

# THE PROPAGATOR

MONTHLY NEWSLETTER OF THE ILLAWARRA AMATEUR RADIO SOCIETY

PO BOX 1838 WOLLONGONG NSW 2500

VOLUME 84, NUMBER 8

AUGUST 1984

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MEETINGS ARE HELD ON THE SECOND TUESDAY OF EACH MONTH (EXCEPT JANUARY) AT 7.30 P.M. AT THE STATE EMERGENCY SERVICES BUILDING, MONTAGUE STREET, NORTH WOLLONGONG. VISITORS ARE WELCOME TO ATTEND MEETINGS.

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## *Last Month's Meeting.*

The results of the 'UHF Kilometer Kontest' so ably managed by Dave VK2EZY were declared on the 10th. Congratulations to the winners Reg VK2EMI, Ian VK2EXN, Graeme VK2CAG and Morry VK2EMV. The presentations were made by Tony Stone VK2VPR resident manager of Dick Smith Electronics who sponsored the contest. It is pleasing to note that both Ian and Graeme were using the Dick Smith UHF 70cm kits.

Advice was given of the "Museum on the Move" sponsored by the Power House Museum in Sydney. The August Programme for the two rail carriages is Kiama, 7th to 15th, Dunmore, 17th to 22nd and Wollongong 24th to 31st. There will be facilities for Amateurs to operate from the 'Museum' and all are welcome to attend and 'spread the word'.

Gil McPherson concluded the meeting with a talk on VHF/UHF antenna design.

The raffle of a Kambrook fan heater was appropriately won by Dave VK2EZY. It is not known if this was in recognition of his 'kontest' success or as a gesture of sympathy for his Robertson QTH in winter periods.

This month's meeting - members will be given a talk by Dave VK2NH and John VK2XY complete with video, on ATV activities. It has been some time since ATV has been discussed at our general meeting so a good night can be expected.

73's

Murray VK2MY

MEMBERSHIP DUES STILL APPEAR TO BE UNPAID FOR MANY MEMBERS. IF THERE IS NO RECORD OF PAYMENT THE POSTCODE ON THE ADDRESS LABEL HAS BEEN ENCIRCLED. THE SOCIETY RELIES HEAVILY ON THIS INCOME SO PLEASE FORWARD AS SOON AS POSSIBLE.

EDITORIAL

Well it looks as if the fine weather is here at last. At least we hope so. The point of the preceding statement, is that Damage was done to the wind generator at Mt. Murry during the high winds of a few weeks ago with the result that it has been on reserve battery power and using a Twenty Sec. Time out, so that explains why you cant have the usual ragchew. By the time this goes to press it is hoped that all will be in order once more. Thanks goes to Dave VK2EZY, Paul VK2ZQT, Ian VK2EXN for the work put in to get the generator up and going again. A special mention to Dave 2EZY for risking life and limb to go up to the site late at night and to pull the generator off the tower before it completely self destructed.

Thanks also go to the members who have contributed some articles for the PROPAGATOR this month, BUT, we still need more so how about putting pen to paper and let the world know you ideas and viewpoints. While on this point I would like to thank the members for the feedback regarding the contents of the magazine since I have been in the chair.

So here comes the crunch... Due to new work commitments I will no longer be able to handle the full EDITORIAL work for the Propagator, I will, however still be able to give a hand, so what it boils down to is that I would like someone to take over the chair if at all possible..

So how about giving it some thought and if you have about 4 hours a month to spare, take on doing the Editing of our club mag. Maybe you also have a better TYPEWRITER than me . Looking forward to hearing from you out there..

73 Dave VK2DFL..

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FOR SALE FOR SALE

YEASU FT 101 ABOUT TEN YEARS OLD IN GOOD CONDITION AND INCLUDING ANT. TUNER?... IF INTERESTED, CONTACT RAY VK2XCC/PHD. QTHR.  
PRICE \$350.00 Neg..

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REPEATER REPORT

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HILL 60 UHF CHANNEL 8225 IS NOW CONNECTED TO THE BUILDING'S 12 VOLT EMERGENCY BACK-UP SUPPLY, SO THE REPEATER WILL NOT GO OFF THE AIR WHEN THERE IS A BLACKOUT.

ALL OF THE I.A.R.S. REPEATERS NOW HAVE BATTERY BACK-UP WHICH MAKES THEM INDEPENDENT OF CONTINUOUS MAINS POWER. MT. MURRAY, OF COURSE, IS TOTALLY INDEPENDENT OF MAINS POWER. THIS MEANS THAT SHOULD AN EMERGENCY OCCUR WHICH CAUSES WIDESPREAD BLACKOUTS, ALL OF OUR REPEATERS WILL REMAIN ON THE AIR. THERE IS NO WARNING OF POWER FAILURE ON ANY OF THE REPEATERS AS THERE IS SUFFICIENT RESERVE POWER AT ALL SITES TO RUN THEM FOR AT LEAST A WEEK. MT. MURRAY IS FITTED WITH A SYSTEM WHICH INDICATES THE VOLTAGE OF ITS BATTERY BANK BY THE PITCH OF THE IDENT TONE. HIGH TONE = HIGH VOLTAGE, LOW TONE = LOW VOLTAGE. DURING THE LAST FEW WEEKS THERE HAS BEEN A CONSIDERABLE AMOUNT OF WIND AND THE BATTERY VOLTAGE HAS NOT FALLEN BELOW 12 VOLTS AT ANY TIME. THE OUTPUT FROM THE WIND GENERATOR SEEMS TO BE MORE THAN ADEQUATE FOR THE REPEATER'S NEEDS DURING THIS WINDY SEASON, AND THERE HAVE BEEN LONG PERIODS WHEN THE IDENT HAS BEEN ON THE HIGHEST PITCH, AT WHICH TIME THE VOLTAGE REGULATOR HAS BEEN DOING ITS JOB IN KEEPING THE BATTERY VOLTAGE AT ITS LIMIT OF 14 VOLTS.

