

P5

Newsletter of the Severnside Television Group
 Edited by Shaun O'Sullivan G8VPG.

NEWSFLASH !

By the time that you are reading these pages, the long awaited new GB3ZZ software should be installed and working. Steve G8KUV and Brian GW6BWX have been very busy, and there are now many new facilities available to repeater users. To access these features, you will need a simple DTMF tone encoder, to send the necessary commands on the inter-carrier sound input. Therefore we have added an extra two pages to this issue, describing how you can make one. We hope to have a kit containing the chip and crystal available - please contact the Editor for details of price etc.

SEVERNSIDE TELEVISION GROUP AT LONGLEAT.

To those members that were there or those who were unable to share a very hot and interesting day at our very OWN RALLY AT LONGLEAT: -

The organising party arrived at 8.15am to find our table close to a blessed opening in the Bring & Buy Tent....we were grateful for the fresh air later in the afternoon!

Ken, G4 BVK and I erected the poles for holding Club antennas, photographs of the ATV team, contributed by Ivor & Viv, and also a fine area map with coverage of GB3ZZ given by G6BWX, Brian plus our usual pamphlets etc., within minutes we had sold our first 23cms antenna....most encouraging.

Throughout the day we had visits from members and many enquiries from as far afield as Plymouth and Cambridge, even enrolling one member from Wimborne in Dorset. We were delighted to greet folks we knew by call-sign and yet had never met. Thanks to all our members who said "Hello" it was great to see you all.

I would like to especially thank Shaun G8VPG for the table at Longleat and all the organising Committee for a superb day, they ordered exceptional weather which brought many happy families to share in our "Radio Day", we felt it was bigger and better than any previous Longleat. We feel sure the Committee should be congratulated on the hard work and perspiring brows that they had to contend with during the day.

To those members who were extremely kind to man the table while Ken and I took a break my very sincere thanks, it was greatly appreciated.....please come again next year!'

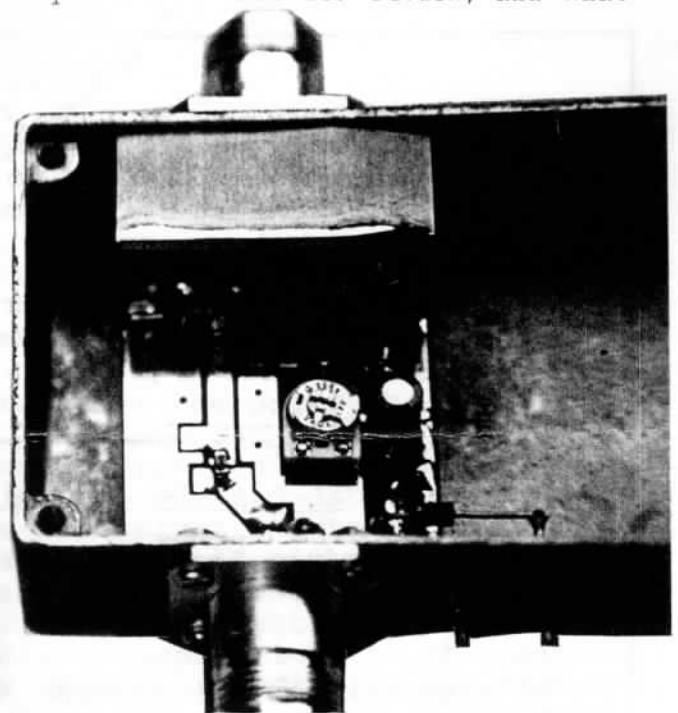
We increased the Club funds by £50 and Ken was also able to sell one of his pre amps with many enquiries for the future.

Last but not least my grateful thanks go to Ken G4BVK for his total support throughout the day, without his help "our table" could not have been so successful.

Jean, G0 AWX. Treasurer.

G4BVK launched his first product at this years BATC Convention at Coventry. This is the ULNA-23-24 GaAsFET pre-amp for the 1.3 GHz band. It is ideal for ATV use, but is also equally suitable for other narrow band modes. With a claimed gain of about 17 dB and a noise figure of 1 dB, the device is worthy of serious consideration by anyone who wants to "hot up" a less sensitive receiver. Earlier development samples are in use on GB3ZZ and by our successful ATV contest team G7ATV/P. Your Editor recently picked a sample at random off the production line for review, and what follows is my findings.

