

# TCARES - Tuolumne County Amateur Radio & Electronics Society Amateur Radio Club Spring 2026 Newsletter

March 21, 2026



**Jamestown Run Morning Briefing Meeting, March 15, 2026**

## Greetings - Winter is Over and Spring has Arrived!

Hello TCARES members and Happy Vernal Equinox (it officially occurred on Friday, March 20, 2026, at 7:46 AM)! As always, this quarter's newsletter articles are meant to *teach*, *inform*, and *inspire*! The TCARES club newsletter helps to keep us abreast of the news of interest, along with promoting connection with one another in different ways. Our article authors have put effort into their pieces and we hope you enjoy their contributions, keeping you aware and actively engaged in our club.

We continue to have breakfast meetings at [My Garden Cafe](#), in east Sonora at 9 am on the 3rd Saturday of the month - come join us and connect with other Hams! We hope to see you all at the next [TCARES Club Breakfast](#) meeting on [April 18<sup>th</sup>](#). Many other events are listed on the TCARES club [Events Calendar](#) (upcoming events are listed on the right side of the webpage). So, please, come join in on the fun and get connected with other hams!

## Coming Up:

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### Dates to Remember:

March 20	Vernal Equinox
March 21	TCARES Breakfast Mtng
March 21	TCARES Board Meeting
March 28	Loomis Hamfest
April 4	WAS 250
April 18	Old Mill Run
May 16	TCARES Breakfast Mtng
May 16	TCARES Board Meeting
May 30	Groveland Grind Bike Race
June 13	Father's Day Fly-In
June 20	TCARES Breakfast Mtng
June 27-28	ARRL Field Day



Snowcapped Sierra Nevada Mountains

Photo by Marc Colton, N6NEZ



Mount Bullion (near Mariposa, CA)

Photo by Marc Colton, N6NEZ

# Editor's Note

By [Jeff Tolhurst](#)  
N6JWT/WRDP326



## Spring is Here - Happy Vernal Equinox!

As I sit here at my QTH at 3,200 feet, looking out over the green foothills, I am reminded of how much this beautiful landscape we call home, defines both us and our lifestyles. We're so fortunate, but as we all know, it can also be challenging to live here. In Tuolumne County, "*resilience*" isn't just a buzzword; it's a neighborly obligation.

Our club is the bedrock of that resilience and provides us with the foundation for communications during times of need, like when 4 or 5 feet of snow fell on some of us just a month ago. I heard Carol, KJ6OC, and Sterling, AE6RN, on our 2 m linked repeater system trying to return home from an appointment - the radio reports they gave informed some of us of their progress and safety. They are two of the best examples of club members, who take advantage of our system on a regular basis - role models for the rest of us, when getting on the air. I know that for some club members (like ME!) it can be a challenge to want to talk on the air - the "*mic fright*" doesn't go away just because we've had our licenses for a decade, or longer. For others, work and family life can simply get in the way of the radio room. I've been there on both accounts.

But here is the truth: a silent radio is a closed door. When you check into a weekly net, or call out on simplex, just to say "*Hello*," you aren't just practicing a hobby. You are stress-testing a lifeline. You are ensuring that when the power goes out, or the smoke drifts in, the "*secondary nervous system*" of our amazing mountains is firing on all cylinders.

Whether you prefer the steady hum of a HF rig, the technical challenge of a digital Meshtastic network, or a simple handheld on the local repeater, your voice is the most important part of the circuit. You don't need a perfect signal report to be valuable; you just need to be there.

So, let's charge those batteries, tune up those radios, and turn those dials this next quarter. I look forward to hearing your callsigns echoing through the foothills (and seeing you sitting next to Carol & Sterling at the next club breakfast meeting)!

73, jeff

**SPECIAL EVENT PERMIT** State of California - The Resources Agency  
DEPARTMENT OF PARKS AND RECREATION

**INSTRUCTIONS:** To apply for a Special Event Permit, complete this form and read the Special Event Permit Terms and Conditions attached. Submit an original and 2 copies of completed forms (an original and 3 copies for hazardous events), all with original signatures, any supplemental documents (see No. 4 below), and a check or money order to cover the required filing fee to the District office of the park unit where the event will be held.

APPLICANT/ORGANIZATION: TCARES (Tuolumne County Amateur Radio & Electronics Society)

ADDRESS: PO BOX 3555 CITY/STATE/ZIP CODE: Sonora CA, 95370

CONTACT PERSON: Jeff Tolhurst BUSINESS PHONE: \_\_\_\_\_ HOME PHONE: \_\_\_\_\_

PARK UNIT: Columbia Station

SPECIFIC USE: Amateur radio

1. PURPOSE OF THE EVENT: ARRL Winter Field Day

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**ACORD** **CERTIFICATE OF LIABILITY INSURANCE** DATE ISSUED: 06/01/2

**THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.**

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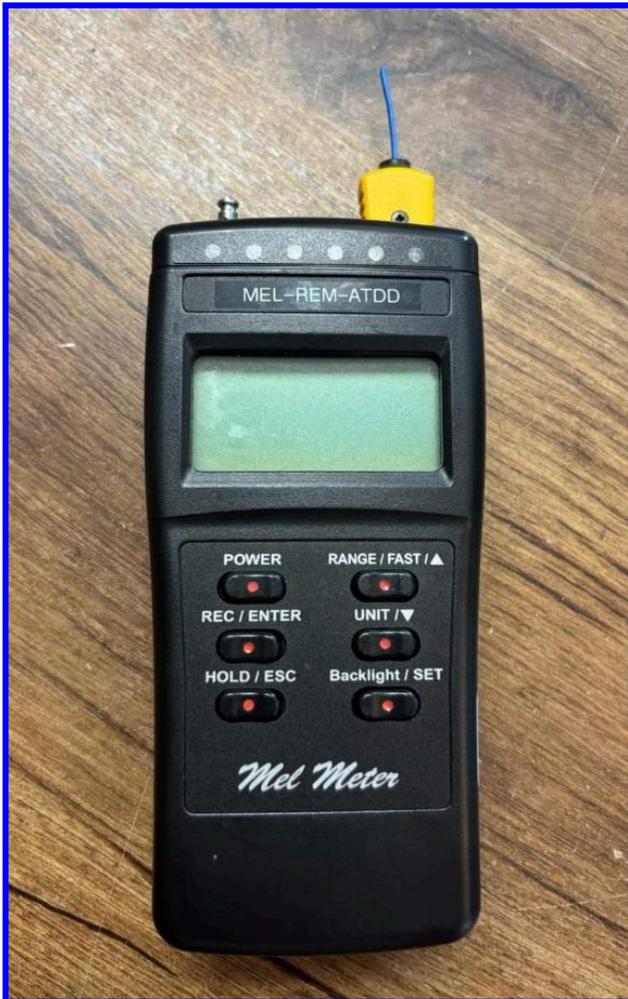
The obligatory forms...



Winter Field Day (WDF) January 24, 2026

## Ghost Busting on WFD

After Winter Field Day (WFD), one of the California State Parks Law Enforcement (LE) officers called me, saying someone had turned in a radio to LE after our event and he wondered if it belonged to anyone from TCARES. I said no one from our group had reported anything missing, and then I asked what type of radio it was. He said, "It says Mel Meter on it." I said I hadn't heard of a Mel Meter radio before, but I would ask around and make an announcement on our weekly nets - we should be able to find out who it belongs to, if one of our members had misplaced it. I hung up, got online and found out a Mel Meter is used to find GHOSTS! I called him back and told him it likely wasn't ours; but if any TCARES members lost a ghost hunting radio device on WFD, let me know...



The Mel Meter (specifically models like the MEL-8704R) is a popular, multi-function tool designed for paranormal investigators to measure electromagnetic fields (EMF) and rapid changes in ambient temperature simultaneously. It features a red, backlit digital display, max/min capture, and an EMF "Burst" mode to detect quick environmental fluctuations often associated with ghost hunting.



# President's Message

by Jeff Tolhurst  
N6JWT



## President's Message

As I look back at our club one year ago, last March we were planning to raise money for a "Comms Trailer" - a communications trailer - that we could bring to our club events in order to have some advanced technological support for the different community events we participate in. In that year, Ned, K6NED, has led the project and we have purchased the trailer, outfitted it with radios, and other equipment, and we have been using it for our events, as planned (the Groveland Grind race; the Father's Day Fly-In; ARRL Field Day; several radio training class sessions, a breakfast meeting, the Tri-County Club Picnic, the TCARES Christmas Party, Winter Field Day, the Jamestown Run, and more). That's at least **10** events in the past year! Thank you, Ned, for your vision, hard work & effort, and your leadership on this project. Our club, and community, are better because of the care and concern you have invested in this project!

