Don't forget to empty the vacuum cleaner bag!)



1. YAESU FT411 2m Handheld Transceiver, fair condition. \$300.00 or nearest offer. Contact Warren (VK2TWG) on (02) 42833337.

2. Tower, 3-section, steel, on-site in Woonoona. For sale on "as-is, where-is" basis. Triangular section, tapered. The successful buyer will have to remove the tower from its present QTH. This tower has comfortably supported a tri-band HF beam and has a platform for a rotator plus a pulley system for raising/lowering antennas. Very little corrosion but could use a coat of paint. Contact Barry (VK2BZ) on (015) 211115 to discuss price and associated matters.

3. The following items:-

i) Capacitance Meter, brand-new, unused condition, with manual. Range 0.1pF to 20MF. \$100 or best offer.

ii) Frequency Counter, as new, works well up to 1.25Ghz, with manual and charger/power-pack. \$150 or best offer.

iii) 100 Watt Transistor Transmitter Output Amplifier for 2M, requires beefy 13.8VDC power supply plus some wiring to interface to Tx. \$20.00 or best offer.

iv) Frequency Counter, Digitor brand, as new, works well up to 250Mhz. \$50.00 or best offer.

v) UHF SWR/Watt meter, unused, as new, metal enclosure, two ranges on meter, BNC connectors at rear, operates up to 470Mhz. \$70.00 or best offer.

Interested? Contact Bert (VK2ZYS) on (02) 4229 8895, preferably with cash money.

(Bert is in poor health and would appreciate prompt settlement on these items. Please help.)

ELECTROMAGNETIC COMPATIBILITY - A CAUSE FOR CONCERN?

Information made available by the WIA has raised the issue (spectre?) of future standards in electromagnetic compatibility (EMC), which may have adverse effects on the amateur service.

The background to this is that the Radiocommunications Act of 1992 set in law an EMC regime which was based on regulations made under the Act, *"...to establish an efficient, flexible and responsive system for technical regulation of equipment that uses, or is affected by, radio emissions..."*

Currently, the Australian Communications Authority (ACA) is responsible for development and enforcement of standards which were developed under an agreement between Standards Australia and the former Spectrum Management Authority (SMA). A suite of mandatory standards for Australia has been developed in conjunction with authorities in New Zealand. These were based on, and usually are in agreement with, international standards. A 1-year voluntary compliance period commenced on Jan 1st, 1996. From 1 January 1997, compliance is mandatory and applies to all relevant equipment, imported or locally-manufactured.

In Australia, complying equipment must carry the "C-Tick" mark. Because our standards agree with international ones, foreign equipment imported which carries the European "CE" mark can be legally imported and sold.

Apart from radiocommunications equipment, EMC standards covering all electrical and electronic equipment are grouped into eight categories:-

- electrical motor-operated and thermal appliances, electric tools and similar apparatus,
- electrical lighting and similar equipment,
- radio and television receivers and audio equipment,
- information technology (computer and telecommunications equipment),
- industrial, scientific & medical equipment,
- spark ignition engines,
- microwave appliances, and,
- generic (all apparatus).

Standards are developed through a committee system. The WIA is represented on a number of Standards Australia and associated committees involved in this endeavour.

The EMC regime offers the possibility of improvement in regard to certain interfering sources, but this is two-way traffic because interference and immunity levels are regulated *"...within acceptable limits..."* These "acceptable" limits have the potential to cause problems for radio amateurs in the future.

Equipment imported or manufactured prior to Jan 1 1997 is exempt from compliance. Interference generated by such equipment may therefore remain a problem for years, until that equipment reaches the end of its working life and is "decommissioned". By the same token, pre-compliance radio or TV receivers have little or no rights for protection from interference from other equipment, (which presumably includes amateur radio equipment).

Already, interference to amateur radio operations, from HF to VHF (in Canberra), has been traced to satellite pay-TV set-top units (STUs) installed in 1996. The problem was poor circuit-board design in the STU and the supplier was reluctant to do anything about it, in spite of representations by both the SMA and the WIA. (*Why are we not surprised?* - Ed.) If further pay-TV services are established using these non-compliant satellite TV STUs we can expect further problems with little in the way of

recourse to legal remedy.

