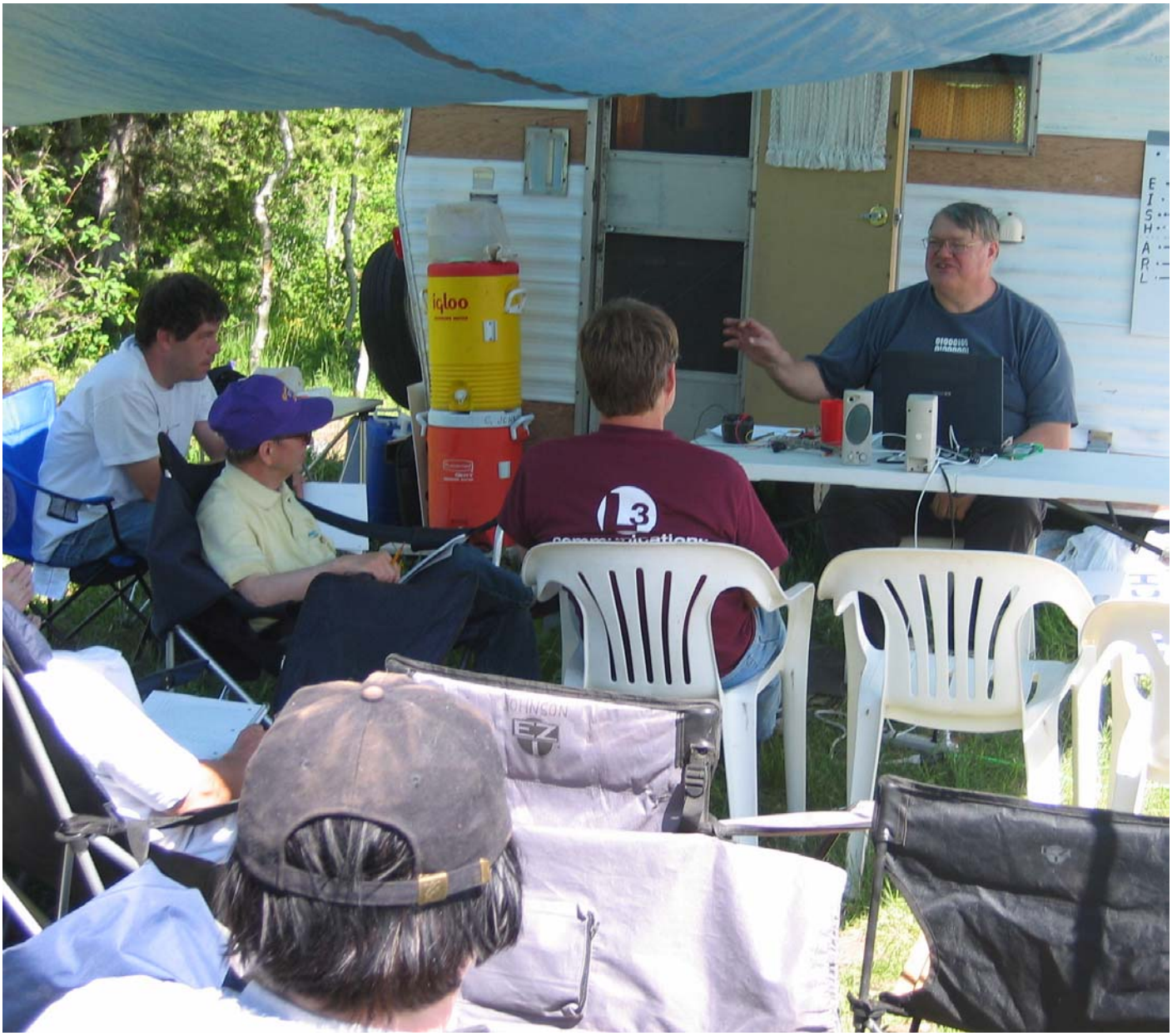
The *Microvolt*

April 2020



Prologue

Publication: *The Microvolt* (USPS 075-430) is the official publication of the Utah Amateur Radio Club, Incorporated, 632 S. University Street, Salt Lake City, UT 84102-3213. It is published monthly except August. Subscription is included with club membership at $20 per year. Single copy price is $1.50. Periodicals postage paid at Salt Lake City, Utah. Postmaster: send address corrections to *The Microvolt*, c/o Tom Kamlowsky, 4137 Clover Lane, Salt Lake City, UT, 84124-2711.

