

QRM

Bulletin issued by the Northern
Branches of the Wireless Institute
of Australia, Tas. Division.

April 1976
Vol.6 No 1

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Launceston
Tas. 7250

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MEETINGS

April 9th Northern Branch. State Emergency Service' rooms
Charles St. 8 p.m.

April 13th North West Branch
Lakins Hall, Ulverstone. 8 p.m.

Y.R.C.S. MEETINGS

April 10th
April 24th Kings Meadows High School. 10 a.m.

April 3rd Lakins Hall, Ulverstone, 2 p.m.

May 1st

April 17th Easter, therefore no YRCS class

CONTESTS

April 24/25th VERON Netherlands
Bermuda, phone

May 1/2nd Helvetia
Bermuda, CW

First I would like to thank Graeme VK7ZGG for editing QRM last year, also thanks to all who assisted Graeme, I hope I can count on your support for the next 12 months.

It seems that 35% of last years members have as yet not paid their subs to the WIA, I am sure that most have simply forgotten to do so, considering there were no reminders sent out. Please send your dues NOW! if you have mislaid the account send your cheque with a note advising them of this. Remember you can not be a member of a branch unless you are a WIA member.

John VK7JV

The anual general meeting of the Northern Branch was held on Friday 12th March at the S.E.S. rooms. The meeting was attended by 22 full members and 10 associate members.

Officers elected were:

President	Brian Yeoman VK7ZBY
Vice Presidents	Lindsay Dowl VK7ZLD
	Mike Wilson VK7ZWW
Treasurer	Peter Dowde VK7PD
Equipment officer	Daniel Apted VK7ZDA
QRM Editor	John van Staveren VK7JV
Lecture officer	Wally Morphett VK7ZWX
QSL manager	Col Wright VK7LZ
Refreshments Officers	Mark Corbould VK7ZMC
	Malcolm Weldon VK7ZMM
Branch WICEN coordinator	Mike Wilson VK7ZWW

Secretary, as there were no acceptances at the meeting it is left to the executive committee to make the appointment.

The general meeting followed the AGM. There was very little business discussed. As Roger Greenwood was delayed in VK3 the auction of his equipment was postponed untill the next meeting.

The executive moved that persons seeking membership should accompany their application where possible, this was discussed at length and passed.

AOCP, AOLCP, NOVICE and C.W. classes.

The Northern Branch has started these classes under the leadership of Brian VK7ZBY and Ed VK7HE.

The classes are to be held every Monday evening at Kings Meadows High School, block B, room 35, and will commence at 7.30 p.m. with 30 minutes of CW, followed by radio theory for 2 hours.

It is proposed to use the ARRL handbook as text, if you haven't got one they can be supplied at a modest price.

Anyone interested (including non WIA members) are invited to attend or for further information contact;

Brian Yeoman	phone, Work 918288	or Home 918218
Ed Hewens	Phone, Work 22251	or Home 391863

The Annual General Meeting of the North West Branch was held on the 9th of March at Lakins Hall, Ulverstone.

The meeting was poorly attended with only 5 A grade, and 10 associate members and visitors, which is very disappointing for a AGM when a good attendance is required. A vote of thanks is extended to Graham VK7ZAQ for his service over the past years.

The president was in the chair, as the secretary was absent Max VK7MX deputised.

Officers elected were:

President	Ian Ellings VK7ZIE
Vice Presidents	Winston Nickols VK7EM Ken Hancock VK7KH
Secretary	Max Ives VK7MX
Assistant Secretary	Sid Medford VK7SF
Treasurer	Max Ives VK7MX
QSL Officer	Harold Hancock VK7MZ
Activities Officers	Ken Hancock VK7KH Clem Burt
Broadcast Officer	Ian Ellings VK7ZIE
Branch correspondents	
Bulletin	Max Ives VK7MX
Q.R.M.	Lindsay Johnson
Equipment store Officer	Adrian Sherriff VK7ZAT
WICEN Coordinator	Bob Simpson VK7ZJS
Repeater and Beacon	
Committee	Graham Rand VK7ZAQ Winston Nickols VK7EM Adrian Sherriff VK7ZAT Ivan Lamberton Wayne Gibson

The AGM closed and a short General meeting was held.

