

STARLITE

THE JOURNAL FOR THE STOURBRIDGE AND DISTRICT A.R.S.



**G6OI
G6SRS**



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G4CVH

**STOURBRIDGE & DISTRICT AMATEUR RADIO SOCIETY
INCORPORATING
OLDSWINFORD HOSPITAL SCHOOL RADIO CLUB**

MEETINGS NORMALLY HELD AT

**OLDSWINFORD HOSPITAL SCHOOL
HEATH LANE
STOURBRIDGE
[8:00 TO 10:00 PM]**

VISITORS ALWAYS WELCOME

**DURING COVID, THE SOCIETY HOLDS ITS MEETINGS
EVERY MONDAY AT NORTON SOCIAL CLUB,
OSMASTON ROAD, STOURBRIDGE**

RSGB AFFILIATED SOCIETY

STARLITE

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StARS Website URLs:-

www.g6oi.org.uk

StARS Facebook Page:-

<https://www.facebook.com/groups/stourbridge.ars/>

Forthcoming Meetings

June 5 th	Club Meeting at Norton Social Club. 8pm
June 12 th	Club Meeting at Norton Social Club. 8pm
June 19 th	Club Meeting at Norton Social Club. 8pm
June 26 th	Club Meeting at Norton Social Club. 8pm
July 3 rd	Club Meeting at Norton Social Club. 8pm
July 10 th	Club Meeting at Norton Social Club. 8pm
July 17 th	Club Meeting at Norton Social Club. 8pm
July 24 th	Club Meeting at Norton Social Club. 8pm
July 31 st	Club Meeting at Norton Social Club. 8pm
August 7 th	Club Meeting at Norton Social Club. 8pm
August 14 th	Club Meeting at Norton Social Club. 8pm
August 21 st	Club Meeting at Norton Social Club. 8pm
August 28 th	Club Meeting at Norton Social Club. 8pm
September 4 th	Club Meeting at Norton Social Club. 8pm

Last month, I shared some doubts I had about the possibility being ignored and not being included in the Society. I fully and unreservedly retract any comments I made and apologise to the Society. It appears that notifications about the recent visit were sent to me, BUT they went to an old email address. The situation is, thankfully, now resolved.

In this issue:

*Woofferton Transmitting Station: A Brief History And Tour
Foundations Of Amateur Radio*

Worked All Continents...in 6 Minutes!

Rockall Island Dxpedition

Special Event Visible On Northern Beaches (From Jim In Oz)

NASA Wants Help From Radio Amateurs

DX News

March 2023 Show 'n' Tell video now up on YouTube

This video has just been put up on the MWRC (VK2MB) club YouTube channel. It runs for about 50 mins and is the show and tell night featuring purchases from Dick Smith's electronic shops round Australia. You'll see what I mean if you watch it and Dick Smith was there to present one of the prizes, he is a member of MWRC (VK2MB), too. Lots of members there and me briefly!!!. Maybe someone would like to watch it.

<https://www.youtube.com/watch?v=TZ8b-e7cHzY>

Jim G4WAO

Woofferton Transmitting Station: A Brief History & Tour

By Geoff Cooper G0KVK

The station was originally built by the BBC during World War One to house additional short wave broadcasting transmitters. When it first started broadcasting, on the 17 October 1943, it had six 50 kv RCA transmitters. The site has been modernised many times over the years and is now DRM (Digital Radio Mondiale) capable of providing daily digital radio programmes. Woofferton is used to broadcast shortwave radio programmes on HF, 4MHz to 26MHz, to Europe, Russia, North/ Central Africa, Middle East and South America. The site is also used for satellite communications and monitoring.

Woofferton Transmitting Station currently has ten HF transmitters. There are 3 X Riz 250 KW (installed 2007/2008), 1XRiz 500KW (installed 2006), 4X 300KW Marconi B6124s (installed 1980) and 2X 250 Marconi BD272s (installed 1963). The Riz transmitters are Digital Radio Mondiale capable and transmit digital programmes on a daily basis for BBC .World Service, NHK & KBS. it also has a 1KW VHF FM transmitter for local Ludlow commercial station Sunshine Radio.

