



MARC Beacon

Volume 9, Issue 12

The Morongo Basin Amateur Radio Club Newsletter

DECEMBER 2020

President's Message

This is WO4ROB, Rob from Joshua Tree MARC President Message for December 2020.

Hello Morongo Basin HAM Radio Operators! The holiday season is here! No matter what restrictions we may have, please find the time to connect with family and friends whether it's in person or virtually over the phone or video conference.

Until there is a vaccination and restrictions are lifted, MARC meetings are put on hold and the Cawfee Tawk net will continue to be held everyday from 10am to 11am. The Cawfee Tawk net was started in March when we were restricted to our homes because of the Covid-19 outbreak and some of us were concerned if our fellow ham operators were doing okay. We don't know if you are okay unless you transmit on the radio. I may not host this net every day, but, I will pledge to check in and listen every day from 10am to 11am on the repeater system when I have a network connection, no matter where I am in the world. You don't have to stay on for the entire hour, just please say hello between 10 and 11. I and others would like to hear your voice.

I upgraded my audio interface card that connects my Raspberry Pi AllStar node to a radio at my home in Joshua Tree so I can connect to the MARC repeater system with my smart phone, no matter where I am in the world. See the separate article for more details.

If you want a cheap desktop computer then I highly recommend the \$100 Raspberry Pi 400. It's a small computer built into an 11.25 inch keyboard with a USB attached mouse. All you need is a TV or computer monitor with an HDMI connection and you're ready to go. I purchased mine at vilros.com.

This is the time of year we normally have elections for MARC officers and board members. If it is okay with the rest of the MARC members, I would like to extend the following positions for another year. Please contact me if you do not agree or if you have questions.

President: Rob Cloutier, WO4ROB
Vice President: Keith Board, N6GKB
Treasurer: Glenn Miller, N6GIW
Secretary: Paul Edwards, AA6SM
Board member: Judy Cloutier, KK6NWX
Board member: Manuel Borges, AE6SG

Please schedule time to check in on the 7 PM Tuesday net and if you can, please join us on the Cawfee Tawk net every morning at 10 AM.

Take care of yourself and enjoy each day. If you're not having fun, then you're doing something wrong.

Rob Cloutier
WO4ROB
Joshua tree
Club President
(760)401-6666
rob_cloutier@hotmail.com



Linked Repeaters

Yucca Valley, W6BA

146.790 MHz (- shift = 146.190 MHz) 136.5 Hz PL/CTCSS

Twentynine Palms, W6BA

147.060 MHz (+ shift = 147.660 MHz) 136.5 Hz PL/CTCSS

Landers, WB6CDF

447.580 MHz (- shift = 442.580 MHz) 173.8 Hz PL/CTCSS

Nets

Amateur Radio Emergency Service (ARES)
Mon @ 1915
Morongo Basin Amateur Radio Club (MARC)
Tue @ 1900

Social Media,

Club web page: <http://www.w6ba.net>

Facebook:

<https://www.facebook.com/MorongoBasinAmateurRadioClub>

Club Meeting

(Cancelled Until Further Notice)

Every 3rd Thursday of the month at 6 PM. At the church of the Nazarene in Yucca Valley at 56248 Buena Vista Dr



MARC Beacon

The Morongo Basin Amateur Radio Club Newsletter



TOM MEDLIN W5KUB WEEKLY WEBCAST 1HAM RELATED. TUESDAY NIGHTS AT 8PM
<http://tmedlin.com/> OR <http://w5kub.com>



HAMNATION IS A WEEKLY HAM RADIO RELATED TV SHOW WITH FAMOUS HOSTS SOME OF YOU MAY KNOW LIKE, GORDON WEST, BOB HEIL AND OTHERS. WEDNESDAY NIGHTS AT 6PM
<https://twit.tv/shows/ham-nation>

The weather station on Paxton Hill at the W6BA repeater site is working great. It will show accurate wind speed and direction measurements for the top of the mountain .

<https://www.wunderground.com/personal-weather-station/dashboard?ID=KCAYUCCA57>
Glenn N6GIW

I also have A weather station by the high school in Yucca Valley N6GKB. Showing the temps and wind speeds in the center of Town.
https://www.wunderground.com/dashboard/pws/KCAYUCCA35?cm_ven=localwx_pwsdash
Keith N6GKB



We are having an informal DAILY net, that started Monday March 30th. Join us with your own cup!