The WIA points out a further potential problem which may surface from forthcoming broadband cable networks planned by both Telstra and Optus. These hybrid fibre-coax (HFC) networks, whose cables are either buried alongside streets or slung between power poles, use 2-way RF transmission on the coaxial sections. Frequencies are 85 - 750Mhz to the consumer and 5 - 65Mhz from consumer to network. Power levels were not stated. Domestic cable-TV converters are also believed to pose a significant threat to amateur radio operations, although this may be minimised if fully-compliant converters are used by the service-providers.

*(Editor's comment: It is difficult to be optimistic about anything introduced by just about any section of the great Australian bureaucratic juggernaut and this is no exception. Committees are all very well but I recall two things which may help readers get committees into the right sort of perspective:- a camel is a horse designed by a committee, and the German word for "committee" is **auschuss** - which is also the German word for "rubbish". However, we must support the WIA in its efforts to safeguard our best interests since it is the only organisation from within our ranks which has the necessary motivation, credibility, and is recognised by the bureaucracy.)*

THE RF ENERGY BOGEY!

Another issue which has been brought to our attention through the WIA is that of RF energy levels. This has arisen through concerns being expressed in the media (and elsewhere) about possible health hazards relating to RF exposure. The most recent campaign has been against mobile telephone towers, particularly those located near schools.

In Australia, standards for RF exposure levels are being developed. The WIA has a representative on the appropriate committee, in this case an amateur who is also a doctor. The principal standard which applies is AS/NZS 2772 (which would appear to be a combined Australian and New Zealand standard - Ed.)

There is considerable contention about possible links between exposure to RF and development of medical conditions, cancers in particular. Cellular telephone towers have been targeted but high voltage power lines are also under suspicion and attract media attention when vocal groups of local residents want publicity. Studies done over decades have yet to show any causal link but the scientific community is (sensibly) cautioning that no-one can unequivocally state RF energy does not cause cancers. More research is needed and is being carried out here and around the world, under the auspices of the World Health Organisation. Funding for Australian research efforts comes from a one percent levy on radiocommunications licence fees. The ACA is currently considering the issue of RF energy limits in conjunction with the Radiocommunications Consultative Council (RCC).

When standards are developed, we as amateurs will have to comply. Little concrete information was given, but according to one spokesman (Dr Andrew Corney - ZL2BBJ), a 100-watt HF transmitter feeding a dipole or vertical aerial is unlikely to generate fields in excess of the limits, even just a few metres from the antenna. A 3-element beam similarly driven is also considered unlikely to exceed limits, but that may not be the case if it were driven by a 400-watt PEP signal. So far as VHF is concerned, a 10-element beam on 2m driven by a 100-watt transmitter is said to generate a field just on limits at a distance of 10 metres.

(Editor's Comment: Firstly, in the absence of proven, conclusive scientific evidence that RF fields don't cause cancer, we ought to be very careful about our own personal levels of exposure which should be minimised wherever possible. Be very careful with RF, even at low levels.)

Secondly, when standards are decided and set into law, it is to be hoped they will not impair the freedom we have enjoyed thus far to pursue our hobby within the confines of suburbia, given all the impediments that seem to exist already - witness the recent troubles one of our members has had

trying to erect a tower. Again we must rely on the WLA to safeguard our interests and therefore, wherever possible, we should support the Institute's efforts in whatever way we can.)

THE EMC CHECK-LIST.

In view of the preceding two items, this little offering, stolen with due acknowledgment from "Smoke Signals" (the newsletter of the Central Coast Amateur Radio Club), is reprinted (in a modified form) for inspiration and information.

- ☒ Make friends with your neighbours before putting up antennas.
- ☒ Make sure your TV and radio receivers are free from breakthrough in case you need to demonstrate the fact.
- ☒ Keep your shack as far away from the neighbour's property as possible. (Doubling the distance between transmitter and TV/radio will *quarter* the strength of any interfering signal.)
- ☒ Keep antennas as far away from adjoining properties as you can. A 3-element beam or a G5RV dangling over a neighbour's roof is inviting trouble.
- ☒ Choose antennas which are in keeping with the size and shape of your property.
- ☒ Use screened antenna leads next to properties.
- ☒ When using a dipole or any balanced antenna fed with coax, use a balun.
- ☒ Use an ATU and get really well connected to earth.
- ☒ Choose the best quality low-loss coaxial cable and make sure it is properly terminated.
- ☒ Get your antenna as high as possible.
- ☒ Run the lowest power level needed to communicate.
- ☒ Do not over-drive the transmitter - it causes harmonics, splatter and spurious signals.
- ☒ Keep an accurate station log - it is your first line-of-defence in the event of a complaint.
- ☒ Regularly check your connections, coax terminations, antenna joints etc. for signs of corrosion which can lead to mixing products.
- ☒ If you receive a complaint, be courteous and try to investigate it (as far as you can) as soon as possible.
- ☒ When talking to neighbours remember they are probably not technical - keep it simple.
- ☒ Try to get to know other amateurs within a reasonable radius of your QTH - they may have information about their own experiences which might be helpful.
- ☒ If you are living in rented premises, get the landlord's permission - in writing.

