

QSA-5



Inside the Clubhouse

Board actions, club activities, and upcoming opportunities to share and get involved..

Ham Radio in the News

From local to national to international – stories, inspiration, and legislation.

Ham Classroom

Every month, we showcase interesting subjects..

"When all else fails, you can count on Amateur Radio"

From the MARS President

As I write this, there are six days left in May, but in my head I hear Rodgers and Hammerstein's June is Bustin' Out All Over. Mainly this is because of Field Day. June 27th and 28th we will be up at Stafford Lake making contacts from 11:00 am on Saturday through 11:00 am on Sunday. While Field Day is a contest event we also view it as the chance to haul out a lot of ham gear to a lovely location, set up a few ad hoc radio stations, and see who we can contact. We also get to see each other live and in person, share a meal, marvel at how lucky we are to live in an amazing place and hang out with the fascinating people who comprise our club.



If you are a seasoned contester (with lots of *Worked All* certificates) come out and mentor those of us who aren't testers. If you are (as most of our members) a technician (and not granted HF privileges) – gain some HF experience with someone who is. If you are not a household where everyone already has a license, come on down and meet other member families. If you want to see what it takes to get an HF station on the air (it is way different than an HT!), join us for setup starting at 8:30 am on Saturday. There is nothing quite like Field Day as an experience and for all that it is free, even entry to the park is free. I will send you more detailed info in club emails.

If you are a soccer, or what the rest of the world calls *football*, fan – their main event, the World Cup is coming to North America and the bay area in June. Hams not wanting to miss out on the excitement are staging an on the air event June 11th through July 19th. For more information check out wc2026ses.org. Antonis Papatsaras AA6PP is organizing folks from our section to participate and you can sign up at aa6pp.org/#/w6s-volunteers

Curtis Ardourel, WA6UDS
wa6uds@w6sg.net

Resources

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[Club Calendar](#) May 17

[Local Repeaters](#)

[Our Weekly Net](#)

[North Bay 2-Meter Critical Mass](#)

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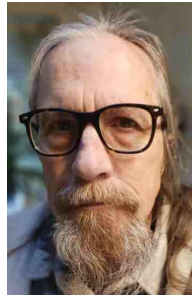
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P.O. Box 6423
San Rafael, CA 94903-0423
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Clubhouse Address
27 Shell Road
Mill Valley, CA 94941

[Membership in the Marin Amateur Radio Society](#) is open to any person with an expressed interest in amateur radio. Annual dues are currently \$30/individual or \$35/family.

From the Editor

Greetings and Salutations! Summer is upon us and with it, Field Day 2026. The Marin Amateur Radio Society is busy preparing for Field Day operations. With this year's Field Day comes a declining solar cycle. While there are still plenty of contacts to be made, the easier bands, such as the 10-meter band, are not opening up as much. Propagation conditions are up and down. While the 20-meter band seems to remain unscathed, HF operators are making the most of the time they have to engage in the long distance radio sport they love.



This got me thinking about creative ways for HF traditionalists to become involved in the two bands they started out with when they were Technicians, the 2-meter and 70 cm bands. I recently won a 2-meter, 70 cm, and DMR complete Ham Shack from Bridgecom Systems. For a guy who cobbles together odds and ends and makes them work for my HF DXing, I'm not used to getting a complete set of state-of-the-art products. While I can't work the HF bands with it, I can try my hand at Satellite comms and pushing the distance limits in VHF/UHF radio, something I've wanted to do for a long time but not be able to afford to do. It turns out that all this gear has satellite tracking software built in. Thus, when the HF bands are down, I've got something interesting to chase! Scanning through these two bands brought back a flood of great memories. Why didn't I spend more time on them?

I'm going to include some writings in the QSA-5 about working long distances on the 2-meter and 70 cm bands in upcoming issues. There's a lot more to the VHF and UHF bands than you think. I've been pouring through articles on these bands and realized that when I was newly licensed, because I knew absolutely nothing about amateur radio, I thought of the 2-meter and 70 cm bands as simple line-of-sight affairs, a place for the old guys to gab about their health problems (I'm old and prone to doing this, so don't take it the wrong way). Boy was I wrong! Stay tuned because we're going to look at a lot of interesting things you can do with the above-mentioned bands.

As always, Thanks to Jay for his brilliant work on the QSA-5. Special thanks to Gerald, Michael, Rich Slusher, Rich Cochran, Oliver, Mark, Milt, Jim, Doug, James, and Paul for their contributions to the QSA-5. **See you at Field Day!**

Hugh Patterson, KN6KNB
QSA-5Editor@w6sg.net

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QSA-5 is published monthly by the Marin Amateur Radio Society (MARS) and sent electronically to its members.

"QSA-5" is a [ham radio Q-code](#) which means "The strength of your signal is very strong."

Have an article or fun ham-related photos you want to share? Please send by the 24th of the month to QSA5@w6sg.net for publication consideration.



Inside the Clubhouse

Board actions, club activities, and upcoming opportunities to share and learn.

Board of Directors

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Inside the Clubhouse: Cleanup Report

The first and most important phase of our Clubhouse repair and cleanup is almost complete. That phase dealt with some significant health and safety issues. Gerald McCarthy, former Deputy Fire Chief of Novato joined us after his retirement from the Fire Department. As a part of his fire prevention duties, Gerald routinely did inspections in Novato. After joining us, he had an opportunity to take a close look at the Clubhouse and had some great concerns about some major safety issues. But, the safety issues he was concerned about were magnified because we have a tenant upstairs and are responsible for her safety as well as our own. This resulted in a number of long discussions about how to address these issues.

Some of the major concerns included the electrical breaker on the wall in the office, which looked like a rather large ball of insulated steel wool. Some of the wiring was functional, some of it was not, and it was difficult to determine which was which. The wall was totally open which is a major code violation to not have sheet rock around a breaker panel. We brought in an electrical contractor to remediate the electrical issues and a sheetrock repair contractor, to install new sheetrock around the panel and in a number of other areas in the building.

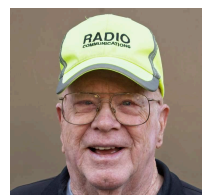
If you had been with us for a while, you'll know we had the roof repaired to cure some major leaks. The water would gather on the enclosed deck and come down through our ceiling. Above the suspended ceiling, there is another ceiling that is sheet rock, much of which got literally washed out. This resulted in another safety problem, since we need to have sheet rock, which affords at least one hour of fire protection below living quarters. We also had a number of holes in the garage area as well as deterioration in the meeting room areas as well. In addition, a number of ceiling tiles in the main meeting area were missing, broken or stained.

We were both delighted with the quality of work our contractors performed. Our electrician did a very nice job cleaning up all wiring and installed emergency exit lighting and an exit sign. Our sheetrock contractor was Patches in a Day, whose specialty is sheet rock repair. They furnished us with a very reasonable bid, as the total job was quite difficult, as they had to go around all of the conduit wires, pipes, and heater ducting without leaving gaps. All gaps were filled and the joints closed with fire-resistant mud and tape to make it code compliant. After the sheet rocking was done, our own Michelangelo, Annie Ivan, took charge of the painting and Andrew Musselman was our fresco man, mudding many damaged areas on the old sheetrock in the garage and meeting room.

Club members did almost all of the cleanup phase of the work. New storage racks were installed in the garage area, old equipment was screened and moved to the back or dumped. Our work area at the rear of the meeting room had new shelving installed. Upon discovering some evidence of rodent visitation after clear out of old furniture and equipment, we had the carpet professionally cleaned.

We still have some cleanup to do and to install a door on the water heater room outside.. Much of the stuff that was in piles around here is long since gone. To my surprise, we actually totally filled a dumpster, and we probably have at least another half a dumpster load to go. Our continuing project is going to be the workshop area back to the garage and finish outside, where there's still lots of junk around. But we are making progress. So, over the course of the next three weeks, we're going to get another dumpster and do an electronic waste run. So be prepared for at least another work day or two.

I want to thank everyone who has participated in this project so far. Believe we couldn't do this without you. There have been so many I couldn't name everyone without leaving someone out so I won't try at this point. However, I have to give special recognition to those who have provided me with assistance in managing the project. Curtis dubbed me the Colonel Contractor (as opposed to General Contractor) when he put me in charge of this project. On that theme I have to recognize my Sergeant-Major, Gerald McCarthy, and my Adjutant, Jim Saltzgaber, who kept me on track. And I can't forget Big Dan Sobel, who not only provided muscle, but also supplied the storage racks. And I'm happy with the way that it's turning out. It's still a work in progress. But I would say within one month, it will be finished.



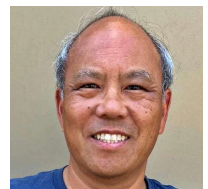
Milt Hyams, KM6ASI



Inside the Clubhouse: [Miwok 100K](#)



Thanks to everyone for your support and service for this year's Miwok 100k ultramarathon. All runners were safely accounted for, with the last runner arriving with the sweep team at 10:50pm; more than two hours after the official cutoff of 8:30pm. Doug has put enormous effort into our APRS capabilities over the past couple of years. The big screen drew a lot of attention. The crossband and guerilla i-gates seemed to perform really well thanks to Rob's efforts. The Bofax and especially Randall teams suffered through extended operating time as I worked with the timing crew to resolve unaccounted for runners (we contacted all their emergency contacts). I had a number of runners coming up to thank us for helping keep them safe out on the course; true validation that your efforts make a difference.



Oliver Lu, KM6BON

A huge thank you to Oliver and the entire MARS team. The support you provide both through APRS tracking and, more importantly, your core ham radio operations is absolutely critical to the Miwok 100K. With limited to no cell service across much of the course, your team is the backbone of our communication between aid stations and race command. We truly couldn't run this event safely or effectively without you.

—Director of Operations, The Miwok 100K Trail Race

Inside the Clubhouse: Go Boxes

Plan for—prepare for—being caught short and in a pinch!

The overarching rationale for a go-box is to keep everything (well, almost everything) together in one place. "Go Box" is actually short for "Grab and Go Box." In many of our public service events, you are out the door well before dawn. Definitely not the time to make a list, to take stock to make sure you have everything you will need. All the parts are together--and you know that all those parts will work well together. No sweat, no fuss, plenty of well-placed confidence. Grab and go, knowing that you are prepared for the assignment.

Why multiple go-boxes? Why accompany them with several (never one!) batteries and several (never one!) antennas? Indeed, why not be satisfied with only one fine base station radio setup?

Well, some people subscribe to the philosophy of "Why two, when one will do?" All praise to them and good luck with that, fella/gal.

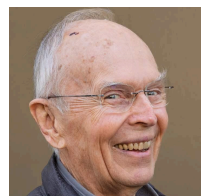
The emergency responders' mantra, to the contrary, is that redundancy is a critical watchword. Their motto is "Two is one and one is none!" Therefore, two go-boxes. Two (or more) batteries. Two different antenna setups. Two HTs as backups or just for listening when you must be away from the base radio.

