

# TCARES - Tuolumne County

## Amateur Radio & Electronics Society

# Amateur Radio Club Spring 2024 Newsletter

March 19, 2024



The Jamestown Run TCARES Net Control Center, March 16, 2024.

## Happy Vernal Equinox!

Greetings TCARES members and Happy Equinox! This quarter's newsletter has some wonderful articles - things that teach, things that inform, and things that inspire! We're hoping to keep the TCARES club aware of the news of interest to members, along with helping everyone to connect with one another in different ways. Our article authors have put effort into their pieces and we hope you enjoy their contributions.

We continue to have breakfast meetings at [My Garden Cafe](#), in east Sonora - come join us and connect with other hams! We hope to see you all at the next **TCARES Club Breakfast** meeting on **April 20<sup>th</sup>** and/or at our **Field Day** event on **June 22-23**. Many other events are listed on the TCARES club Calendar. So, please, come join in on the fun and get connected with other hams!



# Coming Up:

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## Dates to Remember:

March 19	Vernal Equinox
March 23	Ham Exam Session
April 6	OES Town Hall
April 12	DX Convention
April 20	Old Mill Run
April 20	TCARES Club Breakfast Meeting(?)
April 27	TCARES Club Board Meeting
May 18	TCARES Club Breakfast Meeting
June 6	SEA-PAC Oregon
June 21	Field Day



# Editor's Note

By [Jeff Tolhurst](#)  
N6JWT/WRDP326

## 20243 TCARES Looking into the Future with Education, Training, and More



As our club moves forward into the year, one of the things our TCARES Board will be focussing more upon is education and training. Hams need to have the knowledge and skills to be able to enjoy the hobby, as well as help one another, and our community, during emergency incidents. As new hams join our club, they have expressed an interest in learning more. How do we learn more, and where do we go for help?

One way to learn is to get an “*Elmer*” (a more experienced ham, who mentors beginners, or less experienced hams) and one place to go this month to find some Elmers, was the Country Cowboy Church, in east Sonora. Ron Trout, K6QPP/WRYV681, taught a Beginner Radio Class and had 25 students show up (even though the weather forecast was for “blizzard” conditions! Topics covered included the FRS/GMRS/Amateur radio services, radio etiquette, protocols, nets, emergency communications, and more. Ned, K6NED/WRPM781, and Chris, K6CDP/WRPX768, also attended the session and helped class participants get their questions answered and radios programed. They also practiced using radios and ran a simulated net. At the end of the class Ron asked the group for input on potential future classes and there was an overwhelming show of hands for both an intermediate, and an advanced, class. Ron has already set up another Beginner Class for April 13th, at Pine Mountain Lake. Check his GMRS-related website for more information: <https://tcnrw.com/>.

Additionally, TCARES club President, Mike, W6MVM, contacted the ARRL (American Radio Relay League) and, after a detailed conversation, shared with the TCARES Board that the ARRL fully supports the GMRS radio service. The ARRL's attitude is to have amateur radio operators work with GMRS users to support radio-related activities that benefit our communities for the common good. With that in mind, TCARES looks forward to promoting interests that both radio services have in common - training/skills development, emergency communications, community events, camaraderie & fellowship, and more. As GMRS continues to grow, and develop, TCARES is looking forward to recruiting more radio enthusiasts into our club.

On March 19th, a GMRS Stakeholders group meeting was held at the Starbucks in east Sonora. All of the stakeholders have both amateur, and GMRS, licenses, and we've been working on developing the Neighborhood Radio Watch programs in the county. In the past few months, two new GMRS repeaters have been installed on Duckwall Mtn. and on Cedar Ridge, to complement the two other GMRS repeaters in Groveland, and Columbia. Discussion centered on how best to develop, manage, and promote GMRS radio in the region. Additional discussion centered on how best to integrate GMRS with the Amateur radio service. Two websites with information about the growing GMRS system in Tuolumne County can be found at:

1) <https://tcnrw.com/>; and 2) <https://tuolumnecountygmrs.weebly.com/>.

Get involved and reach out - new radio users need our help as we grow and adapt, like wildflowers...

***Enjoy the Vernal Equinox everyone - Spring has sprung!***

73, jeff, [n6jwt](#)



# President's Message

by [Mike McGinty](#)  
**W6MVM**



## President's Message (Mike, W6MVM)

Hello, thanks for electing me as President of TCARES for the next two years. I would like to thank George, N6GEO, for the great job he did as president and for encouraging me to run so he could go trailering in his new (to him) Airstream trailer. Have fun in Quartzite, and say hello to Gordo.

It's too bad the Yuma HamFest, which followed Quartzite, is gone forever. It was my favorite hamfest. No volunteers to do it anymore. Too bad. I would like to

help TCARES to be the club its members want it to be. It's been a great club over the years, a social club, centered around amateur radio, which is what, I think, the members want it to be. I've certainly enjoyed it. We've had fun at the runs, Field Day, Father's Day at the airport, many good breakfast meetings, and other events. We need to keep these events up and improve them where we can.

It's been a long time since TCARES had any active training or mentoring programs. A lot has changed in ham radio in the last 10 years. New and interesting technology has come into the hobby. Digital on both the UHF and HF radio has changed things drastically. Many of our members are already participating in these new modes and having great fun. George's 3<sup>rd</sup> Tuesday night Tech Net on the repeaters has started spreading the knowledge on how to hook your computer to your rig so that you can use these modes. It would be great to have some of our experienced members start some additional training and/or mentoring on these new technologies for those that are interested in them.

I think the club should continue to do what the members enjoy and also try to provide a way for interested members to explore more of what modern ham radio has to offer.

73, Mike, [W6MVM](#), [w6mvm@arrl.net](mailto:w6mvm@arrl.net)

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## Chasing DX

By [David McNeil](#)  
**W6PHO**



[Editor's Note: David will be resuming his column on Chasing DX in the next issue of the TCARES Newsletter. He is currently recovering from some health issues and we are all wishing him well, thinking of him. Get well soon, David!]



# Letters to the Editor

March 16, 2024

GMRS Radio TidBits.

Small subjects in radio.

Nets. What is a Net?

A Net is a group of radio operators that meet on an agreed upon frequency and time to pass information. Formal nets usually have a net control operator, who controls traffic on the net. This system is more efficient in passing large volumes of traffic.

Less formal nets may sound like a group of operators talking among themselves, but there are still rules to keep the net from breaking down. Like taking turns transmitting (talking) based on the order people checked into the net or order of call signs. You did get a call sign when you got your GMRS license. Do you remember it?

On one of the GMRS sights there is a document that tells how to run a net.

A couple of friends talking on the radio is not a net. But still courtesy should prevail.

## **Getting on a Net**

Always give your name and call sign when getting on the net.

A Net may last for minutes or days.

