



North Bristol Amateur Radio Club

S.H.E.7, Braemar Crescent, Northville, Bristol BS7 0TD
G4GCT, M0NBC, G6PNB

November 2021



We have been back at the club for a couple of months now and It feels that things are getting back to normal, if there is such a thing as normal. It has however been noted that for some reason, members that use to be regulars are missing from the meetings. Meetings have more of a structure now, and we are aware that some members may still have a worry about meeting in an enclosed space. We try our best with the tables and chairs being sanitised before we arrive and we sanitise them for the next users of the hall. Remember, we also meet every Wednesday on air and current scientific evidence is that Covid 19 or any other virus cannot be caught over the air waves. Be brave, pick up the microphone and join in. Wednesdays 8pm clock time on GB3BS.

Christmas Meal



Ben, 2E0RBK Has Volunteered again to organise and cook the Christmas Meal. This will be on December 17th so not long now. There will be hampers to win and the Raffle is to be organised by Alan, G7DRU and June his XYL. Entrance for Members, their Family and friends is by Advance Tickets Only and are £6, Children under 16 Free (If accompanied by a member).

Tickets are available from the club on a club night or email / Phone the secretary to reserve yours, details on the back page.

Special Note

If any one has any special dietary needs or allergies, please let Ben Know when booking your ticket. Ben will look after you but must tell him.

Your New Committee

The EGM has been and gone and we now have an elected Committee to take us to the end of the year. It is to be noted that an AGM with new elections as per the constitution will take place in January 2022.

Chair person	Paul Stevenson, G8YMM
Deputy Chair person	Alan Tink, G7DRU
Hon Secretary	Dave Bendrey, G7BYN
Hon Treasurer	Shaun O'sullivan, G8VPG
Membership Sec	Geoffrey Cummins, M6GFM
Training Manager	Ian Conibear G4TAH
Shack Manager	Luke Kelly, 2E0VKV
Special event co-ordinator Matt Adlard G7FBD	

Membership Secretary

Please help Geoff in his new position of Membership Secretary. There are a number of members out there that appear uncontactable. One particular member I tried to contact had a mobile number that was not in use. A home number that was not working and an email address that was dead. In order to make the club function Geoff needs your help. He is hard at work making a database of Members and ex members. If your email address or mobile number changes please let him know. However, he will be trying to contact you all at some time to update the data base and obtain your permissions so that we comply with the GDPR regulations.

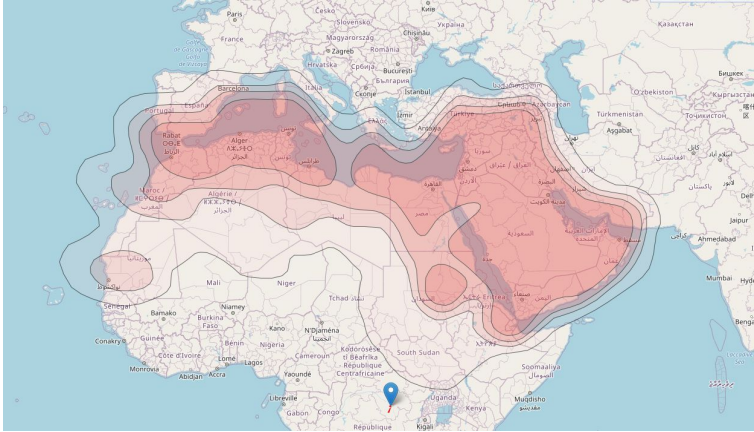
Hon Treasurer

Shaun has also been working hard in his new position as Treasurer. If you were at the EGM you would know by now that we are in the process of changing Banks so that we can operate the club accounts more efficiently.

One way this is to be done is connect a card reader. Shaun has the card reader in his possession he just needs the new account then cash will no longer be required (But can still be used) for Membership fees, door fees and the Tea Bar. Wow, the NBARC is moving to the 21st century.

Playing with Satellites By Mat, G7FBD

Es'hail-2 is a name of a satellite that was built by Mitsubishi Electronics Company in Japan. It was commissioned by The Qatari Satellite Company to provide television services to most of the middle east and as far west as Morocco and North Mail, Turkey and Niger to the south.



