THE PROPAGATOR

MONTHLY NEWSLETTER OF THE ILLAWARRA AMATEUR RADIO SOCIETY

PO BOX 1838 WOLLONGONG NSW 2500

VOLUME 84, NUMBER 1 FEBRUARY 1984

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MEETINGS ARE HELD ON THE SECOND MONDAY OF EACH MONTH (EXCEPT JANUARY) AT 7.30 P.M. IN THE CONGREGATIONAL HALL, CORNER OF COOMBE AND MARKET STREETS, WOLLONGONG. VISITORS ARE WELCOME TO ATTEND MEETINGS.

NOTICE OF MEETING

The next meeting of the Illawarra Amateur Radio Society will be held in the Congregational Hall, Coombe Street, Wollongong, on February 13th 1984 at 7.30 p.m.

REMINDER TO MEMBERS

The I.A.R.S. "Kilometre Kontest" is now in progress.
For details see the December Propagator.

THE DECEMBER MEETING

The last meeting for 1983 was held on Monday 12th December, attendance at some 40-odd being down a bit on the usual, no doubt due to the imminent Christmas holiday break. There was one visitor, VK2PEX, who received the customary welcome.

Among General Business, President Dave VK2DFL congratulated Geoff VK2PBU on behalf of the meeting for his upgrade to full call VK2EWJ, and extended birthday greetings to Roy VK2KO.

Graeme VK2CAG reminded members of the availability of I.A.R.S. Tee Shirts (see the December Propagator), but said that only size 16 was in the Club Store. Other sizes could be ordered.

On display was a model of the 'Unidyne', the "1920's style 1-valve Wireless Set" which is described in Electronics Australia for November 1983. This nicely finished model had been constructed by Dave VK2YKQ from a kit supplied by Technicraft, 388 Katoomba Road, Katoomba. Current price for the kit is now $84.50 which is inclusive of postage.

THE THINGS PEOPLE SAY

"Yes, you are a very good signal into the 'box', until you time-out, then I can't seem to hear you anymore."

"Can you tell me the 'time-out' on this channel, only it is the first time I've worked through S19."

Practical Wireless.

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FOR MANY YEARS ON4BX HAS MAINTAINED HIS POSITION AS THE WORLD CHAMPION RTTY DX-ER. DURING A CONTACT WITH HIM A FEW DAYS AGO ONE OF MANY DURING THE PAST TWO DECADES BETWEEN VK3KF AND ON4BX IT WAS ASCERTAINED THAT HIS COUNTRY TOTAL FOR RTTY NOW STANDS AS 227 WORKED WITH IN EXCESS OF 200 CONFIRMED. INCIDENTALLY HIS FIRST VK AND OCEANIA QSO WAS WITH VK3KF. MANY OTHER STATIONS IN EUROPE AND NORTH AMERICA HAVE REPORTED WORKING IN EXCESS OF 200 COUNTRIES. THIS TOTAL IS VERY DIFFICULT TO ATTAIN FOR STATIONS IN THE SOUTH PACIFIC AREA, BUT SYD, VK2SG IS MAKING GROUND TOWARDS THE DOUBLE CENTURY AND UNDOUBTEDLY HEADS THE VK CONTINGENT AND SYD IS TO BE CONGRATULATED.

FROM THE E.M.D.R.C. BROADCAST AUGUST 16TH 1983.

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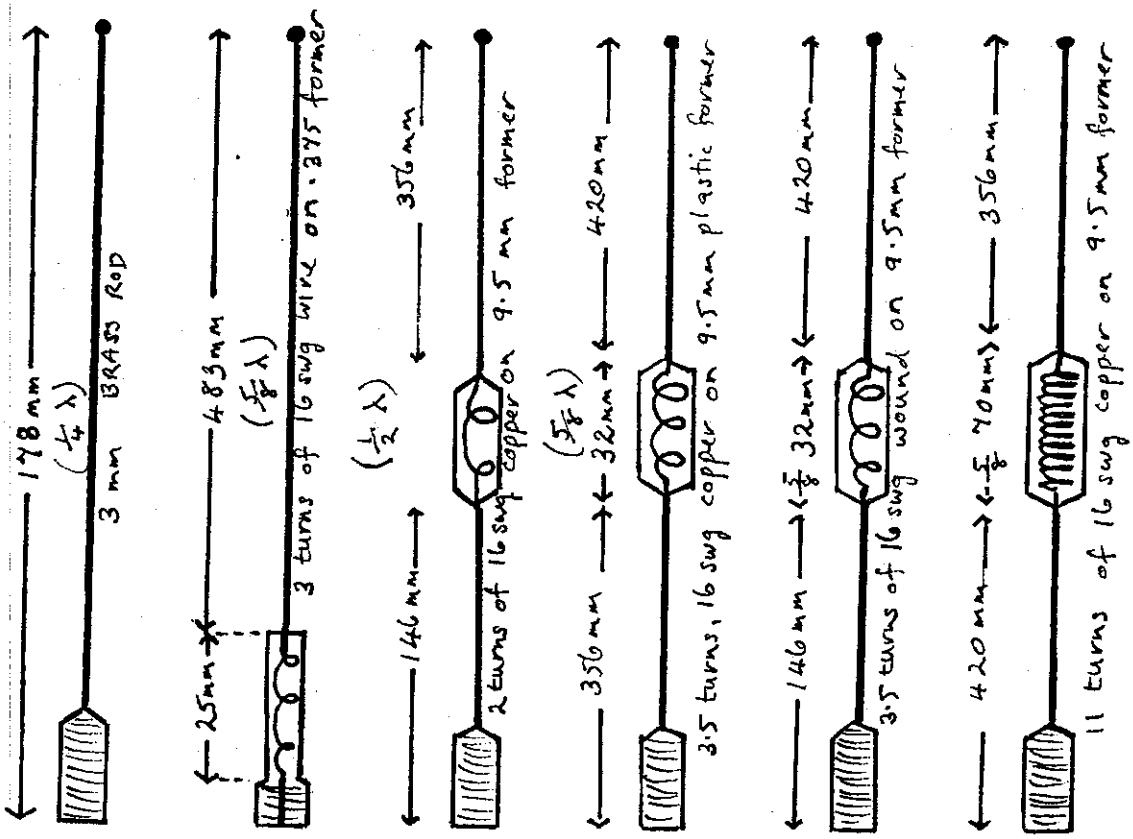
U.H.F. ANTENNAS FOR 70CM



