



# The PROPAGATOR

Illawarra Amateur Radio Society Inc.



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

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

Visitors are most welcome.

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Volume #91 , Number 5

MAY 1991

## EDITORIAL COMMENT

As you will read in the committee minutes it is becoming more and more necessary to have a constant supply of good clean voltage up at Mt. Murray. This is one of the best repeater sites around and the club should make the best use possible of it. Don't forget that you as an amateur are the one who is going to benefit from improvements made up there.

A trench has to be dug that is approx 150m long, and must be a minimum of 450mm deep. A backhoe would be a spot on device for this job. We are hoping to arrange one, but if you know anyone with such a device and would be willing to donate its use for the day, let Ken KWG know about it. Conduit and cable should not be a problem, but if you know where it can be obtained at the right price then let someone know, and put it aside. The more people we have looking for equipment for this project the more likely we are able to get it and the sooner it can be done.

## COMING EVENTS

### MAY

May should be a great evening as a new topic for many will be presented. AMATEUR TELEVISION.

### JUNE

This should also be an informative night as I am sure that every body will have been toiling with this info in this issue about 2m amplifier. Someone may even have some spec's for getting the 70cm machines running. DON'T FORGET THIS IS HOME BREW NIGHT SO ANYTHING THAT HAS BEEN MODDED WILL BE OF GREAT INTEREST.

### July

The AGM. Time has come for the elections. Have you been thinking about taking a position? I know that the Propagator Editors position is going to be hotly contested.

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\*\*\*\* Page 1 \*\*\*\*

A lot has happened on the Packet scene in the Illawarra over the last few months and I'll try to give a bit of a run-down up to the present time. There are few new faces on Packet now and with a couple of the new licencees also interested, we should have the makings of a good LAN, when all those who have shown interest acquire their TNC's and take the first steps into a World of information, frustration, blood, sweat, tears and "omigosh it works!" With VK2RPS operating on ROSE we can now access a Packet Radio BBS in VK6 as easily and as fast as going to the overworked BBS of VK2XY in Sydney.

VK2RAW digi was under test as a ROSE node and after we get a few of the "features" ironed out will be going online permanently. I won't bother you with the frustrations of the new system other than to say I now have a few more grey hairs, the Holden now knows the road up to Mt Murray intimately and the petrol station owners can now afford to lower their prices a bit. Over the last month or so I have set up an MSYS PRBBS here in the Illawarra, so anything that appears on the VK2XY/VK2FEX BBS's will be available here beneath the escarpment. It is currently running on two ports with 147.575 as the Forwarding port and 147.600 as the local LAN port. It can set up for 6Mx or 70 Cm if there is enough interest in those frequency/bands. If asked nicely I'm sure VK2FFN Peter would leave his system on 147.600 for the northern stns to Digi thru as he has an excellent outlook to the north. VK2KHE Peter and I had the system running on 6Mx for some time as a trial but found too much noise on the band caused problems so 147.600 is the second Port for now.

To log onto the PRBBS  
send:

C VK2XGJ

It also serves as a Gateway between the two freq's/bands by using the call VK2XGJ-2. To connect to another stn on the other side of the Gateway, if you are on 147.600 and the other stn is on 147.575 send:

V VK2XGJ-2

It works the other way as well from 147.575 to 147.600 Mhz. Also you may if you wish sit on the quiet freq, ie 147.600 and send your Beacon thru the Gateway and up to the Digi on 147.575, this way other stn's will know the path to your stn, send:

BT PMS

VK2XGJ-2 VK2RAW-1

Hopefully by the time you read this the VK2RAW ROSE system will be up and running, if you require and further info on the system there is a file ROSEUSER.TXT in the Files area of the VK2XGJ PRBBS. Plus I'll try to answer any questions raised, but remember I am no Expert, just a User of the systems.

73 de VK2XGJ

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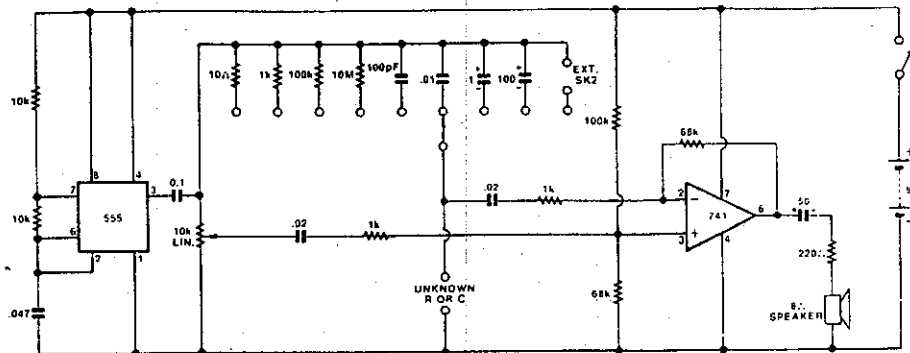
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## Bridge measures unknown resistance and capacitance



This bridge can be used to determine, with reasonable accuracy, the value of resistors and capacitors over a very wide range. The bridge is formed by two arms of the 10k potentiometer, the unknown and the reference value as chosen by the switch. The 555 serves as an oscillator in the audio range and

the 10k potentiometer is adjusted for a minimum output from the headphones or loudspeaker, as determined by the 741 difference amplifier.

