P5

Newsletter of the Severnside Amateur Television Group

Spring 2000

Annual General Meeting

This will be held at the pavilion at Filton (GB3ZZ site) on April 11th. See the Notice at the back of this Newsletter for details.
The main business of the meeting is to elect the new Committee to run the Group for the coming twelve months. **It's important that we have a quorum of members present at the AGM, so that these elections can be held**. The meeting usually lasts for about an hour, after which we will adjourn to the bar for a more informal get-together

Mike and I will be standing down as Chairman and Secretary respectively, so there will be two vacant posts to be filled. This is an ideal opportunity for some of you who haven't been on the Committee before to get involved, and put something back into the Group.

If you would like to help out, and are wondering what is involved, get in touch with one of the present Committee to discuss it. Remember that the continued operation of the repeaters GB3ZZ and GB3XG depends on the Group, which needs a Committee to run it, so please "don't be backward in coming forward", and get those nomination forms in.

Membership subscriptions are due for renewal too, so please use the form attached to this issue, and send us your £6.

Christmas social

The hall at Filton was packed for the Group's Christmas Party on December 11th. Thanks to all who helped to make this event such a successful occasion, especially those who helped with setting up the room, and bringing along refreshments.
A fine array of surplus equipment had been donated for the Auction, and with this and the Raffle, the Group raised over £150.

GB3ZZ: 'slot better!

At the start of February, the GB3ZZ antenna-rigging team braved the elements yet again to install the improved *Alford slot* transmit antenna. Details of the original problems with this aerial, and the results of recent improvements, can be found elsewhere in this issue. The effective radiated power should have improved for terrestrial users as a result!

I've included an article from our Chief Engineer Ian G6TVJ, covering the recent improvements to 'ZZ. I'm glad to be able to report that these have led to an increase in usage of 'ZZ during the first months of the New Year, and good pictures have recently been received from as far afield as Taunton. I have also heard that there are several stations in Bristol trying out ATV for the first time, so let's give them some encouragement by providing some regular pictures, and keeping a listening watch around 144.750 MHz for talkback.

This issue also includes an up-to-date list of DTMF control codes for use on 'ZZ. Two very useful features are the ability to monitor the GB3XG output, and check up on the latest *Meteosat* weather satellite pictures.

Jim GW3PYX will be putting together a schedule of *Meteosat* pictures, for a subsequent issue.

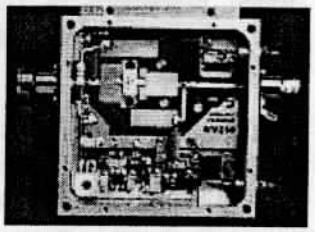
13 cm latest

There's been a flurry of activity on 13 cm (2.3 GHz) recently. Ian G6TVJ has had his beacon in operation again (see the last ***P5*** for details), and he will be building a 1 W PA to add to it later in the year.

Ken G4BVK has been developing a lower noise downconverter, and has had his home-made loop-yagis operating through the bathroom window again! *(I imagine that the rest of his family will be much relieved when he finally gets them on the roof?).*

Nigel G7JZP has been out doing some portable tests with Phil G1HIA, and John G3RFL has put together a system based on one of the 2.4 GHz ISM-band FM video link systems from *Farnell* (as mentioned in the last ***P5***).

John has also built one of the DL2AM 10 W PA kits, so there should be some good signals coming out of Clevedon soon.



John kindly sent me the following comments on his experiments with the modules:

"Feeding a modulated 2.405 GHz FM TV signal with high deviation into the receiver gave a picture with colour right down to -100 dBm which then went into the noise at –105 dBm. Picture quality through the system was very good indeed with none of the loss of colour amplitude that I have seen with other systems.

The L.O. ran about 470 MHz below the RX input frequency. The two sound channels are on 6 and 6.5 MHz FM.

I have integrated an eight-digit display plus a rotational pulse tuning device giving 125 kHz or 1MHz steps.

I have built and boxed up the 2.2/2.5 GHz Rx and it works off 12 volts. I have thought of a problem: I cannot leave the transmit VCO running all the time, otherwise during receive it would swamp the receiver. I cannot turn off the whole TX supply, otherwise it would lose the frequency I had set it to.and default back to the 2330 MHz that I had set in the software. So I am drawing the circuit out to work out how to stop the supply to the VCO only.

I found that the transmit output power was 10 mW, but there is a pi-network attenuator on the PCB which can be altered to give the required 1 mW output to drive the DL2AM 1 Watt PA.

After a lot of work to the TX module, I drove it from my external PIC at 4 MHz and it worked from 2.29 to 2.66 GHz: not bad considering it was designed for 2.4 GHz.