When the Control Operator calls the Net to order, listen to the instructions he, or she, gives. He will introduce the Net by name. He will say something like, "is there any emergency or priority traffic." If you have some now is your chance. Give your call sign. There may be more than one station with emergency or priority traffic. Again you may have to wait your turn. It will go quicker if a number of people are not trying to talk over one another. This is a radio net, not a cocktail party. If there is no emergency or priority traffic, there seldom is, Roll call will start, where people are called by order they checked in or call sign. If there is emergency or priority traffic in the middle of the Net, Call break and give your call sign. You will be able to give your traffic immediately.

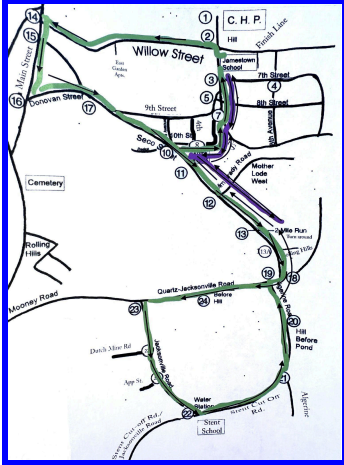
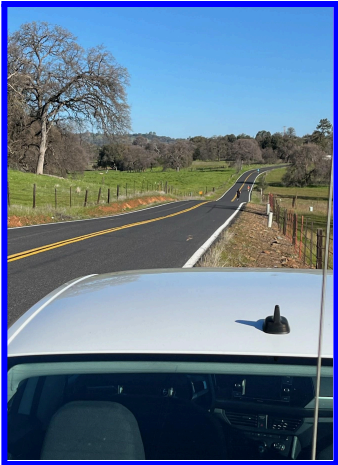
Emergency or Priority Traffic is any traffic affecting life or loss of property. Example: car in the middle of the road on a blind curve, power lines down, water washing out a road, Fire and the like. A missing cat is NOT. Use your best judgment.

There are several Nets in Tuolumne County. You can listen in even if you don't have a license yet.

Have fun Sterling.

-Sterling (yarnspinner7@gmail.com)[*Letters to the Editor can be a useful tool for submitting your opinions and ideas. Send letters to: Email: [info@tcares.net](mailto:info@tcares.net), or Regular Mail: TCARES, PO BOX 3555, Sonora CA, 95370.*]

Images from the Jamestown Run → radio support by TCARES.





# Meet Our Members

By [Ginger Rohlen](#)  
**KM6RFT**



Phil Fish was born in San Diego, California where his father had a job working for Solar Aircraft. When World War II began and his father went off to the war in Europe, Phil and his mother moved back to live with his mother's parents on their farm in Fresno. Phil has memories of lying on the living room rug and listening to Franklin Roosevelt's Fireside Chats over the radio. He also remembers his family gathering around in the evenings as his grandfather would tune into the military frequencies on the radio.

These were his first introductions to short wave radio. Later Phil was introduced to Ham radio through Harry, a neighbor and friend of his parents, who was a Ham Radio operator. At the time Phil enjoyed listening to the Buck Rogers Radio show, but he noticed that Harry's radio transmissions were causing interference.

One day, Phil, who was about 9 years old at the time, stomped down the road to Harry's house, intending to tell him about his frustration with the interruptions. Harry's wife brought Phil down the hall to Harry's radio shack, where Harry was busy reporting the current weather on a weather net. Harry apologized for the interference with Phil's radio show and then began to show him all his radio equipment. Phil was very curious and interested. By the time he left, Phil had made himself a new friend and mentor. Harry handed him all the parts that were needed to make a crystal radio receiver, and happily made himself available to mentor Phil and answer any questions he had.

By the time Phil got to Junior High science class, he was building homemade telegraph systems with batteries, wire, and magnets. According to Phil, "We had a lot of fun. We would set up little telegraph systems around the school, and then, when we could take them home, we'd run them down through our backyards, from one kid's house to another."

In high school, Phil and his best friend enrolled in Radio Shop with an instructor who was also a Ham radio operator. Over time they began to pull little pranks when the instructor would leave the room. When Phil and his best friend took a transformer and wired it to the school bell in the classroom so that when the bell rang, it would send a voltage to the instructor's metal chair and table and give their teacher a strong volt of electricity, their teacher made a decision. "Guys," he said, " You are getting dangerous. I'm sending you to Fresno City College to take an electronics class." It was there that Phil got his Ham Radio license and his Radio Telephone license. He also joined a Ham radio club and participated in activities like the Moon Bounce and other novel ideas at the time.



Phil worked his way through high school and college, working as a television service and repair man. When he decided he wanted to make a change, his friend told him about a job opening at a nearby State Park. When Phil applied, he got the job, and he spent the next 35 years working for the state of California to conduct historic restoration, and to work as a computer technician. During his career, Phil worked at several California State Parks. He has many fun stories to share about his experiences.



When Phil was stationed at Bodie State Park, Phil, Barbara, and their newborn son, lived in one of the old cabins there. When visitors peered into the window to see what it was like inside, Barbara, the baby, and the dog would hold still and the visitors would comment on how life-like it looked inside. Phil also rebuilt the old communication system of crank phones. He loved the look of shock and surprise on the park visitors' faces when the old crank phone would ring. At each new location, once they learned about Phil's work as a volunteer fireman, they made him the Fire Chief. Phil spent the last 10 years of his career working at Columbia State Park. He was also the Fire Chief for the park and volunteered to serve on the Board of Supervisors for the Columbia Volunteer Fire Department.



Phil and his wife Barbara have been married for 57 years. Together, he and Barbara, had four kids, three boys and a girl. Their oldest son served as a marine, and later worked as Security at Columbia College. He died of leukemia several years ago. Their other two sons served in the Air Force, one is a C17 pilot, and retired as a Lieutenant Colonel, and the other served as a C130 Load Master and is now serving in the Arkansas Air National Guard. Their daughter is currently a Fire Marshall in Madera County. When their kids were young and Phil was working at Big Sur State Park, he was a member of the volunteer fire department and Barbara was a volunteer ambulance driver. When they would hear a call over the radio about an accident, both Phil and Barbara would head out the door. Phil chuckled when he shared that their oldest son would say, "I'll take care of the kids, Dad."

Phil has been a member of TCARES ever since the very first meeting at Fred White's house, and he remembers attending TCARES meetings long ago, at the Veteran's Memorial Hall in Sonora. Phil also has fond memories of working with his dear friend, Wally Ratzlaff, another longtime member, who was instrumental in helping to put together our repeater system. "I went up on many mountain tops with Wally. Sometimes we'd put the equipment on the sled and hike in together to work on the repeater system." Wally is now a silent key and he will be deeply missed.

Phil and his wife Barbara have both served as officers in our club. Phil has served as Vice President and as a member of our Board. His knowledge and skills as Fire Chief in the State Parks, led to him being asked to serve as the RACES/OES representative for Tuolumne County, Region 4, which runs up and down the Sierra of California. Phil has served as our club's RACES representative for many years. Barbara served as our club secretary for 12 years, and she also ran the Public Information Office during the Rim and Moccasin fires. As Phil says, "I was in charge of RACES and she ran the public information end of the Emergencies." Through the years, Phil and his wife, Barbara, have volunteered countless hours of service to our club. Their dedication and teamwork has made all the difference. It was an honor and a great pleasure to interview Phil and to work with his wife Barbara.