The 10k potentiometer should be calibrated by determining significant points obtained by using resistors or

capacitors of known value and accuracy. The external reference socket may be used as a means for testing coils or for different ranges other than those which the switch offers.

(By Mr. D. Brighton, Franklin Road, Huonville, Tasmania 7109.)

## Improved resistance-capacitance oscillator

In a common form of RC oscillator as shown in figure 1, a parallel-T network in a negative feedback loop nulls at one frequency, allowing positive feedback via the potentiometer to sustain oscillation at that frequency. The frequency stability is worse and the harmonic distortion is higher than that of a resonant (inductance/capacitance) oscillator because the bandwidth of an RC network is greater than the bandwidth of an LC circuit.

Unfortunately, inductors are usually large and expensive but a suitably proportioned parallel-T network can, with the addition of an extra resistor and capacitor, produce two outputs, one at point A (figure 2), a voltage which nulls at one frequency and the second at point B, a voltage which peaks, and is in phase with the network input voltage, at the same frequency. Positive feedback can now be taken from point B, giving a measure of frequency discrimination to the positive feedback loop and narrowing the overall oscillator bandwidth.

A comparison of measurements made on the two circuits shows the improvement to be expected. Standard tolerance resistors

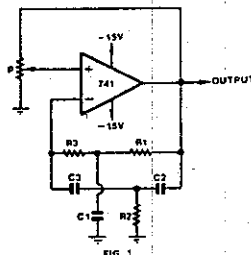


FIG. 1

and capacitors were used. Better results can be obtained by using matched components, or by using trim pots for R3 and R4. Both circuits were adjusted to give an output voltage of 4.5V P-P.

The frequency stability for a 10% supply voltage change was 0.17% for figure 1 and .011% for figure 2. Harmonic distortion was measured at 2.2% and 0.55%, respectively.

The choice of frequency, 4591.5Hz, may seem unusual but has been deliberately chosen as part of an impedance meter, to simplify calculations of inductive and

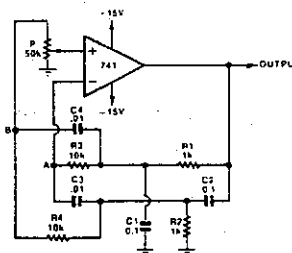


FIG. 2

capacitive reactance. Provided the parameters given below are observed, an oscillator of any frequency may be made.

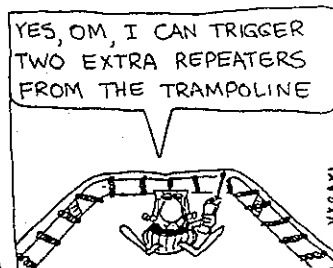
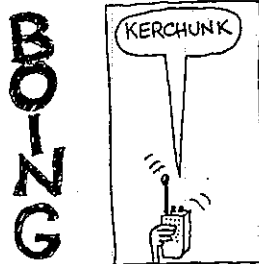
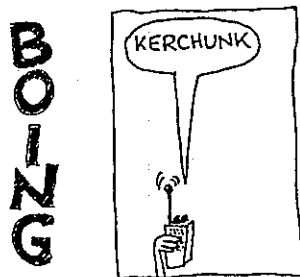
$$R1 = R2 = Xc1 = Xc2$$

$$R3 = R4 = Xc3 = Xc4 = kR1, \text{ where } k \text{ is equal to or greater than } 10$$

$$P = k2R3, \text{ where } k2 \text{ is equal to or greater than } 5$$

X is the reactance at the frequency of oscillation,  $f_0$ .

(By Mr. R. Salter, 12 Avr Street, Macleod, Victoria 3085.)





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PRINCESS HWAY DAPTO

### AMATEUR TVI WIPES

THIS IS PROBABLY THE WORST CASE OF TVI FROM AN AMATEUR STATION THAT WE HAVE HEARD OF.

ONE DAY WHILST BILL VK2JBS WAS WATCHING HIS TELE THERE WAS A LOUD WRAP ON HIS FRONT DOOR. BILL COULD TELL THAT THIS WAS NOT THE KNOCK OF A CASUAL VISITOR. IN FACT, IT WAS THE LADY FROM ACROSS THE ROAD, AND BILL COULD TELL AT A GLANCE THAT SHE WAS NOT HAPPY. HELLO, SAID BILL IN HIS FRIENDLIEST VOICE, WHAT CAN I DO FOR YOU. YOUR DAMN RADIO HAS WIPED OUT MY TELEVISION. I CANT GET CHANNEL 4 OR 5A ANYMORE. AS BILL TRIED TO EXPLAIN THE REASON FOR THIS WAS THAT 4 AND 5A WERE NO LONGER TRANSMITTING ON VHF.

THIS DID NOT MATTER, IT WAS STILL BILLS FAULT.  
"AINT LIFE DIFFICULT WHEN YOU'RE AN AMATEUR".