Additionally, Mike, W6MVM, our past president, outlined his goals for the club last March, which were to keep doing the things we do well (supporting local races, participating in emergency trainings (The Great ShakeOut, The Perfect Storm, the Tuolumne County OES siren testing, etc.), maintaining our excellent repeater system, celebrating and connecting with others (Tri-County Ham Picnic, Christmas Party, etc.), and more. He also commended us for the training classes we revived during his term. He also suggested that we continue to expand that program and offer some training opportunities for intermediate, and advanced, radio enthusiasts.

I think Mike was right on target with his vision and when we have a good thing going, we'll keep doing it, while examining what we can offer to our members, and community, to improve how we serve ourselves, and others. So look for our Education Committee to continue offering intro-level courses, along with some intermediate, and advanced topics. For example, there will be a Winlink training, at Field Day in June, up at the Pinecrest Academy (see [tcares.net](http://tcares.net) for upcoming details).

Enjoy the spring weather and stay prepared - hope to hear you on the air soon!

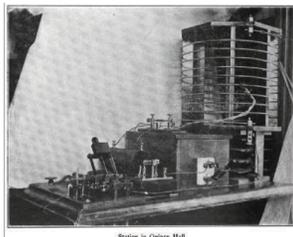
73, jeff



Guglielmo Marconi (L) and Edward Armstrong (1933)



1921 QST Magazine



Station in Quincy Hall  
1st Amateur Radio station on a college campus (Harvard, 1905)



January 1922 issue of QST Magazine - early successes of transatlantic communications by ham radio operators.



Movie star Hedy Lamarr was an avid experimenter with radio and invented frequency hopping spread spectrum, used ubiquitously today.



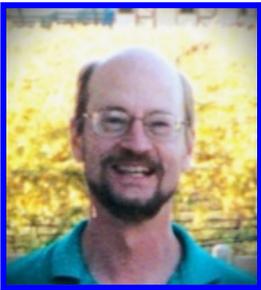
World's 1st FM handie-talkie (HT) for combat use before WWII.



**TCARES Breakfast Meeting  
January 17, 2026**

# Antenna of the Month

By [Gary W. Johnson](#)  
NA6O



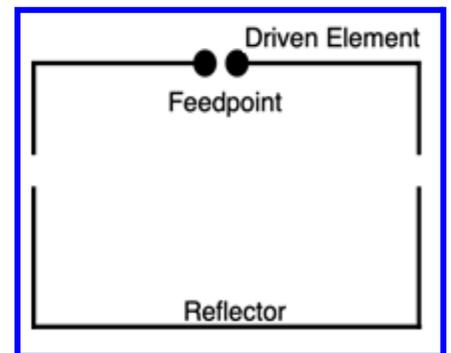
## Moxon

Given a chance, most hams would prefer to have a Yagi up on a tower for as many bands as possible. It's horizontally polarized, has good forward gain and rejects signals off the back and sides... A great combination. But sometimes there is an issue of space because the elements can be quite long. Fortunately a fellow named Les Moxon, G6XN (SK), a British ham, came up with a simple way to shrink a conventional 2-element Yagi to about 70% of original length

without compromising performance. In fact, its front-to-back ratio is actually superior.

The basic outline of a **Moxon rectangle** antenna appears in Fig. 1. It's really just a two-element Yagi with the element tips bent at 90 degrees. In fact, the total lengths are the same: A half wavelength for the driven element, and about 5% longer for the reflector. The trick is that the bend locations and the gaps between the elements have to be optimized to give you the best front-to-back ratio, gain, and a good 50-ohm match. In fact, the dimensions are fairly critical if you want peak performance.

Figure1 (right): Basic layout of the Moxson rectangular antenna



Like many antenna designs, this one is evolutionary. The last great contribution was by L. B. Cebik, W4RNL (SK), who studied it in depth and came up with a set of equations that provide those important optimized dimensions [Ref. 1]. And to make life really easy for us all, Dan Maguire, AC6LA, has written a dedicated application (*Moxon Rectangle Generator*, Fig. 2) that gives you the magic numbers [Ref.2]. You simply supply the frequency and the size of the wire or tubing. What could be easier? His program even supplies an output for simulators including EZNEC in case you want to explore further. I should also mention that the bent-element concept has been

further adapted and morphed into many other designs including the popular Spiderbeam and Hexbeam. Good ideas do seem to propagate.

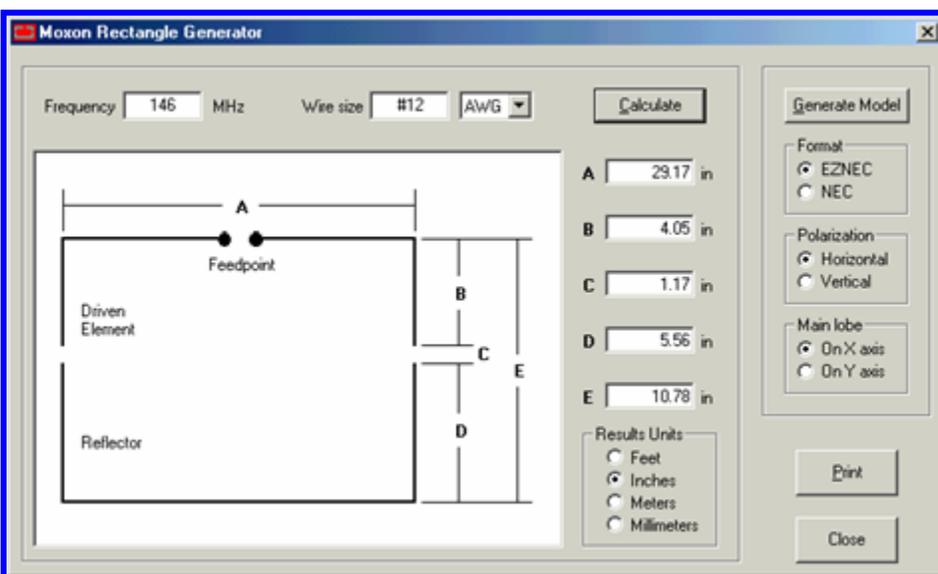


Figure 2 (left): Screenshot of the Moxon Rectangle Generator (courtesy AC6LA).

## Construction

You can build a Moxon from either wire or tubing but most designs are based on wire supported by lightweight fiberglass spreaders in an X-shaped configuration. Look up Moxon construction on the web and you'll find many practical examples. An interesting adaption for 40 m was designed by Dave Leeson N6NL who modified a Hy-Gain XM240 2-element Yagi to achieve superior pattern and greater bandwidth in the same compact footprint. This has been very popular and is easy to build [Ref. 3].

## Performance

Compared to a regular 2-element Yagi, an equivalent Moxon will yield a forward gain only a fraction of a dB less. But its distinct lack of rear lobes is remarkable, reliably down 20 dB versus only 10-12 dB for the most common Yagi designs. It achieves this in a manner similar to a loop-fed array (LFA) Yagi via the added coupling provided by the end wires. Those perpendicular wires give the designer an extra degree of freedom when optimizing the pattern. Results are shown in Cebik's report. Also, the Moxon has excellent bandwidth in terms of SWR—much better than Yagis shortened with coils.

## Conclusion

The Moxon rectangle is really a win-win design and its popularity including its many derivatives is well deserved.

## References

1. L. B. Cebik, W4RNL (SK), Designing Moxon Rectangles by Equation and by Model.  
<http://on5au.be/content/a10/moxon/moxgen.html>
2. Moxon Rectangle Generator application by AC6LA.  
<https://ac6la.com/moxgen1.html>
3. W6NL Moxon on a Cushcraft XM240.  
[http://www.k3lr.com/engineering/moxon/W6NL\\_Moxon104.pdf](http://www.k3lr.com/engineering/moxon/W6NL_Moxon104.pdf)

73, Gary

*Formerly WB9JPS, I have been licensed since 1972, and am originally from Illinois. I no longer have a home station due to RFI and other issues. But thank heavens I now have a fabulous remote station, W6SRR, which I share with Ian, W6TCP. I enjoy operating CW especially and have achieved 9BDXCC (total 318, working on 6m) and 10BWAS. I'm a fairly competent contester, member of NCCC, and station engineer at N6RO. Chasing SOTA activations is also in my fun category--I'm a certified Shack Sloth. My website is: <https://na6o.com/>.*



**TCARES Breakfast Meeting  
February 21, 2026**

# Meet Our Members

By [Ginger Rohlen](#)  
KM6RFT/WSAP468



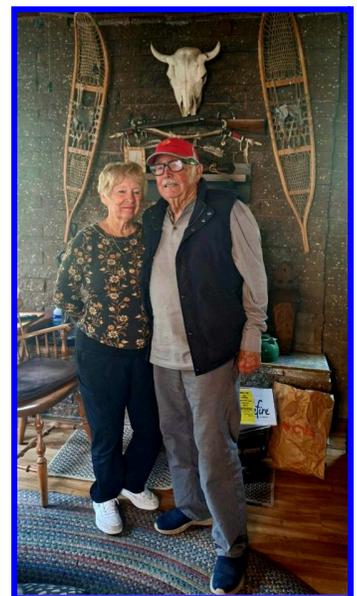
Bob Lyon, KO6SJ, was born in the Bay Area, and lived in San Jose and Los Gatos for most of his young life. His sister had a boyfriend who was very much interested in Ham radio and Bob visited his place a few times and was “enthralled with his idea of having a station and all that.” When Bob was 10 years old, he took a Red Cross course to get his Novice license. He had to learn CW 5 words a minute to pass his test. KM6NQJ was his call sign in those early days. Bob remembers ordering kits through the mail and building them, including a HEATHKIT transmitter. His license expired after a year, and he didn’t upgrade or anything at that point.