Deadline for submissions is the 24th of each month prior to publication. Submissions by email are preferred (k7hfv@arrl.net), but other means including diskettes and typewritten submissions can be mailed directly to: Gordon Smith, 632 University St., Salt Lake City, UT 84102-3213. Reprints are allowed with proper credits to *The Microvolt*, UARC, and authors. Changes in mailing address should be communicated to the Club Secretary: Tom Kamlowsky, 4137 Clover Lane, Salt Lake City, UT, 84124-2711.

Club: The Utah Amateur Radio Club was organized under its present name in 1927, although its beginnings may date back as early as 1909. In 1928, it became affiliated with the American Radio Relay League (club #1602) and is a non-profit organization under the laws of Utah. It holds a club station license with the call W7SP, a memorial call for Leonard (Zim) Zimmerman, an amateur radio pioneer in the Salt Lake City area.

Meetings: The club meets each month except July and August. The meetings are held on the second Thursday of the month at 7:30 PM in the University of Utah's Warnock Engineering Building, generally in room 1230 or 2230, sometimes in 2250 or 105.

Membership: Club membership is open to anyone interested in amateur radio; a current license is not required. Dues are $20 per year, including a *Microvolt* subscription. *The Microvolt* and membership cannot be separated. Those living at the same address as a member who has paid $20 may obtain a membership without a *Microvolt* subscription for $12. Send dues to the Club Secretary: Ton Kamlowsky, WA7ZRG, 4137 Clover Lane, Salt Lake City, UT 84124-2711. Let the Secretary know if you prefer the electronic edition of *The Microvolt* instead of the printed version.

Contributions: Monetary contributions are gladly accepted. Send directly to the Club Treasurer: Chuck Johnson, 1612 W. 4915 S. Taylorsville, UT 84123-4244. For in-kind contributions, please contact any board member to make appropriate arrangements.

Repeaters: UARC maintains the 146.62- and 146.76- repeaters. The repeaters are administered by the UARC Repeater Committee. Comments and questions may be directed to any Committee member. The Lake Mountain repeater (146.76-) is IRLP node 3352. Instructions for IRLP use are on the club website.

Ham Hot-Line: The Utah Amateur Radio Club (UARC) has a Ham Hotline, 583-3002. Information regarding Amateur Radio can be obtained, including club, testing, meeting, and membership information. If no one answers leave your name, telephone number and a short message on the answering machine, and your call will be returned.

UARC 2020 Board

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Field Day Chair: (To be determined)	
License Trustee: Brett Sutherland, N7KG	801 298-5399
Repeater Engineer: Clint Turner, KA7OEI	801 566-4497
Autopatch Engineer: Gordon Smith, K7HFV	801 582-2438

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IRLP Information

For information on using the club's IRLP node on the 146.76 repeater, check http://www.utaharc.org/irlp.

For late breaking news listen to the UARC Information Net Sundays at 21:00 on 146.62 or set your browser to: http://user.xmission.com/~uarc/announce.html

We are grateful to the management of XMission, our Internet Service Provider (ISP), for the donation of this Web-Page service.

For account information go to:
http://www.xmission.com/ Or call 801 539-0852

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Latest News

No April Meeting

Due to the Govenor's limit on group size and general interest in keeping our members healthy, we had to cancel the March UARC meeting and the situation is no better as we approach April, so, with great regret, we must announce the cancellation of the April meeting as well. We hope that our membership will take all due precautions and stay healthy. Amateur radio, after all, is just a hobby, but it gives us a chance to stay in touch with each other if not in person.