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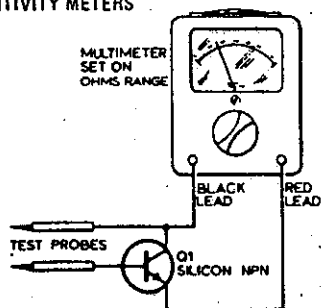
SOURCING OF HARD TO GET RECORDS AND CASSETTES

CONTACT WARREN GIBSON VK2TWG FROM MON - WED AFTER 1PM ON (042)833337

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\*\*\* Page 5 \*\*\*

MEASURING HIGH RESISTANCE ON LOW SENSITIVITY METERS



Many inexpensive multimeters are unable to give useful readings on the ohms range much above 47k. However, by using almost any silicon NPN transistor (BC107 for example) in the arrangement shown will give considerable deflections for quite high values. The meter's scale will not apply but by noting the readings from high tolerance, high value resistors and some interpolation, fairly accurate measurements can be made. Note that on a multimeter the Black (negative) lead connects to the battery positive on the ohms range.

One of the major purposes of the Conference of clubs is to suggest ways that the WIA of NSW, and even the Federal WIA, can become more relevant to, and more supportive of amateur radio in all its various forms, now and as it evolves.

Proposals, which are likely to affect the whole of Australia, or just NSW, or even just this region, need to be collected and distributed to all who are likely to attend, in advance of the conference. Allowing for this collection and distribution means that we need your proposals NOW!

Just to get you thinking along appropriate lines, here are some suggestions:-

1. That clubs be able to bid for the privilege of running the next conference:
2. That the WIA negotiate with traders to allow discounts to members producing a WIA membership card:
3. That differential rates apply to encourage new members - eg new unlicensed members have a 25% discount, proven ELMERS have a 25% discount:
4. That AR be a quarterly publication:
5. That limited licences be allowed to access the top of the 10m band in order to access repeater linkages to mode A satellite:
6. That the WIA produce a reference book of direct relevance to Australian amateur radio practise (like RSGB or ARRL):
7. That novices be allowed to use RTTY and AMTOR on 10m (as in USA):
8. That the WIA pursue more band space above 30GHz:
9. That the WIA of NSW negotiate with local government regarding the erection of antenna towers; criteria could be aesthetics, interference, safety, height vs frequency - so that a clear set of rules apply:
10. That the WIA clarify the structure, relationships and fees between Federal, state and club levels:
11. That the WIA councillors be granted a rebate to their WIA membership fees:

and so on.

So get your thinking caps on and get communicating those proposals to me so I can collate and distribute.

cheers Brian Clarke VK2KLH

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COMMITTEE MINUTES

START 19:30  
PRESENT: VK2'S KVG (CHAIR), KCV,  
XGJ, MT, XSV, TKE, KLH, KEY, XLA,  
XCC, KHE,  
APOLOGIES: NIL  
THE MINUTES OF THE PREVIOUS  
COMMITTEE MEETING WERE READ AND  
RECEIVED.

A MEMBERSHIP APPLICATION FROM  
DAVID DOWNIE, VK2EZX WAS APPROVED.  
BRIAN, VK2KLH, HAS SENT A LETTER  
TO CLUBS REQUESTING PROPOSALS FOR  
THE REGIONAL CONFERENCE OF CLUBS  
TO BE HELD IN JUNE (DATE AND  
CATERING ARRANGEMENTS TO BE  
FINALISED AT NEXT MEETING).

PETER, VK2KHE, TO INVITE THE SES  
CO-ORDINATOR TO THE NEXT COMMITTEE  
MEETING

THE COMMITTEE RESOLVED TO PURCHASE  
A 12BR REPEATER (SIMILAR TO  
VK2RUW) WHICH IS AVAILABLE - COST  
\$100.

THE CLUBS LICENCES ARE TO BE  
RENEWED AND ROB, VK2MT, TO EXAMINE  
THE POSSIBILITY OF COMBINING SOME  
TO REDUCE EXPENDITURE.

TREASURERS REPORT: KEN, VK2TKE,  
REPORTED THAT APPROXIMATELY \$600  
WAS MADE FROM THE APRIL AUCTION.  
INSTRUCTIONS FOR CONVERTING MOCOM  
TRANSCIEVERS PURCHASED AT THE  
AUCTION SHOULD BE IN THE MAY  
PROPOGATOR.

WITH THE CONTINUING POWER PROBLEMS  
AT VK2RAW, THE COMMITTEE RESOLVED  
TO CONNECT THE SITE TO 240V AC,  
SUBJECT TO THE APPROVAL OF THE  
SITE'S OWNER. ONCE THIS IS  
OBTAINED, A BACKHOE WILL BE  
ARRANGED AND EQUIPMENT WILL BE  
PURCHASED.

PETER, VK2KHE, TO ARRANGE AN  
INSPECTION OF THE CLUB RADIO ROOM  
AREA BY INSURANCE ASSESSORS.

- WE MAY SOON BE ON AIR- IT IS  
HOPED TO RAISE THE TOWER BY THE  
END OF APRIL, WEATHER AND  
EQUIPMENT PERMITTING.

PAT, VK2KCV, TO ASCERTAIN WHETHER  
THE CLUB CAN CLAIM AN EXEMPTION RE  
TAXING OF INTEREST EARNED ON CLUB  
ACCOUNTS - STOP PRESS - EXEMPTION  
OBTAINED !!

