



THE PROPAGATOR



MONTHLY NEWSLETTER OF THE ILLAWARRA AMATEUR RADIO SOCIETY
P.O. BOX 1838 WOLLONGONG N.S.W
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MEETINGS ARE HELD ON THE SECOND TUESDAY OF EACH MONTH
(EXCEPT JANUARY) AT 7:30 PM AT THE STATE EMERGENCY SERVICES
BUILDING, MONTAGUE STREET, NORTH WOLLONGONG.
VISITORS ARE WELCOME TO ATTEND MEETINGS.

THIS MONTHS MEETING -: The next meeting of the Illawarra Amateur Radio Society will be held on Tuesday September 10th at 7:30 pm at the usual meeting rooms at the S.E.S. Headquarters, Montague Street, North Wollongong. There will be no guest speaker at the meeting, allowing all to come along for a 'ragchew meeting'. So come along and just have a chat with those whom you often chat to on air, and those who you don't hear so often.

Again the raffle will be for two meat trays, so bring your money with you.

NEXT MONTHS MEETING -: Last month only 32 members attended the meeting (down from our average of about 50) and one visitor G3FTW, George Morriss who drew the raffle tickets.

The raffle last month was for two meat trays. The winners of the prizes were : Martin Hutchings VK2BMH, John Monie and the boobie prize went to Dave Routledge VK2NGS.

There was also an auction of new equipment from a local retailer performed by Lyle VK2ALU. From all reports trading was not particularly brisk and much prompting had to be done to start the bidding.

Thanks to all those who have contributed articles for the 'Propagator' over the last few months. Due to space limitations some articles have had to be held over, but all contributions will appear soon. Please do not think that because of this articles are not needed, and don't hesitate to pass anything on to the editor that you feel may be of interest.

Good luck to those who sat for the last Amateur exams.

REPEATER REPORT GRAEME VK2CAG

Sublime Point

The bent mast at Sublime Point has been repaired and both repeaters are back to normal operation. In fact, there is some slight improvement in signal strength from both repeaters as the aerials have been positioned a bit higher on the mast than before and the direction has been altered slightly to favour Vincentia direction. Repairs were not made easy by the fact that the tilt-over mechanism on the mast which was originally designed for ease of maintenance of the aerials, had become twisted around so there was a risk of the mast coming down over power lines or adjacent building. The whole exercise was expertly engineered and carried out by Ian VK2EXN with assistance from VK2DFK and VK2DFL. Morry VK2EMV, who is still recovering from his operation was there on site, and although not able to get involved physically with the work, gave valuable assistance by keeping watch on the equipment while the mast was away being welded at Mike's place. Morry also did some good 'PR' work by showing the trustees of the site first hand how the threat of danger to property was removed by repairs being done by I.A.R.S. members. It goes over well when the people who are good enough to let us use their property for our repeater can see for themselves that we are endeavouring to maintain the equipment in a safe condition.

Mt. Murray

At last we had a day when the weather was reasonable enough to do that much needed aerial job. On Sunday 4/8/85 Ian VK2EXN and Reg VK2EMI were on site at Mt. Murray. They lowered the mast and fitted the 'Debeglass' insulated guy wire to the aerial whip. Reg examined the aerial and found it to be in good shape. The VSWR had changed slightly since its original installation, but at 1.5:1 is quite acceptable. The aerial had suffered extreme battering in the high winds with one of the temporary guy ropes broken, and the fact that it has come through unscathed has really proven its ruggedness. Now properly guyed, we can look forward to the aerial system at Mt. Murray staying put for a long time to come.

There has been some de-sensing of the receiver for some weeks

now, and it was at first thought that the antenna was responsible. However, checks showed that all was OK and the old receiving antenna (which is still standing) gave the same results as far as de-sense goes. Another visit to the site had to be made with the appropriate equipment to further investigate the trouble.

This was done on 17/8/85, and the problem turned out to be one of the duplexer cavities out of tune. Only minor adjustment was needed to restore the repeater to normal. No reason could be found for the cavity to drift, especially since the other 5 cavities were spot-on.

Just recently a batch of UHF cavity resonators appeared at Cavions. Needless to say, sufficient quantity of these were purchased for future use in duplexers for both of the 70cm repeaters. The cavities have been tested and will cover the tuning range required but considerable work will have to be done to convert them from pass cavities to the pass-plus-notch type needed for repeater use.

