

IARS The IARS PROPAGATOR

The monthly newsletter of the Illawarra Amateur Radio Society Inc.
Registered by Australia Post publication number :- NBH - 1491

Meetings are held on the second Tuesday each month (except January) at 7.30 pm
in the State Emergency Services building in Montague St, North Wollongong.

Visitors are most welcome.

Number 10 Volume 92

October 1977

Editorial

Who do you talk to?

Who you talk to determines your outlook on life.

Take two examples:-

Firstly you talk to your best mate who has just been fired, lost his wallet, been knocked down by a car and his wife has left him! You'd feel pretty down yourself.

How about the same fellow, but this time he's just won lotto, bought a new Fairlane, married a beautiful rich girl and doesn't need a job! You'd feel great (also bloody envious!).

How do you feel when your football team loses? How about when it wins. Like I said, who you talk to determines your outlook on life. Talk to happy people and you think happy. Talk to progressive people and you think progress. Talk to losers and you think like losers.

You're on a fishing trip with two mates. One says 'The sun is shining, the water's calm, the grog is cold and it's a beautiful day'. The other says 'It looks like rain, there's no fish, I've just hooked my

finger and I have to go to tomorrow'. Who would you rather be with?

Ask me how I feel and I'll reply 'fantastic'. Why? If I'm feeling bad and tell myself I feel bad, I feel worse, but if I feel bad and say I feel fantastic, I feel a little better and I'd rather feel better than worse.

If you've got a whinge, don't come and see me. I don't complain and I don't like complainers. Constructive comments are not whinges.

If you think Joe Blo is doing a terrible job, don't whinge, get in there and do a better one. If you can't do a better one get in there and help. Two people pushing in the same direction do a lot more than two people pushing opposite directions.

If I don't like something, I either fix it or ignore it, I don't whinge about it. I don't like the way Our Club is at the moment and I'm doing something about it. Not a lot, since I'm not particularly good at anything, but I'm doing something are you?

Program

October.

This will be a rag-chew night. About anything you want to talk about, but I expect the main movers in the club will be ear bashing us about the Science Centre.

Remember there is a visit to the CSIRO at North Ryde on the 19th for those of you on the list.

November

This will be our usual auction night. The Auctioneer job will be open to negotiation. I have some idea's on a different method of auction - come along and see and

BRING YOUR MONEY WITH YOU

December

Our usual family Xmas night - bring a plate of goodies and the family. With a bit of luck, someone else might take your harmonics by mistake.

January

Time for a break! You can have the month off, unless you are on the committee, in which case we'll have a committee meeting on the usual day and make plans for the rest of the year.

***** Chore! *****

I've told you I don't like washing the car. Well, a couple of weeks ago, I said to myself "Self! No more excuses! The car is putrid! It must be washed". Well, try as hard as it may, my otherself couldn't think of an acceptable excuse (Help Grandpappy!) so I decided to wash the car. I just happened to glance out of my window and lo and behold, my daughter Marilyn was washing my car!!!!!! Well, what could a man say!!! I sure am one lucky!

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***** Big Loss *****

I'm very sorry to say but one of our members is departing for Tasmania in November. Peter VK2KHE is making the big move. It will be a big loss for the club and a bigger loss for me as I regard Grandpappy as a very good friend. Also on the 'Big Loss List' is Vic VK2KVH. Vic was a powerhouse in the club last year and couldn't do enough to help anyone who needed a helping hand. All the best Vic and if I can do anything for you mate, you've got my phone number.

***** Science Centre *****

Looking at all the headings in the last Propagator, if you weren't interested in Packet and weren't interested in the Science Centre, you had nothing to read! You may as well write something yourself to make this thing more interesting!!

***** The Roster *****

Sat	3/10	VK2XGJ	VK2FPN
Sun	4/10	VK2XQX	VK2KHE
Sat	10/10	VK2KWG	VK2SRB
Sun	11/10	VK2JRH	VK2GID
Sat	17/10	VK2XGJ	VK2FPN
Sun	18/10	VK2JRH	VK2TSB
Sat	24/10	VK2GNV	VK2GMC
Sun	25/10	VK2GID	VK2KLH
Sat	31/10	VK2XGJ	VK2FPN
Sun	1/11		
Sat	7/11	VK2DSH	
Sun	8/11		
Sat	14/11	VK2XGJ	VK2FPN
Sun	15/11		

Notice the 'White Holes'?

***** Antennae *****

You may be very knowledgeable about antennae, but I know very little. Sure, I've passed the exam, but the memory fades after 25 years if you don't use the knowledge. There are also a lot of new members who may know the theory, but their practical expertise is sadly lacking (I know, I've listened to some of them!). How about a technical night for beginners explaining the 'How, When and Where of Antennae'. The last one we had on helical HF whips was fascinating. I want something VERY SIMPLE, maybe 5 - 10 minutes by 5 or 6 experienced members starting with basic theory and progressing to matching and the different antennae.

**** Do you know? ****

How do flies manage to land on the ceiling?

Why was the metal Antimony so named?

I read the answers in a message on VK2XGJ bulletin board. Very interesting too. Why don't you get into packet and learn a lot of different things?

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***** Wicen *****

So what DO WICEN do anyway?

In the last week of August, Graham VK2GID spent some time helping Hunter WICEN with communications at the International Six Day Enduro (ISDE for short) off-road motorcycle race at Cessnock. This is only the second time that the ISDE has been held outside Europe; 411 competitive riders from 21 countries were there.

