THE BRISTOL 70cms REPEATER GROUP

GB3BS & GB7BS NEWSLETTER 2023

RU68 - 430.850MHz - TONE J: 118.8Hz.
DVU13 – 439.6126MHz – Colour Code 3.

Follow us on Facebook or via "X" or twitter as its better known. Website: www.gb3bs.co.uk

As we approach another successful orbit of our sun, "Sol" and step forth on yet another orbit, it's that time for the Bristol 70cms Repeater Group Newsletter.

Unfortunately, I must report that this year has been one of the most expensive years to date for the repeater group. Not only did we suffer a primary antenna failure, but also a catastrophic failure of a pair of wet cell batteries. One saving grace was no one was on site at the time of the battery explosion!

Both items will be fully covered in the technical reports further on in this newsletter. At this point I want to take this opportunity to thank everyone that supports the Repeater Group financially. Without your support just the antenna replacement costs would have resulted in the repeaters falling silent as we would not have been able to cover the costs involved.

YES, I get it that there are some users of the repeater that for what ever reason do not wish to support the yearly cost of keeping the site operational, or feel they cannot spare a tenner per year to help keep the site viable, or indeed assume that the repeater is paid for by the RSGB or Ofcom (If the two organisations even offered a donation hell would have frozen over). No, the Repeaters are maintained purely by the Repeater Group and funded by its members!

And to clear up one false rumour. Membership of the Bristol 70cms Repeater Group is used ONLY to support the repeaters at the Lansdown site and not, as I have heard rumoured, the other 18 or so repeaters that form the South West Cluster (DMR) network. The other repeaters on the network are run, maintained and paid for fully by their own repeater groups or clubs. I personally donate the internet feed for our BS site as it's a branch off my own commercial grade internet broadband service, so even the internet is free to our group.

Everything above aside, I hope you will find this newsletter informative, interesting and as ever feedback from you the members is always welcome. Are we doing things right, have you an idea, or would like to see if something is possible. Unless we are made aware we will never know, so please feel free to email us at info@gb7bs.com or fill in the contact us form that can be found on our website http://www.gb3bs.co.uk.

Kindest regards.

73 de – Mat G7FBD/KG7FBD

GB3BS Report

GB3BS – Cica 1978(ish)

Well here we are at the end of another year. Time really does seem to be running by faster as you get older.

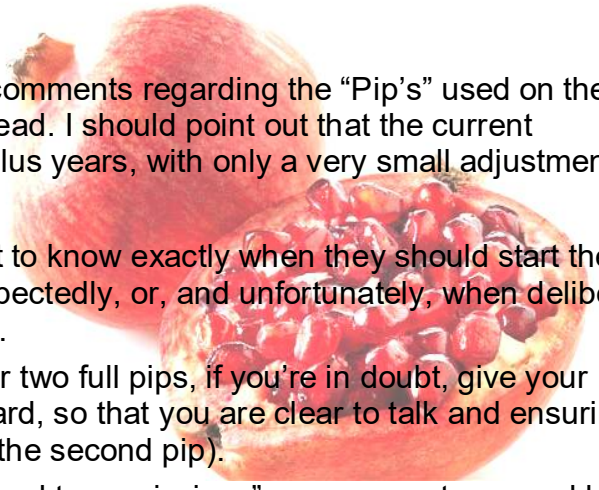
There is very little to report on regarding GB3BS as it has been working away without any intervention, doing what it should. The repeater controller (an Arcom RC210) has been running for just over a year now on its new up rated processor along with the latest Firmware.

Since moving over to the new Processor and Firmware we have not encountered any errors, lock ups or reboots, which is great news. Members may remember several years ago we were, at times, plagued with several unexplained reboots or that the voice announcements going a bit odd! So fingers crossed, those days are well behind us.

The only real problem we had this year was the failure of the main antenna which not only affected GB3BS but GB7BS as well. I will cover this shortly. Suffice to say, performance was slightly down on GB3BS although it did not appear to be noticed, or at least, commented on by the regular users! This is probably down to the repeater being used less by mobiles and more by fixed stations, so the drop in performance was less noticed by fixed stations.

Fortunately, the aerial problem was identified early and very quickly replaced, thanks to Mat – G7FBD trawling the yellow pages hi hi.

Give's me the Pip's



Over the course of this year I have heard various comments regarding the "Pip's" used on the repeater. This issue, from time to time, raises its head. I should point out that the current arrangement of the Pip's has been around for 20 plus years, with only a very small adjustment to their timings in the last 5 years or so.

It has been reported that some users find it difficult to know exactly when they should start their over, especially when other stations break in unexpectedly, or, and unfortunately, when deliberate disruption is caused by "unlicensed transmissions".

The simple solution to all of this is to simply wait for two full pips, if you're in doubt, give your callsign and take a break for the two pips to be heard, so that you are clear to talk and ensuring the Time Out timer is reset. (The reset takes place on the second pip).

If the status of the pips is unknown due to "unlicensed transmissions", or comments passed by them, please remember the golden rule and that is to ignore them and refrain from commentating back at them.

I think whatever systems of tones or pip's that are put in place there will always be problems for some users. However, I am always open to suggestions as to having something different, so do please feel free to make your suggestions known to the Group and we will look into it further, if necessary.

Real Time Clock.