For right now it's called the "**CAWFEE TAWK**" net at 10:00 am till 11:00. It's just a way for any and all hams to check in, say good morning and see what everyone is up to. With all the things going on in this world we would just like to stay connected and be sure our local community of hams are ok. A little meet and greet with your coffee and donuts in the morning is a great start.

More like ice coffee now that it has warmed up!



These Vehicle magnets are still available from Rob, WO4ROB. They 12" long. I believe they are \$10 each. Contact him with your order.



HOW IS IT THAT ROB WO4ROB CAN GET INTO THE YUCCA REPEATER FROM ALL OVER THE USA?!?!?!?



WO4ROB Remote Connection Node

Since Judy and I do a lot of traveling, I wanted a way to connect to the local repeater using my iPhone, no matter where I was in the world. My solution is using a Raspberry Pi AllStarLink (ASL) node connected to a Baofeng radio that stays at my house while I connect to the node through the internet using the FREE Zoiper application (app) on my iPhone.

If I want to connect to the repeater, I start the Zoiper app on my iPhone and make a call to my node at home. Once the call is connected, I remotely turn on the Baofeng radio with my iPhone. This is done using a Wyze Plug at home and the Wyze app on my iPhone. The Wyze plug is a WiFi controlled electrical outlet that the radio is plugged into. I don't want the radio at my home connected to the repeater 24/7 just in case something horribly goes wrong like having a hot mic that continuously keys up the repeater.

In the Zoiper app, I press the Speaker button on the touch screen to hear the distant end better, and the Mute button so no one can hear me. If I want to transmit, I press the Mute button off and on like a push to talk (PTT) button on a radio. When I want to disconnect, I press the End Call touch screen button in the Zoiper app on my iPhone, and remotely turn off the electrical outlet connected to my home radio using the Wyze app.

Configuration:

If you want to build your own remote connection node, then perform the following configuration steps: (Details for each step may be requested, and provided by the author.)

1. Register your own node with your call sign and a password at: <https://www.allstarlink.org/portal/register.php>
2. Purchase the hardware listed in this article for less than \$200.
3. Download the FREE HamVoIP software from:

<https://hamvoip.org/#download>

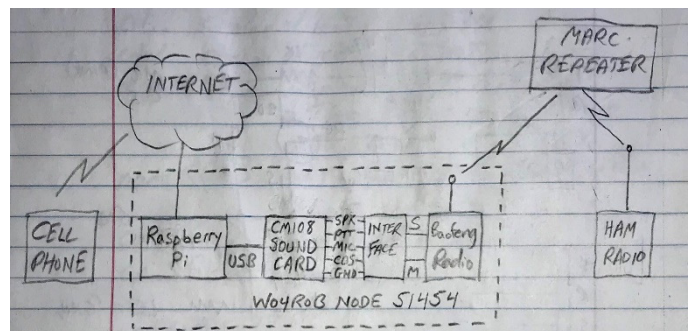
4. Load and configure the HamVoIP software onto a micro SD card for the Raspberry Pi.
5. Download and configure the FREE Zoiper Lite VoIP app onto your iPhone and create an account on your Raspberry Pi.
6. Configure port forwarding on your home WiFi router to allow you to access your node beyond your home network.
7. Disable the un key courtesy tone or roger beep.
8. Disable the voice node callsign ID announcement.
9. Disable the hourly time announcement.
10. Create and activate a whitelist to only allow specific nodes to connect to your node.
11. Adjust the Rx and Tx levels to eliminate distortion.

