



P5

JOURNAL OF THE SEVERNSIDE TELEVISION GROUP
Edited by Shaun O'Sullivan G8VPG

ANOTHER FIRST FOR 'ZZ !

On 22nd April, GB3ZZ notched up yet another first in the development of the ATV Repeater in the UK. An enhanced version of the logic software - Version 2.71 fully described inside - has enabled us to incorporate a video recorder into the repeater. The VCR chosen is a Toshiba model which features a digital colour video framestore. The entire operation of the VCR can be remote controlled by repeater users from their DTMF tone pads on the inter-carrier sound input channel. This enables users to record up to 30 minutes of video and sound, and then play it back to themselves after dropping out of the repeater. Alternatively they can leave video messages for others to look at later. The framestore will freeze the through video, either on the input or from tape, thus enabling stations who cannot operate "look through" to examine their own pictures as the repeater sees them. The full operating details are as follows ;

*70# VCR STOP, this stops whatever tape transport activity the VCR is engaged upon.

*71# VCR PLAY, this function causes the VCR to play the material on tape. The tape length is 30 minutes.

*72# VCR REWIND, rewinds the tape after play or recording.

*73# VCR FAST FORWARD, advances the tape forward.

*75# VCR RECORD, records the current through video onto the tape. The accompanying sound is also recorded.

*77# VCR PAUSE, puts the VCR into pause mode.

The tape transport functions are thus similar to any normal domestic VCR. If whilst in *71# PLAY mode, REWIND or FAST FORWARD is selected, the VCR will go into FAST PLAY BACKWARDS or FAST PLAY FORWARDS.

The framestore is very easy to operate. When in relay or VCR PLAY mode, the code *79# will cause the picture to be digitally frozen. The repeater will send this frozen picture until you cancel it by keying another *79# code. This code thus operates as a toggle ON/OFF for the framestore. Of course, when in PLAY or framestore mode, the repeater will continue to i/d with its usual overlay caption and morse signal.

I am sure that this function will be very popular with repeater users, and as far as I am aware, it is unique. One last function which is useful is *99#, which is a "soft reset" which cancels any existing DTMF activated function. If you get into a muddle with the VCR or Infotext pages, this will safely restore you to square one.

There are some other engineering codes for more drastic forms of reset, but these are confidential and known only to our engineering team. Users are requested not to experiment by trying to find these, since it could cause a malfunction, which takes our over-worked volunteers more time and effort to sort out. Read more about our new logic inside.

One idea for the future has already been suggested. This is some indication of VCR function engaged by means of either an overlaid on-screen caption or a voice synthesiser message. Yes - we are working on a voice synthesiser for certain messages and announcements, but our new Chief Engineer Steve G8KUW is working on ways to give it a local accent ! Watch - or rather listen to this space.

COLOURISING THE CROPREDY
ELECTRONIC TEST CARD GENERATOR

by Pat Janes GW1SXU

Getting colourisers to work properly with the Cropredy TCG has not proved to be a fun thing this side of the Severn !. In case anyone else out there has started kicking the cat, or whatever, we offer what appears to be a reliable and economic alternative.

Messrs. Maplin offer a "TEA2000 PAL COLOUR ENCODER" , details of which were originally published in the "Maplin Magazine" No. 29 (Dec.88/Jan.89). With minor modifications and the provision of a 74LS157 interface as per the original CQ-TV circuit, one is in business with no hassle at all. At least, both Cliff G0FDD and I have knocked up these things with instant success and, believe me, that is some sort of record !.

Maplins offer a kit (LM66W - £19.95) or just a pcb (GD99H - £3.95) . Since the kit includes an ASTEC modulator type UM1233, and the board itself is of very good quality, it will be seen that the cost is quite competitive even when allowance is made for the voltage regulator requirement mentioned later. The RF modulator is not strictly necessary for our purposes - a video output is provided on the Maplin board - and could be omitted. On the other hand, its inclusion offers a means of testing the output on a domestic TV receiver if required. The 74LS157 can be mounted on a small piece of veroboard and a possible layout is shown at Fig.1. The longitudinal lines represent the copper strips, the vertical lines are wire links. The symbols ⊗ are track breaks, 9 in all. A, B, C, D, E and C1 to C5 are lead connecting pins.