I separated the VCO and output amp supply and this is switched externally, so that I can go to RX without turning the PIC supply off (thus retaining the set freq. and muting the RF at the same time).

I took my modified RX unit to G1HIA's *(to try it on Phil's aerials)* and it worked as well as his LNB, which has HEMT devices in it."

John did warn that the modules use tiny surface-mount devices, and so need good eyesight, a steady hand and a fine soldering iron, but the rewards sound to be well worth the effort.

This system also gets over the "IF" breakthrough problem of using a downconverter and a 23 cm receiver. Ian G6TVJ tells me that now the GB3ZZ ERP is improved, he can't see his 13 cm beacon very well due to this breakthrough.

By a happy chance, I met up with John on Dundry on February 20th. I was already up there with my 4m portable gear and mast, when John arrived with his 13cm system, plus a very shiny loop-yagi aerial (the loops were formed from chrome-plated key-rings!). With the loop yagi as high on the mast as the feeder would allow, and with 1 watt from the transmitter, our pictures and sound were both received very clearly by G1IXF and G4BVK. We were also able to receive pictures from Ivor.

The conditions that morning were so calm and mild that John and I were able to operate in the open for over an hour without needing coats or gloves: not bad for February!

Virtual P5

I hope that many of you have had a look at the latest material which Mike has added to our new Severnside Website, at **http://www.qsl.net/stg**.

If you have, you'll have noticed that the ***P5*** Newsletter is also published there electronically, in *portable document format (.pdf).*

Now that we have the technology, we like to know if any of you are interested in receiving your newsletters electronically, rather than as a posted photocopy?

This could be done either by sending the *.pdf* file by email, or by emailing a message that the latest newsletter has been published and may be downloaded from the Website.

Write and tell us if you think this would be a good idea: it would certainly save on photocopying and stamps (*not to mention saliva!)*

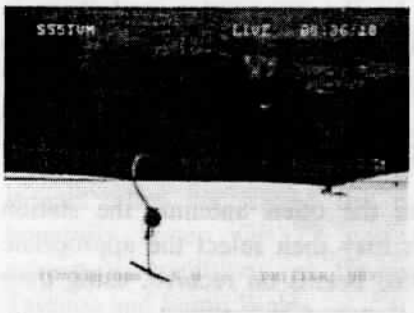
Room for improvement?

During the recent Committee meeting, we discussed possible improvements to our repeaters. One of the proposals was a very sophisticated hardware upgrade to GB3ZZ, *(so that it would be based on a Pentium PC, rather than a BBC Micro!).* This would offer the potential for a huge number of features to be added by software upgrades, and give us probably the most advanced repeater in the country.

As this would be a very expensive and time-consuming project, we decided to seek the views of our members as to what improvements they would like to see in our repeaters. When returning your membership subscriptions, please take a few moments to complete the questionnaire attached.

Examples of what is possible are demonstrated by our counterparts in Slovenia; have a look at:

http://lea.hamradio.si/~s51kq/ATVS.HTM



For example, from that page, the output of their **S55TVM** ATV repeater may be viewed. It looks like it's located at the top of a ski slope, and transmits a picture of its surroundings when not in use. Unfortunately, Filton is less photogenic!

On the other hand, there's no point in investing hundreds of pounds and hours in developing this sort of facility, if all we want to use the repeater for is relaying our pictures around the Severnside area. Perhaps we should look at the idea of inter-linking repeaters, or using cross-band inputs to extend their range. Let us have your views on this.

Down the garden path?

For those interested in predicting microwave propagation over particular paths, have a look at:

http://uhars.herts.ac.uk/~g8dju/pathplot/

This page contains free downloadable copies of the software suite developed by Andy G4JNT. It includes map co-ordinate conversions, distance and bearing calculations, path-loss predictions, and some nifty 3-D terrain displays.

Rally round

Following their very successful talks to clubs in the Cardiff area, Jim GW3PYX and Dave GW0ROL have been asked to put on a demonstration of ATV at the forthcoming Barry Radio Rally. They have *(bravely)* offered to do a live link with GB3XG, receiving pictures from the repeater, and showing them on a big screen in the hall. Obviously an inert test-card would not provide a very impressive demonstration, so Jim would appreciate it if any stations who are around on **Sunday 26th March** could put some pictures through the repeaters, and listen for talkback from the Barry direction. Relaying the ZZ output, and showing off some of its facilities, including the *Meteosat* pictures, text pages and VCR would provide a good demonstration, but some live shack pictures and interesting recordings would be invaluable too.

BATC Rally

STOP PRESS: This year's BATC Rally will be held at Bletchley Park *("Station X")* near Milton Keynes, on **Sunday 7th May**.