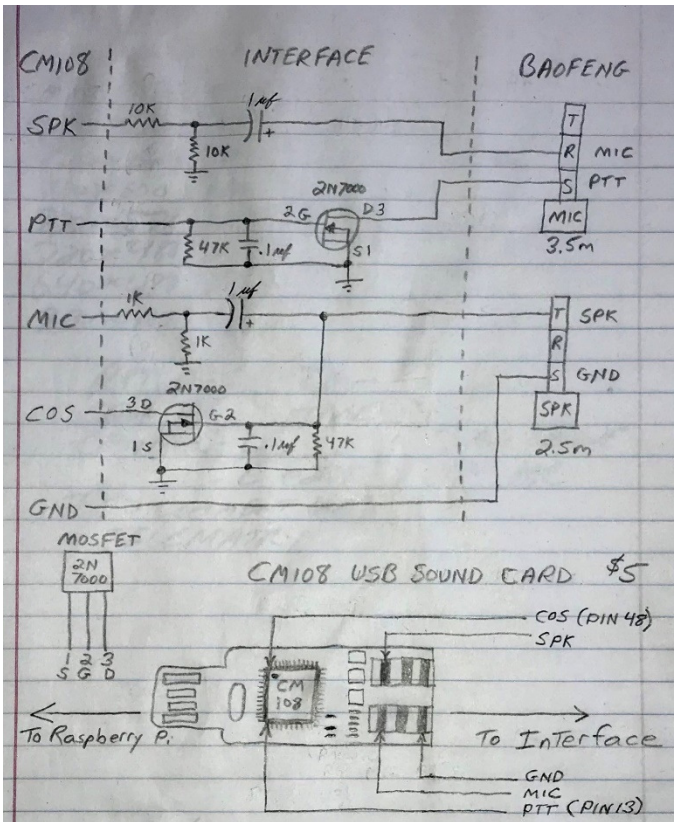
Hardware: (\$185)

1. Raspberry Pi, Revision 4, Model B (RPi4B) with 4 Giga Bytes (GB) of Random Access Memory (RAM), heat sinks, fan, case, 32 GB micro SD card, and a 5 volt 3 amp power supply, \$100 at amazon.com (Note: HamVoIP will not work on RPi4B with 8GB RAM)
2. Baofeng UV-5R radio, \$30 at amazon.com
3. Baofeng UV-5R car battery adapter, \$10 at amazon.com
4. AC to DC 12 volt 3 amp power supply with cigarette lighter adapter, \$15 at amazon.com
5. WiFi remote outlet plug, \$10 at wyze.com
6. CM108 USB sound card, \$10 at amazon.com
7. Sound card to Baofeng radio interface, WO4ROB design \$10, or DIY

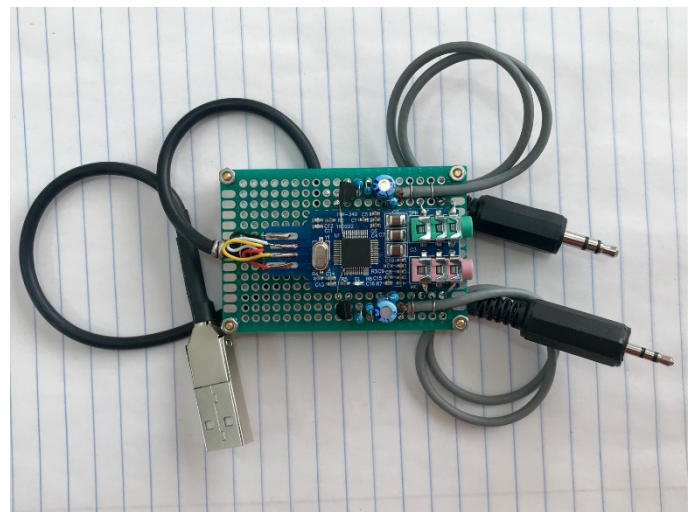
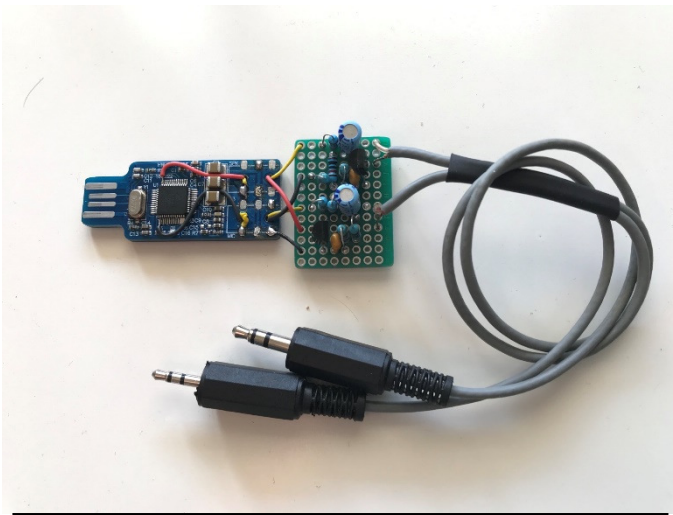
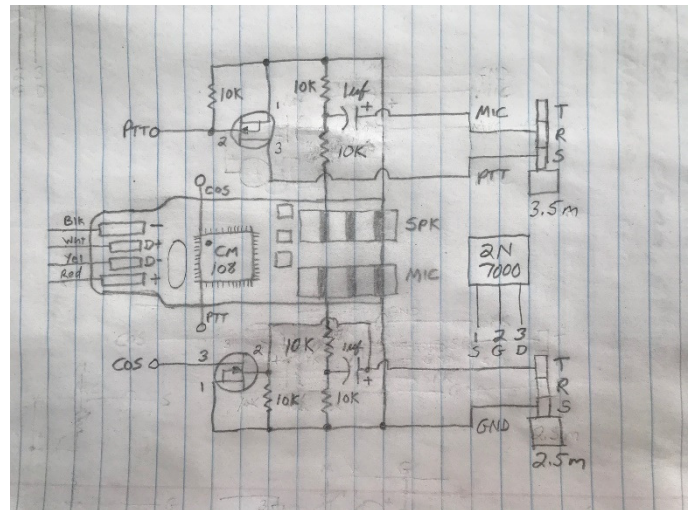
Software: (FREE)