The modifications to the Maplin board are :

1) Referring to Plug 2, short out pin 3 to pin 4, pin 5 to pin 6, pin 7 to pin 8 ; I did this on the bottom of the board, finding very short pre-formed wire wrap leads to be very convenient for the purpose.

2) Referring to Plug 4, short out pin 3 (blanking input) to 0 V ; I did this with a jumper lead to pin position 6 on the plug housing, but it could be done as in (1) above.

All that remains (!) is to inter-connect everything. It goes without saying that you will need a regulated +5 V and 0 V for the 74LS157 board and a +12 V and 0 V for the Maplin board (see footnote). Also a video out line, preferably screened, needs to be provided for the Maplin board, pin 9 of Plug 2. The other connections are shown in Table 1, ie read across to determine what connects to what. A switch could be connected across pins 1 and 2 of Maplin Plug 3 should you need this termination facility.

FOOTNOTE :

The maximum voltage to pins 9 and 11 of the TEA2000 is specified to be 13.2 V, and many shack PSU's exceed this by $\frac{1}{2}$ V or more. One solution would be to apply a 12 V zener diode and a limiting resistor across the supply to the Maplin board. We preferred to use the natty little circuit supplied by Wood & Douglas (Called REG1 and costing £5.50 plus postage & VAT in kit form). This is a low differential regulator - your 13.8 V or whatever it is goes in at one end, and a regulated 12 V emerges at the other. This circuit can also be arranged to supply 11 V for fussy boards like the BATC FM demodulator. The actual output of my REG1 board is 11.95 V, and it is comforting to know that the TEA2000 is working within limits.

(Ed.'s note ; Pat is not being over-fussy about the TEA2000 supply voltage, as those who built GB3ZZ will know to their cost. The TEA2000 is quite happy at 12 V, but 13.5 V will soon blow it).

TABLE 1

74LS157 board	Maplin board	Croproedy board
A	Plug 2, Pin 7 or 8	-
B	Plug 2, pin 5 or 6	-
C1	-	IC2, pin 15
C2	-	IC11, pin 11
C3	-	IC2, pin 14
C4	-	IC11, pin 9
C5	-	IC11, pin 10
D	Plug 2, pin 3 or 4	-
E	Plug 4, pin 4	Q2, collector

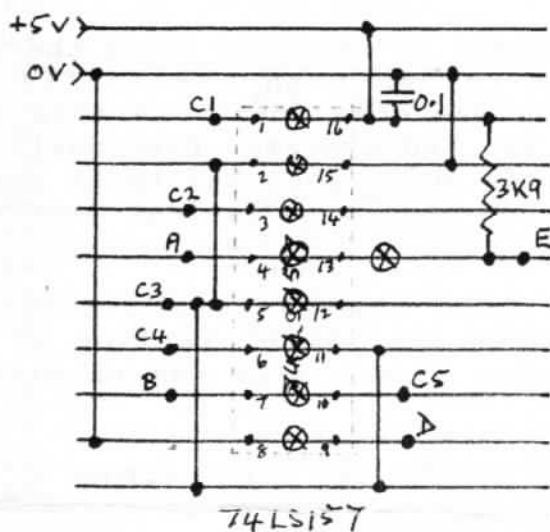


Fig. 1,
viewing component side.

"P5" - YOUR NEWSLETTER

Those of you that read "Practical Wireless" may have noticed the kind comments made by Andy Emmerson in his ATV column about "P5". As a result, we have had several more people from various parts of the UK join the Group. Since most of these are outside of the coverage area of GB3ZZ, the principle benefit which they get is "P5" and the discount on purchases of Group aerials.

Once again, we have two interesting articles from members in this issue, both of whom are GW stations. What about some of you G stations putting pens to paper?. I have some interesting articles for future issues, including a neat video processing board for the W&D VIDIF board to correct video ramping which is currently on trial in the GB3ZZ receiver, and some ideas for a very simple 10 GHz FM TV transmitter and receiver. This will enable you to participate in the 10 GHz TV trials which we are planning for later in the year. The idea is to put a 10 GHz beacon at the 'ZZ site, which will transmit the same video as the repeater. Because we are not licensed for 10 GHz operation, this will be only switched on for manned trials when it can be directly supervised by a licensed Radio Amateur at the site.

