



THE BRISTOL 70cms REPEATER GROUP

GB3BS NEWSLETTER 2012

RU68 - 430.850MHz - TONE J: 118.8Hz

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Welcome to this the 2012 newsletter. I cannot believe it has been twelve months since we last wrote a newsletter. We hope you find this newsletter informative.

A fair old bit has taken place over the year: Things such as software upgrades, operational changes, an electrical problem, alarm monitor interfacing issues plus unexpected generator runs; oh the list goes on. These items will be covered in the Technical report.

Membership has been up and down a bit this year. However, the trend is upwards albeit rather slowly. Some of the membership losses are simply people forgetting to renew. A couple have withdrawn their support as protest at the operating standards used on the repeater, comparing them to CB Radio (their words, not ours). Other reasons are simply unknown to us.

If you would like to check your membership status, then this can be done via the membership section on our website, or via email and of course by asking Mark or I to check for you. If you would like to append your call sign or change your address, please email us these changes so our records can be updated thus ensuring you continue to receive our newsletters etc.

A big thank you to those who continue to support GB3BS, welcome to new members and thank you to those who have made donations to the group. Without this support GB3BS would not be able to operate.

We are both pleased and happy to know the repeater is being used so much, with activity logs showing on average some 6hrs a day (this unfortunately also includes blip times – more on that later!).

Now the serious bit about using the repeater. I, unfortunately, have to put on my “Repeater Policeman” hat! Firstly the repeater is NOT the place to sound off or have a rant; there are far better places and mediums out there if you really want to express your more extreme views in public.

Secondly, please remember we have young foundation licence holders out there that want to pick up the microphone, talk and enjoy the hobby. We should all make an effort to talk with them, welcome them and support them. It’s a hobby for all so let’s try and make it a hobby for all.

It should also be remembered that there are many “shortwave listeners” monitoring GB3BS; both young and old and that some of these are in a school environment.

Finally, please remember, if you do experience any form of repeater abuse, such as the station with the Welsh accent who does not have a call sign, repeatedly seeks signal reports and likes to swear, or the station that makes stupid frog noises, (but we, along with most people now know **HIS** identity & callsign!), it is best just too completely ignore them. Commenting or acknowledging them gives the offender the attention they so desperately seem to desire.

Anyway let me hand over to Mark.

73' Mat – G7FBD

Technical Report

Well here we are again; the past 12 months seem to of flashed by. Over those 12 months we have been quite busy working on the repeater's hardware & software. We have also had a few issues to deal with such as interfacing alarms into the repeater controller, a site electrical fault and a bit of general site maintenance.

New Firmware.

Early in February this year we upgraded the repeaters firmware to a new version. This was a full release version. Up until that time we had been running the repeater on various releases of "Beta" software as released by Arcom Controllers. Being beta versions it was not unusual to have the odd system crash, or that the repeater did not behave as it should. Some of these crashes were more severe than others!

The good news was that the full release version of software finally put an end to the system crashes and odd behaviour. In short, the repeater became much more stable and reliable. We have had an odd time when the repeater did reboot itself, (which it is designed to do if there is a problem) but with the new software it can usually reboot and recover itself without any intervention by us.

Arcom Controllers who make the repeater controller, are still producing and releasing new software versions with new features and controls. However, most of the functions that these new versions bring are either not applicable to repeater use or that they cannot be implemented here in the UK due to our draconian rules.

So, until such time there is a new version released which brings a real benefit to the GB3BS repeater, then we will not install new versions just for the sake of it. System integrity and reliability is important to us and we do all we can to keep it so.

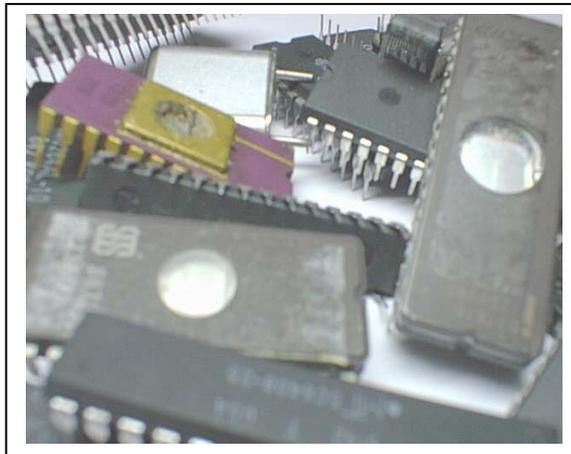
Alarm Interfacing Issues.