1. HAM VoIP, FREE at hamvoip.org
2. Zoiper Lite VoIP soft phone, FREE at the App Store
3. Wyze app, FREE at the App Store





without modifying the CM108 USB sound card with the exception of adding 5 tiny wires to the board for the ground, speaker, microphone, push-to-talk, and carrier-operated-squelch connections. The only other electronic components I added to the CM108 USB sound card were six 10 kilo ohm resistors, two 2N7000 transistors, and two 1 micro Farad capacitors. My new interface card does not require the user to change any of the simple USB sound settings within the HAM VoIP software. See photos for details and please contact me for any questions you may have. - WO4ROB, Rob from Joshua Tree



“Audio Card Interface Update”

Last month I wrote about my remote connection node. Since then I modified the audio card interface that connects the radio to the Raspberry Pi. First of all the CM108 USB sound card would just hang off of the Raspberry Pi USB port making it vulnerable to creating a loose connection. I resolved this by soldering a USB extension cable to the CM108 USB sound card. There are videos and articles explaining the need to remove components from the CM108 USB sound card. I did not see the requirement so I designed my own interface

I LEFT THE ORIGINAL POST UP FOR YOUR OWN COMPARISON FROM THE ORIGINAL AUDIO CARD TO THE NEW UPDATED ONE. Keith Board

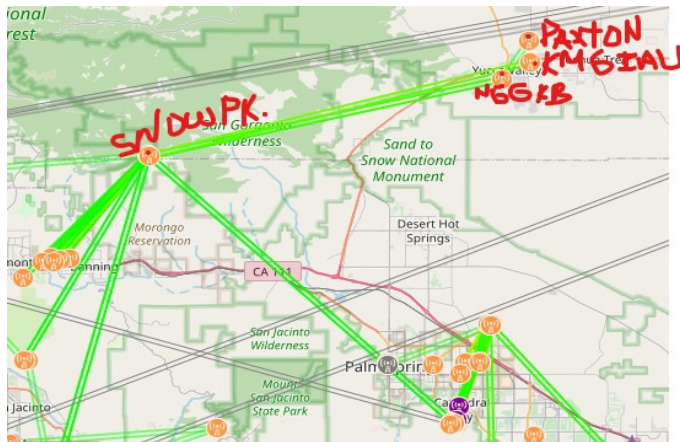


New AREDN Equipment installed on Paxton Hill

2 nodes were installed on Paxton hill this past week.

KM6IAU-PaxtonHill-Node1 An Omni Antenna for local area HAMs to access the system.

KM6IAU-PaxtonHill-Node2 A Link dish to Snow Peak.



This is a map of the high and low desert system, Before, the high desert was not on the map.

I (Keith N6GKB) thought up the idea for the high desert link system a couple years ago as I saw the AREDN system becoming a real time asset to the Ham and emergency system if needed in case the internet and other means of communications were cut off.