The event consists of six days of riding, each day is two laps of a (different every day) 120km course. At six points in each lap, riders must pass through a time control where their riding number and time through is noted. The idea is for the riders to stay on a time schedule for the whole day, early or late clocking in results in lost points.

Traditionally, the results at each control are noted down, and returned to the base scoring centre by courier rider, or at the end of the day. Scores are calculated overnight and are generally known by the next morning. Communications are almost invariably provided by the military forces of the host country.

This year was different. WICEN Hunter Division snagged the job of communications between check points, which was to be tricky enough in the mountainous country around Cessnock. A portable VHF repeater was installed at a strategic location to allow good voice communications into all fourteen check point sites, and back to the Town Hall base.

But let's get rid of this time delay before the results are known. What say the Aussie amateur community shows their

stuff to the world and gives up to the minute results? Enter Darrel VK2DAZ and an incredibly nifty packet radio network. Each check point also had a laptop computer and packet radio system, running through a VHF digi on another strategic hill. This started to call for serious power handling at the (remote) check point, some operators running dual batteries or leaving the car idling all day.

But there were also the speed tests, and their results timed to the hundredth of a second, that had to be added into the formulas. No problem, let's set up another (UHF this time) packet network. Town Hall now sported some five computers to do all the number crunching work. Results were now accurate to ten minutes previous (after the demon of a network was sorted out). One of the things that always fouls up big organised things is that the hot-shots can never be found to make a decision when they are required. Mobile phones don't work in these hills; so let's put an operator with each of the main men.

Hang on, what about safety? Not a problem, said Phil VK2IW. Let's get seven hams who can ride enduro bikes, give them 2m handhelds and scatter them amongst the mobile marshals. Now we are getting tricky: these fellas would be running 3W into quarter wave antennas at ground level in all sorts of hills. Another portable repeater. This one was located on top of a hill which could only be accessed by 4WD along the actual course. Day One saw Phil and his friend stuck on top of the hill when they couldn't get the repeater going in time and had to stay up there

all day until the bikes had gone through (look at about 8 hours - and they hadn't brought lunch!).

The Cessnock ambulance team (three ambulances, three doctors on enduro bikes and a makeshift medical centre) found that their radios didn't like the bush either. Not a problem, let's put an operator in each ambulance and one in the medical centre.

Forty operators, ten cars, eight motorbikes, sixty radios, eleven computers, and three repeaters later (not to mention Phil VK2IW acting as a repeater for all of Day One), the largest exercise ever undertaken by WICEN in Australia was underway. To say it went without a hitch would be blatant lies, but we got everything to work by a lot of perseverance (Darrel VK2DAZ spent 40 hours straight at his computers, and suffered for it the rest of the week). The international media was impressed (pity the Sydney papers and TV didn't bother to show up), and amateur radio had made itself a little bit more famous. Sure, anyone COULD have done it, but Hunter WICEN (with help from amateurs from three states) went out there and DID do it.

So what have the Hunter fellas got that the Illawarra doesn't? They've had an earthquake recently, most of them didn't get much sleep there either, and they actually had to get out in the field and communicate in a time of crisis. They have SEEN what they can do, so now they get out there and DO it.

A very big 73 to the WICEN fellas (and girls) and many thanks for a really great week, from Graham VK2GID.

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***** CSIRO *****

As mentioned previously, a visit has been organised to the CSIRO at North Ryde on Monday 19th October. We will be looking at communication type projects, including antennae testing. Brian Clarke was telling me some of the things that the CSIRO are working on, and it's mind boggling. Maybe high frequency is the way we should go. I mean frequencies in millimetres, not meters! We have our resident expert in Lyle VK2ALU who is more than happy to pass on his knowledge to any seriously interested amateurs.

***** Page 5 *****

**** JOTA ****

Hello again Mr Peter. Things are proceeding from the Scouting end towards the JOTA event at Fairy Meadow. I have received the scouting paperwork and so forth from the Area headquarters, and have registered the station with them. I have also applied for a special call for the weekend; last year we used VK2SCK, so I have asked for that. We could use VK2AMW, but an "S" call makes it obvious to others that we are running a JOTA station, so we get more contacts.

I have also received our first booking of a Cub Scout pack to come for a look, so it looks like it is all go. As long as we can get the site - has anything been done by the IARS towards the site? I have also written the next PKT article for the Propagator, but I will wait until after the meeting to send it to you, in case people want a different slant on things to how I have been doing it.

73 and have fun, de Graham VK2GID.

**** ICOM IC-2GA****

The travelling radio marshals at the Cessnock ISDE (of which Graham VK2GID was one) have conducted a thorough test of the IC-2GA 2m handheld radios, fitted with dry cell battery packs and quarter wave whips. The team got the rigs extremely dusty, stood out in the rain and hail with them, crashed them into trees, dropped them off moving motorcycles, and VK2GID even hit the dirt with one at around 85 km/h, purely in the interests of investigative journalism (Graham's shoulders are recovering as this was written).

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The verdict? The radios didn't miss a beat all week. If you want a tough radio, that will handle just about anything you give them, it looks like Mr Icom has a winner. We haven't tested any other rigs, but we tried almost everything on these babies and they just keep going.

Graham advises that any manufacturer who would like to shower him with lots of expensive products to test, will be more than welcome and this time he will try not to crash his brains out.