Lindsay Johnson

North West Branch, Presidents Report.

Gentlemen, it is with pleasure that I present a report of the Branches activities over the last 9 months which now brings our annual meeting to coincide with the other 2 Branches.

In July a beacon and repeater committee was formed and has since erected a radio shack at Lonah to house a 70cm beacon and a 2 metre repeater, both of which are in final stages of completion. We anticipate making on air tests in the near future.

Y.R.C.S. is in full swing after the christmas break with an average attendance of 10 members. This has been run almost entirely by Graham VK7ZAQ, Adrian VK7ZAT and associate Ivan Lamberton. A membership drive has already commenced to at least double this number.

The cancellation of earlier AOCF and Novice licence examinations has restricted our growth of operative members although we are hopeful of an increase from the February examinations. We have also gained an import from Mt. Morgan in Kirby VK4ZGR. Membership has otherwise remained stable with an average attendance of 18 at monthly meetings.

The Divisional Hamfest at Richmond which was extremely dissapointing, was attended by 6 members and their XYL's.

The equipment store has again helped to meet the needs of most members, the efforts of which are shown in the financial statement.

Again we participated in the Jamboree of the air and the weekly Sunday Broadcast, my thanks to all those concerned. WICEN has been progressing steadily under the services of Bob VK7ZJS as coordinator.

Finally I would like to thank all office bearers and members who have contributed to the success of the Branch during my term of office.

Ian Ellings

Mini Hamfest report.

The annual North and North West Mini Hamfest was held at Port Sorrel on Sunday the 14th of March and was very attended by some 40 odd members, XYL's and harmonics. A big thanks must go to the organizers and all concerned with the staging of this annual event. The big sporting attraction was the annual cricket match, won by, naturally, the North West. With their superior batting, bowling and nippy fielding. At the conclusion of the game, the trophy was to be presented to the winners, but someone forgot to bring it, so now it will be presented at the annual dinner on the 3rd of April.

Various raffles were run during the day and some handy prizes were won. Lyn, VK7ZIE's XYL, won a pop rivet set, which we hear was later conned off her by a cunning old gooseberry grower along the road. A set of door chimes was won by a hard of hearing Northern member. A screw driver set also went to the North. But we think the best one was a nice savoury dish won by a local member, who has since obtained a frilly little apron and can not be removed from the kitchen.

The manner in which the children behaved was really first class, this was later explained when some of them were seen being loaded into a big van and driven off with little eyes peering out through, and white knuckles clutching BIG IRON BARS.

Another member said he was to sick to come but turned up and took out the man of the match award. The weather was hot and humid and the flies were very thick, one member was overheard telling another, a sure way of keeping them of your face. If anyone is interested in this method just ring or write me personally and I will be only too happy to them the sure cure.

Joe VK7ZGJ very ably presented the prizes, organized the raffle and even returned the empty cordial bottles, good old Joe.

Lindsay Johnson

It is good to hear that Ellis VK7WA is back on the air again after such a long absence of some thirteen years, he can be heard nearly every night on 2 metres, talking to Charlie VK7CF or Ken VK7KH. Last week he was heard working a VK3, Ellis is using a Ken KP202 with a 10 watt amplifier and a skeleton slot. He is also very active on HF, using a FT101E into a G5RV.



LADIES PAGE

COOKERY AND METRIC CONVERSION

There are three different systems of units of measurements being used in the world today. Europeans (and a large part of the rest of the worlds population) use only the metric system of weight measures. Australia, the United Kingdom and a large part of the old British Commonwealth have used the Imperial system of weights and measures. The United States has the same system of weights (avoirdupois) as Australia is discarding, but different measures of fluid volume.

The U.S.A. is not yet officially committed to metric conversion, but Australia, the U.K., New Zealand, Canada and South Africa are in the process of changing to the sole use of the metric system.