"Radio Communication" Dec. 1981, from BARG NEWS.

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REPEATER REPORT

MT. MURRAY CHANNEL 6850 HAS BECOME THE GREATEST RAG-CHEWING REPEATER OF ALL TIME. THERE ARE MANY SYDNEY STATIONS USING IT ON A REGULAR BASIS, PEOPLE WHO COULD BE USING THEIR OWN LOCAL REPEATER IF IT WERE NOT FOR THE 'WOMBATS' AND THE LIKE WHO FREQUENT THE SYDNEY REPEATERS, MAKING OURS MORE ATTRACTIVE TO USE INSTEAD. ALSO I HAVE HEARD A NUMBER OF OUR OWN CLUB MEMBERS LIVING CLOSE ENOUGH TO BE ABLE TO HAVE A SOLID QSO ON SIMPLEX RAGGING ON FOR HOURS ON END ON THE REPEATER.

THE REPEATER IS THERE FOR ALL TO USE, AND I AM NOT ABOUT TO DISCOURAGE ITS USE BY ANYONE. BUT IT IS OBVIOUS THAT MOST PEOPLE WHO USE IT ARE UNAWARE, OR DON'T CARE, THAT THE REPEATER IS NOW POWERED BY A WIND GENERATOR AND THAT IT WILL NOT RUN FOREVER IF IT IS USED FOR LONG PERIODS AT A TIME WHEN THERE IS NO WIND TO RE-CHARGE THE BATTERIES.

YOUR REPEATER GROUP WENT TO A GREAT DEAL OF EFFORT TO CHANGE THIS REPEATER OVER TO WIND POWER, AND AS IT TURNS OUT, THE LANDLINE WHICH USED TO SUPPLY 32 VOLTS UNDERGROUND FROM THE NEAREST FARM-HOUSE TO THE SITE HAS FINALLY GONE OPEN CIRCUIT. IT IS NOW IMPOSSIBLE TO RE-CONNECT THE REPEATER TO MAINS POWER, SO IT RELIES ENTIRELY ON THE WIND FOR ITS POWER SUPPLY. THE OLD LANDLINE RUNS ACROSS SEVERAL PROPERTIES WHICH HAVE CHANGED OWNERSHIP SINCE THE LINE WAS FIRST BURIED, AND ITS EXACT LOCATION CANNOT BE DETERMINED. REPAIRS ARE OUT OF THE QUESTION, AND REPLACEMENT IS FAR TOO EXPENSIVE, UNLESS WE GET A DONATION OF HALF A KILOMETRE OF SUITABLE UNDERGROUND CABLE. SO IT SEEMS AS IF WE WERE JUST IN TIME TO INSTALL THE WIND GENERATOR, BECAUSE IF IT WAS NOT DONE WHEN IT WAS THE REPEATER WOULD HAVE BEEN OFF THE AIR.

THIS REPEATER IS FITTED WITH A VOLTAGE SENSING DEVICE WHICH ALTERS THE PITCH OF THE IDENT TONE IN PROPORTION TO THE BATTERY VOLTAGE. IT SEEMS THAT PEOPLE EITHER DON'T KNOW OR DON'T SEEM TO NOTICE THAT THE IDENT TONE VARIES, AND WHAT THE MEANING OF THIS IS.

AT THE LAST CLUB COMMITTEE MEETING IT WAS DECIDED TO GIVE THIS MATTER A GOOD DEAL OF PUBLICITY THROUGH THE PROPAGATOR, VARIOUS BROADCASTS, AND BY SPREADING THE WORD BY WHATEVER MEANS WE CAN. ALSO WE WILL BE FITTING A NEW CONTROL SYSTEM WHICH WILL CAUSE THE TIME-OUT PERIOD TO BE REDUCED AS THE BATTERY VOLTAGE GETS LOWER, AND A TELEMETRY DECODER WHICH WILL ALLOW US TO REMOTELY SHUT THE REPEATER DOWN IF PEOPLE STILL IGNORE THE SIGNS OF LOW BATTERY VOLTAGE.

ITS UP TO ALL REPEATER USERS TO TELL OTHERS SO WE NEVER HAVE TO FACE THE SITUATION WHERE THE REPEATER IS THERE FOR NO-ONE TO USE.