The G4BVK ULNA-23-24 pre-amp

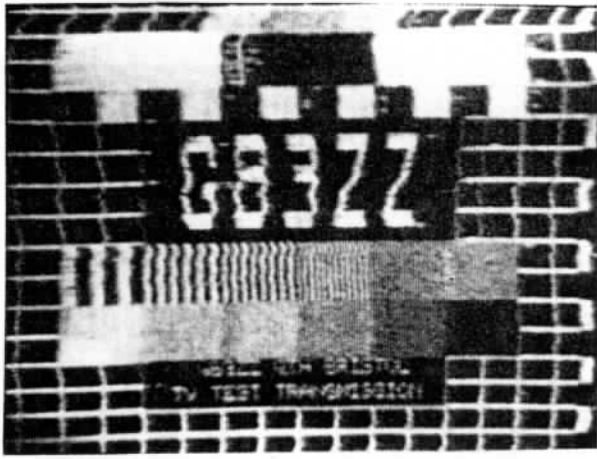


A view of the inside, showing the screened input section (top)

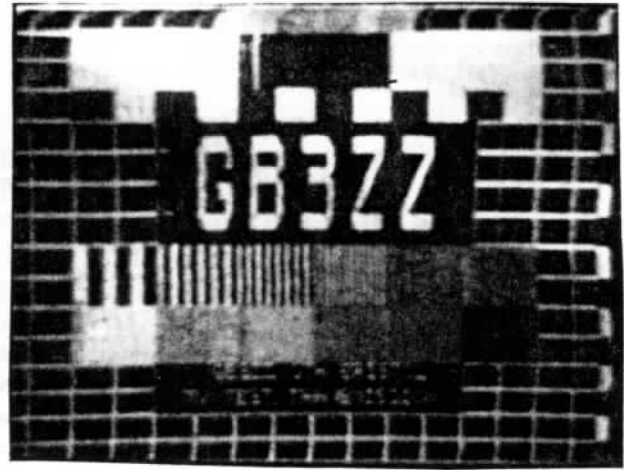
The pre-amp comes ready built and finished in a small aluminium die-cast box, size approx. 105 x 60 x 30 mm. It is sprayed a smart crackle finish grey with white lettering. Good quality N sockets are used for both input and output, although I expect that others could be used by special request. The 12 V dc power is fed in through two feed through insulators, via a reverse polarity protection diode.

Internally, the circuitry is contained upon two high quality, double sided glass fibre pcb's. These have been professionally produced and feature roller tin plating and plated through holes - no expense spared here !. Unlike most other commercial pre-amps, which use pcb strip line inductors for the input circuitry, G4BVK has gone the lower loss way of employing wire lines suspended in air. This is tuned by a good quality PTFE piston trimmer, which may be adjusted via a plugged off access port drilled in the side of the case. The whole assembly is contained within a screened compartment, so that the input is shielded from the output for good stability. The all important GaAsFET, which is an Avantek ATF 10135, is mounted on one of the screen partitions. The remaining circuitry is fairly conventional, being mostly concerned with the power supplies to the GaAsFET. Once more, only good quality components are used, with most capacitors being the leadless chip type. The quality of assembly and soldering is very good. The circuitry only takes up about half the box, so there is scope to add in a second stage or maybe an RF change over relay - I don't know if Ken has any plans along these lines.

Now for the important bit - how does it work ?. The device was used in my shack in front of a Wood & Douglas tunable down convertor, fed by a JVL 28 ele Quad loop aerial. Using GB3ZZ as a yard stick, that system by itself yielded a noisy P4 picture. Adding in the pre-amp improved this by about one picture grade, such that it is now nearly P5. Other users who have higher noise receivers such as the Connexions satellite units have reported improvements of 3 or 4 pictures grades, which is quite understandable when you consider the relative noise figures. The pre-amp is quite stable, and does not suffer any broadcast TV breakthrough at this location. The improvement in sensitivity is such as to make radar interference from our local airport noticeable for the first time, but since this is in the 23 cm band, you can't blame the pre-amp for that !.



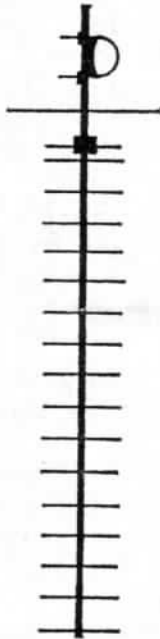
Before...



and after, a useful improvement.