As most of our members will know, the repeater site has its own auto-starting standby generator. This will auto start should there be an incoming mains supply failure and keep the repeater on air. The changeover between normal mains and the generator supply operates seamlessly.

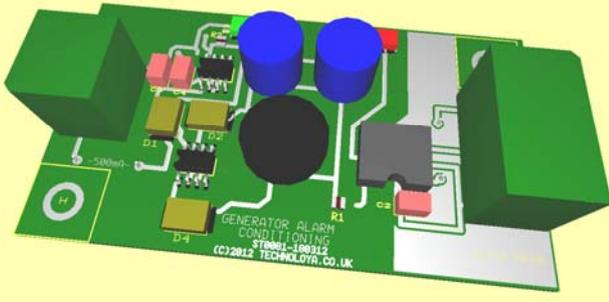
Earlier this year we had a situation where one of our temperature probes which monitor the room temperature was giving markedly high readings for the time of year (February/March). Upon attending site we found that the generator had been running as the engine was still rather warm. Investigations found that the generator had been running for some 17 hours and had only just stopped and hour or so before we attended site.

Apparently this was due to some overhead power line work being carried out by the local electricity board. It was a planned power outage but for some reason we were not informed prior to the work starting! It was after this that we decided that installing a generator running alarm was prudent as we would then know if any generator runs were active and for how long.

Fortunately the Arcom repeater controller has alarm inputs and control line outputs available as standard. However, all these inputs and outputs are not "buffered", in that they are connected directly to the main microprocessor. In order to protect the CPU, all inputs and outputs pass through our Logic Interface unit, this provides buffering, thus protecting the CPU from any undue voltages that may harm it.



Computer representation of the opto-interface board ©



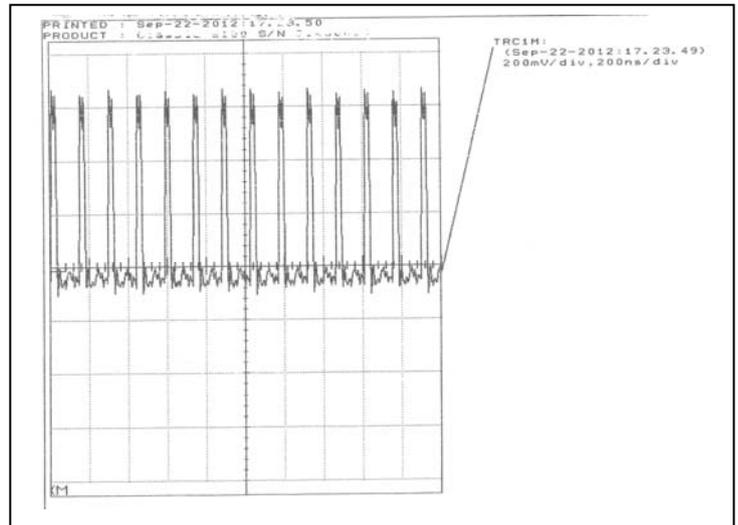
The generator control panel did have a relay that operated only when the generator was actually running but a problem soon became evident that the contacts of this relay would “bounce” as the generator ran up to speed. This would cause the alarm announcement to repeatedly indicate an active state followed by a clear state.

Mat came up with a small and simple opto-isolated trigger circuit that would ignore all these bounces and provide a clean and reliable switch that would operate the alarm. This was installed and tested; all appeared to be ok but there were still odd & unexplained double voice announcements being heard on the repeater.