We don't know at this time when the situation will become more favorable. We will try to keep everyone informed as we approach the May meeting, or lack thereof.

Our Cover

Because we can't use the cover to show you the speaker at the (nonexistent) March meeting we thought we would dream about better times and start thinking about Field Day, the nationwide operating event that happens each year on the fourth weekend in June. The cover shows our Treasurer, Chuck Johnson, WA7JOS, teaching a class at the 2010 UARC Field Day entry near Payson Lakes.

Cancellations

UARC meetings are not the only things suffering from cancellation in the amateur radio world during this time of pandemic. Here are some others of which you might want to be aware:

License Classes: The classes that Morris Farmer planned to teach for those working toward Technician or General class licenses have been canceled. We hope (but can't guarantee) that conditions will be better in the Fall to allow classes at that time.

Other UARC Activities: We do not know at this time if it will be feasible to have May or June club meetings as well as Field Day (June 27-28) and Steak-Fry (July 11). The necessary arrangements for the sites have been made so they can be held if conditions allow them. We will make any decisions known on the club web site at: http://user.xmission.com/~uarc/announce.html.

Utah Valley Hamfest: The Utah Valley Hamfest has been canceled. This ARRL-sanctioned Utah state convention was to be held on May 8 and 9 on the Utah Valley University campus. Those who preregistered may request a refund by sending email to mailto:refunds@utahvalleyhamfest.com. Some have chosen to let their preregistration fees be a contribution.

Dayton Hamvention: The Dayton Hamvention, the largest amateur radio convention in the United States, has been canceled for this year. It would have been held May 21 to 23 in Xenia, Ohio. Many have pre-registered and paid for display space and other options. Refund options can be found at the event's web site: https://hamvention.org/.

License Exams: The UARC-sponsored license exam sessions have been canceled until further notice. It would be well to check with the contact person for any upcoming exam session to verify whether it will go ahead as planned.

HB-101 Fails

Last month we mentioned HB-101, a bill before the Utah Legislature that, in its original form, might have been interpreted to forbid the use of amateur mobile transmitters while driving. An ARRL-recommended amendment had been added (thanks to the efforts of Jay Brummett, W7WJB, and others) that would have clearly excluded from the restriction those drivers operating under FCC rules for amateur radio and other services classed as "land mobile."

The bill was passed by the Senate, but needed to go back to the House for approval of the most recent change. With the rush on the final day of legislature action, it didn't make it to a vote before midnight, and so was lost.

The good news is that there is no worry for the moment about limitations on our mobile operation. The bad news is that if a similar bill is created in a future session, it will be introduced by another member of the legislature, because Carol Spackman Moss has now retired. We may have to start all over convincing another legislator of the need to make the needed exception. We must be vigilant in 2021!

One Thing That *Isn't* Canceled

Utah is one of the four states that make up the ARRL Rocky Mountain Division. The others are Wyoming, New Mexico, and Colorado. This year it was Colorado's turn to host the annual Division Convention. We received the following from those planning that convention:

Dear Friends,

We understand with all that is happening in the world right now that it is difficult to think about what is happening this summer. However, we want to remind you that the ARRL Rocky Mountain Division Convention is being held August 8-9 in Denver. At this time, we fully expect our event to be held and we are looking for your support.

If you would add a link to the convention's website to your website, alert your club members, and generally share amongst your ham friends, we can all look forward to a fun and successful event. Our call for papers and presentations is open on our website, and we'd love to have your submission too.

We all hope things in the world settle down soon and the convention might just be the first time we can gather with our ham radio friends.

We wish you well and thank you for your continued support.

73 from the HamCon Colorado Committee

Website http://www.hamconcolorado.com/

A Check-On-Welfare Net?

