

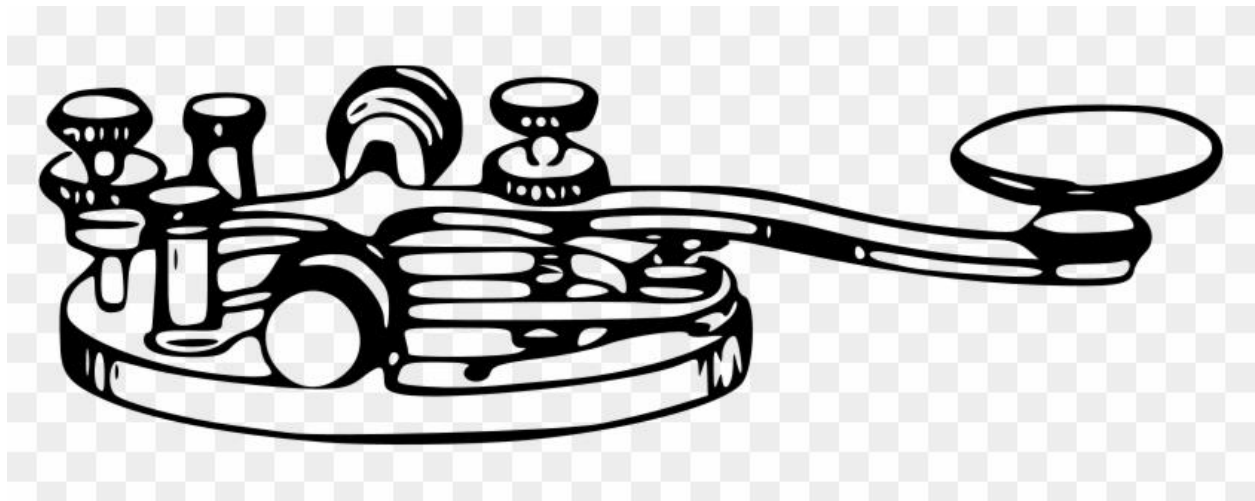


# QSA-5

## Marin Amateur Radio Society Monthly Newsletter

Established 1933

August 2024



When all else fails, you can count on Amateur Radio

## **From Our President:**

Gone Camping. Our President's letter will return next month.

## **From the Editor:**

Greetings everyone! It's August and Summer is coming to a close. While we've certainly had our share of hot days, fall will slowly make its entrance and rather than complain about the heat, we'll all be complaining that it's too cold. Of course, I prefer the cooler months for HF DXing because I live in a heavily wooded area and fall brings a dropping of tree leaves and better band conditions!

The Marin Amateur Radio Society has put on some wonderful events over the last few months, from Field Day 2024 to VE testing. Speaking of testing and newly licensed amateurs, I am in contact with several amateur radio clubs across the United States and many clubs are having problems bringing in new blood. Those of us who are older are approaching our expiration date and won't be around forever. Not to be grim, but it is our responsibility to keep amateur radio alive for future generations.

Part of the problem facing many clubs is that they have become comfortable as a close-knit group of older people doing the same radio activities they did thirty or forty years ago. Younger, newly licensed operators tend to have an interest in newer modes of operation, such as digital, and prefer SDR and QRP rigs.

The clubs that have had an influx of younger members joining them have taken the time to explore new radio technologies. These clubs also have a monthly event for new amateur radio operators in which they get together with more experienced folks who answer their questions, show them how to build antennas, and help them set up their radios.

I mention this because the Marin Amateur Radio Society has a great reputation for being a beginner friendly club. I think it would be wonderful to build up a segment of the membership that was younger. After all, the folks that run our club in the future are going to be those folks who are in their 20s and 30s today. Just some food for thought. A special thanks to Curtiss Kim for writing all the club news

articles! The QSA-5 is also going to start doing a beginner's section for HF radio, starting this month. With that said, have a great August.

[QSA-5Editor@w6sg.net](mailto:QSA-5Editor@w6sg.net)



### **New Members:**

Tim Eisler KO6EMS - Kensington



**“Your parents hath given you a name. And the FCC hath given you another...”**

**Marin Amateur Radio Society**

**Board of Directors Meeting**

**7/11/2024**



**Call to Order 19:30 Hours (7:30 PM) 1930 hours**

**Attendance:**

**President:** Curtis Ardourel WA6UDS

**Director:** Richard Cochran AG6QR

**Director:** Ed Essick K6ELE

**Director:** Steve Toquinto KB6HOH

**Secretary:** James Saltzgaber KM6WWY

**Director:** Jeffrey Young KM6Y

**Treasurer:** Bruce Bartel N6VLB

**Trustee: W6SG** Marc Bruvry KF6VNT

**Trustee: K6GWE** Brian Cooley K6EZX

**Members Present:** Skip Fedanzo KJ6ARL, Dan Sobel N6HLZ, Larry Bradley KK6QPE, Milt Hyams KM6ASI, Charles Benet AI6TT, Mark Klein KM6AOW

**Adopt agenda:** MSC

**Approve minutes of:** 13 June board meeting – MSC

**Secretary's Report:** Jim S- June 13 Board Minutes published in QSA-5. Communications- Received NAARC Co-Ordination certificate for Tam UHF repeater Expires 6/25/2027. We have received a COI for MCBC public service events. 2023 tax return documents uploaded to Google drive.

**Treasurer's Report:** Bruce Bartel- Taxes filed. Financial report in QSA-5

**Committee and other Reports:**

1. **Membership:** Curtis- Membership is currently 147, this is 88% of our end of year 2023 membership. We have 1 new member this month.
2. **Facilities** Skip: A Molly Maids crew cleaned the clubhouse today and did a good job. See clubhouse cleaning in old business. Now that Molly Maids know what the clubhouse cleaning consists of, Skip will get a quote for monthly cleaning with a list of services to be included. We NEED to get a lot of the new old stuff in the backroom out! Curtis – The Donations Committee will be working on that.
3. **VOAD/RCV:** Skip- VOAD is still directed by Adriana Rabkin, she will be scaling down her participation. RCV – Rob Irrelson, Mark Klein, Skipp, and Milt are working on a “shift change protocol” and training for that protocol. The “Great Shakeout” earthquake drill is coming soon, planning is underway. How to get RCV traffic into the EOC and talks with OEM continue for both RACES and RCV.