There has been a trend in cookery in recent years toward the formulation of recipes in terms of volume ingredients only (cup measurements). This trend recognises the fact that many homes are not equipped with kitchen scales and that good simple utensils for measuring volume are cheaper and therefore more willingly purchased than are good kitchen scales.

SIZES OF AUSTRALIAN STANDARD MEASURES

Volume	Old Standard	New Standard
Cup	8 fl. oz. (227 ml)	250 ml.
Tablespoon	1/2 fl. oz. (20 ml)	20 ml.
Teaspoon	1/8 fl. oz. (3.6 ml)	5 ml

It will be noted that there is no Australian standard dessert-spoon.

Since there is no simple relationship between units of the metric and imperial system, DIRECT CONVERSION IS UNREALISTIC. To demonstrate this consider the list of ingredients for a cheese souffle in which the conversion has been made using the approximate conversion factors,
 1 oz. = 28.3 g, 1 fl.oz. = 28.4 ml, 1 pt. = 568 ml.,
 1 cup = 227.3 ml.

continued next page

Girls, who would be interested in starting a "swop" column on our page ? We must all have something we would like to swop. Husband's gear, Him or the Kids are OUT.

Ann, XYL 7NR

Ingredients	Imperial Quantity	Equivalent Metric
Butter	4 oz.	113.6 g
Flour	$\frac{1}{2}$ cup	113.6 g
Milk	1 pt	568 ml
Salt	$\frac{1}{4}$ teaspoon	$\frac{1}{4}$ teaspoon
Eggs	4	4
Grated Parmesan Cheese	$1\frac{1}{4}$ cup	283.8 ml

This conversion is inappropriate since the quantities could not be measured in most kitchens.

The most important things which must be retained when converting a recipe are the ratio of ingredients and within a reasonable limit, the overall size of the original recipe.

There are several methods of converting existing recipes, each, if consistently applied, is satisfactory to one extent or another. Taking all things into account, the method of converting recipes that is considered most satisfactory is based on the following relationships;

8 fl. oz. (1 cup) is replaced by 250 ml (1 metric cup)

8 oz. is replaced by 250 g

Although the yield is slightly greater (about 10%) the proportions remain the same as in the original recipe. Existing baking pans can still be used.

By using this method virtually every recipe can be converted to metric and similar results should be obtained as from the original recipe. There is only one way of guaranteeing success - BYTESTING THE CONVERTED RECIPE AND making any necessary adjustments.

more next month

Annette, XYL VK7KK

Hi girls,

Hallo again, to John VK7JV, and congratulations, he has his brain child back. Let us hope the pumpkins don't mind. Personally I don't think that they will, because they have their own room, bed and all. John seems to do a good job no matter what he tries. Of course wife Joy had a pretty big hand in this too. Next time though they want to try a bigger garden, or smaller vegies. Our family has had some samples, and they were beautiful.

Getting back to QRM. It is nice to know it hasn't lost a printer. I think the members of the club were a little worried, and I have just realised something, I haven't thanked Graeme VK7ZGG for coping with it last year, as well as his school work and pupils. Forgive me Graeme, and thank you.

I hope that John is still going to keep the Ladies Page in QRM, as it is nice to know that we are included, but of course we have to give him something to print on our page.

Well I have run out of things to say, but I have a small favour to ask, ladies, if you have a size 14 WHITE top, summer jumper or blouse that isn't see-through and has a sleeve of some sort, our Judi is having kittens trying to find one, the that she has found are far to dear for what they are. Please ring 272928 if any of you can help her.

Sincerely, Ann, 7NR's XYL.

HF notes by Frank Beech VK7BC

During the callback following a recent Sunday morning broadcast, pleasure was expressed by some at hearing Den VK7DK on 80 metres, well, he can get even lower in frequency, try the 1.8 Mhz band during the evenings and you will hear Den and Col VK7LZ enjoying themselves working around the Pacific and VK where DX can be a real challenge.