SINCE THE INSTALLATION OF THE WIND GENERATOR ON 11/9/83 WE HAVE GONE THROUGH A DIFFICULT PERIOD WHEN THERE HAS BEEN LITTLE WIND AND MUCH REPEATER ACTIVITY. IT CERTAINLY HAS BEEN A GOOD TEST OF THE WIND POWER SYSTEM, AND IF THE REPEATER IS USED FOR THE PURPOSE INTENDED, AND THAT IS (1) TO MAKE A CONTACT THAT WOULD NOT BE POSSIBE POSSIBLE ON SIMPLEX, AND (2) AS A CALLING CHANNEL TO MAKE ARRANGEMENT TO QSY TO ANOTHER CHANNEL, THEN IT WILL ALWAYS BE THERE WHEN WE NEED IT.

THE BATTERIES HAVE A CAPACITY OF 600 AMP-HOURS. THIS MEANS THAT THEY WILL SUPPLY 5 AMPS FOR 120 HOURS. THE REPEATER DRAWS 5 AMPS ON TRANSMIT, AND 50 MILLIAMPS (NEGLIGIBLE) ON STANDBY. THE MAXIMUM CHARGE CURRENT FROM THE WIND GENERATOR IS ABOUT 5 AMPS AND THAT OCCURS WITH A WIND VELOCITY OF 40 KNOTS.... AND THAT IS A PRETTY STIFF BREEZE. ANOTHER WAY OF LOOKING AT IT IS THAT THE REPEATER NEEDS AS MUCH 40 KNOT WIND AS IT HAS TRANSMIT TIME, AND THAT IS NEGLECTING RECEIVER CURRENT DRAIN AND BATTERY LOSSES. SO WHEN THE IDENT TONE GOES LOW, IT WILL TAKE 120 HOURS OF NEAR GALE FORCE WIND TO RE-PLENISH THE CHARGE IN THE BATTERY. THE GENERATOR WILL 'START' CHARGING AT 4 KNOTS OF WIND VELOCITY, BUT THAT IS A VERY SMALL AMOUNT OF CURRENT THAT ONLY MAKES UP FOR THE RECEIVER DRAIN. ASSUMING AN AVERAGE WIND SPEED OF 10 KNOTS (AND WE HAVE NOT GOT ANY OFFICIAL FIGURES, THATS JUST A GUESS), FOR EVERY 5 MINUTES OF USE THE REPEATER NEEDS 25 MINUTES OF REST TO RECOVER.

THERE ARE 5 TONES ALTOGETHER, AND THIS IS WHAT THEY MEAN:

VERY HIGH .....1900HZ... VOLTAGE OVER 13.3 ... GO YOUR HARDEST
HIGH .....1050HZ... 12.7 TO 13.3 VOLTS...STILL NO RESTRICTION
MEDIUM .....750HZ... 12 TO 12.7 VOLTS.... NORMAL OPERATING
LOW .....600HZ... 11.5 TO 12 VOLTS..... GO EASY
VERY LOW .....(BUZZING SOUND)..BELOW 11.5 VOLTS.. EMERGENCY ONLY

AFTER THE WIND GENERATOR WAS FIRST INSTALLED THE BATTERIES WERE IN A GOOD STATE OF CHARGE AND THE IDENT WAS SENDING 1050HZ. AFTER ABOUT 2 DAYS IT WENT DOWN TO 750HZ AND STAYED THERE FOR ABOUT 6 WEEKS. THEN IT ALTERNATED BETWEEN 750 AND 600HZ UNTIL WE HAD A COUPLE OF WINDY DAYS AROUND 16TH TO 18TH OF JANUARY PUT IT BACK ON 750HZ UNTIL THE WEEKEND WHEN 600HZ STARTED TO APPEAR AGAIN.

SINCE THE WIND GENERATOR WENT IN I CANNOT RECALL SUCH A LONG PERIOD WITH SO LITTLE WIND COMBINED WITH SO MUCH ACTIVITY ON THE REPEATER.

EVEN IF THE REPEATER IS SENDING 750HZ, REMEMBER THAT THE BATTERIES ARE NORMAL LEAD-ACID TYPES AND DO NOT TAKE KINDLY TO SITTING FOR LONG PERIODS ALMOST DISCHARGED. IT IS UNLIKELY THAT FULL CHARGE WILL EVER BE REACHED EXCEPT FOR THE WINDY MONTHS OF THE YEAR AFTER WINTER. WE WILL HAVE TO WAIT AND SEE.

ANOTHER FACTOR TO CONSIDER IS THAT AS THE BATTERY VOLTAGE FALLS, ALSO WILL THE CURRENT DRAIN AND THE POWER OUTPUT. THE REPEATER PUTS OUT FULL POWER OF 25 WATTS WITH A BATTERY VOLTAGE OF 13.8 THE POWER DROPS TO 15 WATTS AT 12 VOLTS, AND 10 WATTS AT 11 VOLTS.

A ROUGH ESTIMATION OF THE TONE PITCH CAN BE MADE BY COMPARING IT WITH THAT OF OUR OTHER REPEATERS. THE PITCH OF ALL THE OTHER ILLAWARRA REPEATERS IS APPROX. 650HZ. IF CHANNEL 5 IS ABOVE THAT ALL IS OK, AND IF IT IS LOWER, THEN THAT IS A SIGN TO GO EASY.