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******* Thank you *******

Each month I'm going to feature one member who has done something for our Club. Unfortunately, I don't meet too many so I'm going to need your help to let me know who is doing what.

I don't know who to talk about next month, so please help me. Just a few comments from you and I can write a half page article.

This month, we are recognising Philip Klower VK2GMC. Who the hell is Philip Klower? Don't think I've ever met him! Have you? What does he do? Can't be very much since his name is never mentioned!

Philip does one of those thankless tasks that no one wants, no one sees, no one appreciates, no one gives thanks, but expects it will be done 'by someone'.

Philip is the worker who looks after the coffee. He makes sure the cups are out and the water is hot. He's the worker who picks up the cups after you leave them lying around the place after the meeting. He's the one who gets the blame if the water isn't hot, or there's no milk, or you don't like the biscuits, or the coffee spoon is put in the sugar bowl. He's the one who gets no thanks. He's the one who gets home half an hour after you. It's a thankless unappreciated job but someone has to do it. Reminds me of the meaning of wife - Washing, Ironing, Food, Entertainment.

It's going to get you down Philip, but keep up the good work, most of us appreciate it even if we don't say so, or know who does the job.

******* Page 7 *******

**** How packet radio works ****

Part Two

Welcome back. I didn't explain the purpose of these articles last time: Packet radio is a new mode which few people understand fully. As technically minded people, amateurs would be interested in finding out about the latest communication methods. I'll keep it very simple to start with, and perhaps in time we will delve into things a little more deeply. Last month we covered the basics of what Packet radio does (communication between computers) and the components that might be used to do it. This month we will look a bit deeper into how information gets from place to place. Last month I described the hardware that might be found at a typical Packet radio station. I mentioned that the TNC sends sound signals in the form of two tones to the radio for transmission, and the radio sends tones to the TNC after reception. (Why two tones? Computers deal with digital signals, which means either on or off, so two different tones can represent these signals.) Peter VK2FPN asked me to comment on what "deviation" means. In the case of VHF or UHF FM packet, deviation means what it normally does in FM operation: the amount of modulation. Why is deviation important? If the TNC and radio combination is set with not enough deviation, the other end receives a signal which is lost in the noise and so is hard to decode into the twin tones. If the deviation is set too high, then the receiver at the other end can't find half your signal since it extends beyond the

RX passband. Also you end up causing adjacent channel interference, which is anti-social.

OK, so we now have a system that can take a voltage level at one end, turn that into one of two tones, send the tone over radio, and decode the tone into (hopefully the same) voltage level. Now all we need is work out how to send useful information across this link.

You may remember that Peter also asked me what "AX.25" was. What we are talking about here is the AX.25 Link Layer Protocol. "Protocol" is a word that refers a set of rules to work by. If you are sitting in a school room, the protocol is that the teacher talks and you listen, unless you put up your hand and the teacher then changes things so that you talk and she listens. Without the protocol, nobody knows who is supposed to be talking or listening and everyone gets confused.

The AX.25 protocol is the set of rules that defines how to send useful information across the radio link described above. Last month I hinted at some of the things that the AX.25 protocol does for us. It worries about establishing connections between stations (another word for a connection is a data link, hence the term Link Layer Protocol), about acknowledging correctly received data, and resending data that had errors in it. I could describe how this is done, however that would get seriously complicated and so I will leave it until a later article. Suffice to say that using AX.25, we can send as much information as we like from one station directly to another. The AX.25 protocol also has an extra function that communications

academics find confusing. A Link Layer Protocol is supposed to be able to send information from one computer to another, in one hop. It is not supposed to be able to handle getting from one computer to another using another one along the way as a stepping stone (in voice we call such stepping stones "repeaters"). However AX.25 has a little addition which allows it to handle stepping stones.

You may have heard of a "digipeater" or a "digi" (which is short for digipeater). This is how AX.25 handles the stepping stones idea. To work from VK2GID to John VK2XGJ's station, I can't do it directly because of hills and so forth. So I send my signal to Peter VK2FPN's station, and it echoes them to John's station. On the way back, VK2XGJ sends signals to VK2FPN, and VK2FPN again echoes them to my station. This is "digipeating" (short for of digital repeating), and Peter's station is acting as a digipeater. Unlike voice repeaters, which are specialised systems, you can use any packet station as a digipeater.

The AX.25 protocol allows up to seven digipeaters in one link. This means I could go from here to Newcastle by hopping from here, to Bulli, to Sutherland, to Sydney, to Hornsby, to Gosford, to Wyong, to Toronto, to my friend's place in Newcastle (as long as I could find stations to use as digi's along the way and they can hear the next station). When I send a chunk of information (the chunks are called Packets, remember?), it hops all the way to Newcastle, my friend's station receives it, and then the acknowledgment hops all the way back

to my station.

So by using the AX.25 protocol, we can send data from one place to another and be sure that no errors are picked up along the way. We can also cover quite a distance by using digipeaters to establish multi-hop links. However it turns out that there are a number of limitations in using AX.25 over multiple hops. Next month, I will discuss the limitations of AX.25 for long distance operation, and describe some solutions to these limitations.

If you have any questions about the material covered, or have something that you would like explained, contact either me or Peter VK2FPN, and I will try to help you. See you next month, de Graham VK2GID (042) 294170.