Quite a few VK7 stations took part in the BERU contest this year despite the Test Match down the coast, conditions could have been better but some good DX was available. Ed VK7HE was on the receiving end of some very good reports with his X beam. I lost almost the last two hours when some LID tried to break an HEC pole and plunged the West Tamar into darkness, fortunately only the vehicle and wiring was damaged. During this contest, as always with an eye open for a new country I heard AC5PPS, ah that must be up near Tensing's hunting ground I thought, hasten or you will lose him in the dogpile, called and received 449 with QTH Texas. Vowed to look back and make notes of the multitude of Prefixes being churned out.

VX9 Sable Island is still active, though will be hard to get from here, aim at the Grand Banks off VO1.

A35AF, Kazu is still active from Tonga, QSL via WA4NRE, for three successive nights he could be worked on 7 Mhz around 09.30Z but take care when netting as he is only juuuuust in the band.

10 metres was closely watched over the 13/14th March and was found to be open most of the daylight hours to JA, with some good signals, the JA's had a path into South America for a period of three hours.

15 metres, has been open around 22.00Z to the North and Noreast, to JA, VE7, VS6, VR1 and W6, signals up to 589 and 59 at times.

20 metres, this band has been quite good at times with DX available almost around the clock on CW.

40 metres has been the best band lately for solid DX work, with good paths into Europe and the Eastern USA.

80 metres likewise with 59 signals from Europe at times.

160 metres, as mentioned earlier has begun to open up, with Den and probably Col by now working VR1AA on CW, VK's 2, 3, 4, and 5's have been logged as well as ZL's. This is a very interesting band to try out, but be patient as the DX usually comes and goes quickly, and a long call can sometimes miss it. A good time is when one of the stations is working during sunrise or sunset. Look to your earthing system as well as the wire in the wind.

VK200/LH has been active this month and has been in great demand by locals as well as DX, I ignored a call from VK200/LH for about 5 minutes untill I realised he wasn't left handed Hi. VK2FT/LH added to the fun.

No folks, they are not drilling for oil in Trevallyn it's only Reg's tower standing up all shiny and bright.

Col has been working the Aland Islands, which are quite rare at this time of year as the Finns are usually found only in the sauna baths at this time.

de
VK7BC

VHF notes by Joe Gelston VK7ZGJ

To my knowledge 6 metres has not been open this month, although ZL TV was watchable on two occasions. Activity is almost non existant locally, with Kevin VK7ZAH studying and Daniel VK7ZDA in the process of shifting again.

I have called CQ on 52.050 on several occasions but with no reply, so one can only hope for something better next month.

The 6 metre beacon is still awaiting PMG approval for its erection on 7EX hill, we hope that this will be in the near future.

2 metres has been a little more active with a couple of openings to VK3, Kevin VK7ZAH was the only station on SSB operational at the time.

Activity on 2 metres should improve as the year progresses as there are two more stations, Frank VK7BC and Gordon VK7GW, constructing 2 metre transverters at the present time.

Sorry for the lack of news, I hope to have more for you next month.

73, de Joe VK7ZGJ

FOR SALE ----- FOR SALE ----- FOR SALE ----- FOR SALE -----

Eddystone EC10 MK II communication receiver (solid state)
5 bands covering from 500 Kc - 30 Mhz. In mint condition.
Price \$160. Contact Bill Carter VK7AK, 11 Lansdown Pl.
or Phone, 622035, after hours 622479

WANTED----- WANTED ----- WANTED ----- WANTED -----

Windmill generators, types, Quirk windlight, Web windlight,
Davey Dunlight, 12, 24, 32, 48, 60, 110 Volts AC or DC etc.
parts or info to locate bits and pieces.

Mains regulator or Stablac, 240 in (180 - 280 in), 230 or
240 Volt output regulated up to 2KVA rating considered, valve
or solid state regulation. All particulars and enquires to;
Daniel Apted VK7ZDA, P.O. Box 512 Launceston 7250

NORTHERN BRANCH SUBSCRIPTIONS ARE NOW DUE.

The rate is the same as last year \$2.50. If you are not going
to be at the next meeting please send your cheque or money order
to the branch treasurer at P.O. Box 1010 Launceston.

The new mailing list for QRM will be made up this month, so dont
miss out. Please include your name and address.