APPARENTLY MT. MURRAY REPEATER WAS COVERED IN SEVERAL INCHES OF SNOW DURING THAT COLD SNAP. ITS A GOOD THING THAT IT DID NOT SUFFER ANY PROBLEMS AS THE ROAD UP TO THE SITE WOULD SURELY HAVE BEEN IMPASSABLE, EVEN BY 4 WHEEL DRIVE. IT WOULD HAVE BEEN NICE TO HAVE TAKEN A PHOTO OF IT COVERED IN SNOW.

SUBLIME POINT 7275 REPEATER HAS ENJOYED MANY HOURS OF USE DURING THE WEEKDAYS WHEN IT IS USUALLY IDLE. A COUPLE OF OUR MEMBERS ON THE SICK LIST HAVE BEEN CHIN-WAGGING THE HOURS AWAY WHILE 'HORIZONTALLY POLARIZED' IN BED RECOUPERATING. WHILE THEY ARE DOING A GOOD JOB IN KEEPING THE REPEATER WARM IN THE COLD WEATHER BY GIVING IT A BIT OF USE, IT WILL BE GOOD TO SEE A 90 DEGREE CHANGE IN THE POLARIZATION FOR BOTH PARTIES HI HI... GET WELL SOON MORRY AND JIM.

WORK IS PROGRESSING ON THE 2 METRE DUPLEXERS. THE FIRST CAVITY RESONATOR HAS BEEN BUILT AND IS IN THE PROCESS OF BEING TESTED FOR BANDPASS CHARACTERISTICS. SEVERAL ALTERATIONS NEED TO BE MADE TO THE PUBLISHED DESIGN WHICH WE ARE USING AS A BASIS FOR OUR UNITS BECAUSE OF THE SLIGHT DIFFERENCES IN MATERIAL SIZES, ETC. THAT WE ARE USING. WHEN THE FIRST CAVITY HAS BEEN OPTIMISED WE WILL BE READY TO START ON THE OTHERS, KNOWING THAT THEY WILL TUNE UP PROPERLY. THANKS STAN VK2BKS AND ARCHIE VK2JAC FOR YOUR PART IN MAKING THE PROTOTYPE CAVITY RESONATOR.

WHILE ON THE SUBJECT OF DUPLEXERS, WE ARE IN NEED OF SOME PARTS WHICH WILL BE NEEDED TO COMPLETE THE PROJECT.

MANY TIMES IN THE PAST I HAVE BOUGHT BITS AND PIECES FOR A PROJECT ONLY TO FIND THAT UPON SHOWING A FRIEND, HE EXCLAIMS 'OH, WHAT DID YOU GO AND BUY THAT FOR --- I HAVE A BOX FULL OF THOSE THAT YOU COULD HAVE HAD ++++++' IF I GOT A DOLLAR FOR EVERY TIME THAT HAS HAPPENED TO ME I WOULD BE A WEALTHY MAN....

SERIOUSLY THOUGH, IT SEEMS LIKE A GOOD IDEA TO LIST THE ITEMS WE NEED FOR REPEATER PROJECTS IN THE 'PROPAGATOR' FIRST BEFORE PURCHASING THEM, JUST IN CASE SOMEONE MAY HAVE 'A BOX FULL' WHICH THEY MAY LIKE TO DONATE OR SELL AT A GOOD PRICE. THIS COULD SAVE THE CLUB MONEY, RELIEVE SOMEONE OF UNWANTED 'JUNK' AND SPARE ME THE GRIEF OF THE FEELING OF BEING RIPPED OFF....

HERE ARE A COUPLE OF ITEMS THAT WILL BE NEEDED IN THE NEXT COUPLE OF MONTHS....

28 (YES, TWENTY EIGHT) BNC CHASSIS MOUNTING SOCKETS, PREFERABLY THE THREADED COLLAR TYPE BUT SQUARE FLANGE MOUNTING TYPE WILL DO. THESE ARE FOR THE DUPLEXERS... TWO PER CAVITY, 14 CAVITIES IN ALL. IT DOES NOT MATTER IF THEY ARE A BIT TARNISHED AS LONG AS THE INSULATION IS TEFLON, QUALITY BEFITTING OF I.A.R.S. REPEATERS.

28 (YES SAME QUANTITY) BNC CO-AX PLUGS TO SUIT RG58 SIZE CO-AX. FOR THE INTERCONNECTING LEADS BETWEEN THE CAVITIES.