We intend to see what the coverage of this simple beacon will be, as a prelude to further experiments with 10 GHz. Anyway, the real point of this piece is to remind you to please think of "P5", and help the Editor to fill its pages with interesting stories. It need not be a technical item, but perhaps some ideas for future enhancements to 'ZZ, or may be some funny observations of the ATV scene. There isn't much humour in "P5", perhaps someone out there can poke some gentle fun at our at times obsessive hobby?.

by Brian Kelly GW6BWX

(Eds note ; This article describes the latest changes to the GB3ZZ logic system. The inter-linking provisions of the software will probably have to remain dormant for some time until we find another repeater which can link up with us.

Please send any comments which you might have about the V3.00 software rewrite to me, and I will ensure that they are passed onto Brian, who is currently exiled in the colonies (USA) until later in the year.)

GB3ZZ. Information on updates from V2.70 to V2.71 software.

The following changes have been made to the system software between version V2.70 dated 13th September 1989 and version V2.71 dated 4th March 1990.

The whole source code has been adapted to assemble under the TASM assembler on a PC based system rather than the SYSTEM ADE BBC computer based assembler. This was done purely to save time transferring the program between the two systems. Previously the PC was used to write the source code which then had to be ported to the BBC for assembly, the BBC not having sufficient memory to hold the source code itself.

An acknowledgment beep is now given when a keypad digit is pressed. This was added as there was no way of telling if the logic had recognised a key-code when a text page was on display and the sound channel was muted.

Page numbers are automatically put in the top right corner of the screen when a text page is displayed. This happens on permanently stored and updatable pages. There is no longer any need to code the numbers in the text when preparing pages, an added benefit is that updatable pages will show page numbers even when no text is present. In V2.70 there is no way of telling which update page is selected unless the page number is sent along with the update information.

If a system restart occurs, either by a power failure, local or remote reset, the update pages will be lost. In V2.71 a message to this effect is put on those pages to alert the system manager that the pages need uploading again.

The slow morse ID has been changed from "GB3ZZ BRISTOL GB3ZZ" to "GB3ZZ NORTH BRISTOL GB3ZZ" and speeded up to 12 words per minute.

A bug has been removed which now makes the *99# code work properly. In V2.70 it caused some of the system timers to reset when reselecting normal operation and prevented the ID being generated on time.

VCR control functions have been added, play, fast-forward, rewind, stop, pause, record and store control are available pending allocation of hardware ports to interface to the VCR. In V2.71 keying VCR commands will simply beep an acknowledgment. When the interface hardware specification is known all VCR functions will be enabled.

Provision to network GB3ZZ to other repeaters is now written in the source code. In V2.71 keying network commands will cause an acknowledgment beep but no other action. When a networking protocol has been established the network functions will be enabled

V2.70 did not give morse ID on schedule after a user had ended transmission, even if the DTMF reset had not been used, this bug is now fixed.

Some of the DTMF command codes have been changed to give a more logical numbering system. The antenna selection and text page codes are unchanged.

V2.71 DTMF codes:

*00# to *09# antenna selection.
*10# to *35# fixed text pages.
*36# to *39# updatable text pages.

*70# VCR "stop"
*71# VCR "play"
*72# VCR "rewind"
*73# VCR "fast-forward"
*75# VCR "record"
*77# VCR "pause"
*79# VCR "store".
*80# signal strength display.
*81# show system status.
*82# system identify.
*83# ID caption enable.

*90# cancel network link.
*91# link to repeater A.
*92# link to repeater B.
*93# link to repeater C.
*94# link to repeater D.
*95# link to repeater E.

*99# cancel DTMF function.

Codes in the *40# to *49# range are moved to make space for more text pages.

Codes in the *90# to *98# range are re-allocated to networking functions.