4. **Technical:** Milt – He has asked Gerald McCarthy to be part of the technical committee. Milt was approached, through the Red Cross, by the Multi-Cultural Center of Marin in San Rafael. They have an interest in getting a Ham station in their office to serve their tenants (like RCV's CBO's). The Executive Director will be contacting the landlord for permission to install antennas on their roof. We may have a site there as an “alternative Emergency Operations Center”, not unlike the old Red Cross station that used to be across the street. This will probably be an RCV asset. The next technical committee meeting will focus on the disposition of the repeaters we have received. Removing the duplexers would probably be advantageous as they are not readily available.
5. **Public Service** Rob- Not Present. Next event will be the NCBC Dirt Fondo on July 20<sup>th</sup>. Michael Fischer will be training on Net Control Scribing software on Sunday July 14<sup>th</sup> at the clubhouse at 2:00pm.
6. **VE Testing:** Jim- Next session is Saturday July 13, 1:00 pm at the clubhouse. We have 7 registered applicants. We also have 2 new VE examiners who wish to be part of the MARS VE team, although they will not be available for the July session. I want to give a thank you to all our VE team, I have at least twice the number of volunteers that I require for each session. We finally received the Extra Class exam books for the new question pool, they were mailed to the previous MARS VE Liaison.
7. **Comm Truck:** Jim- The engine problem has been fixed, the smog check has been done, and the registration sticker has been received. A big thank you to Rob Rowlands and Michael Fischer for making that happen. A replacement for the X-50 dual band antenna that was “munched” at critical mass has been received and is available to be installed. The rooftop dual band antenna for the driver's console VHF/UHF that was wiped out has been replaced by Rob Rowlands with a mag-mount and some clever coax adapter installation.
8. **NBAM:** Bruce- The monthly NBAM meeting is this Monday, 7-15-24.  
Nothing else to report currently.

9. **Field Day:** Curtis – Our contacts submission is very close to being submitted to ARRL. Must be sent in by the 23<sup>rd</sup> of this month. He also held a Field Day post-mortem, via emails received and a Zoom meeting. He will not do a formal write-up but will organize the information from that for use in planning next year's Field Day. Steve- This Field Day was a success and a good test of what we can do. We had a good turnout, and a good number of contacts were made. Steve had predicted 500 and we had 497. Reservations have been made for Stafford Lake Park for 2025 Field Day, including Friday in case we wish to set up early. Bruce- We received a QSL card and a request for one. Do we have QSL cards for the club? Milt -Yes there are some in the Radio Room. Ed Essick commended Steve for all the work he did on Field Day. He was very impressed with the way it went off, and how organized it was compared to some he had attended in the past. There was agreement that Steve had done a great job.

10. **Picnic:** Steve- MARS picnic will be Sept. 14, same location as Field Day and last year's Picnic. The picnic committee will be meeting, and he would like feedback on last year's picnic committee agenda. Discussion of potential menu choices from Forest Fire BBQ and if any discount is forthcoming from last year. Milt noted that we had excess food last year. If we upgrade the food, we should use smaller quantities. We will have an organizational Picnic Committee on July 25<sup>th</sup>.

11. **Bylaws:** Nothing new to report

### **Old Business:**

1. Paint the Clubhouse fund is now \$8720. Goal is \$15,000.
2. Clubhouse cleaning- It was mutually agreed to clean clubhouse- Saturday VE session, Sunday Alan Bowker Celebration of Life and Public Service software training. We need an insured contractor. Skip had suggested Molly Maid. They met the requirements. Once they have cleaned the club house and know what it entails, we need to get a quote from them.



3. Revitalizing Babble Class – Next Nb2McM will be at clubhouse. Milt – There is somebody down there virtually every Sunday. It can range from 2 to 10, there is no way to predict.
4. Donations Committee – Rob, Steve, Milt, Richard, Curtis- The Donations Committee has met and created a draft Donations Committee Charter. He requests that the board endorse the committee to act on these tangible, not cash, donations without needing to bring each item before the board. Discussion on possible additions/changes to Donations Committee Charter and procedures followed. Milt – the committee will act as trustees of the club, with a fiduciary responsibility for donated equipment. Curtis- The Donations Committee will be requesting club funds; a preliminary budget would be \$1000.00 for carrying out its charter. Milt – The committee should also have the discretionary authority to allocate donated equipment for club purposes, with a \$1,000 value limit, without board approval. Curtis – A formal Donations Committee Charter will be presented to the board for approval of the committee’s responsibilities and authority, and the committee’s budget.
5. Expanding the NBAM locker – Curtis- Current locker is 4’ X 8’ if the locker is extended across the back wall an additional 4’ X 7’ – Need a request and a budget from NBAM- No request has been yet received, no action necessary.
6. Clearing foliage, especially bamboo in clubhouse back lot-Need to investigate a commercial gardener to do it. Skip will look for a contractor, Bruce will investigate county funds for fire safety that we may be able to obtain.

### **New Business:**

1. Thank you to Field Day committee- Curtis – We have MARS logo tumblers; suggests that we use them for the purpose of recognizing those who contributed significantly to the organization and execution of

2024 field day. Agreed to give MARS tumblers by show of hands.  
Suggested and approved recipients were Jerry Foster, Cal Anber, Steve Toquinto, Milt Hyams, and Jim Saltzgaber.

**Good of the Order:** Nothing noted.

**Executive Session:** Not required.

**Adjourn:** 21:19 MSC

**Next Regular Meeting 2 August 2024**

**Next Board Meeting 8 August 2024**

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## Marin Amateur Radio Club

### Balance Sheet Comparison

As of July 28, 2024

TOTAL

AS OF JUL 28, 2024

AS OF JUL 28, 2023 (PY)

#### ASSETS

Current Assets

Bank Accounts

B of A Facilities Account - 8795

4,884.90

5,948.61

B of A General account - 4328

70,272.76

50,847.74

Cash on hand

MESH Grant (deleted)

0.00

500.00

**Total Cash on hand**

**0.00**

**500.00**

CD

0.00

0.00

Money Market	0.00	0.00
VE Session Cash	0.00	-129.00
VE Session Cash Received 0.00		
<b>Total Bank Accounts</b>	<b>\$75,157.66</b>	<b>\$57,167.35</b>
Other Current Assets		
Uncategorized Asset	385.00	-95.00
<b>Total Other Current Assets</b>	<b>\$385.00</b>	<b>\$ -95.00</b>
<b>Total Current Assets</b>	<b>\$75,542.66</b>	<b>\$57,072.35</b>
Fixed Assets		
club house- 27 Shell Rd. MV	58,983.00	58,983.00
<b>Total Fixed Assets</b>	<b>\$58,983.00</b>	<b>\$58,983.00</b>
<b>TOTAL ASSETS</b>	<b>\$134,525.66</b>	<b>\$116,055.35</b>
LIABILITIES AND EQUITY		
Liabilities		
<b>Total Liabilities</b>		
Equity		
Opening Balance Net Assets	124,400.00	124,900.00
Retained Earnings	13,748.91	-20,412.57
Net Income	-3,623.25	11,567.92
<b>Total Equity</b>	<b>\$134,525.66</b>	<b>\$116,055.35</b>
<b>TOTAL LIABILITIES AND EQUITY</b>	<b>\$134,525.66</b>	<b>\$116,055.35</b>

## Marin Amateur Radio Club

### Profit and Loss

January 1 - July 28, 2024

TOTAL

JAN 1 - JUL 28, 2024

JAN 1 - JUL 28, 2023 (PY YTD)