73, Ginger, [KM6RFT](#)

*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, 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.*

# Community Corner

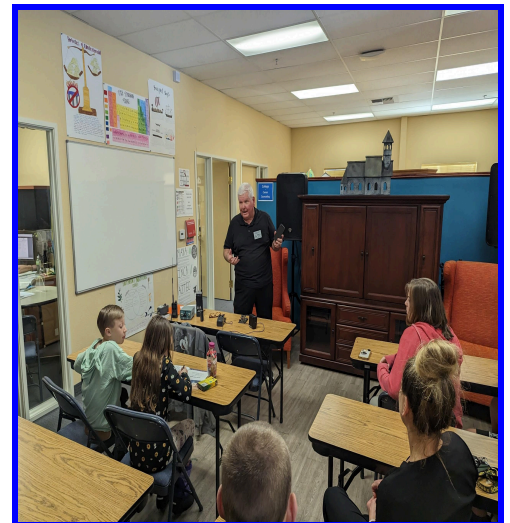
By [Paul Bailey](#)

**KN6CWT/WRWS835**



Hello again from the Community Corner. This article is going to tell you all about a high altitude balloon launch that club members did with a group of students from Mountain Oaks Elementary School. What is a high altitude balloon? They are uncrewed balloons typically filled with helium or hydrogen and released into the stratosphere. High altitude balloons are used for a vast array of authorized purposes in the public and private sectors, such as monitoring the weather, capturing clear images of the cosmos, and carrying out science experiments.

In February of this year, Michael Grcevich, David Volt, George Chraft, Micheal Pierce, and Paul Bailey, started a **"Radio Knowledge and High Altitude Balloon Launch"** class at Mountain Oaks Elementary School. I worked with David and George, who provided the balloon, the hydrogen to launch the balloon, the hardware device, and the launch site, which was in Lodi, CA. Micheal G. provided the example equipment of radios, keyers, tesla coil, and APRS transmitter, along with a functioning website for the balloon launch. Michael P. provided information on radio history and also work packets to test the kids' knowledge. Paul provided radios, keyers, and Youtube videos, demonstrating what ham radio is and its use in our county and further out into the world. These folks went above and beyond with teaching the group of kids. The group showed the kids that radio has so many different functions and avenues to learn from.

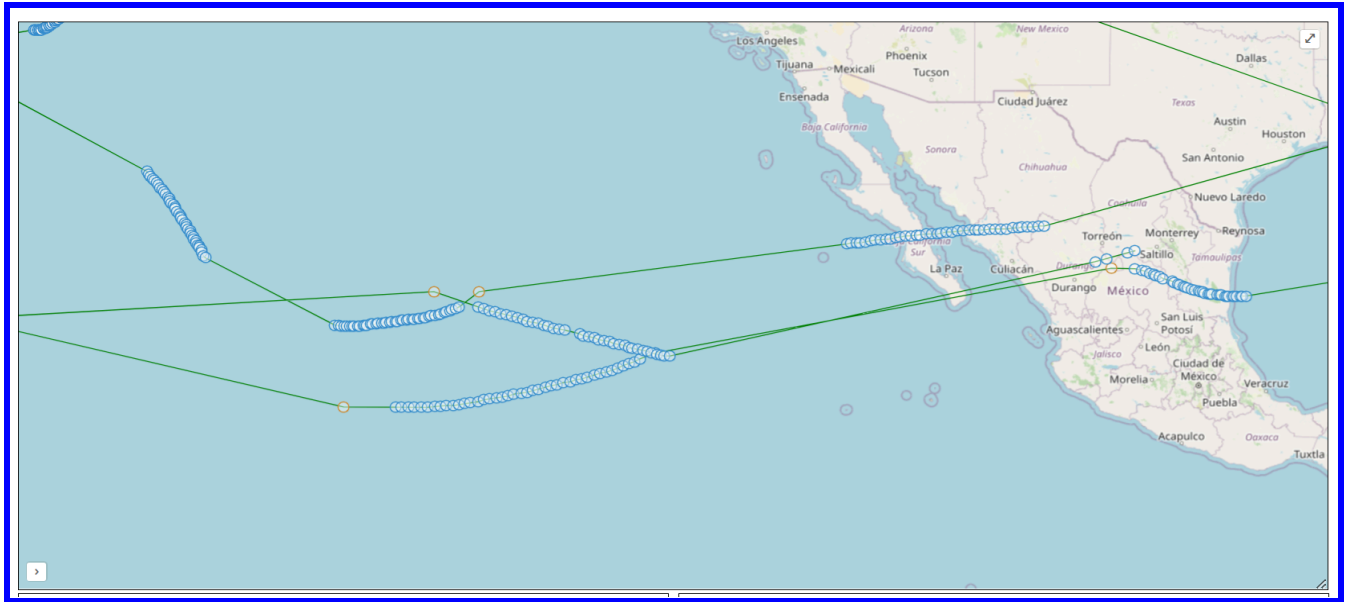


This is an update on how the balloon is doing so far - it's been aloft for **198 days**, and counting! **KB6USJ-11** is still outperforming our original expectations. Valuable information is constantly being collected. If you recall, since the original launch back in May 20, 2023, the Pico headed north and traveled up near the Arctic Circle and one orbit



actually crossed over the North Pole. That event caused some concerns since the angle of the solar panels were not set for that high of a latitude, and the results would not be generating enough solar power to keep the beacon transmitter in operation. The good news is that, for the most part, daily GPS and telemetry data has been received, and the balloon is continuing to send daily beacons. The electronics have held up through solar radiation storms, and harsh atmospheric conditions (including freezing temperatures). I did not mention another concern, which was that KB6USJ-11 would eventually run out of sunlight in its Northern orbit, as the seasons changed, and sunlight would focus on the Southern Hemisphere. Luckily the upper atmospheric winds pushed the balloon to a more southerly orbit. How far south will it go? Its latitude has been in the Tropic Of Cancer - will it get down to the Equator, or beyond?

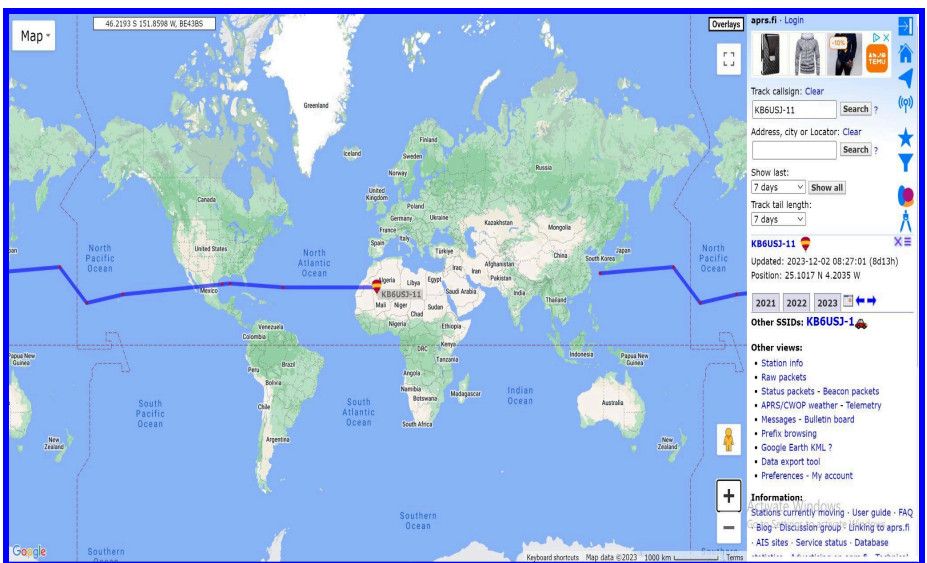
## Map of Balloon Track.