ONE FINAL NOTE... IT WOULD BE GOOD TO SEE MORE ACTIVITY ON OUR OTHER 2 METRE REPEATER 7275 AT SUBLIME POINT, AND ON BOTH OF THE 70 CENTIMETRE REPEATERS WHERE THERE ARE NO POWER RESTRICTIONS... ALL OF THE OTHER REPEATERS ARE MAINS POWERED AND COST US NOTHING TO RUN OTHER THAN THE LICENCE FEES.

GRAEME VK2CAG

ILLAWARRA ARS TO ALTER ANTENNA ON UHF 2RIL 8725 TO OMNI COVERAGE. VHF RIL 7275 REMAINS BEAMED COVERAGE ON COASTAL SUBURBS SOUTH FROM THE SITE. RIL WILL NOW ACCEPT RTTY AS WELL AS VOICE MODES. UHF 2RUW 8225 PROVIDES LOCAL COASTAL COVERAGE. VHF 2RAW 6850 PROVIDES REGIONAL COVERAGE TO THE AREA, IT FAVOURS THE NORTH.

NOW FOR A BIT OF HISTORY (IN BRIEF).

THE AUSTRALIAN REPEATER SCENE STARTED IN JUNE 1968 - AT LEAST IN AN APPROVED FORM. A MEETING WAS HELD AT WODONGA IN SEPT 68 TO DETERMINE AUSTRALIA'S REPEATER PLANS. THAT MEETING BASED THE PLAN ROUND THE EXISTING SIMPLEX OPERATION ON 146.000 CHANNEL 'B' WITH CHANNEL 'A' ON 145.854 AND CHANNEL 'C' ON EITHER 146.100 OR 146.146 DEPENDING ON WHETHER YOU WERE IN VK2 OR VK3. THE COMMERCIAL CARPHONES AVAILABLE FOR CONVERSION TO THE AMATEUR BAND WOULD COVER ABOUT HALF A MEGAHERTZ. SO THE REPEATERS WERE PLACED EITHER SIDE OF THE SIMPLEX CENTRE POINT WITH 4 CHANNELS. INPUTS AT 146.1 .2 .3 AND .4 WITH OUTPUT DOWN HALF A MEG. THE CHANNELS WERE CALLED BY THEIR INPUT NUMBER AND TWO WERE TO BE USED, NOS. 1 AND 4. IT WAS A COUPLE OF YEARS BEFORE THE DEPARTMENT APPROVED THE FIRST SUBMISSIONS. THIS SAW ORANGE, WOLLONGONG AND GOSFORD ON CHANNEL 1 AND NEWCASTLE AND SYDNEY ON CHANNEL 4.

IN JULY 1972 ANOTHER MEETING WAS HELD AT ALBURY TO CONSIDER EXPANDING THE CHANNELS. VK3 CAME UP WITH A PLAN TO EXPAND THE NUMBER OF CHANNELS AND TO SWAP THE OUTPUT TO 600KHZ ABOVE INPUT. THIS WAS NOT ACCEPTABLE TO VK2 AND ON 1/4/73 THEY VOTED BY 216 TO 10 NOT TO ACCEPT THE VK3. 18 MONTHS LATER BY SIMILAR VOTE THE OTHER WAY THEY ACCEPTED THE PLAN AND FROM THAT HAS GROWN TODAYS VK2 TWO METRE REPEATER NETWORK.

REPRINTED FROM NOVEMBER STATE REPEATER COMMITTEE BULLETIN.

On Sunday December 4th, a Christmas Picnic was held at the Cordeaux Dam. Despite the damp conditions, over 30 people attended. Murray2MY and several helpers erredted a tarpaulin over the picnic tables so the XYLS wouldn't get wet-whilst preparing morning tea.

After introductions of members, families, and friends, a raffle was conducted by Dennis 2DMR. It was a delicious Christmas cake, donated by the wife of Graham 2CAG. (Angie).

Tshirts were also on sale with the clubs initials at the front, and the full wording at the back. Graham 2CAG has a very artistic XYL because she also does the printing on the T shirts. The shirts proved very popular, because before long there were over a dozen members with them on. Very smart they looked to.

Dennis DMR provided 2 oscilators for the fox hunt, which always proves popular with the youngsters. One had a low pitch which was found quite easily. But the higher toned one was more difficult. It appeared to be on the same frequency as the local cicadas. Anyway the youngsters enjoyed the chase.

After the usual barbie lunch, almost everyone joined in a cricket match. Can't remember the score, but it was a ton-of-fun. Don't think we are ready for the SCG yet.

Mother Nature was kind to us, because the sun came out and everyong had a pleasant day.

Murray 2MY, must have been on a lucky streak because both his children won the fox hunt. Plus they won the Christmas cake, how tinny can you get.???

Due to the bad weather in the morning, and other prior engagements, several members missed out ontthe picnic. Some have expressed regret, so it has been mentionedd that it would be a good idea to put on another one. The Venue this time, being Sublime Point, Bulli, the site of the repeater. The date being I8th March. Looking forward to seeing you all there.

73 Ray. 2PHD/XCC

Moonbounce Report February 1984.

Antenna radiation pattern was plotted by means of the chart recorder, following repairs to its chart drive motor by the University. The main lobe was confirmed as 2 degrees wide at its half power point and was found to be 4 degrees wide at the 10dB down point. Sun noise was a maximum of 15dB above cold sky noise.