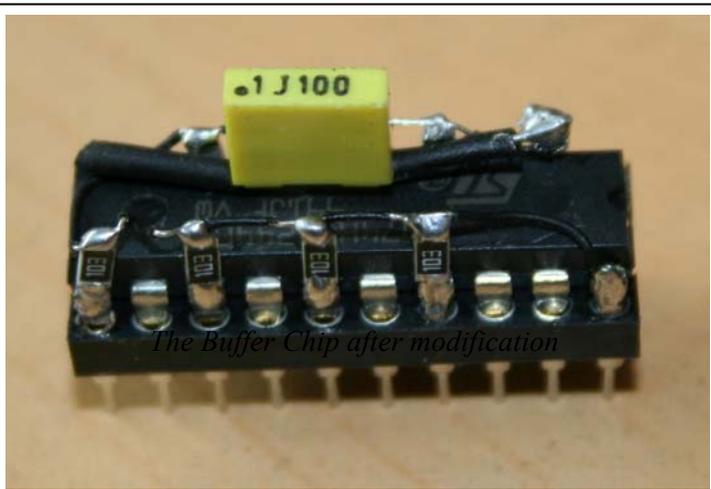
Following several trips to site and the need to take the repeater out of service while we investigated the cause of these false triggers we had a breakthrough. The IC which we were using to buffer both input and output lines of the CPU was found to be “self oscillating”, in fact this oscillation was measured at almost 5MHz.

This digital 5MHz noise was even getting onto the power supply rails that fed the logic interface board. Looking at it with a digital scope showed up the full extent of the problem and how widespread the digital noise was. The problem was not with the circuit design itself but that there was an oversight by us in that the IC used for buffering had a mixture of unused input and output gates!

Apparently it is good practice to tie, or park, these unused gates either to a logic high or low state. It was these gates which were oscillating uncontrollably and causing the generator alarm to false trigger.



Mat carried out a modification to the buffer IC by fitting some resistors to the unused gates, pulling them all to Vcc. This has successfully stopped the oscillations completely in its tracks.



So far this appears to of finally fixed the problem, fingers crossed! We will ensure that this modification is implemented on our new Mk2 Interface board which is currently still in its design stage.

This brings me on to explain what happens, regarding the repeaters operation and announcements, when the site generator starts up, is running and when it shuts down.

Generator start up

The repeater, whether in use or not, will announce by saying ***“Warning, power failure alert active, the time is HH:MM”***

Generator running.

While the generator is running and the repeater is in use, then the two normal “pips” will be sent at a lower audio frequency. The closedown tones will also be inverted (low then high).

Also, whether the repeater is in use or not, the repeater will send the voice announcement ***“Power failure”*** every 20 minutes. The repeater itself can be used and operated normally.

Generator shuts down.

The repeater, whether in use or not will announce by saying ***“Power failure alert clear, the time is HH:MM”***.

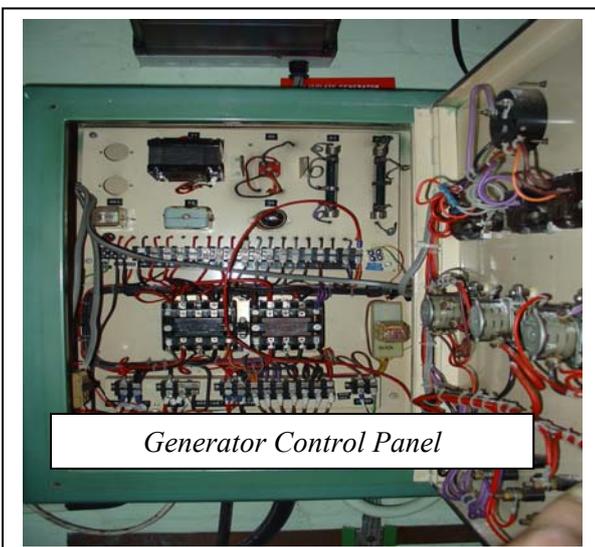
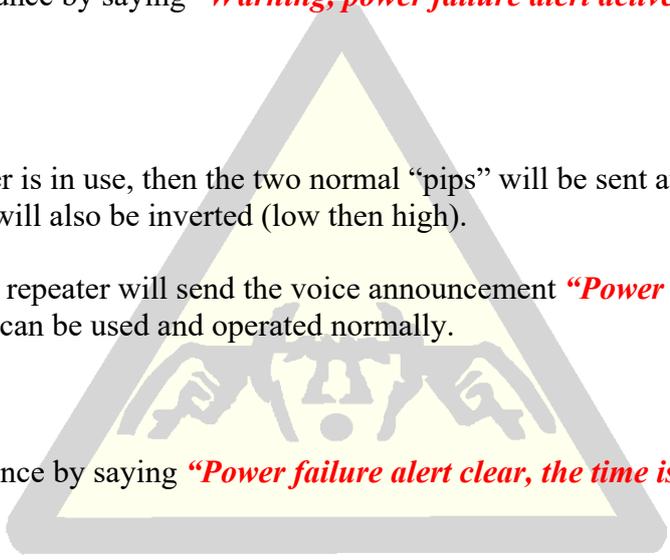
The repeater will return to its normal state and tones, no further announcements will be made.