Growing up, Bob’s sister and brother were interested in horses and yet Bob did not share their passion. Concerned that his son didn’t have a true hobby, his Dad encouraged him to take a day sailing out on the bay with one of his friends. Bob met his Dad’s friend at the Palo Alto Yacht club and they spent the day on a sailboat in the South San Francisco Bay. On that day, Bob’s life-long passion for sailing began. Soon, he had his very own little sailboat that he kept at the Palo Alto Yacht club, and he spent days out on the water. Bob reminisces about being eleven years old, “shouldering his sail bag, dressed in my blue denims, hat, jacket and pants to match. The tide was in, and the day was clear, and already a slight breeze was stirring...plenty for my little boat.” He remembers, “How I treasured those days of sailing by myself on the south San Francisco Bay. My little 12-foot sailboat would take me away physically and mentally to another place and perhaps another time. Already visions of some voyage, only partially conceived, were forming in my mind.”



Bob met his wife Judy in high school when she was 15 and he was 16. They got married during their senior year in college. “Both our parents had houses in Tahoe so we would often be up there together. One night I said, “You know, I’ve won three jackpots today, do you want to get married?” We ran off and got married the next day.” Bob and Judy were both teachers, “I went to

college in Texas and attended San Jose State for a Master’s degree and she went to San Jose State. My Masters was in ornithology, which I picked mostly because it was convenient, and I could have more time to spend with my growing family. While I pursued my Master’s, I also got a teaching credential. I was planning to teach at the Community College level, but they were pretty well filled up, so I asked them, ‘Where do most of your teachers come from?’ and they said the high school ranks. I thought, well I could teach high school for the next couple of years, and then apply. Instead, I ended up continuing as a high school teacher for 27 years. I taught Chemistry and upper division science classes at a high school in San Jose, and Judy taught grammar school in Gilroy, where we lived.”



Sailing was a big part of their lives. Bob and Judy joined a yacht club and continued to buy bigger and bigger sailboats. Together they began to formulate a plan to both retire early and take a year to sail

down to Mexico. While familiar with marine single sideband, which, for an annual fee, lets you communicate to the Coast Guard, high seas telephone service, email through sail mail, and talk with other sailors who have marine SSB on board, a friend encouraged Bob to re-apply for his Ham radio license, and upgrade to a General license which offered many more benefits, free of charge. While both the marine radio and ham radio services use the same type of modulation, called single sideband, with a General Class license you can operate a long-range ham radio, monitor the ham traffic nets for valuable local and distant weather marine forecasts, work the cruising nets, 14.300 MHz maritime mobile nets, send free email, and digital messaging, and even sending color photos over the ham airwaves free of charge.

With the advent of Winlink 2000, a worldwide system of independent Amateur Radio Mailboxes grew, serving the mobile Amateur with basic email. The broad, general criteria was to develop a feature rich messaging system that would operate over Amateur Radio, use the Internet in a "star network" configuration for internal links, making it as spectrum-efficient as possible. Utilizing state-of-the-art object-oriented programming, Winlink 2000 would be very user friendly. Ham radio operators could have their stations designated as Airmail stations. The network would contain many stations worldwide, allowing mobile users to transfer messages regardless of which Winlink station they used. With AirMail, the system would provide e-mail between Amateur stations, internet recipients, and provide weather and help bulletins through the AirMail catalog. The system would also allow users to provide their geographical position to others. Lastly, the system would have complete redundancy and be "Emergency Management" ready ([https://winlink.org/content/winlink\\_early\\_history](https://winlink.org/content/winlink_early_history)).



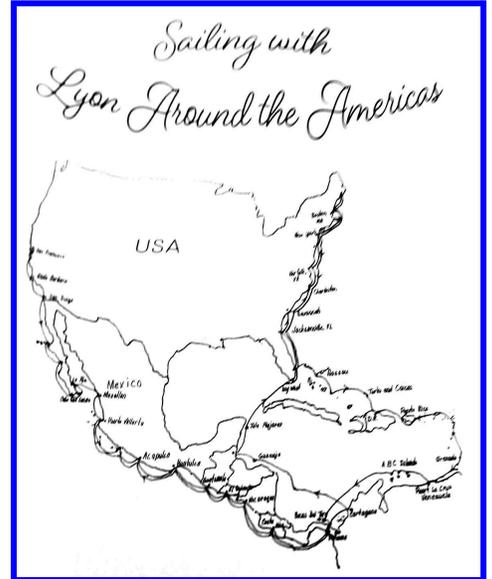
Taking his friend's advice, Bob signed up for Ham radio testing at the Puerto Vallarta Yacht club and earned his General and then continued on to get his Advanced and his Extra. It gave him access to all the bandwidths which meant he could reach any Air Mail station on land, from anywhere in the Caribbean. "I never had a problem. It operates on a very low power transmission. You can have a very weak signal and still be fine." When Bob and Judy were sailing in Columbia, they used an Airmail station in Louisiana.

Judy and Bob enjoyed their year long trip to Mexico so much, they decided they wanted to sail even further. However, there was one stipulation. As Judy says, "Ginger, I told Bob, if I'm going to be able to do this, I need to use a system like Winlink. My parents were aging, grandchildren were being born to our children and with winlink I could be in touch and let them know exactly where I was. We went to Columbia, we went to Venezuela, we went to Maine...and I could write my letters. This is what kept me going...even my Dad at the age of 84, could type a letter back to me, and he always knew where I was. It was such a godsend and kept me committed to this journey and adventure and connected to my family at the same time. I am eternally grateful for how that worked out." As Bob tells it, "To make a long story short, we retired a little bit early from our teaching careers, outfitted the boat with everything, including solar and wind generation, all the radios, radar, depth sounders, wind machines and went to Mexico. We were just going to go down there a year and come back, but we liked it so much that we kept going. And we went down through the Panama Canal, to Cartagena, Columbia and up to Maine, then back down the Intercoastal Waterway, that runs parallel to the coast line."

Bob and Judy sailed around the Americas for six years, covering a total of 20,000 Nautical miles together. Judy shares, "We had A 40-foot boat with two cabins, seven berths, two heads, and a galley that I never minded cooking in.



You measure your fuel. We carried 90 gallons of diesel and 150 gallons of water, so you pace yourself. And we had a water-maker that made fresh water out of salt water. We were never in any stress about it." She continues, "There's always a focus, and you are always working together. You plan your course together and take turns at night...one steering at the helm with the other sleeping right next to them in case we needed each other. It was always a team effort. We had charts. It's like maps of the water so you know exactly what's out there...and Bob did electronic charting so it would show you where you are and where you are going. I signed up for a weather service so we would get a report every morning that was customized for our trip. We had self-steering so we could set a course for a certain heading...and we would do that. We were never lost. We always knew where we were. We were a team." As Bob describes it, "the relationship with the wind and the water, it's...peaceful. Judy was the motivator. I'd get to a place and I'd feel comfortable and Judy was always the one to say, "I wonder what the next harbor is like."



Out of all the beautiful and interesting places they traveled, one of their favorite cities was a beautiful old Spanish town called Cartagena in Columbia. In addition, they really enjoyed the Panama Canal. "During hurricane season, we stayed at the Panama Canal for 3 months. Panama is safe. There's a latitude and longitude of 10 degrees south and ten degrees north of the equator and that is your safe area... So to be hurricane safe, you sail from November to June and then you park." Bob found it really interesting to be at the boat club in the canal and watch all the ship traffic going through the locks.

There were many adventures to share. They both tell a great story about the time a Bryde's whale bumped their boat and swam alongside them for a time. "It was swimming side by side with our boat. They often do this. They think they are part of a herd or something...it bumped the boat a few more times and it turned over on its side and we could see its huge eye looking at us as we were looking at him. We felt this strong sense of connection. The whale followed us for about 15 minutes, swimming underneath the boat and coming up on the other side."