From the '160 Metre Wild Bunch Newsletter'

Vol. I No. 3

SPRING 85

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 Now that we have some experience under our belt and this being Issue No. 3, Let's get down to work. I have had a lot of comments on MY SPELLING? Well I hate to tell you but all of the misspellings is done on Purposes. hihi. We will try to do better, but WHAT DO YOU EXPECT FROM A POLACK ??????????
 FLASH FLASH FLASH VK2DMR on 1850 at 0200z 8 Jan. 1985.?
 For those who were around on that Special Night. All I can say is What a crew Or should I say WHAT A BUNCH OF SUCKERS!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
 With Improving Band conditions who knows what to expect on 160 these days. VKK on 160 at this time? Well anything is Possible. I should of smelled a RAT in the bushes. When ONLY W1PJZ was able to work Dennis(VK2DMR). Such suckers were W8GIO,KB3AK, W1CCS and yes yours truly included with a waiting list in the wings just looming to work a VK at this time of DAY hihi. The only thing I can say is PJ PAY BACK IS A BITCH!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
 You see Mr. PJ set all this up with Dennis and Don(KA1ACB) that afternoon. The Plot began when Don Picked up Dennis at the Airport and had him meet PJ(OH GOD what a Mistake) so the Plan was conceived that afternoon. I must say that it worked very well W8GIO(Paul) who runs a vertical could not reach VK that Night, nor could Mr. DX KB3AF(Tom) in West Va. Than yours truly took over and Called VK2DMR de KA1SSR every one was saying you are doubleing Hell I Could not Hear Him when I switched to the Vertical. Come to find out Dennis said later that I was Pinning his Meter ha. What a story. Well I hate to admitted it but it's true every Dammed word of it. Waht a Bunch of SUCKERS!!!!!!!!!!!!!!!!!!!!
 But that's not all. VE3KQS(Brad) called VE3NNR(Gary) on the telephone and told Him to get on the AIR VK on 1850 SSB. So Gary ran down the stairs to turn on the beast to work VK. Well he called and called and called Finally a reply from VK (who at this time was turning up the Power so he could be herd in VE3 Land. Gary said ur 44 44 44 QRM over, the reply was QSL ur 59+40db. What was the reply from Gary? Oh I know what's going on. Well another one bites the Dust. Sorry Gary but it could not happen to a nicer Guy. So that's the story of the Rare VK2DMR on 1850 at 0200z on Jan. 8, 1985. By the way Dennis worked 21 wild bunch members to Qualify for Membership. All I can Say is Dennis you May will sit in just Right with this wackey crew!!!!!!!!

E.M.E. REPORT BY LYLE VK2ALU

The EME site building was broken into again two weeks ago. The intruders were well equipped with cutting equipment, as they were able to destroy a heavy steel shroud plate fitted over the padlock on the door after the previous break in. The hardened steel lock had been cut with large bolt cutters.

Fortunately I had previously removed most of the equipment for checking while the dish feed horn was taken down for rebuilding, so nothing was stolen.

The remainder of the electronic gear has now been removed for safe keeping. The IF channel receiver sensitivity has been returned to normal with the replacement of valves and adjustment of its IF transformer tuning. It will be some time before the work on the dish feed horn is completed.

The security situation at the EME site will then be reassessed before any equipment is returned to site.

Lyle VK2ALU.

Satellite Notes.

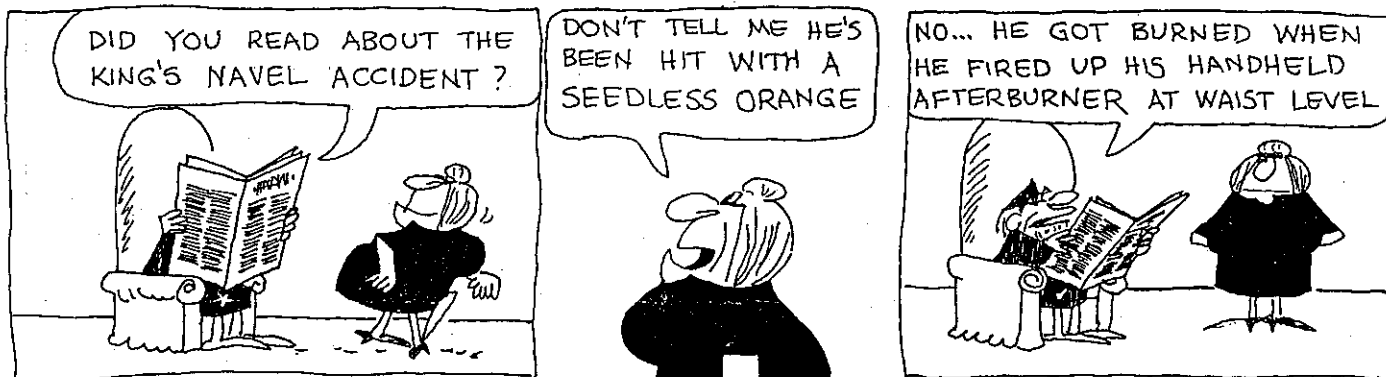
The 'ON' periods for the Mode B and Mode L transponders of Oscar 10 have been altered during the current situation where the satellite is affected by abnormal reduction in battery capacity due to the 'bird' being in earth's shadow for additional time each day.