Sunday the 23 April: Alan, John C, Nick, Wayne, Tony, Dean (who arranged the date and time for the visit) and Geoff arrived at ten o'clock and were met by Dave Porter (G4OYX) and his son Mat (G8XYJ). We were given a leaflet on the safety for the site and were, also, joined by two amateurs from Wolverhampton and one from Droitwich.

The tour of the site started at the output from the transmitting hall building. The feeds to the aerials first went via several 320 ohm feeders, which were made of four wires running in parallel, kept apart with circular insulating discs (which they called sausage feeds). This led into the switching hut, where the feeders changed into 15mm copper pipe. These went along the top of the building where, at some places, the tubes bent down into a square U shape. These spots were used for switching the RF output to another aerial. This switching device was about 6 to 7 feet high and was operated by compressed air via a signal from the control room.

We then went into the field where the masts were and Dave explained how the aerials were designed and how it was all fed by open wire feeders, which, by adding extra lengths of feeder, the aerial could be moved off the beam heading by 12 degrees one way and 12 degrees the other to beam to other parts of the world.

We then walked on around the building and saw the satellite dishes, some in use some under service, also a dummy load. It was in a building, which must have been about 8 foot square with a duct coming out of the back with two large fans on top.

We then went into the main hall where the transmitters are. One of them was open and Dave explained how they worked and showed us the very large coils. He said the only place they could get them made was at a place where brass instruments were made, as they had the ability to bend metal tubes. Dave then took us into a room at the back of the transmitters, where the power supply is housed. There were some very large transformers, rectifiers and smoothing capacitors.

We went further down the hall to see some later transmitters. The chassis were made out of thick copper and the coils were what looked like 22/25 mm copper tube. One of the engineers fired up the transmitter we had been looking at and we could see through a glass window the glow from the heaters in the valves.

We broke for lunch in the canteen. After that we were taken to the control room where the transmitters and the aerials could be monitored. It is manned till 8 o'clock and then London takes control. We then went to see where the satellite feeds came into one room, into the receivers and fed to the control room for selection.

That ended the tour and Dave took us back to the car park where photos were taken. Dave finished off by leaving us with a little story about when it was under American control (Voice Of America). One day an American accountant came to check the stock. On going outside, he saw one tractor mowing the grass and asked where was the second one, which the station controller said it was around the other side mowing that grass. Unfortunately, the second tractor had been sent down to Daventry, so as they walked on, counting the dishes, a message was quickly sent to the tractor driver to stop mowing the grass this side and go round the other way and mow that grass, which, when the American came round the corner, there was tractor number two. Boxes now all correct! It was a really good day and the weather was good for us.

Worked All Continents....in 6 Minutes

By K1HTV, Rich Zwirko

This rather interesting article came across our desk... love it or hate it.... FT8 is making a splash!

On 17 Meter during the late afternoon on May 18, 2021, I completed WAC (Worked All Continents), using the FT8 mode, in 11 minutes.

Around 03:15 AM EDT the next morning, after awaking from a restless sleep and while still horizontally polarized, I turned on my Android phone. I connected to my shack computer and its 3 video monitors using the VNC app.

At that early hour (07:15 UTC) here at my VA QTH, I found 17 Meters was already open to Europe. I switched down to 30 Meter FT8 and proceeded to work some DX.

To my amazement, I was able to make FT8 contacts with all continents to complete WAC (Worked All Continents) in 6 minutes even! Below is the K1HTV log for those contacts, which may be a world record for WAC in the shortest time, at least for the FT8 mode.

(Source: Daily DX 19 May 2021)

Foundations of Amateur Radio

What's in a Dream?

On the 6th of June, 2004, two Brazilian amateurs Roland, PY4ZBZ and Arnaldo, PY4BL made a historic contact on 40m. The distance was not particularly significant, only 70 km, but the mode was.

Using 2.1 kHz bandwidth, so it could fit within an amateur radio SSB transmission, they used software created by Swiss amateur Francesco, HB9TLK to make the very first HamDream exchange.

This technological advancement represents the birth of what we now call HamDRM and Digital SSTV and how it came about is an adventure that needs documenting, since what we have is written in a combination of Portuguese, German and English, cobbled together from broken websites, archives, source code, commit comments and lost links.