Overall then, this pre-amp is highly recommended. Comparative trials carried out earlier indicate that it performs better than most if not all of its commercial rivals (Wood & Douglas, Camtech, LMW etc.). Finally the price, which is a very reasonable £52.00 plus £1.50 postage, which is for a fully finished item, not a kit. The pre-amp is available from the Severnside Television Group, and Ken asks me to mention that special versions are proving very popular and successful when used on nearby commercial frequencies. G8VPG

SEVERNSIDE TELEVISION GROUP



As over 200 users from all over the UK will know, the Severnside Television Group 18 element wideband yagi is the affordable aerial for 23 cm ATV. Just look at some of its star features ;

- * Frequency coverage 1240 to 1325 MHz.
- * Gain 10 dB across the band.
- * SWR about 1.5 across the band.
- * Length only 900 mm, weight only 300 g.
- * Supplied with clamp for masts up to 55 mm in diameter. End mounting design.
- * Neat, unobtrusive design, looks similar to but smaller than a domestic TV aerial.
- * Price only £14.00, plus £2.50 postage.

The aerial is ideal for repeater or portable use. At this low cost, many stations use a second aerial for repeater "look through". Delivery ex-stock.

Cheques should be made payable to "SEVERNSIDE TELEVISION GROUP". Please allow 28 days for delivery. Send your order to Severnside Television Group, c/o 15, Witney Close, Saltford, Bristol BS18 3DX. Tel. 0225 873 098, evenings and weekends only please.

THE WORTHING GROUP 23 cm ATV TRANSMITTER,
SOME NOTES ON CONSTRUCTION & ALIGNMENT
by Shaun O'Sullivan G8VPG.

Many members will have built the Worthing Group 1 W 23 cm ATV transmitter, and doubtless many more people will be using one to get into GB3ZZ in the future. It is an excellent unit, but it can be tricky to get working properly. Some people are lucky (G4YQR) and get theirs on frequency and at full power as soon as they switch on. Others like yours truly took weeks to get everything right. The following notes may help you to get the best out of your unit.

It is very important to ensure that the pcb is adequately earthed to the box. Solder earth tags to the board by the aerial socket, mic socket, video input and by TR1. You must use the supplied die-cast box, or else you will end up really up the creek. The main problem with my TX was that it oscillated about 100 MHz low. Some or all of the following mods may help ;

L3 which conveys the modulating voltage to D1 is critical. If there is any excess tail to the coil on the D1 end, it will oscillate low. Begin the coil windings directly it leaves the solder pad.

The tapping point of R3/L1 on the collector strip line of TR1 affects both the frequency and level of output. Try several points before you settle on one. On mine, it was best fairly close to TR1.

C5 is the single most influential component on frequency. If oscillation is low in frequency, decrease its value. The supplied component is a 2.2 pF ceramic, so you might try a 1.8 pF ceramic or a 2.2 pF chip capacitor. Of course, if your TX oscillates high, you need to increase the value of C5.

C1, C2 and C4 should be replaced with leadless chip capacitors. I am surprised that the Worthing Group don't make more use of these, may be cost has something to do with it.

Some experimentation with these items should get your TX oscillating happily in the required 1240 - 1280 MHz region. The following items are aimed at getting the output power up to the claimed 1 W output. The TX will run up to about 1.5 W when it is fully on song, so some patient adjustment is worth while.

The instructions refer to an optional capacitor CX, on the TR1 end of R4/L2. I found this to be essential, and put a 1 - 10 pF PTFE trimmer in. There is a marked peak in output power which you can tune for. However, adding CX will affect frequency of oscillation, so you may need to then do further tweaks as outlined above.

Replace C7 with a chip capacitor (same value) and replace trimmers C12, C16 and C23 with good quality Mullard PTFE types (809 series, orange spot). The original Allan Latham G8CMQ kits used these components, but the Worthing Group have substituted some much cheaper ceramic devices.

Ken G4BVK found that C21 and C22 around TR4 were quite critical to output power, so some checks around here might prove profitable. Infact, on the last TX which Ken made up, he replaced one of these fixed capacitors with a small trimmer, and was able to tune for a peak. Go easy with TR4, it costs £12 to replace as G4YQR and myself can vouch for !!

I hope that these ideas are useful to anyone out there struggling with a recalcitrant TX. If you know of any further mods/tweaks, please let me know so that they can be passed onto other Group members.