ALSO HAS ANYONE GOT ANY OLD PHOTOS OF MT. MURRAY REPEATER TAKEN BACK IN THE DAYS WHEN THE LANDLINE TRENCH WAS DUG BY THE MAN - POWERED PLOUGH? WE HAD SEVERAL WORKING BEES IN THOSE DAYS AND SEVERAL PEOPLE WERE SEEN WITH CAMERAS AT THE SITE ON THESE OCCASIONS. WE WOULD LIKE TO BORROW THE PHOTOS TO USE THEM IN OUR PRODUCTION OF THE VIDEOTAPE BEING MADE ON THE HISTORY OF OUR REPEATERS.

GRAEME VK2CAG

Moonbounce Report - August 1984.

A series of checks carried out on 17th July confirmed that the receiving preamplifier which has been in use over the past few months was not performing as well as it is capable. An improvement of approx. 1dB. in both 50 ohm termination to cold sky noise and in sun noise was obtained when it was replaced by the preamplifier of W6P0 design.

Scheduled 1296MHz EME tests were carried out on 22nd July with ZS6NG, F6EZA, HB9BM and F2TU. It was thought that HB9BM was heard during his test period but it may have been HB9SV who was calling VK2AMW. The other stations were not heard, however VK2AMW was called by SM6CKU and a contact (our first with an SM station on 1296MHz) followed. We gave him an 'M' report and received an 'O' report. VK2EXN and VK2ALU were involved in these tests. We were copying consistent echoes from our own transmissions for the full 2 hours of the tests even though the moon was not visible at any stage.

I am in need of SMA Plug (ie male) connectors for either RG58 or RG214 coaxial cable. It would be appreciated if anyone who can help could contact me at QTH as shown in the Callbook or via the Illawarra Amateur Radio Society.

Lyle VK2ALU.



# Switched polarization cubical quad

by C. J. McCLOUD, G8IBQ\*

A high-gain aerial which could be vertically or horizontally polarized by operating a simple control in the shack was required by the author, and this led to the development of the following design.

## Aerial details (Fig 1)

The aerial consists of eight closed loops, mounted on an alloy boom. Each loop is made of  $\frac{3}{8}$ in aluminium tubing and held in position by  $\frac{1}{2}$ in doweling which is bolted to the main boom.

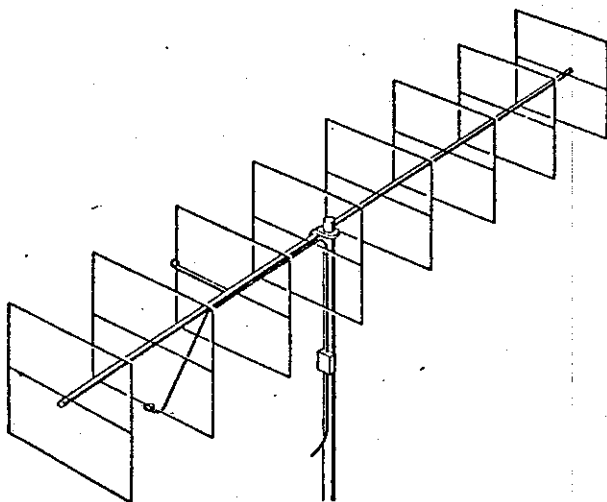


Fig 1. Aerial construction

The reflector is 21in on all sides and is spaced 20in behind the horizontally-polarized driven element. This driven element is 20in on all sides and is fed half way along the bottom leg. The vertically-polarized driven element is placed 14 $\frac{1}{2}$ in in front of the first driven element and is of the same size. It is fed half way along one of the vertical legs. The sizes of the two driven elements can be arranged so that the horizontal element is tuned to 144-145MHz and the vertical element tuned for 145-146MHz. This will improve the swr, as with the band plan fm simplex is largely in the top half of the band and vertically polarized. At the frequency to which the driven element is tuned the swr is 1:1.1 and rises to 1:1.4 at the band edge. The directors are placed 14 $\frac{1}{2}$ in apart in front of the driven elements. The first director is 19 $\frac{1}{2}$ in on all sides, the second 19in and the rest are 18 $\frac{1}{2}$ in on all sides. The dimensions of the completed aerial are 107in long and 21in wide. The element spacings given above may be varied between 0.15 $\lambda$  and 0.25 $\lambda$  to improve gain.

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RADIO COMMUNICATION July 1975