### Income

Christmas Party Income	640.00	
Donations	13,350.00	1,699.17

Dues	8,920.51	7,074.75
Interest Income		792.77
Public Service Refund	168.15	450.00
Rent	21,000.00	18,200.00
Unapplied Cash Payment Income	385.00	
<b>Total Income</b>	<b>\$44,463.66</b>	<b>\$28,216.69</b>
<b>GROSS PROFIT</b>	<b>\$44,463.66</b>	<b>\$28,216.69</b>
Expenses		
Accounting	1,420.00	1,035.00
Awards		299.99
Car & Truck	2,224.89	2,306.02
Car & Truck Gas	88.02	258.02
<b>Total Car &amp; Truck</b>	<b>2,312.91</b>	<b>2,564.04</b>
Christmas Party	2,970.23	
Contractors	21,109.00	
Field day	802.24	90.42
Food	76.89	
Garbage	349.74	336.54
Housekeeping	647.65	
Insurance	1,698.50	1,683.00
Comm Van Insurance	2,169.68	2,513.25
<b>Total Insurance</b>	<b>3,868.18</b>	<b>4,196.25</b>
Meals	76.86	
Office Supplies & Software	18.00	
Other Business Expenses		104.93
Public Service Expense	4,009.18	1,379.96
Reimbursable Expenses	20.00	2,448.73
Repair & Maintenance	320.06	
Repeater	2,138.67	1,567.50
Taxes & Licenses	4,099.67	25.00
Utilities	2,588.06	2,551.46
VE Session		129.00
Water	757.84	319.95
<b>Total Expenses</b>	<b>\$47,585.18</b>	<b>\$17,148.77</b>
<b>NET OPERATING INCOME</b>	<b>\$ -3,121.52</b>	<b>\$11,067.92</b>

Marin Amateur Radio Club

Profit and Loss  
January 1 - July 28, 2024

TOTAL

	JAN 1 - JUL 28, 2024	JAN 1 - JUL 28, 2023 (PY YTD)
Other Income		
MESH Grant Income		500.00
<b>Total Other Income</b>	<b>\$0.00</b>	<b>\$500.00</b>
Other Expenses		
MESH Grant Disbursement	501.73	
<b>Total Other Expenses</b>	<b>\$501.73</b>	<b>\$0.00</b>
<b>NET OTHER INCOME</b>	<b>\$ -501.73</b>	<b>\$500.00</b>
<b>NET INCOME</b>	<b>\$ -3,623.25</b>	<b>\$11,567.92</b>

# LIFE IS SIMPLE



# MARS Club News

## Public Service - 2024 Marin Century 8/3/2024

I'm the MARS coordinator for the Marin Century on Saturday, August 3rd. Along with the Dipsea, this is the most significant Public Service event that MARS does every year; it requires a lot of operators.

Here's the link to the 2024 MARS Public Service dates:

<https://docs.google.com/document/d/1fECLReAGIBKSo5cCjIG0dJw8sLhWQVKeY1CShNC8Thq8/edit>

Please go to the 10. Marin Century:

- If your name is not on the list and you want to sign up, please add it at the end.
- If your name is on the list and you can't participate, please delete it.

Our goal is to have a Radio Operator in every SAG, if possible.

Please add the following after your name on the list: (this can be multiples):

- SAG: I have a vehicle that can haul bike(s) and rider(s).
- SAG Ride along: I am willing to ride with a SAG; I will only do the radio communication.
- SAG Moto: Motorcycle
- SAG Bicycle:
- Rest Stop preference(s)
- MARS Radio Operator that you would like to work with
- Net Control
- Since there is no radio reception at the Farm rest stop (replaces Walker Creek on Marshall Petaluma Rd), we will use STARLINK at that location; add STARLINK if you have experience with it.

Thank you for your prompt attention.

Don Magdanz







# CLUB PICNIC

**Saturday, 14 September 2024**  
**From 11:00 am to 5:00 PM**  
**Stafford Lake Park - Area 1**  
3549 Novato Blvd, Novato, CA



**RSVP EARLY FOR ALL ATTENDING VIA EMAIL**  
**[rsvp@w6sg.net](mailto:rsvp@w6sg.net)**



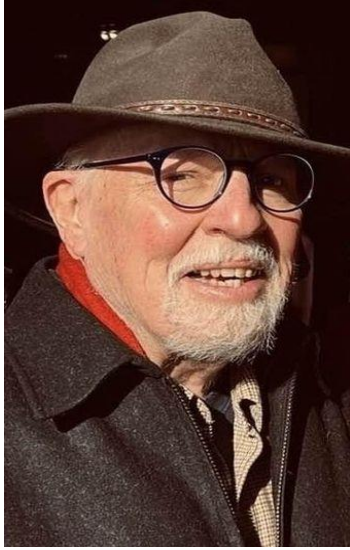
## **Alan Bowker WA6DNR a Celebration of Life**

From Curtiss Kim: "He was man who lived life to the fullest." Tributes flowed during a Celebration of Life for former MARS member, Alan Bowker, WA6DNR. The radio operator became a silent key on March 8<sup>th</sup> of this year succumbing to cancer. He was 75 years old. The gathering at the Mill Valley club house on July 14<sup>th</sup> featured heartfelt accolades describing Bower as a man "who could explain a complicated technical term and yet not make you feel stupid." Curtiss Kim, KM6GUY who like Bowker, worked in the broadcast industry talked about their relationship of working the same radio stations in San Francisco but not at the same time. "We knew all the same people and shared our thoughts about them", said Kim, who retired from radio and television in 2021. Both Bowker and Kim worked at various radio stations during their careers including KNBR and KCBS. Kim then regaled the audience with audio clips of Bowker when he was just a teenager working commercial radio stations in Casper, Wyoming. Bowker was heard telling an interviewer how he moved to Casper at age 10 and worked his way "on the air" as a teenager in 1962. During the same interview, Bowker explained how he got the name he used on the air. Oblivious to the San Francisco radio personality on KSFO, Don Sherwood, Bowker said he heard the name while listening to East Coast radio. To his chagrin, he later found out he had adopted an air name that was etched in radio lore. Those in attendance heard actual "airchecks" of Bowker on the air at radio station KATI in 1966. The highlight was a recording of Bowker when he returned to Casper in 2010 to take part in a radio promotion dubbed, "A KATI Classic Weekend", where past radio personalities were called back to host a radio show and play the oldies hits. He was heard on the tape saying he was glad to be on the radio after a "very, very long time so if I sound a little rusty, I'll get back into it" Others in the audience paid tribute to Bowker's wife, Louise Fay saying she had to put up with a "rooftop full of antennas and a kitchen as a radio shack". Mark Levy, AI6ML remarked how Bowker persevered so positively in the face of stage four cancer. Jeff Peters, AB6BT and Michael Fischer, K6MLF also added their tributes to Bowker saying he was such a friendly force in amateur radio. Bowker was known for his ability in mastering satellite two-way communication and winning the prestigious GrilMaster's Award presented by AMSAT, Amateur Radio In Space.

The event was hosted and MCed by club president Curtis Ardourel, WA6UDS. Bowker's widow, Louse Fay said the audio tapes would have made Alan proud knowing he was back entertaining an audience. Attendees were able to sign a memorial book leaving comments about Bowker.

