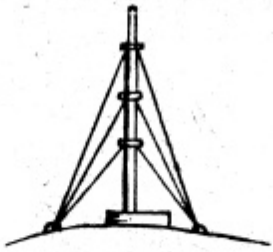
MENDIP REPEATER NEWS



Secretary: S Gardner G4PSP
191 Charlton Park, Midsomer Norton, Avon.
Tel: Midsomer Norton 413902

MAY 1983

Welcome to the latest edition of Mendip Repeater News - YOUR magazine - bringing you the latest Repeater Group News, off beat views and technical articles. Editorial content comes, for the main part from members of the Group's committee but we have again one or two contributions from the membership. If you feel that you would like to write an article for the next issue (to appear later in the year), if you have a simple circuit that may be of interest to others, or if you would like to write a "letter to the editor" then please send your contributions to the Secretary.

CONVENTION

Due to the disappointing attendance at last years' convention held at the Showerings Sports and Social club, it has been decided not to hold a similar event this year. Much effort went into the organisation of the event, and whilst a profit was shown, it was felt that the low attendance figures would discourage traders from returning this year. In consequence it was decided that the Groups annual event should take some other form, such as a family picnic or barbeque.

YOUR COMMITTEE

The present committee (1982/83) are as follows:

Chairman: Bill Brennan G3CQE Vice Chairman: Clem Tabor G3UGR
Secretary: Steve Gardner G4PSP
Tech. Manager: Chris Morcom G3VEH Treasurer: Mrs L Gardner
Computer Services Manager: Malcolm Stanbridge G3RHU

Members: Don Gray G3YPL, Albert Lilly G8VGI, Brian Smith G4ETN, Peter Harston G4JQP, Ian Parker G8XZD, Barrie Stevens G8KKA

If you would like to make any suggestions concerning the running of the group or its repeaters, please make contact through one of the committee members. It is more likely to have effect than just moaning on-air!

MEMBERSHIP NEWS

A full list of current PAID-UP members appears on the back page of this newsletter. Please apply gentle but firm pressure on all those regular users whose calls do not appear on this list to pay their £2 annual subscription to the Treasurer Mrs L Gardner at 191 Charlton Park, Midsomer Norton, Avon. Cheques should be made payable to "The Mendip Repeater Group".

REPEATER CHECK

GB3WR	2m	Repeater Channel R4 Sited Penn Hill: Operational
GB3UB	70cm	Repeater Channel RB4 Sited Bath Univ: "
GB3VS	70cm	Repeater Channel RB13 Site Bridgwater: Hopefully operational by the time you read this
GB3UT	24cm TV	Repeater Channel RMT1 Site Bath Univ: Application before Home Office.

To enable us to maintain accurate records it is IMPERATIVE that you inform the Secretary, as soon as possible of any change of name, address or callsign.

Non receipt of any current newsletter will be due to non-payment of subscriptions OR lack of up-to-date information on current callsign and address.
PLEASE HELP US TO HELP YOU

GB3VS UPDATE

By the time this article gets into print the repeater should be ON-AIR. At last, I hear everyone say!!! I cannot agree more myself. I think other repeater groups can appreciate only too well the problem there has been, with the bureaucracy at the Home Office and with the business of the M.O.D's presence on 70 cms.

At this moment in time the Rx and Tx are in good fettle and are waiting patiently for the "BIG DAY".

The tone decode board has been tested, the audio board has been etched and is awaiting components and the 6800 logic board has to be put together. The eprom has been blown. (Burnt-in rather than blown-up! .. Ed).

I predict that the repeater should get the go-ahead by early May. The Repeater Working Group (RWG) has whispered in our ears, nudge, nudge, if you know what I mean.

I also surmise that with a bit of geeing up by myself and Chris G3VEH, the repeater will be ready to switch on by the time the official word comes through.

Brian G4ETN, GB3VS Repeater Manager.