Lastly, the real time GPS derived clock on site that keeps the Repeater Control Logic synchronised with time is due for a firmware update soon. This is only needed as the manufacturer of the controller, Arcom, has changed the Baud Rate of its communications RS232 port. So moving to a newer version of Firmware will now need us to change the firmware in our GPS Clock to match the new baud rate.

Why the change in baud rate has happened is not clear but we believe it's down to earlier versions running at much higher speeds, which in turn caused errors, so they have decided to keep to a lower baud rate and thus no errors! Mat has added other features to the GPS clock to support other repeater groups that also use our clock system outside UK. These added features do not affect us.

GB7BS Report

During the past year **GB7BS** has been working away without any issues. In fact the only changes made were to its network configuration. This change was so that the repeater would point and connect to the new Virtual Private Server (VPS), located in the "Cloud" rather than the on-site Server that we have now decommissioned.

The new VPS came into operational service almost a year ago now; this is when we decided to effectively Outsource our FreeDMR server to the Cloud rather than running it on our own server located at the repeater site. But more on this later on in this Newsletter.

GB7BS itself is a self-contained unit made by Motorola, it really just sits there are does what it's told by the Server. Apart from a few checks that frequencies and Tx power are all what they should be, there is very little maintenance to be done.

Fortunately, we now possess a spare unit, which can be swapped out should we ever need to. This spare unit has come in handy during testing of the VPS prior to the system going live. For a very short time we had a duplicate South West Cluster network running on dummy loads, just while we were testing and proving that everything was stable.

The repeater has seen an increase of activity over the past year, mainly due to the rapid expansion of the South West Cluster network, but also due to Time Slot 1, Talk Group 9 coming into play. Before moving over to the FreeDMR system, Slot1 was virtually unused and going to waste, but now with the Dial on Demand service this has seen a marked increase in its use, which is great to see. The uptake was initially slow but as people realised what it could do it is now starting to be used more and more.

So that's it for another year, short and sweet.

Main Antenna Failure and its Replacement.

During a routine visit to site in June, I decided to check the main site Antenna as there appeared to be a very slight reduction in signal levels from both GB3BS and GB7BS as measured at my QTH.

Sweeping the antenna with a network analyzer showed that the antenna was giving a return loss of only 10dB or an SWR of around 2:1. While not excessive it was not in the range that it should be. This should be around 15 to 20dB for a return loss or a SWR better than 1.5:1.

Clearly there was an issue with the antenna and although a visual inspection showed no problems, unlike the last failure where the dipoles were hanging off due to metal corrosion, we decided that we needed to prepare for getting the antenna replaced as soon as possible as we could not tell if this fault was stable or would get worse or even suddenly fail.… taking both repeaters off the air.

Fortunately the antenna we use is readably available off the shelf and was in stock. This was immediately ordered and within 48 hours a nice shiny new antenna arrived. This was the easy bit, although our bank funds took a bit of a dent, we now had to find and arrange for a professional aerial rigger to do the work for us as we are not permitted to climb the tower.

Unfortunately the rigging company we had used last time was no longer in business as the main rigger had retired and with it, all his climbing certifications. This was our sticking point, getting someone in to do this sort of work takes time to arrange and exchange all the necessary paperwork. But, after a lot of ringing around by Mat – G7FBD and some leads that went nowhere, we found a commercial rigging company that were prepared to do the work for us and could do it within 3 to 4 weeks, weather permitting of course.

Suffice to say, we bit their hands off. I now had the job of collating all the paperwork from the rigging company and passing it to our land lord to scrutinize. This sort of paperwork is not only certification to climb, but includes certification of climbers that have passed various courses such as first aid and recovery of personnel from towers in an emergency, plus a full Risk Assessment document. When you are potentially dealing with peoples lives, then you must have everything covered.

After about 3 weeks of paperwork going backwards and forwards we had a date set, the 20th July, and the weather was looking good. All fingers crossed and with the new antenna already on site, which gave us time to sweep the new antenna with the analyzer, just to make sure everything was good to go!

Thursday the 20th July came round, it was an early start, we were on site at 07.30 and the weather was perfect with clear blue skies and no wind, a nice summer's morning. By around 08:30 everyone had joined us onsite. Details of the job were exchanged and the climbing team were all geared up and climbing the tower.

The first job was to inspect the antenna, which is at the very top of the tower, to check for any obvious problems and to check the feeder leading to it. Only a short time after the riggers got up to the antenna that they reported that on inspection all of the four dipole baluns, which are sealed in plastic moldings were cracked. Clearly this was letting water in and the cause of the problem.

The antenna was then disconnected from the main feeder and removed from its tower support before being lowered to the ground.

Once on the ground we could inspect it further. It was found that each of the baluns had indeed a crack in the same position on each plastic molding. The conclusion we came to was that water must have got into the molding via the dipole element and although not initially getting into the balun itself, caused the water to freeze and over the years it slowly expanded the crack until water could finally get into the then exposed balun housing.
Apart from the cracks in the balun moldings, the antenna was in very good condition. It was a shame that such an issue like freezing water in a molding, over time, could make the antenna fail this way. But such environments always seem to find the weak spots. This antenna lasted almost 8 years, and that is at the upper end of life expectancy for such commercial aerials, all things considered.

The new antenna was quickly hoisted aloft and secured on the tower. The co-ax connector on the main feeder was checked and then connected to the new antenna. The riggers then climbed down a about 10 feet away from the antenna while I carried out another sweep and finally a final SWR check. Everything looked good, with a return loss of 22dB (<1.5:1), I was more than happy with that.