Since the time it launched, other balloon launches have taken place, and also some failures have occurred. The group considers these attempts as R&D (Research & Development) - some things are learned with failures. Just like SpaceX, it is a step by step process of trying, failing, learning from the failure, correcting, and trying again! Please go to [www.aprs.fi](http://www.aprs.fi) and track the balloon's progress as well as to learn more about the [www.aprs.fi](http://www.aprs.fi) website. Stay tuned - the group has also launched a small **ocean buoy** that has a beacon and solar panels and is capable of 24 hour transmission, since it does carry a battery pack that charges during the day. The program is going to continue and we are in need of a school or students that would like to participate in our experiments, like studying the Earth's magnetic field and Earth's weather sciences.

73, Paul, [KN6CWT](http://www.aprs.fi)

*Hello, my name is Paul Bailey and I have been in love with radios for as long as I can remember. I have been a Ham since 2019. My callsign is KN6CWT. During that time I have gotten involved with TCARES quite a bit. I have been lucky to have been elected to the board of the club as a director and now the Treasurer. I have helped with programing and operating radios for both fun and in emergencies, I've also been fortunate enough to help put in a new repeater. I have also learned so much from APRS to WIN System. I have had the opportunity to participate in club events like field day, races, National Night Out and Fly-in's.*





# Mike's CW Column

By [Michael McGinty](#)  
W6MVM



This is the third column in this series. In the December column I reviewed our contesting efforts both as the club, K6TUO, in the Cal QSO Party, and as W6MVM in the ARRL Sweepstakes and the CQ WW DX Contest. We did well in all of these contests. In this column, I will discuss *keys* and *keyers* and what's going on on the air.

Again, before I start, I want to say that I am a Life Member of the ARRL and, as one, I still get QST as a print magazine. I applied, and paid for, a Life Membership after I retired from a 40-year career as an electrical engineer. I owe this fantastic career to ham radio and in part to the ARRL. More on this in another column. The reason I mention this is because some of the keys I talk about in this column were special offers purchased from the ARRL, at great expense, as donations. Two of these keys are the ARRL 100<sup>th</sup> Anniversary Vibroplex Iambic Key and the Begali Sculpture Iambic Key the ARRL sold as a fundraiser. Begali (an Italian company) supports the ARRL by sponsoring the CW speed tests on W1AW. It also sponsors other CW operations around the world - there's a video on FOX TV about CW - featuring operators from W6SFM in Sacramento. (See Vibroplex at [vibroplex.com](http://vibroplex.com), Begali at [i2rtf.com](http://i2rtf.com), and The Samuel F. Morse Amateur Radio Club at [w6sfm.org](http://w6sfm.org)).

CW keys come in three major types: 1) electronic keyers; 2) 'bugs' (or mechanical semi-automatic keys); and 3) straight keys. There are also an increasing number of operators that use only a keyboard on their electronic keyers. CW can now be operated like RTTY (Radio Teletype), straight from the computer keyboard, with decoding software. Receiving CW seems to work only with strong signals and "good fists" (someone who sends fine code). With the software I've tried, it still requires a good ear to know when the decoding software is screwing up. More on this in another column.



On with the keys. Keys for electronic keyers come in two styles: 1) single lever; and 2) iambic dual lever. [Editor's Note: "One lever is dedicated to sending dits, and the other lever is dedicated to sending dahs. Iambic keying involves squeezing both paddles - the first paddle to make contact sends its element (dit or dah) immediately followed by the opposite element. This continues as long as one or both paddles are squeezed." --from DX Engineering]

All modern transceivers come with built in keyers that have several modes, usually: 1) *iambic1*, 2) *iambic2*, and 3) *straight key*. Some also have semi-automatic or 'bug' mode. There are more iambic modes than are supported by the built-in keyers in transceivers, which keeps external keyers, such as Winkeyer, popular ([hamcrafters2.com](http://hamcrafters2.com)). The external keyers also support the sending of predefined

scripts which are great for contesting. Some transceivers also support this feature. Logging software such as N1MM+ and Ham Radio Deluxe also support this feature.

Back to the keys. I have several Vibroplex keyer keys. I have an old single lever key that looks and acts like a bug. It was the first keyer key that I bought and it is still one of my favorites. It has a big dash knob like a bug and a paddle for dots. This is a great key for bug mode, but it is still a Vibroplex and has to be maintained like a bug. I also have several Vibroplex iambic Keys, including the ARRL 100<sup>th</sup> Anniversary Key. When adjusted properly, they are very good keys. They have smooth action and a good feel. The biggest problem with these keys is that the adjustment screws have a very coarse thread and require set nuts to keep them adjusted. These nuts often come loose during long contests and require the key to be readjusted. The other problem is that they use silver contacts that need to be cleaned. On older keys, all the connections need to be cleaned, but this is not a big deal. When you get an older key, loosen all screw connections and spray them with a good contact cleaner like DeoxIT D5, then readjust the key. Clean the contacts with the same DeoxIT D5 using a calling card. Calling cards are great for contact cleaning. Don't use anything more abrasive.

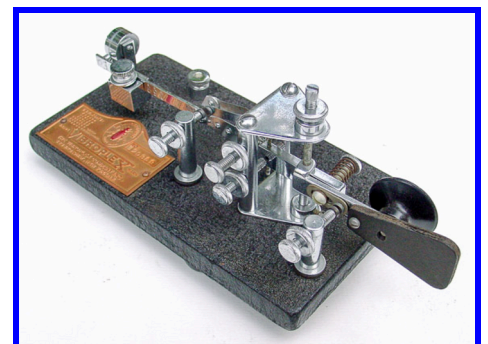


The very best keyer key that I have found is the Begali Sculpture iambic Key. It uses gold contacts. The adjustment screws have very fine threads with smooth plastic capture sockets. It's very easy to adjust and the adjustments stay in place even when the movement is very close. The base is well weighted with a rubber contact foot that wraps clear around the base. It just looks good. Another great feature is the connection. It is a 1/8<sup>th</sup> inch stereo socket on the back of the key which works well with most modern transceivers. This makes it easy to move the key between rigs. The engineering of this key is superb. Form fits function very well. The Begali Sculpture is pricey at about \$460 new from the factory, but I have seen them used on QRZ.com and eBay for about \$350. Begali also has other fine keys for less. See their web site, i2rtf.com.