NEW MEMBERSHIPS

Included in this Propagator is an application form for membership of the IARS. This is **not** for you to renew your membership - you will take care of that little detail at the AGM later this year. This form is to be used to sign up a new member, which entitles you to a \$5.00 rebate on your annual membership fees. Sign up more than one new member (hint - photocopy the form) and you get a rebate for every new member you recruit, to a maximum of four at which point your own renewal is free!

REPEATER REPORT (January to May 1998)

Well, it's been a while since I've tapped out a Repeater Report & a bit has happened so here goes...

VK2RMP (Maddens Plains)

6850 Rptr basically OK. Still getting excellent coverage, with one of the best being a station who regularly calls in from Canowindra. Presently, we are running on low power (about 7 watts to the antenna instead of about 75 watts) due to the TXer having a small problem, which will hopefully be fixed by the time you read this.

Back in early January, we had several ZL stations call into 6850 via some nice trans-Tasman ducting. We also, for about a month, connected our 10m Rptr for a test & boy did it get some use from 10m FM users talking both to our local 2m ops as well as to other 10m users.

After about one & half years, our link to 6700 Milton/Ulladulla Rptr was disconnected on the 27/3/98. The following day, 6850 was linked to the new 6675 Rptr near Batemans Bay. More info to follow, but just quickly, with 6850 & 6675 Rptrs linked together, these 2 Rptrs effectively cover from north of Sydney to south of Narooma.

Shortly, the Rptr will be upgraded & the antenna system improved to make 6850's coverage even better than at present (if this is possible hi hi).

8725 UHF Rptr is working well, with quite a bit of use, especially mobile stations escaping the crap from the VHF pagers around Sydney & W'gong. 8725's coverage is very similar to 6850's. What it lacks in comparable sig strength, it makes up in being a very quiet (read no pagers) band.

VK2AMW-6 Net Rom Node/Digi is also working well, with LOTS of traffic passing thru it. The system provides an excellent path between W'gong & Sydney BBS's & users.

The VK2 WIA Broadcast is still TXed every Sunday at 1000 & 1930 local on both 6850 & 8725 Rptrs. Following the Broadcast, Brian (UBF) takes callbacks, with numbers exceeding 25 on occasions.

VK2RUW (Knights Hill)

8225 Rptr has been working very well without any probs for months. The last visit to the site was July of last year & even then it was because we were visiting Mt Murray & we decided to go & just have a check. The last actual work done on the Rptr was in October of 1996!

The linking thru to VK2RGN Goulburn & VK1RGI Canberra is working very well, with no probs. There has been continuing talk of extending the linking north thru Hornsby/Berowra to Gosford & on to Newcastle.

On Sunday morning, the VK2 WIA Broadcast is TXed at 1000, while at 2000 in the evening, we receive the VK1 WIA Broadcast back up the line. Listening to both the VK2 & VK1 Broadcasts, probably gives you a better "picture" of what's happening out there in Amateur land...

The 10 m Rptr (29.520/29.620) has been built & tested, but we're just waiting a little longer before putting it on the air. We still have to build a DTMF controller to control turning the 10m Rptr off & on & also remotely adjusting the 10m Rxer's mute, to allow for the vagaries of the band (read Taiwanese fishing boats & Korean taxis).

VK2AMW-7 & VK2AMW-9 (Mt Murray)

VK2AMW-7 147.575 Net Rom Node/digipeater has been working wonderfully well. The last time it was visited was July of last year. It was checked a week ago when a second digi was installed at the same site, this being VK2AMW-9 on 144.925MHz. This digi is on-air on test to provide a service to our southern cousins down the Shoalhaven & beyond. It is running on a 3 element yagi facing south,

as against 7575 which is on a high-gain omni. 4925 frequency is a nice quiet frequency and provides access to VK2XY, a fairly major BBS in Sydney.