While all this work was going on we were fortunate to have the rigging company fly their Drone up and around the site and tower, which was interesting to observe. They use Drones quite a bit these days to do survey work on towers. The company was kind enough to supply us with the raw video footage that the Drone captured. Mat – G7FBD then managed to edit the footage and make a presentable video of the work carried out on site. The video can be seen on our Facebook page or going to our own YouTube channel:

https://www.youtube.com/watch?v=A21vqFyrqKE

At around 11:30am and after a round of Tea, Coffee & Biscuits the job was completed and the riggers were clear of the site. Our landlord was more than happy and impressed with the way the job proceeded and had been carried out, which can't be bad!

Finally, I did a final sweep and SWR check of the new antenna before reconnecting it to the repeaters GB3BS & GB7BS. All was good and we cleared site knowing that a good job was done and that we could not have asked for a better team of riggers and that the weather too could not have been better.

MB7VV & MB7UVV

Much liked our main repeaters, there is not much happening with the two APRS boxes.
Both continue to operate flawlessly with zero input from me. I do check a couple of times a year for revised firmware, but to date there has not been any updates from the author.
At the start of December, the Notice of Variation for both boxes was renewed as requested yearly by the RSGB/Ofcom.

Moving to the Cloud

With reference to the 2022 news letter, you will remember in 2021 we purchased a HP DL380 G7 server so we could move the Southwest Cluster over to the FreeDMR network and thus allowing us to break through the limitations of the Motorola IPsite connect of 15 repeaters. Moving into 2023 and the ever increasing cost of electric we looked long and hard into the operational costs of running our own server locally on site and wrote a pro's and con's list.

Mark and I had a conversation where we found out the measured running cost (In Electric) of the server per month, multiplied it by 12 and then added the average price of a couple of server spares such as spare hard disk module (Second hand I will add) and fans, internal *cmos* batteries etc and arrived at a figure "X", we added that to the pro/cons list. We then looked around at providers of servers hosted in the cloud and after speaking to a few providers, worked out potential costs, not only for year 1 but years 2 and 3 and called this "Y" and added this to the list.

It turned out to be a no-brainer. Based on purely running costs there was a noticeable saving. BUT, when you added in the potential maintenance costs of providing spares, downtime fitting them and the extra heat that a server would generate over a hot summer it was VERY VERY clear that moving over to a cloud server solution was the way to go.

A Cloud server

Basically, the physical host sever, in a data centre somewhere in the world, has fully redundant power supplies, is in an air conditioned environment, and has its own team to fix/replace any hardware failures. Even If the server fails, it's not our problem or cost to replace the unit. And the nice thing is, this Physical host server will be running anywhere upwards of 50 other virtual servers on it so the costs are shared by all the owners of the other virtual servers running on the hardware.

Up scale this as the service provider could have 'n' numbers of physical servers in the data centres dotted around the world. The result is a price to the end user (in this case us) that under cuts the cost of running our own physical equipment. Professionally, more and more of Mat's customers are realising savings of moving from their own physical hardware to Cloud solutions. One big thing is security. Each virtual server is isolated. Even though it exists on a physical bit of hardware with other virtual servers owned by other companies there is no data sharing between these virtual boxes. It's just like having a physical box, but without all the overheads.

Once we had selected our Virtual server provider and agreed a fair price for years 1 and 2 and had a projection for year 3 we went ahead and entered into a contract.

The really nice thing of Virtual servers (VSP) is they take seconds to create. While on the phone to the company, the VSP was commissioned and we were provided with the basic log in details.

Shortly after that, I had built the Docker system and installed the FreeDMR software; it then immediately connected itself to the FreeDMR network.

We let it sit for a couple of days just to make sure my poor Linux skills had been enough to actually build a duplicate of our existing physical server (At Lansdown) and that the VSP and physical servers were communicating with each other.

It was then time to bite the bullet and move GB7BS off the physical server and over to the new VSP. Okay I was taken back by the fact that it worked first time! GB7BS was now being hosted on the VSP, but was able to talk to the other cluster members that were still connected to the soon to be made redundant physical server.

Confident that moving the other cluster members over to the new VSP could be done with minimal effort of the external repeater groups and no effort by ourselves, we contacted the other groups and gave them the information they needed to move their own repeater over in their own time.

It took about a month for everyone to move off the physical server over to the VSP. Once the physical box was empty so to speak it was powered off and as soon as we get some time on site to photograph it we intend to sell it on.

WEB Exit stage left:

So, for those who do visit our core website you may have noticed that the South West Cluster (SWC) dashboards, news and other articles have all been removed!
Fear not, we have not quit the cluster! Instead, due to impressive growth of the cluster over this year, we looked at our website and took an operational decision to strip out all content pertaining to the SWC and move it to its own dedicated website, thus freeing up the main Bristol 70cms Repeater Group website for items relating to our core equipment and operations.

As stated above, the SWC has its own dedicated website which can be found here:

www.thesouthwestcluster.co.uk

This website carries all relevant news items, how to's, Codeplugs, maps and other information about the SWC including live dashboards where you can visually watch traffic making use of the cluster.

We hope splitting the sites the way we have done will prove useful to all users of which ever site you connect to. As the well known TV advert used to state, "Now the science".