*99# remains a general reset to cancel DTMF functions and return to normal operation.

All external equipment control codes will be in the *70# to *79# range.

Engineering control codes exist but are hidden from unauthorised users. Experimenting with other codes could cause temporary malfunction.

Planned changes to V3.00.

Version V3.00 of the software will involve a complete re-write of the source code so comments and suggestions would be welcome as early as possible so that they can be planned before the code structure gets "frozen".

The master clock tick (MCT) is the smallest unit of time that any of the timers can count. It is currently one-tenth of a second and cannot deviate far from this value, bearing in mind the maximum delay is 2^8 ticks or 25.5 seconds. Making the MCT faster will reduce the time for text and caption display and already this is barely adequate. Making it slower will cause the access and drop routines to become "sluggish" and make the morse ident run slower. The solution is to change the way the timers work, in V3.00 it should be possible to retain the MCT as it is but create delays of up to 2^{16} or 1 hour 50 minutes which should be more than adequate !!

All the dormant functions in V2.71 should be enabled.

More pages of information will be available, by moving all the fixed text pages to another EPROM in the system, 48 pages become available instead of the present 26. This also makes EPROM preparation easier.

Memory space will be freed to hold up to 17 updatable pages.

On screen graphics will show signal strength, video and audio deviation levels and carrier frequency. It is planned to use bar graphs to show these reports.

On screen graphics will show usage levels over the past 24 hours on an hour by hour basis.

With suitable hardware modifications it will be possible to periodically scan through the beam antennas looking for weak signals which cannot access through the alford slot. This would only be done when the repeater is not being used by local operators.

LONGLEAT 1990

This years Longleat Rally, organised by the Bristol RSGB Group, is to be held on Sunday 24th June. As most of you will know, the Group have been most generous to us, giving us two donations of £250 each, the most recent last autumn. Hence it would be nice if we could return some help to them.

There is always a need for helpers on the day of the rally, and also on the Saturday before. All sorts of work needs doing, from the heavy work of setting up tables. to lighter duties such as erecting signs and labeling tables. A free buffet lunch is given on the Saturday to all those helping.

If you have some time spare, please volunteer your help. An hours effort on the Bring & Buy stand is always appreciated, and surprisingly most people seem to enjoy it !. Also, don't forget to say "hello" to the committee members on our own stand.

AGM REPORT

Our AGM was held on 10th April, to a slightly larger turn out than last year. Members listened to a review of the years achievements from the Officers. Notable points are an overall surplus for the year of £194.83, which is about half of last years figure. However this is balanced by expenditure on GB3ZZ of £951.40. This is a very large amount, made possible by the hard work and generosity of our members and the Bristol RSGB Group. The Bristol RSGB Group made another very kind donation of £250 last autumn. Profits on trading continue to be our biggest source of income, totalling more than twice the income from subscriptions.

This fact provoked the one big debate at the AGM. Founding Chairman G4ZQF felt that subscriptions should be increased, since they had been at the £5.00 level since the Group started. A quick calculation based on the level of inflation for the past four years suggests that it should be about £7.00 by now. Roger felt that members were getting too cheap a bargain with subs at only £5.00. However, the view of the meeting after much discussion was that whilst £5.00 was very fair value, especially for those who use the repeater fully, many of our social and more distant members might be deterred by an increase. The idea of a two tier subscription was suggested.

The outcome was that subs remain at £5.00 for this year at least. Many members add a voluntary donation of a few pounds to their subs, and you may care to do this if you are able to afford it. If you have any views on this subject, why not drop a line to the Editor ?.

There were some changes to the Officers and Committee at the AGM. Chief Engineer Ken Stevens G4BVK retired, and Steve Walsh G8KUW was elected to replace him. Ken remains on the committee, and hopes to have a bit more time to develop his business AZTEX Electronics, which produces the pre-amps and transmitters which we sell. Phil Smith G1HIA has retired from the committee, and his place is taken by Paul Stevenson G8YMM. The complete list is now as follows ;
Chairperson, Mrs. Viv Green G1IXE.

Chief Engineer & Vice Chairman, Steve Walsh G8KUW.