THE MAY GENERAL MEETING WILL BE  
ABOUT AMATEUR TV (ATV) COURTESY OF  
MICHAEL, VK2XCE. COME ALONG FOR A  
POSSIBLE SCREEN TEST AND BIT  
PART..IF WE CANT APPEAL TO YOUR  
VANITY AT LEAST COME ALONG AND  
FIND OUT ABOUT THIS INTERESTING  
FACET TO OUR HOBBY.  
MEETING CLOSED 21.20.

\*\*\*\*\*

DENIS'S ANTENNER COLUMN

# Fools Guide to Fuse

## Replacement



97Amp



243Amp



612Amp



1,482 Amp  
(Slow-Blow)

# a carrier-operated relay for VHF amplifiers

simple switch  
operates reliably  
over wide  
temperature range

The availability of low-cost hand-held VHF transceivers has increased the demand for external power amplifiers to overcome the inherent power limitations of these radios. In particular, many Amateurs wish to adapt their hand-held units to mobile use and take advantage of the abundance of low voltage DC power available in this application with an add-on amplifier.

Many application notes detailing the construction of such amplifiers are available.<sup>1</sup> A typical design appeared in past editions of the Motorola *RF Data Manual* as EB92A and is built around the MHW-252 hybrid module. The possibility of obtaining 20 dB or more of gain in a single module prompted us to build these amplifiers with the hope of developing 25 watts from the 200 mW provided by an ICOM 2A operating on low power.

The construction of these amplifiers proved to be a near-total disaster for several reasons, and we are by no means encouraging others to follow in our footsteps as far as the amplifier design is concerned. In fact, the latest edition of Motorola's *RF Data Manual* does not list the MHW-252 at all. However, one significant improvement was made in the Motorola design which will undoubtedly prove to be very useful in future power amplifier projects.

The major improvement concerns the COR circuit. In the original Motorola design, shown in fig. 1, it can be seen that a 5-pF capacitor is used to couple RF energy to a transistor that drives a mechanical relay. At 146 MHz, 5 pF represents 220 ohms of capacitive reactance. Because the transistor switch is forward

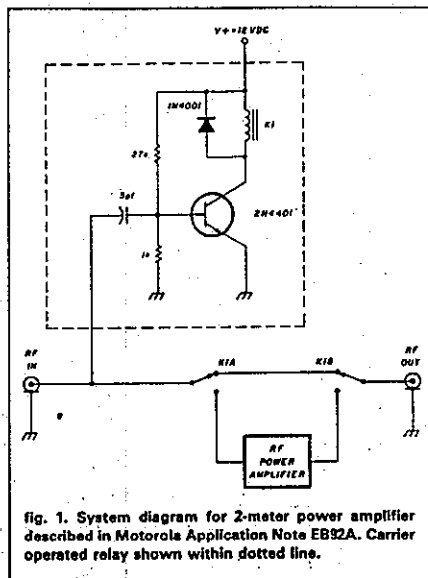
biased somewhat during reception, the 5 pF capacitive reactance is primarily the input impedance to the circuit, and thus seriously affects the receiver signal path. In addition, the transistor circuit was found to be extremely unreliable because of base-emitter threshold changes with temperature, especially bothersome in mobile operation during cold mornings. In fact, the slight variation with frequency of the power output of an IC-2A became very noticeable on some mornings, yielding operation on only part of the band.

## some problems occurred

Some history of our construction experiences offers comic relief value and should therefore be expounded for completeness. We built three of these amplifiers using the suggested single-sided PC board. As described in the application note, the circuit purportedly used the lead inductance of the relay and printed circuit traces as elements of a harmonic output filter. Measured with a Bird wattmeter, each of our separately constructed units produced a whopping 17-18 watts of output power. This was about 10 watts lower than expected. After a call to the manufacturer we were certain we had erred somehow. The manufacturer's representatives verified the published performance specifications, which we were obviously not meeting. In order to rectify matters, we delved into the theory of the LPF and tried different capacitor values and types. In spite of these changes, output power remained below 20 watts even with different ICOMs, each of which provided the required 200 mW into a 50-ohm load. Suspecting some type of mismatch condition either at the input or output, we proceeded to construct new boards using 50-ohm microstrip for RF connections. Instantly, 30 watts appeared at the Bird wattmeter load upon test. We concluded that the relay lead inductance was itself not enough to mismatch the input and output circuits but that the

By Frank M. Calmi, WB3JCC, P.O. Box 650163,  
Vero Beach, Florida 32965, and Edward A.  
Richley, KD8KZ, 41 N. Highpoint Circle South,  
Naples, Florida 33940.

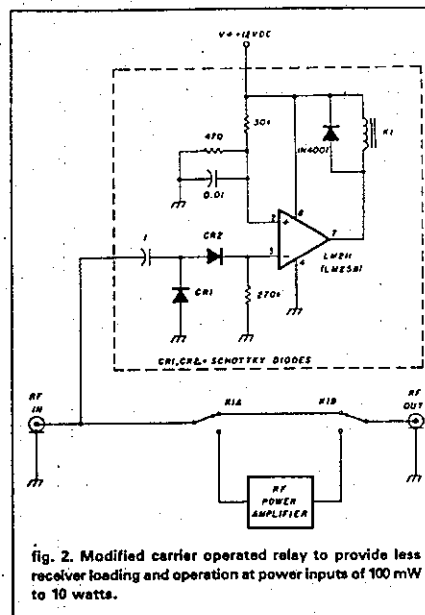




circuit traces were. The LPF was also deleted. Other harmonic filters were investigated, and although power loss was not significant, they were not used for the balance of our tests.