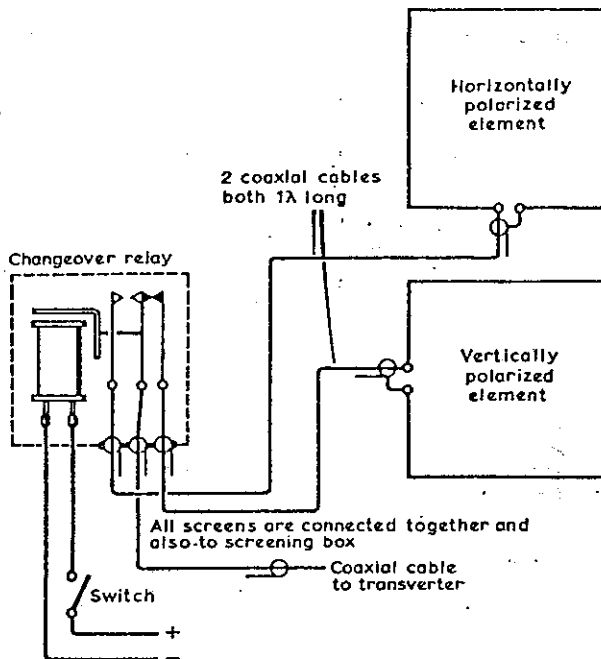


Fig 2. Element switching details

## Element switching (Fig 2)

A coaxial cable 1 $\lambda$  long is connected to each of the two driven elements. These two cables are taken to a change-over relay mounted in a metal box on the mast. A coaxial feeder from the transceiver is also brought to this relay. The screens of the three cables are joined together and connected to the relay box. The centre conductors of the cables are connected to the relay so that in one position the vertically-polarized element is connected to the feeder and in the other position the horizontally-polarized element is connected to the feeder. The relay can be of any type available, but a coaxial relay is to be preferred.

## Conclusion

The author has had very good results from this aerial and it out-performs the eight-element Yagi which it has now replaced. He will be pleased to hear from readers who make use of the design.

MIGHT BE WORTH A TRY

ED.



# Cassette-Aided CW and RTTY

- - inexpensive message storage

The "in" thing today is to use IC memories for functions such as routine CQs or special calls on CW, ID functions, RTTY test messages, etc. But, for individual station use, there is still a lot to be said for the use, for these functions, of a compact cassette recorder once it is equipped with the proper interface and signal conditioning circuits to handle digital data. Such recorders are inexpensive, reasonably reliable and can be used for both digital type signals and voice signal recording/playback. Unlike some IC memories where the data in memory is lost when the power is removed, there is no need to reprogram the memory (the cassette) of such a recorder every time it is used. A situation that particularly enhances the use of such recorders is the recent availability of endless loop cassettes at a reasonable

price. Although such cassettes were available before from Phillips, they were relatively expensive. But now the Japanese have done it again, and such endless loop cassettes in a variety of loop times ranging from 20 seconds to 12 minutes long are available for \$4-\$5 from outlets such as Lafayette Radio. The shorter duration tapes (not the 12 minute one!) allow for a CQ call to be made on CW, a pause of

10-15 seconds to check for replies and then more repeats of the call. With a station wired for semi-break in, the operator only has to listen for replies at the right time. The tapes can be used in the same way for a phone station equipped with VOX.

Recording and playing back speech transmission is no problem with a cassette unit, although it is better to use the station microphone rather than a cheap cassette

type. Also, it is worthwhile to pay a bit of attention to room acoustics and make the recording as good as possible. After all, the recording need not be made at the station location, but where conditions favor the recording process.

Recording and playing back CW or RTTY transmissions requires conditioning circuits. Poor results will usually be obtained if one just audio records; the output of a CW sidetone monitor, for instance, and uses the audio playback to activate a relay. A very good conditioning circuit for CW or RTTY recording and playback appeared some time ago (*Electronics*, April, 1974) and with some slight modifications is shown in Figs. 1 and 2. It has been used with several cassette units with good results. The circuitry has the advantage of using inexpensive components; it may be built inside most recorders and powered from the recorder's internal power supply.

Fig. 1 shows the record mode input circuit. The keyed signal is filtered to remove contact bounce and then it is used to turn on the 2N3906 stage which in turn gates the 2N2646 sawtooth oscillator. The 200 pF between the base and emitter of the 2N3906 is rf bypassing in case a transmitter is also keyed as a recording is made. The 2N2646 operates at about 5 kHz. If this frequency is too high for some inexpensive recorders, the .005 mF capacitor in the gate of the 2N2646 may be raised to .01 mF. The output is fed to a high impedance input or, if the recorder does not have such an input, to a low impedance input via a 470k resistor. In the latter case, it can be permanently left connected since it will not affect voice recordings.

The playback conditioning circuit is shown in Fig. 2: The recorded tone is rectified by the 1N4148 and applied to an

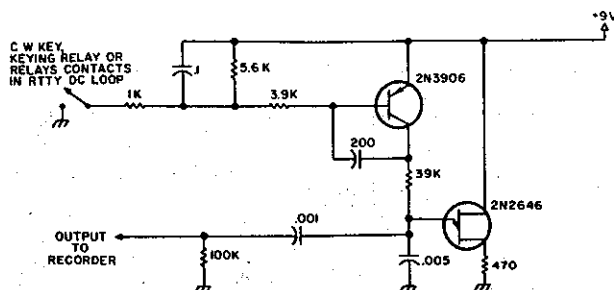


Fig. 1. Signal conditioning circuit for recording produces a keyed sawtooth signal at approximately 5 kHz.

RC timing circuit. The decay voltage developed across this network, when the tone is removed, is used to turn on the 2N3904 and 2N3906 stages. Both transistor base-emitter junctions have 200 pF bypass capacitors across them for rf protection. Keep these leads as short as possible. The output of the 2N3906 stage may be used to drive a reed relay, as shown, or the relay may be replaced by a resistor. The positive voltage across the resistor

which is developed during key down periods can then be used to drive the appropriate IC or transistor stages in an electronic keyer. The RC timing combination of .01 mF and 39k should be right for most CW keying and RTTY speeds. However, if clean output keying is not obtained at the speed desired, try varying the RC values slightly.