The same outlook is applied to people: firefighters and law enforcement folks most often go in teams of two. Even if only one of them could do the job just fine. Usually, Murphy's Law is alive and well. Don't forget it or discount it. Be ready to meet and defeat Murphy.

Why prepare with redundancy? Radios go glitchy. Unexpectedly. Batteries go flat. Unexpectedly. Different locations call for different antennas. Your kit failed to include the correct connectors for one of the antenna's coax cables. A sudden unexpected downpour drowns your microphone, even if everything else works just fine. All of those situations have happened to me. In other words DO NOT go into the field without backup equipment.



The other overarching reason for my three go-boxes (shown above) is that they're designed for different purposes. On the left is a basic dual-band 50W UHF/VHF base station. In the middle is a DMR 50W base station radio which can also play a role as a backup UHF/VHF setup. On the right is a mesh repeater station-in-a-box. It needs to be accompanied by a tripod and a laptop computer.



Michael Fischer, KM6MLF

My goal was to build a Go Box that could be used on MARS Public Service Events. I also wanted to build it around the ICOM IC-2730A radio because that is the same radio that I have in my vehicle. I did not want a different radio that I had to learn how to program and operate. The 2730A is a dual-band, dual channel radio that can transmit on 5, 15, and 50 watts (per MARS guidelines). Besides being familiar to me it has proven to be very reliable and robust and it has a separate control head. Its main disadvantages are its weight (about 3 pounds) and cost (about \$300). Obviously, there are many lighter and cheaper radios out there.



My next quandary was to figure out what kind of box would accommodate this radio along with other pieces and parts. I do not have a work bench at which I can do the customization needed to convert an ammo box into a viable Go Box. After a considerable amount of Google-ing, the Go Box

Gods smiled down at me. On eBay, I found a company ([HamGeek](#)) that customized an existing waterproof box by machining a stainless steel panel that fit inside it along with faceplates designed to accommodate several different radios, including the ICOM IC-2730A. The box has brackets to attach the radio underneath it, parallel to the bottom of the box and the control head attaches to the faceplate on top of the panel.

The panel also has Anderson Power Poles and a PL-259 connector for the antenna. It also comes with two cooling fans that can be switched on manually or automatically using the (supplied) thermal sensor. It comes with a built-in speaker, which I removed then installed an external speaker jack in its place. The Go Box with the radio installed weighs about 9 pounds.

The main drawback of this Go Box setup is that there is no room to accommodate a suitable battery. To house a Bioenno 15 amp battery, I purchased another waterproof box (smaller than the main Go Box) that also had space to carry an AC to DC charger. I have used this battery on many public service events and don't think I ever came close to running it all the way down.

Along with a collapsible antenna mast and an accessory bag, my complete Go Box setup can be carried in four pieces. I can have it operational in about 15 minutes. I have used this on public service events for about three years and never had one problem with it. Every setup has its pluses and minuses, but I don't think I would do anything differently the next time around. I am very satisfied with its performance. During the course of my Go Box project, I sought the help of some of the MARS Elmers. Because of their assistance, I learned much more than just how to build a Go Box. I thank them for their tutelage and patience.



Rich Slusher, KI6UIM



I like using ammunition boxes as sturdy containers for storing and transporting radio and other gear. They are strong, stackable, weatherproof, dustproof, rodent-proof, and not terribly expensive. The VHF/UHF Icom 2730 radio in my go box is identical to the VHF/UHF radio in my home station, and they are both programmed identically, in an effort to reduce operator errors. The separation kit from the factory comes both with an extension cord (to separate the head from the main unit) and strong magnets (for securing the head unit). I simply place the magnetically attachable head unit anywhere on the outside of an ammo box. The microphone then plugs into the head unit. I use a small magnetic hook to hang the microphone next to the head unit. I find that keeping the microphone on a hanger instead of strewn about the table can reduce the chances of accidentally keying the mike. All the gear that's magnetically attached to the outside of the ammo boxes here are magnetically attached to the *inside* of the radio box during transport and storage.

Since my radio is a dual band, dual receiver radio, I like feeding the two receivers into two widely separated speakers, because that makes it easy to hear which side of the radio is receiving a particular transmission. I put strong magnets on the speaker brackets, making it easy to securely mount the speakers on the ammo boxes.

I keep notetaking equipment stored in the radio box. I've got a clipboard with paper and a zippered plastic pouch filled with "golf" pencils. I also have a small, inexpensive digital clock, for time-stamping notes. I've found that having the time in big numbers right by the clipboard makes the job a little easier, and also ensures that multiple people at a rest stop can all log times consistently.

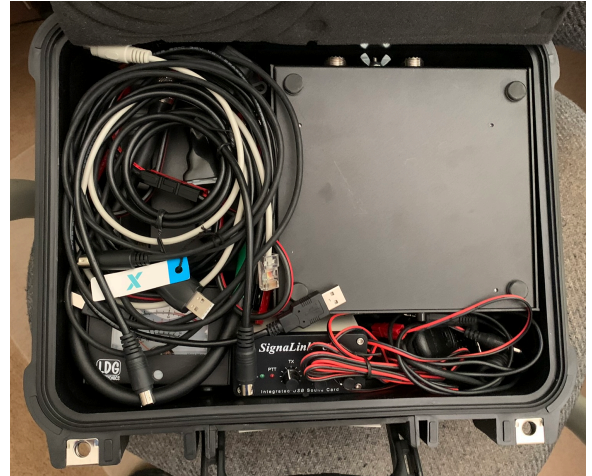
The antenna connector is on the right side of the radio, ready to connect to an antenna feedline. I usually use a mast-mounted J-pole, though I also have a 2m yagi that I can deploy if needed. The red and black power cable is connected to a DC extension cord of a few feet long, with power pole connectors on each end.

Besides my radio go box, I also have a battery box. It's got a 40Ah Bioenno lithium iron phosphate battery, surrounded by some foam packaging material. I could theoretically transmit key-down for a full 4 hours and 45 minutes continuously before depleting the battery! In practice, this battery comfortably supports anything I'd do with it for several days, at least.



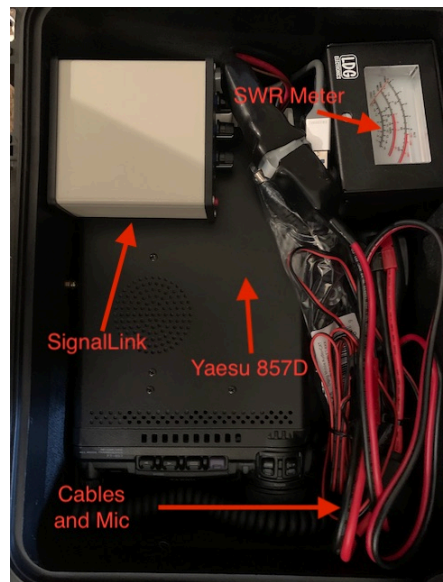
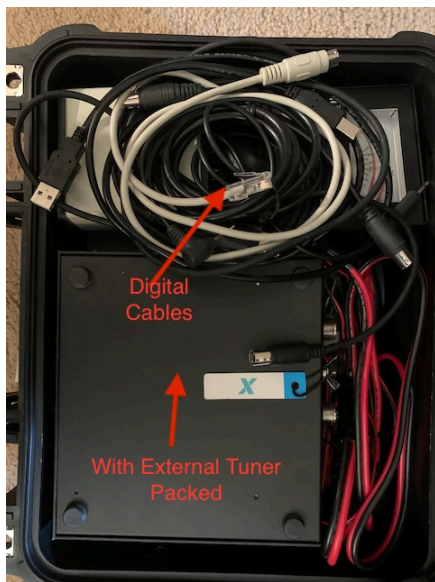
Rich Cochran, AG6QR

My primary go-kit is a Yaesu Ft-857D with an external LDG YT-100 antenna tuner, a SignalLink analog/digital converter and SWR meter that fits into a small waterproof Apache box from Harbor Freight. The 857D is a 100 watt radio that supports all bands and all modes. It was the original radio I bought after getting my license because it would handle VHF/UHF as well as the HF bands, all in one small/compact unit. Alas, they're no longer made, and if it were, I'd probably buy another one for backup. When I obtained an ICOM 7300, I decided to build an actual go-kit to house it instead of just tossing everything into a backpack.



My primary antenna is a Buddipole. Yes, it is expensive, but I chose it because it was also pretty much an all band antenna that was compact. In fact, my entire field deployable stations consists of the 857 kit, the Buddipole, a camp table and camp chair, and battery. I can pack the entire station into a location in one trip, though it is getting harder to do these days! :-)

Originally, my only use did not include digital capabilities, but as I started to get into digital, I decided to add those components to my go-kit as well. Initially, it was just the SignalLink and components to allow me to do Winlink from the field. You can see the radio kit in these pictures:



(cont'd)

As time passed, I got into digital communications and became part of the AREDN team in the North Bay. We have a bit of a backbone such as it is for emergency data communications throughout the entire Bay Area that is an "alternet" effectively. There is a MARS committee called [NBAM](#) (North Bay Area Mesh) that is responsible for parts of the network in the northern counties. As part of a grant from [ARDC](#), NBAM has built a number of completely digital go-kits that range from some larger portable nodes intended to establish an ad-hoc backbone if needed, to portable kits that either connect to the [Bay Backbone](#) (if within site of a node) or to another portable access node (from an ad-hoc net). You can see a picture of one of the portable access nodes below, as well as a battery kit used to power both the voice kit as well as the digital kit.

The battery kit consists of 2 batteries, a POE injector, an ethernet switch and a solar charge controller with solar panels. Again, all can be transported in a backpack to a remote site.



Mark Klein, KM6AOW

(cont'd)

My VHF-UHF Go Box is basically a self-contained "Grab-N-Go" unit, needing only to be opened, connected to an antenna, and turned on to be operable. It consists of an Alinco DR-735T mobile radio mounted in a Harbor Freight Apache 3800 case with a Bioenno Power 12V 15 Ah LiFePO4 Battery and a Bioenno Power 2-amp Lifepo4 Battery Charger.