On a recent Sunday night net, the suggestion was made that it might be valuable for hams who live alone to have a net where a roll is called, just to make sure all the net members are still able get to the radios and talk. The proposed net would meet daily (time of day yet to be determined) and just call for each member to check in. It might last no longer than 15 minutes. When a member failed to check in folks running the net would take whatever action that member had asked be taken. That might be any of:

–Take no action unless two consecutive misses
–Call the member on the phone
–Call a friend or relative specified by the member
–Call an ambulance
–Other action the member might suggest

The idea might or might not be useful. There might be too few or too many folks that could be helped. Daily might be too infrequent to be effective. But your Board would like to look into it and get input from our members. Let us know what you think.

Your Audio is Low

On March 18, the day of our Salt Lake Valley earthquake, Jerry Wellman, W7SAR got on the air on UARC's 146.62 repeater from the state Emergency Operating Center (EOC). He spent most of the day there answering questions from many operators who wanted information about the severity of the quake, travel problems, etc. Several people noticed that many of the operators had very low audio (i.e. very low modulation). Telling people they had low audio didn't seem to generate any correction, for example, by talking louder. The situation pointed to the fact that we aren't doing a very good job of educating new hams and would-be hams about what modulation is and why it's important.

Maybe we should review just what modulation is and why it's important to understand. Back in the 1800's it was discovered that radio waves would travel long distances. The problem was that the waves weren't visible or audible, so of what value were they? The first answer (and the only one for a decade or more) was that if we could just detect when the waves were present or absent, by turning them on and off we could send messages using Morse Code, which was already being used successfully for the telegraph.

A Canadian named Reginald Fessenden figured out in the early 1900's how to send voice over these waves that could neither be seen nor heard. The trick was to make the strength (amplitude) of the radio wave go up and down with the sound vibrations that were to be sent. This alteration of the carrier wave to transmit sound was called "modulation."

On our VHF frequencies we use mostly a different kind of modulation: Frequency Modulation or "FM," to send our voices. Instead of changing the strength of the signal in step with the vibrations of our voices, we change the *frequency*.

Maybe it's best explained with an example. Let's say we're on a nominal frequency of 146.52 MHz. Our standard ham "deviation" in Utah is 5 kHz. That means that as we speak, our carrier frequency goes no more than 5 kHz above 146.52 and no more than 5 kHz below 146.52. In other words, our carrier must always stay between 146.515 and 146.525 but it goes back and forth between the two hundreds or thousands of times every second. How loud your audio sounds at the receiving location is entirely dependent on how close to the full 5 kHz you swing your carrier and how often you get that close.

The important point is this: *How loud your FM signal is heard by someone receiving it has nothing to do with signal strength!* That means that if you get a report of "low audio," running more power or a better antenna will have *no effect!* This is why we hear frustrated reports from hams like :

"I've tried three different antennas and twice the power and I *still* get low audio reports!"

So if power and antenna gain don't help, what *do* you do about low audio? The important thing to remember is that to fix low audio, you have to make your change in a place where there *is* audio. This means between your lungs and the modulator stage in your transmitter. Once the signal comes out the antenna port, it is now radio-frequency energy rather than audio-frequency energy and it's too late to change the latter.

The very first thing to check is whether you are close enough to your microphone. Two-way radio transmitters are designed and adjusted for "close-talking," i.e. your lips should be almost touching the microphone. Many microphones are designed to be sensitive only to very close sound sources in order to eliminate room echos and background noise.

Another thing to check is whether, if you are using a hand-held radio, you are talking into the microphone and not the speaker. The microphone is often behind an innocuous hole that is easy to overlook or ignore.

Another problem at this end of the audio path can be a waterproof membrane between you and your microphone. Some Yaesu handhelds have had this problem, apparently having been set for proper audio without the membrane. If you don't plan to do much of your operating under water, a simple solution is simply to punch a small hole in the membrane right over the microphone. Another solution is simply to use an external microphone.

Another solution that many times can be executed without much trouble is to *speak up*. We all have the ability to adjust how loud we speak. Unfortunately when we suggest this to a party the result is often that he sounds much better for fifteen seconds or so, but then gradually falls off to the original low volume.