Transponder operating periods are

Mode L from MA 190 to 206
 Mode B from MA 207 to 29
 OFF from MA 30 to 189

Thus, Mode B is operational over Perigee, where the satellites angular rate of movement is greatest and communication range is least.

Lyle VK2ALU.



EXPANSION OF SBS TRANSMITTING FACILITIES

The transmitting facilities of the Special Broadcasting Service (SBS) were recently expanded when new transmitters were commissioned in Brisbane, Newcastle, Wollongong and Adelaide. These stations use 25kW UHF transmitters supplied by Philips and manufactured by Pye in the United Kingdom. The transmitters are physically about the same size as the older NTS 10kW VHF transmitters, although the NEC UHF transmitters in use in Sydney, Melbourne and Canberra are much larger.

The transmitting systems at these new locations operate, as a matter of Government policy, in the UHF band. The SBS is currently the only television operator providing high power wide coverage services in UHF.

All transmitters use klystrons as the final amplifying device and although initially more expensive compared with tetrodes, they generally have better reliability, improved electrical stability and long life performance, typically up to 60,000 hours. To ease installation problems when a klystron does finally need to be changed, the replacement klystron is mounted in a special trolley and wheeled into the transmitter cabinet. The klystron is 1.295m in length and must be handled with care.

Separate but identical transmitters are supplied for the vision and sound signals. However, under emergency conditions it is possible to put both vision and sound through a single transmitter, although at reduced power, to allow repairs to be made to the faulty transmitter. This is technically known as multiplex reserve operation.

The efficiency of these transmitters is only about 25%, which is very much lower than modern VHF units. This has required substantial upgrading of the main power supply systems at Newcastle and Wollongong. There is also consequently a large heat load to be absorbed and this is arranged by a complex vapour phase cooling system with stringent demands on the purity of the water used.

The output of the transmitter feeds the antenna through a single 150 mm coaxial cable. This is twice the size of the biggest cables used for other television services. The size is essential to minimise the high attenuation of UHF signals in cables and the need to cater for a number of transmitters to share the one antenna in the future.

The preferred type of antenna is a multi-level array of broadband panels. Worldwide tenders were called last year and a contract was awarded to a South Australian company, Hills Industries. The Hills design mounts the basic panels inside a cylindrical fibreglass radome, which because of its shape, significantly reduces the wind loading on the existing towers compared with the conventional approach of mounting panels on a four-sided steel column.

Pending upgrading of the towers, a low wind load slot antenna was installed at all centres as an interim measure.

From 'The Broadcaster'
Contributed by Ken, VK2DOI.

HOMEBREW NOTES (#1)
DENIS (VK2DMR) & KEITH (VK2OB)

Over the years that the Tech classes have been running we have taken great pains to stress the enjoyment to be had from constructing your own gear. Indeed, we are all experimenters, it's just that some of us are more experienced than others!!

This is intended to be one of a series of articles dealing with homebrew projects for the shack. We cannot guarantee the regularity of the articles nor will full constructional information be given. Rather each project will be complete in itself and the constructor in many cases will be given the opportunity to finish the project in his own personal way (this is half the fun of homebrew). In addition, the accent will be on test and measurement equipment - both because these are often not found in the shack and because quite often they are expensive to buy commercially.

