

# THE BRISTOL 70cms REPEATER GROUP

## GB3BS & GB7BS

### NEWSLETTER 2016

*RU68 - 430.850MHz - TONE J: 118.8Hz.*

*DVUI3 - 439.6126MHz - Colour Code 3.*

*Follow us on Facebook or via Twitter. Website: [www.gb3bs.co.uk](http://www.gb3bs.co.uk)*



## Welcome to the Bristol 70cms Repeater Group 2016 Newsletter.

The 2016 newsletter is our second fully electronic version. As explained in the 2015 newsletter, (available on the download newsletter archive section of our website) this move to electronic format was done for cost, environmental and accessibility reasons.

Overall the repeaters have all preformed without very much downtime this year. Only one major incident affected the UHF repeaters. This was the spectacular failure of our antenna; this will be covered further in this newsletter. There were some smaller outages caused by GB3BS lock-up's; again this is explored further on.

The APRS system, although not strictly part of the repeater group equipment, has preformed without incident.

Due to the overall performances of the equipment, the number of site visits has been significantly less than years gone by. Most site visits are mainly for generator tests and the odd repeater lockups.

One important mile stone to report is that in September The Bristol 70cms Repeater Group reached the ripe old age of 40.

I am still recovering from the fact that last years introduction page spanned two pages, a first!

What you can find in this years newsletter.

- **Technical report GB3BS.**
- **Technical report GB7BS.**
- **Technical report MB7VV.**
- **The Southwest Cluster Network.**
- **Another year, another failed antenna.**
- **The Bristol 70cms Repeater Group at 40.**
- **Rally Report.**
- **Membership.**
- **5G Back Haul Link.**

Let me take this moment to wish everyone a safe and healthy festive season, a productive and enjoyable 2017.

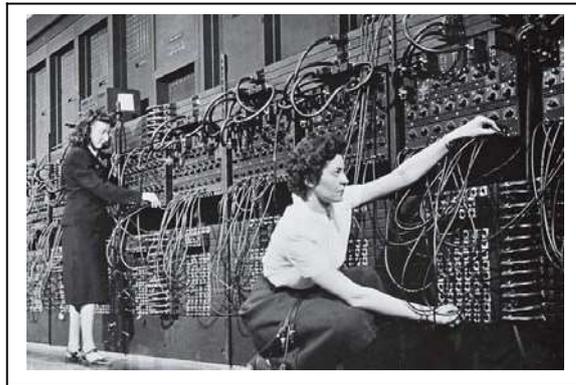
73  
Mat. G7FBD/KG7FBD

# GB3BS

As usual GB3BS has been working away without any issues, apart from the odd software crash where the repeater logic gets itself in a timeout loop that it cannot recover from. I am sure most users have heard this.

This problem has been a bit of a pain in the rear and tracing the problem and what causes it to occur has been quite time consuming and difficult. However, we are fairly confident that the problem lies between the repeater logic controller and the GPS real time clock.

It would appear that on rare occasions the RTC data, when sent to the repeater controller fails to be accepted or that the communications port on the controller does not wake up and so the data is interpreted by the controller as being corrupted. This in turn causes the controller to have it's working configuration to be overwritten, thus causing the problem!

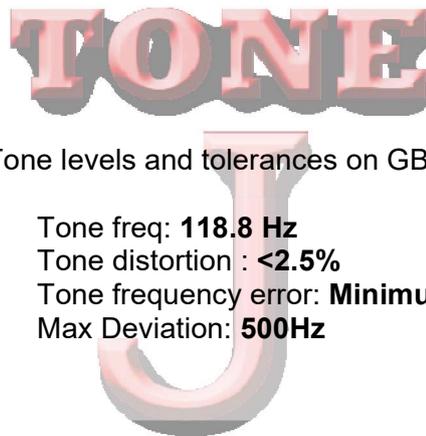


So far, when this happens, a visit to site is needed to reload the configuration back onto the controller. We are now working on a 2 step resolution to resolve this and any other similar issues. Our plan is soon to have in place a new GPS designed derived RTC which should fix this problem. Also, that the loading of configuration data or new software will be done remotely, saving trips to site. Hopefully this will be installed in early 2017.

I should also remind users that while the repeater controller for GB3BS has crashed, there is absolutely no point in trying to persistently blip the input with a carrier or tone bursts etc etc. You will not fix the problem.