And with the countless hours of work from Aaron KM6IAU it all became a reality!!

Chris WB6CDF helped greatly install the antennas and helped me get it all installed up on Paxton hill.

As with some new systems it has some bugs to work out that we are working on but it is looking to work out great in the near future.

For more info about AREDN got to:

www.arednmesh.org

Or you Can contact Keith N6GKB

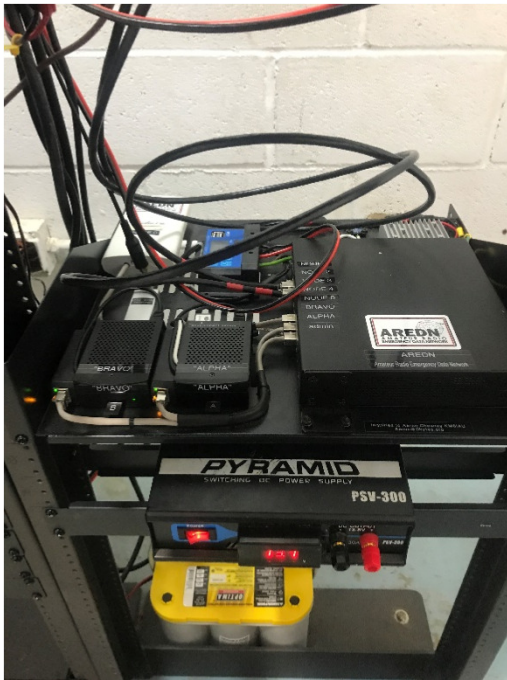
N6gkb@live.com or

Aaron KM6IAU

Km6iau@0bytes.org

For the local information concerning our new nodes up on Paxton Hill.





Once it is fully operational anyone within line of sight of Paxton Repeater should be able to access the AREDN mesh system.

Next month I will have a more complete and detailed information about our new AREDN nodes.



QUARTZFEST is now "QUARTZ-PAUSE" 2021

YES, Quartzfest is now Quartz-PAUSE 2021, same BLM place, same station, same excitement , *Sunday January 17 through Saturday January 23rd, 2021.*

"NOTHING WILL BE ORGANIZED"....just like the first 4 years of Quartzfest 25 years ago! WHO IS IN CHARGE???....NO ONE IS IN CHARGE!! We are all ON OUR OWN!!

Covid-19 precautions preclude our regular tent gatherings, tent registrations, packed seminars, and the like. Social physical distancing and masks will keep us on-point to avoid any virus during this pandemic

Quartz-PAUSE will continue to be radio ACTIVE. Talk in on 146.550 simplex. Park ANYWHERE you want, and leave more room to spare. Announcements in the morning and evening on 146.550.

YES, the Main Fire Ring will be the focal point where there will be no close gatherings, per management....oh....there is NO management this year.....

YES, Frank is thinking about planning a day of guided and narrated 4-wheel. No visitors in the caravan vehicles, suggested, unless family.

YES, one day will be a yard sale, socially distanced, and handle inspections of gear with gloves. (some ham gear, we do that anyway!)



Yes, Gary will have lots of ATV topics to see and hear in your own unit's cable ready TV. Socially distanced HOOTENANNY, ...we got the whole desert, in our (sanitized) hands, ...Bring your gut-buckets and kazooos.

GOLD in them thar hills, you say? Lots of room to separate and do some rock hounding....we got the whole mountains nearby..... Have you been to Quartz Hill, about a half hour away? the BIG WHITE TENTS are coming to town, the full week, so mask-up and explore the RV show with no time limit to get back to Mile 99.



11/30/2020

RadioShack® is back as an online retailer of electronics, offering some parts in its inventory that largely consists of radios, batteries, telephone gear, drones, computer accessories, and even cameras. The iconic company was recently purchased from General Wireless by Retail Ecommerce Ventures (REV).

No plans are in place to reopen RadioShack-owned stores, although some 400 brick-and-mortar outlets not affiliated with REV are operated by franchisees. REV, which specializes in online retail, has previously revamped the internet presence of such bankrupt businesses as Pier 1 Imports and Dressbarn, according to a news release.