John D Lodding

VK2ZLJ



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*** 13.8v Power Supply ***

PART 2

The 20 Amp supply will require wiring with fairly heavy duty cable to avoid voltage drops. Flexible 50/0.25 or 7/0.67 (2.5mm square) building wire would be the minimum size to use, but 4mm automotive would be better. This cable should be used between the transformer and rectifier(s), smoothing capacitors, transistor collectors and emitters to positive output terminal and the negative rail. The output terminals chosen should be able to handle at least 20 Amps.

All connections should be clean and a heavy duty soldering iron should be used when soldering the larger cables using a good quality resin cored solder. The transistors and rectifier(s) should be mounted on adequate heatsink(s) with care taken to insulate the transistor cases (Collectors) from ground. A good heatsink compound should also be applied to these insulated joints.

The voltage regulator and crowbar circuits can be assembled on a small pc board or veroboard. The case or anode of the thyristor, should be mounted on a 12 X 50mm heatsink. Layout of the components is not critical, however, interconnecting wiring should be kept as short and as tidy as possible. Allow ample ventilation within the case and ensure that the power cable is fed in through a rubber grommet and is clamped at its entry point. Voltage and current meters can easily be incorporated into the output circuit if required. The voltage meter should

have the appropriate scale (0-15V) and be connected across the output while the current meter (0-20A) should be connected in series.

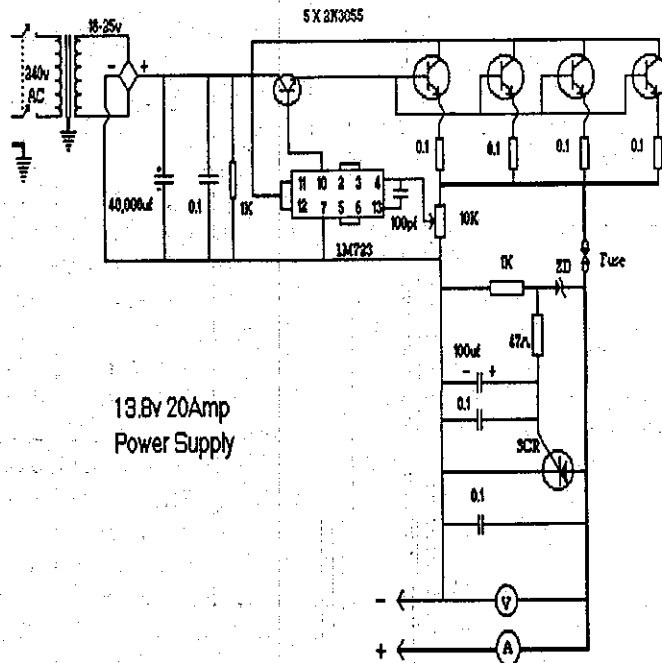
After assembly, a thorough inspection of the unit should be made to ensure there are no short circuits, solder bridges and all components are properly secure.

TESTING THE UNIT

The first test should be made to ensure a good connection exists on the power plugs earth. This is for safety only as a faulty transformer or one that breaks down during service and the primary windings short to the iron core, can be potentially dangerous if the transformer is not insulated from the case and a poor earth connection is employed. Check for continuity using a known quality multimeter or other resistance measuring device between the power plugs earth pin and a bare metal area on the power supply casing. A resistance of 0 Ohms should be observed, anything higher is unacceptable and the fault MUST be remedied before further operation.

CROWBAR

Rotate the 10K trimpot wiper fully counter clockwise and insert a low capacity fuse in the fuseholder (1 amp is satisfactory). Next plug in the unit and switch on. Check for overheating, smoke or burning smell. If this occurs, switch off immediately, locate and repair the fault. Connect a multimeter switched to 20V DC across the output terminals and observe the voltage which should be between 9 and 10V. Slowly rotate the 10K trimpot clockwise



and carefully observe the voltage reading which should be increasing. Slowly increase the voltage to the point where the fuse blows which should occur at 15V +/- 300mV. Switch off unit, rotate 10K trimpot fully counter clockwise and replace fuse with 20 amp type. Using the above test procedure, rotate the trimpot until desired voltage obtained i.e. 13.8V.

LOAD TEST

This test requires you to draw 20 Amps from the supply. (This is where you find out if you have done it right!). A transceiver capable of drawing 20 Amps on transmit (AM, FM or CW) is suitable. If you don't have such a beast, then you will have to devise a high powered resistor suitable for short duration tests. An example of this is several lengths of nichrome resistance

wire paralleled together to produce 0.7 Ohms and wound on a non conductive heat resistant former taking care that each length is separated from the other. **WARNING** this device will try to dissipate in excess of 270 Watts and will therefore become very hot!

Connect your voltmeter / multimeter across the output terminals and switch on the supply. Ensuring you have a reading of 13.8V, connect and key the load for 1 or 2 seconds and observe the voltage.

If all goes well, there should be a minimal voltage drop in the millivolt range. This voltage drop is quite normal and will vary according to wire size, solder joints and connections used in the construction.

73's DE Peter, VK2KHE.

****Repeater Report****

(28/8 to 20/9/92)

We start this report with a BIG thank you to John (ZDM) who managed to recently acquire twenty four 2 volt/200 AH deep cycle cells for the Club's rptrs. These cells had been well maintained & were still in service when removed. By their date stamping, they appear to be around 6 years old which is still quite young for these type of cells, which have a life expectancy of over 15 years. These twenty four cells will be grouped to provide four sets of 12 volt batteries to power our rptr sites for many years to come. Thanks John.