## 1750 Hz Tone Burst.

Just a reminder that the accessing of the repeater by way of a 1750 tone burst has not been available for over a year now. CTCSS is the only way to access the repeater and has been successful in preventing open squelch noise from passing rain storm static.



I get asked what are the CTCSS Tone levels and tolerances on GB3BS, so here they are for those interested.

Tone freq: **118.8 Hz**  
Tone distortion : **<2.5%**  
Tone frequency error: **Minimum +/- 2Hz, Maximum +/- 4Hz.**  
Max Deviation: **500Hz**

## Pip's Revisited, Again!

Members and followers are I am sure aware of the brief article that appeared in our last newsletter regarding the correct use of the "pips" on GB3BS. If anyone is unfamiliar with the item, then the 2015 edition of our newsletter is online for viewing.

It would appear that some people are finding difficulty in counting the two pips once a station has stopped transmitting. It is appreciated that this indeed may be a problem especially when a station "blips" the repeater, either deliberately or by accident, causing the pip timing to reset and for the sequence to start over again, probably to some stations great satisfaction and amusement!

The Group are current looking at this issue and maybe small changes to the pips sequence and/or tones will be considered. If anyone has thoughts on this and would like to see a change then now is your opportunity to have a say or make suggestions.

I don't see this as a big issue as the "pip" arrangement on GB3BS has been around for more than 20 years and serves the repeater well.



### Maintenance.

Maintenance of the repeater was carried out twice this year and ensures it runs in tip top condition. No problems have been encountered and since the main PSU and Battery Backup diodes have been beefed up on the alarm / DC Power distribution panel there have been no more failures when running on emergency battery power.

The standby battery was tested each time maintenance was carried out. The standby battery will provide full repeater service for around 3 to 4 hours should the sites standby generator fail to auto start and supply power.

Audible alerts will be periodically transmitted by the repeater and the "Pips" will be lower in Tone. This all indicates that the repeater is running on Generator Power,....when it starts hi hi.

Antenna and filter checks were carried out and found to all be within spec. However, during May & June of this year an initial and casual look skyward, as you do, at the main antenna revealed that things were definitely not at all well!

It was noticed that one of the folded dipoles had broken away from the main mast and was drooping down, being only held aloft by the Co-Ax feeding it.

As the weeks went on things rapidly got worse for our main antenna. Have a read of our full and detailed report on what happened further down in this newsletter.



## GB7BS

The DMR repeater has been performing well and we have seen an increase in activity, albeit a slow one. With new stations showing an interest in DMR as a whole.

It is also good to see that for a large part of the time stations adhere to using Talk Group 9 on Slot 1 for local QSO's and the use of Talk Group 950 slot 2 for working the South West Cluster network of repeaters.

We have seen a few stations that accidentally use the other talk groups that are associated with either the Phoenix network or that of the Branmeister network. Use of those talk groups will not work on GB7BS or any of the South West Cluster repeaters.

### Maintenance.

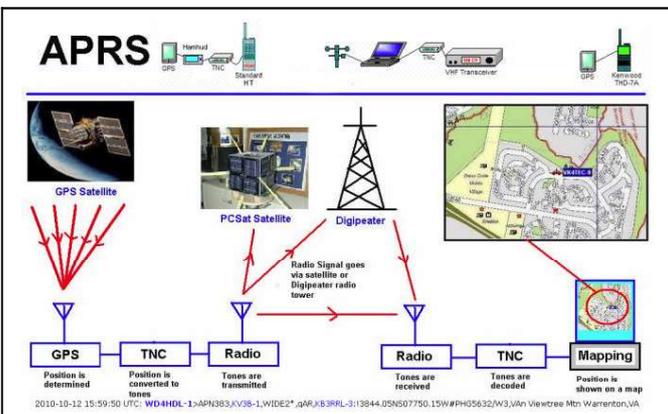
GB7BS was, like GB3BS, given two health checks this year and apart from some small changes to the configuration and a clean of the cooling fan filters, everything has been running without any real need for intervention.

Fortunately with this DMR network we are able to monitor and make any changes that are needed remotely, saving us a site visit.

This is something that we are bringing to GB3BS once we have made changes to some of the hardware, allowing remote control of the repeater controller.

We currently have a new version of firmware from Motorola for the DR3000 repeater. This will probably be installed during the early part of 2017 once compatibility checks have been completed and we are confident that by upgrading the software does not cause us other problems.

Motorola have a security feature imbedded in most of their products that do not allow the "customer" the ability to roll back any firmware to a previous version. So once done it would seem that there is no way back.