During its heyday, RadioShack had some 8,000 retail outlets and once offered some amateur radio equipment, including some popular handheld transceivers and a 10-meter transceiver. RadioShack came out of its second bankruptcy in January 2018 with 400 dealers, an online retail presence, and a distribution center.



Launch Window for AMSAT's RadFxSat-2 / Fox-1E Opens on December 19

12/03/2020

The launch that will carry AMSAT's RadFxSat-2 / Fox-1E CubeSat into orbit will likely take place later this month. Virgin Orbit has announced that the launch window for their LauncherOne Launch Demo 2 mission, which will carry the AMSAT spacecraft into orbit, opens on December 19. RadFxSat-2 is the fifth and final Fox-1 satellite built by AMSAT.

Like RadFxSat / Fox-1B (now AMSAT-OSCAR 91RadFxSat-2) the RadFxSat-2 / Fox-1E CubeSat is a partnership opportunity between Vanderbilt University and AMSAT and will carry a similar radiation effects experiment, studying new FinFET technology.

The RadFxSat-2 spacecraft bus is built on the Fox-1 series but features a linear transponder upgrade to replace the standard FM transponder in the Fox-1A – Fox-1D projects. In addition, the uplink and downlink bands are reversed from the previous Fox satellites in a mode V/u (J) configuration using a 2-meter uplink and 70-centimeter downlink.

The telemetry downlink will be 435.750 MHz. The inverting linear transponder uplink will be 145.860 MHz – 145.890 MHz. The inverting linear transponder downlink will be 435.760 MHz – 435.790 MHz

The telemetry downlink features a 1200 bps BPSK channel to carry the Vanderbilt science data, in addition to a 30 kHz wide transponder for amateur radio use. Telemetry and experiment data can be decoded using **FoxTelem** version 1.09 or later. "Participation in telemetry collection by as many stations in as many parts of the world as possible is essential, as AMSAT Engineering looks for successful startup and indications of the general health and function of the satellite as it begins to acclimate to



MARC Beacon

The Morongo Basin Amateur Radio Club Newsletter

space,” AMSAT said in announcing the possible launch window. “AMSAT will send a commemorative 3D-printed QSL card to the first station capturing telemetry from RadFxSat-2.” — *Thanks to AMSAT*

Arecibo Observatory Instrument Platform Falls into Iconic Dish

12/01/2020

[UPDATED 2020-12-02 @1609 UTC] The 900-ton instrument platform of the 305-meter radio telescope at Arecibo Observatory in Puerto Rico fell some 400 feet Tuesday morning, crashing into the huge, already-damaged dish below, the National Science Foundation (NSF) reported in a December 1 Tweet. “No injuries were reported,” NSF said, adding that it is still assessing the situation. “Our top priority is maintaining safety.” The calamity not only was a final and fatal blow for the observatory but for the people of Puerto Rico.

Head of Telescope Operations Angel Vazquez, WP3R, called December 1 “indeed a sad day.” Vazquez was in the Observatory’s control room at the time, salvaging important instruments when he heard a loud noise.

“At around 7:55 AM, the platform collapsed due to the extra stress on the existing cables because of the main cable failure in November. Strands were starting to pop all weekend long, and it was just a matter of time,” he told ARRL. “It came off the easternmost tower (T4) and took about 15 seconds. The azimuth arm that housed the dome came off the track, fell into the dish a little north of center and the triangle was pulled by the other existing cables to the northwestern part of the dish. The tops of the towers broke as well. This was a 900-ton platform, and the dome was smashed like an eggshell.”

The towers supported the massive instrument platform, which was suspended on cables above the dish. On August 10, an auxiliary cable that helped to support the platform snapped and fell, causing a 100-foot gash in the reflector dish. After an extensive evaluation, NSF **announced** on November 19 that the damaged radio telescope — in service for nearly 60 years — was beyond repair and would be decommissioned due to safety concerns. Arecibo, which, among other accomplishments had contributed to the observation of black holes, was the second-largest radio telescope in the world.

The iconic dish has served as a backdrop for several science fiction movies. The Arecibo Observatory Amateur Radio Club, KP4AO, is headquartered at the research facility, and several other radio amateurs are employed there in addition to Vazquez. Operations at the world-famous observatory have been managed by the University of Central Florida (UCF).