VK2RAW (146.850) - 30/8/92 While I was walking thru' the Harbour Tunnel (attempting communication on my handheld), Ken was busy up at Mt Murray. He installed the new set of batteries & got his two truck batteries back that he had "temporarily" put at the site 18 months ago. While there he once again investigated the occasional "scratching" on the WIA Broadcast audio. After going thru' all connections again, accompanied by much head-scratching, he climbed the tower & had a look at the Link Yagi. Found the solder connection between the SO-239 & the gamma match had fractured. With the amount of wind at the site he was unable to get enough heat out of his gas soldering iron to re-do the joint. A few metres of insulating tape afforded a quick fix till the joint can be resoldered in the future. He also took an IFR with him to check for the very slight desense we thought the rptr was still sometimes suffering. He found that the

clipping/limiting pot had a dirty spot in it's travel. At this position, the deviation of the rptr could be "forced" to go well more than the normal 5kHz deviation (especially so if the signal it was RXing was deviating excessively). It appeared that when this happened, the rptr's transmitted signal would extend outside of the filtering ability of the diplexer's notch-filters. This would then allow the rptr's TXer to desense it's RXer (Rptr diplexers normally consist of 2 sets of three "notch"-type cavity filters in series with the rptr's RXer & TXer. The three in series with the RXer input are tuned to "notch-out" the TX frequency. The three in series with the TXer output are set to "notch-out" the RXer frequency. Note they are not "pass-band" filters). The rptr is presently performing well.

VK2RIL (147.275) - Once again it's pleasing to report that the rptr is functioning well. Unfortunately the same cannot be said for the pager interference that is still (over 5 months now) plaguing our rptr. The local DOTC have spent considerable time on the problem but at this time have not been able to detect how the interference is occurring. The previous interference from another Telecom pager (on 148.0375MHz TXing from the W'gong Exchange) was caused by a spurious 40dB down in the top-half of the 2m band. As yet DOTC have been unable to detect any actual spurious from the "suspect" Telecom Pager on 148.1875MHz (also at the Exchange). Until DOTC can figure out how the Pager is getting into 7275, they cannot start proceedings to rectify the problem. In the meantime DOTC have

tuned-up & supplied a "pass-band" cavity filter to see if this helps the situation. This was picked-up on Friday (19/9) & installed the following morning. The results obtained with the adding of the filter may help DOTC to determine the cause of interference. As well as this pass-band filter, there are 5 (yes 5) other filters on the input of the rprr's RXer. Two are tuned to "notch-out" the on-site Motorola Pager on 148.7875MHz. The other three are the rprr diplexing. As reported in the last report, the number of "false-triggerings" our licensed rprr has now suffered at the hands of pagers (in particular Telecom Pagers) would now exceed 1,300,000 in the past 5 months!!! By the way, the set of 200AH batteries was installed at 7275 on Saturday (5/9/92)

VK2RIL (438.725) - Also on the 5/9/92, we installed a set of batteries onto 8725 (although co-sited, 7275 & 8725 are not in the same building). The south facing 10 elmt Yagi was changed to a 7 elmt dual-dipole version (It was hoped the 7 elmt would provide a better coverage to W'gong area). Testing since then found has found that this antenna isn't as good as hoped. On Saturday (19/9/92) changed the antenna (hopefully for the last time) to a 13 elmt yagi. This appears to give the best coverage by far. Everything else working fine (That's because there's no Pagers on 70cm!)

VK2RUW (438.225) - The rprr & linking working fine till Sunday (6/9/92) Michael (XCE) & Rod (TRB) were on site doing some work on the Rose system, when something caused the mute on 8225 to go into some type of

high-speed oscillation. Unable to rectify so got them to bring the rprr, link transceiver, link/rprr control rack unit & the 20A P/S rack unit back with them. As reported last month, we were going to bring the system down soon anyway to do work in readiness for the linking to Mt Ginini, the schedule has just been brought forward. In the meantime, Ian (AIJ) at Goulburn had acquired, bought X-tals & tuned a Phillips 747 for our Club to use as a replacement link transceiver. Unfortunately the interfacing of this transceiver is totally different to the previous unit, an AWA 700. Have decided to rebuild the whole control unit. If time is on my side, the rprr should be back on time by the October meeting. Apologies for the loss of this service. When the system is returned, the 200AH batteries will also be installed.

VK2RUW (144.775) Packet - Michael (XCE) bought X-tals, tuned & interfaced the VHF port for this system. Installed on 6/9/92. Coverage excellent. Reports of "plus 9" into Goulburn (compared to 6850 at fours to fives). Unfortunately, it turns out that there is mix of a few of the megawatts of signals at Knights Hill right on 144.775MHz. This is making access times low. The port hears you, but can also hear the mix of signals & waits for a break in their transmissions before replying to you (along with all your retries). Michael is going to try some filtering

VK2RUW (29.620) - Nothing to report

Till next time - Rob VK2MT

[Editors note:- Rob had written more about the pager problem but in the cold light of day thought better of putting it in and left it to me for a decision. Personally, he has a very good point and I would print it and back him up, but it (regrettably) wouldn't do any good except air his valid complaints in public a little more forcefully than has been the case. Basically the question is 'What would happen if we caused interference to the commercial organisations the way they cause interference to us?']