Generator.

The generator is working well and has provided a reliable backup during the few times we have had a power outage. It was serviced last year and apart from a monthly test run when we are on site it’s a useful asset to the site.

When we took on the site, the generator was fitted with a pair of large 12volt lead acid batteries. These are used to start the generator and are on a constant float charge. We do not know how long they have been in service but they appear to be in really good condition and only require a check from time to time that the acid level in each cell is ok, (I am so glad I didn’t throw my old hydrometer away)!

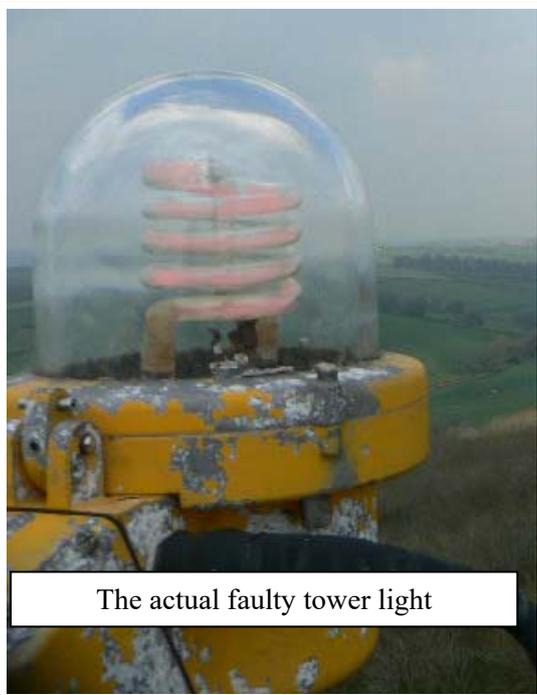
In the future we are looking to maybe give the generator a bit of a makeover by way of a new paint job, once some of the rust and oil has been cleaned off. The control panel itself and the wiring is showing its age but continues to operate faultlessly. We have managed to obtain service handbooks for the diesel engine but so far we have not been able to get hold of the control panel’s circuit diagram.



Generator Control Panel



Battery charger and control panel



Tower Light Failure.

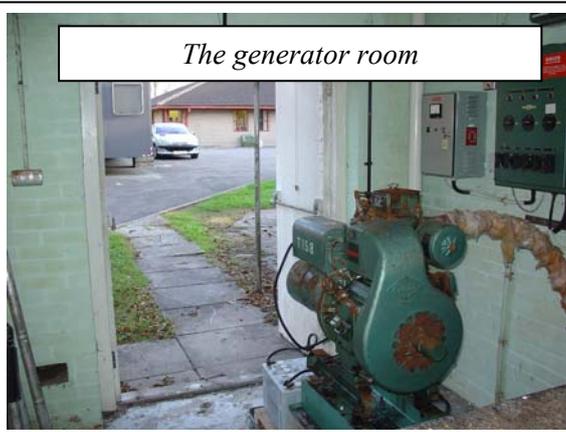
During late July we had several occurrences of the on site generator running following the main circuit breaker tripping out indicating an electrical fault. Following repeated site visits to reset the circuit breaker we found that these occurrences were happening at around the same time each evening.