## MB7VV Technical report.

Over the last 12 months of MB7VV's existence, I have only had to attend site once due to a lock-up of the APRS 3-in-1 modem software. This, I think was down to a bug in one of the traffic counters not rolling over correctly back to zero when it reached the maximum value it can count up to.



Other than this lockup there have been no further problems with MB7VV.

A snapshot taken on the 10th December at 14:00 shows the unit been operational for 59 days at 9 minutes since its last reboot (keeping an eye on the counters!)

In this time period the system has digipeated 11452742 data block via the RF port and has forwarded 366457 of these blocks onto the internet. These statistics do not include a further 218227 blocks that were rejected by the system as not being formed correctly (effectively being discarded).

In January I added to the system, MB7UVV or as I like to think of it "Uplink VV". This is a low powered (RF power) station that is again, connected to the internet. However, its configuration is different to MB7VV. Again, this unit is able to Digipeat RF traffic, but as its ERP is much lower than normal, the affective range of this repeater is reduced to a few Kilometres. Internet traffic is only able to travel from the internet to the RF world, which is opposite to MB7VV which only allows the flow onto the internet.

The result is a work around of the licence restrictions for remote operations of equipment. By Ofcom's own admission, it's a result of them not understand the systems that can be put in place to manage equipment remotely and offer safe and reliable emergency closedown facilities (with fail-safe's).



In short, with the addition of MB7UVV traffic can now leave the internet and be placed onto the airwaves, where MB7VV receives the packet and digipeats it onto other system and mobiles. The packet is not placed back onto the internet, as VV checks to see if the packet already existed (Which it does as it comes from the internet in the first place). If VV receives a packet that does not exist on the internet, then it passes the packet to the internet.

RF packets received by MB7UVV are also forwarded to MB7VV where, again they are re-broadcast.

An expensive and complicated work-a-round to a problem caused by not keeping up with current technological advances. Not helped by the RSGB's repeater management team who, well, it appears struggle with the basics of RF. Let alone with planning and exploring new technologies.

On the plus side, at the start of the year the repeater group were invited to write a technical paper for Ofcom. Detailing management problems facing remote operation, shutdown and monitoring of amateur radio equipment, the methods and solutions the repeater group have put in place to overcome these problems. I think this invite originates from the approvals we gained for our solution to the car key fob problem we had at Cossham Hospital (Remember those days)?

Work on producing this document has been somewhat delayed, as mentioned at the start of the Newsletter, life has just been way too busy.

You never know, once written, perhaps Ofcom will allow full remote operation of HF stations such as those operated in the United States.

# The South West Cluster

There is not much I need to write about here regarding the South West Cluster itself as it is a collection of individual repeaters joined together on a network. I am sure each repeater group have their own things to say and newsletters to circulate.

The South West Cluster network of repeater currently consist of the following Repeaters:-

GB7AA – Bristol.	GB7DR – Bournemouth.	*GB7MJ – Romsea.
GB7BS - Bristol.	GB7JB - Mere.	GB7SD – Weymouth.
GB7CW – Bridgend.	GB7KT – Andover.	

With GB7YS coming on line in the near future. NoV Granted 27/10/2016.

\*Operational, but not yet connected to SWC.

I do try to post the current status of each of the repeaters on our Facebook page <https://www.facebook.com/groups/gb3bs> as and when I have time to do so. Of course people are free to add their own information at any time or make comment. I hope people find the postings useful.

I am able to monitor each of the SWC repeaters for faults and/or any alarms and then passing that information out to the relevant keeper. However, it can be a time consuming task and I am not glued to the computer loggers all the time, so any input from the users out there listening to the network is always welcome.

We are often asked various questions about the other repeaters on the SWC. We should make it clear that we only look after and are responsible for GB7BS.

All other repeaters are operated & maintained by the people and repeater groups that are associated with it. It is the linking of all those repeaters and groups that share the common goal to provide a simple and effective DMR mobile roaming network in the South West.

If you have a specific question (or believe there is a problem) with regard to any of the repeaters on the SWC then please contact the repeater group who is responsible for it as they will have the most up to date information.

If you need up to date information on how to work the SWC or for a list of repeaters and their frequencies, then please visit our web site [www.gb7bs.com](http://www.gb7bs.com) as there is everything you will need to get going. If not, do please feel free to drop us a message and ask us, we will endeavour to help you.