******* Bits 'n Pieces *******

If you are looking for a PC, here's a way you can help Our Club. For every 10 computers purchased by club members, Keira Komputers will donate 1 to Our Club! So, if you want to buy a computer, at least give Michael McCoy a call for a price on (042) 27-3052.

From Barry Hartley VK2FE at Macalec. Do not replace the 6146 valves in the Kenwood transceivers (520, 820, 530 and 830) with the PENTA valve. The PENTA valve appears to cause failure in the 240v fuse, cathode resistor and anode choke coil.

Do you have a name? Do people call you 'mate', 'sport', 'hey you', 'Uh?', 'love'. Solve the problem! Buy a club badge with your name and call sign for only \$5. Contact our secretary (Damn! I can't remember his name, wish he'd wear a badge).

Darrel VK2USA isn't impressed. He received The Propagator when he wasn't financial, but as soon as he paid his dues, his copy didn't arrive!

Crystals. No, not the singing group, but genuine custom made Xtals. These are available at a very good price from our President (Look for his name on his badge).

In November, we plan to invade the St George club. Officially it's a social visit, but in reality, we are going to pinch their good ideas and use them in our club to make us better. Let me know if you want to come along.

WARNING. Dale VK2DSH is looking for someone to receive the Leather Tongue Award. Graham Denny has constructed a good one, and the recipient must wear it around his neck at each meeting for all to see!

John VK2XGJ is running a 2m net on Monday evenings at 7.30 pm. We'll start off on VK2RIL (147.275) and see how it goes. If there are problems, Rob VK2MT will link VK2RIL with VK2RAW. Hey John! How about we use VK2RUW and involve the Goulburn boys. This is your chance to be involved in an 'Official Waffle Session'.

Next March we hope to have a talk by Dale Woodside VK2TZ on Antennae. I'm told he's very good. I'm really looking forward to this night.

Next April, John VK2XGJ will be running a packet demo, not just talking about it.

Next February, Barry Sullivan our local RI from DOTC will be talking about RFI.

Phil VK2TPH is organising something to do with strippers; I missed part of the conversation.

The Science Centre will require some operators at different times during the week when the high schools visit. These students are just the right age for us so let Dale VK2DSH have your name if you can give 2 hours to Our Club.

Don't forget JOTA is held later this month. We always need operators so contact Graham Denny if you can spare an hour or two on Oct. 17th and 18th.

What's the most popular name for our members? We have 7 Johns, 6 Davids and 5 Peters in 57 members. 4 members have a street number of 6. We lost 34 members between last year and this. We send out 17 copies of The Propagator to advertisers, clubs and magazines. Each issue costs about 86c including postage (almost half your annual fees). There are over 7,000 words in an issue. Major writers are Peter VK2KHE, John VK2XGJ, Graham VK2GID and Lyle VK2ALU. It's not game to count the man hours involved.

An update on the CSIRO visit.

10:00 - 10:45 Intro & PLANS talk

10:45 - 11:45 Mobilesat and Anechoic Chamber tour

11:45 - 12:30 Multibeam Antennae Display/E&O tour.

13:30 - 13:30 Lunch

13:30 - 15:30 Various demos' including Solid state devices, A4 Chip Electronics & Cyrogenics

***** Committee Meeting *****

Personally, I don't particularly like attending committee meetings but the September one was GREAT! Everyone was starting to pull in the same direction and a lot of ideas came out on things we should be doing. Everyone was very positive and you could almost feel the buzz in the air. It seemed like a big weight had been lifted and we could now get on with the job.

Here's my version of the official minutes of the Committee meeting held on 15/09/92:-

Meeting started late at 19:40.

Usual prelim stuff about apologies and previous minutes.

During matters arising from previous minutes we discussed the budget, morse keys, WIA meeting, Keira Komputers offer, Club running costs, Fund raising activities, High School Science Centre visits, TAFE students, copies of the Propagator to clubs and magazines, CSIRO visit.

Letters came in and none went out.

We have some money but need more.

Repeater report by Rob VK2MT with a BIG thank you to Ian VK2IAJ for the UHF link transceiver.

General business:- Change in club meeting format, business cards, no Propagator if not financial (*Ed. Please pay up to help my circulation!*), future meeting topics.

The meeting closed at 21:25. With all that discussion, I'm going to demand a pay rise.

***** Historical *****

WAY BACK THEN Episode 12.

The remainder of 1972.

Dapto Moonbounce Project -

The hazards to receiver preamps caused by high power transmission were demonstrated in February when the transistor in our latest preamp was destroyed after the failure of its input protection diodes. The coax. receive/transmit relay, which provided some 60dB of isolation, had to be backed up with a second coax. isolation relay.

An important milestone in the Project was achieved on 31st March 1972 when, at 1131GMT, we heard our own echoes back from the moon for the first time!!!! - at signal strength of up to 3dB above noise level in 2.1KHz receiver passband. This event is recorded on a most interesting section of recording chart which clearly shows the required 2.5 seconds delay between the transmitted and received signals, also the effects of libration fading which is unique to the EME path.

As at this time some 1700 man hours of work was shown in my Project diary, in addition to many more hours spent by Project members at home working on various items of equipment. This over a period of a little over 2 years.

In those days a Moonbounce Project was not to be taken on lightly! - BUT - VK2AMW was in business!