Material for P5

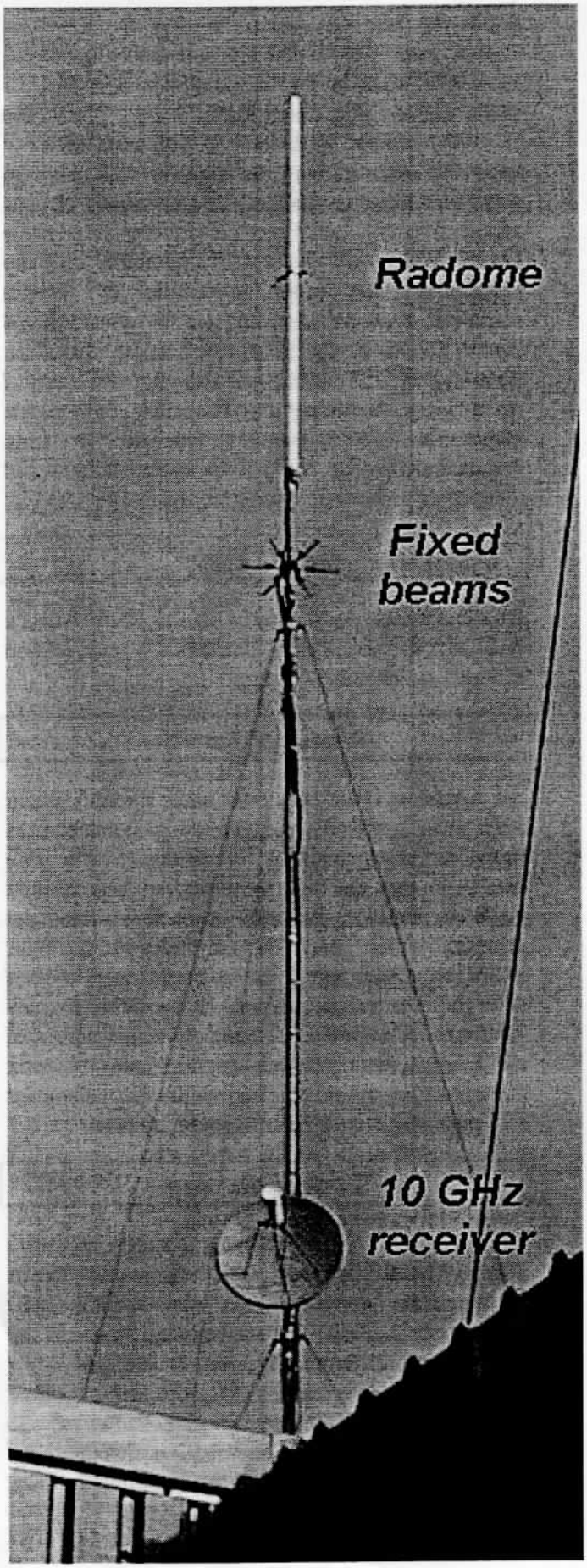
As regular readers may well have spotted, recent ***P5***'s have consisted exclusively of contributions from the same handfull of sources. The only reason for this has been the complete lack of input from anyone else! So once more, if you have any material which may be of interest to other Members, please send it in. It doesn't need to be of a highly technical nature: a review of new hardware or software, a report of recent activities, ATV equipment wanted or for sale, or even humorous or spoof articles would be welcomed. Get your quills or keyboards going, please.

Dish of the day

Phil Longhurst GW8BVI has a **1 metre steerable dish** with LNB support, which he would like to exchange for a smaller dish with 9 GHz LNB. Apparently Redrow Homes were not keen on the idea of a Jodrell Bank outstation in Caldicot!

If you're after a big dish, or can sort him out with a more compact 10 GHz receive system, Phil says he can collect or deliver in the Bristol or Gwent areas. Phil can be reached at: 2 Clos Rheidol, Caldicot, NP26 4JD. Tel/Fax 01291 431537.

GB3ZZ upgrade: a four-page special



After ten years' trouble-free service, the *GB3ZZ* antenna system has undergone considerable re-engineering this year, and is now working well.
For those of you who have never visited the site at Filton, this is what it looks like from the ground.

The Radome provides a weatherproof housing for the main antenna system, and not just a perch for the fat blackbird I've often seen up there! Laboratory measurements show that the white plastic tube has negligible loss at 1.3 GHz.
The omnidirectional *Alford slot* receive antenna is mounted right at the top, with the *G4BVK* low-noise preamplifier fitted directly below it. The preamp uses an *ATF101* GaAsFET to provide sub-1 dB noise figure and excellent strong-signal handling. The amplified RF is routed down to the receiver by an LDF4-50 *Heliax* cable.
A similar antenna is mounted at the bottom of the radome, for use by the transmitter, and there is sufficient spacing between the two antennas to achieve over 70 dB of isolation. The transmit feeder is LDF5-50, and has a loss of about 0.8 dB. It is routed up the centre of the hollow mast.