## Repeaters come & Go!

Over the last year, and a bit, we have had several repeaters join and then leave the SWC network for differing reasons. These have been GB7FI and GB7TC.

While it was disappointing to see these repeaters leave, the decision each group made to leave the SWC was theirs alone and should be respected, they had their reasons for doing so.

The SWC Repeaters have always maintained that repeaters and groups are always welcome to join the SWC and at the same time free to leave it at any time, there are no ties. That is how we all get along and are devoid of the politics which sadly has blighted other and similar areas of different networks out there!

But, which ever repeater, or network, you make use of, please support it. I am sure any repeater keeper will be very appreciative.

# The Future

The future of the South West Cluster is in the hands of all the repeater groups that are currently connected and with those that will join in the future, there are several in the pipeline, with a lot of interest in how we “do things” without the politics. Several other groups around the country have now adopted our simplicity and approach, which appears to be growing.

It would seem that the role of a Repeater, especially a DMR repeater, but not exclusively, is changing. Repeaters in the past were primarily set up to provide and assist mobiles and portable stations alike. However, today it seems that Digital repeaters are now there to act as a Gateway, with more people just operating them from their home QTH as a way into the system.

While the South West Cluster is no different in this regard, it has been designed specifically for Mobile operation and with the feature of true Roaming, allowing mobile stations to traverse through the SWC coverage area without having the need or rush to change channel and or talk group.

But looking to the future, we are now looking at potentially expanding our coverage within the South West as much as we can. This obviously requires other repeater groups or individuals with a similar aims to set up new or additional repeaters and join us.

Currently we, that is the SWC group of repeaters, will need to invest in new hardware which will allow us to cater for more and different repeaters, while at the same time allow us to better manage the existing repeaters, talk groups and facilities that the system can provide.

It may also offer the facility to provide a web based page where call records can be viewed and checked which several people have enquired about, especially at the Rally events we attended this year.

This may, on agreement of all, allow us to selectively link to other networks and talk groups onto the SWC. But always with the mobile concept in mind and not just providing more “armchair” Gateways!

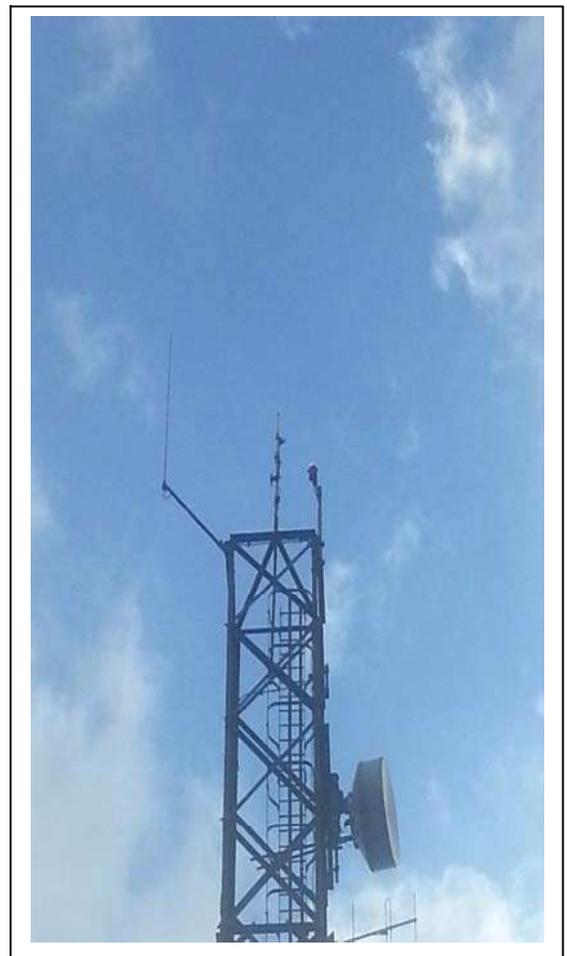
## Site Antenna Problem (again...)