*** RB13 THE CHANNEL TO WATCH ***

GB3UT UPDATE

The project is moving slowly ahead with the hardware in the development phase, and the licence application under consideration by the Home Office in TV repeaters, Phase 1. The upsurge in interest in amateur television, concurrent with the boom in home video and computing, is bound to guarantee further interest in this project. One modification to the specification for the repeater is that it will now be designed to receive not only AM DSB and vestigial sideband signals but also FM signals to an appropriate standard.

G4JQP

VIEWED FROM THE CHAIR.

It may come as a surprise to those of you who are not familiar with page three of "The Sun" that this year (1983) is "Be Kind To Your Committee Year". This laudible event was inaugurated recently by Professor A.G.Gro --perhaps better known for his brief but masterly non-mathematical summing up of the properties of the "Slim Jim".

As Chairman of the Group I feel compelled to do something towards promoting the welfare of that dissident layabout lot affectionately called "The Committee" and personal (?) finances being such that I cannot afford the usual three tanker loads of real ale, I resolved on a course that might help ---with your cooperation--reduce their nightly blood pressure readings.

HOW TO KEEP YOUR COMMITTEE HAPPY

(Some simple rules for avoiding Committee Coronaries.)

1. Pay your subs.

2. On WR always leave two pips--even when taking a pip.

3. Don't allow jammers to get under your skin. Stomp on them whenever you can and never give them any recognition whatsoever. Telling the other bloke he has just been wiped out by a "Wolly" is a signal report that really makes a Wolly's day.

4. If you wish to break in on a contact do so in between the two pips and make a brief call----dont drop carrier & wait for permission. The two pip system is designed to avoid all that.

5. Having broken in with a call remember the original users are politely standing by. Dont take over the machine and start a series of QSOs.

6. Use simplex whenever possible --simplex allows you to expound at some length without fear of the dreaded time out--besides we are running out of Blue Peter badges.

7. Try not to sit on your microphone in the car ---its unhygenic for a start and can be the reason for some strange conversations and even stranger noises on WR. However if you cannot resist this sort of exercise then please use simplex.

8. If you like using "Q" signals on phone then at least try to get the right ones --one chap insists on calling QSZ (send everything twice) when it may be he means QRZ (who is calling me)--or perhaps he just wants to get the other bloke to time out ?

9. If you are a regular user of WR please dont announce three or four times every week that you never use repeaters --or could it be that a certain G2 (a non-member I hasten to add) believes he is working simplex ??

9. Be helpful to visitors in the area. Some may genuinely believe that WR is in the Outer Hebrides if you have told him so.

10. Never mention the word "Decorating" on the air--it has a most unfortunate effect on certain females.

11. Always remember there are a lot of people listening on repeaters and not all are enthusiasts---dont bore them with lots of useless amateur or CB jargon.

12. Enjoying your hobby doesn't preclude you from getting a laugh out of it every now and then even at your own expense.

13. Finally please have pity on those who's nickname is Wally.

If you cannot bring yourselves to observe the above simple rules you could instead buy your Committee members a large pint whenever you meet them.

See you all at Longleat ! G3CQE.

BIRKS

A general call to all Birks. A meeting has been arranged at the "old" Birk HQ (the BOAT AND ANCHOR) right next to junction 24, M5 (Bridgwater turn-off) for the FIRST MONDAY IN JUNE.

A date for the jolly old diaries ** JUNE 6th ** 8pm.

If attendance is good, Birk meetings will resume as before.

For details contact Brian G4ETN

Raynet Rejuvenation:

The recent appointment of G4MFD to Deputy County Controller and G4RMT to Taunton Group Controller has led to Somerset Raynet getting a new lease of life.

Success has followed success recently both with exercises and User Service operations. Most notable was the exercise involving Taunton and Yeovil members at Taunton's Marathon. The greatest test of the operators ability was the fitting of rigs to positive earth vehicles and the installation of an antenna on a magmount to a fibreglass vehicle.

The growth of interest and activity has enabled the Taunton group to exercise on behalf of all four of the User Services and has led to much closer contact between the amateur and the public.

With the increase interest from all sides no doubt new groups will be emerging in various parts of WR country. Anyone wanting further information should contact David, G6NIR, on Kingston St Mary 526.