The problem turned out to be with the tower warning light, which is controlled by a dawn to dusk light sensor. Every time it got dark enough for the tower light to come on then the main circuit breaker would trip out causing the generator to start up.

Following a Saturday afternoons site visit and some standard mains insulation testing we found that there is a breakdown of the insulation between the 240V live and earth of the light assembly at the top of the tower.

This 240V circuit has now been isolated at the fuse board and was reported to the site owner, who in turn have notified Bristol Airport and the CAA. As you can appreciate we are not responsible for the tower light so repairs are out of our control.

We are aware that our findings as to the fault were confirmed by the site owner and they are currently arranging for this to be fixed. There is no information as to lead times to repair, or if the tower owners will actually instigate a repair. We will keep you posted.



Site Maintenance.

During the past year we have undertaken a small amount of building maintenance work. We had planned to refurbish the generator room and bring it up to the same standard as the main comms room where the repeater equipment is located.

Unfortunately this work has taken a bit of a back seat due to work commitments, available personal time and the need to finish off tasks outstanding to the main comms room and the repeater upkeep itself.

However, we have got the generator room into a reasonable condition but does still require the walls and ceiling to be cleaned, primed and then painted along with the floor given a coat or two of sealing resin.

We anticipate that this work will start when the weather gets a bit warmer in the spring of 2013. During one recent site visit we did a bit of tree pruning, clearing of tree debris from the flat roof and keeping the rain water soak a ways clear.

We have noticed that one of the side doors weather board is probably going to need replacing at some stage as its not been painted for many years and has succumbed to the elements. Although not overly important, it does help stop rain water ingress into the generator room when it's raining heavily and blowing a gale!

Membership.

As Mat has already mentioned, membership has fluctuated around the low 50's mark, this is pretty much unchanged since this time last year. There have been a few that have, unexpectedly and for whatever reason, dropped off the list. Donations are generally down this year although there has been support from people who do not regularly operate through GB3BS or who are just listeners.

Overall membership levels are increasing, albeit very slowly. We had expected that levels would have increased a bit further since moving the repeater to the new Lansdown site as coverage has dramatically increased. But it seems that the perceptions are, for some, that the repeater is not my local repeater so I don't need to support it!

Certainly with the current membership levels as they are and the donations received we are holding our own and are just seeing a little bit of money replenishing our depleted bank account. Changes have been made regarding the site insurance policy since the demise of Bluefin from the Amateur Radio arena.

Please check your membership status at the bottom of page 9. If you are not listed then this could be the last newsletter you receive from us.

We hope that membership and interest in the group will continue to grow. To everyone out there who does supported us, our sincere thanks, it is very much appreciated.

Repeater Abuse.

I now move onto a subject that everyone will have a differing view about and concerns repeater abuse. At the start of this newsletter Mat touched on this topic so I was initially reluctant to expand on the matter any further.

However, listening to the repeater confirms that there are stations (both licensed and un-licensed) out there who seek to impose disruption on the repeater and to stations using it. By disruption I mean such things as continually accessing the repeater without giving any call sign, playing of music, playing of computer generated type noises, verbal insults and deliberate jamming, the list could go on!

Obviously unlicensed stations that persist with this disruption have, on the face of it, nothing really to lose. But to those who do hold a licence I find it bizarre as to why they want to do it and put their own licence at jeopardy! Repeaters give them an instant audience. Anything to get attention I guess!

We have no issue with stations testing their equipment or rig settings etc on the repeater, but please do remember to give a callsign and indicate that you are carrying out tests.

But the news is not always bad. I have received several emails and had face to face conversations with people that have mentioned potential sources of repeater abuse heard on GB3BS and on other local repeaters. I have also recently been made aware that Ofcom are now taking reports of such disruption much more seriously than they have in the past and are actively tasking more staff to investigate. Let's hope so!

As part of holding a NoV for the repeater I am obliged to monitor (from time to time) the repeater for such "abuse" and if it persists I must officially report it. Obviously this would be for cases of blatant and repeated abuse. If you hear anyone deliberately causing disruption or are suspicious of a station and its validity then do not give them an audience, ignore them.