A series of checks of transmitter output frequency showed that the 144/1296MHz transverter mixer crystal is 12KHz low at 1296MHz. The 144MHz exciter VXO was recalibrated to compensate for this error and now provides a tuning range of 1295.995 to 1296.027MHz.

An automatic keyer which transmits 'CQ de VK2AMW' has been completed. It will release the operator for other checks during general calling periods.

All rubber bushes in the flexible couplings of the Declination drive system were renewed to assist to reduce the amount of 'free movement' of the dish in gusting wind conditions. Painting was completed of all steelwork etc. which has been installed on the dish and its support structure over the past few months.

Further echo tests confirmed that the dish has still to be pointed at the Moon with an accuracy of $\pm\frac{1}{2}$ degree in order to receive echoes. Under these circumstances visual alignment on the Moon is essential as pointing under remote control is accurate to only ± 1 degree at the best.

It was suggested to the University that Undergraduate or Postgrad. participation in the Project in developing more sophisticated systems than are available at present. Three possible projects were put forward for consideration. Unfortunately this and other planned development work is hampered by the requirement to limit transmitter power output to the 120 watt Amateur Licence level, which we are currently running. This is insufficient to provide consistent copy of our echoes from the Moon.

Scheduled 1296MHz EME tests were carried out with G3LTF and OK1KIR on 22/1/84. We were delayed in getting on due to a defect in the 144MHz frequency source, introduced during modifications completed on the previous day and to inability to see the Moon through the cloud cover until some 10 minutes beyond start of sked. period. G3LTF was not heard during his scheduled period and was not heard until 20 minutes into the following period of OK1KIR's schedule, when he was copied underneath OE9XXI .

We were able to send G3LTF an 'M' report and we received 'MRs' back from him. Unfortunately the contact could not be completed because of loss of signals at our end when the Moon set behind trees on the low hill to the west of our location. OK1KIR was not heard.

VK2EXN used his 'sideswiper' key and electronic keyer to good effect during the above scheduled tests.

Lyle VK2ALU.

PICNIC AND BBQ.

At the Sublime Point Lookout, and Repeater site.

18 March. 1984. from 10.00

BRING THE FAMILY AND FRIENDS. Foxhunt and raffle.

Macelec Pty. limited Professional and Industrial Electronics

99 Kenny Street, Wollongong
P.O. Box 1755, Wollongong. 2500
Telephone (042) 29 1455
Telex AA29232

AMATEUR RADIO EQUIPMENT PRICES - FEB '84.

Most of these prices have been genuinely reduced and are available for the month of February or while stocks last.

Icom.

IC730 10-80 Mtr 100 Watt (12VDC) Transceiver with SM5 Desk Microphone, HM7 Fist Mic, FL54 c/w Filter, P515 Pwr Supply and ICSM5 Base Station extension Speaker.

This system has been used on air for approx 2 hours. It is as new and carries full warranty. Normal Price $1,450.00
Reduced to only.....$1,150.00

Icom.

IC2A 2 Mtr Hand Held 800 CH with Nicad Batteries and Charger.....$285.00

BC31E Icom Rapid Charger.....$44.00

HM9 Ext Spkr.Mic suit IC2A/4E.....$20.00

BP5 HD Battery Pack.....$50.00

MB16 Mobile MTG Bracket suit IC2A/4E.....$10.00

CP1 Cigarette Lighter Plug/Cord.....$6.00

GC-4 Icom World Clock.....$120.00

Kenwood.

MC50 Dual Impedance Desk Mic.....$60.00

MC355 Fist Mic.....$33.00

SW-100B Swr/Pwr meter for 140 to 450 MHZ.....$58.00

MB430 Mobile Mtg Bracket for TS430.....$20.00

AT130 80-10 Mtr Antenna Tuner.....$120.00

Daiwa.

CNA-1001 Automatic Antenna Tuning Unit.....$275.00

CS-201 2 position Coax Switch.....$45.00

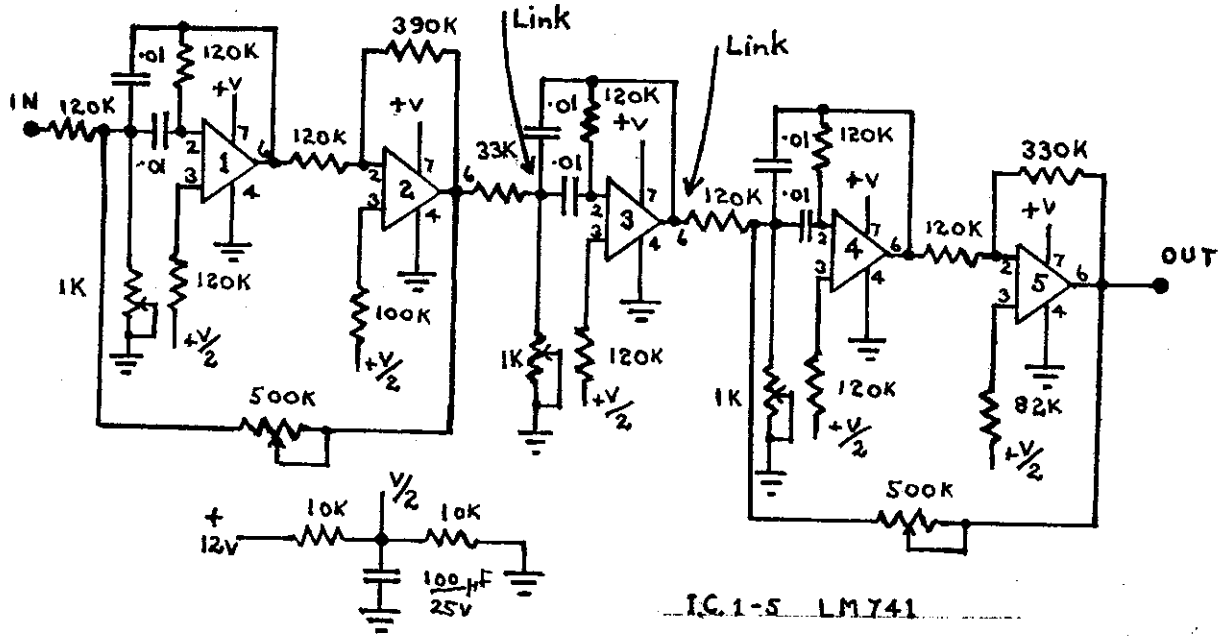
We also have a wide range of Kenwood and Icom Products available.