Although we have split the sites, under the bonnet both sites still exist side by side on the same web server. By using pointers, we have managed to create a pseudo website which sits inside our main repeater group website. This approach saved us having to pay for two physical sites. The only cost is a minimal fee I personally pay on behalf of the SWC Repeater Keepers to register the domain, which points to the landing page of the SWC website. Confusing maybe, but as the pages are internally called sensible names, navigation for maintenance and update purposes is straight forward. The only issue I DO have is to remember the complex password needed to access our own website service with the Website host. Darn Multi Factor Authentication. Anyone would think I am back at my day job!

So that's the whole reason for splitting the sites. Just to make it easier to maintain and present the information relevant to either the Repeater Group or the SWC.
We hope you like this solution, and of course, feedback on either or both sites is always welcome

Battery Boooooooom!

It was on the 15th July that we decided to go to site to deliver the new antenna that we had purchased in readiness for the antenna swap out planned for the 20th July.

On arrival, and opening the main site doors, we were greeted by a VERY pungent acidic smell. My eyes were immediately drawn to the pair of heavy duty batteries on the floor next to the generator, used to start the generator.

On initial inspection, I could not understand why all the tops of the cells were missing their screw down filler and gas vent caps. These were found scattered all over the room along with large splashes of what turned out to be battery acid running down the walls, or rather, had been as it was now dry.

My first move was to isolate the batteries from the charger and the generator itself. Once this was done we had a closer look at the batteries. These are two heavy duty 12v flooded type batteries in series to give the 24volts for cranking the generator. We soon noticed that almost all the battery acid was gone! This was down to one of the batteries having its top almost completely blown off, and overall the whole battery had a rather large bulge.

The second battery did not look too bad, on the face of it, but we soon noticed that it had obviously suffered a large explosion as the whole of one side was blown out with the plates of the battery all exposed, again, all signs of the acid were gone, it was a total wreck and it became clear that all, or most, of the acid had been sprayed all over the walls. What was left, if any, had been soaked up by a wooden stand that supported the two batteries.

The next step was to check that the charger had not in some way contributed to the batteries exploding. The charger is only used for float charging and was only capable of supplying a maximum of 2 amps. Normally the float charge was only around 20mA with good batteries, but is also protected with a fuse.

The float charger is an old wall mounted type made by Erskine and although was very old did the job of keeping the batteries topped up. Testing the charger all appeared ok, although it seemed to be down on output voltage so was definitely not capable of over charging the batteries as was our first thought. It was soon clear that we were in need of two new batteries and potentially a new float charger. Yet more expense. This was bad timing for this to happen as we were shortly to have our new antenna installed later in the week.

So, we did a brief clean up with what we had on site. We isolated everything and decided to come back later in the week when the antenna was being swapped out and do a proper clean up and transport the wrecked batteries to the battery company for disposal, and source some new ones while we were there.

We purchased two new batteries, maintenance free ones this time, so no more topping up or acid slopping around. Having showed the old batteries to our battery supplier he noted that the probable cause of them exploding was shorted plates which then caused excessive current to heat up the battery and cause lots of gas, which then at some point, exploded! Battery age was also a factor as they were getting on a bit!

We also needed a replacement float charger, so we decided to add that to the shopping list. The new charger was not much bigger than a house brick yet would fully charge, float charge, condition and monitor the batteries. We returned to site to offload the new batteries and planned to return at the weekend to install the new starter batteries and charger.

The following weekend we attended site to install the new batteries and charger. But first we had to de-contaminate the walls, floor and ceiling of battery acid that got sprayed everywhere following the explosion of the old batteries.
With everything now cleaned up and a couple of ancillary components installed, we connected up the new batteries and mounted the new float charger on the wall, which compared to the old charger; it looked rather lost on the wall. The nice thing about this new charger is that there is no setting up; it just looks after itself and the batteries. However, there is a simple display that reads out the various stats and condition of the batteries etc, a nice to have touch!
It was all up and running in no-time and we then carried out a few runs of the generator to check everything was good. Float battery volts was spot on at 27.3.

We returned to site again a few weeks later just to check that the charger and batteries were all doing well, which they were. Suffice to say the month of July had been a very expensive one, with a new antenna swap out, a pair of new heavy duty batteries and charger to match; we did not have much change left out of £800. So, our thanks to each and every Repeater Group member for your support.

Control Panel Confusion

Staying on the subject of the generator starter system and batteries, back on the 22nd December 2022, on the last site check of the year which included a full load drop test (Fancy term used to indicate the site supply is turned off) of the generator. All started and ran up to speed; the failed mains electric was replaced by the generator produced supply, just as it should do. The system was left running on generator for about half an hour. Enough time for things to come fully up to temperature, a cup of coffee drunk and a chat about plans for this year (2023). At the end of the mug, I mean at the end of the test the mains supply was restored causing the control system to switch back from generator to line supply and turn off the generator itself. Except it did not! The normal loud electrical “Clunk” of the control gear switching over was replaced by a loud hum, and a generator happily still running at full speed.