The blue marker at the bottom of the map marks the actual “Earth” location of the satellite which is above the town of Opala in the Democratic Republic of the Congo. When I say it’s above the town, I mean 22,236miles (35,700Km) above the town! The blue marker at the bottom of the map marks the actual “Earth” location of the satellite.

This puts the space craft in a part of space sometimes referred to as the Clarke Belt, named after Arthur C. Clarke after he popularised this geo-stationary orbit position as a way of revolutionising telecommunications.

The term geo-stationary refers to a point that an object (in our case a satellite) has to reach away the centre of the earth so it orbits around that centre point of the planet means that it orbits at the same rate as the earth’s rotation. Thus to an observer on the earth it appears to be fix stationary relative to the observer. In fact it is moving at a slow rate in the shape of a figure of 8 its exact patten within a large pre-defined cube of space, but the object is so distant to the observer it remains static.

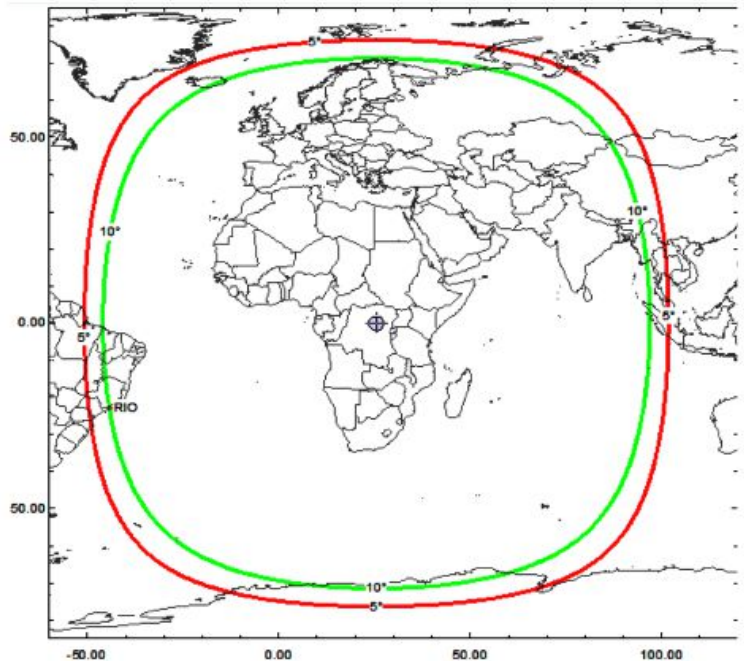
Es’hail-2 was launched from the Kennedy Space Centre at 20:46 on the 15th November 2018 and placed into a temporary staging orbit close to the earth where it was initially tested before being moved to its parking position at 25’9 degrees east of due south.

The satellite is fitted with a number of Ku-Band and Ka-Band transponders to broadcast television to the areas marked on the map above. (The darker the Red patches on the map, are the strongest signal reaching Earth and therefore you need a smaller dish to receive the signal. The lighter the colour, the weaker the signal so you need a larger dish). The term transponder refers to an electronic device mounted on the satellite that for simplicity can be thought of as an amateur radio repeater. It receives a signal at one frequency and re-transmits it on another. There are a lot of technical differences in reality between a transponder and a repeater but these are outside the scope of this article.

So, why am I telling you about a middle east owned TV satellite?

Let me just show you another map of the same satellite.

Also mounted on the same spacecraft are two “Phase 4” amateur radio transponders! These were commissioned by Amsat – DL (Germany). Anything within the green area can receive this satellite with a moderately sized dish, those located between the green and red areas will need a slightly larger dish, just like the television service above. Outside of the red area you cannot see the satellite due to the earth's curvature so would not be able to get a signal.



Just like the television service you transmit your information to the transponder on one frequency and it re-radiates the same signal-information on a different frequency.

As stated, there are two Amateur radio transponders fitted to Es'Hail-2. The first is a narrow band linear transponder. This has a uplink frequency (the transmission from earth to the spacecraft) between 2,400.050MHz and 2,400.300MHz or what we refer to as the 23cms band.