Once accessed on the omni antenna, the station using the repeater may then select the appropriate one of the six fixed beams on receive, using their DTMF keypad.
There is no masthead preamplifier on the fixed beams, but their gain and directivity often result in a clearer picture through the repeater, with less multipath distortion.
When the input signal drops, 'ZZ will default back to the omni antenna.
The transmitter always uses its omni antenna.

The dish points at *GB3XG*, and picks up its output signal at 10.065 GHz. An LNB mouted at the focus of this dish converts the signal to a 1 GHz IF, to feed down to the receiver below. Once accessed, DTMF control can select the output of this receiver, to be viewed on the 1316 MHz output.

A 1.5 GHz loop-yagi is mounted at the bottom of the mast *(not visible from the ground)* and is used to receive weather pictures from the *Meteosat* satellite in geosynchronous orbit. Again, these pictures may be viewed under DTMF control.

As well as the antennas, the guy wires and fixings have been refurbished, and *(we hope)* should be able to cope with another ten years' weather.

GB3ZZ Improvements

A report by our Chief Engineer, Ian G6TVJ

For a year or so, there has been an ongoing project to refurbish the antennas at GB3ZZ. The project began in the summer of 1999, and was finally finished *(fingers crossed!)* on Saturday 5th February 2000.

As reported in previous ***P5***s, the antenna system of ZZ has been completely replaced. This has consisted of fitting a new mount and radome assembly, which contains two new antennas and a new 24cm pre-amplifier, kindly supplied by Ken G4BVK. Inevitably there have been a few teething problems along the way. One such problem was a number of disappointing signal reports from distant stations just after the installation; This was puzzling as the brand-new transmit antenna should have provided improved results. Tests on a similar antenna revealed that the radiation pattern was in fact skewed upwards from the horizon. A modified antenna was fitted on February 5th, which now produces the correct radiation pattern.

Signal reports for GB3ZZ have now improved from all directions, GB3ZZ should be at least as good as it was when we started the refurbishment and hopefully better. GB3ZZ can now be copied, subject to conditions, as far away as Swindon, Taunton and South Wales.

A second improvement has also been effected with GB3ZZ. Checks on the transmitted deviation revealed that the repeater was operating well within the limits laid down by the RSGB. With the help of Nigel G7JZP the transmitted deviation has been checked accurately and increased to close to the specification laid down by the RSGB.

GB3ZZ now looks set to continue well into the new millennium. The serviceability of the antennas has now been improved so that any future faults or modification can be dealt with swiftly. It is designed to dismantle easily, to aid inspections, and Ivor G1IXF has replaced all the old metalwork with corrosion-resistant stainless steel items.

In the summer of 1999, tests revealed a reduction in the RF output from the power amplifier. It is hoped in the not too distant future to replace the PA with a new higher output item – watch this space.

Special thanks goes to the following guys for their assistance in replacing the antennas-
Ross G0WJR, Ivor G1IXF, Ken G4BVK, Nigel G7JZP, Mathew G0ECM and Phil G1HIA.

Hesitation, repetition or deviation?

G6TVJ writes: "The repeater specification recommends a transmitted deviation of +/-3.5 MHz. A better way to quote this is in MHz/V i.e. the deviation developed by a 1V peak-to-peak video signal: in this case the figure is 7 MHz/V. The repeater's deviation was tested by modulating the transmitter with a 1V square-wave and measuring the results on a spectrum analyzer. A 1 Vp-p 10 kHz signal produces a display containing two peaks separated by the deviation at that frequency. Since 10 kHz is at the bottom of the transmitter pre-emphasis curve characteristic, the deviation can be calculated accurately. The advantage of this method is that a simple 1V 75R signal is put on at the repeater and the results may be monitored remotely in the comfort of one's own shack.

Calculating deviation can get complicated, but if the *CCIR 405* pre-emphasis spec. is followed, at low frequencies the loss of this network is defined at 11 dB. This means any transmitter will be under deviated at 10 kHz by 11 dB, so if you want 7 MHz/V at 0 dB then at 10 kHz, the deviation will be 1.97 MHz/V (-11 dB).

GB3ZZ has been adjusted to produce a deviation of about 1.9 MHz/V (measured at 10 kHz): this corresponds to a deviation of 6.7 MHz /V with a video signal. The increase in deviation was about 40%, which should result in an improvement in your received signal-to-noise ratio (SNR) of several dB. Improving the SNR means a better picture (maybe an increase of several P-grades).