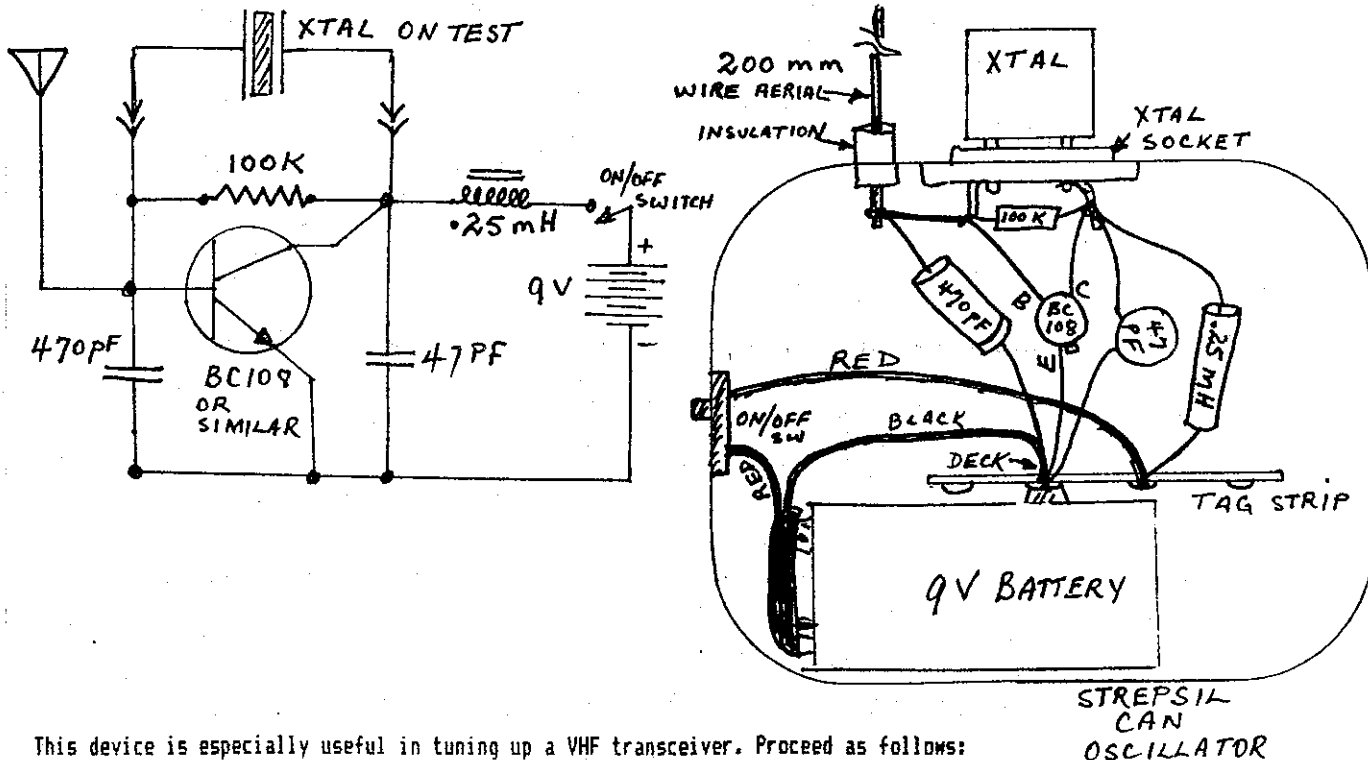
Finally, each project will have been built by either one or both of us and in many cases will have been built by many of the students in Tech classes (Nuff said). No fancy components are used and in many cases preloved (ex-Cavions) transistors etc. can be used.

A TUNE-UP OSCILLATOR.

This device is an almost indispensable piece of gear in the shack and has a huge range of uses. It has been used as a morse code oscillator, a crystal checker, and for it's original use as a tune-up device for changing the frequency of disposals transceivers.

The original circuit appeared many years ago in Electronics Australia when it was still called Radio, TV and hobbies (no computers around then!).

Both of us have built ours in Strepsils tins (the price was right!) but the choice of packaging is left to the whims of the constructor. The transistor can be almost any NPN silicon transistor in the junkbox. The circuit can be made using almost any of the usual techniques including Veroboard, tagstrip, PC board or point to point wiring. No special care was found to be necessary but it might be wise to keep the wiring as short as possible.



This device is especially useful in tuning up a VHF transceiver. Proceed as follows:

- 1 Remove the transmit Xtal and place in the oscillator and switch on.
- 2 Initially couple the output to the receiver input and tune each stage.
- 3 As the stages get closer to the correct frequency continually move the oscillator away from the input until no further improvement can be achieved.

So there it is the cheapest RF oscillator you could buy (or not buy).

DETAILS OF SETUP OF AMATEUR STATION
AT THE 14TH AUSTRALIAN JAMBOREE

THIS DESCRIPTION IS OF THE SETUP AND OPERATION OF THE AMATEUR STATION AT THE 14TH AUSTRALIAN JAMBOREE FROM 29TH DECEMBER 1985 TO 9TH JANUARY 1986. IT IS ALSO INTENDED TO OPERATE A STATION FROM THE SITE OVER THE J.O.T.A. WEEKEND OF OCTOBER 19TH & 20TH.

THE JAMBOREE SITE IS LOCATED AT "CATARACT SCOUT PARK" ABOUT 1.5 KM ALONG THE ROAD LEADING TO CATARACT DAM. THIS ROAD RUNS OFF THE BULLI - APPIN ROAD ABOUT 6.1 KM FROM APPIN.

THE STATION ITSELF IS LOCATED VERY NEAR THE MAIN ENTRANCE AND IS ON ABOUT THE HIGHEST PART OF THE ENTIRE SITE THUS BEING IDEAL FOR THE PURPOSE.

THE STATION CONSISTS OF TWO MAIN PARTS; THE ANTENNAS AND THE "SHACK". THE ANTENNAS WILL BE MOUNTED ON THREE WOODEN POWER POLES (OR AT LEAST THAT IS WHAT WE ARE HOPING TO GET) WHICH ARE ABOUT 20 METRES ABOVE GROUND LEVEL. THEY WILL BE ARRANGED IN A TRIANGLE AND WILL SUPPORT THE FOLLOWING ANTENNAS:

1. AN 80 METRE DIPOLE RUNNING NORTH - SOUTH FORMING THE BASELINE OF THE TRIANGLE.
2. TWO 40 METRE DIPOLES RUNNING FROM THE ENDS OF THE BASELINE TO THE THIRD POLE WHICH WILL BE EAST OF THE BASELINE AND AT RIGHT ANGLES TO ONE ANOTHER.
3. TWO 4 BAND BEAMS ON ROTATORS, ONE ON EACH END OF THE BASELINE.
4. BEAMS FOR 6METRES, 2 METRES, AND 70 CENTIMETRES WILL BE MOUNTED TOGETHER ON A ROTATOR ON THE POLE AT THE APEX OF THE TRIANGLE.
5. VARIOUS GROUND PLANE ANTENNAS FOR 2M AND 70CM MAY BE MOUNTED ON THE APEX POLE AS WELL AS THE NEED ARRISES.