Finally, and to bring this topic to a close, persistent cases of repeater abuse will be logged and where possible recorded then passed to Ofcom, even if it's just to protect ourselves as a repeater group and its users.

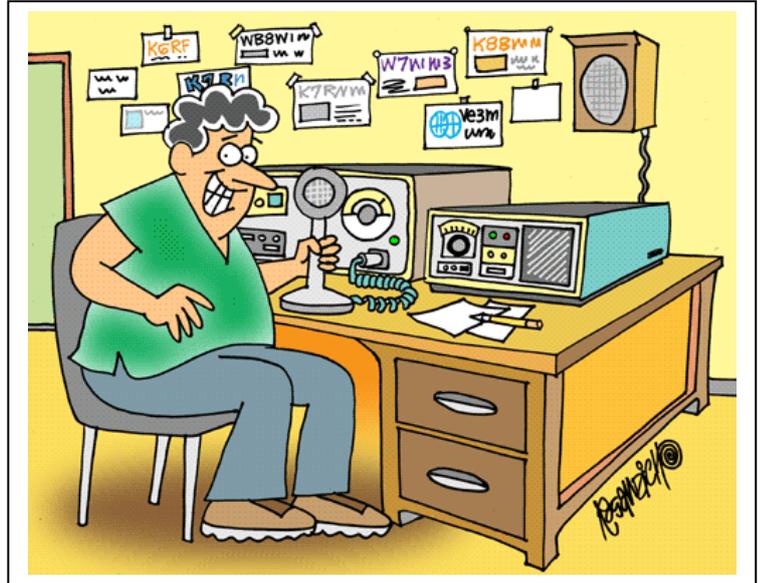
Repeater Activity.

Generally activity on the repeater has certainly grown, which is always good news. Mobiles and portable stations alike over a wide area have been heard calling through and making use of the repeater. This has certainly gone to prove that our prediction maps are a fair representation of our workable foot print

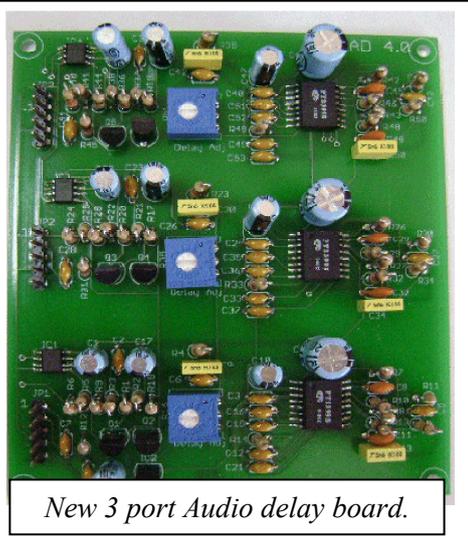
North Bristol ARC were given the go-ahead to use GB3BS on a Sunday morning to aid their Sunday net.

This allows both low power operators and those who live further away to take part in the club net. Priority still remains with Mobile stations and a first come first served basis MUST be adhered to.

North Bristol ARC welcome any station (member or not of NBARC) to participate in the net starting at 11:00 on a Sunday and goes on for approximately an hour.



Hardware.



The repeaters hardware continues to perform well and is proving to be extremely reliable. We now have a full set of spares should anything develop a fault. As all the units are modular they can be swapped out very quickly and do not require any setting up or tuning on site. They are always ready to go!

While on the subject of modules, we recently swapped over to our spare RC210 Arcom repeater controller. This is the first time that this unit has been run on a live system. The only difference with this controller is that Arcom have made a few changes to the digital delay board design and improvements to the internal grounding system on the controller PCB itself. This new design seems to give slightly better performance in that it has a nice flat audio response with zero gain and that the digital distortion figure is a bit lower.

Using this new board has further reduced the repeaters overall system distortion figure from around 7% to less than 4%, which is quite a remarkably low figure for an analogue repeater system.