Another method which may be used to set the deviation of a transmitter is by examining the spectrum created by sine-wave modulation (instead of the normal video signal). The carrier component of an FM signal disappears during particular modulating conditions; this effect can be used to indicate a particular deviation condition. At a modulation index of 2.4 the carrier amplitude is zero; this occurs when the deviation signal is 7.2 MHz and the modulating signal is 1.5 MHz. At 1.5 MHz, the loss of the pre-emphasis network is zero and so the ratio between the deviation and the signal input to the transmitter is determined and the transmitter deviation set up accordingly."

GB3ZZ DTMF Keypad Codes

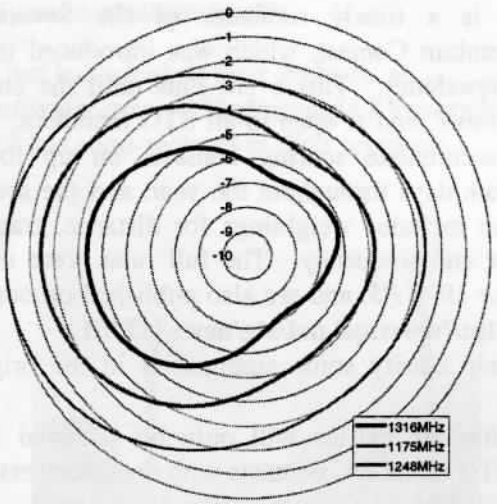
Antenna Selection	**00**	Select Antenna 0 (N)
	01	Select Antenna 1 (NE)
	02	Select Antenna 2 (SE)
	03	Select Antenna 3 (S)
	04	Select Antenna 4 (SW)
	05	Select Antenna 5 (NW)
	06	Omnidirectional Antenna
	07	Omnidirectional Antenna
	08	Omnidirectional Antenna
	09	Omnidirectional Antenna
Text information	**10**	Main text index
	11	STG information
	12	GB3ZZ special features
	13	DTMF instructions
	14	DTMF valid commands
	15	GB3ZZ transmitter info
	16	GB3ZZ receiver info
	17	GB3ZZ controller info
	18	Antenna selection info
	19	Future developments
VCR Help	**20**	VCR functions index
	21	VCR STOP instructions
	22	VCR PLAY instructions
	23	VCR REWIND instructions
	24	VCR FAST FWD instructions
	25	VCR RECORD instructions
	26	VCR PAUSE instructions
	27	VCR STILL instructions
	28	VCR overview
	29	VCR hints and tips
Club information	**30**	STG Club index
	31	P5 Newsletter
	32	BATC information
	33	Bristol RSGB group info
	34	ATV contest info
	35	Obtaining keypads
	36	GB3ZZ firmware notes
	37	Weather satellite info
Remotely Updated pages	**38**	Updateable events & news
	39	Updateable events & news
	40	Updateable events & news
	41	Updateable events & news
	42	Updateable events & news
	43	Updateable events & news
	44	Updateable events & news
	45	Updateable events & news
	46	Updateable events & news
	47	Updateable events & news
	48	Updateable events & news
	49	Updateable events & news

Repeater Linking	**50**	Reserved for GB3XG
	51	Reserved for GB3XG
	52	Reserved for GB3XG
	53	Reserved for GB3XG
	54	Reserved for GB3XG
	55	Reserved for GB3XG
	56	Reserved for GB3XG
	57	Reserved for GB3XG
	58	Reserved for GB3XG
	59	Reserved for GB3XG
Weather Satellite	**60**	Show Weather Satellite image
	61	Weather Sat channel 1
	62	Weather Sat channel 2
	63	Reserved - Weather Sat control
	64	Reserved - Weather Sat control
	65	Reserved - Weather Sat control
	66	Reserved - Weather Sat control
	67	Reserved - Weather Sat control
	68	Reserved - Weather Sat control
	69	Reserved - Weather Sat control
VCR Controls	**70**	VCR STOP control
	71	VCR PLAY control
	72	VCR REWIND control
	73	VCR FAST FWD control
	74	VCR – reserved
	75	VCR RECORD control
	76	VCR – reserved
	77	VCR PAUSE control
	78	VCR – reserved
	79	VCR STILL (Freeze) control
Diagnostics	**80**	Signal strength report
	81	Repeater status report
	82	Repeater identify
	83	Repeater callsign caption
	84	Recall last caption
	85	Signal diagnostics
	86	Experimental signal links
	87	Experimental signal links
	88	Experimental signal links
	89	Experimental signal links
Networking	**90**	Cancel all repeater links
	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
Special	**96**	Reserved
	97	Reserved
	98	Reserved
	99	Cancel special functions