Honorary Secretary, Shaun O'Sullivan G8VPG.

Honorary Treasurer, Mrs. Jean Fletcher G0AWX.

Committee Members, Ivor Green G1IXF, Alan Tink G7DRU, Ted Halliday G3JMY, Ken Stevens G4BVK and Paul Stevenson G8YMM.

Although not a committee member, Dr. Chris Newton G0FGZ has agreed to act as Auditor for a further year.

The AGM was followed by another of our pleasant social evenings which was enjoyed by all present. The next social will be on 30th September, we have abandoned the summer one since it was so difficult to fit in with everyones holiday plans. However, if the weather is suitable, we may have a barbecue at the contest site during the summer contest on 9th June. Keep watching 'ZZ for further details nearer the time.

THE EDITORIAL 'PHONE NUMBER !

This item does not apply to many STG members, but none the less, I have to mention it to you. Although my postal address is a Bristol one, my telephone number comes under the Bath exchange. Thus from Bristol, the local code is 92. From further afield, the STD code is 0225. I mention this because there is a Bristol 873 098, which is in Clevedon. It would appear from the contents of a shirty 'phone call which I received recently that this poor individual is constantly pestered with calls for me, despite the fact that my letter headings always contain the correct code. I think most of the calls are to do with Longleat, but if you are calling me, please remember the right number, 0225 873 098, and give these poor people in Clevedon some respite.

G8VPG Ed.

CONTEST NEWS

We once more entered the BATC Joint European ATV Spring Contest on 9/10th March. Whats more, we have had the results in record quick time. On 23 cm, we were first with 1680 points from 21 contacts, with a best DX of 180 km. On 70 cm, we very nearly came first, but have to make do with second with 5319 points from 25 contacts, with a best DX of 342 km.

After lasts years terrible mud and bad weather for this contest, we were slightly hesitant to commit ourselves for this one until we saw the forecast a few days before. As it turned out, the weather was mostly dry, but rather windy at times. Fortunately, the aerial system had been strengthened since September, so the wind did not hamper us too badly. However it did make outside work very cold at times. Luckily we did quite a bit of work under the Halogen spot lights on the Friday night, when although it was dark, it wasn't so cold.

Work started very early on Saturday morning, with Ivor out and busy at 6.00 am !!. Yours truly arrived some hours later, and poor Ken G4BVK very nearly didn't arrive at all. His car was in a bad way, and a punctured diaphragm in the carburettor was diagnosed. This entailed an emergency trip down to Wells to buy the necessary parts, together with a few hours labour to get everything back together.

We were finally ready to crank up the tower just as dusk was falling. When it was finally up at full height, we tested the equipment, and all was not well on 23 cm. Ivors splendid new mast head mounted PA was not switching over as it should. Because it was now dark, it was possible to see some rather alarming sparks part way up the tower. It was cranked down and examined, and we found that one of the control cables had become trapped and stripped of insulation by the tower sections as they slid apart. This was repaired and we were finally ready to go.

At this stage, I should tell you about our new mast head mounted PA for 23 cm built by Ivor G1IXF. We have used 4 x 48 ele quad loops since September last year, but they were fed by a 30 W PA in the shack, using some LDF5-50 cable. The new PA is housed in a superb cast alloy case with a hinged front cover. It houses 4 individual 20 W PA devices, which through 4 change over co-axial relays, drive each aerial seperately. Because the feeder is limited to only about 3 m of cable, very little power is wasted. The voltage drop up the dc supply cable is compensated for by supplying more volts at the bottom end. It is planned for next time to incorporate the drive transmitter into the mast head unit, thus only needing to send video up the mast head. The device certainly worked very well, so much so that stations were copying us at good strength when we couldn't see them. I think that we now need a super-cooled GaAsFET pre-amp to bring the receiver up to the same level of performance.

Conditions were somewhat mixed, but we did get some good DX on 70 cm with a contact with F6IFR. As always, we would like to thank all those who took the trouble to work us. The next contest is on 9/10th June. There is a possibility that we may not be able to have the Gordano ARG tower for this one, so if anyone knows of a tower which we can borrow, please let us know.

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