To provide some context, there is a broadcast radio mode called DRM, or Digital Radio Mondiale. At this point I should mention that this has absolutely nothing to do with Digital Rights Management with the catchy acronym of, you guessed it, DRM. As you might expect, this acronym clash is unhelpful, to say the least, when you're trying to find information about this radio mode.

Digital Radio Mondiale, or DRM, essentially defines a digital standard for radio broadcast transmissions. It can handle multiple audio streams as well as file exchange and is used by broadcasters across the globe. Mondiale, in case you're curious means worldwide in French, seems my high school language lessons have finally been put to good use, my French teacher in the Netherlands will be thrilled.

DRM is more efficient than AM and FM and as an open standard, it's gaining popularity. The first broadcast using this mode took place on the 16th of June 2003, during the World Radiocommunication Conference in Geneva.

An open source implementation of this mode is called Dream. The source code is available online and is capable of being compiled for Windows, MacOS and Linux. Dream was originally written by Volker Fischer and Alexander Kurpiers. The Dream project started in June of 2001 and today it has many contributors.

The DRM standard uses different bandwidths depending on which mode is used. The narrowest DRM mode uses 4.5 kHz, but modes using 100 kHz exist. By comparison, a typical analogue amateur radio uses 2.7 kHz for SSB. Using the source of Dream, Francesco built a modified version, called it HamDream and let it loose on the world. It was used for that very first 70 km contact between Roland and Arnaldo.

Several versions of HamDream existed. The first QSO used 2.1 kHz and the last version of HamDream used 2.5 kHz bandwidth. To fit digital audio inside that narrow bandwidth it used different audio compression techniques, called a CODEC, namely LPC10 and SPEEX.

According to Francesco, HamDream is the basis for all current amateur radio 2.5 kHz HamDRM programs. He goes on to say that it's outdated and the source and executables were removed from the net. Personally I think that's a shame, since it represents part of the history of our community and I think that putting the source online in a place like GitHub would be beneficial to the hobby.

The 2.5 kHz HamDRM mode is implemented in several places. QSSTV, EasyPal and

WinDRM to name a few. No doubt it's elsewhere. Of those three, only QSSTV survives. The source code for EasyPal, written by Erik VK4AES, now SK, was lost, apparently when the computer on which it lived was sold by his estate. Ironical really, since EasyPal was written because Erik lost a previous application due to a lightning strike nearby and was forced to write a new application from scratch.

WinDRM appears even more elusive. There's a repository on the now archived Google Code site. There are derivatives that appear to use a version of WinDRM, but details are hard to find. An archive I have shows a commit by Francesco, HB9TLK from 2008. I've yet to learn how this relates to the overall picture.

In parallel, in 2005, a few enterprising students made a MATLAB implementation of DRM. Called Diorama and written by Andreas Dittrich and Torsten Schorr it forms the basis of a Linux open source HamDRM receiver written by Ties, PA0MBO, chosen because it had a better performance in marginal conditions than Dream did. It's called RXAMADRM. Ties also wrote an open source transmitter, cunningly called TXAMADRM. It was based on the source code of Dream, specifically v1.12b.

If at this point your head is exploding, I wouldn't blame you.

Let's recap.

There's an open broadcast standard called DRM. An open source, cross platform tool called Dream, in active development, implements that standard.

A special, now discontinued, version of Dream was created called HamDream. It used less bandwidth than DRM and forms the basis of a standard that we now call HamDRM, which underpins Digital SSTV.

HamDream forms the basis of the discontinued products, EasyPal and WinDRM, and lives on in TRXAMADRM and QSSTV, both Linux open source.

In amateur radio terms HamDRM is one of the ways we can efficiently exchange digital information across long distances.

At this point you might wonder why it matters?

For starters, this is part of our history of amateur radio. The HamDRM mode is poorly documented, if at all. It forms the basis of several modes in use today and writing your own software is made all the more challenging because much of the design and development of this mode has been lost.

What's more, HamDRM is an example of "modern radio". It uses the same fundamental techniques used by the 4G and 5G mobile phone network, as well as modern Wi-Fi. Losing this is a massive step backwards for amateur radio.