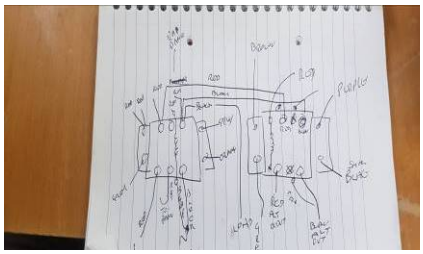
It did not take a genius to work out; something had gone wrong in the control gear. Personally the DALE control box that had been beautifully manufactured in 1969 is a work of art, yet at the same time it scares the hell out of me.
It’s not the Frankenstein looking contactors, or even the control switches on the front panel. It’s the amazing wiring layout inside. With the odd wire cut off.

Others go to one end of a variable resistors and no where else. It’s a right nightmare and is on my list of “Yeah I must get round to working out a circuit diagram for this”. The fault was a sticking contactor that was not pulling in (Turning on) when mains electricity was applied, but instead sat there trying to hum the tune of the funeral march (badly).

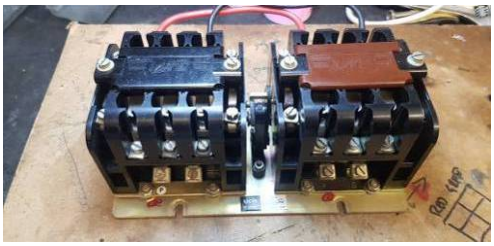
There was nothing Mark or I could do other than try and free things up, which of course failed. Time was pushing on, so the decision was made to set the control panel to “Bypass” that took the generator off line, but applied mains supply permanently onto the building distribution boards. There it stayed until the New Year.

Move the clock forward to January 2023, and we were back on site and still scratching heads. There are two of contactors (Middle of the above picture) that are mechanically linked together and should stop one from engaging if the other is already switched on. Then switch over when things return to normal. This was **not** happening!

In my previous job, back, back and back again servicing contractors was a common task and I suggested a service should really be carried out. Let's face it, the control box was built at the end of the sixties, and some of the modifications were done when the site was operated by the CEGB in the '70s.

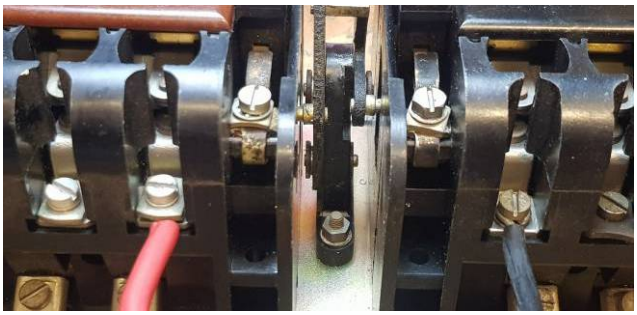


It took lots of paper notes and scribbles, along with megabytes of photos before Mark started the process of isolating the contactors and finally removing them from the control box. With sweat on his brow, and yes there was genuine



blood on one of his hands, he thrust the tray containing the contactor into my hands, and did mutter something which I missed what he said, but I assume it was a comment on how well it had gone, and how he had enjoyed his afternoon!
Back at home, I stripped the contactors down, and as expected there was a mixture of corrosion and carbon coated electrical contracts.

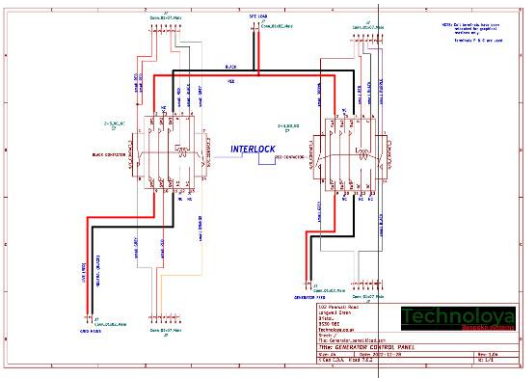
Parts were left soaking in some solvent cleaner for a few days while I had yet another dose of Covid. Once I did not feel like S**t I returned to the workshop and using some scotch bright and switch cleaner I removed parts from soak and fully cleaned the parts. Once cleaned they were re-assembled and the moving Bakelite parts were coated with a silicon spray that is primarily sold for use on curtain rails but I have found to be a fantastic surface coating for moving parts.



The interlocking mechanism was thought to have some adjustment in it. But when I had taken the contactors apart I notice that the movement of one contactor was not its full motion range and parts of the assembly were out of alignment so were not making and breaking contacts at the right time. This meant that the contactors would trigger the opposite contactor control slightly ahead of where it had to be time wise, which was causing the interlock to jam and stop motion of the opposite contactor. Careful re-alignment was made when I re-assembled each contactor.

A few shots looking at a contactor, this shows it before and after cleaning.

Below is a snapshot of the wire diagram I created from my paper notes and photographs of the panel. This was handy when it came to re-fitting the contactors back into the control panel. And then it was time to switch on the power! Both Mark and I were expecting a loud bang. But nothing! One contactor pulled in and that was it. We looked at each other and after a few second Mark said "Ok, that's a good sign", Cheeky I thought, followed by phew, It's working just as expected.



Of course a number of test starts were carried out and it all worked as it should. When power fails one contactor falls out (Contactor A), as it does it triggers the generator to start (The Alternator is also the starter motor). As the generator spins up to speed the AC Volts climb. Once it gets to around 220V that's enough to pull in the second contactor (Contactor B) which locks out the first contactor (A) and ensures we do not put volts back into the grid. Once mains voltage returns it forces the first contactor (A) to try and pull back in. As it does it has enough movement to force the generator running contact to break which starts the generator spinning down. As it does the volts drop, and around the 170V mark the contactor (B) falls out and disconnects the generator fully and releases the lock. This allows the mains connected contactor (A) to fully pull in and the site is moved back onto the mains grid.