Engineers were ready to implement emergency structural stabilization of the auxiliary cable system, but while arranging delivery of two replacement cables and two temporary cables, a main cable broke on the same tower on November 6. Based on the stresses borne by the second broken cable, engineers concluded that the remaining cables were likely weaker than originally projected.

Antenna designer and electrical engineer Jim Breakall, WA3FET, who conducted research at the world-famous facility over more than 45 years, told ARRL that his experience with Arecibo began in 1974 when he was a student, and he worked on the first HF ionospheric heating design and calibration of the dish for ionospheric research. He also conducted amateur radio moonbounce experiments there. Later, he designed feeds for radio astronomy and designed and built the HF ionosphere modification facility that fed the dish with a dipole array at the bottom of the huge dish, after Hurricane Georges destroyed the first HF facility some 10 miles away in 1998.

“I built a super contest station on my farm there about 2 miles away using Angel’s call sign, WP3R. It got destroyed in Hurricane Maria in 2017,” Breakall recounted. “I also was on the team for KP4AO in 2010 for EME [moonbounce] and my photo was on the cover of QST with Joe Taylor, K1JT.”

“I was prepared for this, but still never wanted to hear it,” Breakall told ARRL. “It is like losing a loved one when you know they are dying. Wow. Who would have ever believed it.”

NSF said it was saddened by the latest development regarding the aging radio telescope. “As we move forward, we will be looking for ways to assist the scientific community and maintain our strong relationship with the people of Puerto Rico.”



MARC Beacon

The Morongo Basin Amateur Radio Club Newsletter



Above before



Now after

Arrecibo Observatory to be Demolished

Nation Science Foundation engineers have determined the damaged Arrecibo Observatory is in imminent danger of unpredictable collapse with threat to life and surrounding structures. Planning underway to safely disassemble or demolish the antenna system.

The Verge story:

<https://www.theverge.com/2020/11/19...-decommission-structural-collapse-cable-break>

Comment: A major symbol of America's decline and abandonment of research, science and education.

China now has the worlds largest radio observatory.



Serving the radio community since 1942

**Universal Radio Inc.
651-B Lakeview Plaza Blvd.
Worthington, OH 43085**

Orders 800 431-3939 Info. 614 866-4267

Universal Radio Closing: Retirement

This note from the Universal Radio Website...

<https://www.universal-radio.com/RetireNotice.htm>
!

QUOTE:

Dear Friends Of Universal Radio,

Time waits for no one, and that includes Barbara and myself.

We have decided to retire and our current location in Worthington

will close on November 30, 2020. Even though the store is closing

we will fulfill all existing customer orders and have a large amount

of inventory to close-out. The Universal Radio website will be maintained

for the foreseeable future to sell this remaining stock, publications and

some select products. Unfortunately the lack of a store front showroom

will preclude us from carrying some manufacturers' products.

I am very fortunate to have been in the radio business for over 50 years,

13 at Radio Shack and 37 at Universal Radio. We have met many wonderful

people along the journey who have supported me personally as well as

Universal Radio. It has been a privilege to have a



MARC Beacon

The Morongo Basin Amateur Radio Club Newsletter

continuous career in the fascinating field of radio since 1969.

Please accept our sincere **“Thank You”** for your support of Universal Radio for these many years, and for the months to come.

Our new address for correspondence and mail order is below.
This is not a store front.

Universal Radio Inc.
752 N. State St. Unit 222
Westerville, OH 43082

Phone: 614 866-4267
Thank You
73,

Fred Osterman N8EKU
Barbara Osterman KC8VWI

ARRL Asks FCC to Allow 3.4-GHz Operation until Spectrum is Occupied

In [comments](#) to the FCC, ARRL has argued that radio amateurs be allowed to continue shared operation in the 3.4 GHz band until 5G licensees who purchase the spectrum when the FCC puts it up for auction initiate incompatible operations. In its *Further Notice of Proposed Rulemaking (FNPRM)* in WT Docket 19-348, the FCC had proposed to sunset the band for amateur radio in two phases, governed by when new licenses are issued rather than when the new licensees begin to use the spectrum. In the *FNPRM*, the FCC solicited comments on whether alternatives exist to its proposal.