* * *

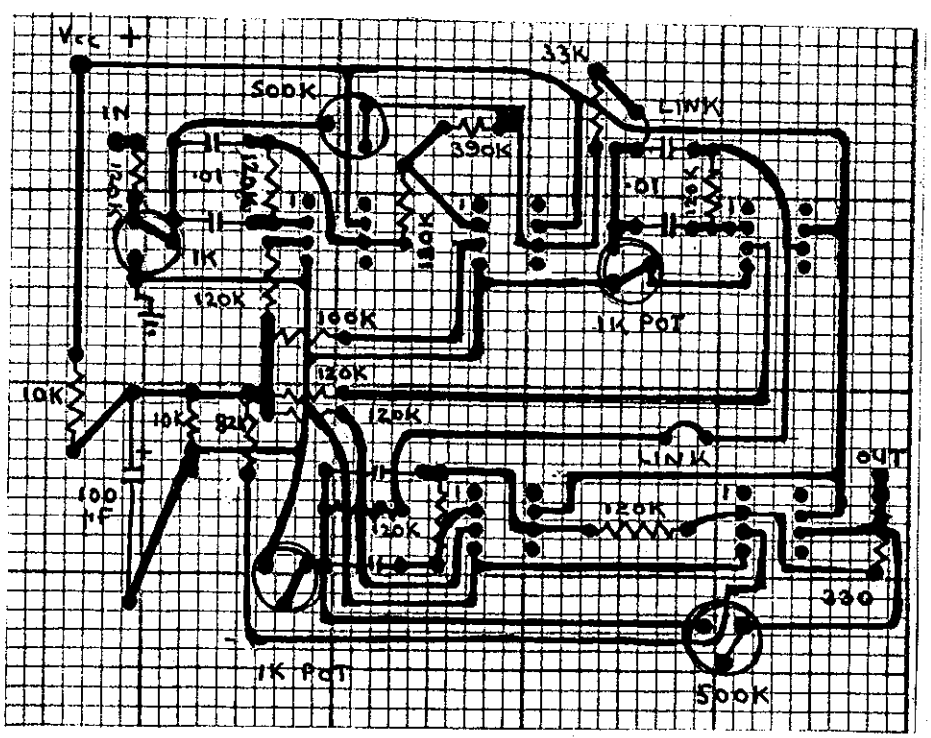
170 Hz Shift Bandpass Input Filter.

The following is an abridged version of an article by Ken Squires, VK2SD, published some time ago in "Arewise", the filter described here having been originally designed by Peter Stark K20AW and published in "73 Magazine", September 1977. Until recently, printed circuit board kits for this filter were available from ANARTS but the Veroboard layout shown here is easy to construct. Great care must be taken to ensure that all track cut-outs are complete and do not have any fine pieces of copper shorting the cut or adjacent track. It is wise to inspect the board with a magnifying glass to ensure that there are no shorts. A circuit variation that may be found necessary is to change the value of the potentiometer on the input of i.c.4 from 1k to 2k, to allow this section to be tuned to 2310 Hz. Further information if required can be obtained from Peter Mulligan, c/- ANARTS, P.O. Box 860, Crows Nest, 2065.

Centre frequencies are: 2085, 2195, 2310 Hz
Filter gain at 2200 Hz is 12dB and there is a minimum of 20dB insertion loss at 1900 Hz and 2500 Hz.
Output level should be within 1 dB of flatness at any frequency between 2100 and 2300 Hz.



I.C.1-5 LM741



170 Hz Shift Bandpass Input Filter - Alignment Instructions.

Alignment of the filter is easy. The three stages are disconnected from each other at the links and each stage is aligned separately. First, the 1k pot is adjusted to peak the gain at the centre frequency. Then the 500k pot (for the two amplifier circuits) is adjusted to make the bandwidth correct. There is a slight interaction between the two adjustments, so the process is repeated two or three times. Once the three stages are adjusted separately, they are connected together.

Note: The maximum input level allowable before distortion occurs is 250 mV and the output from the receiver must be padded down to this level. It is advisable to connect the filter into circuit via suitable capacitors at the input and output.

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Press Release Date: 15 September 1983

DEPARTMENT AMENDS RADIO LOG-KEEPING REQUIREMENTS

The Department of Communications announced today that following consultations with the Wireless Institute of Australia it had agreed to amend requirements for log-keeping by amateur radio operators.