This article alone represents a week of research by two people, thank you Randall VK6WR, and I won't be surprised to learn that it contains errors and omissions. It shouldn't have to be this hard to discover how a mode works, what is used to make it tick and how to write new software to implement a new application.

Gotta love open source. Speaking of which. If you have source code copies of HamDream or WinDRM, I'd love to hear from you. cq@vk6flab.com is my address. If you have documentation on the design of the HamDRM mode, I'll owe you a beer, or a glass of milk, your choice.

I'm Onno VK6FLAB



In June 2023 a team will land on Rockall Island, more than 200 nautical miles from the West Coast of Scotland, and the nearest civilisation. Their intention is to survive on the tiny island for one week battling winds and waves in order to raise £50,000 for charity.

The expedition team is made up of a number of highly experienced radio operators who will be running 24×7 transmissions on SSB CW and FT8 for 1 week, with two radios transmitting simultaneously. More details will be posted here soon! Rockall is an uninhabitable granite islet situated in the North Atlantic Ocean. The nearest permanently inhabited place is North Uist, an island in the Outer Hebrides of Scotland, 200NM to the east.

The UK claimed Rockall on the 18th of September 1955 when “*Two Royal Marines and a civilian naturalist, led by Royal Navy officer Lieutenant Commander Desmond Scott, raised a Union flag on the islet and cemented a plaque into the rock*”.

Rockall stands at 17.15m above sea level at it's tallest point, covering an area of just 784.3 m² it is ;located at 57° 35'28.79" N 13°41'11.39" W. more information from:

<https://www.rockallexped.com/>

International Museums on the Air Weekends 2023



Museums on the Air takes place over the weekends of the 17th – 18th and 24th - 25th of June. The intention of the event is to set up amateur radio special event stations at as many of the museums as possible throughout the whole of the world on HF, VHF and, if at all possible, a Ui-View (APRS) packet station to be set up at each museum site, but the scope of your station is entirely up to you. The choice of museum is also left very much up to you, however, aim for the largest and/or most unusual site you can find.

The museums taking part over the years have included ships, castles, air museums, Napoleonic forts, pumping stations, wireless museums, racing museums and many others. For the purposes of the event, the word 'museum' is loosely interpreted. There really is no shortage of venues in which such an event can be staged, no matter where in the world you might live.

The event has proven itself to be extremely popular and well supported special event particularly amongst the UK radio amateur population. It also went down very well at the museums which were used as the venues for the event, and invitations have again been extended for the coming June. It has shown itself to be a tremendous public relations exercise, as well as all of us having lots of fun over the IMW weekends.

At least part of the intention for this event, is to present modern amateur radio to members of the public and to help us loose some of the stuffy anorak image. What better place to do this than in the very public and well visited areas of the many museums which can be found in most parts of the world?

Those clubs and museums which do decide to take part, should please use the free on-site 'Registration' facility. The 'Registration' is simply to assist us in administration of the event and provide those taking part with an indication of how many and exactly where the museums taking part are located. We also send out a participation award to all stations that register. More information and registration details at <https://www.radio-amateur-events.org/IMW/index.htm>

Foundations of Amateur Radio

Propagation during the 2023 Solar Eclipse

On Thursday the 20th of April, 2023 at 04:17:56 UTC the world was subjected to a rare event, a hybrid solar eclipse. In Perth I experienced a partial eclipse and people lucky enough to be directly in line, places like Ningaloo Reef, Exmouth and Barrow Island, experienced a total eclipse. Timor-Leste had the experience of the peak total eclipse.

At the time I went into my shack and refreshed the WSPR or Weak Signal Propagation Reporter beacon map I have open and noticed that my beacon wasn't reported. I sagely nodded my head, that makes sense, no Sun, no propagation and I got on with my life.

Last week a fellow amateur, Will VK6UU, asked if anyone had any VK6 specific HF propagation reports to make. Being the data geek that I am, I thought to myself, "Aha! I can do some data analytics on the WSPR dataset that I have." So, the die was cast for a few enjoyable hours of importing 2.4 gigabytes of compressed data into a database and constructing a set of SQL queries to see what I could learn.