Bob and Judy sold the boat 10 years ago. "Part of my giving up of the boat was I was going to get a nice new good transmitter and set up a station here in Sonora. When I first set up my transmitter,

I talked to a man in Japan. I have a vertical antenna, but I don't use the vertical much. I use a G5RV multi band straight line antenna. I got a new one to put up because the old one fell down. Another reason I am putting a new antenna up is I'm trying to reach the East Coast so I can talk directly with my friend, who moved there recently. I used to talk with him every morning when he lived nearby. In Bob's radio shack, I noticed an array of flags displayed and hanging from the ceiling. Bob explained that those were courtesy flags from their years of sailing. When a vessel visits a foreign country, it is part of maritime etiquette to fly the country's flag as a sign of respect and a willingness to comply with local laws.



Bob and Judy have a whole community of friends that they have close ties with down in Puerto Vallarta, Mexico. Many of them don't have their sailboats anymore either and now have RV's or condos instead. Bob and Judy explained that they all get together each year, to do an RV trip towards the end of summer, and join each other for cruises.

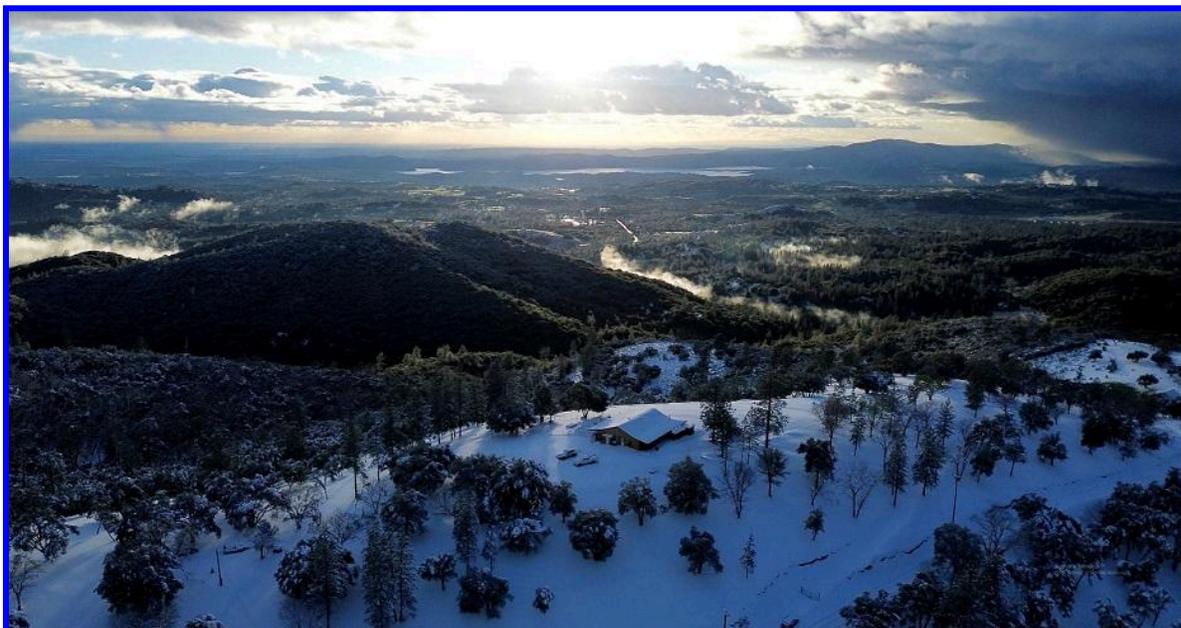
As our interview drew to a close, I said, "I get the sense that you two are wonderful companions together." They replied together, "So far! It's been 63 years!" Bob writes in their book *Lyon Around in the Americas*, a collection of letters from their years of sailing, "And what was the most important ingredient to a successful voyage? Not all the goodies, not the strong and ample cruising sailboat, not the relatively new and powerful engine...not any of these although they did make daily life more comfortable. The most necessary thing undoubtedly turns out to be a 'compatible mate'...as in life itself."

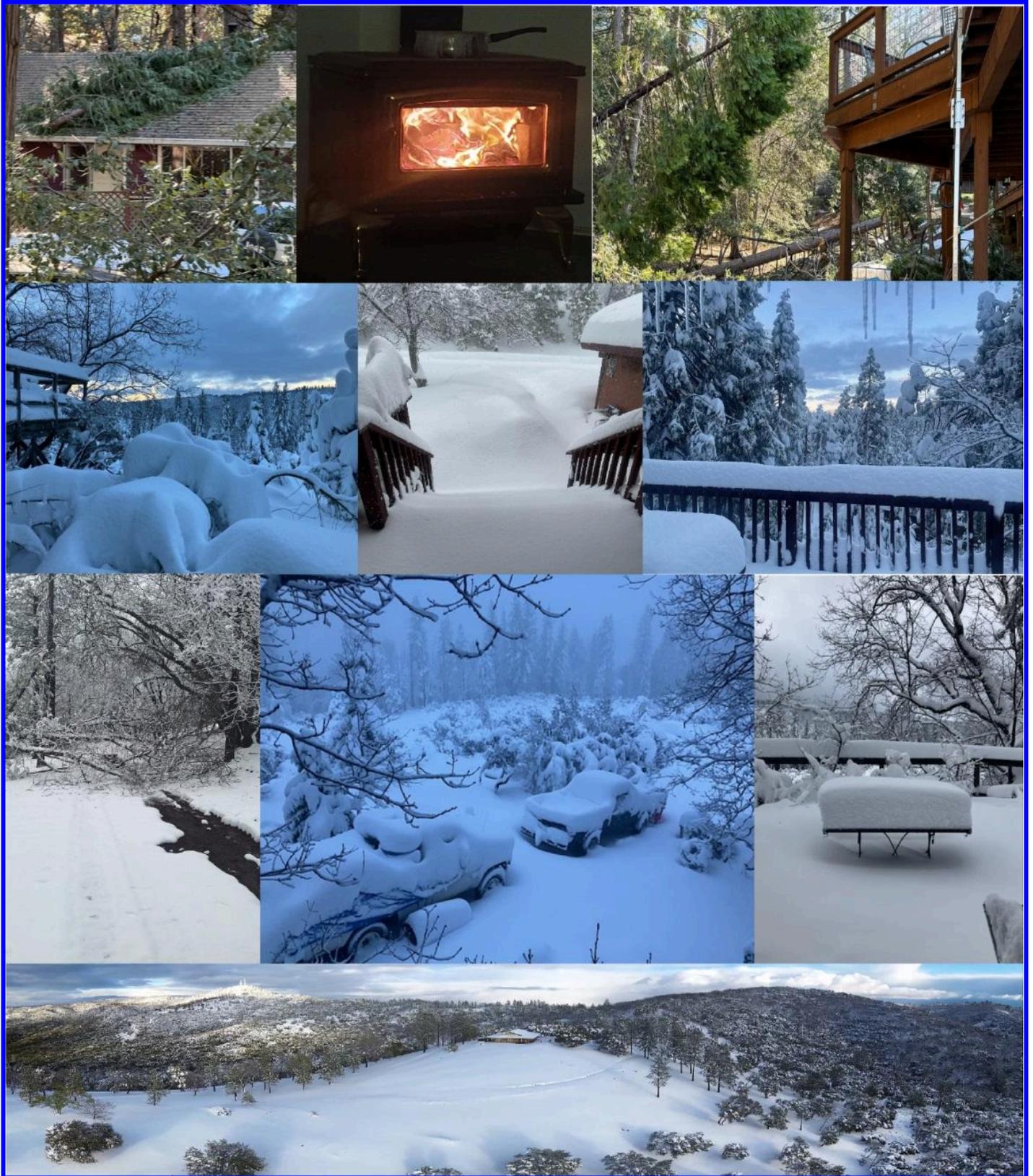


I enjoyed our visit together in their lovely home and had a great time when Bob took me for a ride in the 4WD gator to see the property. We drove up and over trees that had fallen in the most recent storm. The wildflowers were beginning to bloom and there were meadows throughout. Their property is beautiful and includes a granite quarry that was active in 1915. Some of the granite from this quarry can be found in the buildings on the Stanford University campus. Thank you so much Bob and Judy for your warmth, generosity of spirit, and hospitality. I greatly enjoyed all your stories and you truly do make a wonderful team.