VK2RIS (Saddleback Mtn)

6975 Rptr is working fairly well. I'm not sure what the problem is, but it seems that it's not working to it's full potential. A major overhaul/upgrade is planned, but the Rptr itself hasn't suffered any problems since about February last year & even then it was only just a quick fix.

VK2RBT (Mt Boyne)

Well this is the new Rptr the IARS has established down the south coast. The Rptr is on 6675 Rptr pair & is located near Batemans Bay. It covers from Nowra, thru Milton & Ulladulla, Batemans Bay, Moruya & on to Narooma, while a couple of Canberra stations from the west have also called in.

The Rptr was first on the air on the 28/3/98. A group of four IARS members - John (ZLJ), Phil (TPH), Chris (XBC) & myself, left Wollongong before 6am, travelled the 170 Km to the site, arrived about 8.20am. We had a quick cuppa, then started the install. The cabinet, batteries, diplexer & FM-814 50w Rptr were installed with the Rptr on the air by 10.15am! The antenna system was previously installed back in February, but more work had to be done up at the 120' level. The RXer & TXer are each running on their own VHF folded dipole, fed with LDF 4-50 heliax. One of the first stations was from Eden a couple of hundred Kms away, reporting a strong signal on his J-pole, very promising...

We also installed a Net Rom Node/digipeater with an FM-828 & TNC. Originally we were planning to install it on 144.925MHz, but the path to other systems wasn't as good as we hoped, so we changed it to 147.575MHz, which connects reliably to our VK2AMW-7 at Mt Murray. Another folded dipole was used for the antenna, this time fed with LDF 5-50 heliax.

Both the voice & packet systems run off 6 x 200AH batteries for mains back-up. Both systems can be shut-down remotely via DTMF control & the voice Rptr has voice ident, not morse. This Rptr is linked to our VK2RMP 6850 Rptr way back up here. As mentioned earlier in this Report, with these two Rptrs linked, reliable mobile coverage can be expected from north of Sydney to south of Narooma, west to Orange, Canowindra, Goulburn & Canberra - not too bad. Our installation working-bee left about 6pm & after a stop at Sth Nowra Maccas for tea, we were home about 9.30pm. A long day, but very productive. At the time of writing (mid May), the Rptr hasn't missed a beat, touch wood...

Well that's about it for this Report, hear you on the airwaves.

Rob - VK2MT.

HOW TO RIP STUFF OFF...

Here's a quick way to salvage components, especially ICs, off old PCBs, especially double-sided ones. All you need is a vice, some sort of device to exert tension on the IC and one of those nifty heat-guns used for stripping paint, shrinking heatshrink and so on.

Clamp the PCB in the vice vertically. Put on your eye protection and preferably some protective gloves as well. Position the tensioning device so you can use it quickly and then apply heat to the opposite side of the board, under the IC. After a few seconds, begin applying tension to the device on the opposite side of the board. Keep up the heat and suddenly the device will come out. You'll probably have molten solder flying around the area as well, hence the protective gear. Wear shoes.

This technique usually results in quick recovery of devices with minimal damage. The board itself will probably be rather the worse for wear but you should get most of the ICs you want OK.

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David Thompson - WIA (NSW Div) Councillor.

One of our guest speakers at the May meeting was David Thompson (VK2NH) who is a councillor in the NSW division of the WIA and also has the distinction of being the Publicity and Olympic Games Officer.

Rather than the usual gee-up speech about why we should all become members of the WIA, David's evening could perhaps best be described as a "fact-finding mission". From the outset, David asked us what was wrong with the WIA and how we perceived it. This resulted in quite a spirited response in which a number of grievances and problems with the image of the WIA were aired. We might have challenged David, but he likewise challenged us. I think we probably deserved it.

This was a most refreshing change from what we might have expected and we ought to give credit to David for being a tough cookie and weathering the onslaught of our members who raised quite a number of issues. David has assured us the issues we raised will be taken to heart and followed up within the NSW division.