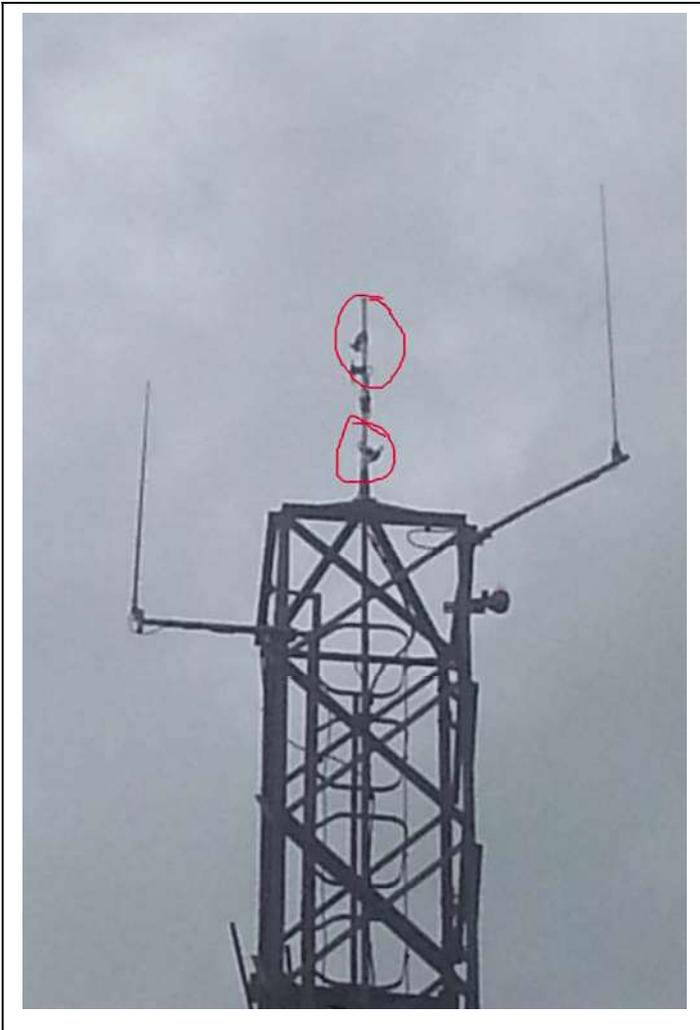
As already and briefly mentioned in this newsletter, during some routine maintenance we uncovered what was to turn out to be a catastrophic and structural failure of our main site antenna!

Members will I am sure remember that it was only back in the summer of 2014 that the antenna was replaced with a nice new one, following a SWR problem during periods of very hot weather. There was a full article in our 2014 Newsletter if anyone remembers or wishes to have a read.

So it was with dismay that just short of 2 years later we would again be having antenna problems. During a cursory visual inspection from the ground it was noticed that one of the four dipoles was hanging down and only being held aloft by its Co-Ax feed.

Checking the SWR of the antenna did not show anything, it was fine! A return to site two weeks or so later we noticed that a further two more dipoles were now suffering the same fait. So three out of the four dipoles were now dangling down the supporting pole. Mat – G7FBD managed to take some close up pictures of the antenna and it clearly shows that the metal supports for the dipoles were cracked, broken and parts missing.





Most of these broken parts had succumbed to good old earth's gravity and were, after some careful searching, found lying in the grass and surrounding woods not to mention on top of our site roof!

Once again we checked the SWR with a view to shut GB3BS & GB7BS to low power should it cause problems. The SWR did not show any real degradation, however by this time there was a definite problem with repeater coverage with some bad spots now showing up. The dipoles, as can be seen, were at odd angles and the polar diagram of the antenna could only be guessed at,....it must have been Bad!

Following our findings and knowing the antenna was still under the manufactures warrantee, I quickly got onto our antenna provider and explained what I was seeing!

After a few moments he simply said "Emmm, we have seen this problem before". He went onto explain that there was a known manufacturing problem with the Aluminium bracket castings that support the dipole onto the main pole. He explained that we were only the third report of such a problem,.....yea right, we thought, bearing in mind this antenna is from professional company and mass produced!



Anyway, within 48 hours we had a nice brand new antenna once again,...but could we trust it? Following assurances by the manufacturer that the design and the company that did the outsourced castings were now different it should not happen again! Besides, we had a nice new and full warrantee again!

But, as we have mentioned in the past on similar occasions, the main problem is the funding for the antenna to be replaced by certified antenna riggers. This is a big cost and is something we cannot really get around or avoid.

After many phone calls we found a company who was prepared to do it and at a very good price and during a weekend when there was very little activity by site staff.