The GB3ZZ Alford slot antenna revisited

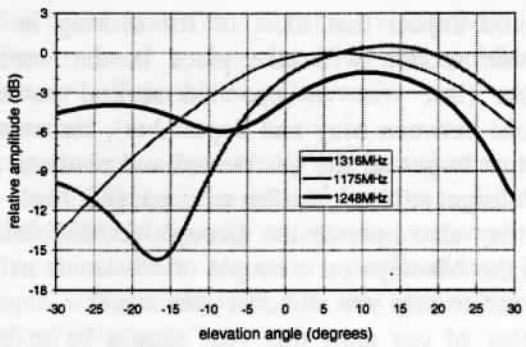
During the course of refurbishing the GB3ZZ repeater last year, the entire masthead unit was replaced, as detailed in previous issues of ***P5.*** Unfortunately, the replacement had some problems, and it did not even perform as well as its predecessor! Receive performance was then improved by replacing the masthead preamplifier and swapping the new receive slot antenna for a refurbished older one. This allowed the first antenna to be measured in the anechoic chamber. Initial measurements in the test range showed that the antenna's frequency response seemed to peak well below the Amateur band!

New Alford slot polar patterns



This was due to the main lobe being tilted upward from the horizontal, so most of the transmit power was actually being radiated skyward!

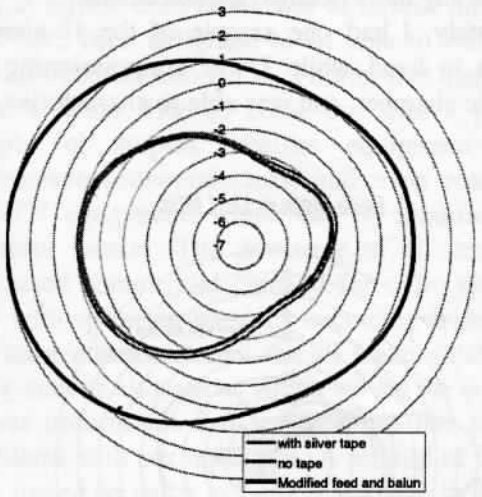
New Alford slot elevation patterns



There was some concern that the silver tape stuck over the front of the slot was causing this detuning effect, but once it was removed, the real problem became evident: the feed-point was well off-centre in the slot, perhaps due to a manufacturing error.

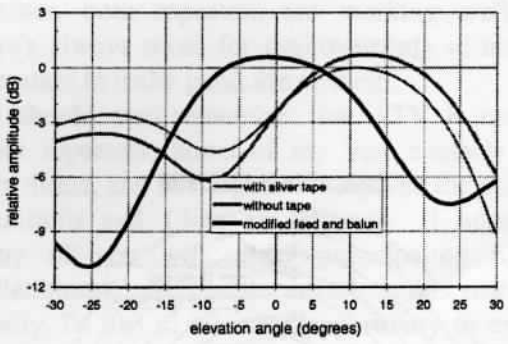
With the feed extended and re-fitted in the centre of the slot, a much better response was obtained.

New Alford slot polar patterns at 1315MHz



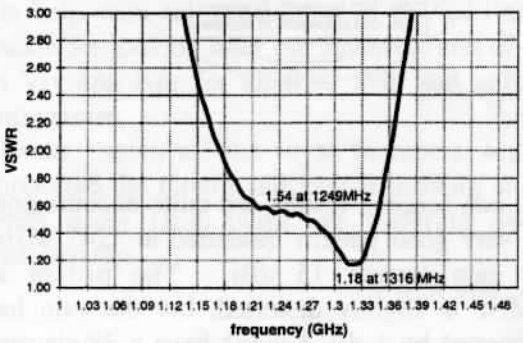
The effective gain has increased by about 3 dB, since the radiation is coming out horizontally now.

Elevation patterns of new Alford slot at 1315MHz



The only remaining problem was the VSWR, but further modifications to the balun slot on the feed line allowed it to be optimised for the 'ZZ output frequency.

VSWR of modified Alford slot



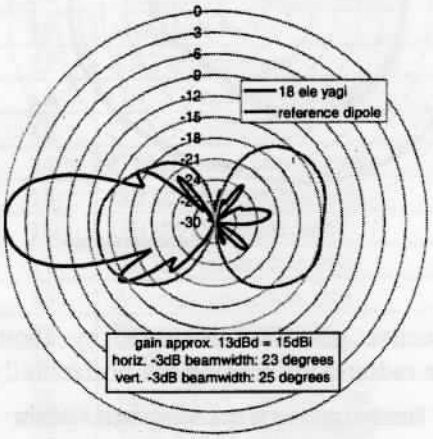
My thanks to the Centre for Communications Research, University of Bristol for the use of their test facilities.