I mainly use the Begali with a Cricket 2 keyer in semi-automatic (bug) mode. My Flex 6300 doesn't support bug mode in the built in keyer software though both my Icom and Yaesu transceivers do. My contesting partners love to use this key mainly in iambic2 mode. Dave, W6PHO, liked it so much he bought one for his station.

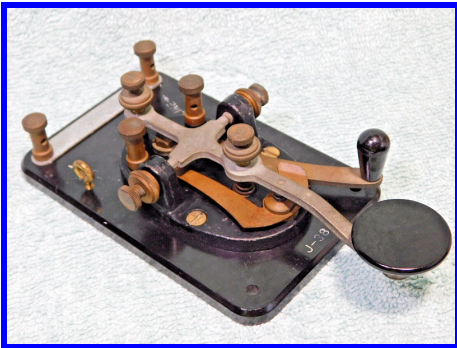
I have to admit, I mainly use semi-automatic mechanical bug type keys. This is what I grew up with. I still love them even though they are a pain in the ass to keep running. But then, I still use vacuum tube Collins rigs from the 1950s and 1960s regularly. The key I use mostly is the Vibroplex Standard Deluxe with a Vari-speed swing arm and extra weights to slow it down. Most bugs were designed for speeds from 20 to 50 wpm. The swing arm with extra weight slows it down to about 12 wpm. This is what I use regularly on our CW net. For slower speeds, I side-swipe the dash key. This works great. Adjusting a bug is an art that is well described on many Youtube videos so I won't go into it. I will be glad to help anyone who wants to try using a bug.



My first bug was a Vibroplex Champion that I bought new in 1960. I still have it and use it. It was the cheapest bug I could get. For a kid in high school \$125 was big money. Unlike the Standard and the

Blue Racer, the Champion and the Lightning Bugs have flat, rather than round, weight arms and use different weights. I made extra weights to slow it down using an alligator clip with a fishing sinker soldered to it. This worked well. The Champion and Lightning Bugs are good keys and are usually cheaper on the used market. Lightning Bugs were mass produced for WW2 military and merchant marine use.

The next key group is straight keys. My favorite straight key is still the WW2 J-38. I bought the one I have now in 1960 for about a dollar. I recently loaned it to Paul, KN6CWT, who used it for about a year before he bought himself a key. He made a nice plug for modern transceivers for it. The J-38 is easy to adjust and is smooth to operate. It comes with the flat key top that was popular in the forties and



fifties with no shield below the key top. Many users used a poker chip with a hole drilled in it under the key top to make it more like the Navy key. The J-38 also has a shorting switch which was very useful for tuning up older CW transmitters. There are many J-38s, J-38 copies and J-38 type keys on sale for about \$50. Look on QRZ.com. Some are older and really beautiful. The J-38 was a copy of the standard telegraph key of the 1860's.

The other straight key I really like is the Bencher RJ-1 or RJ-2 model straight key. They are both the same except the RJ-2 has a chrome base. The Bencher is smooth, has a heavy base and good feet and has a semi-Navy type key handle. It's kind of like the J-38 with a poker chip but good enough. One of the things I don't like is that the connections use spade lugs underneath the key. Once you make a good cable, this is not a big problem. Another thing I don't like is that the key adjustments require an Allen wrench which is supplied and clips underneath the key. Once the key is adjusted, it is very stable, and doesn't require frequent readjustment, but I like to adjust my keys for the speed I'm operating and this makes it inconvenient. This key is very reasonably priced at about \$160 for the painted base, or \$190 for the chrome base.

Vibroplex straight keys are beautiful to look at and the owners I've talked to really like them. I don't have one but I would like to. They run from about \$180 for the standard to about \$220 for the deluxe.

Enough with keys. They're great fun, but on to operating.



I've enjoyed checking into the Samuel F. Morse Amateur Radio Club CW Net on Tuesdays, at 8 pm, on 3.545 MHz. This is a very casual CW net run at about 15 wpm. Net control is always W6SFM, though the actual operator varies among members. Net control sends a preamble and asks for check-ins (QNI). If you want to join in, just send your call. Net control will call you in order. The check-ins discuss what is going on at their QTH's in plain language CW. Good fun, lasts about an hour.

Our club CW net on Thursday nights at 8:30PM has been active. Paul, KN6CWT, and Mike, KI6WJT, have been regulars. Dave, W6PHO, occasionally



gets in from SF. We also get some outsiders checking in. I've gotten some QSL cards from them lately.

I haven't been doing much contesting lately. I missed the ARRL WW DX Contest. That's at the end of February for CW and the first weekend in March for phone. It's usually great fun. DX has been great with many DX-peditions going on.

**ARRL**  
The National Association for Amateur Radio®

ARRL Home | Contests Home | Calendar | Log Submission | Logs Received | Scores | Certificates | Clubs | Non-Contest Events

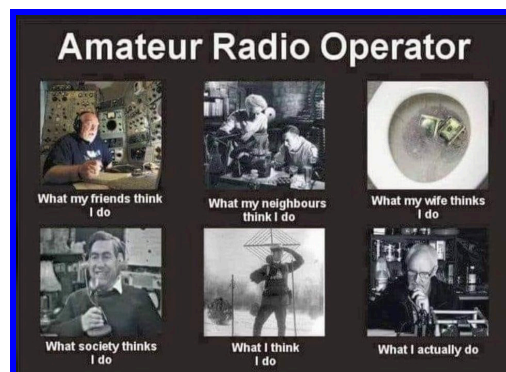
### Contests

	Contest Results Status																			
	2023 Rookie RU SSB	2023 Digital	2023 Jun VHF	2023 IARU HF	2023 222 MHz	2023 EME	2023 10 GHz	2023 Rookie RU RTTY	2023 Sep VHF	2023 SCR October	2023 SS CW	2023 SS Phone	2023 160M	2023 10M	2023 Rookie RU CW	2024 RTTY RU	2024 Jan VHF	2024 SCR February	2024 DX CW	2024 DX Phone
10 GHz																				
10 Meter	Results Final	Results Final	Results Final	Results Final	Results Final	Processing Logs	Processing Logs	Results Final	Results Final	Results Final	Raw Scores Available	Raw Scores Available	Raw Scores Available	Raw Scores Available	Results Final	Raw Scores Available	Raw Scores Available	Processing Logs	Raw Scores Available	Raw Scores Available
160 Meter																				
222 MHz																				
Digital	<b>Current/Upcoming Contests</b>																			
DX CW	Feb 12-16 ARRL/LIMARC February School Club Roundup Logs due: 2359Z Mar 2																			
DX Phone	Feb 17-18 International DX CW Contest Logs due: 2359Z Feb 25																			
	Mar 2-3 International DX Phone Contest Logs due: 2359Z Mar 10																			
EME	<b>Attention:</b> Results articles for legacy contests have been recently added to the site. Use the link at the bottom of the left navigation menu to access these contests.																			
Field Day	Welcome to the ARRL Contests portal - your one-stop shop for all of your ARRL contest interests. From here you can access everything from the starting bell of a contest to your post-event hard-fought certificate of accomplishment.																			
IARU HF	Use the navigation tabs on the left to access information about specific contests. Use the tabs at the top to submit your log, manage your club's eligibility list, download your certificates and view other information for all contests.																			
Jan VHF																				
Jun VHF																				
Rookie Roundup, CW																				

I hope to cover more in the next column.