If you would like to find out more about Alan Bowker, WA6DNR or hear some of the audio tapes that were featured at the gathering you can go to

<https://katicasper.com/djs/alan-bowker-don-sherwood/>



## 2024 MARS Public Service dates

If you're interested in getting involved in the public service branch of our club, here is a list of the events scheduled for this year. Radio communication is the glue that often holds these events together. As with most events, finding enough volunteers is challenging. If you're interested in helping the club, contact Rob Rowlands NZ6J: rowlands47@gmail.com

- 1. Kaiser 5k and half marathon: SFARC Sunday, February 4, 2024**  
DMR Radio required DMR Repeater (W6PW) Digital channel RX:444.225, TX:449.225 Color Code (CC): 1 Timeslot (TS): 2 Talkgroup(TG) 9
- 2. Public service briefing and lunch: Saturday April 6, 2024, 1100 to 1400 hrs, Location: to be decided**
- 3. [Ridge to Bridge](#): Saturday, April 14** Requesting 16 MARS volunteers:
- 4. MCBC Jane Fondo Saturday April 27 2024** Womens mountain bike event  
18 at aid stations, 3 accompany SAGs, 1 moto, 1 biker  
Don Magdanz, Event Organizer at Net Control
- 5. [Miwok 100K](#), Saturday, May 4, 2024**  
18 at aid stations, 3 hikers
- 6. [Dipsea](#): 113th Annual Dipsea will be run on Sunday, June 9th, 2024** 7am-2pm 20 needed  
(Stinson/County CommTruck)  
Don Magdanz, Finish Truck and Information Tent



7. **Field Day**: June 22/23, 2024 Stafford Lake Park 1800z (11am) to 2100z (2pm Sunday) <http://www.arrl.org/field-day-rules>
  
8. **MCBC Dirt Fondo**: Saturday, July 20, 2024, 6am - 3pm 18 needed (/Fort Cronkhite/CommTruck)  
Don Magdanz, Event Organizer at Net Control
  
9. San Francisco Marathon **Saturday/Sunday July 27-28, 2024**
  
10. **Marin Century**: Saturday August 3, 2024, 5:00am-8pm 34 needed (Stafford Lake/CommTruck) Don Magdanz, Event Organizer at Net Control
  
11. **Double Dipsea: Saturday August 24, 2024**, (Comms Organizer TBD)  
6:30am-1:30pm 18 needed (Stinson/CommTruck)
  
12. **MCBC Adventure Revival**. Saturday, September 21, 2024 7:30am-3pm. 15 needed. (San Geronimo former golf course/CommTruck?) Don Magdanz, Event Organizer at Net Control
  
13. **ZBC Dipsea Hike**: Saturday, September 21, 2014 (Comms Organizer TBD)  
7am-2pm, 8 needed (Old Mill)
  
14. **Breast Cancer Prevention Partners Peak Hike**: Moved to Pacifica in 2023, no MARS radio support required.
  
15. **MDARC Pacificon** ham convention San Ramon Marriott **October ? 2024**

**16. Dolphin Club Escape from Alcatraz Sunday, October 5, 2024 10am-6pm. 8 needed (Old Mill) Could certainly use 20, if more folks are interested, please!**

## **North Bay Critical Mass Report**

Here is what took place at the July North Bay Critical Mass event: Instead of their usual location at the Marin Civic Center, this July's North Bay 2-meter Critical Mass event was held at the MARS Clubhouse at 27 Shell Rd in Mill Valley. They met on Sunday, July 21st from 10:00am until noon. This was the day after the MCBC Dirt Fondo event.

Mark Klein KM6AOW was their featured guest speaker and presented a WinLink workshop. This was an 'all hands on' training session so members were encouraged to bring their laptops or MAC devices. Participants were able to access WiFi at the clubhouse to send and receive WinLink messages. Members were asked to install WinLink on Windows or MAC device prior to the event (see links below).

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# Install Winlink

- Hopefully you did this prior to this session!
- From the [Winlink Website](#)
- How to Get an Account:
  - Download, install and configure any [client software](#) We suggest [Winlink Express](#) Study its help about installation and use.
  - **if using Winlink Express**, with an internet connection fill out the form presented on first startup after installation. See the help article "Basic Configuration" for guidance. Be sure to include a password and password recovery address. Click 'Update'. Winlink Express makes the process easy. Your account is created!

## RCV News

### RCV Helps Canal Alliance with GMRS System

From Curtiss Kim: With Canal Alliance in San Rafael set to open brand new offices one mile away from their current location the nonprofit is setting up a General Mobile Radio Service (GMRS) link. The community-based organization with the help of several Radio Communication Volunteers (RCV) designed a land-mobile FM UHF radio bridge between their two sites. Javier Villafane, the IT and Operations Specialist with the Alliance designed the 462 Mhz system with the input from Skip Fedanzo, KJ6ARL, Dirck Brinkerhoff, KM6VKQ and Curtiss Kim, KM6GUY. Both Brinkerhoff and Kim are assigned to the Canal as part of their RCV duties. Canal Alliance will keep both sites in full operation. The MARS members made several site inspections of both 91 Larkspur Street and 711 Grand Avenue to check sight lines,

cable runs and antenna placements. Villafane then gathered the information supplied to craft the two-way communications link. He selected Midland GMRS mobile radios, outdoor fiberglass antennas and the appropriate power supplies and back up battery units. The RCV members conducted a radio test using personal GMRS equipment to make sure the concept would work as expected. Fedanzo, Lead Operator of RCV, was pleased Canal took the initiative to connect their two operations with a reliable radio system saying it will help RCV do its job in the event of an emergency. Canal Alliance provides everything from a food pantry to legal services to a health clinic for immigrants who are challenged by a lack of resources and an unfamiliar environment. The organization serves thousands in a concentrated area of San Rafael. The new offices of Canal Alliance are expected to be in operation sometime this fall. The newly designed GMRS system is anticipated to be up and running for the dedication ceremony.



## ACS/RCV Mission Statement

**Mission:** During national, regional, or local emergencies provide effective backup radiocommunications in support of the EOC/VOAD and Community Based Organizations (CBOs) or other non-public safety agencies within the Marin County OA when requested by competent authority.

**Capabilities:** Proven ability to establish and maintain radio communications

between OA EOC/VOAD and CBOs during exercises including the three annual Golden Eagle and two Great Shakeout exercises. Ability to deploy and operate portable stations as needed to establish reliable communications in areas that are otherwise out of touch with the EOC/VOAD.

**Resources:** Develop and maintain the resources that may be needed to support the overall mission:

1. Operators – A corps of trusted radio operators with: (1) basic skills and a commitment to establishing radio communications when needed; (2) ongoing participation, training, and practice in accurately passing message traffic using a variety of basic analog and specialized digital means.
2. Mobile stations – Individual operators routinely test and maintain their own radio transceivers and related equipment including power supplies, which can be deployed to locations otherwise lacking reliable communications with the EOC/VOAD or between two or more CBOs.
3. Relationships – Establish on-going relationships of familiarity and trust between RCV operators and with key staff of served agencies, including EOC and VOAD.