The downlink frequency (from the spacecraft back to earth) is between 10,489.550MHz and 10,489.800MHz. This is referred to as the 3cm band.

The second transponder is a wideband digital transponder with an uplink frequency range of 2,401.500MHz to 2,400.500MHz and a downlink range of 10,491.000MHz – 10,499.000MHz. This transponder is primarily design for Amateur digital television or other experimental digital modulation schemes.

The narrow band transponder has a band plan identical to our classic HF bands, CW and narrow band digital modes at the bottom of the band, and wider modes such as SSB are on the upper part of the band plan.

So, why am I interested in Es'hail-2?

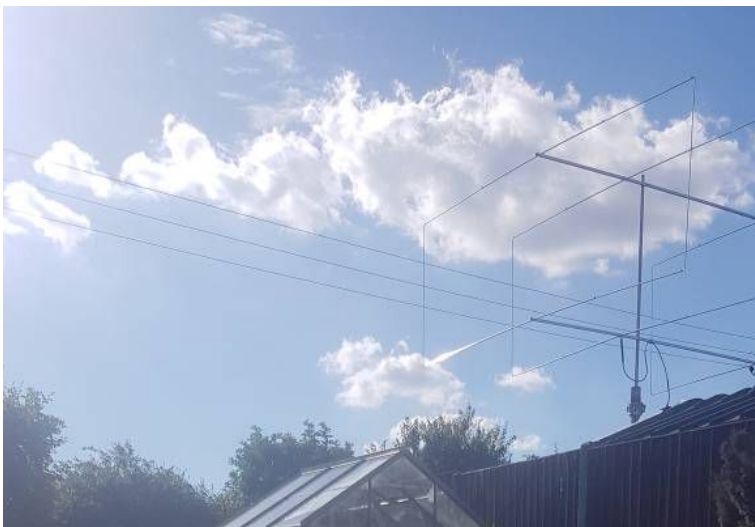
Well, as some of you who know me will know I used to operate HF using a end fed long wire, only mounted 2m above the ground along my fence line.

However I have had to remove my one and only HF antenna as it fell foul of the new antenna separation rules. You see for 16m of my fence line runs parallel with a public foot path which is directly the other side of the fence shown in the picture below.

Be it a not so pleasant Dog walker lane to the Stone Hill fields for the obvious reason of “out of sight out of mind” shall we say. This footpath is not heavily used, but to apply the RSGB rules, you have to assume 100% occupation of the area. And the separation is the thickness of a fence panel (about 25mm) and 150mm



spacing to the edge of the trample marks. This means the whole of the footpath is considered to be in the danger exclusion zone. So I had no choice but to cease using the antenna and remove it. The other problem I face with ANY HF/VHF/UHF operations is my direct neighbour. You guessed it, he is also licensed and in the 5 or so years he has been living here he has turned his garden into a “Scaled replica of Goonhilly”. Pictured below is his main HF (11m) antenna which is mounted on a 15m pump mast and in its down position.



(Technical note: Never take a picture into bright sunshine without a lens shield!)

He has a high number of antennas for most bands from DC to at least UHF most are vertical but he does have loops and centre dipoles up. Okay he centres operations on 11m but even so, on my old antenna before I pulled it down I measured a massive 47v into a 50R load. The poor old IC7300 can cope with a maximum of 1.6V according to the tech team at Icom. Okay we both cause each other overloads for example when I was using FT8

On 6m over the summer in lockdown he reported I was causing breakthrough on some of his kit (tough really) and he to me when he is operational.

To help a little I built a small unit that would switch a bank of high speed Schottky diodes into the receive path when receiving thus clamping the voltage to 0.4v maximum and switching them out when I transmitted. For 6m, uhf and vhf I use a classic tri-band white stick which just meets the isolation from one of the upstairs bedroom (about 1m to spare)

Mat, get to the point old chap.

Back during lockdown 3 I was holding the regular Saturday night DMR net (Its on Slot2 talkgroup 2 between 19:00 & 20:00 clock time if anyone is interested in calling in). Dave G3ZXX was one of the stations taking part, he mentioned he had just worked over 120 stations that week on a thing called QO-100. Initially I thought it was some new digital mode like FT8 and started to quiz him about this new magic mode.