Interior



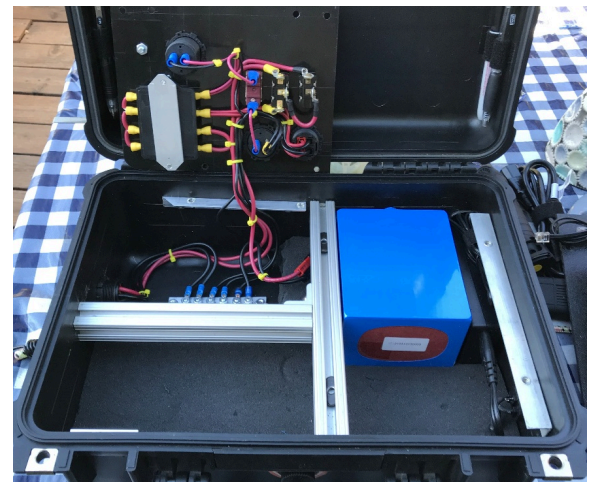
Meters/Switches



Storage

RADIO: I selected the Alinco DR-735T radio for several reasons. I also use the same model radio in both of my vehicles for mobile communications, so I am very familiar with it. It has dual channels with a very easy to read LARGE LCD display panel and a variety of lighting combinations. Large channel memory with flexible 10 Bank organization. It also has Cross Bank Repeater mode and can be used with external TNC for digital modes. I program the radio using RT Systems software. The power output is selectable 50/20/10 watts transmit.

LAYOUT: The Apache 3800 case is divided into top and bottom sections with battery, charger, wiring, and storage located below the deck (shown to left) and radio, switches, fuses, battery meters, 12-volt power pole connectors, and USB connectors on the deck. Velcro clipboard, pencil, and pen holders are located inside the lid. External 120 VAC computer standard power inlet for the charger and Power Pole 12 VDC in/out connectors are located on the outside of the case.



Under Deck Battery, Charger & Wiring

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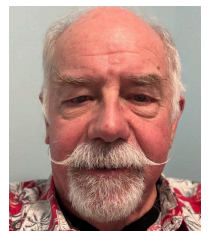


My HF Go Box (on the right) is designed to be a storage/transport/operating platform for an ICOM IC-7300 transceiver. It is not self-contained as it has no battery, it connects to an external power source, either battery or AD/DC power supply.

The IC-7300 is mounted to a base plate with rubber feet that holds the radio either inside the Apache 4800 case or elevated for operation as shown. Also shown is a remote speaker and a DAIWA CN-501H Cross Needle power/SWR meter. There is a Power Pole fused connection block behind the speaker for power inlet and distribution. An Ameritron SDC-102 screwdriver antenna controller is Velcro mounted to the lid for use with Tarheel or similar screwdriver antennas. An auto-tuner or 120VAC/12VDC power supply can be carried on the left side of the radio with speaker and power meter in separate cases if desired.

AMMO CAN BATTERY BOX

Located between the go boxes is a 50 Cal. Ammo Can Battery Box containing a Bioenno 30 Amp Hour LiFePO4 battery, 6-amp battery charger, battery meter, push to reset circuit breakers, 2 internal and 2 external Power-Pole 12 VDC connectors, and a 12 VDC cigarette lighter connector with USB power plug. This is used to power the radios or other accessories. Not shown is a Predator 100Watt folding solar panel and charge controller that is used to charge the battery box or the battery in the VHF Go-Box. This box also doubles as a CPAP power box for dry camping.



Jim Saltzgaber, KM6WWY

Inside the Clubhouse: Building a VHF/UHF Go Box

Disaster strikes suddenly! An earthquake has caused an interruption in both cellular and Wi-Fi service. An after-shock hits and the power goes out. You worry about staying inside of your house. You have an amateur radio license and your neighbors don't. You are the only connection to the outside world. It's time to step up and get information to help your neighborhood recover. Do you have a self-contained radio system that will allow you to do so? Do you have a radio go box?

A ham radio "go-box" is a self-contained, portable amateur radio station housed in a rugged case for rapid deployment, ideal for emergency communications (EmComm – Emergency Communications), field operations (POTA/SOTA), or operating when you don't have a permanent station. These systems integrate a radio, battery, and antenna connections into one unit, ensuring a "grab-and-go" solution.

Key Components of a Go-Box

- **The Container:** Commonly rugged, waterproof cases like Pelican cases or repurposed military ammo cans are used to protect equipment.
- **Transceiver:** Popular choices include mobile VHF/UHF radios or compact HF radios. While many people have HF go-boxes, Ecomm rigs tend to be the most popular because it's easier to connect VHF/UHF to localized communication networks.
- **Power Source:** LiFePO4 (Lithium Iron Phosphate) batteries are favored for being lightweight and holding high capacity. Solar systems are also used but are difficult to handle during emergency events where time is of the essence.
- **Power Management:** Often includes solar charge controllers, power distribution blocks, and Anderson Powerpoles for reliable power management.
- **Accessories:** Built-in speakers, microphone extensions, USB charging ports, and tuner controls.

Common Use Cases

- **Emergency Services (EmComm):** Supporting ARES, RACES, or CERT teams during disasters when infrastructure fails.
- **Portable Ops (POTA/SOTA):** Allowing operators to easily move their equipment to parks or summits.
- **Field Day/Club Events:** Providing a structured, mobile station for contests.
- **HF DXing:** HF operators will often go to locations that are on higher ground, allowing for better signal reception.

Popular Build Styles

- **Ammo Box:** Often uses 50-cal ammo cases for a compact, durable, and cost-effective solution.
- **Pelican Case/"Shack in a Box":** Larger, heavily protected cases for full-featured HF stations.
- **Modular Systems:** Separate, organized boxes for radios, batteries, and accessories for better weight distribution.

A Simple VHF/UHF Go-Box

A simple VHF/UHF go box provides a portable, self-contained communication station, ideal for emergency services (ARES), Field Day, or POTA activations. This design uses an ammunition can or similar hard case to house a dual-band radio, battery, and necessary connections.

This is not a step-by-step guide, but simply an outline to use if you want to build your own go-box. You can substitute any of the items mentioned if you want. However, keep in mind that size and weight are critical to a

successful go-box. You need a go-box that is lightweight so it can be carried for long distances and small because you'll probably be carrying other items as well.

Important Tip: Keep the go-box as simple as possible. The more complicated it is, in terms of wiring and components, the more things that can go wrong. You don't want to have to trace a wiring problem in the middle of a disaster. Here's your target: Radio – Battery – Antenna!

Essential Components

- Case: A .50 Cal plastic ammo can (like MTM Case-Gard) or a small Pelican/Apache hard case (e.g., Apache 3800).
- Radio: A compact VHF/UHF mobile radio (dual bander rated 25-50 watts).
- Battery: A 10-15Ah LiFePO4 battery is recommended for long life and low weight.
- Power Management: Anderson Powerpoles, a fuse holder, and a small voltmeter.
- Antenna: A magnetic-mount dual-band antenna (e.g., Nagoya NL-770) or a J-pole for high gain.
- Internal Support: Plywood or HDPE board for mounting the radio.

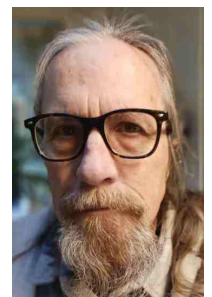
Step-by-Step Construction

1. Prep the Case: Drill holes in the sides for a panel-mount SO-239 (antenna), Anderson Powerpole (DC input), and speakers/USB ports.
2. Mount the Radio: Use velcro or the radio's original mounting bracket to secure it to a plywood board that fits snugly inside the box.
3. Wiring:
 - Connect the battery to the radio, placing a 10-15A fuse in-line on the positive wire.
 - Connect the radio's antenna port to the external bulkhead connector.
4. Install Accessories: Install a DC voltmeter to monitor battery health. Add a 12V cigarette socket or USB port for accessories.
5. Final Assembly: Pack the radio, battery, microphone, and a thin antenna into the case.

Optional Enhancements

- Solar Charging: Add a 10A solar charge controller to charge the battery in the field.
- Internal Speaker: Install a speaker into the lid or use a mobile radio with a loud, front-facing speaker.
- Digital Modes: Add a Raspberry Pi or Signalink for Winlink/FLDIGI capabilities. However, the more you have built into the go-box, the more that can go wrong.

This should give you an idea of what you need and how to put it together. Be creative! However, always remember that you'll be a life to the outside world in a disaster. You'll need to get information out and take in information in a timely manner. Send us your pictures of your finished go-box for inclusion in future issues of the QSA-5.



Hugh Patterson, KN6KNB

Inside the Clubhouse: [Beacon Exercise](#)

On Thursday, April 30 agencies (from Humboldt to Livermore) held a practice emergency on the air event to simulate the aftermath of a catastrophic California earthquake. This was not a discussion-based event—it was about testing what you have, what you know, and how well you communicate when infrastructure is down. In preparation, Marin ACS/RACES/RCV shared their [Beacon Exercise Plan](#) the day before.

Throughout the day there were texts, on-air simulcasts, and Winlink transmissions to support the planned scenario. The following are excerpts from the 4/30 exercise:

0900h (Received Text) *THIS IS AN EXERCISE: BEACON Module 0/Briefing. Participants should begin/started reviewing their safety msg, operating instructions, & roles for participating.*

1100h (On the MARS Simulcast) Good morning. We're going to be kicking off check-ins or log-ins for the RACES ACS Beacon exercise, and I'm going to be asking for people to come in three at a time. First of all, is there any emergency traffic on the repeater? This is WB6EOC.

Hearing none, we'll proceed with check-ins. And, remember, we'll be trying to log up to 40 or 50 people, so it's gonna be challenging. So, first three check-ins, please and comment on your availability? ...

I'll get back to you with logical names for you to use, and after that, if you can use those names of the supposed location that you're operating from, virtually. Okay, next group of three, please....

1145h *THIS IS AN EXERCISE: NWS has issued a TSUNAMI ADVISORY. The public should stay out of water & away from shore. WHAT ACTIONS SHOULD YOU TAKE?*

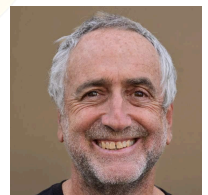
1218h (Sent ICS-213 form to WB6EOC via Winlink/Telnet): The Redwoods (@ 40 Camino Alto, Mill Valley) is requesting flashlights and water for 100 residents. Some residents are without water service and others have no electricity. THIS IS ONLY A DRILL.

1248h (Received ICS-213 reply): Resource management has been notified. Expect delivery within 12 hours. This is a drill!

1338h (Sent ICS-213): A landslide is now partially blocking 101 S onramp @ E. Blithedale. Traffic and Sheriff notified. THIS IS ONLY A DRILL.

1338h (Received ICS-213 ACK): A landslide is now partially blocking 101 S onramp @ E. Blithedale. Traffic and Sheriff notified. THIS IS ONLY A DRILL.

1600h *THIS IS AN EXERCISE: STOP ALL RELATED TASKS FOR THE EXERCISE. Begin Hotwash*



Jay Hamilton-Roth, KO6FIR

Inside the Clubhouse: FCC License Renewal

As many of us know, prior to April 19, 2022, there was no charge to obtain or renew an FCC Amateur Radio Operator License. At that time, a \$35 license fee and additional steps were added to the FCC online database to collect fees for licenses or renewals. I have heard of various problems and confusion that these steps have caused people trying to do it themselves (if they tested/renewed prior to April 2022).