Before getting stuck in, I spent a few hours thinking about the problem. How could I go about doing this? Propagation information is notoriously fickle. You have to consider the obvious things like the Solar Index and the Geomagnetic Index which vary considerably. Then there's the nature of the various reports themselves. Not everyone has their beacon on all the time, not everyone has their receiver on all the time. Weekends are more popular than weekdays and popularity overall is growing exponentially. The solar cycle is on the way to its peak, so there's that variation to consider and if that's not enough, how should you compare the Signal To Noise ratio between weak and strong beacons?

With all that in hand I set about constructing a plan. I created a folder to hold my charts and SQL queries, intent on uploading that to GitHub when the work was done.

For my very first test I thought I'd count the number of reports per band in a 24 hour window around the eclipse. I imported all the WSPR records that had a VK6 callsign, either as the transmitter or the receiver, given that I was interested in learning if stations transmitting from VK6 could be heard elsewhere and inversely, could VK6 stations hear any other stations?

As my first effort, I created a scatter-plot to get a sense of what kind of numbers I was looking at. The initial result was interesting. Around the eclipse itself there was no propagation. This wasn't unexpected, since that's what I'd seen on the day at the time on my own map. I changed my data to use a cumulative count per band to see if any band was particularly different and then discovered that there was no propagation at all, on any band.

That seemed ... odd.

So, I had a look at the source data and discovered a gap, which accounted for what my chart was showing. I added a fake record for the eclipse time itself, just so I could see where on the chart this gap was. Turns out that for VK6 stations, the gap is just over five hours, but it's not centred around the eclipse. There's a four hour window before the eclipse and a one hour window after it.

Then I started looking at all the reports from across the world. To give you a sense of scale, across April 2023 the dataset has nearly 139 million rows. It's 12 gigabytes in size. By contrast, in March of 2008 when the first reports started, there were just over 93

thousand reports in a 7 megabyte file. Charting this shows exponential growth, hitting a million reports in July of 2009, 10 million reports in January 2016 and 100 million reports in October of 2021.

So, the eclipse and global propagation. The results came in and the reports are that there was no propagation, on any band at any point during the just under two hours and 12 minutes before the eclipse and the 38 minutes following it.

That ... or the WSPRnet.org database was down during the eclipse.

So, unfortunately I cannot tell you what propagation was like during the eclipse, since it appears that those records don't exist.

Looks like we'll have to wait until 2031 when we can try this again. We'll all be a little older and wiser by that time and perhaps we can come up with a way to ensure that the global central WSPR data server is running without downtime, scaled to match the growing requirements and paid for by a benevolent organisation with deep pockets.

I did start considering making lemonade from my lemons and charting the kinds of down time the WSPR server has, but just looking over the various discussion groups showed that this is going to be painful. On the plus side, I learnt about SUM OVER and LAG functions in SQL, so there's that.

I must confess that if we're going to seriously use WSPR as a propagation analysis tool we need to fix these kinds of issues. I have no doubt that running WSPRnet.org is a massive enterprise and that it costs real time and money to make that happen.

So, who's up for the challenge and will the real owner of WSPRnet.org please raise their hand?

Finally, if by chance you were running a WSPR receiver during the 2023 Solar eclipse you might want to consider looking at sharing your logs, since they're potentially the only record still remaining.

I'm Onno VK6FLAB

Special event visible on northern beaches Friday 28th April

Jim G4WAO wrote:
"Not really technical but definitely different and a fun item. It was a club member's birthday and this was his birthday card."



GARRY CRATT IS 70 TODAY VK2YBX

Ham Radio Operators, We Need Your Help During Solar Eclipses!

Ham Radio operators, we're calling you! Members of the Ham Radio Science Citizen Investigation (HamSCI) will be making radio contacts during the 2023 and 2024 North American eclipses, probing the Earth's ionosphere. It will be a fun, friendly event with a competitive element—and you're invited to participate.