G0WJR December 1999

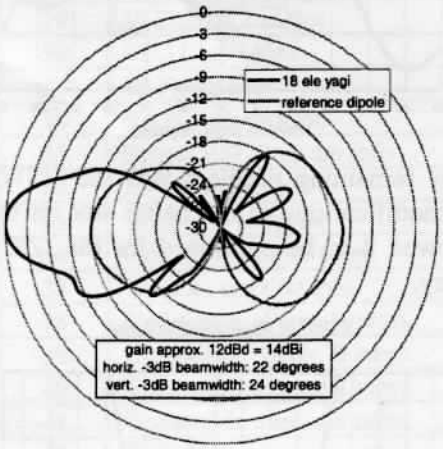
STG Yagi measurements

We recently received an enquiry from a potential customer about the characteristics of our Yagi antennas. Other than the gain figures quoted in our adverts for many years, I was unable to find in the archives any more detailed measurements.
Fortunately, I had one sample of the 18-element antenna to hand while I was commissioning the anechoic chamber, and was able to characterise it.

Polar plots at 1247 MHz

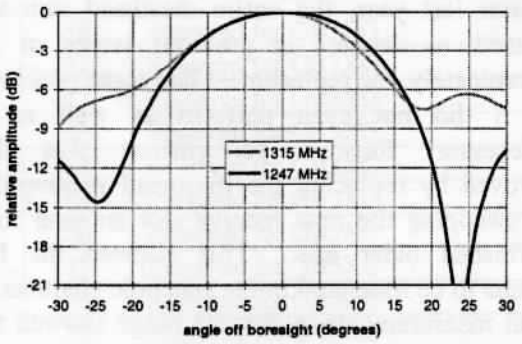


Polar plots at 1315 MHz



As you can see, the results are quite encouraging, with a very good pattern measured at 1247 MHz, and a gain around 15 dBi. The pattern at 1315 MHz is slightly distorted, but the gain has only dropped by 1 dB. I didn't have a 38-element aerial available for measurement, but we may assume that with double the boom length, the gain will be around 3 dB higher, with correspondingly narrower beamwidth.

Elevation plots of 18 ele yagi



Millennium contest

Here is a timely reminder of the Severnside Millennium Contest, which was introduced in the last newsletter. This event runs until the end of November, and is open to all STG members. You can accumulate scoring contacts on up to ten separate days throughout the year, and the scoring system includes weightings for distance, transmit power and frequency. The full rules were in the Winter 1999 ***P5***, and are also published on our site at: **http://www.qsl.net/stg/news.HTML**
To help clarify some ambiguities in the original rules:

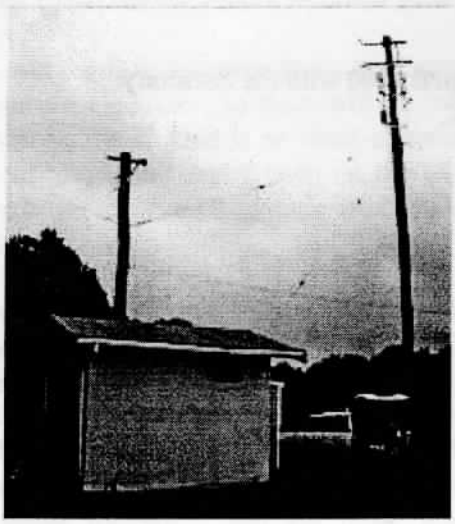
- although entries will only be accepted from STG members, contacts with non-members will still count for points
- points are claimed by the transmitting station, once their pictures have been correctly identified on the talkback link; two-way exchange of pictures is not necessary.
- portable stations may use a different site for each session, if desired.

I would expect that most of the scoring in the portable section will take place in the warmer months (last year we operated several portable stations between May and September), but now is the time to get all the gear tested and ready to go. Don't forget to check the 2m talkback gear too!
We may also operate the Group's contest station from the Mendips on a couple of weekends in the summer, to help you all boost your scores.
Another of our aims this year should be to beat 100 km on 10 GHz. Last year, distances of almost 70km were worked on a couple of occasions, so it's just a case of finding a pair of suitable sites. Does anyone fancy an expedition to North Devon, or Dorset, perhaps?

News from around the World

Just before Christmas, I had an email from Michael Sheffield ZL1ABS in Auckland, New Zealand, describing recent ATV activities Down Under.
At their November meeting, rain prevented any aerial work, so they had a look at a new DVD player with five-channel Dolby sound AC3 decoder built in. This was compared with Sony ¾-inch U-Matic tape machines, but they didn't say which they preferred. It sounds like they were too distracted by the nostalgia of reviewing ten-year old recordings on the U-Matic machines!
They have developed their own design of 23cm synthesized FM-ATV TX with stereo sound, which is felt to be on a par with the best designs available from the USA & UK, with the bonus that all the parts can be obtained locally.