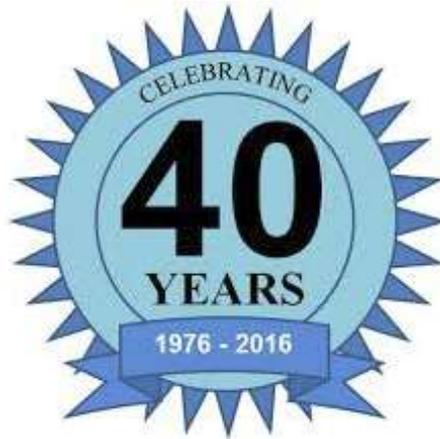
A few weeks later and on a sunny Sunday morning the new antenna was installed. Even while the rigger was doing his work on top of the tower to remove the old antenna, bits of Aluminium continued to fall off,...with shouts of "**Below!**" and the odd thud on the ground.

With the failed antenna finally on the ground we could now see the full extent of the problem that Aluminium corrosion had been. As the pictures show, it was quite devastating that this was going on and its effects were so rapid.



The rigger himself commentated that it was the worst he had ever seen. We were all slightly bemused by the fact that the manufacturer probably knew of the problem but did not inform his customers of the potential problem and advise that their antenna be safety checked.

So, all was well again and after a sweep of the antenna both GB3BS & GB7BS were switched on and put back into service. Looking back on this, it was a job that was quickly identified and corrected with very little down time and did not put such a big dent in our funds as it could have.



"Here, did you know that 2016 is our 40th year"?

This was how Mark started the conversation. Yes. He was correct well, kind of.

The repeater Group had been formed in 1974 when the NoV was granted to operate a UHF repeater. It was not until 1976 that GB3BS actually took to the air. Back then there was none of this "Three months to get the box on the air" rubbish there is today.

To keep the maths simple we will assume that this 40th anniversary relates to the launch date of operations. Over the last 40 years, lots have changed. The founding membership of the Bristol 70cms Repeater Group, the equipment, the antennas, hair styles and lets not forget the actual repeater site.

CTCSS has become the norm, UHF radios have been taken up by the mainstream manufactures, heck, they have even bolted a VHF radio onto the systems to make "Dual Band" radios. Who would have thought that would be possible in 1976?

The Voyager 1 space probe had not even been launched yet (1977), that's already made it to interstellar space! However Vikings 1 and 2 found a new home on Mars. The Cod wars were underway; Concord made its first commercial flight. The UK even won the Eurovision song contest and then of course there was the heat wave and of course I was only 8 years old!

ABBA, Elton John, The Wurzels, Brotherhood of Man and Chicago to name a few all had No.1 hits in this year.

Richard Dawkins published "The Selfish Gene", The Cray 1 computer was launched. Asymmetric-key crypto was published (and we still use that). Ebola virus first flared up in Zaire. Dementia with Lewy bodies is first described. (Now a Western World epidemic).



Christmas was a fun time in 1976, Various new toys hit the stores.

Here are just two of the many new "Must Haves"



Things have certainly come a long way. Next is a list of key events from the last 40 years.

- 1976 - GB3BS first put on air (using a Pye Westminster W15U & GB3US Logic).
- 1982 - Antenna changed from the basic pair of dipoles to the Finglas SA460
- 1982 - Logic changed to G3RKL MK1. TX changed for the Pye F462.
- 1984 - Logic upgraded to the G3RKL MKII Logic.
- 1992 - CTCSS Subtone system added to the repeater.
- 1996 - Car Keyfob problem is highlighted by Cossham Hospital.
- 2007 - Nearby Doctor surgery reports keyfob problems. Later proven not to be GB3BS.
- 2008 - GB3BS is moved to a 7.6MHz shift, along with new Arcom logic & a new Tate TX/RX system.
- 2009 - The Repeater Group receive a request from Cossham to vacate site due to the £18.7m + refurbishment, and the dislike of the Architect to antennas on roofs.
- 2009 - GB3BS is move to its new home at the Avon Fire & Rescue site at Lansdown.
- 2010 - GB3BS finally moved onto our main antenna located on the sites tower.
- 2013 - The Repeater Group apply for an NoV for GB7BS, a DMR repeater.
- 2014 - NoV Granted for GB7BS.
- 2014 - GB7BS joins GB3BS on air. Joins in the literal meaning as they share the same antenna.
- 2014 - The Main antenna was replaced due to an electrical breakdown.
- 2015 - New 5GHz link installed enabling internet access for GB7BS.
- 2015 - MB7VV was launched by G7FBD. An APRS repeater node.
- 2016 - For a second time the main antenna Fails. This time mechanically.
- 2016 - The Newsletter is late for publication due to "Commitments"

A more detailed description of our history can be found on our website [www.gb3bs.com](http://www.gb3bs.com)

So, what's ahead? We simple don't know, I am sure it will present us with more challenges. And we will face them as they come along like we always have.