G6NIR

Raynet Report

Congratulations to all those who participated with the communication network during the "Taunton Marathon" on Sunday 17th April. I gather it was a great success.

There were 25 operators, of which 9 ambulances were equipped with communications. Radio links were set up at all "sponge stations". Somewhere in the order of 500 messages were exchanged throughout the day.

Once again, very well done.

Brian, G4ETN

OBITUARY

It is with much regret that the Group records the death of two members, Geoffrey Manning G2IK and Leon Ward GW5NF. They will both be sadly missed.


G4 portable on Dartmoor
returning to the GM station
We are hand held here O.M.
Just taking the dog for a walk!
G4GBN.

The G3VEH Method of Modification of the Icom ICB I050 to the IO-Metre Band.

The IC I050 rig uses the MC I45I06 synthesizer chip which readily enables easy and very inexpensive modification to allow IO-metre FM operation.

The channel switch provides a binary code to provide division ratios in the range 40 to 79 for CB operation and to enable the rig to cover the FM segment, established in the United States of America, necessitates the addition of I70 to this range. The rig will then cover a frequency range of 29.3 to 29.69 Mhz., the band edge being 29.7 MHz.

The number I70 is simply added by means of 2 C-mos 4-Bit binary Full Adder chips inbetween the channel switch and the MC I45I06. The existing input to the synthesizer chip, IC20I, is as follows

Pin number on IC20I	I7	I6	I5	I4	I3	I2	II	I0
Division number controlled	I	2	4	8	I6	32	64	I28
Binary Input for 40(Ch.I)	0	0	0	I	0	I	0	-
Binary Input for 79(Ch.40)	I	I	I	I	0	0	I	-
Required number to be added	0	I	0	I	0	I	0	I

The last number, the one to be added, is equivalent to I70 and it will be seen that pin IO of IC20I, initially not used, is now required and provision for this has conveniently been made on the p.c.b. The effective division ratio fed into the synthesizer corresponds to 2I0 for Ch. I and 249 for Ch.40.

Note that a'I' corresponds to plus 5-volts and a zero 0-volts applied to the IC pins.

The fixed input of I70 to the two CD4008 4-Bit Binary Full Adder chips is applied to pins 7,5,3,& I of each chip, ie:-

	ICI				IC2			
Pin number of chip	7	5	3	I	7	5	3	I
Binary Input	0	I	0	I	0	I	0	I

Pin I4 of ICI is the carry-out to pin 9 of IC2 (No connection is made to pin I4 of IC2). The inputs from the Channel Switch are connected as shown in the attached circuit diagram, Fig.I.

It will be noticed that the pins I and 5 of ICI are connected to the 5 volt rail via a IOK resistor, R5, rather than directly as in the case of IC2. This is to facilitate a I00 KHz. down shift of the transmit frequency corresponding to the input frequency of the majority of the American IO-metre repeaters which are often audible and workable with only 4-watts RF from the UK.

The circuit of the repeater shift is shown in Fig.2 and uses the Hi-Lo power switch to operate the shift via the transistor Q203. The red lead from the switch SWIOI centre pins to the to the channel switching board should be removed completely. The emitter lead of Q203 must be desoldered, lifted carefully back up through the hole and re-soldered to the PA screen to which the transistor is bolted.(Emitter lead is one nearest rear of transceiver). The orange lead from SWIOI should be desoldered from its connection point adjacent to C339 and re-soldered through the now vacant emitter hole of Q203 across to the collector of Q203. The single

track to the old emitter hole must be cut. The opposite end of the orange lead must be removed from SW101 and connected to "Adder Board" at the junction of pins 1 and 5 of IC1 and R5.

Cut the track leading to the collector of Q304 so as to isolate it from the 12 volt rail and link the pa directly to the 12 volt rail as in Fig.5.

Connect a 4" length of wire to the centre pins of SW101 and solder the other end to collector track of Q203, the transmit switching transistor, shown in Fig.5.