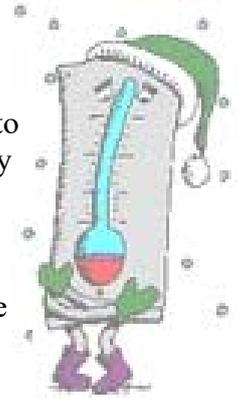
Tone Access.

Several people have raised the matter regarding 1750Hz Tone Burst access and do we plan to turn this off? At this time we have no plans to turn it off. As one of the "older repeaters" we are allowed to continue with this option. We did carry out a poll on our Facebook page asking how people access the repeater. Although the response was low, the overwhelming majority use CTCSS.

There are a few advantages to moving to a CTCSS only system. One being that only a valid signal with CTCSS would open the repeaters squelch system for initial access and during all QSO's. This would have the effect of stopping any miscellaneous noise that keep the squelch open such as rain static that sometimes occurs on site. Our logs do show that very few stations use 1750Hz so maybe it is something to trial at some point in the future. If you have opinions on this subject then feel free to let us know.

Site Environment.

Despite the comms room going through some wide temperature ranges, which were recorded as 4deg C in winter to 32 deg C at the height of summer, there does not appear to of been any changes to performance. Diplexer losses were checked to see if there was any form of detuning due to temperature differences when hot or cold. The good news is that none were observed and the diplexer is certainly thermally stable!



Fortunately if things do get a bit warm then there is a set of 6 cooling fans mounted in the top of the rack and will switch on when the room temp reaches around 27 deg C. This provides more than adequate air circulation around the equipment in the rack and within the room itself. The transmitter is, as standard, rated at 100% duty cycle without the need for any additional cooling, so the fans are not essential but they do help to keep air circulating in the summer time.

2.4 GHz Wi-Fi Link.

In last year's newsletter we mentioned our intention to get a 10 M/bit Ethernet link working between Mat's QTH and the repeater site. We have got all the equipment and it has already been field tested. Getting this circuit on site will be very useful and will open up other projects for the group.

Unfortunately due to a mixture of work commitments, personal time etc. we were unable to get the two panel antennas installed. However, after surveying Mat's QTH it was felt that access to the gable end of his roof to carry out the installation would be better via some scaffolding or portable type staging.

So, if there is anyone out there who might be able to suggest a cheap hire company or has something similar of their own and is willing to lend it out for this work, then I am sure Mat will be interested in hearing from you. Email: info@gb3bs.com

Email, Web pages, Facebook, Twitter & Skype.

Don't forget that we always welcome any reports, comments or news that you have and would like to pass on or share. We have email of course and you can also contact us via the web site using the on-line form.

Our web site (www.gb3bs.com) continues to grow and we do our best to keep it up-to-date with news and pictures. It is also a place where you can check your membership status and renew your membership. Our news section has all the latest updates of what has been going on and if there are any operational changes.



Since launching our Facebook page this has become quite popular and attracts a reasonable amount of activity. One of the good things about the groups Facebook page is that anyone can add things and are then instantly viewable by other group members. You can see at a glance what we have been doing on a day to day basis and keep track of any repeater outages or such things as planned maintenance. If you have not seen these pages then why not give it a go!

Earlier this year we created a Twitter account for the repeater group and its followers. We also use this medium to send out any important news such as the repeaters status, planned outages, condition of any faults and any on-going alarms.



We are trying to get some of these "Tweets" automated but we currently cannot find the best way to do this, but we are working on it! Of course anyone who is following us can send us Tweets and is yet another way to get in touch with us especially if you're on the move with a mobile device / platform. Links to both Facebook & Twitter pages can be found on our web site.



Don't forget, you can also get GB3BS on Skype (monitor only).
So you can dial in and monitor anywhere in the world (we have!).

Just do a Skype search for "Bristol Repeater", request to join and away you go. If it's engaged then keep trying!

And Finally.

Our thanks to everyone out there that have shown their support towards GB3BS.

Mat and I both put in a lot of enjoyable time and effort keeping the repeater going and responding as quickly as we possibly can to any problems that may occur.