“Amateur activities further the public interest and should be permitted to continue on a secondary basis unless and until a new primary licensee is ready to occupy the spectrum in a preclusive manner,” ARRL told the FCC. “At a minimum, amateur operations should be permitted to continue indefinitely in the 3.3 – 3.45 GHz spectrum, where no new flexible licenses are under immediate consideration. The Commission could consider whether a registration or other mechanism similar

to that found in Section 97.303(g) would facilitate avoiding interference.” Section 97.303(g) contains specific frequency-sharing requirements for the 2200- and 630-meter amateur bands.

“Amateurs often select the 3.4-GHz spectrum precisely because other spectrum choices are sub-optimum or simply not available. Amateurs also are only secondary users on most of the other spectrum suitable for similar purposes,” ARRL said. “Links must be carefully engineered because of that secondary status, which applies to most of the 2.4- and all of the 5.8-GHz bands available to amateurs. ARRL emphasized the importance of allowing amateurs to continue to use the 3.4 – 3.45 GHz portion in particular.

ARRL pointed out that in many geographic areas it could be years before the 3 GHz spectrum is actually put into use by commercial users, and argued that amateur radio should be allowed to continue to operations on a secondary, non-interference basis as it has done for decades with federal primary users, until new uses actually begin, rather than when licenses are issued. Read [more](#).

The K7RA Solar Update

Tad Cook, K7RA, Seattle, reports: Sunspot Cycle 25 is a year old, and solar activity continues to increase. Last week, the average daily sunspot number was 27.9. This week it's 57.6. The highest daily sunspot number of the past week was 84 on November 29. Solar flux also peaked that day at 116.3, pushing the week's average to 108.1, up from 90.1 the previous week.

Geomagnetic indicators were moderate. A [solar flare on November 29](#) was the most powerful solar flare and coronal mass ejection (CME) in the new solar cycle — a sure sign of increasing activity. It was not Earth-directed, however.

Predicted solar flux over the next 45 days is 105 on December 3 – 4; 103, 95, and 90 on December 5 – 7; 85 on December 8 – 9; 80 on December 10; 85 on December 11 – 12; 82 on December 13 – 16; 85, 90, and 100 on December 17 – 19; 105 on December 20 – 21; 108 on December 22; 110 on December 23 – 25; 115 on December 26 – 27; 113 on December 28 – 30; 110 on December 31; 105 and 103 on January 1 – 2; 95 on January 3 – 4; 92 and 88 on January 5 – 6; 85 on January 7 – 8; 82 on January 9 – 12, and 85, 90, 100 and 105 on January 13 – 16.

Planetary A index is predicted at 5 on December 3 – 17; 12, 20, and 8 on December 18 – 20; 5 on December 21 – 22; 8, 10, and 8 on December 23 – 25; 5 on December 26 – January 13, and 12, 20, and 8 on January 14 – 16.



DECEMBER 2020

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
STAY SAFE STAY HEALTHY STAY TOUCH		MARC Net 7:00 pm NCS JESSE		ARES Meeting 6:00 pm		
6	7	8	9	10	11	12
	ARES Net 7:15 pm	MARC Net 7:00 pm NCS GLENN				
13	14	15	16	17	18	19
	ARES Net 7:15 pm	MARC Net 7:00 pm NCS KEITH		NO MEETING		
20	21	22	23	24	25	26
	ARES Net 7:15 pm	MARC Net 7:00 pm NCS FRED				
27	28	29	30	31		
	ARES Net 7:15 pm	MARC Net 7:00 pm NCS JESSE				KAFEE TAWK 10AM DAILY CLUB REPEATER

↓
↓

One More Page



MARC Beacon

The Morongo Basin Amateur Radio Club Newsletter



[FT8 HEAVY WEIGHTS EVENT 2020](#)

The event takes place on December 26th at 00:00 UTC to 23:59 - only 24 hours.

The frequencies we will use are non-standard FT8 frequencies.

We have narrowed it down to 3 major bands of **17m**, **20m**, and **40m**

The unofficial frequencies we'll use are: **18.095 MHz**, **14.090 MHz** and **7.064 MHz**

Please message me for more Info 73

<https://qrznow.com/ft8-heavyweights-by-9z4y-kc0bra/...>

"Make Ham radio great again" Join the fun, get the contacts.

FT8 Heavy Weights 2020 edition

On Dec 25 at 8 PM – Dec 26 at 8 PM UTC

Be there or be square.