I am glad the skills I learned while working at Brunel Technical College came in useful. I will not share the comment Mark made when I sent a picture of a pile of bits to him ☺

It does show, you never know when life skills will suddenly be useful.

The expanding South West Cluster

I would like to start off with addressing the question, "What does this have to do with the Bristol 70cms Repeater Group?" The short and self praising answer is everything!

Back on the 24th of November 2013 the Repeater Group applied for an N.O.V. to operate GB7BS, a DMR repeater from Lansdown. We were aware that Tony G4CJZ (G8CJZ) had also applied for GB7AA around about the same time and possibly due to a conversation Mark had had with him. Unfortunately do not quote me on GB7AA as I cannot remember!

Anyway, GB7AA went on air in 2014 followed shortly after by our own GB7BS. We were joined shortly after by GB7JB, GB7SD and GB7DR and again my memory is a bit laps with events but it was banded the idea of linking these five repeaters together in a sort of "Cluster" of DMR repeaters. You have to remember in the UK at this time, there were not that many DMR repeaters, and those that were on air were linked to the bigger DMRmarc network formed in the states.

We wanted something local within the UK and more importantly, something locally here in the South West. This lead onto the locally termed: "Southwest Cluster".

Over time, we were joined by GB7CW outside of Swansea, GB7TC in Swindon and GB7FI (On the Mendips) and GB7IT in Weston Super Mare.

However, due to local operator pressures by members of the above repeater groups and our open policy of "Repeater Groups can join and leave freely, just let us know", the above repeaters decided to move over to other networks. Ok, all but Matt (G4RKY), just simply left without even letting us know they were moving networks. Even a single instance of lying as to why when we tried to reach out to the groups to tell them that we had lost contact with their repeater. We carried on with the initial 5 repeaters (Our core repeaters if you like) and were joined by GB7KT over in Andover and eventually by GB7RD and GB7SP.

Over the following years the cluster continued to grow and more repeaters wanted to join. Sadly we had to turn down a couple of groups as they were located more in the Midlands and South East England than the Southwest.

By the winter of 2020 we consisted of GB7BS, GB7AA, GB7DR, GB7EW, GB7JB, GB7KT, GB7RD and GB7SP. We also were now formally known as "The South West Cluster" or simply (SWC) yet the fear of running out of repeater slots was on our minds as the Keeper of GB7JB was already aware of more repeaters looking to connect into the cluster. By the end of 2022 we had been further joined by GB3JB, GB7PF, GB7YD and the guys at GB7MJ had swapped over to a Motorola and had connected to the cluster. We used a program called RDAC to monitor the network, this took a repeater slot. We were starting to get a little more than concerned we were going to max out the number of boxes Motorola IP SITE CONNECT could support.

However, back in 2020, I had reached out to a group called FreeDMR who were UK based and were aware of the cluster and its growing size. They also were tolerant of my lack of Linux skills. Between Mark, myself and the guys at FreeDMR we had built a virtual Linux box on a physical host machine I ran here at my QTH, this ESXi machine also provided me with a couple of Virtual Windows machines I used for my own projects, so "spinning up" a Linux box was easy, doing things with it, well that was hard work. Thankfully I fell back on my work colleague "Google". Between us I managed to build my first ever Linux system, install a Docker, and build a FreeDMR server. Did it work, err, No. There were issues. The guy's from FreeDMR thought it was down to the ESXi box.

Driven forward we invested in a cheap, and I mean cheap physical server, and by the end of 2022 we had built a physical FreeDMR server and had actually moved over to it. We had finally smashed the limitation of the Motorola system and now were limited by the new server which for the record is set in software at 110 repeaters. Not much into 2023 we were starting to be hit by the cost of Energy and had to do our part to reduce our costs, as much as we could.

Mark and I did a power consumption survey of Lansdown which led on to a sharp intake Breath and a consumption cutting exercise. Everything was looked at DC power supplies were merged, Onsite monitoring was ether simplified or just turned off. We even swapped out the florescent lights for LED versions. And then we looked at the server!

Remember this is commercial kit with redundant power supplies, multiple network ports, 8 hard disks, dual CPU and tonnes of memory, basically a energy Vacuum. You guessed it; we had to get rid of it. By late January we were looking at commercial virtual server suppliers. Our own Domain address company offer virtual servers or VSP's as they are known. We negotiated a very very good two year deal and once they spun up this virtual machine (All of about 30 seconds) we were logged in and I was building a second FreeDMR server!

If anyone would like to purchase our HP DL380 G7 server with dual Xeon processor with 72GB Ram, dual supplies and 8 populated drive bays (and spare drives) all 720GB. Please contact the Repeater Group at:

info@gb3bs.co.uk

Once built, it was connected back to our real server and GB7BS was moved over to the VSP. Because it was linked to our original server we could allow other repeater groups to visit their own site, change the config of their repeater and move across to the VSP box in their own time. We planned on this taking three to four months to complete, but in reality with a month and a bit from GB7BS moving over we were shutting down the Physical server at Lansdown a few hours after the last repeater moved across, thus saving on the electric.