Assemble the "Adder Board" with the components located as illustrated in Figs.3 and 4. Connect output leads, preferably colour coded as per the input leads from the channel switch, to the board, refering to the following table:-

Table 3

	IC1					IC2		
Pin number of chip	10	11	12	13	10	11	12	13
Colour of wire	Brown	Red	Orange	Yellow	Green	Blue	Mauve	Grey
Adder Board Output	S1	S2	S3	S4	S5	S6	S7	S8
MC 145106 Input	17	16	15	14	13	12	11	10

These leads need to be of the order 3" long as does the final lead which is connected to the plus 5 volt supply rail.

The four corners of the board have small squares of copper laminate left to which may be solder tacked 16 or 18 gauge tinned copper wire for fixing to the transceiver board, as shown in Fig.5.

Remove the seven leads from the main transceiver board feeding from the channel selector switch, carefully noting their colours and position and reconnect them to the inputs of IC1 and 2 as per Fig.1. Note that pin 15 of IC2 is grounded.

Similarly connect the output leads from the "Adder Board", as per Table 3, to the inputs of the MC145106, cutting them to a tidy length. This completes the basic modification to the transceiver for 10-metre operation.

Retuning of the Transceiver.

Very carefully remove as much of the surplus wax from coils T101, T102, T202, T207, T208, T209, T301, T303, T305, T307, using a fine screwdriver or similar tool. To avoid breaking the cores it is recommended that a small electricians screwdriver be slightly modified to a wedge-shaped end as in Fig.6. Heat may be then applied, by means of a soldering iron, to the shank of the screwdriver and hence to the core which will be sufficient to free the wax sealing the core. The cores may then be brought to the top of their formers thus bringing the remainder of the wax out. A plastic trimming tool is recommended for all the tuning and can be easily made from a small knitting needle with its ends filed to the same wedge-shape.

Any "sticky" cores may be quickly loosened with the screwdriver and iron technique quickly followed by the plastic trimming tool.

The first retune is made to the VCO coil,T202, which will require screwing further into the former which will reduce its inductance thus increasing the frequency of oscillation. This is carried out with the channel selector switch set to channel 1 whilst monitoring the test point on pin 7 of IC20I with an oscilloscope or reasonable voltmeter. It will be noted that this voltage can be made to vary between 0 volts and almost 5 volts by the tuning of T20? , but should be set to about 0.8 volts. If the channel switch is now stepped up through the channels the voltage will increase in small increments until the switch reverts back to channel I after 40 whence it will return to 0.8 volts.

It will be useful at this point to have a source of 29.6 MHz. signal (Ch.3I) to enable the receiver RF stages to be peaked up by the tuning of TI0I and TI02. A not too local station may like to provide this service in the absence of a signal-generator. This then completes the receiver tuning,

Tuning of the transmitter may prove a little more tricky since coils T207, T208, and T209 peak very sharply.A sensitive receiver covering this frequency will come in useful at this time. Unless by some fluke, pressing of the PTT on the mike will show no RF output indication on the S/Output meter. However, a sensitive HF receiver with a "sniffer" antenna should detect a signal when tuned to the correct output frquency therefore these three coils can be peaked up. When this has been done a small deflection should be observed on the meter.

With the transceiver antenna terminal connected to a dummy 50 ohm load or power output meter, T30I, T303, T305 and T307 may be trimmed for maximum power output.(min. 4 watts with I3.8 volts applied to the transceiver.) Re-check the tuning from T207 through to T307. This will ensure a fairly clean output frequency spectrum although two spurious responses will always be present cuased by the third harmonic of the I0.240 MHz. oscillator, ie. 30.720 MHz. This will result in (in the case of 29.6 MHz.) spurii at plus and minus I.I20 MHz of the main carrier, which will be of the order -50 dB down on 4 watts.

At this stage it must be remembered that the receive and transmit frequencies are off-set by I.25 MHz. from"round" tens of MHz. for the UK CB channels. This is quickly rectified by the addition of a I5 pF capacitor in parallel with CT 20I and CT 202 (one across each) which will bring the two heterodyne frequencies almost exactly I.25 MHz. down. If a frequency counter is available the frequencies may be adjusted exactly by lightly coupling the counter probe to the emitter of Q20I and trimming X20I by CT20I for I6.505 MHz. in the receive condition, and by trimming X202 by CT202 for I6.960 MHz. in the transmit condition.