Finally, please don't form the impression that this unit is particularly troublesome. It goes together quite easily and performs very well, being so stable that the optional PLL board is hardly needed for home use. However if you do fit one, you must get the unit oscillating properly before fitting the PLL, since it won't pull the frequency anymore than the conventional tuning pot.

If you have found some other mods or tweaks which improve this unit, please let me know so that I can pass it on to other readers who may be struggling !.

HOME VIDEO EDITING PART I

by Shaun O'Sullivan G8VPG.

This is the first part of a two part article about Home Video Editing. The second part is scheduled to appear in the next issue of "P5". The intention of the article is not really to tell you how to go about Home Video Editing, but to review some of the equipment which is on the market to make the job easier for you. This time we are going to look at video editing decks, and some of the very clever items from the land of the rising sun which are making it very easy to get quite passable results from Home Video Editing.

To carry out any sort of editing, it is necessary to have two video decks. The first of these could be your camcorder in playback mode, providing it has composite video and audio outputs. All editing should be carried out at video base band level. The purpose of the first deck is to play back the programme to be edited, so that the second deck can re-record part or all of it, perhaps together with other material. Clearly therefore, it makes life easier if this deck has good search facilities and a pause key. Slow motion makes it possible to accurately select the start of the track to be dubbed onto the second deck.

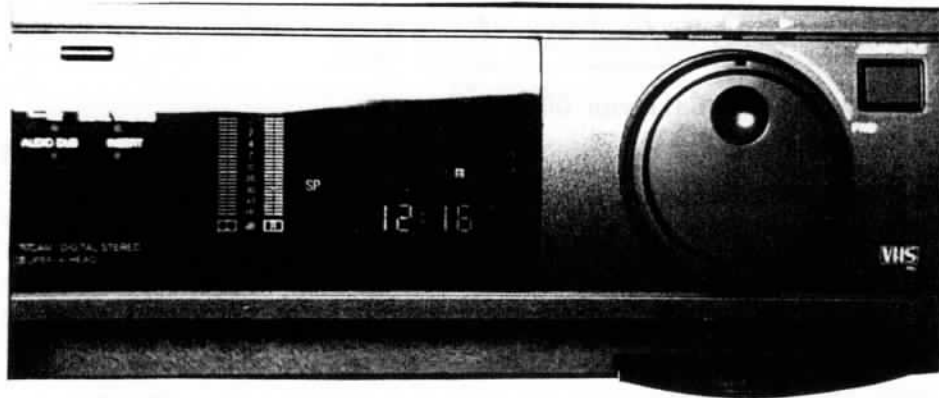
The requirements for the second deck are more complex. Obviously, it must have composite video and audio inputs and a pause facility. Once again, good search features in both fast and slow motion is very useful. However, the deck must be able to piece together a series of disconnected video tracks from the playback deck without any rolls or loss of sync, or else the results will look awful. This is called assembly editing. It is also helpful if it can drop in a track of video into an existing programme, again with no roll at either the beginning or end. This is called insert editing. Finally, it should also have audio dubbing, which enables a new sound track to be dubbed over an existing one without disturbing the video. This enables you to dub music or commentary over the finished video editing job.

To do all of this, you need what has been until recently a fairly rare animal, a video editing deck. Now there are at least three decks on the market aimed specifically at the home video enthusiast who wants to edit his camcorder tapes. They are all VHS-HQ machines, and fall in the price range £399 to £599. There are also some more expensive machines with these features in the range £799 to £999 and over, but these are all either 8 mm, Beta or VHS-S and will not be discussed here.

The three machines considered here are the Sony SLV-401 (£449), Panasonic NV-L25 (£399) and Panasonic NV-F70 (£579). The prices quoted are the lowest seen in "What Video" magazine, and you should be able to obtain all of them in Bristol at these levels if you shop around and haggle. It goes without saying that besides their editing facilities, all these decks will perform the more conventional duties of recording and playing back TV programmes, usually doing so with a level of quality slightly above that of the ordinary domestic deck.