Further down the chain there may be easy adjustments on the radio that will give you more audio. Most transceivers have a "microphone gain" or "microphone sensitivity" adjustment. For most FM-only transceivers that are less than 20 years old, this is usually an adjustment found in the menu system. Check your manual for details. Some Bau-Feng models, unfortunately, have omitted this feature. For them, speaking close and loud seems to be the only solution.

Multi-mode transceiver almost always have a front panel control for mike gain on single sideband. Often it performs the same function on FM. Some, however, have a menu option that handles FM separately. Again, check your manual.

For very old radios, the mike gain may be a screwdriver adjustment inside the case.

Also found in menus in recent radios (including the Bao-Fengs) is the choice of "wide" or "narrow" FM. "Wide" generally refers to 5 kHz deviation, while "narrow" typically means 2.5 kHz. If you're in Utah be sure to choose "wide." If you visit the L.A. Basin or New York City you may have to switch to "narrow."

So if increasing your signal strength won't make you any louder, is there any reason ever to bother with a good antenna? Most certainly! Better signal strength can increase your readability, but in a different way. A stronger signal (more RF energy as opposed to more audio) will reduce the background noise at the receiving end. FM has a unique characteristic called "quieting." If you've opened your squelch fully with no signal present you have probably heard noise at a level that threatens to drive you out of the house. But when the receiver starts hearing a carrier signal, the noise goes down. More signal means less noise until, when a very strong signal is received, virtually all the noise is gone. We call this state "full quieting." Once you've reached full quieting at a listener's receiver you can add another thousand watts and the listener won't be able to tell any difference.

So weak signal and low audio can both contribute to poor reception. There are situations where the audio is undecipherable due to a combination of the two and an improvement in either one would allow the message to get through. But be sure you have a reasonable audio level. It generally costs nothing, isn't unsightly in the neighborhood, won't dim the lights or raise the power bill, and isn't likely to raise complaints from your HOA.

Amateurs Help Design Low-Cost Ventilators

From ARRL News

Amateur radio volunteers from around the world have volunteered to assist University of Florida Professor Sam Lampotang and his engineering team in their quest to rapidly develop an open-source, low-cost patient ventilator that can be built anywhere from such commonly available components as PVC pipe and lawn-sprinkler valves. The amateur radio volunteers are developing Arduino-based control software that will set the respiratory rate and other key parameters in treating critically ill coronavirus victims.

Multiple volunteers responding to a call for help from Gordon Gibby, MD, KX4Z, included noted software developer Jack Purdum, W8TEE, and uBITX transceiver maker Ashhar Farhan, VU2ESE. University of Florida physicians are working to address the critical legal aspects as the design moves closer to fruition.

The ventilator's valves would precisely time compressed oxygen flow into patient breathing circuits under Arduino control, allowing exhausted patients with "stiff" lungs impacted by viral pneumonia to survive until their body can clear the infection. The software design team is also adding simple features such as an LCD display, encoders to choose parameters, and watchdog safety features. -- *Thanks to Gordon Gibby, KX4Z*

ARRL Headquarters Closed

The American Relay League (ARRL) has closed its headquarters in Newington, CT, in response to a decree from Governor Ned Lamont requiring non-essential operations to reduce their workforce personnel by 100%. Many of us rely on various services from ARRL Headquarters including code practice and bulletin transmissions, processing of VE exams, award issuance, shipment of ARRL publications, and issuance of news and periodicals. We are told that W1AW Code practicice and bulletins, periodical publication, and VEC operations will continue as usual. Other help may be slow in responding because of reduced staff.

They will keep the amateur community informed about any further developments.

Member of the Month

Jay Brummett, W7WJB

By Linda Reeder, N7HVF

This month we are featuring Jay Brummett, W7WJB. Jay has been in amateur radio for three years and has his Extra Class license. Jay became interested in amateur radio when he was a young child. When Jay was in the fourth grade he had a Hallicrafters receiver. Back in those days this was the most popular radio.