73, Ginger

*Ginger is a mom, a teacher, a student, a devoted partner, and a life-long learner. Her interests are many and center around service, communication, leadership, and integrity. She recently completed a Masters of Science in Counseling. She is open to challenging herself to learn and grow and in facilitating that in others. Ginger shares a love of Geology and the natural world around her with her partner, Jeff, N6JWT, and enjoys hiking and exploring the outdoors. Her interest in Ham radio stems from a desire to join others in learning, to be of service, and to continue to improve her communication skills on the air.*





**Images of the regional Snowstorm Event in mid February 2026**

# Mike's CW Column

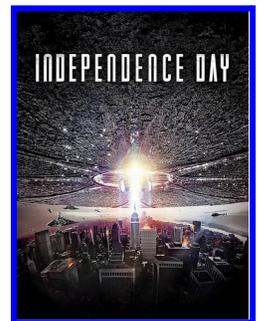
By [Michael McGinty](#)  
**W6MVM**



## CW News

Hi all. The big contest lately has been the ARRL- DX both CW and SSB. We worked both, but not heavily. We only worked about 20 stations in each contest, all DX stations. It's amazing how many different countries you can work in a weekend in these contests, and almost all will submit their logs to Logbook of the World (LoTW). This makes it easy to confirm your contacts. These contests and the CQ WW DX Contests are some of the most fun contests of the year.

Why is DXing important? Let me pose an outrageous example. Remember the Will Smith movie, "Independence Day", the military needed to coordinate an attack on the alien ships on a communication system that was hard to jam. All satellites had been disabled. What did they choose? Short wave CW! And in the movie, it worked! I suspect in a real emergency, it would still work.



To be honest, in 60+ years of participating in emergency ham radio communications, I've only had one time where what I did really made an impact. That was on May 23, 1960. A tsunami hit Hilo, Hawaii, and devastated it. I was the newly appointed ARRL Emergency Coordinator for the area of Honolulu, above Pearl Harbor. I had a house above Pearl Harbor that gave me great coverage of all the Honolulu area and a direct link to Hilo. We didn't have 2 meters in those days. We used 40 meter AM on 7.225 MHz. I ran the local commuter net on 7.225 MHz starting at about 4PM local time. Saying that I ran it is an over statement. It was a pretty loose net, but fun. Most of the rigs used converters that converted 40 meters to the AM band of car radios. The most popular transmitter was a two tube design, from Popular Electronics magazine, that was crystal controlled and used a carbon WW2 microphone. It put out about 7 watts and ran on the power supply from the car radio.



Even though I had access to the really good emergency rig in Berkheimer Tunnel in Diamond Head, a Collins KW-1 and 75A-2, I didn't have time to get there. I used my Hallicrafters SX-101, Johnson Pacemaker, and a 40 meter dipole from home. This gave me about 45 watts carrier output or about 60 watts PEP output.

We got started on the net well before the event and helped coordinate the evacuation of the Hilo area. Our operators went door to door, through downtown Hilo, to get people to evacuate. We were on the net the whole time. It was very successful. We had one devastating event. One of our operators decided to make sure the movie theater was evacuated. He was a regular on our nets. I told him it was too late and to get out now, but he insisted. We never found his body or even his car. The theater was leveled. The tsunami was so powerful it bent the



parking meters level. Half of Hilo was wiped out completely. The other half was damaged.

We continued to help with communications for days from Hilo. The phone company was destroyed. We were oftentimes the only way information got relayed. We did what we could, we did what mattered. It's this type of calamity where ham radio really matters. A total disaster.

I know this has little to do with CW, but it is where ham radio is at its best. The skills used in these emergency operations, message passing, net coordination, and operations are often best learned on CW and CW nets. The messaging nets still exist and operate weekly. I need to get back on them and will report on them in the next column.



73, Mike

*I started in Ham Radio in 1957 as KN5UHU and K5UHU in Kingsville, TX. I was very active in the early 60's as KH6DOX in Honolulu. Then I received my EE degree from San Jose State in 1969 and focused on working as a consulting engineer. Ham radio took a back seat to what were very exciting times in electronics and software. After retirement in about 2010, I went back to enjoying ham radio and have been active with TCARES in Sonora. I've collected a lot (too much) of Collins equipment and used them on the air exclusively until recently. I purchased several modern rigs including my favorite Flex 6300. I use the Flex at home.*



**Introduction to Radio Training Class held on March 7, 2026 at the Pine Mountain Lake Lodge in Groveland, CA**

# Repeater Coordinator Notebook

By [Greg Triplett](#)  
WA6HNA/WRZS966



## TCARES Repeater System Status Q3 2025

[Editor's Note: The TCARES VHF 2 meter repeater system is currently operating well. Greg, WA6HNA, and Marc, N6NEZ, recently visited both the Moccasin & Pinecrest repeaters to do some routine maintenance. They are coordinating and collaborating with the mountain top property owners on MOU's, etc., and continue to have positive working relationships with all involved. A huge thank you to Greg, Marc, and crew, for all you do for the club to keep our repeater system maintained, resilient, and functioning well!

Greg is the TCARES Repeater Coordinator & K6TUO FCC Trustee. He was a senior hardware engineer at Google (now retired), who specialized in FPGA (Field Programmable Gate Array) design for high-speed digital circuits and systems in the networking, data communications, storage area networking, wireless, and RF industries. Additional industry experience was in test & measurement, telecommunications, satellite TV, security, military, and aviation.



**Introduction to Radio Training Class held on March 7, 2026 at the Pine Mountain Lake Lodge in Groveland, CA**

# ARES/RACES Emergency Communications Report

By [Ned Sudduth](#)

**K6NED/WRPM781**



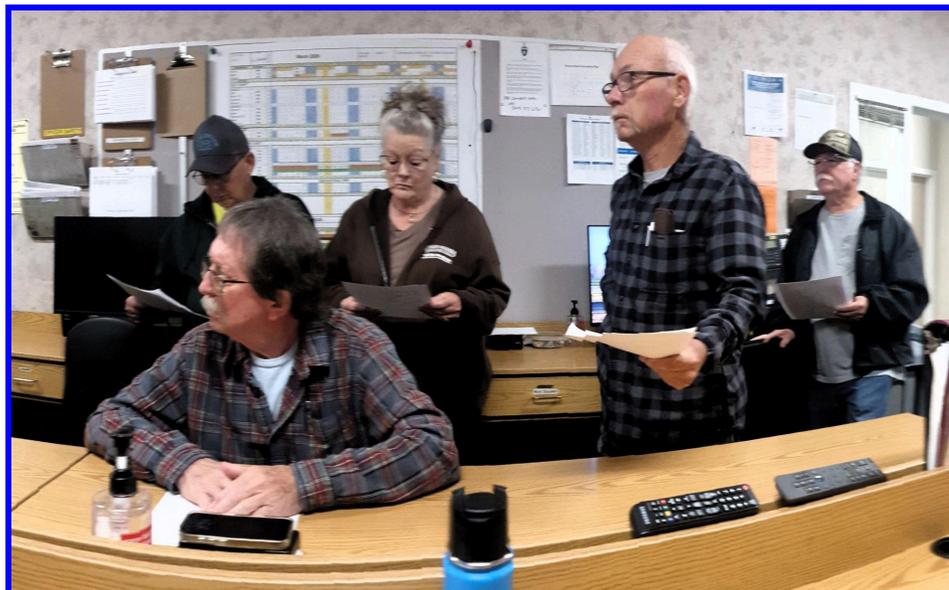
## Comms Trailer used in the Jamestown Run

[Editor's Note: I submitted this brief summary for Ned.] Ned, K6NED, and Paul, KN6CWT, collaborated and coordinated to transport the Communications trailer, early on the morning of March 15th, to Jamestown Elementary School, which was the start and finish line of the Jamestown Run. The trailer was set up as the net control station for Grayson, KE6KYI, and Jeff, N6JWT. Grayson operated using the ham radio station on the VHF Duckwall repeater, while Jeff operated

on the Moccasin GMRS repeater on UHF.

Immediately following the race, the TCARES team had a debriefing, indicating that radio communications & support for the race was an overall success. Thirteen (13) radio volunteers from the TCARES and GMRS communities participated. Volunteers were thanked, and commended by the race organizers, who said our help was greatly appreciated - they were grateful and thankful. We put the trailer into use to help practice, and prepare for emergencies, and we learned some things that will help us in future events. Thanks to all the volunteers!