The total cost for the circuitry described should be on the order of \$5. A few

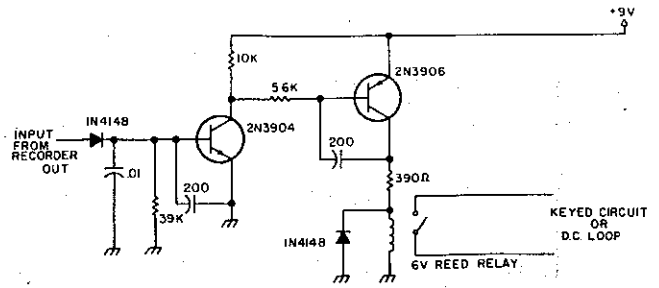


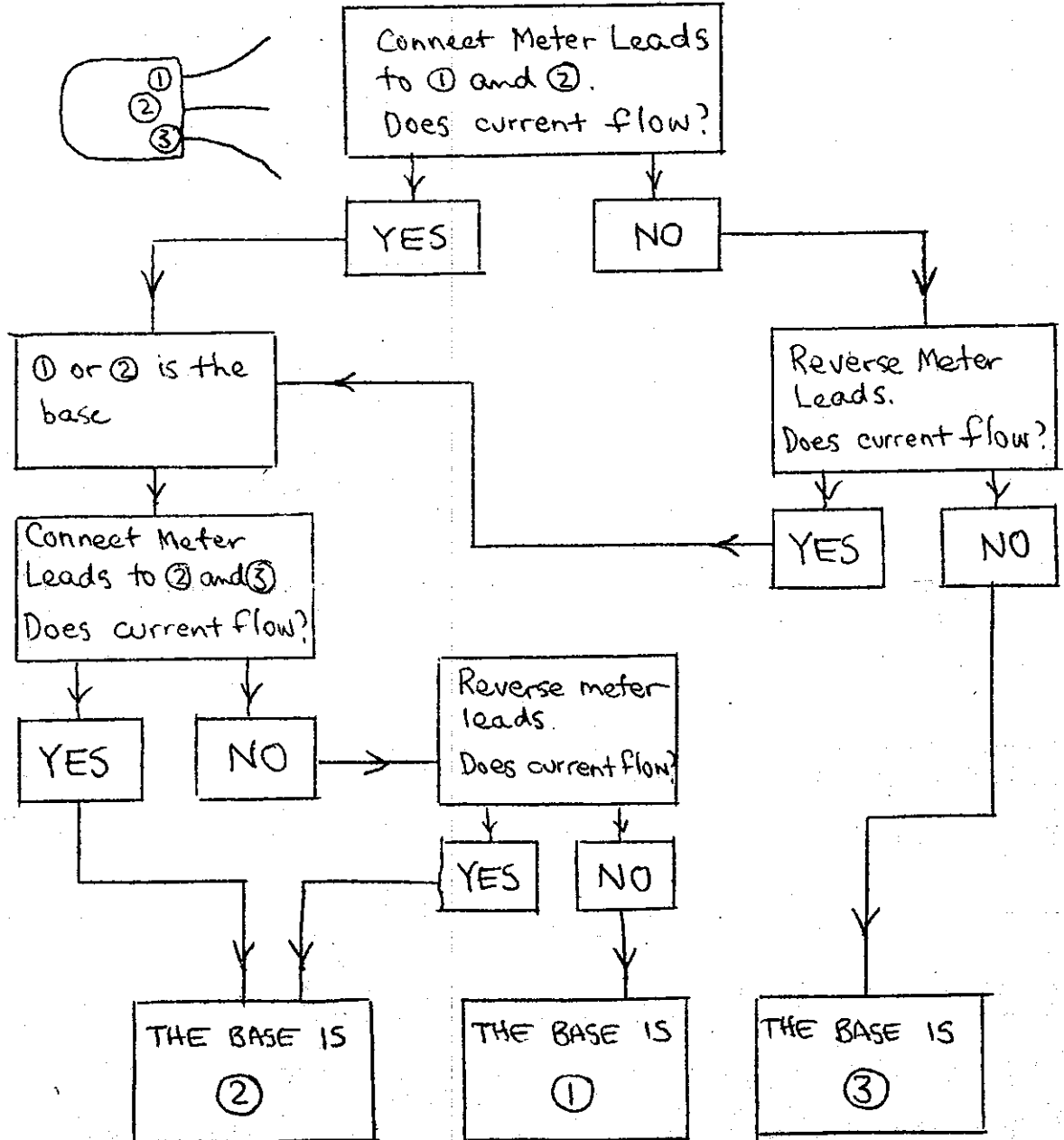
Fig. 2. Playback signal conditioning circuit.

endless loop cassettes, if that type is used, will bring the cost up to \$20 or so. But, it still represents a lot of opera-

tional convenience, economy, flexibility and data storage room as compared to IC memories. ■

### 1. FINDING THE BASE OF A TRANSISTOR

Use an ohmmeter with battery voltage 3V or less.