The transmit audio is rather "dull" and, of course,preset to I.5 KHz.peak deviation for the CB band. The peak deviation is controlled by RV303 and with several of the equipments encountered, maximum setting of this control does not permit greater than 2 to 2.5 KHz. peak deviation. Ideally, with the bandwidth of the receivers being 8 MHz., it is undesireable to exceed 3KHz. peak deviation. A search around the pcb revealed a capacitor, C3I4, a 0.02 uF discoidal which is not shown on

the schematic diagram in the instruction manuel. It is located at the junction of C313 and R219 which are the audio feed to the vari-cap diode, D206, from Q303 and by reducing this 0.02 uF (C314) to 0.01 uF almost exactly doubles the peak deviation to 3 KHz.

The next job is to "brighten" the audio up on transmit by changing the following:-

C301--0.047 uF mic input cap to Q301 -- change to 0.01 uF.

C304--1.0 uF/50v.coupling cap Q301 to Q302-- change to 0.1 uF.

R308--150 ohm Q302 emitter resistor -- change to 100 ohm.

N.B. Using a peak deviation greater than 3 KHz. will cause adjacent channel interference with this 10 khz. "system", and also distortion which will detract from readibility. Remember that FM segment of 10- metres is quite small, so use sociable bandwidth transmissions!

Finally, 10.695 MHz. dual monolithic crystal filters are available from Ambit Int. and greatly improve receiver performance if they are used to replace CF101. Their insertion loss is much lower than the ceramic filter used and marked improvements in sensitivity and selectivity are instantly achievable at a cost of £3-£4, dependent upon quantity bought. The first price break is at 10 off.

Final, Final!

If you purchase a CB power amplifier, remember that they rarely have a low pass filter fitted and experience has shown on the Spectrum analyser, (there ON !) that the second and third harmonics are often no more than 20 to 30 dB down on carrier. The 1650 on its own is good, but through a pa a 29.6 MHz. call was heard by half of Bath (Avon) listening to Radio 2 on 88.8 MHz! This being the local BBC relay frequency a 5-element LPF was soon installed after the PA.

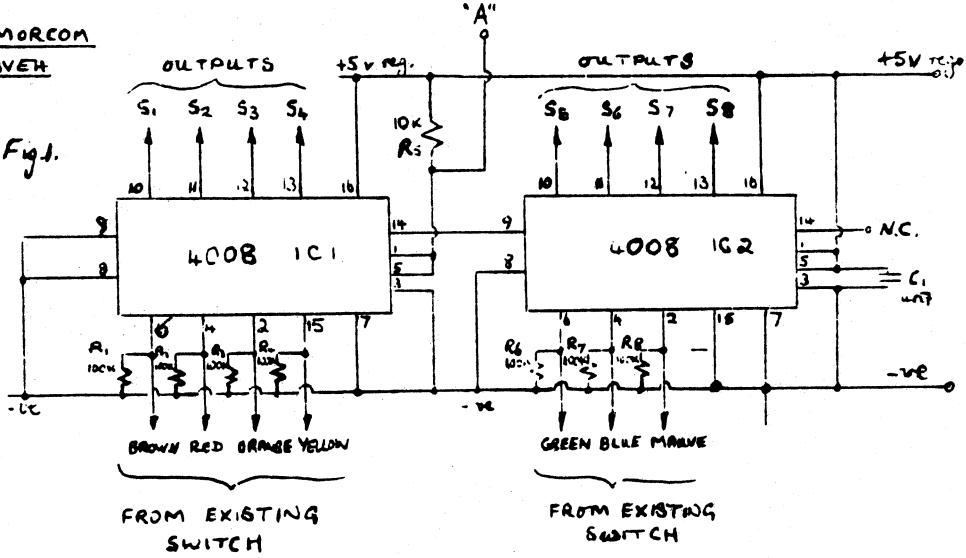
C.Norcom, G3VEH
15.2.83

As supplies of the ICB 1050 are rather short in some areas, other rigs to look out for include the SIGNAL 1001 and the JWR M2 - but make sure they use the Motorola MC145106 or equivalent synthesizer chip. Some models may require a change of crystal .... Ed.