I've just had a look at their Website, at:
http://www.qsl.net/zl1qf/atvug/ATVusers.html
which has some pictures of their repeaters.



I also heard from Gene Harlan - WB9MMM, who offers to send a free issue of his publication ***Amateur Television Quarterly*** to anyone interested.
"To get a free sample of ATVQ, just send an email to *ATVQ@hampubs.com* - Attn: Gene - WB9MMM. Make sure to include your snail mail address, as these are paper publications. Your sample will go out with the next issue (the first week of February)."

As we go to press, I hear that the 13 cm allocation 2.302 to 2.400 GHz has been withdrawn in Australia. Let's hope it doesn't happen here!

Final final

As this will be my last ***P5*** as Chairman, I hope you'll forgive me the indulgence of a few personal comments.
Over the last year, I have enjoyed meeting many of you at rallies, club talks, and of course on the air, and have been delighted to be able to welcome a few newcomers into ATV. I doubt that there's ever been a better time to come on, with a plentiful supply of surplus satellite equipment, cheap microwave semiconductors, and even ready-built FM-TV equipment, which can be modified from adjacent bands. The downside of all this is the increased commercial demand for radio spectrum, and with spectrum auctions becoming widespread, we must make sure that we all make good use of the generous allocations which we get for our £15.
It was unfortunate that last year we had so many problems with our repeaters. A rebuild of GB3XG was forced on us by yet another change in the band allocation, and after ten years, GB3ZZ was overdue for refurbishment. These major rebuilds are seldom easy, but we did suffer some unexpected problems with the performance of the new aerials. After a lot more hard work, much of it in inclement weather, both repeaters are working well (but there's always room for improvement) so now it's important to make good use of them.
We should also remember that ATV is not just about repeaters: some of my best contacts have been direct, and I've especially enjoyed the portable operations and 13cm experiments. I hope that many of you will enjoy participating in our Millennium Contest activity sessions this year.
Finally, I'd like to take this opportunity to express my sincere thanks to all those who have helped me during my year as Chairman, and especially to Ian, Nigel, Brian and Jim for their help with the repeater systems, to Mike for running the aerial sales, and setting up the new Website, to Paul for maintaining the membership records, to Frank for his help with the production of ***P5***, to Dave and Jackie for looking after our finances, and of course to Viv and Ivor for all their help and unflagging enthusiasm.
Thanks too to all the loyal Members who have supported the Group and kept it thriving at a time when many radio clubs are suffering declining membership.

G0WJR March 2000

A.G.M & SUBSCRIPTIONS

SUBSCRIPTIONS NOW DUE

This issue contains your subscription renewal form. We hope you will continue to support the group by renewing your membership. Please make your cheques payable to "*SEVERNSIDE TELEVISION GROUP*".

NOTICE of ANNUAL GENERAL MEETING

Formal notice is hereby given of the Annual General Meeting of the Severnside Television Group. This will take place on **Tuesday 11th April 2000 at 7.30 pm**, Elm Park Parish Pavilion, Elm Park, Filton, Bristol.

All members are asked to attend the meeting. Guests and non-members are welcome, but will not be able to participate in the voting.

AGM NOMINATIONS

Nominations are now invited for the following posts:
Chairman, Chief Engineer & Vice Chairman, Secretary, Treasurer
and up to five committee members.
All nominations must be deposited in writing **no later than 4th April 2000** with the Secretary:
Mike Stevens G7GTN, 13 Downs Rd, Westbury, Bristol. BS9 3TX.

A suitable nomination form is included opposite.

RESOLUTIONS

Members wishing to propose Resolutions at the AGM must submit them in writing to the Secretary no later than 4th April 2000. Each resolution must be proposed and seconded by two fully paid-up members of the Group, who should be prepared to address the AGM when the resolution is discussed. Members should note that whilst there will be an opportunity to discuss minor matters under "Any Other Business" at the AGM, constitutional or major matters must be submitted in advance as a formal resolution.

CURRENT COMMITTEE

For your information, the current committee is listed below:-

Chairman	Ross Wilkinson G0WJR
Chief Engineer and Vice Chairman	Ian Bennett. G6TVJ
Secretary	Mike Stevens G7GTN
Treasurer	Jacqueline Thorne
Committee Member	Jim Checuti GW3PYX
Committee Member	Matthew Bell. G0ECM
Committee Member	Dave Brown GW0ROL
Committee Member	Brian Kelly GW6BWX
Committee Member	Ivor Green. G1IXF