## **VE Examination News**

### **July 13<sup>th</sup> VE Session Report**

From Curtiss Kim: Thanks to the latest MARS VE session two new operators are now part of the world of Amateur Radio. The pair successfully obtained their Technician Class licenses during testing on July 13<sup>th</sup> with one electing to take and pass the General Class ticket as well scoring 100 percent on both. One candidate successfully upgraded to General Class and the final candidate upgraded to Extra. All in all, it was a pretty successful afternoon. Lead Volunteer Examiner, Jim Saltzgaber, KM6WWY was obviously gratified by the success of each candidate and afterwards spent time individually talking to

each license holder on how to maneuver the FCC website to obtain their certificates. There was no shortage of VE support as Mel Nunes, AB6QM, Ken Brownfield, AB6JR and Jerry Foster, WA6BXV sat in to grade the exams with Dave Sneed, WD6L, Mark Klien, KM6AOW, Curtiss Kim, KM6GUY and JoAnne Saltzgarber, KN6FXH providing sign in, verification and logical support. Next MARS VE exam session is set for Saturday, October 12, 2024 at the Mill Valley clubhouse at 27 Shell Road, Mill Valley CA 94941. (<http://w6sg.net/site/why-how/exams>)



The Marin Amateur Radio Society's VE Program is an extremely important component of amateur radio. The national program MARS is a part of allows member radio clubs to administer licensing tests on behalf of the FCC. What this means to people getting into ham radio is that there are more test locations and a more flexible schedule for taking the license exam. Jim Saltzgarber, KM6WWY, is

the Lead VE. There has been some disruption to the VE services at the ARRL. Here's an article from the ARRL:

**ARRL VEC Services Update During Systems Disruption:** This applies to a specific period of time during which the problems occurred.

<https://www.arrl.org/news/arrl-vec-services-update-during-systems-disruption>

**IMPORTANT NOTE:** If you are upgrading to Extra-Class, the new question pool is effective as of July 1<sup>st</sup>. This means any testing dates after July 1<sup>st</sup> will use the new question pool. If you've been studying for a test date after July 1<sup>st</sup>, using an older Extra-Class study guide, you'll have to pick up a current study guide with the new question pool. You're not going to lose the knowledge you acquired through studying with the old book, but you will have to be prepared for the possibility of some different questions added to the new test (the number of questions remains the same). In short, get an updated study guide!

The first scheduled testing session was on January 13<sup>th</sup>, 2024. The test started at 1:00pm. Our first testing session has passed, and we have three more remaining:

**January 13<sup>th</sup>** (Completed, we had 7 applicants, 6 successful. 4 new Technician Class and 2 new General Class).

**April 13<sup>th</sup>** (Completed, we currently had 7 registered applicants. Note: **This was the last VE session before the current Extra Class pool expires and is replaced with a new one on July 1<sup>st</sup>. All applicants passed!**

**July 13<sup>th</sup>** The third session of the year. As of our last board meeting, we had zero sign ups.

**October 13<sup>th</sup>** Fourth session of the year.

All exams are held at the MARS clubhouse. Check-in is 1:00pm. Information on Exam Registration is at: [Register for the Exam | Marin Amateur Radio Society \(w6sg.net\)](#)

The application form can be found at: [MARS VE Exam Application Form](#)



Jim S. KM6WWY

From Curtiss Kim, regarding the April 2024 testing session:

### **VE Reminder**

If you've been studying for your Extra Class License better not be using an old exam guidebook. As of the first of this month, the question pool for Element 4 has undergone a revision. Every four years the tests for amateur licenses are revised and this year the Extra Class quiz has been rewritten. According to ARRL, "The new pool incorporates significant changes compared to the 2020 -2024 version, 82 new questions were created, and 101 questions were eliminated, resulting in a reduction of the number of questions from 622 to 603. Over 350 questions were modified. The Volunteer Examiner Coordinators consider a question modified when the knowledge being tested was not changed but wording was improved, or answers or distractors were replaced." The new Extra class question pool contains 10 schematic diagrams. Testing for Technician and General Class licenses currently remain the same.

The next MARS VE Session is set for July 13th, 2024 at 1PM at the Mill Valley Club House, 21 Shell Road, Mill Valley, CA 94941. Sign up at

<http://w6sg.net/site/why-how/exams/register-for-the-exam>



## Your First HF Transceiver

I'm an HF guy. I love making contacts around the world. However, getting into HF can be extremely expensive and if you're retired and, on a budget, you must get creative! My first HF rig was a Ten Tec Corsair (43 years old) that the club was scrapping. While I did study electronics in school, restoring this radio was a challenge. While I did get it up and running, it's big and heavy. I decided to get a rig I could take with me and use in the field. I ended up with a Xiegu G90 because a lot of the POTA operators (Parks On The Air) used them and made some fantastic contacts globally.

If you've passed your General and want to get into HF, deciding on a good HF rig can be daunting. There is a plethora of choices at prices that run from low to extremely high. If you can afford a top-of-the-line rig, should you buy it as your first HF transceiver? Probably not! Until you try HF, you may not know whether you like it or not. HF is a lot different than VHF/UHF in several ways. HF uses a different method of propagation that is heavily influenced by solar activity. Antennas are far less forgiving and can require a lot of tweaking, and the etiquette of communication is a bit more formal.

I don't want to discourage anyone from getting into HF. I just want to prepare the potential DXer for the additional work that needs to be done to participate in the HF realm. This is why you might consider a radio like the Xiegu G90 or, if you want to spend three hundred dollars more, the Yaesu FT-891. Both are portable and can be run on a 12V battery. However, the Xiegu G90 is 20 Watts while the Yaesu FT-891 is 100 Watts. Personally, I get everywhere on 20 Watts. Of course, it's a bit of a challenge but that's part of the fun! The Xiegu G90 also has a built-in antenna tuner and SWR scanner, which really helps.

Then you need to consider antenna type. I am fortunate because I have tall trees on the property, so I have no problem stringing a long wire 30 feet up. If you don't have access to trees or a way to suspend your wire antenna high above the ground, you can use a vertical antenna, which requires radials. Radials can be challenging as well, since you need to spread them out evenly from the base of your antenna and cut them to specific lengths. As you can see, there's a bit of



work involved in getting on the HF bands. However, it's well worth it when you can talk to someone on the other side of the planet!

There is a lot in the way of moving parts when it comes to HF radio. Over the next few months, the QSA-5 will break down what you need to get started in this area of amateur radio. These articles will be written for those amateur radio operators who are new to HF. We'll cover propagation basics, antennas, and HF communications etiquette, as well as all points in between. Stay tuned!

## **Testing the USDX QRP Clone 8 Band HF Radio**

In earlier issues of the QSA-5, I introduced the 8 Band USDX HF transceiver. At around \$129.95 (the price has dropped over the last few months), it was worth taking a chance on. The radio is an Atmega 328P based SDR radio, which is the same chip the Arduino Uno uses. This means that you can modify the firmware. This is a trend that many Chinese radio manufacturers are following, allowing radio owners to play around with the underlying firmware. Quansheng also employs accessible firmware that has allowed users to greatly modify the radios operating system. This sounds like a winning combination for experimenters. However, there's one problem that can create a major issue, quality control.

When I ordered one of these tiny transceivers, I was aware of the reviews which ran from wonderful to dreadful. It came down to quality control and purchasing the radio from the right manufacturer (which was nearly impossible to determine). I got lucky and received a radio that worked! However, examining what lie under the outer casing was a bit frightening.

It wasn't that the components were wired incorrectly. It was just a slightly sloppy job. When I build an electronics project, everything is neatly done. I make sure that there are no cold solder joints and carefully trim excess wires from components. I found a couple of poorly soldered connects on my radio and resoldered them. You might think that this is a great reason to avoid Chinese

made electronics. However, companies like Xeigu are taking a hint from Japanese radio manufacturers and upping their game. Xeigu, makes excellent HF QRP radios. If you open a Xeigu radio, you'll be impressed by the quality of their work! Of course, you pay for the quality.