In addition to these problems, discussions with the manufacturer provided critical information regarding the input attenuator network. We were told that deleting the network would result in damage to either the ICOM or amplifier because of the adverse interaction between the amplifier and the ICOM resulting from improper source impedance at the ICOM output (on low power only). A 1 to 1.5 dB minimum amount of attenuation is required for the network to reduce the interaction. Fortunately we found this problem by accident before these discussions, but the ICOMs were not damaged. (Our MHW-252 modules were replaced at no charge.)

The process of changing circuit boards to the microstrip type required some work and a bit of magic which we did not possess. In the absence of magic or luck we noted that the MHW-252 leads promptly detach from the module substrate after one soldering/desoldering operation. We assumed we had defective modules, but units from different sources behaved similarly. A honed soldering iron tip and a steady hand allowed us to reattach the leads to the substrate. (We might add that because our construc-



tion and design experience is extensive, we cannot wholly be blamed for the aforementioned problems.)

While waiting to overcome some of these difficulties with the circuit, we set out to improve the COR circuit. We decided that the ideal COR circuit should have the following properties:

- as little loading of the receiver signal path as possible (1 pF at 146 MHz)
- reliable operation down to 100 mW
- simple and inexpensive
- ultra-reliable with respect to temperature

### COR description

A quick calculation shows that the peak-to-peak voltage of a 100-mW RF signal on 50-ohm line is about 6 volts. This should, in a properly designed circuit, be more than sufficient to guarantee reliable operation. The trick is to make a suitably high impedance switch so as to allow a 1-pF capacitor to provide the coupling. The capacitive reactance of a 1-pF capacitor is approximately 1100 ohms, which presents little loading to the receiver even if the switch input is highly capacitive.

No problems were experienced with the configuration shown in fig. 2. CR1 and CR2 are inexpensive Schottky diodes configured as a voltage doubler to extract the peak-to-peak voltage of the RF signal, aside from the voltage drops of the diodes. The bias built up by the action of the diodes keeps them operating primarily in reverse bias where their capacitance is typically 1 pF. This is entirely acceptable for VHF applications and is significantly better than that of low-cost junction diodes. Furthermore, the insignificant storage time of the hot-carrier diodes makes them much more efficient as an RF level detector.

#### circuit description

The circuit operates as follows. Application of RF power to the input provides a rectified signal at the diode doubler as described. The input impedance of the comparator (or op-amp) and bleed-off resistor is sufficiently high to allow a significant voltage to be developed at pin 2 compared to the bias applied at pin 3 (200 mV). The comparator changes its output state from high to low at this time. Relay K1 is actuated by the near ground potential assumed at output pin 1, provided the required relay current is within the sink capabilities of the comparator output stage. Upon release of input excitation, the voltage at pin 2 decays to a value sufficiently below the bias voltage at a rate determined by circuit capacitance and the 270-kilohm resistor. Subsequently, K1 is de-energized.

The comparator chosen was an LM211 (preferable) or an LM258 (a dual device). Either can sink the 25-30 mA required to operate the OMRON relay used in the Motorola design. In addition these ICs come packaged in a TO-5 metal can package which permitted the pins to be conveniently inserted into the appropriate holes already present in our circuit boards from the Motorola design. (Incidentally the old transistor circuit was removed and tested for 60 Hz response at 120 VAC.) Although double the component count is used compared to the suggested COR circuit of fig. 1, the new circuit easily fits on the circuit board and has been used in other power amplifiers.

The circuit, which met all of our requirements, has been in use for several months. If anything, it is too sensitive, as nearby mobile transmitters will sometimes cause the relay to chatter furiously. We noted this effect only at the Dayton Hamfest and consider the inconvenience of minimal consequence.

#### references

1. Motorola RF Data Manual, Second edition, Motorola, Phoenix, Arizona, 1980.

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## REPEATER REPORT

The past month has been very eventfull repeater-wise. Unfortunately for the editors that means a long report, sorry guys.

VK2RIL- Everything OK until around friday arvo/saturday morning the 19-20th of april. A strong, loud signal appeared on the input fx holding the repeater open for sometimes hours on end. Sometimes it would stop for a second or so, just long enough for the repeater time out to reset, other times it would actually time out the repeater, rendering it unusable for hours. From my place I could just hear the signal on the input with the antenna facing north towards Sydney & with an rx preamp on. 7275 was receiving it very strongly because it took an extremely strong signal to get over the intrference. It continued right thru sunday. There was amention of some interference on some Sydney repeaters on the WIA broadcast on sunday. Monday morning it was still going strong. I made a recording of it and went and saw Barry Sullivan at the local DOTC. He was keen to try and assist with the problem. After listening to the tape he contacted the fellow at the main monitoring center at North Sydney and played the recording to him. He said that he would monitor RIL that arvo and tuesday and try to trace the interference. A description of the interfering signal may be of interest. There are two parts to it. One is a loud buzz. It doesn't change pitch or rate very often, it stays fairly constant. Second is what sounds like a radio station. Talking and music can be heard but it is very distorted. This part of the interference has since been identified as an encrypted radio service txing from Centre Point Tower. (This could be part of a Japanese tourist information station txing to Sydney hotels) It appears to have it's main fundamental fx on 151.420. The interfering signal has been floating up and down the band and has affected most Sydney repeaters, both +/- offsets as well as our 6850. I'm writing this on the 26th

and the interference still appears to be with us. Hopefully by the time you read this the situation will be rectified. My thanks to John ZDM for his help in this matter.