73, Mike, W6MVM (w6mvm@arrl.net)

*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 in two locations, at home in Soulsbyville, and on my sailing yacht, Integrity. My main station is in Soulsbyville, CA.*



# Repeater Coordinator Notebook

By [Greg Triplett](#)  
**WA6HNA**



For this edition of the TCARES Quarterly Newsletter, I would like to provide a status report of the TCARES Linked Repeater System.

## General Overview

The TCARES Linked Repeater System was reliable, and maintained consistent performance during 2023.

As most of the club members are aware, prior to mid-2019, the TCARES repeaters were all independent, non-linked machines, with RF decks, system controllers, and power supplies all in the 30 to 50 year-old age range. The equipment had served us well over the years, but most was well beyond its useful service life. In addition, two of our repeater locations were not going to be available to us for much longer. It was at that time, our then President, Larry Crabtree (W5JVJ), asked if we could perform an inventory, determine what upgrades needed to be performed, and what site access requirements we needed. Oh, and the TCARES Board threw an additional goal onto the list: could we link all the repeaters together?! That was a stretch goal, for which we knew we would need the whole club to get behind both financially, and with time and effort. A few months later, Covid 19 hit the scene, and since so many things were shut down, a number of us found ourselves with more spare time. It was now GO-TIME for putting this system together!

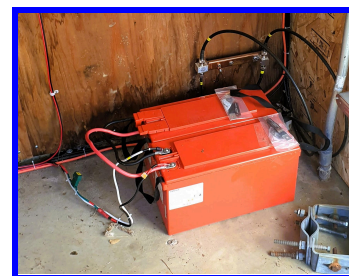
As with any new complicated system, like our Linked Repeater System, there are growing pains, and bugs, that need to be worked through. 2019 and 2020 saw us fundraising and implementing the vast majority of the initial system. 2021 and 2022 were all about uncovering system, individual component, and software weaknesses and bugs. In fact during that time we literally had our Pinecrest Repeater building (at the top of Dodge Ridge @ 8,200 ft.) blown off the ridge by hurricane force winds! We also had a couple of antenna failures (thanks to the woodpeckers and Mother Nature's wind and ice storms). We have since replaced those antennas with hardened versions. During 2023, the vast array of new-system issues we had been fighting seemed to have finally settled down, and we were able to make progress fixing smaller bugs and developing more system robustness. 2023 was a good year overall.



## Late 2022 & 2023 in Review

Here are some system highlights of the last 1-1/2 years:

- Hobby Hill - Jeff (N6JWT), John (KN6RLM), and Greg (WA6HNA), installed a solar panel, and West Mountain solar charger/battery controller/power supply controller, with an emergency power switchover system to keep the Hobby Hill repeaters running, even during power outages.



- Hobby Hill - Greg (WA6HNA) troubleshoot and repair the frequent AllStarLink dropouts between the Hobby Hill and Duckwall repeaters. Problem found to be the ethernet wiring between the Hobby Hill Internet Dish, and the radio room router had rubbed through the insulation where it fed through the building. No problems reported since the repair.
- Duckwall - Greg (WA6HNA) adjusted the link transmit audio up a bit to balance link audio levels throughout the system.
- Pinecrest - Ned (K6NED), Jeff (N6JWT), and Ginger (KM6RFT) all helped upgrade the backup battery bank to approximately 300 Amp-Hours (nearly a week) of back-up capacity to support the repeater system during long high-country power outages.
- Hobby Hill - Jeff (N6JWT), John (KN6RLM), and Ned (K6NED), upgraded the back-up battery bank to approximately 300 Amp-Hours (nearly a week) of back-up capacity to support the repeater system during long PSPS power outages.
- TCARES System - Greg (WA6HNA) attempted to set the repeater system in full-time linked mode, but ran into trouble on repeater net nights when the repeater controller scripts tried to link the repeaters with a short timeout (net mode). This caused the repeaters to unlink just as the evening net started. The temporary solution was to not do full time linking until a solution is found.



### Q1 2024 in Review

- Duckwall - With the sad news of Wally's recent passing (W6FEJ), FCC rules required us to change the repeater call sign. The background on this topic is that the TCARES Club and our Repeater System normally use the K6TUO call sign. However, several years ago, the TCARES Board of Directors wanted to honor Wally for all his support of the club over the years by keeping him as the FCC Trustee of the Duckwall repeater, and have it use his call sign for all to hear. With Wally's passing, the Trustee is required to revert to TCARES, and thus switch to K6TUO. As a related note, per FCC rules, TCARES is only allowed to maintain one vanity call sign, so we are unable to request the W6FEJ call sign for our club. As a result, all TCARES repeaters now feature the K6TUO callsign. We will all miss Wally.

### Looking Forward Through 2024

For 2024 we have a few projects planned to improve the system:

- Pinecrest - The existing site antenna is several decades old and near the end of its useful life. The plan is to replace it with a 2-bay VHF dipole. Due to the harshness of the winter weather there, a standard CommScope 115 MPH wind survival antenna is not strong enough. We are investigating options for a 150+ MPH antenna, and will install it this summer if we are able to find one that meets our specification.
- Greg (WA6HNA) will revisit the full-time linking of our repeater system. We have a complete spare repeater and controller that can be used for testing. We will implement the change and test it on the spare system





before deploying it to the larger TCARES Repeater System.

- We need to update some of the software on our AllStarLink Silicon-Valley server. There is a known bug where the AllStarLink software application will stop accepting new nodes to log into our system until the software is restarted. There is now a fix available for that bug.

73, Greg

*Former 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.*



New Cedar Ridge GMRS Repeater



Ned testing the Hobby Hill Columbia Repeater



Panorama from a Drone flight above the Hobby Hill Columbia College Repeater

# ARES/RACES Emergency Communications Report

By [Ned Sudduth](#)

**K6NED/WRPM781**

## TACTICAL RADIO BAG



We have all heard of 'Go Bags', you know – the kind of backpack or suitcase packed full of several nights of personal items, clothes, medicines, photocopies of key paperwork. The kind you grab when evacuated at short notice due to a wildfire. Well, today we will talk about 'Radio' Go Bags.

A Radio Go Bag is small - about half the size of a student backpack. It has a shoulder, or cross body, sling and is full of pockets and attachment points. Ham radio operators use Radio Go Bags in the field, while staffing a run, or race event. You can use them hiking, or camping, or as your main radio shack at home.

The main feature of the bag is your radio(s), however, some folks like to have more than one. Pictured here are 5 radios (which may border on too much, as it adds lots of weight). One radio is required, but you may find extra listening sources helpful, and a backup is good. In order of importance I would list them in the following order: 1) Anytone ham radio; 2) Uniden scanner; 3) 2 more ham radios; 4) FRS (Family Radio Service) radios.