THE SHACK ITSELF WILL BE LOCATED CLOSE TO THE APEX POLE EITHER JUST INSIDE OR JUST OUTSIDE THE TRIANGLE. IT CONSISTS OF A DEMOUNTABLE BUILDING ABOUT 8M X 8M. THIS WILL BE DIVIDED INTO TWO SECTIONS INTERNALLY, ONE 8M X 6M WHICH WILL BE THE OPERATIONS AREA AND THE OTHER SECTION (2M X 8M) WILL BE THE ADMIN AREA AND OPERATORS' AMENITIES AREA. A SEPARATE DIAGRAM WILL BE FOUND AT THE END DEPICTING THE ANTENNA LAYOUT AND THE INTERNAL LAYOUT.

WE ARE HOPING TO HAVE THE STATION MANNED 24 HOURS A DAY OVER THE FULL PERIOD OF THE JAMBOREE ALTHOUGH THERE WILL OF COURSE BE PEAK PERIODS AS WELL AS SLACK PERIODS AND SO THE NIGHT OPERATORS WILL PROBABLY BE ABLE TO SLEEP UNLESS THERE IS A SKED ON DURING THE NIGHT. IT IS EXPECTED THAT THE LOAD WILL BE FAIR DURING THE DAY PEAKING DURING THE EARLY TO MID EVENING SO THIS SHOULD BE THE TIME TO HAVE ALL OPERATING POSITIONS IN USE.

THE ACTUAL OPERATING POSITION WILL CONSIST OF A SQUARE IN THE CENTRE OF THE ROOM, MADE UP OF 4 TABLES. THIS SQUARE WILL BE ARANGED AT AN ANGLE OF 45 DEGREES TO THE WALLS. IN THE CENTRE OF THE SQUARE WILL BE A PARTITION ABOUT 2M HIGH FORMING A SQUARE BOX IN THE CENTRE AND ALSO FORMING A BACKING FOR EACH OF THE FOUR OPERATING POSITIONS (TABLES). THIS BACKING WILL ALSO FORM PART OF THE ACCOUSTIC SCREENING BETWEEN THE OPERATING POSITIONS AS WELL AS PROVIDING AN AREA, INACCESSIBLE TO THE BOYS, FOR ALL CABLING TO RUN AND AS A DISPLAY BOARD FOR MAPS, A CLOCK AND OTHER THINGS SUCH AS SKED SHEETS. THE CABLING WILL GO FROM THE CENTRE TO ONE CORNER OF THE ROOM (NEAREST ADMIN) WHERE THERE WILL BE A PATCH PANEL FOR ALL POWER, ANTENNAS AND ROTATORS. THIS WILL ALLOW ANY OPERATING POSITION TO HAVE ACCESS TO ANY ANTENNA JUST BY GOING TO THE PATCH PANEL AND CHANGING THE APPROPRIATE LINK.

THE CALLSIGN FOR THE STATION HAS BEEN ALLOCATED BY D.O.C. ALREADY FOR BOTH THE JAMBOREE AND J.O.T.A. AND IS "VK2SAJ". LOGGING WILL BE DONE