Lets look at the Sony first of all. It is the only deck here with digital PIP (Picture In Picture) facilities, which it puts to very good use in its role as an editing deck. It features 4 video heads for a perfect still picture and fast or slow picture search. It has a flying erase head for perfect insert and assembly editing. The PIP facilities are used to generate an edit monitor, which splits the screen to simultaneously display both the incoming video from the playback deck and the picture on the tape about to be recorded upon. It also displays the edit commands, most of which can be sent by the full feature infra-red remote controller. The deck has two sets of video/audio inputs, one of which is usefully positioned on the front of the deck. According to the video magazines, the quality of performance of the deck is good, but probably not as good as the two Panasonic decks described later. However, its one big failing in my view is the total lack of audio dubbing. Despite the impressive and useful PIP edit monitor and a reasonable price, this writes it off for serious consideration unless you're into silent movies !. What a shame, especially when you consider that my old Sony C5 Beta machine had this feature as standard.

Secondly, lets look at the Panasonic NV-F70. This is a new model, only launched in the UK this spring. It has had near rave reviews from all the video magazines, who



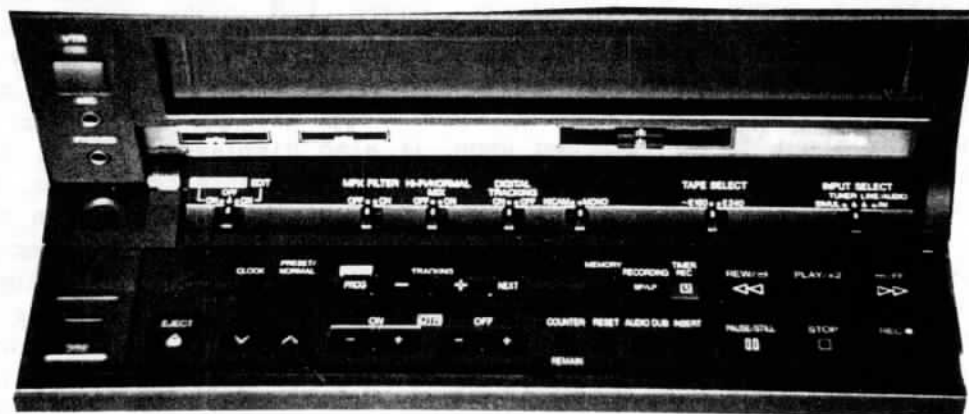
Part of the front panel of the Panasonic NV-F70 showing the unique jog/shuttle dial and multi colour display panel.

state that it is the best machine available short of VHS-S. My acquaintance of some two months tends to re-inforce this view. The picture and sound quality are very impressive, and I must finally admit that I have found something which improves upon my beloved Sony Beta machines. The F70 features 4 video heads for super freeze frames and search facilities, and a flying erase head for perfect editing with no rolls. Its big feature is a shuttle and jog control, which is normally found only on professional machines. This is a pair of concentric dials, the outer ring of which is the shuttle control. In the centre position, the playback picture is frozen. When twisted clockwise, the playback is instantly and smoothly varied from 1/25 to 9 times normal speed. Twist it anti-clockwise and it does the same in reverse. When in the centre still picture position, the inner jog dial enables you to play the video in forward or reverse, one frame at a time. Thus the edit point can be decided to the nearest frame; you won't find better search facilities than this.

The audio facilities are equally impressive. Besides the conventional linear audio track which is recorded by a non-flying head at the edge of the tape, the F70 has a pair of hifi stereo tracks which are recorded by flying heads. The quality matches that of a good quality audio tape deck. The deck has a built in NICAM stereo decoder, ready for when stereo TV broadcasts start in this area. You can also use the stereo tracks alone without any picture, thus the F70 doubles as a hifi tape deck. The audio dub works only on the linear edge track.

The machine has a full feature IR remote control, which has VHS indexing commands and a very neat bar code reader which enables you to programme the 8 event timer one month in advance from a sheet of wipe over bar codes. The TV tuner has 99 memories, which don't get much use in the UK with only 4 terrestrial channels.

As you might guess, I am very much sold on this deck, which has so many good features that it is difficult to list them all. The only snag I have found is that it is a complex deck to use, needing frequent use of the instruction manual which is not always very clear. Otherwise, the performance is brilliant, particularly when you play the sound back through a good hifi system.



The fold down flap of the F70 reveals a comprehensive range of controls and features.

NEWS BRIEFS FROM THE EDITOR.