The little USDX QRP transceiver I purchased doesn't compare to my Xeigu G90. However, it works just fine at 5 Watts (which is not the actual transmitting power). I'm still working on the hard numbers regarding its actual power and transmit/receive abilities. The delay has to do with the number of different antennas I use for the testing. However, I did finish the rough power testing.

Using a 13.8V power source, an SWR/Watt meter, and a dummy load, I was able to get the following numbers: Testing CW on all of the bands, the power ranged from 3.23 to 4.95 Watts. SSB operation ranged between 2 and 3 Watts, which wasn't great. Going on to a few user groups, there are a few minor hardware modifications that I'll make over the next month to improve the transmission capabilities. Using a 12V battery, the power dropped down to 2.67 to 3.88.

With a rig like the Xeigu G90, you get extremely close to the full 20 Watts and no change when using a 12V battery. However, the Xeigu is much more sophisticated and costs three and a half times as much. The other problems I encountered with this rig was a speaker that became distorted when you turned it up and the frequency sometimes being off by 1 Khz. I discovered this when looking for a listed POTA (Parks on the Air) activation. So why bother with this radio?

The answer is simple. I like to modify radios. If I can spend a few days cleaning this radio up, swapping out a few minor components, and making a few tweaks, and end up with a decent QRP rig, I'm satisfied. For what it is, it worked, I had no problem making contacts on the 40- and 20-meter bands. However, I was using an antenna (my home base station antenna) that has been carefully positioned and tested.

In the end, this is an experimenter's radio. Most people who purchase this radio do so because they want a rig they can take apart and rebuild. Thus, if you're looking for something you can tear apart and rebuild, this radio is for you. If you're looking for a portable HF rig, consider a Xiegu G90 or a Yaesu FT-891. There is another, better option for those who are looking for a HF transceiver that you can easily build and modify, the sBitx:



The sBitx is a kit radio you can assemble with a screwdriver and a pair of pliers. Next month, we'll dig into the sBitx further. For now, here's a list of the HF transceivers features:

- **Runs FT8, SSB, CW, RTTY, PSK31** and others out of the box (no computer required)
- Compact 10"x 6"x 2" size, slips into the backpack
- Raspberry Pi inside, all preconfigured software & source code on-board
- Hackable, tinkerable, scriptable
- Integrates **logging, logbook, spotting** in one compact box
- High Performance **Hybrid SDR** with passive front-end
- Brick wall **crystal filter 8 crystals**
- Fully **electronic T/R** and band switching
- **Open source**, documented
- Powered it from an external 11.1v LiPo batteries for field ops

It's a general coverage, 10 watts HF SSB/CW transceiver kit with features you need

for operating ease, convenience and versatility. You can operate your sBitx over the WiFi with your phone/tab/computer. It works from 3 MHz to 30 MHz, with up to 10 watts on SSB and CW, with a very sensitive receiver. It features digital tuning, dual VFOs, RIT, CW Keyer and more. We'll dig into this radio more next month!

## **The Xeigu G90**

This is an amazing radio, period! I have and use an old school Ten Tec Corsair that I have been restoring for the last few months. However, with the VFO and power supply (both original), it takes up a lot of space, not to mention it can be temperamental. I was looking for a small HF transceiver I could use at home and in the field for POTA events. I found the Xeigu G90. It has been around for a few years and has gained a large following.

What stands out about this radio is its features and quality for a \$450.00 rig. It has a built-in antenna tuner which can tune pretty much any antenna (within reason – it can't really tune a coat hanger). It also has an SWR scanner that produces a screen similar to a standalone antenna analyzer. It is a 160-10M transceiver that does LSB, USB, CW, AM as well as L-D (LSB data), U-D (USB data), and NFM.

It has a waterfall display which is useful for hunting down signals (or finding a place to call CQ that doesn't return the response "this frequency is in use you lid!") It's an SDR rig with a 24-bit processor, so the radio runs smoothly.



It provides 20W power, which surprisingly gets you everywhere. I've made contacts in Chile and New Zealand, using a 65-foot random wire antenna and a 9:1 unun. On the 20M band, I have no problem talking to operators across the country, and they sound like they are sitting in my ham shack with me. The built-in speaker is loud. So, what's the bad news?

The G90 has a tiny screen. It's 1.8 inches. However, it is crystal clear, and I have no trouble seeing the many details that appear (and I'm one step closer to needing a seeing eye dog). Then there's the learning curve. To look at the radio, you'd think "there's not many buttons and knobs, so this should be easy to figure out." What makes this radio a little difficult to master is that there are a lot of great functions and tools built in and you have to use a specific series of button commands to get to them. However, once you learn how to use the radio, it's a breeze to operate.

The microphone, which has a push to talk button that feels solid, has a keypad to operate all the functions on the radio's faceplate. The face plate is detachable, so you can mount the body elsewhere if using it in your car.

You can power the Xiegu G90 with a rechargeable 12V battery. Amazon sells them for about \$40.00 and it comes with a charger. Due to the low power consumption, this specific battery will get you five to six hours of hardcore use.

One last issue that is easily solved: The radio gets hot. However, you can buy a fan for it that has a heat sensor in its base that controls the fan based on the temperature (\$69.95 on Amazon). It can be connected to a computer for digital modes and lends itself well to these modes. I'll be doing more on this radio in upcoming issues because I think it's a great rig. Here's a breakdown of the basics:

The Xiegu G90 is a popular choice for amateur radio enthusiasts due to its portability, affordability, and feature set. Here's a breakdown of its key characteristics:

- **Type:** Mobile and Base Station
- **Power Output:** 20 Watts
- **Frequency Range:** 0.5 to 30 MHz
- **Modes:** SSB, CW, AM, FM
- **Display:** Detachable 1.8-inch color LCD screen

**Other features:**

- Built-in automatic antenna tuner: This is a significant advantage of the G90 as it allows you to use a wider variety of antennas without needing a separate tuner.
- Software-defined radio (SDR) architecture: This provides the G90 with excellent signal flexibility and future-proofing for software updates.
- I/Q output: This allows you to interface the G90 with a computer for expanded functionality such as panadapter displays.
- Users report that the Xiegu G90 is well-built, durable, and has excellent sensitivity and selectivity.

Users also mention that the user interface can be a bit challenging to learn. The Xiegu G90 typically costs between \$399.95 and \$448.41.

## Xeigu G90 Review and Unofficial Field Test

I introduced the Xeigu G90 160 – 10-meter HF radio in last month's issue. I purchased one of these amazing radios and had a chance to test it out on Field Day 2024. The radio cost \$445.00 (plus tax) and another \$69.95 for a fan unit and stand. The antenna used was an EFHW with a 9:1 Unun (wire length 65 feet). The radio is 20 Watts, so it's not quite a QRP rig nor is it a 100-Watt base station. However, 20 Watts will get you anywhere. Three hours after Field Day 2024 ended, I made a contact (confirmed) with an amateur radio operator in Hungary. That is 6,100 miles away from San Rafael. He recorded my signal as 57 and I recorded his signal as 59. Not bad for 20 Watts!