VK2RAW- 6850 is basically OK. 7575 digi is still undergoing changes. After my last report on the problems caused by some misguided individuals getting into the system and changing the configuration, John XGJ has done considerable work on the Rose system to get it up and running again. He has added password protection to prevent access thru the back door and has tested and retested the system before putting it up again at Mt. Murray. Unfortunately our present "hills" radio had its squelching system remoned to suit the present TNC, but the new Rose TNC requires a squelched audio output. We have acquired the circuit diagram from Graeme CAG and will attempt to re-squelch the radio. In the meantime, John is donating one of his radio's to get the Rose system on the air. This radio is a power hungry beast, so the battery voltage at the site has been suffering when it has been up there. After modification of the hills, it will be re-installed.

VK2RUW- On the 7th of April, Ken and myself replaced the large 20ft long(6m) 10dB colinear with a smaller 5ft 3.5dB 450.470 commercial item. It was hoped that the broader lobes to the horizon would give a better signal into the main service areas. Also, using the antenna below its design fx, the lobes of the txed signal should (theoretically) have a slight down tilt of about 5 deg. Well this did not happen. Everybody reported a much poorer signal strength than before. At least we tried it, you never know till you try it.....

Yesterday, Anzac Day, we went back and changed RUW's antenna to the larger colinear. Also Steve XNH had completed the UHF amplifier for the output and drove all the way from Sanctuary Point to Knight's Hill to install it. Steve had also made some aluminium shelves to install in our cubicle. It all went well. The antenna up, amplifier on, shelves in. I had also made a 20 amp power supply to replace the batteries and charger at the site.

I feel this will be more convenient and reliable because we get our mains power from the accompanying transmitter hall which is hooked up to two generators. When that big lightning storm went thru a couple of weeks ago and blacked out Robertson and parts of Albion Park, RUW went off the air, but was back on 15 seconds later when the generators cut in. The removed batteries can now be kept on charge for back up at Mt. Murray. Reception reports on RUW are know excellent. The amp has made a huge difference. Some examples of improvement with the amp are:- the repeater has gone from 2's to 8's to an easy 9

;- Peter KHE now sometimes gets in full scale from "frogs hollow"

;- strength 9 in Ulladulla. Should be easily workable from home stations in Batemans Bay

;- At my place on a hand held it's gone from 4's to 5's to full scale and is accessable on 0.5 watts

;- the repeater seems to be receiving better. This is probably due to the high "Q" filtering Steve put on the input and output.

;- the txer output even after amplification is now cleaner than before. THANKS STEVE.

We also tried to help the temperature sensative squelch from opening when it gets cold at the site. A 75 watt light globe was installed and left turned on tom keep the cubicle warm. (over night temps often drop below 0 deg C.) If it gets too warm the cubicles blower fan will kick in and bring some cold air in. The heat from the globe seems to be helping but, the squelch is still opening occasionally so more heat is needed. I am going to make up a circuit that will turn the fan on between 25-30 deg C and turn the light on between 10-15 deg C. To help the temp stabilization, some insulation may also be needed.

VK2RAH- Also on the 7th April I re-tuned the output of the txer at Knights Hill and installed a delay cicut on the rxer at Mt. Murray to stop false triggering from all the noises and spikes that float in on 10m. To trigger the repeater, at least 2 secs of signal is required.

when in normal use the delay returns to normal. The complete system is presently working very well. The 25 watts output is being well heard and on most weekends the repeater is in use for hours on end. Users have been VK2,4,6,8,7L's and JA's. Some very complimentary reports have been received. Pinnig the needle is typical.

till next time  
ROB VK2MT



BELIEVE ME. HIGH LEVEL R.F.  
WONT HARM ANYTHING.



NO! MY RADIO HAS  
NOT BEEN ON ALL DAY.