NORTHERN BRANCH W.I.A. TASMANIAN DIVISION

REVENUE STATEMENT FOR YEAR ENDING FEBRUARY 28, 1976.

Sales		\$12,283.18
<u>Less</u> Cost of Sales		
Opening Stock 1/3/75	\$698.17	
Purchases	<u>12,136.62</u>	
	12,834.79	
Less Closing Stock 28/2/76	<u>1,313.95</u>	
		<u>11,520.84</u>
GROSS PROFIT		762.34
<u>Add</u> Other Income		
Q.R.M.	107.00	
Subs	236.00	
Annual Dinner	322.00	
Raffles	19.61	
Fed. Donation	21.00	
Interest	<u>31.63</u>	
		<u>737.24</u>
		1,499.58
<u>Less</u> Expenses		
Soft Drinks	8.74	
P.O. Box	8.00	
Q.R.M.	50.00	
W.I.A. Tas. Division	350.60	
Annual Dinner	304.50	
Directory Entries	29.50	
Q.S.L. Bureau	8.60	
Suppers	22.93	
Refund Clubroom Account	108.15	
Stationery	8.00	
Floral tributes	13.00	
P.M.G.	32.00	
State Library	5.35	
Petty Cash	30.00	
Cheque Books	12.80	
Refunds	14.00	
N.W. Branch Donation	50.00	
Repeater Expenses	67.00	
		<u>1,123.17</u>
NET SURPLUS		<u><u>\$376.41</u></u>

BALANCE SHEET AS AT FEBRUARY 28, 1976.Liabilities

Acc. Funds	\$2,295.19
Net Profit	<u>376.41</u>
	<u><u>\$2,671.60</u></u>

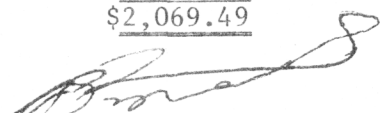
Assets

Stock	\$1,313.95
L.B.S.	<u>1,357.65</u>
	<u><u>\$2,671.60</u></u>

CLUBROOM ACCOUNT

Balance 1/3/75	\$1,765.46
Interest Received	162.48
Transfer ex Trading Account	108.15
Fund Raising	<u>33.40</u>
Balance 28/2/76	<u><u>\$2,069.49</u></u>

AUDITED & FOUND CORRECT.


B.C. PROVERBS. A.A.S.A., F.C.I.S.

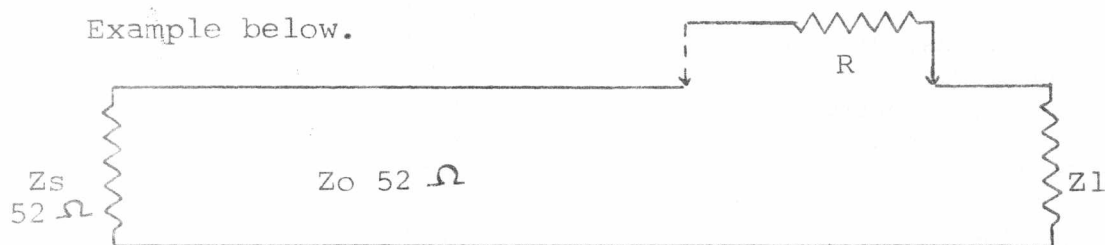
IMPEDANCE MATCHING OF TRANSMISSION LINES TO RESISTIVE LOADS.

It is a well known fact that maximum power transfer occurs when the source impedance (Z_s) equals the load impedance (Z_l). The same situation when transmitter output $Z =$ transmission line $Z =$ antenna load Z .



In the example given maximum transfer of power occurs (no tuned lines) when $Z_s = Z_o = Z_l$. Propagation of energy along a transmission line however does present some problems for us amateurs. We are limited to restricted values of Z_o (eg. 52 and 72 Ohm) in cables and of course the value of Z_l is often nothing like the value of Z_o . So here is a simple solution to overcoming the problem with very little power loss. Note this circuit uses no complex impedance matching devices.

Example below.