Both amateur and professional broadcasters have been sending and receiving radio signals around the Earth for over a century. Such communication is possible due to interactions between our Sun and the ionosphere, the ionized region of the Earth's atmosphere located roughly 80 to 1000 km overhead. The upcoming eclipses (October 14, 2023, and April 8, 2024) provide unique opportunities to study these interactions. As you and other HamSCI members transmit, receive, and record signals across the radio spectrum during the eclipse, you will create valuable data to test computer models of the ionosphere.

For more information, go to <https://hamsci.org/festivals-eclipse-ionospheric-science>

More about solar eclipses: <https://solarsystem.nasa.gov/eclipses/home/>

V47JA Saint Kitts Island

W5JON will be active again as V47JA from Saint Kitts Island, IOTA NA-104, 23 May - 7 June 2023.

He will operate on 160 - 6 m (Including 60m), SSB, FT8.

QSL via home call direct, LOTW.

Address for direct QSL:

JOHN V ABBRUSCATO, 22199 PINE TREE LN, HOCKLEY, TX 77447, USA

FP/KV1J Miquelon Island

Eric, FP/KV1J will be again active from Miquelon Island, IOTA NA-032, 27 June - 11 July 2023.

He will operate on 80 - 6m SSB, RTTY, CW, FT8 and FM Satellites.

He will operate also in some contests.

QSL via home call, LOTW.

Address for direct QSL:

ERIC A WILLIAMS, 763 PLEASANT ST, MARLBORO, MA 01752, USA.

D44DX D4CW Santa Maria Sal Island, Cape Verde

Oliver, DJ5QW will be active as D4CW and D44DX from Santa Maria village, Sal Island, IOTA AF - 086, Cape Verde, Cabo Verde, 30 May - 13 June 2023.

He will operate on 80 - 10m, CW, SSB and also DMR.

QSL via home call DARC Bureau.

VP2V/W9DR Anegada Island, British Virgin Islands

W9DR will be active again as VP2V/W9DR from Anegada Island, British Virgin Islands, 23 - 29 June 2023.

He will be active on 6 m, CW, SSB, FT8, MSK144.

His operating freqs 50115 SSB and 50115.6 CW. QTH Locator - FK78tr.

QSL via home call direct.

Address for direct QSL:

DAVID R RIDGE, 371 SHELTER LANE, CYNTHIANA, KY, 41031, USA.

5UA99WS Niger

Giorgio, IU5HWS will be active as 5UA99WS from Niger, 1 May - 15 June 2023.

He will operate on 40 - 10m Bands, SSB, FT8.

QSL via EA5GL.

Address for direct QSL:

PEDRO MIGUEL RONDA MONSELL, MAXIMILIANO THOUS 16-24, E-46009, VALENCIA, Spain.

7Q7WW Malawi

7Q7WW Team will be active from Malawi, 21 June - 3 July 2023.

Team - W1IE, KC4D.

They will operate on 160 - 6m, CW, SSB, FT8, RTTY.

QSL via W1IE.

T31TT Kanton Island, Phoenix Islands

T31TT Team will be active from Kanton Island, Phoenix Islands, IOTA OC - 043, starting 1 June 2023.

Team - Rebel DX Group. They will be active 9 - 10 Days.

They planning to operate on 160 – 10m. They will use Icom 7300 transceivers with amplifiers.

DXCC Country - Central Kiribati, T31.

QSL via 3Z9DX OQRS.

FO/F6BCW Huahine Island, French Polynesia

Didier, F6BCW will be active from Huahine Island, IOTA OC - 067, French Polynesia, May - October 2023.

He will operate on 160 - 6m, CW, SSB. DXCC Country - French Polynesia.

QSL via F6BCW, LOTW.

Address for direct QSL:

Didier CADOT, 180 rue du Moulin de la coudre - 71440, TRONCHY, FRANCE.

FH4VVK Mayotte

Marek, F4VVJ ex SQ6WR will be active as FH4VVK from Mayotte, IOTA AF - 027, 1 September 2022 - 1 April 2024.

He will operate on HF Bands.

He is planning to activate Le Petite-Terre, FH – 002. DXCC Country - Mayotte, FH.

Information received from Marek, F4VVJ.

QSL direct or via eQSL.

Address for direct QSL:

DLEM - CCL - BML, DZAOUDZI, Quartier CABARIBERE, DLEM 97615, Mayotte.

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