You can of course help by letting us know if and when faults occur on GB3BS. We much prefer multiple reports of a problem than none at all. We are both not always around or monitoring the repeater and work commitments sometimes takes us out of the area. So, the sooner we know about a problem then the quicker we can resolve it. Fortunately we do have remote access to the repeater so that some problems can be remotely sorted, or at worst the repeater can be shut down until one of us can attend site to wield the hammer!

73' for now, we hope you have enjoyed reading our newsletter and wish everyone a very Happy Christmas and New Year.

Mark – G4SDR.

STOP PRESS

Sunday 17th November 2012

A site visit today to conduct a generator load test lead to an interesting set of events. On arrival at site we found the area around the base of the mast coned off. Working on the mast were subcontractors hired by Avon Fire and Rescue to carry out a tower inspection.

Speaking to the contractors they confirmed the tower light was beyond repair and was to be replaced once a climb certificated electrician was available. They also explained what exactly the inspection involved. As you can see from the picture all structural aspects were inspected including the base of the legs. The picture shows the shuttering enclosing the fresh concrete and anti-corrosion mix after removal to expose the base of the legs. The tower is healthy and good for a few years yet!



Current membership list (3rd December 2012). Correct at time of going to print.
Calls in **RED** show membership about to expire.

2E0JUW 2E0J	WJ	2E0LBF	2E0ZAW	AW (SWL)	G0ECM
G0GZW G0XAY		G1FUA	G1IHL	G1IXE G3LYW	
G3LZN	G3XED	G3XOB G4EJH		G4FUA G4JQX	
G4KUQ G4OJI		G4RZY	G4SDR	G4TAH	G4THG
G4ULV G4XC	B	G4YZR	G6FFB	G7FBD G7IQJ	
G8NQO G8YMM M0AKF			M0GTT	M0HBT	M0HDJ
M0HTB M0LHS		M0PRJ	M0SFT	M0TTE	M0XMM
M1BGB M1CEL		M1MAD	M3HNL	M3JDK M3PGS	
M6BJL M6EKG		M6FUA	M6MGE		

Wishing all our members

MERRY CHRISTMAS
*A Happy and safe
New Year*

From

*The Bristol 70cm
Repeater Group*

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THE BRISTOL 70cms REPEATER GROUP, (GB3BS)

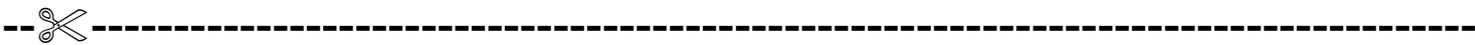
🌐 GB3BS Website: <http://www.gb3bs.com> ✉ Email: info@gb3bs.com

If you use the Voice Repeater **GB3BS** and would like to support the group then all you need to do is fill out this form and part with **£6.00p**. Your details and membership fee will then be passed to our treasurer. You can also subscribe using Paypal[™] (also supports Credit/Debit card payment). See “Membership” on our website for detail.

PLEASE REMEMBER

*Repeaters do cost money to run.
Without members the repeater GB3BS would cease to exist.
Please help support what you use.*

Please make cheques payable to “Bristol 70cms Repeater Group”



Please tick appropriate boxes and print clearly – Thank you.

£6.00 Membership

Donation Amount £ _____

I am paying by **CHEQUE / CASH** **Please delete the appropriate.**

Callsign: _____

Email: _____

Name: _____

Address: _____

Postcode _____



PLEASE NOTE: Membership is based on a yearly subscription (from the date processed). Although we can process advance yearly membership we would discourage this method. At present we DO NOT have a “Family” membership, or any other concessions. Please also note ALL membership fees and donations are NON refundable. We recommend you do not send cash through the postal system. The Bristol 70cms Repeater Group cannot be held responsible for lost or missing payments. Being listed on our website is conformation of membership. No receipts are issued unless a stamped address envelope has been provided.

Any information/data provided will ONLY be used to mail you our newsletter. Data will be deleted 6 Months after the laps of any membership. Reminders of pending membership laps will be sent via email where possible one month before the expiration date. The membership section of our website also reflects this information.