### Illawarra Field Operations Day

Well this report is a little late but the Editor's have been short of Copy. As you all would have read the Illawarra Field Operations was last November but little has been read or mentioned of it. Some of the "happenings" will never be mentioned and others will be recalled for a time to come yet. A certain Gentleman discovered that after arriving at the site had left the little bits of bent wire that they now call Tent Pegs at home. When questioned as to his checking the night before his answer was "But the wife packed everything I didn't do it!" And so we had to come all the way back again to get them. He also had to have a navigator to get back to the site! No names, no pack-drill, but his Call is VK2FPN. We arrived back at the site, on top of Mt Saddleback in case you had forgotten, and a couple of the more advanced "HF operators" were trying to set up one of the portable antennas that were acquired from the "Shop" trips we done last year, the first thing I did when seeing this was to move my car well away from the area as the mast itself had a very good representation of a sine wave and was guyed and strapped up with various other parts of a similar type of antenna. Rob VK2MT has a pic of this if you are interested. By this time the three tents were up plus sundry antennae from 6Mx to 70 Cm and from memory a certain amount of operating was done. The evening meal was eaten then much "socialising" in general with a nice little fire to keep the evening chill away. It was cool up there at night. Steve VK2XNH was there with his 23cm FM and Lyle VK2ALU made some contacts on 10Ghz into Sydney. Next morning was cool and slowly all the "funny noise makers" crept out of the tents. I managed contacts on 2Mx and 6Mx SSb (only local tho did hear DX) and 2Mx packet plus my first contact on 23cm. ( You owe me a QSL, Mike VK2XCE) Rob VK2MT, Peter VK2BIT and Ken VK2KWG had contacts

on 6Mx and 10 Mx plus others. There were also a lot of accusations as to who snored the loudest and I think it was finally narrowed down to the two tents at the eastern end of the area. A few more of the IARS members arrived thru the Sunday morning and by lunchtime the sun was starting to get to a couple of us and we decided to pull out a little earlier than expected. I hope that we have another one of these Operations days, but held at a cooler time of the year. Calls present: VK2KWG, VK2XQX, VK2JBS and XYL, VK2BIT, VK2MT, VK2ALU, VK2DSH, VK2KHE and harmonic, VK2FPN, VK2XNH, VK2EU, VK2EWJ, VK2XBC, VK2XGJ and a few other that I have forgotten, my apologies on that.

de VK2XGJ

### ALL ABOUT GRAEME

There is a point of conjecture in the XLA shack at the moment. You see, Mrs XLA has been putting the question to Graeme as to where he is really going on the 3rd Tuesday of the month. By careful observation, Graeme's wife has noticed that his call sign has not been appearing in the attendance of the committee meeting published in this magazine you are currently reading. Last meeting Graeme asked if this could be rectified as it has been getting colder and colder spending the nights alone in his shack. All we can say to his wife is GRAEME WHO???

### STS37

Congratulations to Peter VK2KHE. Why you ask? simple. Peter being the intrepid amateur that he is, did get a contact with the last space shuttle. I don't have the call sign of the happy in the shuttle, but frog hollow has a new glow about it.

NECESSITY IS THE MOTHER OF INVENTION, AND THIS PIECE OF WISDOM HOLDS TRUE FOR THAT STRANGE RELIGIOUS SECT KNOWN AS THE IARS.

IF YOU REMEMBER THE IARS WERE A SLIGHTLY OFF BEAT GROUP OF IDOL WORSHIPERS, WHO WOULD TRAVEL GREAT DISTANCES TO CHANT SCRIPTURES TO THEIR HEAVEN GODS. ALAS THIS NEARLY PROVED FATAL TO THE ONE KNOWN AS THE KCV FOR HE WAS NEARLY LOST FOR ALL TIME TO THE BUSH SPIRIT WHO HAD THE ABILITY TO CHANGE THE COURSE OF BUSH TRACKS WITH THE POWER OF HIS WILL. THIS POWER FROM THE DARK SIDE DID CAUSE THE IARS TO PONDER AND REASON THAT A PERMANENT SITE FOR RITUALS AND CHANTING SHOULD BE ESTABLISHED SO THAT THE UNKNOWN WOULD NOT HAVE TO BE FACED.

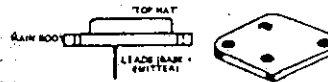
SO TO THIS END THE IARS DECIDED TO PERFORM ALL OF THEIR GROUP RITUALS FROM THEIR NORMAL MEETING PLACE. THIS MENT THAT A HUGE TASK KNOWN AS A PIECE OF CONSTRUCTION MUST BE UNDERTAKEN IN ORDER THAT THE GODS TO BE APPEASED WOULD BE ABLE TO RECEIVE THE CHANTS AND PRAISES. MUCH DISCUSSION AND THE APROPRIATE AMOUNT OF STICK POINTING LATER THE IARS DECIDED THAT AN IDOL SHOULD BE ERRECTED TO THE GODS, AND THROUGH THIS IDOL, THEY WOULD COMMUNICATE TO THEM.

MANY FACTORS LED THE IARS TO CONSTRUCT AN ENORMOUS IDOL ACCORDING TO THE SCRIPTURES:-

IT SHALL BE 1 PACE SQUARE AT THE BASE AND BE 13 PACES IN HEIGHT!!! THIS LAST PIECE OF WRITING DID CAUSE MUCH DISCUSSION AMONGST THE IARS AS THEY THOUGHT THAT IT WOULD BE EXTREMELY DIFFICULT TO WALK 13 PACES STRAIGHT UP. BUT, AS ONE OF THE MORE INTELLIGENT IARS POINTED OUT THAT IF THE IDOL WAS CONSTRUCTED IN THE HORIZONTAL PLANE, THEN IT WOULD BE EASY TO WALK THE 13 PACES REQUIRED. ONCE THIS WAS DONE THE IDOL COULD THEN BE MADE VERTICAL AND THE SCRIPTURE WOULD BE ADHERED TOO.