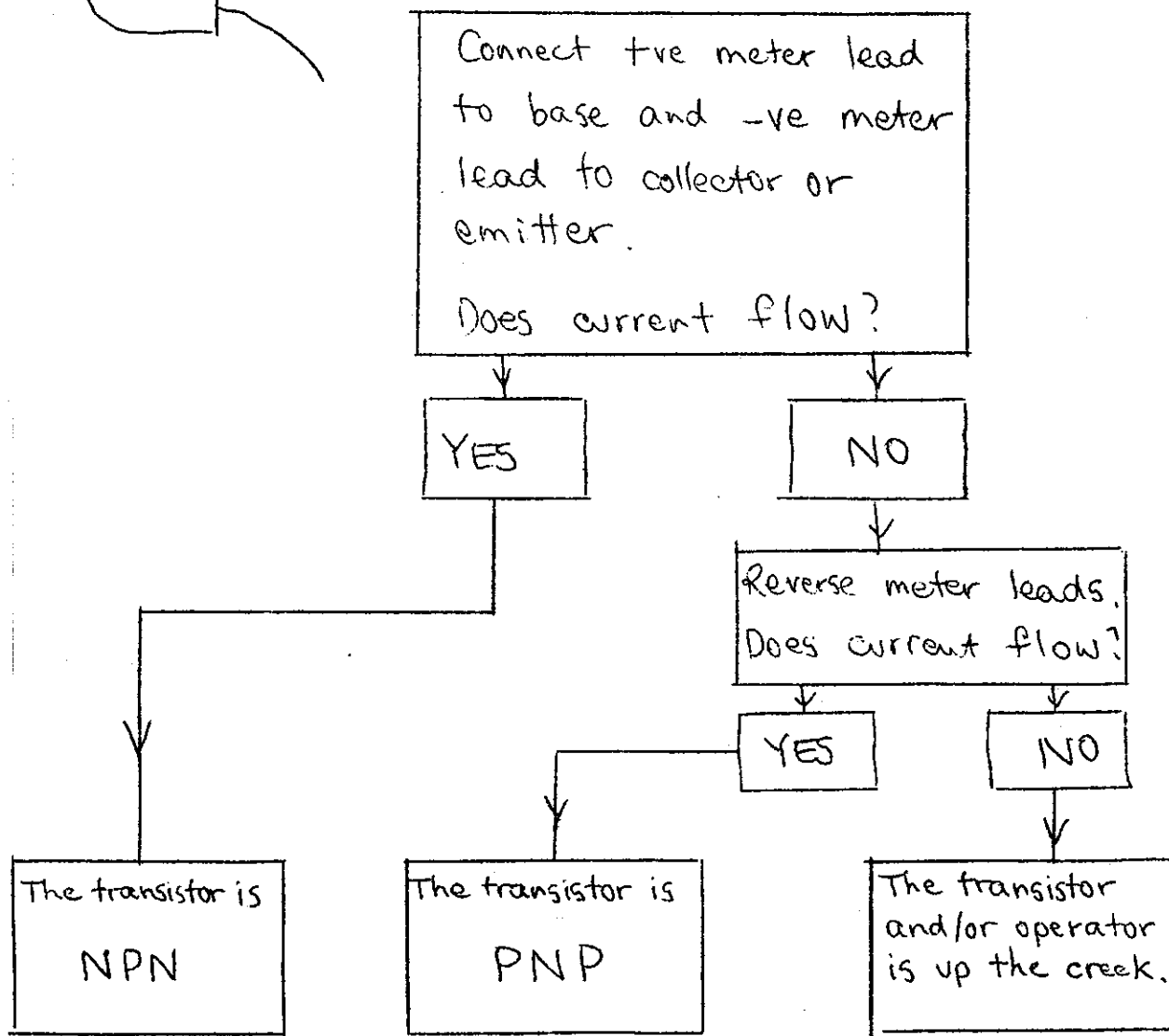
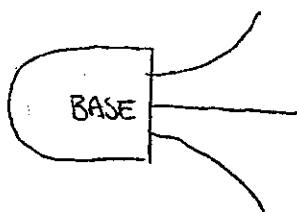


The flowchart is a simple test that can be used to identify a faulty transistor.

## 2 FINDING THE POLARITY OF A TRANSISTOR

Use an ohmmeter, with battery voltage 3v or less. Note that the "+" terminal becomes negative and vice versa when a multimeter is used as an ohmmeter.

First, find the base as described in part 1.



## 3 FINDING COLLECTOR AND EMITTER

Now the base and polarity is known, place in the "E.A. transistor tester," both possible ways. The connections which show highest gain are the correct ones.



EMERGENCY CALLS

Phil Duck VK2PGL.

I would like to put forward a suggestion to all club members that if you find yourself in a position that you have to call CQ EMERGENCY, and you do not get a reply, PLEASE dont assume that you have not been heard before giving up. Put your request across anyway. Think of the hundreds of people with SCANNERS in the district who may have heard your call but cant reply. I found myself in that position one night and it is quite distressing. Lets believe in the old saying that there is always someone listening, take a punt, who knows it may save a life..

MUSEUM ON THE MOVE

Hours.. Sun to Frid. 9.30 am to 4.30 pm

Sat. 1.00 pm to 4.30 pm.

Wollongong: 5th July to 17th July.  
 Nowra : 19th July to 1st August  
 Berry : 2nd August to 5th August  
 Kiama : 7th August to 15th August  
 Dunmore : 17th August to 22nd August  
 Wollongong; 24th August to 31st August.