While staffing a public event like a race, you may be positioned on a public road and a safety high-visibility vest is essential. You may need weather gear suitable for the day. Clubs like TCARES have a box full of vests, but you may opt to get your own, with pockets, or one that fits you better.

Have an extra battery pack for your radio, or a way to charge the battery in the field. Also, a car charger is another alternative option. Pictured is a battery replacement module that will plug into your car 12 volt outlet to power the radio. Also pictured is a USB battery, charging one of the radios.

If you are standing along the race course, you can have one speaker microphone on each shoulder. Use one to talk to Net Control, and use the other monitor other channels - like public safety channels, or GMRS, if in use during the event. If you are vehicle deployed, the speaker mic is a must for better hands/eyes free driving.



Radios



Safety Gear



Power



Speaker Microphones

Pen and paper, pocket sized, so you can capture information you cannot memorize on the fly. Also pictured is a print out of FCC radio license and business cards. If you are expected to log bib numbers of participants, a clip board may be better.



If you have extra space, or don't mind the additional weight, small handy tools can be added to your bag. Pictured is a multi-tool weatherman, small emergency kit with matches and string, flashlights, and thermometer.

If you are asked to ride along in a roving vehicle, this mag mount, along with the speaker microphone will make your day at the event much better.



Paperwork



Pocket Tools



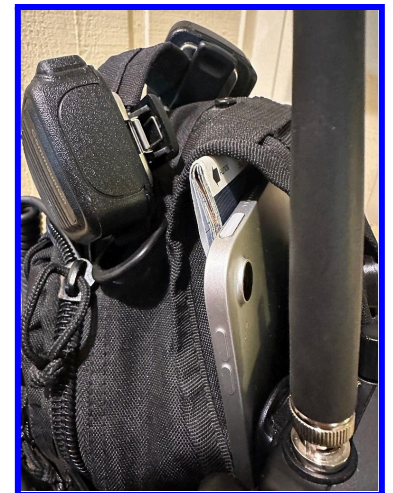
Mag Mount Antenna



ID Name Tag  
+ Other Features

YES, with the exception of what I would wear on my body and the mag mount. Pictured are all the items carefully placed inside the bag or attached outside. Also in the bag is a large paper map and a 10 inch iPad. This configuration is too heavy for this operator for in-field on-body usage. But it is ready for rapid adjustment (removal of gear not needed for the day) for the mode of intended use.

Find your bag on Amazon by searching for 'tactical sling bag' and pick one that suits your taste. You will have endless choices of styles and colors. Prices range from \$20 to \$40. You may also consider how you would carry water and snacks, a separate first aid kit, or a medical admin pouch as well.





# Sparky's Corner

By [Rich Combs](#)

**KN6HSR/WRMM317**



## FRS and Tones

The last article was a general introduction to **FRS**, Family Radio Service. Now we'll cover a few more details. First up is TONES!

PL, Private Line, Channel Guard, CTSCC, Tones, call them what you will, they are just different names for the same thing. It is not a form of encryption, your transmission is still able to be heard by anyone. It is a way to reduce hearing unwanted transmissions on the same channel you wish to operate on. Maybe your group wants to stay in touch while out for a hike, but doesn't want to hear some fishermen chatting on the same channel. You could switch to another channel, where you might unfortunately have a similar problem. Instead use tones.

I think CTCSS is the best term to use as it describes what is happening. CTCSS stands for Continuous Tone Coded Squelch System. Let's start from the end.

A Squelch System is a way to disable the audio on a receiver. Many radios have a squelch knob. As the squelch knob is turned clockwise, a stronger signal will be required to turn on or "open" the audio on the radio. It is normally adjusted so that the audio will turn on slightly above the ever present level of background noise. Sweet, no noise to bother your partner, assuring domestic tranquility.

Tone coded. Instead of a knob that sets the squelch level, a tone is used. If the tone is not present, it is like having the squelch knob turned all the way up, blocking all audio. If the tone is present, the audio is "opened", or turned on. A tone is just that, a sound, in the low end of the hearing range, between 67 Hz and 254.1 Hz. This is Hz, not KHz or Mhz. 67 Hz is just above the annoying 60 cycle hum we sometimes hear, while 254.1 is a C<sub>4</sub> for those musically inclined. But we don't hear them on our HT!

What! Is my hearing aid malfunctioning? No. The radios are designed with an audio filter that blocks any sound below about 300 Hz. The tone is there, we just don't know it.

Enter Continuous. The tone is there during the entire transmission, we just don't hear it because all audio below 300 Hz is blocked. Hopefully the Continuous Tone Coded Squelch System makes some sense now.

You can use CTCSS on Transmit and/or Receive, sometimes called Encode and Decode. If you transmit on a different tone than the receiver is set for, the receiver won't hear you. If you have your receiver tone set differently from the transmitter, you won't hear the transmission. Simple as that. Your group operates on one tone, and the fishermen on another tone. You hope.

What can go wrong? There are 50 standard CTCSS tones, although a subset of 38 is sometimes used. This can lead to a problem. "I'm on tone 2, set your radio to tone 2." If one radio has 50 tones, and the other has 38, the tone numbers may not match up. What you must do is specify the tone frequency, and you must know the correspondence between your tone # and the tone frequency. "I'm on tone 2,

which is 71.9 Hz for me. Let's use that tone." is much better than just "use tone 2". An example is in Table 1.

One final gotcha, or tip, is that if your tones are turned off, or tone 0, you will hear all transmissions on a given channel. This might be helpful to monitor for traffic, but you won't know what tone is being used, if any, so your response might not be heard. And it won't block any unwanted traffic.

This is written for novice FRS users, but everything here applies to GMRS and HAM radios.

73, Sparky, [KN6HSR](#)



Tone Name	RETEVIS RT49P FRS Frequency	RETEVIS RT76P GMRS Frequency	Radioddity DB25G GMRS Base Station Frequency
1	67.0	67.0	67.0
2	71.9	71.9	69.3
3	74.4	74.4	71.9
4	77.0	77.0	74.4
5	79.7	79.7	77.0
6	82.5	82.5	79.7
7	85.4	85.4	82.5
8	88.5	88.5	85.4
9	91.5	91.5	88.5
38	250.3	250.3	192.8
39			196.6
40			199.5
41			203.5
42			206.5
43			210.7
44			218.1
45			225.7
46			229.1
47			233.6
48			241.8
49			250.3
50			254.1

Table 1 showing how the Tone Name vs. Frequency can be different for the RETEVIS FRS & GMRS radios compared with a Radioddity GMRS radio.