A spokesman said that in future log-keeping would be optional with these exceptions:

- every amateur station is required to have a log-book available in which to record distress and emergency traffic. In the case of a network carrying emergency traffic a log is to be kept by the control station.
- a log is to be kept by an amateur if requested to do so by an officer of the Department of Communications.

Club stations still were required to maintain a log of all transmissions in accordance with the format detailed in paragraph 6.11 and Appendix 15 of the Amateur Operator's Handbook.

The spokesman said: "With the increasingly mobile nature of many amateur stations the Department recognises it is impracticable to insist that all traffic be logged.

"However it is still vital that any distress or emergency signals be logged, as this monitoring can be important in assisting the distressed party."

The changes had been made under the provisions of Wireless Telegraphy Regulation 31(1).

from "Oxtales", volume 1, number 8.

The following is added:

A WORD OF WARNING: Remember that keeping your log is still strongly advisable:

(a) What if you find you need evidence of transmission times in the event of a T.V.I. complaint and subsequent investigation?

(b) And what about keeping track of QSL cards.. contests etc?

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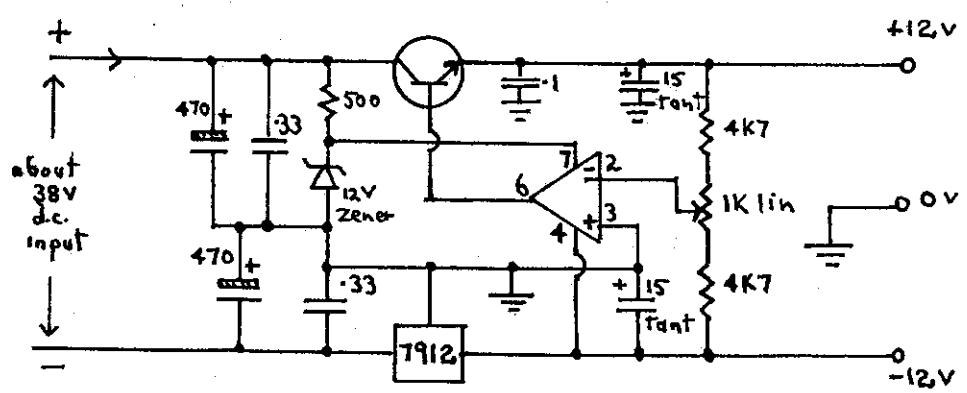
AN INTERESTING CIRCUIT.

The problem was to use a floating d.c. supply of about 38 volts to provide ± 12 volts for an op-amp power supply. On the face of it simple enough, but establishing a zero with reference to the plus and minus proved another matter. Voltage doubler circuits are easily found but voltage divider circuits are very thin on the ground. Sure, a centre-tapped resistor can be placed across the supply, feeding positive and negative regulators, but unless the current taken by the loads is much less than that passing through the resistor, regulation will be poor. As soon as one 12 volt line is required to supply more current than the other, down goes its voltage. This effect is less as the centre-tapped resistor is reduced in value but this means that there is a greater continual drain on the supply and thus power wastage.

To eliminate this power wastage, instead of the centre-tapped resistor two large value capacitors were tried but with exactly the same result. In addition, when the unbalanced load was removed it was found that the capacitors retained their unbalanced voltages.

Ham Radio Magazine for March 1983 reproduced an Automatic Negative Voltage Regulator circuit, copyright Tandy Corporation, from the 1980 Archer Semiconductor Guide, which appeared to offer possibilities. The positive 12 v output line is derived from the positive of the supply through a regulator, the negative output being obtained from the negative of the supply through a p.n.p. transistor. These outputs are connected together via two series 4k7 ohm resistors, the junction of which supplies the inverting input of an op-amp whose noninverting input is grounded. An equal but opposite voltage to the difference between the inputs appears on the output of the op-amp, biasing the p.n.p. transistor into conduction. Thus a dual voltage supply is produced. As soon as the centre point of the 4k7 resistors varies from ground potential, the bias on the p.n.p. transistor varies to allow more or less current to pass to restore the centre point to zero. All very neat.



I didn't have a positive voltage regulator but I did have a negative one (7912) and also n.p.n. power transistors are cheap and easy to come by. So after some experimentation I came up with the above circuit based on the Variable Voltage Supply in the Ham Radio article, and I made it up. As I see it, it should work, on exactly the same principle as the Automatic Negative Regulation circuit, but it wouldn't for me. Perhaps an n.p.n. transistor cannot be used in this application, or requires different biasing arrangements. So I offer the circuit to anyone who would like to experiment with it. If you get it to work, please let me know.

Ken, VK2DOI.

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NEW UHF FILTER DESIGN ... may supersede other methods

Development of a new construction technique for RF filters has overcome inherent design problems and production difficulties normally associated with radio telephone filters used in the higher RF spectra, according to Matsushita Electric of Japan. The new process is employed in a device called a "Varisonator" which is said to be easily made in the resonant frequency range of 500-3000 MHz.

A significant advantage claimed for the new ceramic-filled device is its integral trimmer capacitor mounted at one end of a silver-plated conductive (coaxial) cavity. This feature allows easier adjustment of the filter: traditionally-designed devices are usually large, hard-to-adjust, and expensive, says the manufacturer. The Varisonator has a Q_u value of more than several thousand (typically) due to a low leakage rate in the device, as well as the large dielectric coefficient of the ceramic. This factor is enough to reflect all TEM propagation waves in the resonator at its open coaxial end - the terminal side where the capacitor is located (the tuning capacitor further reduces leakage).