While the display screen is only 1.8 inches, it is exceptionally clear. I'm one step away from needing a seeing eye dog and I can see everything clearly. The screen contains a wealth of information that provides essentially what you'd basically get with an Icom 7300 (but not as fancy). The buttons are small, but the three knobs are large enough to comfortably use. The main tuning knob can be replaced with a more traditional VFO knob. (they cost about \$7.99 on Amazon). The weighted aluminum replacement knob makes DX tuning a pleasure. The main tuning knob and frequency controls allow you to fine tune the frequency at the same level as found on any of the small Icom HF rigs.

There's a little bit of a learning curve with the Xeigu G90 because it has numerous features and a small number of buttons and knobs to access those features. However, once you master the radio's system, it becomes second nature. The radio can get hot, so cooling is important, especially when operating outside. When out in the field, I run the radio and fan using a 12.8-volt, 6 Ah (6000 mAh), rechargeable (2000+ charges) battery that came with a charger. It costs \$38.95 on Amazon. The battery was used and recommended by Walt K4OGO on his Coastal Waves and Wires YouTube channel, and he would get a day's worth of radio out of it (the G90 has a low power consumption profile). At home, I use a standard 13.8 Volt plug-in power source.

What impressed me about the Xiegu G90 most was that it worked right out of the box! I set the band at 20 meters and saw a plethora of signals, and I had not used its internal tuner. Speaking of internal tuners, the G90 has a brilliant internal tuner and SWR analyzer built in. While it might not tune a rusty coat hanger in an old fisherman's boot, it has easily tuned every antenna I've attached to it. Is there any downside to this HF radio?

I don't consider 20 watts versus 100 watts to be an issue. I've been able to get all over the globe on 20 watts. I've also been able to get through pile-ups in which amateur radio operators were using 100 watt and up amplifiers as well as large directional antennas. In fact, when I get through a pile-up and the receiving station tells me I'm a 57-59, only to ask me about my rig, they are surprised that I'm working 20 watts. So, what's the downside?

Firmware updates. The Xiegu G90 has a base and separate head. Firmware updates must be done for each. The way in which you update your firmware is not for the faint of heart. While you cannot brick (make totally useless) the G90, you can get stuck having to spend a lengthy amount of time getting things back. The good news is that the Xiegu G90 comes with the latest firmware, and you are not forced to update your firmware if a new system comes out. I'll be doing a how to regarding the firmware in an upcoming issue.

## **The JPC-12 Vertical Antenna**

While I've been using a 65-foot EFHW antenna with a 9:1 Unun for HF work at home, I needed a field antenna for field and POTA (Parks on the Air) work. After much research, I settled on a the JPC-12 (\$158.95 at Amazon). This is a center coil



loaded vertical antenna for 40 to 6 meters. Fully standing, it's 13.5 feet tall. The antenna is extremely well made. There are no cheap parts. The antenna includes: an extremely sturdy ground spike made from Aluminum, a Carbon Fiber and Aluminum base for coax cable (standard SO-239) connection, 4 Aluminum sections that screw together so you can change the antenna's base height, a loading coil with a slider for adjustments, and a telescopic whip (about 8 feet). It also comes with its own radials and a nice carry bag that has elastic straps for each component.

I have seen many YouTube videos with POTA and SOTA operators using this antenna with great results. I wasn't disappointed. However, there is a bit of a learning curve with this type of antenna. With wire antennas, there are less compromises to be made. With  $\frac{1}{4}$  wave vertical antennas, you must work around the compromises which means making multiple adjustments to find the sweet spot. The other issue has to do with radials. The JPC-12 comes with a ribbon cable you can split into individual radials (ten total). The cable is 18.5 feet long. The radials work great, except you must have space for them (37 feet from one radial tip to the other). I was able to do some research and, discovered that 15 radials at 2.5 meters (8  $\frac{1}{2}$  feet) gave me just as good a signal. This information came from Callum who is the head big wig at DX Commander antennas.

I'm currently running field tests on this antenna and need another month to really give an accurate opinion, which I'll do in next month's issue. Thus far, I've been getting good results and the idea of having a good portable antenna for my POTA and field work that doesn't require flinging wire up at a high tree branch is a winner (half the time the weight attached to the string lands on my head). One thing that is great about this antenna is that it takes five minutes to set up (not tune but physically set up). That is useful in an emergency.

Another benefit of the JPC-12 is that you can change the configuration of the antenna: You can position the coil and the base or just use the coil and telescopic whip in a manner like the Wolf River Coil antenna. All in all, the antenna works

great. However, like all antennas, it takes a fair amount of tweaking to get it just right and to get the most out of it. I'll provide you with SWR readings next month and specific performance details as well.

## Ham Radio News

Each month, QSA-5 searches the internet for stories about amateur radio in the news. As editor of our publication, I merely present these articles and do not take a position regarding their message or content. Our first article comes from the BBC News:

**Amateur radio club has changed my life:** This is a wonderful article that touches on the benefits of amateur radio for folks with disabilities

<https://www.bbc.com/news/articles/cd17nj8wpl8o>

**How local amateur radio enthusiasts in Colorado assist with public safety:** A good reminder of the importance of amateur radio in an emergency.

<https://coloradocommunitymedia.com/2024/07/25/how-local-amateur-radio-enthusiasts-in-colorado-assist-with-public-safety/>

**Amateur Radio Participates in World's Largest Naval Exercise:** An interesting piece from the ARRL.

<https://www.arrl.org/news/amateur-radio-participates-in-world-s-largest-naval-exercise>

**Ham radio operators showcase emergency readiness:** As the adage goes, "When all else fails." Here's an article about emergency readiness and amateur radio.

<https://lufkindailynews.com/news/local/ham-radio-operators-showcase->

[emergency-readiness/article\\_976174fe-f0b1-527d-a56a-4d2dd1614c0b.html](https://www.peakofohio.com/emergency-readiness/article_976174fe-f0b1-527d-a56a-4d2dd1614c0b.html)

**Local Teachers Participate in Amateur Radio Relay League:** Ohio Teachers participating in the ARRL Field Day.

<https://www.peakofohio.com/local-news/powell-smith-participate-in-arrrl-teachers-institute>

**ARRL Still Dealing with Security Breach:** As most of you know, the ARRL was hacked. Logbook of the World is still having problems. Here is the latest from the ARRL:

<https://www.arrrl.org/news/arrrl-systems-service-disruption>

**Ham Radio? Is That Still A Thing?** In today's world of technological advances, is ham radio still something to be considered as relevant?