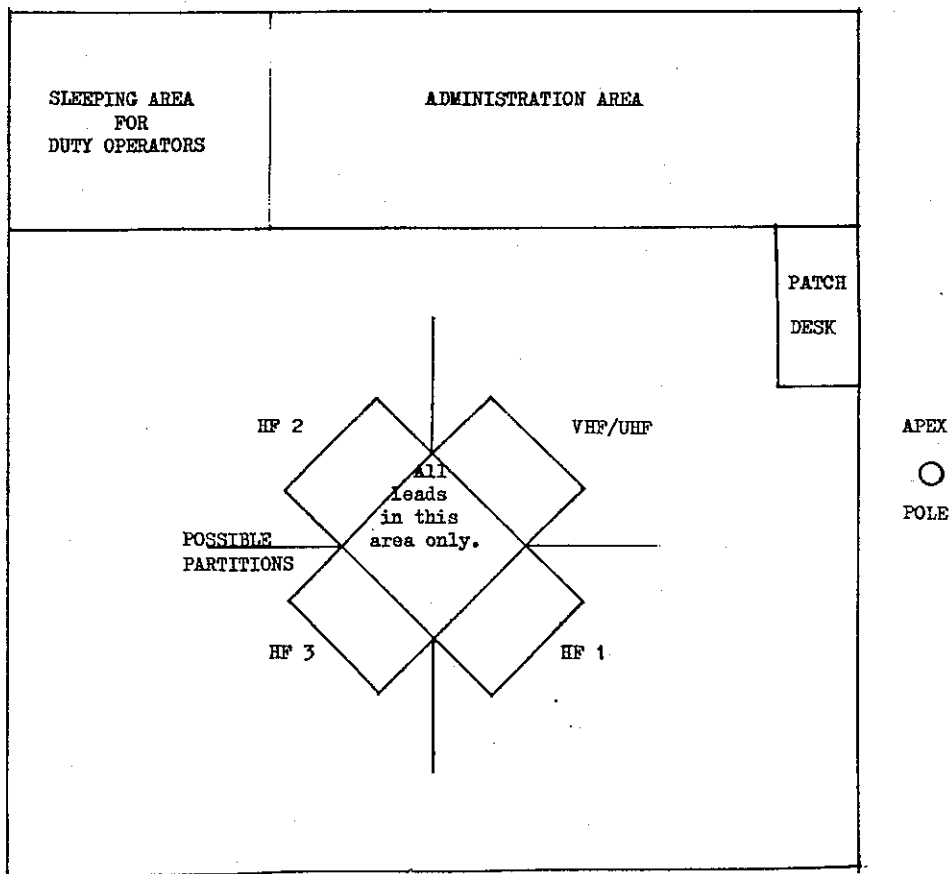
FOR ALL CONTACTS AND IT IS INTENDED THAT WE WILL HAVE QSL CARDS ON CONTINUOUS STATIONARY SO THAT AT THE END OF THE DAY (OR SHIFT) THE CONTACTS WILL BE TRANSFERRED FROM THE LOG SHEETS ON TO A COMPUTER WHICH WILL THEN PRINT OUT THE CARDS READY TO BE SIGNED BY THE APPROPRIATE OPERATOR.

IN THE OPERATORS' AMENITIES AREA THERE WILL BE ROOM FOR 2 TO 3 PEOPLE TO SLEEP AT ONE END WITH ADMIN AT THE OTHER END. WE WILL HAVE FACILITIES THERE FOR MAKING COFFEE, TEA ETC AND PROBABLY A SMALL FRIDGE IN WHICH TO KEEP MILK ETC.

THERE WILL BE PARKING AVAILABLE EITHER IN THE SCOUTERS' CARPARK OR THE MAIN PUBLIC CARPARK (WHICH IS JUST BEYOND THE MAIN GATE AND THEREFORE VERY CLOSE TO THE STATION. VEHICLES (EXCEPT FOR A VERY FEW) WILL NOT BE ALLOWED WITHIN THE SITE DURING THE JAMBOREE SO IF YOU WANT TO GET AROUND YOU WILL NEED TO WALK OR USE A PUSHBIKE.

IT IS HOPED THAT A FAIR NUMBER OF SKEDS WILL BE ARRANGED AND TO THAT END WE WILL BE PUBLISHING AN ARTICLE IN THE SCOUTING MAGAZINES ENCOURAGING THOSE ATTENDING TO TRY TO ARRANGE A SKED BACK TO THEIR HOME TOWN OR HOME TROOP.

THIS IS A BRIEF OVERVIEW OF THE ACTIVITY AND IF THERE ARE ANY QUESTIONS PLEASE GET IN CONTACT WITH ERIC VAN DE WEYER (VK2KUR) 70 DOWLING ST, ARNCLIFFE 2205 OR ON PHONE (HOME) (02) 591543.



The centre of the 4 operating tables consists of a square of wooden partitions to about 8' high. These will be a map, clock and speaker mounted on each. All cables to and from the operating positions will go into this middle section from where they will go either overhead or under the floor to the patch desk. All patching will be done at the patch desk so that there is no need for the operators to get to the cables behind the equipment and the boys can not get to the connections either.

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CALL SIGN IF ANY:

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WANT QSL CARDS AT MEETING YES _____ NO _____ WIA MEMBERS ONLY

NB: Receipts will be available for collection at following
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I hereby absolve the Illawarra Amateur Radio Society from any responsibility
with respect to accidents or personal injury occurring during any function
or meeting of the Society.

Signed:

Please send to: The Honorary Treasurer,
Illawarra Amateur Radio Society,
P.O. Box 1838,
WOLLONGONG. N.S.W. 2500.

Continued from last month.....

protocols

What we have described is not yet truly packet radio. It could be called "frame radio," the exchange of frames of information. The protocol, in addition to specifying the structure of the frame, determines the contents of the ADDRESS, CONTROL, and possibly the DATA fields. It also determines action to be taken in various situations. For example, just exactly what should be done if the first, second, and fourth frames received in a single transmission check out, but the third does not? Or, what should be done if the other station suddenly stops responding? The list of "what-ifs" increases rapidly as other users join the frequency.