I soon discovered its not a mode but a geo-stationary satellite that was fitted with amateur transponders. I also discovered during the net that after a power outage at his QTH Dave was having problems finding a device on his home network.

I have known Dave for quite a few years via GB7JB his DMR repeater that is also connected to the Southwest Cluster. He knew I work with networks professionally and asked to pick my brains about his issue. A time was arranged and I gave him a ring. This call was really the start of my QO-100 adventure.

For additional information QO-100 is short for Qatar-OSCAR-100, Qatar is the country that own the satellite and OSCAR stands for Orbiting Satellite Carrying Amateur Radio and this is the 100th project launched. Es'Hail-2 is the second satellite launched by Qatar company Es'HailSAT.

Editor's Note

This is a mammoth project that Mat has been planning all summer long. This article is just the beginning. The next Q5 will bring the technical side of this project and may answer any questions you may have. I know of at least two other members who has given this satellite a squirt of RF. Perhaps you may want to give it a go.

Please make sure that your license permits the use of this band. At the time of publication, foundation licensees are not permitted on these bands without an advanced licensee being present.

A talk and demonstration is being arranged for the new year, so stand by and look out for this in the next few calendar of events.

Dave G7BYN

International Lighthouses and Lightships On The Air GB0AVL (Avon Lights)

It was the weekend of the 21st & 22nd August. The WX was wet, and of course you can guess, yes on setting up the antennas it poured down. I got soaked. The antenna used was the same one as we had used at the Avon Valley Railway way back in 2019. That was the last event the NBARC had attended.



Calls were slow but steady. I will say that the Icom7300 on it's first outing since it was purchased back in 2019, was holding up well being answered on the first reply to a CQ call.

The proceedings were halted for a while due to the arrival of Holly and her parents, Louise and Rocky, M6VRL.

There being about 90 contacts over the two days I think this can be called quite a success.

Churches and Chapels On The Air

This smaller event was organised by Steve G8JUT and Tony, G8CKK. The antenna system was Tony's Vertical and Steve's trapped "V". The Church was Filton Church. The location in the car park was maybe not the best place to set up but, the favoured spot couldn't be used due to a boundary wall collapse. The area having been fenced off for safety. Steve however managed to work a station over the pond. Well done Steve. This is a record for the NBARC in this type of event.



Avon Valley Railway's 40's Event

This event was unfortunately brought forwards from the normal weekend being the last weekend in September. Of course this would have coincided with Railways On The Air Event. We were in the main marque as usual with the antenna, a doublet, erected on the Friday. This was from the roof of the main station building to a tree just over the area. Being aware of the new regulations with regards to RF separation, the height at the drooping centre was 3.5m above head height. With the power and frequencies used on the day, easily complied.



John, G4GAU one of our members, brought his truck to display. A magnificent beast that doesn't do many miles to the gallon.

Below we see that Monty gave us a visit. On the Saturday we were visited by The Prime Minister, The Rt Hon. Winston Churchill but, due to the secret nature of his visit, we were not permitted to photograph him or even tell anyone of his visit.

It was great fun reacting with the actors, so much so that Rocky is thinking of joining the event next year dressed in who knows what.

Well we do know that he was thinking of dressing as an airman or pilot from a Polish Fighter squadron adjoined to the RAF.



Remember, These brave men flew along side the RAF and were there in the thick of it fighting up front in the Battle Of Britain. Without them we would have lost and the RAF would have been no more.

On a lighter note, all the nations who dressed up are good friends and have a lot of fun dressing up. How many of us dressed up when we were kids. Nothing changes.

40's event Continued



The Russian Military are always very smart and well turned out. This man, (Sorry didn't get his name) a Russian who came to the UK a few years ago, portrays a member of the fore runner to the FSK. Rocky, who speaks a bit of Russian had a long talk with him about what would best suit him for the 40's re-enactment next year. By the way The FSK is the Russian Homeland Security the FSK successor to the section of the KGB.

Great fun was had by all. Below is Ian, G4TAH looking rather cheery. Ian is now the Training manager. We will all give him our support and assist him when possible.