Since conductive loss determines the Q_u of a resonator, the conductors used in the new filter are formed by applying a thick film of silver to the inside and outside of a hollow ceramic cylinder. An arc-shaped segment at one end of the ceramic forms one plate of the integrated tuning capacitor.

The silver deposited on the cylinder is also used as a terminating conductor of a coaxial transmission line. Skin depth of this silver film possesses a resistance larger than that of the bulk silver used for depositing it; this causes conductive loss.

The great advantage of the integrated trimmer capacitor in the new filter is that this design removes the stumbling block found in other types of ceramic-filled resonators; adjustment of these requires the mechanical addition or subtraction of ceramic material from the end of the cavity. This could also result in the need for a separate, external trimming capacitor - resulting in reduced Q_u.

Construction details of the Varisonator comprise the following: The hollow ceramic cylinder has its overall silver coating extended and deposited in the form of an arc on one end. An inner ceramic shaft contains an alumin rotor onto which a "mirror-image" silvered arc has been deposited. These two arcs form the capacitor, placed between the two terminals of the resonator. Capacitance is varied by rotation of the shaft; obviously, varying the capacitance changes the frequency.

The manufacturer claims that production output is very high due to the incorporation of this integrated trimmer capacitor as opposed to the time-consuming and expensive process involved in making other types of filters (including mechanically-altering the ceramic structure for tuning). One reason is that each Varisonator is an independent component: its performance in a filter is not influenced by others as there is no mutual EMG energy leakage. Plessey Components which distributes Matsushita components in Australia, offers two types of Varisonators:

* EZF-B855 AM/AT, an MCA device for radio communications;
* EZF-F904/F962 AT14, designed for citizens band radio.

Plessey Components is situated at Christina Road, Villawood.

from RADIOCOMMUNICATIONS.

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THE ILLAWARRA AMATEUR RADIO SOCIETY - P. O. BOX 1838 WOLLONGONG 2500

Meetings: Second Monday of every month except January at 7.30 p.m. in the Congregational Church Hall, Coombe Street, Wollongong. Committee Meeting - 3rd Monday of each month.

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

Broadcasts: On Sunday night prior to Club Meeting - 7.00 p.m. RTTY on 6850 VHF Repeater; 7.15 p.m., Voice on 6850 VHF, 7275 VHF and by relay on 3.562 Mhz. Call backs after the WIA relay at 7.30 p.m.

W.I.A. Relay: On 6850 VHF at 11.00 a.m. and 7.30 p.m. weekly on Sunday.

Club Nets: 3562 Khz SSB on Sunday at 8.00 p.m. and slow morse net on 28.440 Mhz on Tuesday at 8.00 p.m.

Newsletter: "The Propogator", published monthly to reach financial members in week prior to meeting. All articles, ads etc. to the editor, Leo Kleeborn, VK2YJK at 33 Lombard Avenue, Fairy Meadow 2519. Telephone 84.9751. Copy deadline 3rd Tuesday each month.

Membership: The Secretary, I.A.R.S. P. O. Box 1838, Wollongong 2500. Full membership is $7.00 per annum; students and pensioner concessional members $4.00 per annum.

QSL's: For financial members who are also financial members of the W.I.A. ONLY.
Inwards: Mike Keech VK2DFK, QTHR; Outwards: Ian Callcott VK2EXN QTHR.

Awards: The award of the I.A.R.S. is "The Lawrence Hargrave" award. VK stations require 10 contacts with I.A.R.S. members; overseas stations require 5 contacts with I.A.R.S. members or contact with the Club station VK2AMW is sufficicnet in itself for the award. Band details - time, day, date, frequency, station worked + $2.00 or 4 I.R.C.'s to Award Manager, I.A.R.S., P. O. Box 1838, Wollongong 2500. No QSL cards required.

Store: The Club store operates at each Club meeting.

Committee: President - Dave Myers VK2DFL, 78 Highlands Pde., Bulli.
Vice President - Keith Curle VK2OB, 24 Beach Drive, Woonona.
Secretary - Murray McConnell VK2MY, 62 Ramah Avenue, Mt. Pleasant.
Treasurers - Geoff Cuthbert VK2ZHU, 2 Nioka Avenue, Keiraville.
Richard Fox VK2ERF, P. O. Box 1120, Wollongong.

General Committee: Mike Keech VK2DFK, Ian Callcott VK2EXN, Ray Ball VK2XCC Morry Van-De-Vorstenbosch VK2EMV, Jim Mead VK2EJM, Jock Taylor VK2JT, Roy Parton VK2KO.

Repeater Chairman: Graeme Dowse VK2CAG.

Repeater Committee: Mike Keech VK2DFK, Morry Van-De-Vorstenbosch VK2EMV, Ian Callcott VK2EXN, Dave Colless VK2EZY.

Broadcast Officers: Denis McKay VK2DMR, Paul Gardiner VK2ZQT.

QSL's: Mike Keech VK2DFK and Ian Callcott VK2EXN.

Propogator Editor & Staff: Leo Kleeborn, Editor VK2YJK, Ken Frost VK2DOI, Cartoonist Brian Wade VK2AXI.

Storepersons: Kitty and Kel Smith VK2PSK, VK2PSI.

Life members: Graeme Dowse VK2CAG Keith Curle VK2OB