Pierce Healey VK2APQ on behalf of the Museum is keen to have local amateurs introduce themselves, and if possible demonstrate Amateur Radio by making contacts via Repeaters using "handhelds". The museum are keen to get a section dealing with Amateur Radio included on the train display.  
 de Roy VK2KO..

Thanks also go to Roy for his work in various club affairs during his terms on the committee. Due to other commitments Roy has had to give up his involvement in club activities, and the committee regretfully accept his resignation. This now leaves a committee position vacant and we would like to have any nominations for same from any interested members.

Once again Roy, many thanks....

de Dave VK2DFL..

# HF Bands Expander!

- - eliminate splatter  
to gain operating room

With many of the speech processing circuits in vogue these days, the SSB operator often operates his rig on the thin line between keeping it fully modulated and overmodulation with its attendant splatter. There are very few devices which can respond instantaneously to the changes in PEP as a transmitter is modulated and so inform the operator when a PEP value has been exceeded, which causes the transmitter to flat-top and splatter. Meters, no matter where they are located in the transmitter or antenna chain, are useless to identify transistery modulation peaks unless they are equipped with somewhat elaborate peak sensing and storage circuits. The only devices which by themselves can respond essentially instantly to voltage/current changes are electron tube dis-

play devices (scopes and magic-eye tubes), neon bulbs, and LEDs.

An oscilloscope is, of course, one of the best monitoring devices one can use. But, a scope can be expensive to employ as just a monitoring device, and it is not always easy to hook up a regular bench type scope for modulation monitoring. Also, it is hardly a handy monitoring device for portable operation. This article explores the use of simple and inexpensive neon bulbs and LEDs for the instantaneous indication of different PEP output levels.

The idea of using neon bulbs as an inexpensive PEP output indicator is certainly not new. It was done by many amateurs in the early 1960's, but it often proved to be a problem to get reliable indications on various bands unless the bulb circuitry was

located at some point in the transmitter output line where the impedance remained the same on various bands. Today, this is not so much of a problem, since almost all amateurs use coax and also use a transmatch or similar device along with an swr meter between their transmitter and the antenna transmission line. The coax from the transmitter to transmatch is "flat" on every band, and that is the point at which to locate the PEP indicator.

W6GWS came up years ago with the circuit shown in Fig. 1(a). It is simply two neon bulbs connected in series with the voltage dropping resistors arranged so one bulb lights at a chosen *normal* modulation level and the other bulb lights when a *chosen PEP limit* is reached. The circuit can be used across any impedance transmission line. The *total* value of the resistances

needed is calculated using Ohm's law, knowing the approximate transmitter power output, the impedance of the transmission line, and using a figure of 1 Watt for the power consumed in the bulb circuitry. The values of R1 and R4 will be 1k or more for any transmitter output of 100 Watts or more, so these resistors, which should be a fixed carbon type, isolate the circuitry from the transmission line so no loading effects are noticed. The resistor directly across the bulbs can be any sort of carbon trimmer pot or regular carbon pot rated at 1 Watt or more.

The ideal way to adjust the ignition point of the bulbs initially is with a monitoring scope. Adjust R2 so the bulb associated with it lights fully when a normal modulation level is achieved with no flat-topping. Adjust R3 so its bulb just starts to glow when flat-topping just occurs. The adjustments may interact a bit, so one has to go back and forth a few times to check the settings. An alternative to the scope method is to insert a carrier so the transmitter draws 80-90% of its normal dc input. Then adjust R2 to light its bulb. Further, reinsert the carrier for the full dc input and adjust R3 so its bulb ignites. The latter ignition point should be checked by some on-the-air checks, if possible, to ensure that it warns when overmodulation starts to cause splatter.

The circuit of Fig. 1(a) works best with linears having about 150 Watts or more PEP output. For PEP output levels of down to 60-70 Watts, the simple circuit of Fig. 1(b) is used. It also uses a NE-17 neon which ignites at a slightly lower voltage (55 volts) than the usual NE-2 (65 volts) and has a larger glow surface. As before, one bulb is set to indicate normal modulation and the other to indicate the danger of flat-topping. 1k isolating resistors are used and the variable resistor calculated on the basis of the

voltage across the line (calculated on the basis of the line impedance and the PEP output) and the fact that the neons use about  $\frac{1}{4}$  Watt of power.

A point to watch when using either neon circuit is that the variable neon resistors will set the ignition point of the neons, but the extinguishing voltage depends on the characteristics of the neon bulbs. Before finalizing a circuit, check that the extinguishing voltage of the neon used for flat-top warning is the higher of the two particular bulbs used. Otherwise, one can get a slightly confusing indication where the flat-top bulb, once a peak ignites if and the normal modulation bulb, will remain glowing for an instant after even the normal modulation bulb extinguishes.

LEDs can be used instead of neons and present both advantages and disadvantages. The disadvantages are the size of the indicators and that LEDs do not have quite such a distinct or sharp turn-on

point as many neons. But, LEDs draw less power and can be used down to quite low power levels. By using a green LED for normal modulation and a red LED for flat-top warning, an interesting display can be created.

The LEDs, being dc devices, require a rectifier circuit as shown in Fig. 1(c). The approximate total value of the variable resistor needed can be calculated on the same basis as before, except that the typical LED will require about .03 Watts for operation (1.5 volts at 20 mA).