The infighting of several years ago within the NSW division, both behind-the-scenes and on-air, has without doubt done great harm but I think the depth of suspicion and mistrust which still exists came as something of a surprise. David expressed in no uncertain terms his determination to do the very best he could to see that the NSW division moved forward and met future challenges head-on, including recruitment of new members. His willingness to listen to what must at times have been unpalatable facts marks him as a man of integrity. His obvious love of amateur radio was reassuring to those of us who have perceived the WIA in the past as a group of "old fuddy-duddies". David has a vision for the future of the WIA which deserves support. He was clearly determined to be contactable by all amateurs and many of us found his business card with several phone numbers on the back being pressed into our hands. Here is someone who listens and wants our feedback. In return, we ought to support him - and the WIA. If you're not already a member, now's a good time to join.

In his capacity as Publicity and Olympic Games officer, David outlined some of the plans the WIA has for amateur-related activities during the games. Amongst these will be attending for the needs of visiting amateurs attending the games from overseas, and a station within the complex itself.

The Illawarra Amateur Radio Society Inc.

PO Box 1838 WOLLONGONG NSW 2500

VOICE REPEATERS

<u>CALLSIGN</u>	<u>FREQUENCY</u>	<u>SITE</u>	<u>AREA</u>	<u>LINKED TO:</u>
VK2RUW	29.620	KNIGHTS HILL	ILLAWARRA	(OFF-AIR)
VK2RBT	146.675	MT BOYNE	B'MANS BAY/ULLADULLA	VK2RMP
VK2RMP	146.850	MADDENS PLAINS	ILLAWARRA/SYDNEY	VK2RBT
VK2RIS	146.975	SADDLEBACK MTN	WOLLONGONG/NOWRA	-
VK2RUW	438.225	KNIGHTS HILL	ILLAWARRA	VK2RGN & VK1RGI
VK2RMP	438.725	MADDENS PLAINS	ILLAWARRA/SYDNEY	-

<u>PACKET SYSTEMS (DIGI's/NODES/GATEWAYS/BBS's)</u>	<u>TYPE</u>
VK2AMW-1 144.625 WOLLONGONG UNI WOLLONGONG	GATEWAY
VK2AMW-6 144.700 MADDENS PLAINS ILLAWARRA/SYDNEY	NODE/DIGI
VK2XGJ 144.700 DAPTO WOLLONGONG	BBS
VK2AMW-9 144.925 MT MURRAY ILLAWARRA	NODE/DIGI
VK2AMW-5 147.575 MT BOYNE B'MANS BAY/ULLADULLA	NODE/DIGI
VK2AMW-7 147.575 MT MURRAY ILLAWARRA	NODE/DIGI
VK2XGJ 147.575 DAPTO WOLLONGONG	BBS
VK2XGJ 439.075 DAPTO WOLLONGONG	BBS (9600B)

Membership:- \$20.00 per annum. \$15.00 concession (enquiries to the Treasurer). Memberships expire immediately after the AGM in August.

OFFICE-BEARERS & COMMITTEE:

PRESIDENT: VK2XQX Simon Ferrie (02) 42836107
VICE PRES: VK2UBF Brian Farrar (02) 42672296
SECRETARY: VK2MT Rob McKnight
TREASURER: VK2TNK Rob Skelcher
COMMITTEE: VK2ZLJ - John Lodding (02) 42941690 , VK2AGV - Ned McIntosh
VK2ZWG - Jim Beaver (02) 42848634, VK2TPH - Phil Howchin

REPEATER COMMITTEE: VK2MT - Rob McKnight, VK2BIT - Peter Woods
VK2ZLJ - John Lodding, VK2TKE - Ken Goodhew

PUBLICITY: VK2UBF - Brian Farrar

BROADCAST: VK2UBF - Brian Farrar (146.850Mhz), Rob McKnight (438.225Mhz), Simon Ferrie (438.225Mhz)

EDITOR: VK2AGV - Ned McIntosh (0418) 420310, (018) 420310

PRINTER: VK2MT - Rob McKnight

CANTEEN: VK2KVH - Vic Hee

LIFE MEMBERS: VK2CAG Graeme Dowse, VK2OB Keith Curle, VK2ALU Lyle Patison

Club Meetings: The second Tuesday of every month (except January) in the SES Building, Montague St, North Wollongong, commencing approximately 7.30pm.

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I.....,a member of the society.Nominate the above applicant
for membership of the society.

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(signature of member)

Date:

I ,a member of the society. second the above nomination for
membership of the society.

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(signature of member)

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