We then set about organising EME tests with WA6AHW, who was "ready and waiting", also OZ7UNI and, later in

the year, with K2UYH and W6FZJ. As the organisation of specific tests was rather a slow business, only 15 separate EME test periods resulted up to the end of the year. The other stations were hearing our signal better than we could hear them, although we could copy our own echoes on most occasions without much difficulty, even when we did not have a "visible moon".

Here I should make some mention of the "official" method of signal reporting used by those engaged in EME experiments on 432MHz and upwards in frequency. A slightly different transmission and reception procedure and method of signal reporting has been used on 144MHz EME.

It was soon realised by the very first EME workers that the standard "R-S-T" reporting was not adequate because of the very weak signals being received. If a signal was just discernible in the noise background then acknowledgment would be best made by transmitting a single morse character, the letter "T", and repeating it in a prearranged fashion, with relatively long breaks between repeats to differentiate it from the letter "M", which was used to acknowledge reception of sufficient information on callsigns of both stations, signal reports etc. to provide a "valid" contact. If the signal was relatively strong, such that long groups of letters was received without difficulty, then the letter "O" was sent as an acknowledgment. Transmissions also took place on a strictly followed two and a half minute period basis, with the designated

station transmitting first, starting on the "hour or half hour" and the two stations alternating transmission and reception periods for a total period of, usually, half an hour unless a "contact" was made more quickly. (hardly ever the case in the early days!)

As we strictly adhered to the above requirements, we were not able to report a successful EME contact in even though we considered that our receiving system was working fairly well, in that we were receiving not only our own echoes, but also up to 14dB of noise from the sun when the dish was pointed towards it. In those days the noise level from the sun was used as a common standard of comparison of receiving systems capability, even though its noise output was known to vary over a period (short or long, depending on how "active" the sun was at the time) - because the receiving systems were mostly not sensitive enough to pick up the much more constant but much weaker galactic etc. noise sources. The sun also provided a very convenient means of calibrating the antenna pointing system, as its position in the sky can be readily determined, whether it is cloudy or not.

Various improvements were thus made to our EME system over the remainder of the year, as follows -

(1) The transmitter frequency source was modified to include a phase locked loop and oven mounted reference crystal - to improve transmit frequency stability.

(2) An "active" audio filter was constructed, using a "state of the art" device sent to us by K6MYC. This provided variable bandwidth down to 40Hz wide at 6dB down without "ringing" and also variable centre passband frequency over a wide range. This item gave interesting results. When listening to very weak signals by ear, using a very narrow passband, it was found that the audio frequency of the signal in the very narrow band of noise at almost the same frequency made it difficult to differentiate between signal and noise.

Better copy of very weak signals could be achieved if a passband of several hundred hertz was used. However, when the very weak signal was being copied on the chart recorder, then the narrower the passband used the better, provided that short time receive system gain variations etc. did not cause problems.

The old adage "that the ear-brain system provides the best audio filter" might well be true when there are no other signals in the passband.

(3) A system was installed to feed a small amount of transmitted signal into the input of the receive converter via a coax. relay so that we could identify transmit frequency exactly on the dial of the IF channel receiver whenever necessary.

(4) Progressively better receive preamplifiers were constructed and tried out as better transistors were received from EME friends in the States. We were thus able to receive our own echoes from the moon up to 9dB above noise by years end.

X (5) A large security locker was made to our design by the Wollongong Uni. College, to house the equipment in the Operating room, as protection of this gear from theft or vandalism by intruders.

Interest in VK2AMW's Moonbounce activities became apparent, not only locally and in Australia, but also overseas. It became necessary to prepare Technical Bulletins from time to time, describing our equipment, progress etc. These were sent to many places on request - to save VK2ALU from writer's cramp!!

About this time the Club agreed to reimburse VK2ALU for overseas postage which was increasing rapidly. The cost of the equipment in use was being shared between the Wollongong University College and VK2ALU and to a small extent, by other members of the team.

An official opening ceremony for the Project was put on by the Wollongong University College in April - to which they invited representatives from the Press, Radio etc. We were all treated to tea, cake and bickies at the Dapto Site and we were able (eventually!) to give a demonstration of radio echoes from the Moon. Good publicity resulted, including a photograph in the local newspaper of a group of some of our team members inspecting the results of their efforts on a recorder chart.

The NSW Division WIA requested that a talk be given on the Project at a

Division monthly meeting. This was carried out by VK2ALU in July, to a large audience at the Sydney meeting room.

A demonstration of EME echoes was given, at their request, to a group of WIA members from Sydney, in October. Visitors from various other places arrived from time to time to inspect the Project

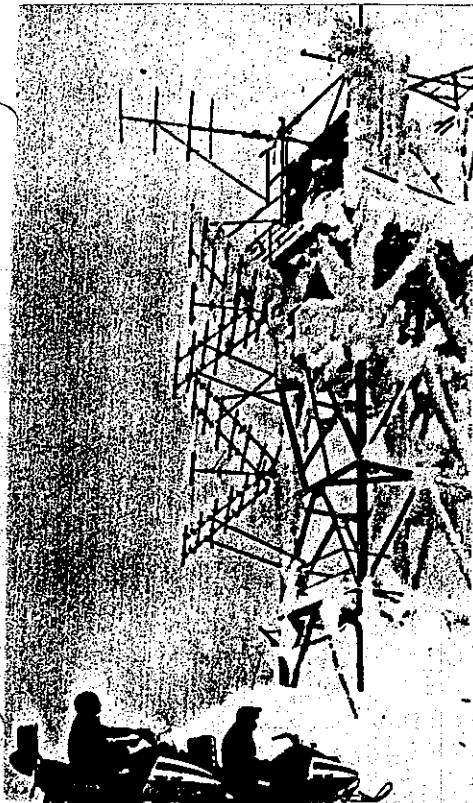
We were, by the end of the year, recognised as an experienced member of the half dozen or so UHF Moonbounce groups scattered around the world. We were the only one using circular polarisation which was technically superior to the linear polarisation used by the others. This was possibly a major reason why we could hear our own echoes more strongly than signals from other stations.