*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 QRPguys. I have been developing a Neighborhood Radio Watch (NRW) program in Tuolumne County, modeled on one in El Dorado County, CA, USA.*

# From Hobby Hill: GMRS MATTERS

By John Buster  
KN6RLM/WROX508

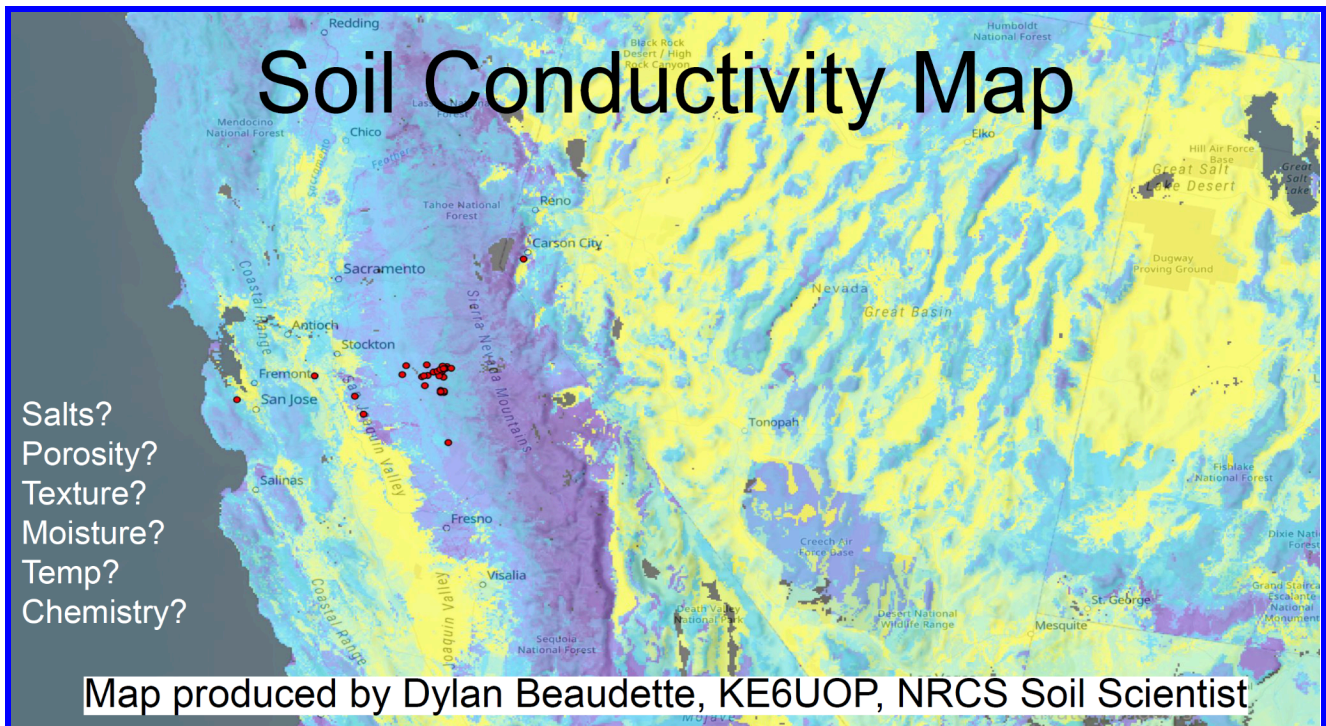


[Editor's Note: John will be resuming his column on "From Hobby Hill: GMRS Matters" in the next issue of the TCARES Newsletter. Current status of the Hobby Hill repeater, on the Columbia College campus, in Columbia, CA is all systems are go! The weekly Tuesday night nets (at 7:30 pm local time) continue to have from 16-24 regular check-ins. If you download the **Zello** smartphone app and add the "**Hobbyhillgmrsrepeater**" channel, John will add you in as a user, which will then allow you to check into our nets, using your smartphone as a walkie talkie. You must have a valid GMRS license to

participate, which costs \$35 dollars, and can be obtained within just a few hours (usually) from the Federal Communications Commission (FCC). More information can be found at either of the following links: 1) <https://tcnrw.com/>; or 2) <https://tuolumnecountygmrs.weebly.com/>.]

73, John, [KN6RLM/WROX508](#)

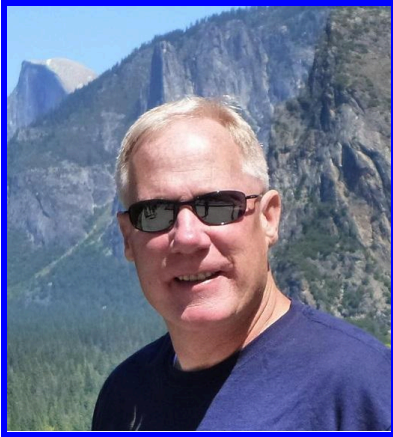
*My name is John Buster, and I've been a member of TCARES for a couple years. My dad was a contractor and used HAM radio to communicate with repeaters and auto patch from all kinds of remote places when I was a kid. I always thought it was magical, and I can remember times that his Motorola trunked repeater system got us out of a few binds! Fast forward to me getting on the air, I was a CDL interstate truck driver, and used CB radio to communicate with other drivers and companies I worked with. I listened to a lot of garbage on the CB and after I left the trucking industry I realized there was a much better way to communicate with people. I got my technician license and made some good friends, and after that got my GMRS license to get my whole family on the radio. I live in a fire-prone area, and communications are vital during emergencies. I belong to the Hobby Hill Repeater Group and we have an established Neighborhood Radio Watch Net. I hope to help strengthen our emergency preparedness and look forward to helping improve TCARES relationship with the OES.*





# Groveland GMRS

By [Chris Passeur](#)  
K6CDP/WRPX768



## GMRS Coverage is Increasing in Tuolumne County

Hello,

Within the past few months, we have increased our GMRS coverage in Tuolumne County. With that, we have changed our Facebook name to "[Tuolumne County GMRS](#)".

By the time you read this publication, we should have our **fourth** GMRS repeater up and running in Tuolumne County. We have now added a GMRS repeater up in Cedar Ridge.

Thank you to Nick and Juliana for allowing us to use your tower. The GMRS repeaters are located in Columbia, Groveland, on Duckwall, and now in Cedar Ridge. As you know, Two Way Radio is an excellent backup plan for communications during emergencies because, most likely, landlines and cell phones will not be working. In fact, cell phones and landlines go down even when there is no emergency in Tuolumne County. Unfortunately, most people are not radio "nuts" like me, or us, and do not want to study to take a test to get an amateur radio license. With GMRS we are helping to serve the community. As a side note, we are always encouraging GMRS users to check out TCARES and to investigate getting their Ham ticket.



Our Groveland GMRS NET is on Saturday nights at 1900 hours (7 pm). Stations are checking in from all over the county and even from outside of our county. The Columbia repeater also has a large turnout for their NETS. We are hoping with the added repeaters and coverage, other neighborhoods will also start their own NETS.

Before using the GMRS repeaters, we do require GMRS users to first contact Marc, N6NEZ/WRME405, or myself so we can verify their license status. We have had felons request to use our repeaters, which we have had to deny. Any licensed amateur radio operator does not need to ask us for permission, but does need to have a GMRS license.

73, Chris, [K6CDP](#)  
([Tuolumne County GMRS Facebook Page Link](#))