Z_l antenna radiation resistance	= 41 Ohm
Z_o impedance	= 52 Ohm
Z_s impedance	= 52 Ohm
R resistance	= 11 Ohm

By inserting an 11 Ohm resistor in series with Z_l the problem is solved - $Z_s = Z_o = Z_l$. A small power loss will be developed across R but if the system is not used at high power levels the loss should not be too great.

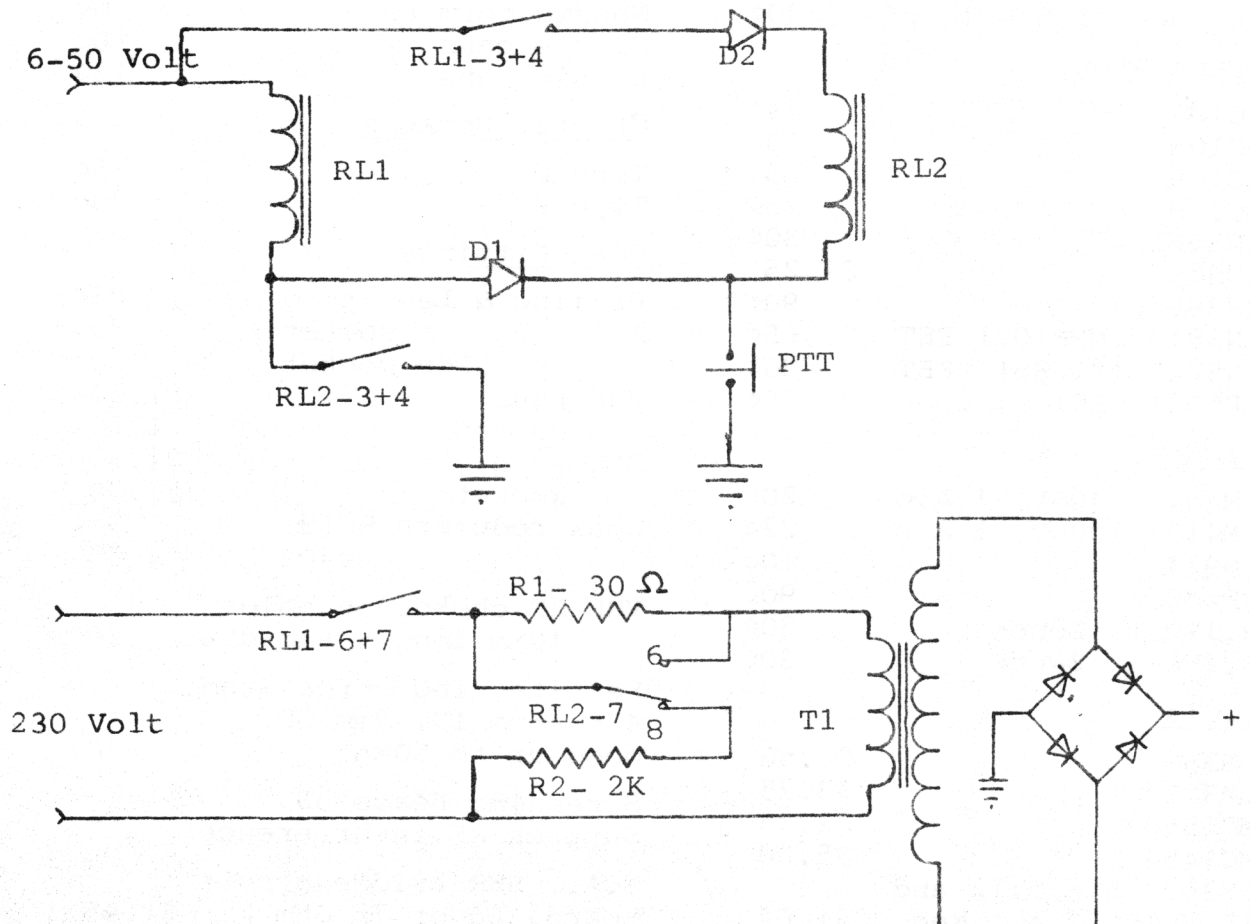
It is simple when you think about it $Z_s = Z_o = Z_l$ and maximum power is transferred. This is rule of thumb!