That is how the radios were back then: you had to have a separate transmitter and receiver. Jay had the receiver and he learned a lot listening to the amateur radio opperators. He wanted badly to get his amateur license but because he was dyslexic had a hard time learning the Morse Code. Jay did

stay active in radio communications by being a member of the Civil Air Patrol and as a CB operator. In the early 1970's one had to apply for a CB license to get on the air. The license included a call sign. Shortly after that they did away with the licenses.

Jay is a computer engineer. It is his job to make sure the computers are up and running. Jay works for Davis Technical College, has been there for 40 years, and is now semi-retired. Jay is a part of the cyber security factual Davis Technical College. Jay and his wife, Frances, have three grown girls. None of them are in amateur radio. Jay's wife, Frances, has her Technician license. Her call sign is KI7YSI.

In September, 2019, Mel Parkes, NM7P, the ARRL Section Manage for Utah, appointed Jay to be Governmental Liason for ARRL's Utah Section. Jay looks after the laws and ordinances that may affect amateur radio. Jay would like all of us to help protect our amateur radio privileges. We have been fighting for years for our zoning rights to put up antennas. It has passed the House in Congress but not the Senate.

Jay was going to be the guest speaker at the March 12 UARC meeting to teach us how to influence the legislature, but, because of the problems we are having with the Carona disease we had to put the meeting on hold. Jay, we will be looking forward to hearing from you at a future meeting when things will be back to normal.

Jay is a member of UARC and the ARRL. Jay's favorite thing about amateur radio is riding his Harley Davidson motorcycle with his VHF radio on the Harley with a hand-held mike. Jay said you can always find him working on either a radio electronics project or some amateur radio political activity.

Jay, we appreciate your contributions to amateur radio. We know how important it is to stay connected with our government.

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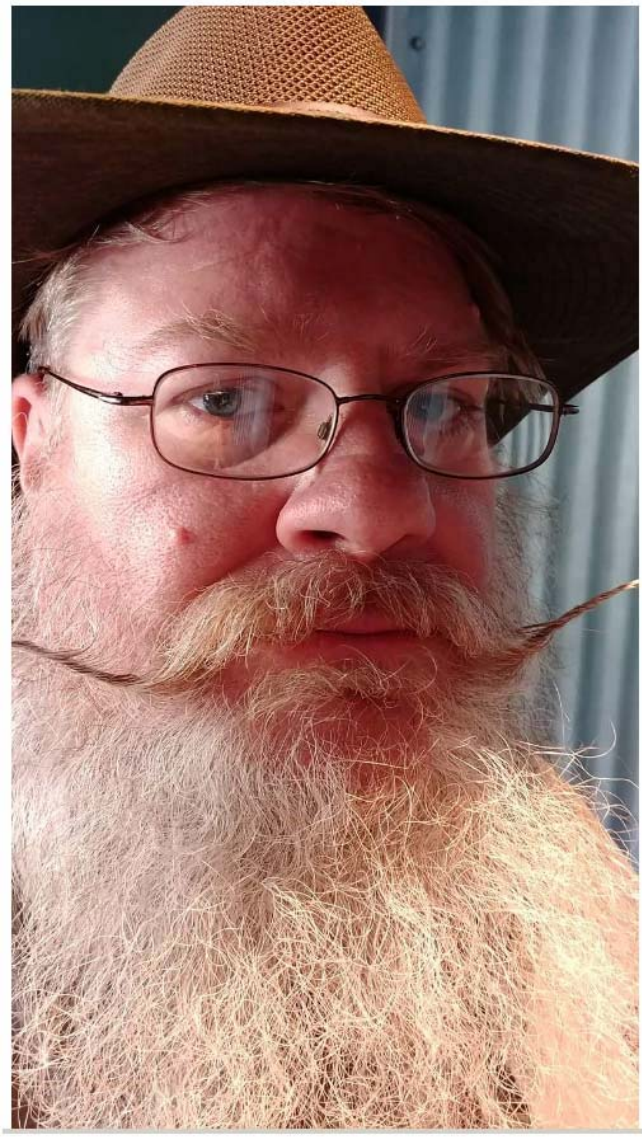

Jay Brummett, W7WJD