*Ned is the TCARES Webmaster (<http://www.tcares.net>), as well as the club's ARES/RACES Coordinator. He was previously KM6EAC, then N4NED, and is now K6NED. He has achieved the following awards: Grid Squared; United States Counties; World Counties; and World Radio Friendship. He served in the U.S. Navy (PlankOwner USS Essex LHD 2) and he and his wife, Toni, K6TNI, live in Sonora.*

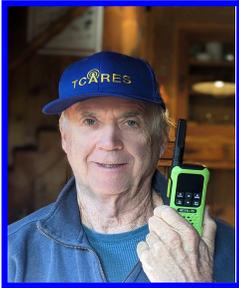


**Jamestown Run Morning Briefing, March 15, 2026**

# Sparkie's Corner

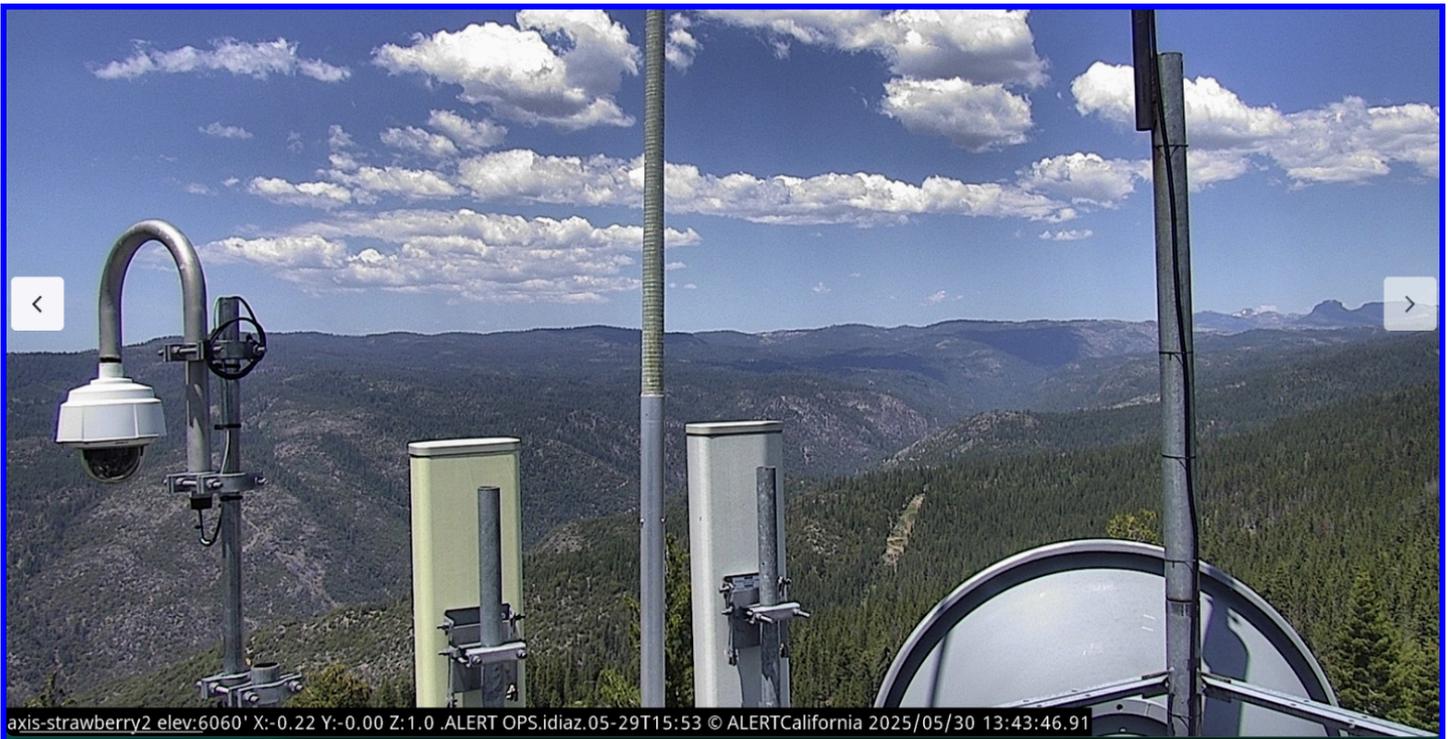
By [Rich Combs](#)

**KN6HSR/WRMM317**



## Looking up canyon from Strawberry Peak

If you are headed up country to the Pinecrest Basin there are a few items to take particular note of. First, the Pinecrest repeater, which has been missing in action for a few weeks, is back on the air, better than ever. Thanks to Greg Triplett, WA6HNA, and Marc Colton, N6NEZ, for an amazing repair job. Greg and Marc had the clever foresight, evident only in masters of their trade, to take on seemingly complex repairs, with simple solutions. Seems the repeater was unplugged! Anyone else would have taken *days* to troubleshoot the problem. That's why we pay them the big bucks!



And in more repeater news, last summer Chris Passeau, K6CDP/WRPX768, and Marc, N6NEZ/WRME405 (and crew), gave a heads up that they were planning to install a GMRS repeater on Strawberry Peak. Sure enough in short order it appeared! Marc seems to have a way with the powers that be, getting permissions for siting, and FCC approval, where most of us would bog down. This is a great location, and now links up Strawberry and Pinecrest, as well as adding radio coverage up & down the Stanislaus River Canyon, and brings much of the high country up Hwy 108 into the fold.

If you plan to access this repeater, be sure to send an email to [chris.passeau@gmail.com](mailto:chris.passeau@gmail.com) with your FCC GMRS callsign. It will be verified, and then you will receive the PL tone needed to use the repeater. Don't forget to program it into your radio.

And a final note, there is a GMRS net on Saturday mornings at 8 AM in the Strawberry-Pinecrest area. The first net is on GMRS channel 17, simplex, followed by a net on the Strawberry Pk repeater, Chan 26. Don't forget to get the PL tone! Hope to hear you up the hill.

73, Sparkie

*I passed my Technician and General licenses in February, 2020 and Extra in September 2021. (I'm good at taking tests; I need to work on working a radio!) Main QTH = Livermore, CA, USA, (CM97). I'm relatively new to the radio world! Member of LARK (Livermore Amateur Radio Klub), and TCARES (Tuolumne County Amateur Radio Electronics Society). My alternate QTH = Strawberry, CA (CM98). As of 10/2021, I'm now working on CW via CW Academy. I passed the Beginner level in October, 2020, and I passed the Basic level in March 2022. I got interested in HAM radio to improve emergency communications for the Strawberry Volunteer Fire Department in 2019. I have gotten in way over my head since then! I have enjoyed building a few kits from QRPme and QQRPguys. I have been developing a Neighborhood Radio Watch (NRW) program in Tuolumne County, modeled on one in El Dorado County, CA, USA.*

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# Tuolumne County GMRS

By [Marc Colton](#)  
**N6NEZ/WRME405**

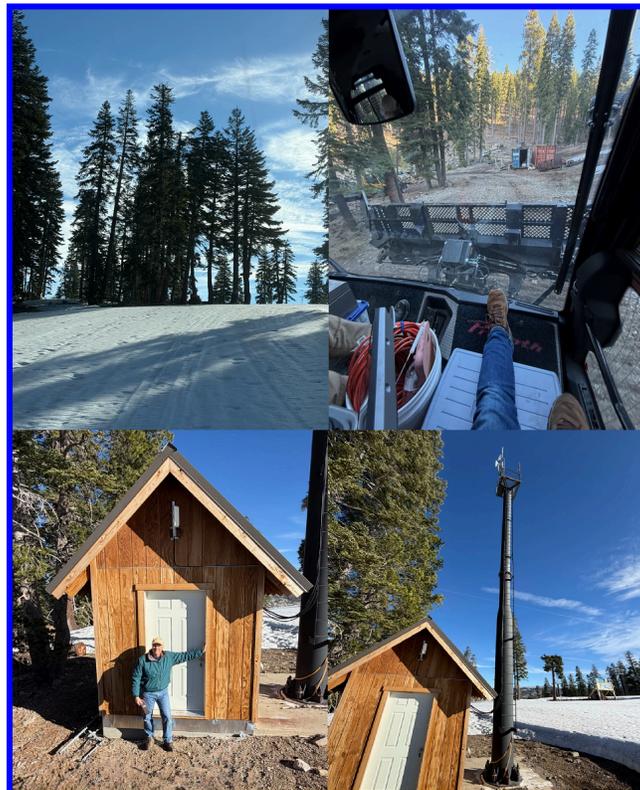


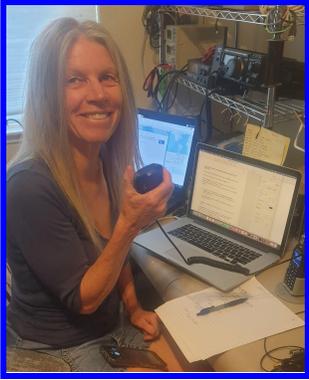
## Tuolumne County GMRS Community Update

[Editor's Note: The Tuolumne County GMRS repeater system is currently functioning well! The system consists of 6 GMRS repeaters: 1) Hobby Hill (Columbia); 2) Moccasin Peak; 3) Vernal Ridge (Groveland); 4) Cedar Ridge; 5) Duckwall Mtn; and 6) Strawberry Peak. Marc, N6NEZ/WRME405, Chris, K6CDP/WRPX768, and Greg, WA6HNA/WRZS966, continue to fund, and maintain, the system. Without their efforts, the GMRS repeaters would not exist. This repeater system continues to be integrated with the TCARES 2 m repeater system for emergency, and other communications uses. A HUGE THANK YOU to the three of you for all of you! For more information, go to the

Tuolumne County GMRS Repeater System home page @ <https://tuolumnecountygmrs.weebly.com/>. All GMRS repeaters functioned well throughout the winter storms, providing excellent communications within the greater Tuolumne County area. Well done Marc, Chris, and Greg!