Heard on GB3WR: "There's some funny kind of crud on the box today, I dont know, perhaps it's me."

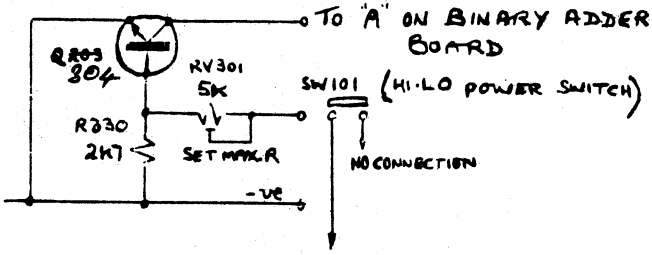
C.J. MORCOM
G3VEH

Fig.1.



ADDER BOARD OUTPUT	S1	S2	S3	S4	S5	S6	S7	S8
MC14516 INPUT PINS	17	16	15	14	13	12	11	10
LEAD COLOUR (OUTPUT)	BROWN	RED	ORANGE	YELLOW	GREEN	BLUE	MAUVE	WHITE

Fig.2.



100KHz TX DOWN SHIFT FOR REPEATER OPERATION. (TX ONLY)

Fig.3. TRACK SIDE

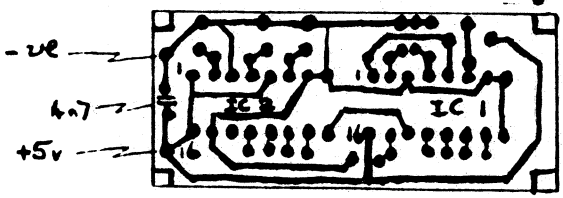
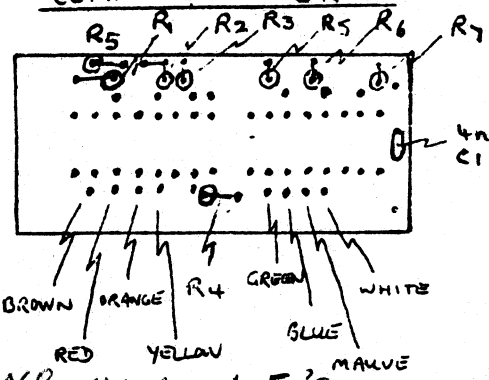