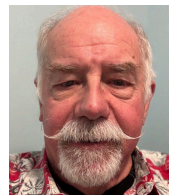
Applicants/renewals are now required to, in addition to having their 10 digit FCC Registration Number (FRN) number:

1. Register a "Username email" (all FCC correspondence is now done via email) and Password in the "[Commission Registration System \(CORES\)](#)" system. The email in the CORES system will be your official FCC contact information, so use an email that you can readily receive FCC correspondence from.
2. Associate your FRN number in the FCC License Manager with your Username in the CORES system. This then allows you to have all of your FCC user data available via Username/Password. To login to your account on the CORES page you will also have to enter a "security code" that will be sent to your email. At the "User Home" page, you can "Associate Username to FRN", as well as other FRN functions and Update Username Profile.

Once the above has been done, you can log onto the [License Manager](#) to print official license copies, renew Licenses, etc. The FCC does have a very helpful Tech Support line: **877-480-3201 (M-Fri. 8a.-6p. ET)**. All renewal charges are billed directly to the licensee via email invoice.

If this is too much slogging, there are other options available:

- Have one of the [14 Volunteer Examiner Coordinators \(VECs\)](#) process your renewal. You can deal directly with a VEC who will, for a fee, process your renewal. For example, [W5YI Licensing Services Inc](#)
- [ARRL processes renewals](#) for members at no additional cost above the FCC \$35 renewal fee (\$25 extra for non-members).
- Process your renewal through a local VE Team. The MARS VE team is affiliated with the ARRL VEC. We will assist you with preparing and submitting the necessary form, submitting it and any charges, and the ARRL VEC will do the rest. License renewals must be submitted no earlier than 90 days prior to their expiration. We submit renewals with examination reports from our regularly scheduled sessions (2nd Saturday of Jan., April, July, and Oct.). Contact me at: EXAMS@W6SG.NET or Jim Saltzgaber fairfaxjim@saltzgaber.com if you wish to submit a renewal. We do not submit Vanity Call Sign applications.

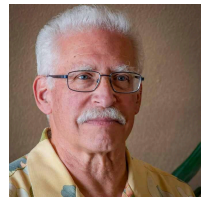


Jim Saltzgaber, KM6WWY
MARS VE Team Liaison

Inside the Clubhouse: North Bay 2m Critical Mass (NB2mCM)



In our third season of taking APRS seriously for public-service events, I've been working on a replacement for CalTopo to display the locations of hikers, bikers, SAGs and sweeps. With the help of [Claude Code](#) and our APRS Team (Alex, Sheila, Charles D, James and Nick J) I was able to preview the [MarsAPRS.org](#) app at Critical Mass. It uncovered a few bugs, but was well received (safe to try it out). I also demonstrated another fun new app: a speech-to-text live translation that I used to display the Sunday morning 10am net. Ultimately, it's my goal to make sure that others can run APRS for Net Control and not be dependent upon me.



Doug Kaye, K6DRK

Powering Radio Equipment in the Field

Operating radio equipment in the field requires a suitable battery with the capacity to last for the anticipated length of operation. If operating for an extended time (provided there is ample sunlight), one can supplement with solar panel(s). Never simply attach a solar panel directly to your battery! Always use a charge controller, or at least a suitable step-down converter. Let's look at each of these components:



Batteries: The physics of modern batteries includes: engineering, chemistry, structure, mechanics, and thermodynamics, materials science, and even involves an exchange of gases! They're like living, breathing things - with Lithium Ions moving back and forth, causing changes over time affecting performance and life cycle! Cylinder, Pouch or Prismatic Cells should have engineered safety features such as a BMS (Battery Management System) and thermal interrupts, etc. Ratings are sometimes exaggerated! Quality control can vary greatly. Best to buy name brands and OEM!

Chemistry: Each has its own voltage parameters, charge curve & attributes:

- Lead Acid - use distilled water, they can spill, are heavy - do not discharge to less than 50%.
- SLA (Sealed Lead Acid) - require venting in an airtight container
- GEL 'cell' - Gel paste electrolyte - good for deep cycle, use in any position.
- AGM (Absorbent Glass Mat) advanced SLA type (they come dry, you must add electrolytes, Higher voltage requirements than SLA). AGM can have a long life if never over-discharged or abused!

NOTE: The following batteries vent hydrogen and oxygen through pressure relief valves and could explode in an airtight container! Could use a small hose to vent:

- Lithium-Ion - small/light, good power density - no float required - onboard BMS - Caution! - can cause fire if damaged or abused!
- NMC / LiNiMnCoO₂ (Nickel Manganese Cobalt) - a type of Lithium-Ion - used in EVs - good power density - shorter life cycle.
- LiFePO₄ (Lithium Iron Phosphate) - no float required - good power density - onboard BMS - safer than Lithium Ion, good life cycle.

Recommendation: Bioenno BLF-1220A 12V, 20Ah \$193.- has a great reputation - has internal BMS - both connectors are the same point electrically. Can be charged with the appropriate AC Charger \$25. Other models - 15Ah - \$150, 12Ah - \$110.

DO NOT: Over-Charge! Over-Discharge! Store or leave discharged for a period of time!

Battery Considerations: size & weight, Power Ah rating (beware deceptive advertising), depth of discharge, safety & lifespan, and cost.

Battery connectors: battery boxes (with connectors), banana jacks (5-Way binding posts, Anderson connectors (powerpoles come in various sizes - 15A, 30A, 45A), cigarette lighter socket (typically 10 amps max!!), USB, XT60 (60 amps), DC5521 (55 mm L. x 2.1 mm Diam.) (3~5 amps max), and MC-4 (for solar panels).

Recommendation: Powerwerx - PWRbox2 - \$120. or DIY

Solar Panels:

- Efficiency ~ 25% of Sunlight's energy at best
- Watts: Will only be fully realized- at the summit of a 20,000 ft mountain located on the equator, at 12 noon during the equinox, on a cold clear day with no clouds & panel perfectly aligned! - real world ~70% of that - with no shadows or debris - beware deceptive advertising, over provision by up to 50%, called "over paneling".
- Voc (Voltage open circuit) - never exceed this value for the following device!!
- Short Circuit Amps - Usually ok to have excess amps, the load will only use what it requires.
- Power = Volts x Amps. Focus on power (Watts) instead of volts or amps. Volts & amps are context-dependent.; power reflects the actual energy transfer.
- Adapters - Panels wired in Series = higher voltage - smaller gauge wires, make sure the controller can handle the higher voltage. Panels wired in Parallel = higher current
- Fuses



Solar Panel Considerations: size/weight (portability - foldable), power (in Watts)(depends on your use case - consider over paneling), Voc - (voltage open circuit) is the maximum voltage, current short circuit (the maximum amperage), and connector types (kickstand or mounting).

Charge Controllers:

- Step-Down or "Buck" Converter - Simple to operate - non programmable - inexpensive
- PWM - (Pulse Width Modulation) Charge Controller - can select different chemistries - moderate cost - programmable, requires some learning curve - may waste excess energy

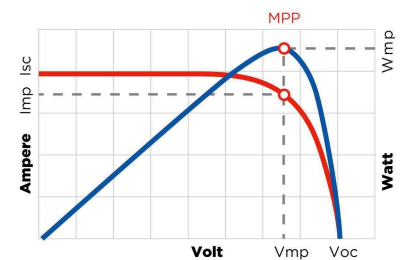
- MPPT - (Maximum Power Point Tracking) Charge Controller - can select different chemistries - more expensive - programmable, requires some learning curve- most efficient

Power (Watts) = Volts x Amps. Can be measured with an inexpensive Inline [watt meter/power analyzer](#) (\$10+) Watts vs. Watt-Hours - Watts are like Speed & Watt-Hours are like Total Distance Traveled, eg., a 100W light bulb is using 100 Watts. In 5 hours it uses 500 Watt-Hours.

MPPT vs. PWM Charge Controllers. An MPPT charge controller is more efficient than a PWM controller because it actively converts excess panel voltage into usable charging current, while a PWM controller mostly throws that excess voltage away.

PWM controller behavior: A PWM controller essentially connects the solar panel directly to the battery in pulses. That means: The panel voltage gets pulled down close to the battery voltage. Any extra voltage above the battery voltage is not efficiently used.

MPPT controller behavior: An MPPT controller contains a high-efficiency DC-DC converter. It is continuously hunting to find the panel's Maximum Power Point (the voltage/current combination where power is highest). This algorithm is known as "Perturb & Observe" (P&O). Converts that higher panel voltage down to battery voltage Increases charging current proportionally (See MPPT curve chart right).



MPPT Chart

Example: Solar array operating point: 36 V at 8 A, Battery charging voltage: 14.4 V.

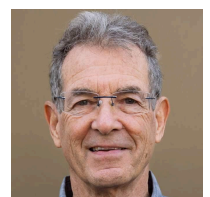
With PWM: Panel is forced near 14.4 V. Current remains roughly 8 A. Power into battery $\approx 14.4 \times 8 = 115$ W (even though the panel could have produced: $36 \times 8 = 288$ W). The rest is effectively lost because the panel is not operating at its maximum power point. This gets much worse with: high-voltage panels series-connected panels cold-weather conditions (where panel voltage rises further).

With MPPT: MPPT conversion efficiency: say 96%. Battery charging power: ≈ 276 W delivered to battery. At 14.4 V battery voltage: Charging current ≈ 19 A. So instead of wasting excess voltage, the MPPT controller transforms it into extra current.

Typical real-world efficiency comparison: PWM system utilization: often 60–80% (depending on voltage mismatch). MPPT conversion efficiency: typically 95–99%. The bigger the gap between: panel V_{mp} (maximum power voltage) and battery charging voltage ... the bigger the MPPT advantage. That's why nearly all modern higher-power solar systems use MPPT controllers.

Summary. Batteries come in a variety of form factors and chemistries. Lithium Iron Phosphate (LiFePO₄) is likely best for our radio needs. My recommendation would be the Bioenno - BLF-1220A 12V, 20Ah. Put it in a box like the Powerwerx PWRbox2.

For extended operation, add a small solar panel (40~160W). Use a charge controller - MPPT is most efficient, although PWM or a simple 'Step-Down' Converter will work fine. A specific use scenario may require a more custom solution, e.g., operating 24/7.



James Renney KI6RGP

Inside the Clubhouse: **DESIGNCON[®] 2026** Exhibits

WHERE THE CHIP MEETS THE BOARD

The [DesignCon conference](#) targets people who are developing and testing electronic devices. The next conference will be held Feb 2 – 4 2027. Registration to attend the floor exhibits is often available at no charge if one signs up far enough in advance. Since there is a large overlap between electrical system design and amateur radio, I spent 5 hours touring through the DesignCon 2026 show floor.