Marc has been interested in two-way radio since college when he earned his Amateur Radio License. He worked in the two-way radio field for most of his career and has seen many advancements in radio technology. He's currently enjoying helping Tuolumne County volunteers put together a robust GMRS radio system. Through the informal Neighborhood Radio Watch (NRW) program, citizens should be better prepared to help each other in the event of a natural disaster, loss of power, or loss of cell phone service, which can happen to residents in our County.





## GMRS Women's Net!

**Who:** Any women with an FCC GMRS license

**What:** Weekly GMRS net

**When:** Thursday evenings @ 7 pm

**Why:** To practice radio skills, increase knowledge, make connections, and more

**How:** Tune in to the Duckwall GMRS repeater (Channel 22R; RX: 462.725 MHz; TX: 467.725 MHz; PL: 192.8 Hz)

**Where:** Anyone within line-of-sight, who can hit the Duckwall GMRS repeater

*"The **purpose** of this net is to create a supportive community of women to practice skills in handling radio traffic and to share GMRS radio news, information, current status, and activities."*



**Jamestown Run, March 15, 2026**

# Tech Talk: Beyond the Basics

By [Dave Arrich](#)

**AD6AE**

## A 2-Meter Yagi Antenna That Definitely 'Measures' Up

146.5 MHz 3-Element Tape Measure Yagi

Updated 3-2026

**AD6AE**

A compact, lightweight, portable Yagi antenna with folding elements and a 2-piece boom



Antenna Dimensions		
US/Imperial		Metric
Cumulative Spacing	Element	Element Length
Zero	REFL	39-13/16"
16-1/8"	D.E.	38-15/16"
22-1/8"	D1	36-3/8"

### Materials List: 1/2-inch Sch. 40 PVC. (If using 3/4" adjust spacing accordingly.)

- 10' stick for two boom sections (38") plus six 5" element support arms (30") for 68" total
- 3 - 'Crosses' for R, D/E, & Horizontal or Vertical Mast Mounting + rear handle for Fox Hunts
- 1- 'Tee' for D; PVC cement (optional)
- Pack of 10 (#4 x 3/8") sheet metal screws
- Either: 1/16" or 5/64" dia. drill bit (pilot holes). Either 1/8" or 7/64" dia. drill bit (element holes)
- Sandpaper, rosin core solder, solder paste, and soldering iron or gun
- 1 (10' x 1") tape measure ≈7' required
- 1 (8") piece #12 solid wire for a 4" long hairpin (after final tuning, this one was 3-1/4")
- 2 (#43 or #61 mix) clip-on ferrite choke beads or a ferrite toroid or CM currents will be problematic.
- BNC-F to 2-screw adapter or RG-316 pigtail with female connector; length as needed for pigtail
- Velcro tape to secure folded elements; hand tools: old scissors to cut elements, screwdriver, drill

**Construction Note:** This prototype is not glued together. Another element mounting idea can be found on the link below: "\$10 Antenna Reaches Out Far."

### Assembly: Boom, Reflector & Director - Refer to Photos for Details.

1. Cut the boom pieces for center-to-center or edge-to-edge element spacings as shown in the diagram. To allow for length added by connectors, measure the **outside diameter** across the connector opening (for 1/2" PVC, it's ≈1-1/16"). Subtract that length from each boom piece. When fully seated, it should be the correct length for the center-to-center element distance between couplings

### Driven Element:

2. Cut the D.E. in half, trim ends at a 45° angle and smooth. **For each half:** Sand to remove a 3/8" wide patch of paint from one end on the **convex** (plain) side; clean, apply soldering paste and tin well.
3. Center punch then drill an 1/8" dia. hole located 3/4" from the tinned ends. (see photo)
4. Using the holes as marking guides, center the 45° cuts into the 'vee' molding lines of the 4-way cross; allowing a 1-inch gap between the two dipole halves; mark then drill a 1/16-inch pilot hole in the 'cross' connector arms for attaching each half of the driven element (see hairpin photo); center punch & drill an 1/8" hole in D/E support arms as done in step 5. and fasten to support arm ends.(photo).
5. Strip 1" of insulation off each end of an 8-inch long piece of #12 solid wire; clean, apply paste & tin.
6. Form hairpin as shown; adjust radius so pins are spaced ≈1" apart, ends even; solder to D/E.
7. Prepare coax with a female connector on one end, thread on ferrite beads; bare, tin ends then solder. Or, use a BNC to 2-screw connector shown in the hairpin photo, tin and solder pigtails to D/E.
8. When tuning is completed and readings are satisfactory, remove card stock and secure screws.

## Tuning

1. **Install** a common mode choke; a must or tuning will be unstable with changes of coax lengths.
2. **Calibrate** the VNA to an extended reference plane for a 20-25 foot length of coax used for tuning. If using an antenna analyzer, record R and X Values and sign of X if shown.
3. **Mount** only the DE to the boom, attach the calibrated coax with CM choke, elevate about 10-feet high pointing straight up; step away and position yourself off the tip of the DE. **Record VSWR at 3-points: 144, 146.5, & 148 MHz.**
4. **Trim** DE for lowest VSWR at 146.5. Then trim corners at 45°; sand smooth. Attach the hairpin.
5. **Mount** remaining elements; point straight up; elevate 10 ft.; record VSWR, R&X at 146.5 MHz.
6. **Match**; adjust length of hairpin for a VSWR of  $\leq 1.2$  at 146.5MHz; When done, check all 3-points.
7. **NOTE:** For this one, *6-1/2 inches of wire (after trimming) added sufficient inductance for a 1.2 VSWR.*
8. **Tuning Tip:** If VSWR is too high at 148 MHz, make the hairpin a little longer; if it's too high at 144MHz, make it a little shorter. After each adjustment, recheck VSWR at 3-points. Aim for  $\leq 1.2$  at center &  $\leq 2.5$  at band edges. This prototype antenna tuned easily.

Some builders fine tune by excessively distorting the hairpin. Don't bother. The VSWR will change when using it in close proximity to anything (yourself), so disregard. Unfortunately, many hams ignore the importance of using a CM choke or 1:1 coax balun on a dipole for proper tuning and improved operation.

**Summary:** This design was taken from the K7MEM designer choosing the DL6WU spacing option. His designs claim improved detuning immunity over other designs that are caused by variances in construction and environmental factors. After testing this prototype, I agree.

My initial reaction was that elements made with unplated, painted, spring-steel ribbon indicated that design calculations may be more of suggestion than of fact. Without copper plating, steel is a very poor material for VHF due to lower efficiency from increased skin effect depth and higher heat losses.

**BUT** the range test results still '*Measured Up*' to be very close to designs using aluminum elements.

**Theory:** As explained in the video links below,<sup>4,5</sup> as each element is added, capacitive coupling between the D/E and the parasitics increases as each one draws excitation power from the D/E as the wave travels thru each element. As such, they become impedances in parallel with that of the driven element which, like resistors in parallel, lowers the antenna's input impedance and resonance. The feedpoint impedance decreased from 50Ω resistive to approximately 35Ω capacitive so the antenna resonance and VSWR shifted accordingly.

However, the resonant length of the D/E has not been altered so do not attempt tuning by adjusting its length or those of the elements. Initially, the DE was isolated then tuned by trimming to length until  $R \approx 50\Omega$ ,  $X \approx 0$ . Therefore, the VSWR issue does not involve element resonances. Rather, it is that of matching the lower input impedance of the antenna, (which is capacitive  $X_c$ ), to that of the 50-ohm line (resistive) and is achieved by adding an inductive reactance ( $X_L$ ) of equal value (*the hairpin*) to compensate for ( $X_c$ ) so that  $R + X_L - X_c = R$  or more properly stated,  $R_{50} + j0\Omega$ .