Since the move to a VSP we were joined by another group of repeaters, and as I write this, the current count of repeaters connected to “The South West Cluster” stands at eighteen, or nineteen if you include the test repeater GB7BT. It would be twenty; however the keeper of GB7YD reported that his user base did not like DMR as it’s to complex and so he shut it down. However, in reality he has moved networks. Another case of just not being up front & honest, and if he wanted to leave, that founding principle still stands of being able to leave when ever you want, but just be honest.

South West Cluster Repeater List

Repeater	Location	QRA	Channel	Output Freq	Input Freq	Colour Code	Notes
GB7AA	Thornbury, Bristol	IO81RO	DVU54	439.6750	430.6750	1	
GB7BS	Bristol/Bath	IO81TK	DVU13	439.1625	430.1625	3	
GB7DT	St Austell	IO70NJ	RU75	430.9375	438.5375	7	
GB7DW	Dunkeswell	IO80JU	RV50	145.6250	145.0250	7	
GB7EW	Exeter	IO80FR	DVU42	439.5250	430.5250	3	
GB7FB	Bideford	IO71VA	DVU38	439.4750	430.4750	5	
GB7HD	Tavistock	IO70VO	RV55	145.6875	145.0875	3	
GB3JB	Mere	IO81VC	RV63	145.7875	145.1875	5	
GB7JB	Wincanton	IO81TB	DVU37	439.4625	430.4625	1	
GB7KT	Andover	IO91GE	DVU40	439.5000	430.5000	1	
GB7LZ	Lapford	IO80CV	RU73	430.9125	438.5125	1	
GB7MJ	Romsey	IO91GA	DVU51	439.6375	430.6375	5	
GB3ND	Holsworthy	IO70UW	DVU59	439.7375	430.7375	1	
GB7PF	Princetown	IO80AN	DVU51	439.6375	430.6375	3	
GB7RD	Yelverton	IO70XL	DVU55	439.6875	430.6875	3	
GB7SD	Weymouth	IO80SQ	DVU33	439.4125	430.4125	1	
GB7SP	Salisbury	IO91CB	DVU60	439.7500	430.7500	3	
GB7WW	Chippenham	IO81WL	DVU38	439.4750	430.4750	7	

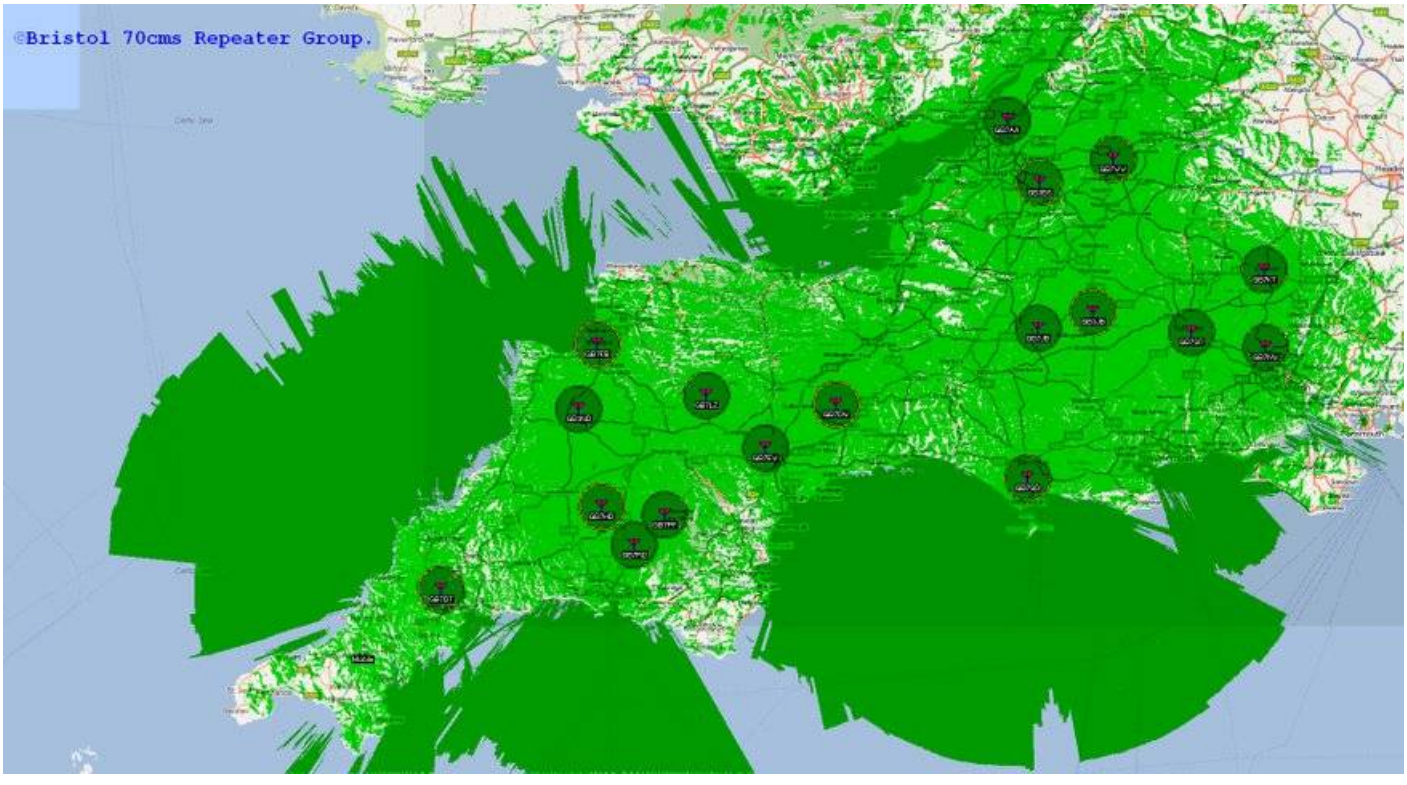
Talk Group List: TG9 - Slot 1 Local / DoD. TG950 - Slot 2 SWC. DoD Inactivity timer 10min.