Whatever circuit is chosen, it must be properly shielded since one is tapping into the transmitter transmission line. The circuitry required is so small that in many cases the circuitry can be enclosed within a transmitter, an SWR bridge, or an antenna matching device. In the case of the LEDs only, they can be remotely located once the sampled rf signal is rectified. So, the rectifier circuitry could be located by the

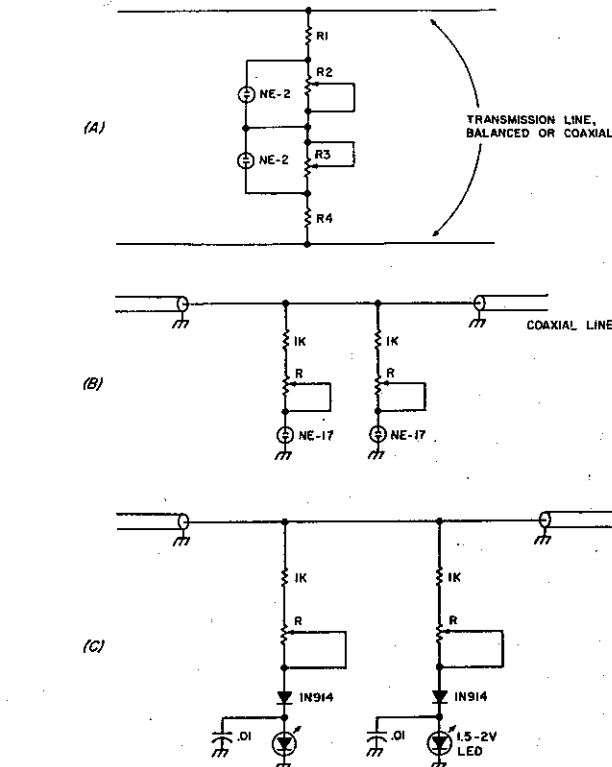


Fig. 1. Various neon and LED PEP indicating circuits.

antenna terminal of a transmitter and the LEDs on the front panel. An alternative is to use a small minibox en-

sure which has a coax receptacle and use a standard T connector to break into the transmission line. ■

## Winter Maintenance for Amateur Radio Equipment

1. Oil all RF stages to reduce noise levels.
2. Rotate tubes and check air pressure.
3. Adjust heaters to 100 degrees.
4. Plug all grid leaks and check padding on padders.
5. Check RH group of all bleeders.
6. Check water levels in tank circuits and reservoir capacitors.
7. Check sharpness of trimmers and sharpen if necessary.
8. Replace all screens in filters dropped by screen droppers.
9. Check weights of all plate loads.
10. Empty ion traps and clean excess flux from all magnets.
11. Sweep all IFT'S and empty IFT cans.
12. Check and if necessary instal new beaters in mixers.
13. Clip new lambswool on all buffers.
14. Check licences of drivers and renew if necessary.
15. Check linears with ruler.
16. Fit new honpers on all feeders.
17. Look down all flat transmission lines for reflections.
18. Check taste of PI output with product detector and mop up any splatter.
19. Check that rate of PI output matches feed lines.
20. Grind seats of all standing waves.
21. Discard all out of date complementary output stages.
22. Keep more than one ion in the fire at all times.
23. Replace all spent 'T', 'Q', 'Z', gamma matches.
24. Check high and low beams for distance.
25. Dust and replace all images at a standard frequency.
26. Count quads.
27. Make sure that all guys are tight and all plate circuits are loaded (suggest a bus bar for this). Beware end effect.
28. Tighten lids on biscuit containers.
29. Oil all crystal locks.
30. Dredge all net channels.

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

Meetings: Second Tuesday of every month except January at 7.30 p.m. in the S.E.S. Headquarters, Montague Street, North Wollongong. Committee Meeting - 3rd Tuesday 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 and 7275 VHF Repeaters; 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 MHZ 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, Dave Myers VK2DFL at 30 Highlands Pde. Bulli 2516. Telephone 84.9404. Copy deadline 3rd Tuesday each month.

Membership: The Secretary, I.A.R.S. P.O. Box 1838, Wollongong 2500. Full membership is \$10.00 per annum; students and pensioner concessional members \$5.00 per annum.

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 sufficient 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, 30 Highlands Pde., Bulli.

Vice President - Keith Curle VK2OB, 24 Beach Drive, Woonona.

Secretary - Murray McConnell VK2MY, 62 Ramah Avenue, Mt. Pleasant.

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- Andrew McEwan VK2XGC, 7 Nioka Avenue, Keiraville.

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Repeater Committee: Mike Keech VK2DFK, Morry Van De Vorstenbosch VK2EMV, Ian Callcott VK2EXN, Dave Colless VK2EZY, Fred Zickar VK2YSB.

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Broadcast Officer: Dave Colless VK2EZY.

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

Propagator Editor & Staff: Dave Myers, Editor VK2DFL, Ken Frost VK2DOI, Cartoonist Brian Wade VK2AXI.

Store: Ray Ball VK2PHD/XCC

Publicity Officer: Nora Fisher, 17 Elizabeth Street, Mangerton. 2500.

Awards Manager: Jim Hayes VK2KJJ.

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