Fig.4. COMPONENT SIDE



P.C.B. LAYOUT

NB. Not ALL 1050's are the same colour wiring

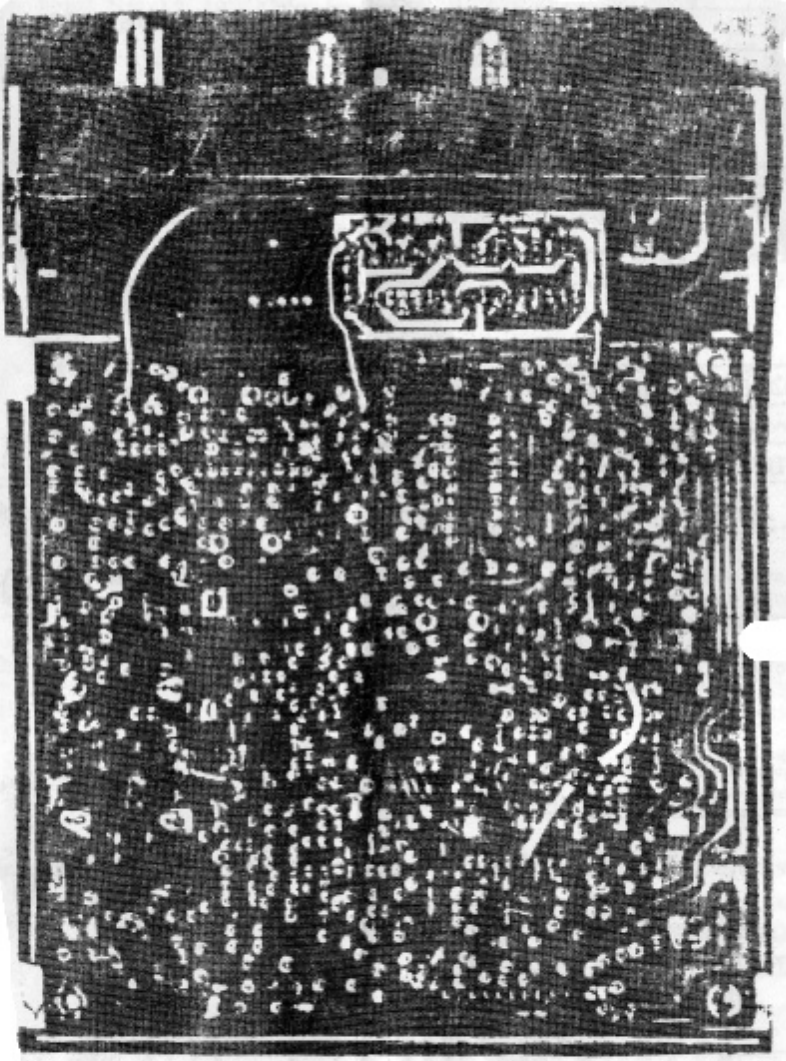


Fig 5

A Glossary of Amateur Radio Terminology.

Compiled by L.Stoke, G8QRZ.

The Box. ie. The Repeater. There is usually something wrong with it.

Time Out. A particularly unfriendly & variable characteristic of certain Repeaters. Especially frustrating when you are advertising computer programs, radio shops, or just having a moan about the RSGB.

RSGB. An organisation dedicated to keeping Class B licencees off 6 & 4 metres.

Sea Bears. An inferior class of radio operators, who talk a lot of rubbish in a strange language. Not to be confused with Radio Amateurs using 2 metre repeaters.

Linear. A device used to increase your ability to work DX through repeaters and cause TV eye.

TV Eye. A distressing complaint often contracted by people living close to users of Linears.

Aitch Eye. An expression used to inform the listening world that you have just said something very amusing and/or clever. Habitual users tend to develop a hearing defect, causing them to talk over other stations using the repeater.

Access. As in:"G8QRZ checking Access 'WC, there". An often heard expression of uncertain meaning. Perhaps the user wishes to pay his Repeater Group subscription by credit card?

Personal.Your very own Access Card.

There. The most important word in the Amateur Radio vocabulary It has undoubted magic powers and should be used as often as possible. It reaches the parts that other words fail to penetrate and is now being used increasingly by TV AM presenters.

Break. Another magic word. Should always be used on its own or repeated twice,but never in conjunction with your callsign For best effect, use just at the point when someone is about to start speaking to a station he has been trying to contact for the last three hours.

The Q code. A group of User Defineable words.