That this is was acronym-rich environment, is an understatement. Many systems to measure and test PCIe v4.0, v5.0, v6.0, v7.0 boards being developed. For reference, the PCIe v7.0 specification was just finalized in June 2025. I discovered that many of the people staffing the booths were Electrical Engineers with amateur radio licenses. While introducing myself to the exhibitors, I apologized for the fact that I am a Chemical Engineer not an Electrical Engineer. I added that I have been involved with amateur radio since before age 12. What follows is a summary of some of the exhibitors:

Amazon-Leo Satellite Internet strives to compete with geo-stationary satellites in coverage, however with lower latency because the satellites are LEO (Low Earth Orbit) not geo-synchronous. SpaceX Starlink is an existing provider and direct competitor. Interested? [Register here](#). More info about this service is [here](#) and [here](#).

Times Microwave Incorporated's (subsidiary of Amphenol) representative thought that N connectors crimped onto LMR-400 cable was as reliable as connectors soldered on the cable. They recommend their EZ version of N connectors which connects to the inner conductor with a spring loaded terminal. As an alternative to or perhaps an initial step prior to wrapping connectors with tape, a rubber boot which covers and waterproofs the N connector could be installed.

Amphenol showed connectors for liquid cooling used in electronics systems

[Rosenberger](#) thought that their N connectors crimped onto LMR-400 cable were as reliable as connectors soldered onto cable.

[Glenair](#) fabricates custom cables (equivalent to LMR-400) in the United States. They can supply single-unit quantities.

Parts distributors at the show included [DigiKey](#), [Mouser](#), [Win Source Electronics](#), and [ElectroRent](#).

DigiKey was showing some private-label equipment. Notable items included:

- [Integrated test/tool kit VOM DKS-TKI with VOM](#), soldering iron, small screwdrivers in a plastic carrying case (for newbies)
- [Temperature-controlled Intelligent Soldering Station DKS-SLDR2-US](#)
- They were giving away samples of [SolderFul Breadboards](#) which have the same form factor as solderless breadboards. This facilitates transferring a circuit from a solderless breadboard to a soldered breadboard.
- [DKS-SOLDERBREADBOX1-ND](#) - Same overall size as the -02 with corners rounded out so that it fits in a standard box

Tektronix displayed systems to evaluate PCIe, and USB. They had no classic digital oscilloscope instruments on display.

Siemens showed an AI assisted tool for analysis of board level layout of high-speed RF designs.

[KiCad](#) had a booth. In addition to advocating and supporting the open-source KiCad software for circuit design and parts placement, they provide training and consultancy services.

Other exhibitors at the show included board fabrications (including one based in Israel that can fabricate hybrid flexible-firm PC boards. Their turnaround is about 24 days.), Vector Network Analyzers (some had 4 ports that could perform multi-port analysis up to 16 GHz or higher. Prices for these commercial offerings were \$8000 and up.), and a manufacturer of combined antenna for Bluetooth, GPS, WiFi, and AM/FM broadcast. The intended market is manufacturers of automobiles.



Paul H. Gusciara, Ph.D., P.E., WAINMT

Inside the Clubhouse: June 2026 Calendar

Curious what's coming up? You'll find details on all of our weekly nets, upcoming meetings, public service events, and other local activities on our [online calendar](#). You can even [subscribe to the calendar](#). Please submit corrections or suggestions to: QSA5@w6sg.net.

upcoming SPECIAL EVENTS

JUNE

Friday, 5 [MARS Club Meeting](#)

Saturday, 14 [115th Annual Dipsea](#) 🏃

Sat-Sun, 27-28 [Field Day](#) 📡

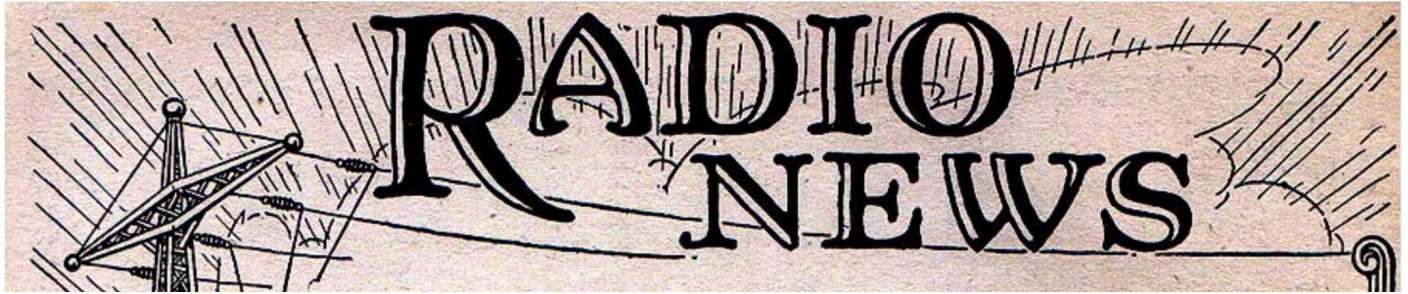
Sunday, 28 [North Bay 2 Meter Critical Mass](#)

JULY

Friday, 3 [MARS Club Meeting](#)

Saturday, 11 [Amateur Radio Exams](#) 📄

Saturday, 19 [North Bay 2 Meter Critical Mass](#)



Ham Radio in the News

From local to national to international – stories, inspiration, and legislation.

✧ [Reviving Teletext for Ham Radio](#)

✧ [FCC Regulatory News](#)

Trusted Radio News Sources

[ARRL News Page](#) for national news regarding ham radio.

[QRZ Now](#) for ham radio news from around the globe.

[Amateur Radio Newsline](#) weekly amateur radio story highlights.

Remembering Denise Stoops, KI6BBR

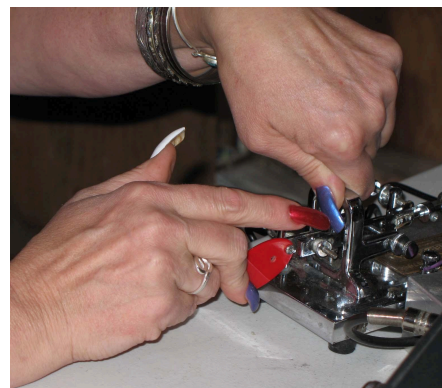
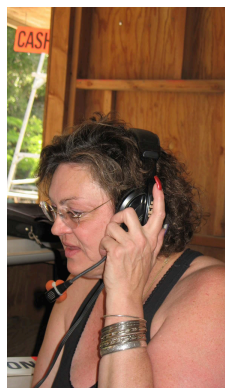
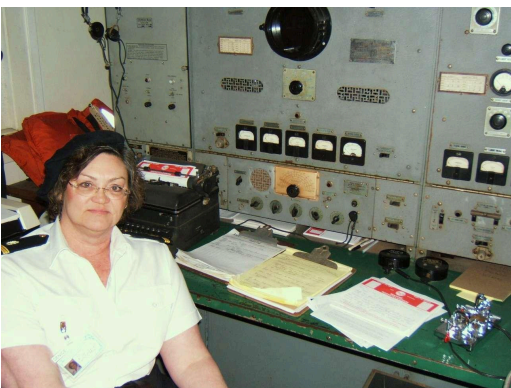
Denise Stoops, KI6BBR, a commercial radio operator for many years at the [RCA Maritime Radio Receiving Station](#) at Pt. Reyes, KPH, passed away at her Bolinas home on Saturday, May 2, 2026. Many remember Denise as the R/O on the [SS Jeremiah O'Brien](#) (KXCH) Liberty Ship berthed aft of the USS Pampanito. Denise was a crack CW operator and could handle a semi-automatic key (bug) like no other. There are several YouTube videos on the internet where you can see [Denise in action at KPH](#). She was the first woman radio operator hired by RCA. In later years, Denise was overseas with the Military Supply Command until she fell ill in Singapore.

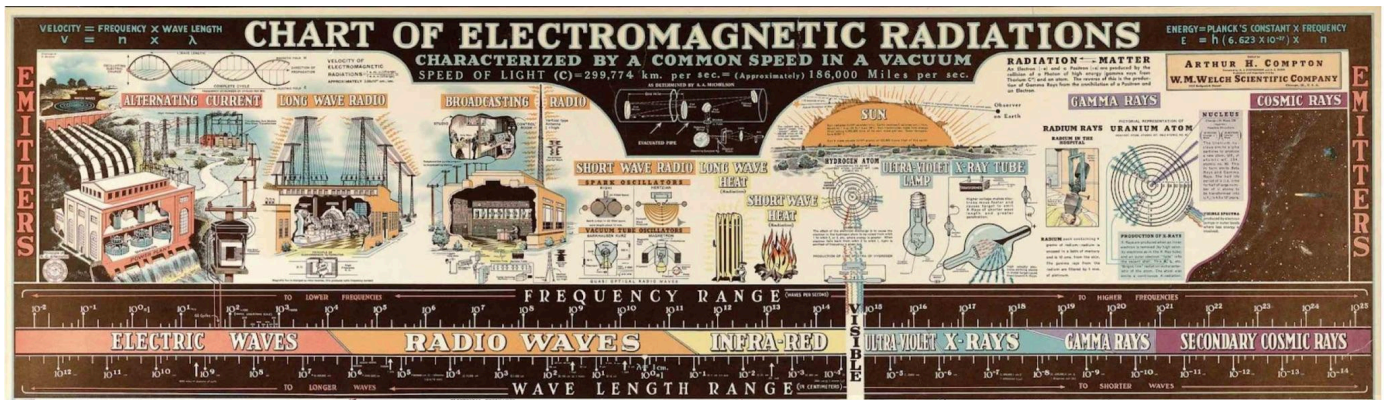
Her hand was so quick on that paddle key that it was a red blur. Red because of her gaudy fingernail polish, right?

– Dennis Regan, K7ZJU

I had lunch with her several times at Fisherman's Wharf—and witnessed her warp-speed key action aboard the O'Brien. Jaw-dropping.

– Michael Fischer, K6MLF





Ham Classroom

Every month, we showcase interesting subjects.

💡 [HF 101 for Beginners](#)

💡 [2-Meter Single Sideband: The Hidden Gem of VHF for Amateur Radio Operators?](#)

February 2026






Building Ham Radio Electronic Projects

The Joy of Craftsmanship

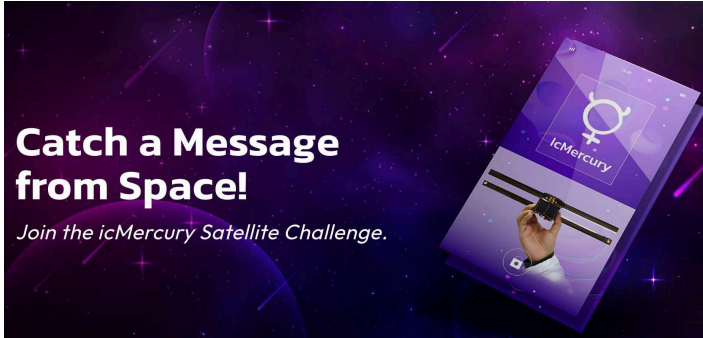
Gary W. Johnson, NA6O
Feb, 2026




<https://na6o.com>
gwj@me.com




Video: [Building Ham Radio Electronic Projects: The Joy of Craftsmanship](#)
 from [Northern California Contest Club](#) Meeting



Catch a Message from Space!