This method should be very useful for matching VHF $\frac{1}{4}$ wave whip antennae in mobile use, VHF power amps are usually transistorised and power transistors do not like high SWR.

In practice the $\frac{1}{4}$ wave whip, base impedance is usually around 20 Ohm, the easiest method is to insert a SWR bridge in the line and a potentiometer between the feedline and the antenna, a carbon pot of about 50 Ohm is best although a wire wound pot may be used but do not forget to cancel the inductance of the pot by adding a small capacitor in parallel, about 30pf should do the job. When minimum SWR is achieved, measure the resistance and replace with a fixed value of R .

continued next month

A method of switching high power, power supplies to reduce high voltage transients at both switch on and switch off, to increase reliability of solid state rectifiers.



Switch on sequence.

- 1) The PTT switch operates RL1 via D1, this closes contacts RL1-6+7 which applies 230 VAC to T1 via current limiting resistor R1
- 2) Contacts RL1-3+4 operate RL2 via D2, this closes contacts RL2-6+7 bypassing R1 and applying full supply voltage to T1.
- 3) Contacts RL2-3+4 hold the coil of RL1 operated

Switch off sequence.

- 1) When PTT is released RL2 opens removing the bypass from R1 and applies a load R2 across the primary of T1.
- 2) Contacts RL2-3+4 open releasing RL1 and so removing the supply from T1.
- 3) RL1 is always the last relay to release.

Northern Branch Equipment store.Resistors

$\frac{1}{2}$ and $\frac{1}{4}$ Watt 3¢
per 100 \$2.50

Capacitors

Ceramics 8¢
Trimmer 1.5 - 12 pf 20¢

Transistors

BC107 14¢
BC108 19¢
BC109 20¢
BC178 25¢
2N3563/4 30¢
2N3055 \$1.25
2N3866 90¢
2N3819 (MPF102) FET 65¢
2N5245 (TIS88) FET 80¢
MPF121 FET 75¢

Diodes

EM404 400V, 1 Amo 20¢
EM410 1000V, 1 Amp 22¢
1N914 10¢
HP2800 90¢
9.1Volt Zener 30¢
6.2Volt Zener 30¢

I.C.'s

LM380 \$2.50
LM372 \$3.75
MC1550 \$1.25
MC1454 \$5.00
LM342 5,6,8,12 and
15 Volt, 1 Amp Reg. \$1.62
and many other I.C.'s

Any I.C. not in stock
can be obtained within
2 weeks.

Molex (pins) I.C sockets
will be in soon

Coil Formers

Neosid single bases 10¢
Neosid double bases 11¢
F16 slugs, 2-12 Mhz 7¢
F29 slugs, 12-200 Mhz 7¢
Neosid formers 8¢
Single cans 10¢
Double cans 12¢

Crystal Sockets

Type D 25¢
Type K 30¢

Coax Fittings

Belling & Lee, plug 22¢
socket 35¢
PCB socket 30¢
VHF plug \$1.20
socket \$1.20
BNC plug \$1.30
socket \$1.30
Coax reducers RG58 35¢
ur70 35¢

VHF RF chokes, 6 holes
10mm long x 6mm dia. 29¢

Ferrite ring cores Grad.
4C6, 6mm ID, 9mm OD,
good up to 50Mhz 40¢

Screening Beads 3B
Suppress RF interference 7¢

E.A., SWR bridge circuit
board, 50 or 75 Ohm \$1.45

Circuit board for LM380 75¢

Fibre Glass circuit board
blanks, single sided per
square foot \$2.50
double sided per sq.ft. \$3.00
Sizes, 12"X6" & 12"X12"

Meters, 200uA movement, scale 0-8, as used in tape recorders
Large \$1.00 Small \$0.80

Transistor radio Pot/Switch 3¢

Cross Hatch and Dot generator kits, case not included \$21.00

Packets of 100 transistors, unmarked and untested \$1.20

Packets of 100 diodes, unmarked and untested \$1.20

We can also obtain all types of HF tranceivers, all VHF
tranceivers, transverters and converters, Aerials, Crystals,
Toyo crystal filters, books, subscriptions to all amateur type
magazines, call books and log books.