## The 2016 Rally report.

This year, again has given the Bristol 70cms Repeater Group the chance to attend two of our favourite Rallies.

This year at the West Rally in Frome. We were moved around from the previous spots mainly due to the Cheese and Grain being internally re-designed. To be honest we were not sure if it was the location, or repeater groups generally are not seen as an interesting stand anymore. Although we were on one of the main routes in and out of the show, most people wanted to get inside to look around and just passed by, or they were carrying their prizes back to the car! But to be fair to the organisers, where do you put everyone as this years rally was certainly up on traders.

Over all the day did fly by, and yes we did get a few people stopping and either saying hi, asking about how to program their radio, network connectivity and the odd "Who are you" and "What is it you do"?

We also attended the Chippenham Rally. This was at a new venue for the rally, a sign that the rally is successfully growing in three years from a micro rally to a mini rally. I think our position at this rally may have been affected by being opposite a trader who had some very interesting items for sale. Many visitors were just passing and simply acknowledging Mark and I, although I did have an interesting conversation with one member of the public who wanted to learn more about Digital radio. Unfortunately this was regarding D\*Star but we were still able to answer his questions.

We look forward to attending these rallies next year, and possibly others if we are invited.

Our sincere thanks must go to Shaun and the West Rally team and also to John and the team from Chippenham. And to all the people who attend and supported the rallies

# Membership

Membership at the early part of the year saw a slight surge, mainly due to more people using the South West Cluster DMR network and thus GB7BS.

Overall, membership for 2016 peaked at 64 and has over the latter part of the year fallen to around 53. This is typical with trends we have seen in the past, people come and people go.

This past year we have had some extra bills to support, mainly the replacement antenna. Fortunately the failed antenna was replaced under warrantee but rigging costs was still a sizeable outlay. Insurance costs too have seen an increase along with electricity etc. Fortunately the day to day running costs of both repeaters and all the ancillary equipment is relatively light.

I am often asked why membership is not set higher; some even suggest £20 a year would not be unreasonable. Currently our £8 membership fee is we feel about right, we are not for making a profit on what we do. As long as there are sufficient funds to pay the bills and have a little in reserve for those unexpected situations then that is all we really ask.

However, what I do not understand is those that make regular use of either GB3BS & GB7BS but do not feel the slightest obligation or consideration to support and help fund what they use. It would seem this is yet another area of our hobby that has broken down; the like minded camaraderie of the hobby has gone.

Obviously we do not expect every repeater users to fund every repeater they use, but please, if you regularly make use of a repeater then help it to survive by way of a subscription or donation.

## Membership List

Below is a list of current members, as of 18<sup>th</sup> December 2016. As we say each year, if your Callsign is not listed there then your membership has probably already lapsed and this will be the last newsletter you will receive from us. We do send out email reminders a month ahead of membership lapsing.

But, as always, please check the membership pages on our web site for an up-to-date list. If you think there is an error regarding your membership status then please do get in touch with us so we can check it.

May I also remind people that it is now essential that we have valid email address for you so that our newsletter can reach you. If you wish to change your address details or email address then please contact us with the amendments and we will update your membership record. We should also point out that any membership that has expired for longer than six months will automatically have their details deleted from our database.

As always, and I know we say this every year, but we would like to thank everyone who has supported us either by way of becoming a member or by sending in donations and not forgetting those who have also offered help and assistance. It is very much appreciated and we can assure everyone that 100% of all funds collected go into keeping the repeaters on the air.

2E0EOL	2E0JUW	2E0JWJ	2E0KKB	2E0PGS	2W0CVL	G0ECM	G0GRI
G0GZW	G0IUE	G0RMA	G0XAY	G1FUA	G2BAR	G3LZN	G3XOB
G4EIA	G4EJH	G4FUA	G4GUG	G4JQX	G4KUQ	G4MCQ	G4OJI
G4OTJ	G4SDR	G4TAH	G6GVH	G7FBD	G7KNA	G7NSY	G8CKK
G8JUT	G8NQO	G8YMM	GW1MCD	M0GTT	M0HDJ	M0KEE	M0LHS
M0LJT	M0MGT	M0PRJ	M0THJ	M0WYB	M0XMM	M1CEL	M3IZB
M3ZJK	M6FUA	M6GFM	M6MGE	M6OJI	Membership about to expire		