Join the icMercury Satellite Challenge.

[Can You Hear Our Satellite? Let's Find Out!](#)

Ham Classroom: HF 101 for Beginners

DXers Will Find a Real Challenge on the VHF/UHF Bands

As we head towards the end of Solar Cycle 25, the HF bands that we so populated and easy to use are now becoming harder to work. The 10-meter band has been poor and sparsely occupied with operators calling CQ. While the promise of decent propagation still exists, band conditions are getting worse and the noise floor is rising. When we reach the end of the solar cycle, do we hang up our HF rigs? No! When the going gets tough on HF, the tough get going back to their roots, the 2-meter and 70 centimeter bands!

HF DXers often view the 2-meter and 70-centimeter bands as nothing more than local party lines. However, dismissing them ignores some of the most rewarding technical challenges in amateur radio. While HF relies on the relatively predictable cycles of the ionosphere, long-distance VHF and UHF work is an exercise in hunting the "elusive." Instead of waiting for a solar peak to talk across the ocean, VHF/UHF DXing turns the atmosphere into a dynamic playground where weather patterns, meteor showers, and even the moon become your reflectors. It shifts the focus from simply operating a radio to truly understanding the environment around you.

The shift from HF to "Weak Signal" VHF/UHF also offers a refreshing change in operating culture and equipment precision. On HF, high power and massive wire arrays are often the barrier to entry, but on 70 centimeters, a modest station with a high-gain Yagi and a low-noise preamplifier can achieve incredible results through Tropospheric Ducting or satellite work. There is a unique thrill in hearing your own voice echo back from the moon via EME or timing a contact to the split-second window of a meteor trail. It requires a level of finesse and "gray matter," operations that the often-congested HF bands lack.

Furthermore, the digital revolution has completely leveled the playing field for long-distance VHF. Modes like FT8, MSK144, and Q65 allow hams to pull signals out of the noise that were once considered impossible to hear. For the HF veteran who feels they have "worked them all," the higher frequencies offer a new frontier of unworked grid squares and rare propagation modes. Giving these bands another chance isn't just about finding a new way to chat; it's about rediscovering the "magic" of radio where every long-distance contact feels like a hard-won scientific achievement.

While 2-meter (144—148 MHz) and 70-centimeter (420--450 MHz) bands are primarily line-of-sight, hams achieve long-distance communication (hundreds or thousands of miles) using techniques like repeaters, satellites, weak-signal SSB, and atmospheric ducting. These methods transform these bands from local tools into regional and global communication systems.

Here are the key methods for long-distance on these bands that we'll be looking at over the coming months:

1. Repeaters and Linked Systems

- **Wide-Area Repeaters:** Strategically placed on high mountain tops, these can provide coverage over a 100-mile radius, often connecting to remote bases to extend reach.
- **Linked Repeaters/IRLP/EchoLink:** Many repeaters are linked via the internet or RF links. A 2m handheld in California can connect to a repeater in New York or even to international nodes, allowing for worldwide communication.

2. Digital Modes

- **APRS (Automatic Packet Reporting System):** Used for transmitting GPS coordinates, text messages, and weather data over long distances via digipeaters, often tracking stations across states.
- **Digital Voice (D-STAR, DMR, System Fusion):** These allow for digital voice networking, allowing users to connect to global digital rooms and networks.

3. Satellite Communication (AMSAT)

- Using 2m/70cm, hams can communicate through amateur satellites (like the ISS) to talk to others in other countries (not as far as HF). A 2m/70cm radio and a directional antenna (like a Yagi) can reach satellites to link stations thousands of miles away.

4. Weak Signal SSB (Single Sideband)

- **2m/70cm SSB (144.200 MHz/432.100 MHz):** Instead of FM, using SSB and directional antennas enables much longer-range, direct communication, especially during "band openings." This is popular for serious, long-range VHF/UHF operators.
- **EME (Earth-Moon-Earth / Moonbounce):** The ultimate long-distance technique, where 2m or 70cm signals are beamed at the moon and reflected back to Earth, allowing for worldwide communication.

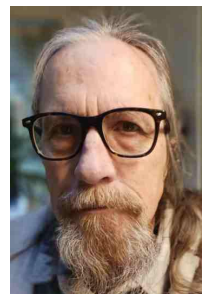
5. Specialized Propagation (Atmospheric Conditions)

- **Tropospheric Ducting:** Occurs when weather conditions trap VHF/UHF signals, allowing them to travel hundreds of miles beyond the horizon, sometimes over oceans.
- **Sporadic E:** While more common on 6m, this can occasionally impact 2m, creating unusual, long-distance signal refraction.

Summary of Differences

- **2-Meter (144 MHz):** Generally better for longer range and, because it is VHF, it tends to bend over hills slightly better than UHF.
- **70-Centimeter (440 MHz):** As a UHF band, it is superior for penetrating buildings or operating within city environments, and its smaller antennas allow for high-gain, easy-to-manage directional antennas for, e.g., satellites or EME.

Over the coming months, we will look at activities the HF enthusiast can do when propagation shuts down those bands. We also want to encourage novice operators to explore these two bands and enjoy their full potential. Stay tuned and if you have done any of the previously mentioned activities. We'd love to hear from you or submit an article!



Hugh Patterson, KN6KNB

Ham Classroom: 2-Meter Single Sideband: The Hidden Gem of VHF for Amateur Radio Operators?

Many hams associate the 2-meter band (144–148 MHz) exclusively with FM repeaters and local simplex chatter. While FM dominates everyday mobile and handheld use, single sideband (SSB) unlocks a completely different world of weak-signal DX, contests, and long-distance VHF excitement. If you own an all-mode transceiver (or even a dedicated 2m SSB rig), 2-meter SSB is both rewarding — and under appreciated — mode in amateur radio.

What Is Single Sideband? Single sideband is a highly efficient form of amplitude modulation (AM). In conventional AM, a radio signal consists of a strong carrier plus two identical sidebands (upper and lower) that carry the same audio information. This wastes power and spectrum: roughly two-thirds of the transmitted energy sits in the unused carrier, and the second sideband duplicates the first.

SSB solves both problems by suppressing the carrier and eliminating one sideband. Only the remaining sideband — containing all the voice intelligence — is transmitted. The result is a signal that uses roughly half the bandwidth of full-carrier AM (typically 2–3 kHz for SSB versus 6–8 kHz for AM) and concentrates nearly all your transmitter power into useful information. On VHF and UHF bands (including 2 meters), amateurs use Upper Sideband (USB) by convention.

How Does SSB Work?

At the transmitter:

- Your voice modulates a carrier, producing upper and lower sidebands.
- A sharp filter removes one sideband (and the carrier is greatly attenuated or removed entirely).
- The remaining sideband is amplified and radiated.

At the receiver:

- The incoming SSB signal looks like a narrow slice of RF with no obvious carrier.
- The radio's beat-frequency oscillator (BFO) or product detector re-inserts a local carrier at exactly the right frequency.
- The audio is recovered through mixing, just like in AM — but with far greater efficiency.

This is why SSB sounds “Donald-Duckish” if you’re off-frequency by even 50–100 Hz: your re-inserted carrier isn’t perfectly aligned with the original suppressed carrier.

SSB vs. FM: Key Differences:

Aspect	SSB (USB on 2m)	FM (standard on 2m)
Modulation	Amplitude (one sideband)	Frequency
Bandwidth	~2.5–3 kHz	10–15 kHz (deviation ± 5 kHz)
Power efficiency	Excellent, all power used to transmit voice	Good, but constant carrier power
Weak-signal performance	Outstanding — readable 10+ dB weaker than FM	Poor — “capture effect” and noise floor bury weak signals
Tuning	Critical (± 50 Hz)	Forgiving (channelized)
Audio quality	Natural but requires precise tuning	Excellent, wide fidelity
Fading	Amplitude varies (needs good AGC)	Constant envelope, more resistant to some fading

In practical terms, switching from FM to SSB on the same band, same power, and same antenna often feels like adding a 10 dB gain beam or doubling your power. A signal that is barely detectable (or gone) on FM can still produce perfect copy on SSB.

Why is Upper Sideband (USB) used?

Historical and regulatory convention — On HF bands, amateur radio operators traditionally use lower sideband (LSB) below 10 MHz and upper sideband (USB) above 10 MHz. This practice originated from early commercial and military SSB equipment designs which were later adopted and standardized in amateur radio.

The ITU and organizations like the ARRL formalized similar guidelines, and it carried over to VHF/UHF. Since 2 meters (144 MHz) is well above 10 MHz, USB is used by convention for SSB/CW weak-signal work. This is consistent across most VHF/UHF bands (6m, 2m, 1.25m, 70cm, etc.) where SSB is permitted. The ARRL band plan explicitly designates the weak-signal SSB segment on 2m (144.100–144.275 MHz, with the national calling frequency at 144.200 MHz) as using USB.

Propagation Differences: 2m FM vs. 2m SSB

The physical propagation is identical — both modes travel via line-of-sight, tropospheric ducting, sporadic-E, meteor scatter, aurora, and EME (Moon Bounce). The difference lies in how each mode handles marginal paths:

- FM excels on strong, local signals and through repeaters. Its wider bandwidth and capture effect make it robust against moderate fading but terrible for weak signals. Once the signal drops below the FM threshold, it disappears into the noise.
- SSB thrives on weak, fluttering, or fading signals. Its narrow bandwidth improves signal-to-noise ratio dramatically. During tropospheric openings or sporadic-E, SSB stations routinely work 200–500+ miles on 2 meters with 50–100 W and modest beams — distances that would be impossible on FM simplex.

Real-world example: Many operators have completed 150–200 mile SSB contacts over mountains or across states using just 10–50 W, while the same path produced no readable FM signal at all. SSB effectively “extends your range” by making better use of every decibel that reaches the other station.

Use Cases for 2-Meter SSB

- Weak-signal terrestrial DX — Sporadic-E, tropospheric ducting, and mountain-topping.
- VHF contests — ARRL January VHF Contest, June VHF QSO Party, September VHF Contest, CQ WW VHF — SSB is a major point-scoring mode.
- VHF nets — Some areas run weekly 2m SSB nets on 144.220 MHz.
- EME (Earth-Moon-Earth or Moon Bounce) — Voice SSB is possible with big arrays and legal-limit power.
- Satellite work — Linear transponders on OSCAR-29 and OSCAR-7 use SSB/CW on 2m uplinks.
- Portable and rover operations — Lightweight Yagis + 50 W all-mode rig = potential for long distance propagation. Reports from ARO's from atop Mt. Diablo report contacts exceeding 200 miles.
- Emergency communications — When FM repeaters are down or saturated, SSB can reach distant EOCs or other hams on direct paths. The North Marin EOC in Novato has 2m SSB capabilities.