We had also developed a valuable relationship with the Division of Radiophysics of the CSIRO, from which we obtained some very useful information on circularly polarised dish feeds, celestial radio sources, which we were to put to good use in subsequent years.
Lyle VK2ALU.

I know the grass is always greener on the other side of the fence, but reading this makes me wish I had been a part of the project. Maybe it's just the way Lyle is telling it and not giving us all the heartberak and problems that they had,

***** Scoop *****

I happened to be at Knight's hill the other day and took a quick photo of Rob and Ken arriving to do some work on the repeaters. Sorry for the poor quality, but at least it shows what dedicated people they are.



***** Warning *****

The hardest thing about the editors job is fitting everything in to a limited amount of space. I'll bet next month is going to be very short of news since VK2KHE won't have an article and others are likely to 'dry up' so prepare for a lot of raving from me unless you can contribute!

***** For Thinkers *****

A man and his son were driving down a country road when they became involved in a serious accident. The man was killed and the son badly injured. Upon arrival at the Hospital, the lad was taken to the operating theatre where the surgeon took one look at the patient and said, "I cannot operate on him, he is my son".

Can you explain this?

VK2KHE: "How were the exam questions?"

VK2FPN: "They were easy, but I had trouble with the answers."

Teacher: "Johnny, say something beginning with I."

Johnny: "I is..."

Teacher: "No Johnny, you must say I am."

Johnny: "All right, I am the ninth letter of the alphabet."

Mother to son: "Come on, you'll be late for school."

"Not going," came the reply.

"Why, what's wrong?"

"The teachers hate me and the kids despise me."

"I'll give you two good reasons why you should go."

"What are they?"

"One, you're forty one, and two, you're the headmaster."

***** The End *****

That's the end of this for another month. Only 18 to go. See you!!

POST BOX

"THE ILLAWARRA AMATEUR RADIO SOCIETY Inc"
PO Box 1838, Wollongong, 2500.

REPEATERS	VK2RUW	29.620	Voice	Mt Murray/Knights Hill (off air)
	VK2RUW	144.775	Packet (ROSE)	Knights Hill
	VK2RAW	146.850	Voice	Mt Murray
	VK2RIL	147.275	Voice/RTTY	Sublime Pt
	VK2RAW	147.575	Packet (NetRom)	Mt Murray (Off air)
	VK2RUW	438.225	Voice	Knights Hill
	VK2RIL	438.725	Voice/RTTY	Sublime Pt

BROADCASTS - The Wireless Institute of Australia, N.S.W Division broadcast is relayed to 29.620 MHz and 146.850 MHz at 10.45am and 7.15pm each Sunday. Callbacks after the broadcast. RTTY broadcast in the week before the Club meeting, Sunday evening, 6:45pm on 147.275 MHz, relayed onto 3.618 MHz +/- QRM and 29.620 MHz, with callbacks immediately after.

CLUB NET - There is a club net on 147.275 (VK2RIL) at 19:30, 7.30 pm and 09:30 UTC. All members and non members are invited to join in and waffle.

NEWS LETTER - The "PROPAGATOR" is published each month to reach all financial members in the week preceding the Club meeting. Articles and letters are always welcome. Commercial advertising \$60 per half page per year, member's classifieds are free. See Peter VK2FPN for details.

MEMBERSHIP - \$20.00 P.A, concessions \$15.00 P.A, expiring immediately after the Annual General Meeting in July.

LAWRENCE HARGRAVE AWARD VK stations require 10 contacts with IARS members. Overseas stations require 5 contacts. One contact with the Club station VK2AMW is suitable. Details of contacts are to be sent to the Club secretary.

***** COMMITTEE *****

PRESIDENT	VK2KLH	Brian Clarke	
VICE PRES	VK2KWG	Ken Grimm	
SECRETARY	VK2JRH	Ron Hanks 84-2691	
ASSIST SEC	VK2SRB	Robert Bonella	
TREASURER	VK2DSH	Dale Hughes	
ASSIST TREAS	VK2GID	Graham Denney	
COMMITTEE	VK2SRB	Robert Bonella	VK2XQX - Simon Ferrie
REPEATER	VK2MT	Rob McKnight	VK2TKE - Ken Goodhew
QSL CARDS	VK2GID	Graham Denney	
PUBLICITY	VK2KWG	Ken Grimm	
BROADCAST	VK2XGJ	John Simon	
EDITORS	VK2XGJ	John Simon, 61-4628	VK2FPN Peter Read 61-7148
SOCIAL	VK2XCC	Ray Ball	
CANTEEN	VK2GMC	Phillip Klower	
DOTC LIASON	VK2MT	Rob McKnight	
LIFE MEMBERS	VK2ALU -	Lyle Patison	VK2CAG - Graeme Dowse
	VK2OB	Keith Curle	