GREAT MAGIC WAS EMPLOYED TO MAKE THE IDOL VERTICAL, AND ONLY A SELECT FEW OF THE IARS WERE ALLOWED TO VIEW THIS MAGIC TO TAKE PLACE. THIS MENT THAT ALL BUT THE HEAD PIECE OF THE IDOL HAD TO BE FITTED, THUS ELIMINATING THE NEED TO TRAVEL GREAT DISTANCES AND WITH THE POSIBILITY OF LOSING MEMBERS OF THE TRIBE ALONG THE WAY.

#### TEMPLATE AND HEAT SINKS FOR POWER TRANSISTORS



Power transistors similar to OC35, 28 etc., can be useful even when there is a complete electrical breakdown. They can be modified and utilized as either a power transistor heat sink, or as a making out and drilling template. Just remove the 'top hat' part of the transistor by squeezing it in the jaws of a vice.

The top hat should fully detach itself from the main body and the main body can be modified further by filing it flat. Then remove the ceramic insulators and base and emitter leads by pulling with a pair of pliers. Little effort is required to do this.

#### TRANSISTOR SOCKET

If you have ever built a transistor tester and use it a lot, for testing large batches of unmarked devices for instance, you are probably aware of the shortcomings of normal transistor sockets which, in fairness, are not designed for continuous use.

A really hardy socket can be made from a B9A or B7G valve plug (not socket). These consist of pins which are hollowed out and are mounted on an insulated base. The spacing between the pins is ideal for use with most types of transistor.

See Jack at

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POST BOX

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REPEATERS

-VK2RAH - 29.520 VOICE HF Mt MURRAY RX  
 29.620 KNIGHTS HILL  
 -VK2RAW - 146.850 VOICE VHF Mt MURRAY  
 -VK2RIL - 147.275 VOICE/RTTY VHF SUBLIME Pt  
 -VK2RAW - 147.575 PACKET VHF Mt MURRAY  
 -VK2RUW - 438.225 VOICE UHF KNIGHTS HILL  
 (OFF AIR) -VK2RIL - 438.725 VOICE/RTTY UHF SUBLIME Pt

BROADCAST

-IS ON SUNDAY EVENING AT 6.45pm, IN RTTY MODE, TRANSMITTED ON 147.275 AND RELAYED ON 3.618 MHz +/- GRM. CALL BACKS TAKEN IMMEDIATELY AFTER. VOICE BROADCAST HELD AFTER WIA RELAY ON 146.850 MHz (VK2RAW) AND 3.618MHz +/- GRM.

WIA RELAY

-ON 146.850 MHz AT 10.45am AND 7.15pm EACH SUNDAY.

NEWS LETTER

-PUBLISHED EACH MONTH TO REACH ALL FINANCIAL MEMBERS IN THE WEEK PRECEDING THE CLUB MEETINGS. ARTICLES AND LETTERS ARE VERY WELCOME.

MEMBERSHIP

-\$15.00 P.A. CONCESSIONS \$12.00 P.A.

LAWRENCE  
HARGRAVE  
AWARD

-VK STATIONS REQUIRE 10 CONTACTS WITH IARS MEMBERS. OVERSEAS STATIONS REQUIRE 5 CONTACTS. ONE CONTACT WITH THE CLUB STATION VK2AMW IS SUITABLE. DETAILS OF CONTACTS ARE TO BE SENT TO THE CLUB SECRETARY.

STORE

-THE CLUB STORE IS OPEN AT EACH MEETING.

\*\*\*\*\* COMMITTEE \*\*\*\*\*

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SECRETARY  
TREASURER  
ASSIST SEC  
TREASURER  
ASSIST TREAS  
COMMITTEE

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 -VK2MT - ROB MCKNIGHT  
 -VK2FPN - PETER READ  
 -VK2KLH - BRIAN CLARKE  
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 -VK2TPH - PHIL HOWCHIN  
 -VK2GID - GRAHAM DENNEY  
 -VK2JBS - BILL STONE  
 -VK2MT - ROB MCKNIGHT  
 -???

- VK2XSV - VIC HEE  
 - VK2XGJ - JOHN SIMON  
 - VK2KHE - PETER TOMLIN  
 - VK2XLA - GRAEME EAST  
 - VK2XGJ - JOHN SIMON  
 - VK2KLD - LES DAVID

REPEATER PRES  
REPEATER COMM

QSL CARDS OUT  
QSL CARDS IN  
PUBLICITY  
BROADCAST  
CARTOONIST  
PROPAGATOR ED  
PRINTERS  
SOCIAL DIRECTOR  
CANTEEN  
STORE  
TOWER CO-ORD  
DOTC LIASON  
LIFE MEMBERS

(Your name could be here....)  
 -VK2AXI - BRIAN WADE  
 -ZAPHOD (VK2XQX, VK2JBS, VK2GID)  
 -VK2DSH - DALE HUGHES -VK2XCC - RAY BALL  
 -VK2XCC - RAY BALL  
 -VK2DYU - BILL CHADBURN  
 -VK2XSV - VIC HEE  
 -VK2XSV - VIC HEE  
 -VK2OB - KEITH CURLE  
 -VK2ALU - LYLE PATISON -VK2OB - KEITH CURLE  
 -VK2CAG - GRAEME DOWSE