The interchange of packets results in communications between the participating stations on more than one level. The ISO, International Standards Organization, has defined a model network structure consisting of seven "layers." The first three, levels 1, 2, and 3, are concerned with communications and are the ones of interest to us. Each consists of a set of related tasks which would ordinarily be handled by correspondingly related processes (electrical or software). The ISO layer structure does not define the specific protocol to be followed to accomplish the tasks of any level, and the operation of each level should be independent of how lower-level tasks are performed.⁵

Furthermore, each layer is "transparent" to the levels above it. This means, for example, that information used to direct actions by a level 3 process is treated as data by the level 2 process. A packet is structured like an onion. Each process peels off the applicable control information before passing the remainder to the next higher level.

The bottom layer is called the physical layer. It is concerned with such things as modulation and transmission techniques, signaling the beginning and end of packets, bit-stuffing, and maintaining synchronization with the incoming data stream. The second level, or data link layer, defines the use made of the address, control, and FCS fields of the packet. Level 2 is responsible for setting up and maintaining a connection or data link with the other station. This includes verifying data integrity, acknowledging receipt of intact frames, retransmitting unacknowledged frames, and performing various link control functions. The third level, the network layer, defines routing functions and inter-network communication. Level 3 is concerned with setting up and maintaining routing tables for communication between stations which are not in direct contact. Amateur packet radio has implemented some level 3 functions but not all.

An additional set of rules for collision avoidance

protocol, is necessary for packet radio but not for communications over wires. Since stations cannot receive at the same time they are transmitting, "collisions" occur when two or more stations transmit simultaneously. A scheme for avoiding repeated collisions must ensure different retransmission times after an initial transmission has failed. If all stations can hear each other, as is the case when all transmissions are made on the same frequency and all stations are close together, all that is needed is to impose a short random wait time for stations retransmitting a packet. If a central controller (or a satellite) transmits on one frequency and listens for all other transmissions on another frequency, a more elaborate scheme is required.

The HDLC frame structure described above is imposed on levels 1 and 2 of all protocols implemented so far for Amateur packet radio, and both the VADCG and TAPR TNCs use LSI chips that perform many of the level 1 and 2 tasks. The two most widely used protocols, VADCG and AX.25, are thus functionally equivalent on level 1 and quite similar on level 2.^{6,7} AX.25 is modeled on X.25, a standard developed by the Consultative Committee for International Telegraph and Telephone (CCITT) of the ITU.⁸ AX.25 was put forward by a group of Amateurs at the AM-SAT packet conference in October of 1982. AX.25 specifies the address as containing Amateur call signs of both the sending and receiving stations, with optional routing information in the form of the call signs of stations requested to relay, or digipeat, the packet. The VADCG address field contains a numeric address of the sending station only; packets setting up the connection contain call sign information in the data field. Relay by an unspecified digipeater can be requested. The control functions implemented in AX.25 are summarized in table 1. Most control func-

table 1. Level 2 control functions.

| | |
|------|---|
| RR | Receive ready: acknowledge receipt of information frames by specifying the sequence number of the last packet received. |
| RNR | Receive not ready: request to stop sending (receive buffers full). |
| REJ | Request retransmission of missed frames after receipt of a frame number larger than expected. |
| DM | Disconnected mode: response to a packet other than a connect request. |
| SABM | Set asynchronous balanced mode. This is a connect request. |
| DISC | Disconnect request. |
| UA | Unsequenced acknowledgment: sent in response to a connect or disconnect request. |
| FRMR | Reports an abnormal condition; that is, receipt of a packet with an undefined or invalid control byte. |

tions can be performed by a packet which also transmits data: Fewer level 2 control functions are specified in the VADCG protocol.

implementation

If you have a home computer, you are probably wondering where you can get a packet radio program for it. You may even be thinking about writing one yourself. The only hitch here is that you need more than a program. At a minimum, you need some hardware to enable the computer to control the radio push-to-talk line, put signals into the microphone input, and interpret signals on the speaker output. Specialized hardware, such as an HDLC controller, is very desirable. This hardware must be able to generate interrupt requests to the computer. The program itself should take care of the input and output requirements of both the radio and the terminal through interrupt processing. You can't afford to miss part of an incoming packet because you got busy parsing a line from the terminal! This means that the program probably has to be written at least partly in assembly language. Interpreted languages, such as BASIC, are commonly used on small computers, but they are neither fast enough nor versatile enough for real-time programming of this kind. These obstacles are not insurmountable, and in fact many hams have been successfully running packet radio programs on various home computers.