CONTEST NEWS ...The Group entered the Summerfun Contest on June 10/11th, and readers will be relieved to learn that the weather was much kinder than it was in March. There was a little drizzle and low cloud - Mendip murk I call it - on the Saturday morning, but by the time that we all returned from lunch at the nearby hostelry, things were much brighter !. Ivor and Ken had put in some work on the evenings preceeding the weekend, and the tower and its base were in position and levelled up. This saved quite a lot of time, and we were able to make very quick progress assembling the aerials. We were given another field to use this time, and I think that it was the best yet. It was right by the big microwave relay tower, and was flat and level with short grass. Thankfully, the tower gave us no trouble, and I don't think that we affected it !.

By tea time, we were on air and Viv had time to cook us some tea before the start of the contest. Conditions were not particularly good, although we did have some one way contacts on 70 cm with ON and F stations. The points that we are claiming are 5571 on 70 cm (best DX 515 km) and 2092 on 23 cm (best DX 215 km). These totals represent an improvement on last Junes Summerfun contest, but don't equal our performance in last Septembers International.

Speaking of which, the next and last contest of the year which we enter as G7ATV/P is the International on 9/10th September. This is the big one, and we're making our plans already. Although the final European results of last years contest have not been published yet, we are aiming to improve our placing. Compared to last year, we have made some significant improvements to our kit. Please watch out for us and give us some points.

NEXT SOCIAL EVENING ... The next Group Social Evening will take place on Sunday 24th September, at the usual venue of the repeater site. The arrangements will be the same - you bring the drinks and the committee will provide a light buffet. This will be a good opportunity to inspect the re-vamped repeater, which looks very different now that it is installed in a professional 19" rack.

MEMBERSHIP ... Group membership currently stands at a very creditable 53, which I think is very good for such a specialised organisation. Of course if we had more members, we could do even more for you. Applications for membership are dealt with by our Chairperson Viv G1XE, and the subs are still only £5.00. Please do your bit to recruit any ATVers who might benefit from membership of the Group.

P5 - YOUR NEWSLETTER ... I am afraid that the new desk top publishing facility is not much in evidence in this issue - it's a bit tricky to work and I need more time to practice with it !. May be next issue ...

I am very grateful to those members - mostly on the committee - who have written or promised articles. I have several very interesting ones coming up in the next issue. These include a series of useful mods/improvements to the very popular Wood & Douglas VIDIF FM IF strip, how to make your own Quad Loop aerials and Part II of the series on Home Video Editing.

This is our first 8 page issue and I hope that you all enjoy reading it. If you want to see "P5" continue at this size, please send in your articles to the Editor. The December issue will be published on 26th November, and copy must reach me by 3rd November at the latest.

CLUB DEMONSTRATIONS ... September will be a busy month for the committee. Besides the contest and social evening, we are doing two club demos - 13th September at Bath & DARC and 21st September at Highfields ARC, Cardiff. If your club would like a visit from the Severnside Team, please contact the Editor.

Finally, lets look at the Panasonic NV-L25. Essentially, this is a-cut down, baby version of the F70. Baby is the right word, I wonder how much smaller video decks can get than this, which occupies about 20% of the space and weight of my old Sony C5. Imagine the F70, and take away the shuttle and jog controls, hifi stereo tracks and NICAM decoder and flying erase head, and you have the L25. The IR remote control is the same, and it features the essential insert edit and audio dubbing facilities, which don't seem to loose too much from the lack of a flying erase head. Four video heads give good slow and fast search facilities. The magazines once again rate the picture quality as very good.

In conclusion then, the serious home video buff will only be satisfied by the F70. What is better ? - why only two F70's, the second one to act as a playback deck where the decks synchro edit interface makes editing even easier. If the pennies are tight or if you're not interested in the stereo hifi sound facilities, then the L25 will do almost as well. The Sony's picture and editing quality is not quite as good as the Panasonic's, but if you can live without audio dub (a very big "if" for any serious video enthusiast) then the PIP edit monitor is very useful and clever.

Next time I will look at some simple audio and video editing units, to give fade and wipe facilities. Happy editing, and lets see the results on GB3ZZ !.

GB3ZZ TECHNICAL REPORT.

As always, our engineering team have not been resting on their laurels, but have carried out a substantial amount of work on the repeater. This falls into about six categories, as follows ;

COLOUR IMPROVEMENTS ... Ken G4BVK has rebuilt the receiver, and has carried out a number of modifications to the Wood & Douglas VIDIF FM IF strip. These have produced a significant improvement in the colour quality of through signals. The mods are quite straight forward, and will form the basis of an article in the next issue of "P5", so that you too can try them at home.