Horizontal vs. Vertically Polarized Antennas

Vertical VHF antennas (like the common 2m verticals used for FM/repeaters) will work for SSB operation on 2 meters, but with limitations compared to horizontal polarization.

The dominant convention on 2m SSB (weak-signal, DX, tropospheric ducting, meteor scatter, contests) is horizontal polarization. Most active SSB stations use horizontal Yagis, loops, or dipoles. A vertical antenna is cross-polarized to them, causing a typical 20 dB or more signal loss (often described as 20–30 dB in real-world tests). That's like dropping your power from 50W to under 0.5W— or worse. Signals that are marginal with horizontal become inaudible or very weak with vertical.

Noise floor advantage — Horizontal antennas tend to pick up less man-made noise (power lines, appliances, urban QRM) on VHF, giving a cleaner receive signal for faint SSB/CW stations.

Propagation benefits — Horizontal polarization often experiences less loss over obstructed paths (diffraction around hills/trees/buildings) on VHF weak-signal paths.

Frequencies Used for 2-Meter SSB (ARRL Band Plan)

The dedicated SSB segment on 2 meters is:

- 144.100 – 144.200 MHz: EME and weak-signal SSB (also shared with some CW)
- 144.200 MHz: National SSB Calling Frequency (USB) — always start here!
- 144.200 – 144.275 MHz: General SSB operation

Recommended practice:

- Call CQ or look for activity on 144.200 MHz USB.
- Once contact is established, QSY up or down 5–20 kHz to clear the calling frequency.
- Stay within 144.100–144.275 MHz to remain courteous and legal per the voluntary band plan.
- Below 144.100 MHz is primarily CW and EME; above 144.275 MHz you'll find beacons and OSCAR sub-bands.

Get On the Air!

If your rig has an "SSB" or "USB" mode on 2 meters (IC-9700, FT-991A, TS-2000, IC-705), you already have everything you need. Pair it with a small horizontal Yagi (even a 3- or 5-element portable beam) and you'll discover why many serious VHF operators call 2m SSB "the other VHF mode."

Next time the band is quiet on FM repeaters, tune down to 144.200 USB. You might be surprised by what you hear — and who hears you.

73 and see you on 2-meter sideband!

References: ARRL VHF/UHF Band Plan, <https://www.k0nr.com/wordpress/>



Gerald McCarthy, W6NOV

Marin Amateur Radio Society Board of Directors Meeting 5/07/26

Call to Order 19:30 Hours (7:30 PM)

Attendance:

☒ President Curtis Ardourel WA6UDS ☐ Secretary James Saltzgaber KM6WWY ☒ Director Richard Cochran AG6QR ☐ Director: Ed Essick K6ELE ☐ Trustee W6SG Marc Bruvry KF6VNT	☒ Vice President Kathy Funke-Spicher KM6URP ☒ Treasurer Bruce Bartel N6VLB ☒ Director Steve Toquinto KB6HOH ☐ Trustee K6GWE Brian Cooley K6EZX
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☒ **Adopt agenda** MSC without objection to adopt agenda as amended.

☒ **Approve minutes** of 9 April board meeting MSC to approve minutes.

☒ **Secretary's Report/Communications** – Jim KM6WWY– No Report

☒ **Treasurer's Report** Bruce N6VLB -Published in QSA-5. Due to QSA-5 current publishing schedule, financials will be 1 month behind to allow the Board to review before publication. MSC to approve April Financials presented to board.

Members Present: Milt Hyams KM6ASI, Skip Fedanzo KJ6ARL, Scott Pasternak KN6ZDM, Charlie Benet AI6TT, Antonis AA6PP

Committee and other Reports:

1. **Membership** Curtis -WA6UDS - 113 68% (73% at this time last year) Currently paid members are displayed in black in online member roster, blue = non-paid.
2. **Facilities** – Skip KJ6ARL – Review of proposed Clubhouse Inspection Plan and Clubhouse Emergency Action Plan. He and Jim KM6WWY are reviewing these plans. Question: Who will be responsible for and tasked with the large amount of inspection & record keeping? Skip and Jim will continue streamlining the process. Since we are out of the rainy season, we have quite a bit of weed build-up. Milt – Suggested that we wait until the clubhouse cleanup is completed, probably June.
3. **VOAD/RCV** Skip KJ6ARL – BEACON 2026 exercise Net Control for both Marin RCV and RACES were held in the clubhouse radio room, as well as the Winlink station and VOAD director Adriana Rabkin. Most of the RCV traffic was done via Winlink. It was a successful exercise. Skip is still working to get Dylan; our high school new member, vetted with the County Department of Public Works for RCV membership.
4. **Technical** Milt KM6ASI/Antonis AA6PP- Milt the repeater system worked very well during our last public service event.
5. **Public Service** Scott KN6ZDM– Last event went very well, APRS was tested and worked well. Headphones will be recommended for future net control operators as the noise level was quite high.
6. **VE Testing** Jim KM6WWY– No report
7. **Comm Truck** Charlie AI6TT – Truck is now registered; Curtis will get the tag and registration to Charlie so he can put it on the van. Charlie will get the additional keys necessary to access the generator and battery locker to Scott KN6ZDM.

8. **NBAM** Kathy KM6URP – Attended the Bodega Bay Fish Fest. Ed Witt, Bodega Bay Cert had set up their Winlink apparatus at the Bodega Bay Cert Booth at the Fish Fest, working very well. Subsequently, the system would not work. Work will have to be done to diagnose this failure. Bucket truck has been arranged to install new AREDN nodes at Doran Beach Park. Skip – Does the Marin EOC have AREDN mesh node installed? Milt – no it does not. Curtis – We have received messages through the NBAM email box – he will forward them to Kathy for action. Meshtastic and AREDN Mesh have been being confused by some new users.
9. **Clubhouse Cleanup** – Milt KM6ASI – Clubhouse was used for general meeting May 1. Continued work will focus on the bookshelf area back through the work area and garage, as well as the outside area. A second dumpster will be ordered for the 13th and that should conclude the clutter removal phase.
10. **Field Day** Steve – 3rd meeting was held yesterday (May 6). Steve will be looking for additional greeters. We are going to be short-handed this year as several of our Field Day regulars will not be able to attend. Curtis has put out an email request for volunteers. We are getting there. We will have one more meeting in June before Field Day, to be scheduled.

Old Business:

1. Club budget for 2026 – Curtis has not yet updated the budget to reflect clubhouse cleanup costs.
2. Clubhouse Inspection and EAP- See discussion in Facilities Report. Additional methods of ensuring that the inspections and reports are done. Possibly doing it as part of Sunday's clubhouse regimen has been suggested.
3. Sale of donated equipment- Curtis – Would like to combine a silent auction of the donated equipment with a celebration for the completion of the Clubhouse Cleanup. Donation committee needs to compile list of salable equipment and low value items. Milt has suggested using these items as "giveaways" at meetings mystery boxes. Schedule wise, possibly moving the July meeting to a daytime mid-month celebration/silent auction.
4. Club reopening celebration and thank you – This will be combined with the Sale of donated equipment. Possibility of Tee Shirts for those who participated in the cleanup was discussed. He is open to suggestions.
5. Doug Slusher KF6AKU Donation – The donated IC-7300 MK2 radio has been installed in the clubhouse radio room along with an auto-tuner. Steve KB6HOH has tested and made contacts with the radio. A permanent location will be worked out with Marc KF6VNT, station license trustee, as well as a computer for this radio.

New Business:

1. Club Picnic – Steve KB6HOH will work with the Stafford Lake Park staff to schedule the annual picnic, suggested date is September 19, if available.

 X **Good of the Order – Nothing noted**

 X **Executive Session – Not required**

 X **Adjourn – 21:50 MSC**

Next Regular Meeting 5 June 2026

Next Board Meeting 11 June 2026

Suggested EAP and Inspection Checklist (Attachment 1)

1. Monthly Safety Inspection Checklist

Frequency: First meeting or first Sunday of each month

Inspector(s): _____

Date: _____

General Building & Emergency Egress

- ☐ All exits, doors, and hallways clear of obstructions
- ☐ Emergency lighting and exit signs functional
- ☐ Interior lighting (all rooms, hallways, bathrooms, office, garage, comm room no burned-out bulbs)
- ☐ Exterior lighting (entryways, parking area, perimeter) functional and timed/motion-sensor working
- ☐ US Flag (exterior or meeting room display) in acceptable condition: clean, no tears/fraying, properly displayed
- ☐ First aid kit(s) stocked and unexpired
- ☐ No extension cord or “zip” cord use
- ☐ No tripping hazards, loose carpeting
- ☐ No accumulating boxes or electronics (mark with blue tape with date for disposal after 30 days unless directed otherwise)

Fire Safety

- ☐ All fire extinguishers present, pressure in green, pins/seals intact, tags current
- ☐ Smoke/CO detectors tested and batteries fresh (if so equipped)
- ☐ Replace batteries annually in CO/Smoke detectors. Date: _____

Electrical & Electronics Safety

- ☐ No overloaded outlets, daisy-chained cords, or damaged wiring
- ☐ GFCI outlets in kitchen/bathrooms test properly
- ☐ Surge protectors if used on radio/electronics/ computers working
- ☐ No extension cords under rugs or through doorways

Kitchen

- ☐ Appliances clean and operating.
- ☐ Refrigerator $\leq 38^{\circ}\text{F}$; no spoiled food, clean and organized
- ☐ Sink/drains clear, no water leaks under or around

Bathrooms (2)

- ☐ Fixtures functional, no leaks
- ☐ Exhaust fans operating
- ☐ Floors dry and slip-resistant
- ☐ Windows secured

Meeting/Classroom

- ☐ Tables/chairs clean and free of damage
- ☐ Tables/chairs in place with aisle access
- ☐ AV equipment secure, cords managed
- ☐ No debris / orphaned equipment (blue tape, date, discard in 30 days)
- ☐ Drop ceiling tiles in place, undamaged (no sagging or stains)

Office

- ☐ Furniture anchored (earthquake zone)
- ☐ No overloaded shelves
- ☐ No extensions cords or “zip” cords
- ☐ Windows secured

Electronics Workbench

- ☐ Tools organized
- ☐ ESD mats/grounding good
- ☐ No exposed wires or chemicals
- ☐ Racks/antennas secure
- ☐ No extensions cords or “zip” cords
- ☐ All coax connectors tight on radios
- ☐ Grounding present and properly secured to radios