There are disadvantages with this approach, however. These programs are not very portable: they work on a specific computer with a specific operating system, and depend on the specific configuration of the hardware "extras." The programming has to be done over for each different type of computer. Modifying a protocol would be a major undertaking involving reprogramming many computers. Furthermore, many hams who don't own computers or who don't want to get involved in a programming project are interested in packet radio. After all, an RTTY terminal unit or a CW keyboard need not be connected to a computer. This is why most Amateurs involved in packet radio are using a terminal node controller. The TAPR and VADCG TNCs have standard terminal interface connections, and provisions for versatile radio interfaces. The ROM memory chips can be programmed with software implementing a standard packet radio protocol, and, once such software is written, it can be easily transferred to any similar TNC. Since the TNC is basically a dedicated microprocessor, the demands of radio communications do not interfere with a resident operating system.

packet radio — communications of the future

Hams all over North America are now involved in

sending packet radio messages across town on VHF on UHF bands. Digipeater relays and ordinary voice repeaters make it possible to communicate over distances of 100 miles or more. Packet radio mailboxes and bulletin boards are on the air in several areas. Interest is growing rapidly in this newest mode of communications. With more experimentally inclined packeteers joining the ranks, exciting developments will be forthcoming. The emphasis for the future will be on long-distance communications and inter-network linking protocols. Experimental hf packet communications has been done on 10 meters. Inter-network communications through UHF and microwave linking stations using high data rate modulation techniques is envisioned. The digital special communications channel on the AMSAT Phase III-B satellite will see use by packet radio stations. Groups are working on protocol standards for this application and on L-band amplifiers to allow inexpensive access to this satellite mode. Possibly the most ambitious project in the works is a packet radio satellite with a store-and-forward mailbox as well as direct relay capability.

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- Proceedings of the IEEE*, Vol. 6, October, 1978. This entire issue is devoted to packet communications.
- Korfhage, Robert R., editor, *Computer Networks and Communication*, AFIPS Press, 1978. This collection of papers from three computer conferences covers a wide range of topics, from ARPANET to packet radio.
- Second ARRL Amateur Radio Computer Networking Conference Proceedings*, March 19, 1983. This recent publication contains descriptions of packet radio systems including implementation details.
- Tucson Amateur Packet Radio Corporation Packet System Beta Test (1983)*. This manual contains information on AX.25, VADCG protocol, modulation, and HDLC.

THE ILLAWARRA AMATEUR RADIO SOCIETY

P.O. Box 1838, Wollongong, 2500

Meetings: Second Tuesday of every month except January at 7:30pm in the S.E.S. Headquarters, Montague Street, North Wollongong.

Repeaters: VK2RAW-6850 VHF Mt Murray
VK2RUW-8225 UHF Hill 60 Port Kembla
VK2RIL-7275 VHF Sublime Point
VK2RIL-8725 UHF Sublime Point

Broadcasts: On Sunday evening prior to the club meeting - 7:00pm RTTY, 7:15pm-Voice : Transmitted on 7275 VHF and by relay to 3.562 MHz. Callbacks after the voice broadcast.

W.I.A. Relay: On 6850 at 11:00am and 7:30pm each Sunday.

Club Nets: 3.562 MHz SSB on Sunday at 8:00pm and slow morse net on 28.440 MHz on Tuesday at 8:00pm.

Newsletter: "The Propagator", published monthly to reach financial members in the week preceeding the meeting. All articles, ads, etc

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AT CLUB STORE NEXT MEETING WILL BE FOR SALE
SEVERAL 4:1 BALUNS WITH LIGHTNING ARRESTORS
BUILT INTO THE CONTAINER.

Dapto.

Secretary - Jim Hayes VK2EJH, 1 Kathleen Cres, Woonona.
Treasurer - Andrew McEwan VK2XGC, 7 Nioka Ave, Keiraville.
Auditor - Geoff Cuthbert VK2ZHU, 1 Nioka Ave, Keiraville.

General Committee: Ian Callcott VK2EXN, Wojciech Tomczyk VK2OE, Martin Hutchings VK2BMH, Jim Mead VK2EJM, Gerhard Mueller VK2XGA, Dave Routledge VK2NGS, Paul Suters VK2KPS.

Repeater Chairman: Graeme Dowse VK2CAG

Repeater Committee: Bill Jut VK2KWJ, Rob McKnight VK2JRC, Morry Van De Vorstenbosch VK2EMV, Peter Woods VK2VCK, Ian Callcott VK2EXN, Mike Keech VK2DFK, Dave Colless VK2EZY.

EME Co-ordinator: Lyle Patison VK2ALU

Store: Ray Ball VK2XCC

Publicity Officer: Dave Myers VK2DFL

Broadcast Officer: Paul Suters VK2KPS

Propagator Editors: Paul Suters VK2KPS, Jim Hayes VK2EJH, Gerhard Mueller VK2XGA.

Life Members: Graeme Dowse VK2CAG, Keith Curle VK2OB, Lyle Patison VK2ALU.