**53 Current members (18th December 2016)**

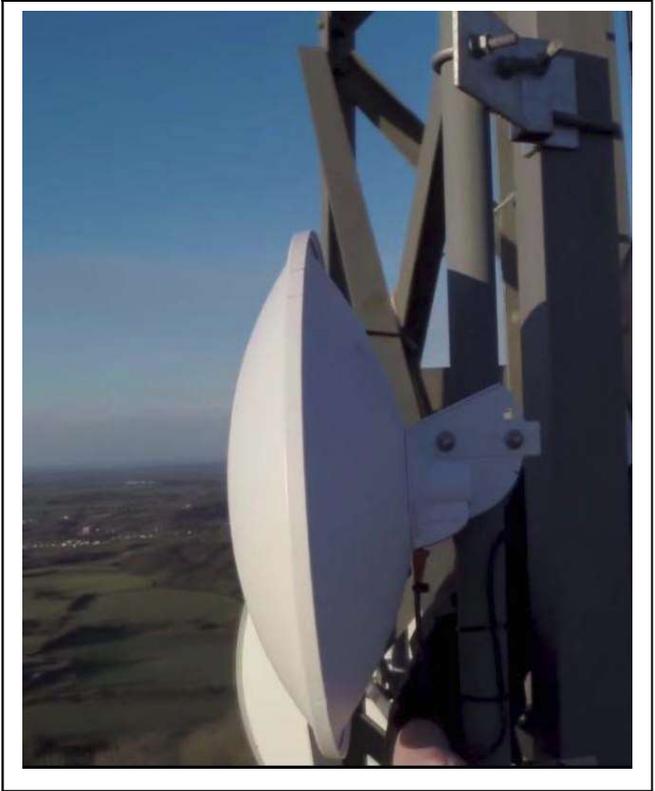
# 5G Back Haul link.

Our back haul microwave link which provides our repeater site with its broad band connection, and more, has been working faultlessly. Despite all the weather it's been through such as heavy rains, thick fog, sleet and some snow it has carried on regardless and without any real increase in path attenuation during those times.

The only outages we did have this year were due to a few main power fails at our "B" end, Mat G7FBD's QTH. Unfortunately the fitting of a UPS system was considered, but would not really solve these issues as the broad band supplier also succumbed to the same local power outages!

Work is currently on-going to provide an automated monitoring system. This will constantly keep all the SWC repeaters in check and record stats on each of the internet connections. The system can then alert, if requested, individual repeater groups or their keeper of any problems and failures through email or text messaging.

Mat – G7FBD is currently working on this system and which is being tested to ensure alarm trigger points are correctly set. Once completed, it may be a system that just informs a keeper of problems and takes the need to centrally monitor the network for problems.



## ***Silent Key***

### **Dave Farr – G4WUB (Wub)**



Sadly passed away at his home on November 1st, aged 58.

Dave was one of the original founders/member of the South Bristol Amateur Radio Club when it was located at the Whitchurch Folk House, South Bristol and held several positions on its committee throughout the years.

Dave was always very supportive of the club and their many activities such as National Field Day and the yearly Rally when it was held at the Bristol Train Shed.

He was also very active on GB3BS and subsequently joined the committee as our Secretary and later became Chairman.

On behalf of all that knew Dave and the Bristol 70cms Repeater Group, our thoughts I am sure, are with his wife Jan and stepdaughter Cassie at this time.

His Obituary can be viewed in full here [www.family-announcements.co.uk/bristol/view/4214707/farr](http://www.family-announcements.co.uk/bristol/view/4214707/farr)



*Merry Christmas to all our Members and  
readers of this Newsletter from  
Mat & Mark.*

# THE BRISTOL 70cms REPEATER GROUP.

## GB3BS / GB7BS

🌐 Website: [www.gb3bs.co.uk](http://www.gb3bs.co.uk) ✉ Email: [info@gb3bs.co.uk](mailto: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 £8.00p. 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. 100% of your membership goes towards looking after both repeaters and the site in which they are located.

### 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.*

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



Please tick appropriate boxes and print clearly – Thank you.

£8.00 Membership

Donation Amount £ \_\_\_\_\_

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

Callsign: \_\_\_\_\_

Email: \_\_\_\_\_

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Postcode \_\_\_\_\_

Please send to \_\_\_\_\_.

**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.