Below, we have also had young Nick M7NCK have a go on the microphone Nick has a real enthusiasm for all things radio and he is always wanting to have a go.

We also had a member of the team who were running the Fry's Sentinal Loco have a go. He sent a greetings message to a station in Portugal. This gent knew a bit about amateur radio and has said that he will be popping along to the club.



Contacts were of excellent quality. If we could hear them, we could work them. The bands were said by some to be flat but, we found Germany, The Netherlands, Spain and Portugal all romping in.

The antenna as stated was a Doublet. Facing proximately NW / SE so strong Spain and Portugal was a bit if a surprise.

Rocky, M6VRL And His Antenna Capers

The picture opposite from Rocky's window shows the track his antenna wire took across the communal garden. This gave us a bit of a laugh at the club a few weeks ago as he said that he dug it in the dead of night with a spoon. Yes you heard right. As he didn't own a spade. And the dead of night so he couldn't be seen. I'd say that it was reminiscent of the film Great Escape.

The men in clean white coats will take him away before long.

Joking aside, Rocky is never short of ideas and putting them into practice. I know that he will make it work. He has wound his UNUN and mounted it in a plastic box ready to feed his end fed wire.

The problem he has is that he lives in an upper floor flat with a communal garden. There is no way that he can drill through a wall so the feed wire will exit via a window. We have discussed the use of very thin copper wire as Shaun, G8VPG suggested back in our talk on antennas back in October. I noticed that Paul, G4CVD suggested this in his article published in Q5 may 2020.

This is a possibility and just goes to show what can be done if you really want to sort out your particular problem. We hope to bring more news of this project in the next Q5.



Using Mag Mounts

We have heard about using a Mag Mount on your car roof, and using a Mag Mount on a metal tea tray at the home QTH. Some one told this new radio ham he could use a mag mount at the top of his tower. The problem was he wasn't told to take it off the car first.

This was found by our member Dave, M0RKE. If you have found a funny, send it into the editor.

Events Calendar of 2021-2022

November 5 th	General Club Night
November 12 th	RF separation. Using the RSGB Spread Sheet
November 19 th	General Club Night
November 26 th	Great Shack Clear out Bring and buy
December 3 rd	General Meeting
December 10 th	General Meeting
December 17 th	Xmas Bun Fight
December 24 th	No Meeting
December 31 st	No Meeting

Start of 2022

January 7 th	Film Night. Ham Radio in WW2 (With a Local Link)
January 14 th	General Club Night
January 21 st	General Club Night (Committee Meeting)
January 28 th	AGM
February 4 th	General Club Night
February 1	Round Table Also Q5 Published with new calendar events

The above events could change due to unforeseen circumstances. To confirm, you can ring the Secretary on 07533933831.

Club and Members Nets

To spice up our nets, the Wed net will be a Technical net (If we can). If members have a problem, or just want to know how something works, ask your question here.

This came about because some participants of our nets didn't want to spend the night talking about the weather and general chit chat. They said it was boring, so wouldn't come on any net. The Chit Chat evenings will be the club night being Friday and the Sunday net. We hope this will cater for all.

Wednesday net (This is a regular Net) GB3BS 20:00 to 21:00 Local

Sunday Evening Net This is on GB3BS 20:00 to 21:00 clock time.

Saturday Mat's DMR Net GB7BS 19:00 to 20:00 South west cluster TS2 (950)

If you have anything for Q5, please email it to me before the closing date being 24th January 2022. The next Q5 will be the midwinter edition publication date 1st February 2022. This is the time of year we can make or mend our kit. Antennas is of course the favourite things to make, so if you have any ideas on this subject or if you want to make something but don't know how to go about it, there is sure to be some one in the club who can help you.

Q5 Publication

Last date for articles 24th January

Publication Date 1st February

During the pandemic We have been publishing Q5 as near to monthly as possible. Now we are back at the club Q5 have reverted to quarterly. It is hoped that I will still get articles sent to me from time to time. I thank all of you that have submitted items over the past couple of years. All back issues are available on the club's new web site.

Club Contacts

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Next Q5

Early February (See Note opposite)

www.nbarc.org.uk