THE FOLLOWING ARE MEMBERS OF THE GROUP AS AT 23/04/83

G2ALA	G2BAR	G2BQY	G2BRR	G3BJC	G3BNF	G3COP	G3CQE
G3DHH	G3ECS	G3GKA	G3GKC	G3GOW	G3HWL	G3IBK	G3IDA
G3IES	G3IJU	G3JEP	G3JMY	G3JQQ	G3LJD	G3LNW	G3MIZ
G3MVA	G3NET	G3NOP	G3NXU	G3OSH	G3RHU	G3SRL	G3SXY
G3TKF	G3TSK	G3UCC	G3UGR	G3UPV	G3UTO	G3UUR	G3VEH
G3VJJ	G3WRV	G3XBW	G3XDR	G3XFW	G3XGY	G3XIT	G3YBY
G3YHV	G3YNI	G3YPL	G3YRM	G3ZKI	G3ZUQ	G3ZUW	G3ZWL
G4AJD	G4AUN	G4AYD	G4BSF	G4BYJ	G4CBS	G4CJZ	G4DKS
G4ELW	G4ETN	G4EVI	G4FSL	G4FTA	G4FVW	G4GBN	G4GTD
G4HHL	G4HTJ	G4HWD	G4INR	G4IQX	G4IXP	G4JBG	G4JBH
G4JQD	G4JQP	G4JSN	G4JZL	G4KBN	G4KJP	G4KLG	G4KNE
G4KPT	G4LAF	G4LAW	G4LDR	G4LFM	G4LJZ	G4LMO	G4LYP
G4MCE	G4MQX	G4MYR	G4NIC	G4NQQ	G4NUJ	G4NXG	G4OAG
G4OEC	G4OFP	G4OFH	G4OJA	G4OJH	G4OJI	G4OMG	G4ONS
G4OTJ	G4OWH	G4OXR	G4OXY	G4OYY	G4OZH	G4PDG	G4PFL
G4PHZ	G4PII	G4PSP	G4RLK	G5RQ	G6AEC	G6AFL	G6AGL
G6ANI	G6ASI	G6ASO	G6ASP	G6AWT	G6BIZ	G6DFF	G6DZH
G6EAQ	G6EGU	G6EHD	G6EIO	G6EIY	G6EMB	G6ETL	G6EVY
G6EWX	G6FFY	G6FXH	G6GBH	G6GNG	G6GNR	G6GSO	G6GVH
G6HHH	G6HII	G6HIQ	G6HJE	G6HKT	G6HMV	G6HN	G6HNU
G6HOR	G6HQH	G6HQX	G6HRQ	G6HRV	G6HRX	G6HSX	G6HTI
G6HTZ	G6HWO	G6HWS	G6HYU	G6IAC	G6IAV	G6ICF	G6IDG
G6IEY	G6IKR	G6INH	G6IQP	G6IVU	G6JIV	G6JNB	G6JNS
G6JYD	G6KPD	G6LRK	G6LRQ	G6LWW	G6LXS	G6LYX	G6LZT
G6MBJ	G6MGO	G6MHB	G6MJG	G6MSO	G6NGB	G6NIK	G6NIR
G6NRS	G6NVR	G6NZF	G6OVS	G6PJS	G6PNW	G6POW	G6PWN
G6P2B	G6RPJ	G6RQP	G6RZD	G6SCO	G6TAH	G6TKT	G6TKU
G6TWA	G6UVJ	G6VXI	G8ARH	G8BCH	G8BIR	G8BMR	G8CPF
G8DBP	G8DJW	G8DKC	G8DON	G8DRK	G8EDQ	G8EQL	G8FAS
G8FC	G8FTV	G8GFZ	G8GUA	G8GYU	G8HNM	G8HRP	G8HUH
G8HVY	G8IGB	G8IOJ	G8IUF	G8IZZ	G8JAR	G8KKA	G8KKB
G8KNN	G8LGC	G8LRB	G8MYN	G8MZI	G8NJZ	G8NMU	G8NNU
G8NQO	G8OEU	G8OGN	G8OQG	G8OTA	G8OUG	G8PQA	G8PVG
G8RHO	G8SRH	G8TJF	G8TOP	G8TVQ	G8UGY	G8UTB	G8UXY
G8VDF	G8VFR	G8VGG	G8VGI	G8VOE	G8VOF	G8WBV	G8WJJ
G8WKK	G6WKL	G8WLV	G8WRC	G8XPS	G8XIM	G8XJF	G8XTE
G8XYS	G8XZD	G8YCS	G8YML	G8YMM	G8YNW	G8ZDR	G8ZIS
G8ZQF	G8ZRN	G8ZRO	G8ZSP	G8ZVK	G8ZYD	GW2DPD	GW2FWD
GW3LAD	GW3PCK	GW3TSH	GW3YTJ	GW3ZFG	GW4BTU	GW4HGY	GW4ISF
GW4KYM	GW4NIJ	GW4OKI	GW4PCJ	GW6ADM	GW6CMP	GW6CTO	GW6ESP
GW6GNQ	GW6GXC	GW6HAW	GW6HHO	GW6ISF	GW6JCD	GW6JQU	GW6KQU
GW6NGQ	GW6SOM	GW8DGM	GW8PTS	GW8TQD	GW8UXI	GW8UXK	G6RZE

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