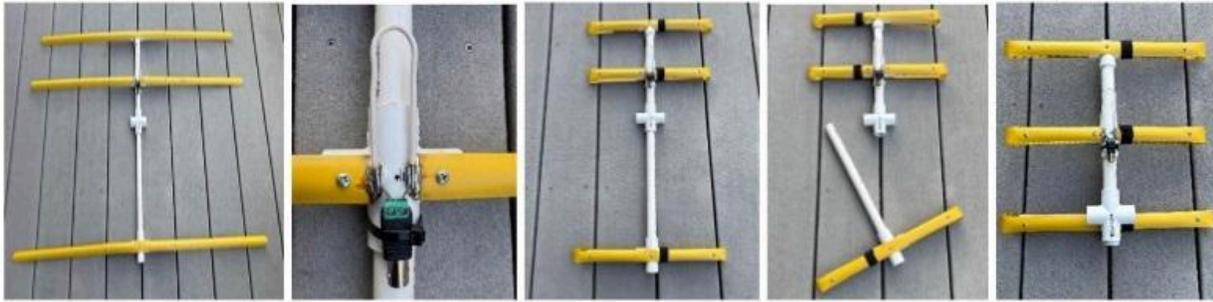
**NOTE:** K7MEM's gain figures are expressed in dBd. For dBi as used here, simply add 2.15 to his.

## PHOTOS

**Antenna elements fold and boom breaks down into a 14x14-inch package.**

For reference, the deck boards with spaces are 6" wide.

Velcro strips were attached to one support arms underside to secure elements when folded.



**H or V Mast Mount**

**Hairpin Match**

**Elements Folded**

**Broken Down**

**Nested**

Velcro strips were later attached using screws and washers on one of the support undersides.

**TRACE LEGEND. Yellow:** Reactance (X) **Green:** Smith Chart **Magenta:** Resistance (R) **Blue:** VSWR



**Test Setup w/CM Chokes using a calibrated 15' piece of RG-316**



**146.5MHz – SWR 1.22 (Blue)  
Smith Chart shows 60Ω, -j3.7Ω (capacitive)**

### SPECS

**NOTE:** The K7MEM calculator gives the calculated gain in dBd for a 3-foot boom and one director to be  $\approx 4.8$  dBd. Converting:  $\text{dBi} = \text{dBd} + 2.15$  or  $\approx 7$  dBi.

This prototype range tested at 8.3 dBi. So the phrase; "It works real good" is quantified.

**SWR: 144MHz: 2.34 || 146.5MHz: 1.22 || 148MHz: 2.25**

**Measurement Method:** Friis 3-antenna; spaced 20 meters, elevated 10'; nanoVNA s11(Tx); s21 (Rx)

**Gain:** 8.35 dBi || **Beamwidth:** 58° || **F/B Ratio:** 13 dB || **F/S Ratio:** 35 dB

**Nested Size:** 14x14" || **Weight:** 1 lb.3 ozs || **Assembled Length:** 25-1/2" || **Width:** 39-3/16"

### **Resources:**

1. Ideas from: [Tape Measure Yagi – KC3SMW](https://www.youtube.com/watch?v=ktoiyKoo36A&t=991s) <https://www.youtube.com/watch?v=ktoiyKoo36A&t=991s>, [\\$10 Antenna Reaches Out Far!](#), et al.
2. Yagi Antenna Designer: [VHF/UHF Yagi Antenna Quick Designer - K7MEM](#)
3. Includes other antenna design calculators: [DL6WU Yagi-Uda antenna online calculator - 3G-aerial](#)
4. Parasitic Antenna element interactions 1: <https://www.youtube.com/watch?v=2DcvmGPLdT0>
5. Parasitic Antenna element interactions 2: <https://www.youtube.com/watch?v=J8S3iZ9-848>.
6. Element spacing reference points were not specified so they were assigned as center-to-center.
7. **1:1 current balun:** 8 bifilar turns of RG-316 on an FT140-61 core (about 18-inches required..)

**Created: 8/2025 Updated 3/2026**

For a PDF copy of this and my other articles or calculators, send 'Title' requests to: [dfarrich@yahoo.com](mailto:dfarrich@yahoo.com).

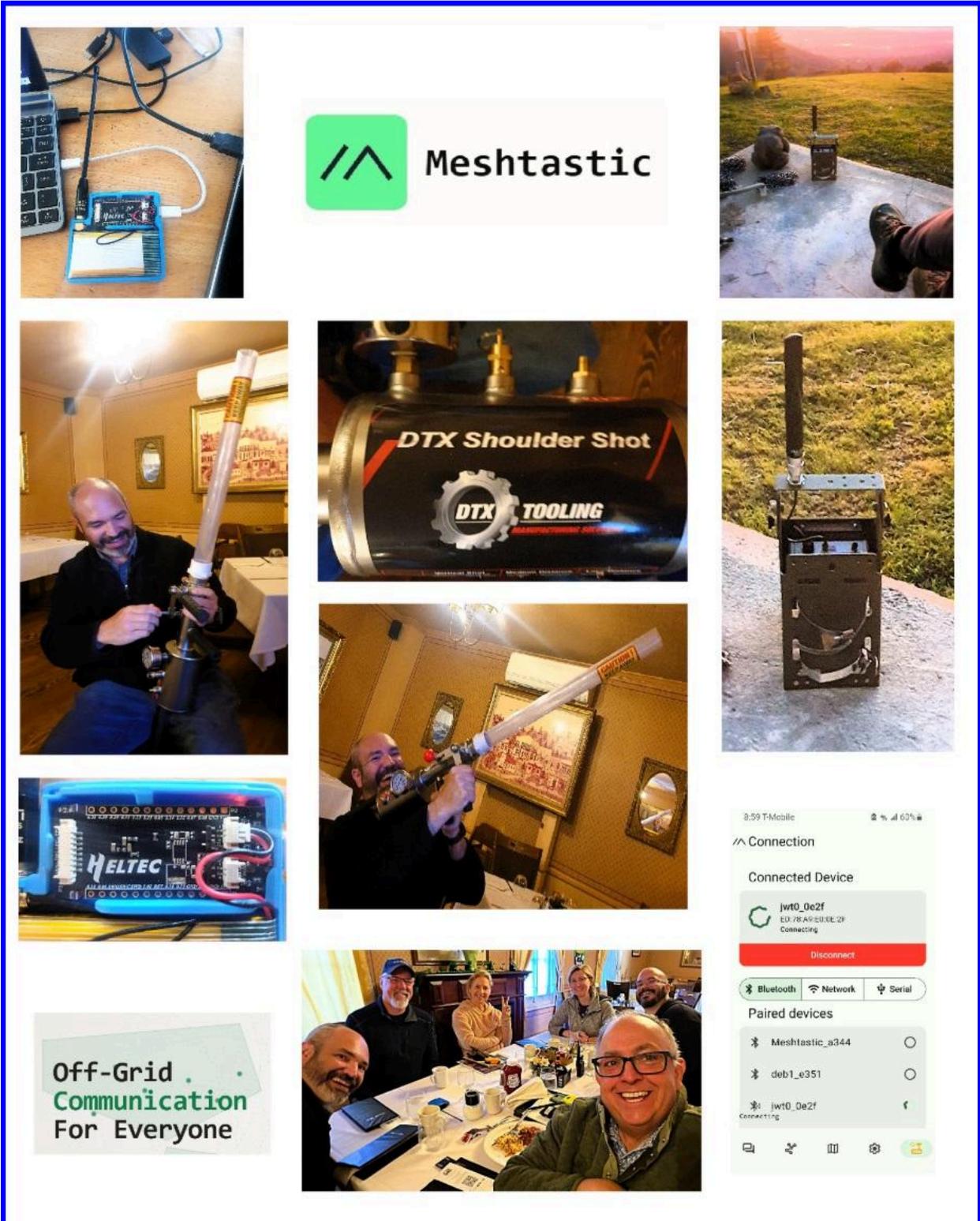
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*"Everything should be made as simple as possible, but not simpler." -Albert Einstein*

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*Dave's lifelong electronics journey began dramatically at age 4, causing a farmhouse blackout, and then a "shocking encounter" at age 8, sparked more intense curiosity. Self-taught through correspondence and mentoring, he was running a radio/TV repair service by age 14. In 1965, he earned an FCC First-Class Ticket with Radar Endorsement, leading to a role at GE (General Electric), testing Apollo program components. In*

1967, Dave joined the Navy, serving 23 years as a Communications Technician, maintaining complex HF systems within a Wullenweber Antenna array. During a 1974 NSA (National Security Agency) assignment, he obtained his ham radio Extra Class license, actively engaging in DXing, contesting, and getting his code speed up to 20 wpm, before a 42-year hiatus. Post-Navy, he spent two decades with the NCPA (Northern California Power Agency), first as a geothermal electrician based out of Middletown, and Roseville, then as a SCADA (Supervisory Control and Data Acquisition) technician for a hydroelectric plant in Murphys. Three years ago, he reignited his passion for ham radio, delving back into antenna and transmission line theory.



## Meshtastic Group Meetup, March 14, 2026

**TCARES Breakfast Meeting  
March 21, 2026  
Steve Snider, N6VIN  
Presentation on Asia Dive Trip**



**TCARES Club Breakfast Meeting, March 21, 2026**

# TCARES Board Members 2026



TCARES Club Board Meeting, March 21, 2026