For the next month or three Ed VK7HE will handle all equipment
store sales, orders may still be placed with Daniel VK7ZDA.

SEMICONDUCTOR CONNECTIONS

NOTE: All connections shown from lead or wiring side.

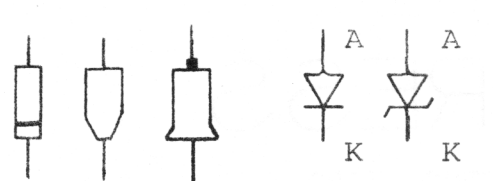
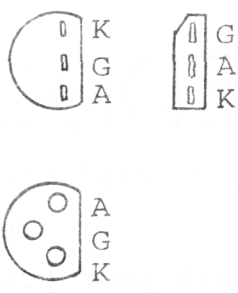
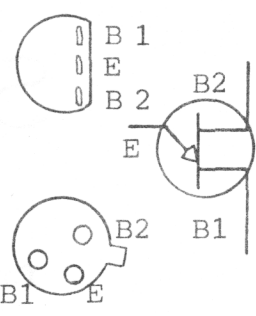
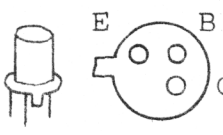
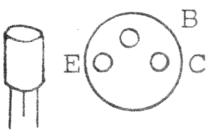
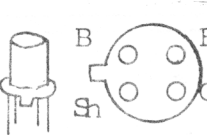
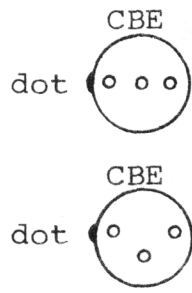
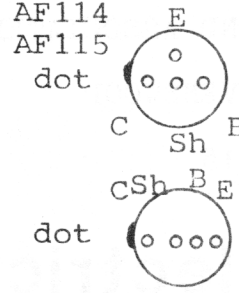
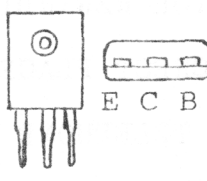
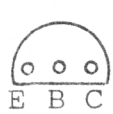
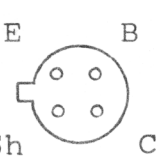
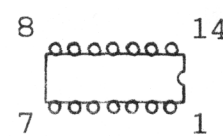
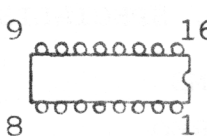
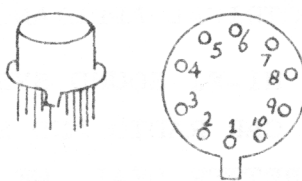
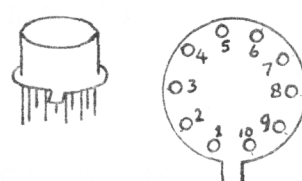
REMEMBER:

WITH TRANSISTORS USING TRIANGULAR LEAD CONFIGURATION WHEN APEX IS UP THE COLLECTOR IS ON THE RIGHT.

LEGEND

K- cathode
C- collector
B- base
E- emitter
D- drain
A- anode
S- source

G1- gate one
G2- gate two
Sh- shield

Diodes general & Zener diodes			SCR	UJT & PUT	
 Banded glass diodes have K marked with thicker band eg. 1N914 Note. Zeners normally have voltage indication.					
TO-18	TO-39	TO-5, 105, 106	TO-72	SOT-25	SOT-25/1
 TT3564 BC108 BC109	 2N3564 2N3565 etc.	 BF115 BF184	 BC157/8/9 BC147/8/9	 BF184/5/6	
Old Style & Jap	Old Style	Plastic	AWV	TO72/1	
	 AF114 AF115	 2N5192	 AS- series	 BF200 BF180/1/2	
IC	IC	IC		IC	
 14 Lead Dual inline	 16 Lead Dual Inline	 MC1454 MC1550		 TAA300	

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