EQUIPMENT RACK ... Thanks to Steve G8KUW, we have been able to obtain a large professional 19" equipment rack, and the entire repeater has been rebuilt into it. Besides looking much better, it has improved access for maintenance work, and also contains a built in cooling fan and electrical circuit breaker. A temperature controlled cooling fan has been fitted to the repeater shack, to try and limit the temperatures reached in hot weather.

VIDEO MONITORS ... Thanks to Phil G1H1A, we now have a pair of 9" video monitors built into the rack. One shows the off air picture from the repeater receiver, and the other is a preview monitor for the transmitter. This makes life much easier when tests are being carried out on site.

NEW RECEIVE AERIALS ... One of the big improvements which is planned for late 1989 is a change to the receive aerial on the repeater. In addition to the Alford slot, we will add 6 small directional beams, each having 4 or 5 elements. Early tests show that such small aerials have a beam width of about 60 degrees, so coverage should still be omnidirectional. The big advantage is that they almost totally eliminate the ghosting and shadows which are evident on the through video at present.

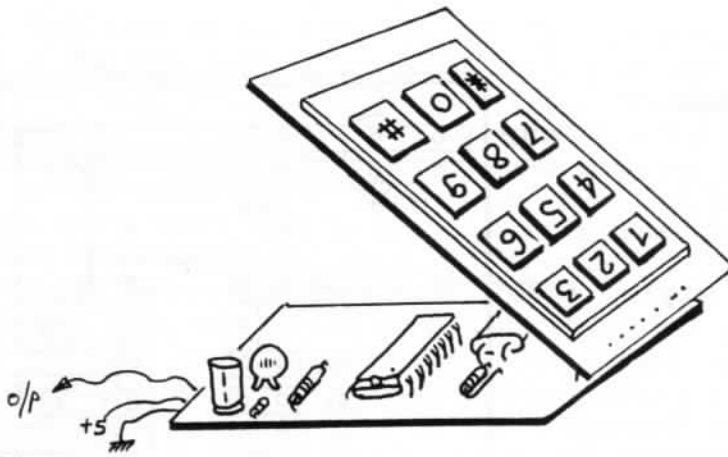
This change will co-incide with the new software for the logic, which is used to control the 7 aerials. Initially, you will go in on the Alford slot, and then a DTMF tone on your inter-carrier sound will select the best aerial for your direction. Work has already commenced on the hardware to switch the aerials, which consists of a six way motor driven rotary co-axial switch and a two way relay.

A prototype aerial is being built by Ken G4BVK, and will be used to finally prove the concept and decide the size of the six new aerials. Watch out for the tests which will take place in the autumn.

NEW SOFTWARE FOR LOGIC ... The BBC computer based logic is working very well, and Bryan GW6BW has nearly finished the new software for it. This will provide a large expansion of the facilities available, including for the first time, user selectable features. This will be carried out by DTMF tones sent on your inter-carrier sound. Full details of the codes and a suitable tone generator will be published soon in "P5". The tone generator is very simple and inexpensive, and the Group hopes to be able to provide most of the necessary components

2m RIG AT SITE ... Also thanks to Steve G8KUW, we now have a 2m rig built into the rack at the site, which enables us to run talk back when tests or work is being carried out on the repeater.

G8VPG.



Suggested layout

Construction.

Cut the 0.1" pitch Veroboard to the diagram over the page. The visible tracks on the diagram should be the only tracks that connect to anything else. Use a 3-4mm drill bit to cut away unused copper and isolate components from each other. Use thin jumper wire to link the +5v and GND tracks to the chip and link the keypad to the correct row and column inputs of the IC. You may use the layout diagram over the page if your keypad pin-outs correlate with that shown, you must still link R3 on the keypad land to R3 on the IC land and R2 to R2 etc. If your keypad has different pin-outs to that shown you will need to link the row and column pins as appropriate to the keypad.

Next fit the passive components (all 5 of them!), and finally fit the IC to the board. You may if you wish use a socket, but either way ensure that the end with the indent is furthest away from the crystal, thus ensuring that PIN1 connects to Vdd or +5volts. Note that the diagram over the page shows the track side view and the chip is viewed as if the Veroboard is transparent so you are looking at the underside of the chip. The layout drawing above this text will show you what the final assembly will look like.

Steve Walsh G8K UW 8/89