Group Time Out: 4 min

© Bristol 70cms Repeater Group.

Information Correct as of November 2023.
Compiled by G4SDR.

So what’s in store for The South West Cluster? We honestly do not know. There are rumours a foot of at least two more Repeaters are in talks about linking. Watch this space! Oh and for the record the VSP is now paid for by each of the Repeater Groups that connect to the cluster.



The final comment I will make with a smile on my face. The South West Cluster is now the biggest DMR Network in the UK. And I must thank Simon, Jon and Norman from FreeDMR for helping this happen. It's a long way by being told by the RSGB that DMR is to expensive and will NEVER catch on!!

For more information on the Southwest Cluster please visit:

www.thesouthwestcluster.co.uk

Bristol 70cms Repeater Group – Membership

Membership during the last year has remained fairly constant at around 50, a slight drop from last year with some members not bothering to renew their membership for what ever reason, and then out of nowhere we have new members joining, which is great to see.

Last year we increased our membership fee from £8 to as it is now £10. Although it's a small increase it has made a small difference to our funds. However, if you have read through this newsletter you can see we had an expensive year and one which we were not expecting all in one go!

Currently our bank account has no more than a few hundred pounds in it at most. It seems that we very slowly build the funds up only to have them eroded by some unforeseen expenditure. But that's the same for most of us you could argue?

Fortunately we have been lucky in that we have managed to keep our heads above water and keep going, so I hope everyone can see how our income from membership is so important to our survival.

Fortunately, now that the Cloud Server costs are being shared between all of the connected Repeater Members that are joined to the SWC, has spared us additional costs.

So a BIG thank you to everyone who gives money through membership, it is so much appreciated.

Payment Methods.

Just as a reminder, when renewing your membership, could we ask that, if possible, you pay using Bank Credit Transfer (BACS). This way we get 100% of your money rather than via PayPal who take their cut off our income.

We introduced payment via BACS last year and it appears to be growing in popularity. Paying any membership or donations via PayPal is of course still acceptable if more convenient.

Our BACS details are as follows:

"Bristol Seventy Centimeters Repeater Group"
Sort Code: 20-13-34, Account Number: 20201316.

Note: If paying via BACS, please send us an email (info@gb7bs.com) so that we can check that your payment has been received into our bank account.

Members of the Bristol 70cms Repeater Group as of 23rd December 2023.

2E0HOM	2E0HVY	2E0JWJ	G0FAJ	G0IUE	G0IWT
G0XAY	G1IHL	G1LRO	G3XED	G3XOU	G4CPO
G4EJH	G4FUA	G4GUG	G4KUQ	G4MCQ	G4OPQ
G4SDR	G4TAH	G4ULV	G4WOD	G4XCB	G6MRJ
G6YCJ	G6YNL	G7BYN	G7FBD	G7KNA	G7TFS
G8NQO	G8YMM	M0HDJ	M0KEE	M0LHS	M0MGT
M0TJX	M0WYB	M0XMM	M0YHF	M1CEL	M1NED
M6GFM	M7ITI	M7NCK	MW0VCK		

Membership does not expire before the end of Jan 2024	Membership expires at the end of Jan 2024	Membership expires and the end of Dec 2023

G4OPQ

It is with deep, deep sadness I have to report that 2023 has taken another dear friend from our Amateur Radio family. Martin Holli, G4OPQ was often heard on the South West Cluster and of course on GB3BS. He will be sorely missed.

Our thoughts are with his family and his close net friends. 73' Martin. SK SK.

THE BRISTOL 70cms REPEATER GROUP.

GB3BS / GB7BS

Website: www.gb3bs.co.uk Email: info@gb3bs.co.uk

If you use the Repeaters, GB3BS or **GB7BS** and would like to support the group then all you need to do is fill out this form and part with **£10.00**p. Your details and membership fee will then be passed to our treasurer. You can also subscribe using BACS (Preferred) or by Paypal[tm] (also supports Credit/Debit card payment). See "Membership" on our website for detail. 100% of your membership goes towards looking after both repeaters and the site in which they are located unless paying by Paypal who rob a percentage!

PLEASE REMEMBER

Repeaters do cost money to run.
Without members the repeaters GB3BS and GB7BS would cease to exist.
Please help support what you use.

If paying by cheque, please make payable to "Bristol 70cms Repeater Group".

Please tick appropriate boxes and print clearly – Thank you.

☐ £10.00 Membership ☐ Donation Amount £_____

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

DO NOT SEND CASH BY POST. The Repeater Group cannot be held responsible if it goes missing.

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. Membership is used for the upkeep of BOTH Repeaters.

Any information/data provided will ONLY be used to mail or email you our newsletter and send membership reminders. 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.