Communications Room

- ☐ Antennas coax secure to Polyphaser(s) and ground bus
- ☐ Grounding bus secure to grounding station ground
- ☐ Ground pipe beneath radios secure and undamaged
- ☐ All coax connectors tight on radios
- ☐ Grounding present and properly secured to radios
- ☐ Radio vents clear; no overheating, no storage on radios
- ☐ Grounding present and properly secured to power supplies
- ☐ Power leads from power supply to radios properly secured
- ☐ All coax in good condition

Garage/Storage Area

- ☐ Flammables in approved containers
- ☐ Heavy items secured
- ☐ Floors clear; no spills
- ☐ No signs of water leaks
- ☐ No signs of rodent activity
- ☐ Garage door in working order
- ☐ Garage door locks in working order
- ☐ Garage lighting working

Exterior (Quick Visual)

- ☐ Doors (front and old app bad doors secure/weather-tight)
- ☐ No new damage or pests
- ☐ Windows secured and without damage
- ☐ Clear exit path for tenant
- ☐ No items on stairs
- ☐ Hot water heater room clean, free of storage

Update Station Manual (Routine Operations, Emergency Operations, Appliance Information, Emergency Contact Information, Pending Maintenance Issues)

- ☐ Insurance company information updated
- ☐ Emergency contact list updated
- ☐ Emergency vendor list updated
- ☐ Plumber
- ☐ Electrician
- ☐ Roofing Co
- ☐ Safety policies
- ☐ Duplicate Comm Van information updated
- ☐ Insurance
- ☐ Registration
- ☐ Emergency Procedures

Notes / Actions Needed (include pro reports):

Inspector Initials: _____ **Signature:** _____

2. Seasonal Safety Inspection Checklist

Frequency: October to April, prior to and immediately following major storm

Inspector(s): _____

Date: _____

- ☐ Roof, gutters, downspouts cleared
- ☐ Side drainage ditch clear, functioning, no blockages/erosion
- ☐ Drains in front parking lot working, no blockages
- ☐ No leaks around windows/doors
- ☐ Heating system clean; air filter replacement date: _____ (replace 1–3 months)
- ☐ Mold inspection in wet areas
- ☐ Wood framing checked for rot
- ☐ Windows/doors seal; weather stripping good
- ☐ Dipole Antenna mounts secure
- ☐ Flag Pole in place
- ☐ Garage mounted antenna(s) guy wire and antenna condition
- ☐ Roof Antenna mounts secure

Notes / Actions Needed:

Inspector Initials: _____ **Signature:** _____

Summer (Hot/Dry Season) – May to October or before and after predicted East Wind Event and/or Red Flag Warning for Marin (Below 1000' elevation)

Inspector(s): _____

Date: _____

- ☐ A/C, fans, ventilation clean/operational; air filter replacement date: _____
- ☐ Equipment (radios, HVAC) not overheating
- ☐ Wood surfaces checked for drying/cracking
- ☐ Perimeter cleared of all combustibles (defensible space)
- ☐ Generator serviced
- ☐ Pest nests removed
- ☐ Roof vents clear
- ☐ Roof clear of combustible materials (tree litter)

Notes / Actions Needed:

Inspector Initials: _____ **Signature:** _____

MARIN AMATEUR RADIO SOCIETY EMERGENCY ACTION PLAN

California Code of Regulations, Title 8, Section 3220

1. Fire Safety and Evacuation

- If you smell smoke, see fire, or hear the smoke / CO alarm immediately evacuate —do not investigate or delay.
- Alert others including the tenant(s) calmly Call 911 from outside (provide address: 27 Shell Road, Mill Valley; describe the emergency).
- Evacuate using the nearest safe exit — close doors behind you but do not lock them.
- Follow posted exit signs/routes
- Proceed to a pre-designated assembly point (e.g., across the street or in the parking area away from the building and overhead power lines).
- Do a head count/account for people; report missing individuals to firefighters or 911.
- Never re-enter the building until cleared by emergency responders.
- Fire extinguishers — know locations (often near kitchen, radio room, exits); use PASS method (Pull pin, Aim low, Squeeze, Sweep) only if trained and the fire is small/contained — otherwise, evacuate.

2. Utility Shut-Off Procedures

- All members with key fob access should be able to identify, locate and shut down natural gas, water and electric services.
- **Natural Gas Shut-Off:**
 - Main valve: Need to locate — turn quarter-turn so handle is perpendicular to pipe (off position).
 - If you smell gas: Do not turn lights/switches on/off, use phone inside, or create sparks; evacuate, open doors/windows from outside if safe, call 911 first, address is 27 Shell Road, Mill Valley;. Call PG&E (800-743-5000) when told to do so by 911 operators.
- **Water Shut-Off:**
 - Main valve: Often at the street meter (curb box) or inside near water heater/entry point — wheel/lever valve; turn clockwise to close.
 - Internal valves: Near sinks, water heater, or bathrooms for isolating sections (useful for leaks/clogs).
- **Electricity Shut-Off:**
 - Main breaker: In electrical panel (need to identify location); flip main switch to off.
 - Sub-panels: May exist for radio room? — label important circuits (e.g., don't shut off security cameras - I can explain later).

3. Earthquake Procedures

- During shaking: Drop, cover, hold on — get under sturdy furniture; protect head/neck; stay away from windows, heavy objects, antennas outside, overhead power lines or utility poles.
- After shaking stops: Check for injuries, fires, gas smells, or damage. If gas smell: Evacuate and shut off main gas (need to locate) if accessible/safe. Inspect for hazards (downed wires, structural issues).
- Evacuate if building damage suspected; assemble at safe point.
- Use club radios/nets for status checks if power/cell service out.

4. Medical Emergency

- Once the club can pass a fire inspection, I would like the club to consider adding a AED and CPR masks.
- Call 911 immediately — provide address, nature of emergency, number of victims.
- If trained, provide first aid/CPR; use any onsite first aid kit.
- Designate someone to meet responders at entrance.
- Clear space; keep calm crowd control.

5. Power Outage / General Safety

- Use flashlights (avoid candles/open flames).
- Unplug sensitive equipment (radios, computers) to prevent surges on restoration.
- For extended outages: Club may activate emergency nets or generator (if van/on-site).
- Secure building before leaving (lock doors, check stove off).

6. General Daily/Closing Procedures

- Kitchen/Stove: Double-check stove is fully off (knobs to OFF, pilot if any); never leave unattended.
- Exits/Doors: Ensure clear access
- Security: Arm/disable alarms if present; lock up; report suspicious activity.
- Last out: Walk through — check appliances, lights off, thermostat set, doors/windows secure empty garbages (bathroom, kitchen, comm room, meeting room).

7. Contact Information

- Plan must contain the name and contact information for Club President, whomever has delegated responsibility for implementing plan / facility manager and/or club emergency preparedness manager

We will need to document site-specific details (e.g., exact shutoff maps, extinguisher locations, and assembly points) and create a simple laminated map.

All members with key fob access should have a working knowledge of the above information, the “club binder” location along with procedures to contact Insurance Co etc., and fire extinguisher.

Marin Amateur Radio Society

Balance Sheet Comparison - Custom

As of April 30, 2026

Distribution account	TOTAL	
	As of Apr 30, 2026	As of Apr 30, 2025 (PY)
Assets		
Current Assets		
Bank Accounts		
CD	0.00	0.00
MARS BUILDING FUND (8795) - 3 - 2	1,960.40	2,078.40
MARS GENERAL FUND (4328) - 9 - 1	77,653.69	73,741.58
Money Market	0.00	0.00
VE Session Cash	0.00	0.00
VE Session Cash Received	0.00	0.00
Total for Bank Accounts	\$79,614.09	\$75,819.98
Accounts Receivable		
Other Current Assets		
Uncategorized Asset	0.00	0.00
Total for Other Current Assets	\$0.00	\$0.00
Total for Current Assets	\$79,614.09	\$75,819.98
Fixed Assets		
club house- 27 Shell Rd. MV	58,983.00	58,983.00
Total for Fixed Assets	\$58,983.00	\$58,983.00
Other Assets		
Total for Assets	\$138,597.09	\$134,802.98
Liabilities and Equity		
Liabilities		
Current Liabilities		
Accounts Payable		
Credit Cards		
Other Current Liabilities		
Total for Current Liabilities		
Long-term Liabilities		
Equity		
Retained Earnings	22,664.10	15,577.46
Net Income	-8,467.01	-5,174.48
Opening Balance Net Assets	124,400.00	124,400.00
Total for Equity	\$138,597.09	\$134,802.98
Total for Liabilities and Equity	\$138,597.09	\$134,802.98

Marin Amateur Radio Society

Profit and Loss Comparison (January-April, 2026)

Distribution account	TOTAL	
	Jan 1 - Apr 30 2026	Jan 1 - Apr 30 2025 (PY)
Income		
Donations	3,695.00	904.00
Dues	60.00	90.00
Rent	11,400.00	5,400.00
Total for Income	\$15,155.00	\$6,394.00
Cost of Goods Sold		
Gross Profit	\$15,155.00	\$6,394.00
Expenses		
Awards	200.00	400.00
Car & Truck	323.00	354.94
Field Day	35.00	
Food	1,843.37	661.44
Garbage	216.88	210.96
Insurance	\$2,657.92	\$1,427.83
Comm Van Insurance	149.16	1,006.49
Total for Insurance	\$2,807.087	\$2,434.32
Office Supplies & Software	185.98	52.00
Public Service Expense	3,731.83	1,994.10
Repairs & Maintenance	7,267.61	922.50
Taxes & Licenses	4,442.48	4,164.36
Telephone	445.86	
Utilities	1,446.18	1,492.07
Accounting		340.00
Equipment < \$2,500		431.48
Other Business Expenses		575.2
Station Upgrades & Maintenance		1,894.69
Water		341.05
Web Services Expenses		0.00
Total for Expenses	\$22,945.27	\$16,269.23
Net Operating Income	-\$7,790.277	-\$4,110.23
Other Income		
MESH Grant Income	100.00	
Total for Other Income	\$100.00	
Other Expenses		
MESH Grant Disbursement	576.74	1,064.25
Total for Other Expenses	\$576.74	\$1,064.25
Net Other Income	-\$676.74	-\$1,064.25
Net Income	-\$8,467.01	-\$5,174.48

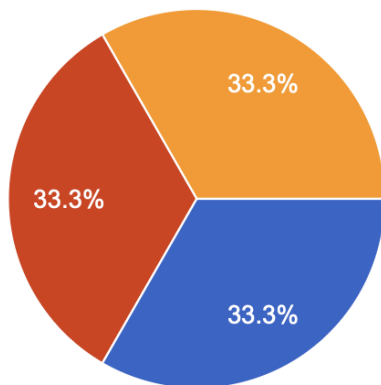
This Month's Quick Online Survey



[What size font should we use for
our article content?](#)

Last Month's Survey Responses

Have a "Go Box"?



- No. 🙄
- No – but I plan to build/buy one in the next year. 🤞
- Yes – I proudly built one of my own! 🙌
- Yes – I bought mine off-the-shelf 👍