<https://incompliancemag.com/ham-radio-is-that-still-a-thing/>

**Monitoring the Moon when it happens: Ham radio scientists to monitor eclipse.** An interesting piece on amateur radio and radio astronomy:

<https://www.news5cleveland.com/news/local-news/monitoring-the-moon-when-it-happens-ham-radio-scientists-to-monitor-eclipse>

**No Cell Phone, No Problem:** When the cell towers go down, radio will be the only form of communication:

<https://www.theguardian.com/us-news/2023/may/27/ham-radio-emergency-natural-disaster-climate-crisis>

**FCC Regulatory News**

Here are the current regulatory changes and FCC news as it applies to Amateur Radio. This section of the QSA-5 newsletter was introduced last year. We will add new regulations and rules monthly, removing the older regulations and rules as new regulations/rules are introduced. As of the August 2021 issue of the QSA-5 newsletter, this list of FCC regulations and changes will be reduced, only covering this year's new regulations and rules. The newest regulations and changes will appear at the top of the list. Note that we are not able to cover every change the FCC has made this year within our publication. Wow, it looks like there is some new news from the FCC:

**Solar Activity Significantly Affecting Ionosphere, FCC Opens Docket for Comments on Impact:** The impact of solar activity has been driven the FCC to solicit comments regarding it's impact:

<https://www.arrl.org/news/solar-activity-significantly-affecting-ionosphere-fcc-opens-docket-for-comments-on-impact>

**FCC to Require Two Factor Authentication for CORES Users:** It seems that the powers that run the big show have found yet another fee to tack on to the amateur radio operators ability to operate:

<https://www.arrl.org/news/fcc-to-require-two-factor-authentication-for-cores-users>

**FCC To Vote on Removing Symbol Rate Restrictions:** From the ARRL regarding the digital modes.

<https://www.arrl.org/news/fcc-to-vote-on-removing-symbol-rate-restrictions>

**Job Posting: FCC Recruiting Field Agents:** In case any of you have wanted to become a field agent. Does it come with a badge?

<https://www.arrl.org/news/job-posting-fcc-recruiting-field-agents>

**FCC Grants an ARRL Emergency Request to Permit Higher Data Rate Transmissions for Hurricane Relief Communications:** The FCC has granted an [ARRL](#) emergency request for a 60-day temporary waiver intended to facilitate amateur radio

emergency communications for hurricane relief.

<https://www.arrl.org/news/fcc-grants-an-arrl-emergency-request-to-permit-higher-data-rate-transmissions-for-hurricane-relief-c>

## Propagation News

Here are some links dedicated to propagation conditions, space weather, sunspot cycle information and all things related to solar conditions:

**The K7RA Solar Update:** This is the K7RA solar update, which is updated regularly:

<https://www.arrl.org/news/the-k7ra-solar-update-837>

**DX.QSI Propagation:** A simple, straightforward website for propagation conditions that is regularly updated:

<https://dx.qsl.net/propagation/>

**Radio Society of Great Britain: What's New and Propagation Now:**

A great resource from the UK version of the ARRL regarding solar activity and propagation:

<https://rsgb.org/main/technical/propagation/whats-new-propagation-now/>

**SunSpotWatch.com:**

A good general interest site for amateur radio operators who follow solar activity:

<http://sunspotwatch.com/>



## DIY Radio References

We have added a few additional links to our list and will continue to do so as we discover more websites related to the Do-It-Yourself movement! QSA-5 is going to keep adding to the original list of online resources, bringing you more resources as we find them. If there is anything you think would be useful to other club members, contact me and I will be happy to include it in this reference section.

**Microcontrollers and Single Board Computers:** With the advent of the Arduino micro-controller board, the Raspberry Pi (a single board minicomputer) and Texas Instrument's Launchpad (also a single board microcontroller), Amateur Radio enthusiasts can build both accessories, such as antenna tuners, and fully functioning transceivers. I have spent the last year at the University of California studying these devices, learning how to use them and incorporate them into electronic projects. I was able to build two HF receivers based on the Arduino and Raspberry Pi devices. The best news of all is that these devices are inexpensive! I encourage you to check these websites out!

**Arduino:** The Arduino microcontroller board was the first to popularize these devices. They are inexpensive and can be used for a variety of radio related projects.

I will include some links to radio related Arduino projects in the next issue of the QSA-5. Here's a link to the Arduino homepage:

<https://www.arduino.cc/>

**Raspberry Pi:** Did you every wish you could have a PC small enough to fit into your shirt pocket? Your dream has come true. The Raspberry Pi 4 is a fully functional Quadcore 1.6 GHz computer, about the size of a package of playing cards. It has an Ethernet jack, two USB 2 ports, two USB 3 ports and two HDMI ports. Next month, I'll post some links to radio related Raspberry Pi projects. Here's a link to their homepage.

<https://www.raspberrypi.org/>

**Texas Instruments TI Launchpad:** The Launchpad is Texas Instruments answer to the Arduino. The Launchpad is geared more towards advanced projects and is slightly more expensive. However, the Arduino still holds it own against this device. The Arduino also has more in the way of opensource software. Here is a link to the TI Launchpad homepage.

<https://www.ti.com/design-resources/embedded-development/hardware-kits-boards.html>

**Tools for electronics:** It is a lot easier to build or repair your electronics if you have the right tool. Paperclips and duct tape are not the solution to everything (unless you are McGyver – hopefully, you got the reference). Therefore, we added some links to suppliers of electronics tools.

**All Electronics:** A one stop electronics shop that has a variety of tools for your repair and building needs:

<https://www.allelectronics.com/category/780/tools-and-supplies/1.html>

**Jameco Electronics:** A supplier of decent tools at a reasonable price:

<https://www.jameco.com/Jameco/content/tools.html>

**Electronic Printed Circuit Boards (PCB):** If you design and build projects that require specific circuit boards, you know how difficult it is to find a board that will work for your purposes. Designing a board and then having it made can be expensive. Here is a company that has a large number of radio PCBs you can purchase and then add components to. They also can take your design and fabricate a PCB at a very reasonable cost. The company's name is **PCBway**:

<https://www.pcbway.com/project/>

**Electronic Components and Parts:** Many of us involved in amateur radio are constantly tinkering with electronics. It seems to be part of our genetic makeup! Here are some links to companies that sell electronic components and parts, starting with San Rafael's own Electronics Plus (Support local business).

**Electronics Plus:** It's great to have an electronics store close by for those times when you need a part immediately:

<https://www.electronicplus.com/>

**Digikey:** A good source for DIY and Maker projects as well as parts. They claim to have the world's largest selection of electronic components.

<https://www.digikey.com/>

**Jameco:** This company is a good source for almost everything, especially mainstay items such as resistors, capacitors, etc.

<https://www.jameco.com/>

**Homemade Antennas:** Many new amateur radio enthusiasts put a great deal of time and effort into researching their first radio. However, they often neglect the



most important component to a successful radio experience, the antenna. Even if you have some ham radio experience, antennas can be a daunting subject. Commercially manufactured antennas can be expensive and beyond your budget during these hard financial times. Even if you have the funds available to purchase an antenna, reading through the antenna's specs can be akin to reading some long lost ancient language. A good solution for increasing your knowledge of antennas and radio wave propagation, not to mention cutting the costs down, is to build them yourself. Here are some links to DIY (do it yourself) sites to give you a start:

Antenna building basics:

<https://www.wikihow.com/Build-Several-Easy-Antennas-for-Amateur-Radio>

Good Reference for several antenna types:

<https://www.hamradiosecrets.com/homemade-ham-radio-antennas.html>

A step-by-step guide for building a simple antenna:

<https://geardiary.com/2012/07/21/building-a-simple-ham-radio-antenna-without-soldering/>

Instructions for a VHF/UHF dual band antenna:

<https://www.instructables.com/Quarter-Wave-Dual-Band-VHFUHF-Ham-Radio-Antenna/>

Build an HF dipole antenna:

<https://www.electronics-notes.com/articles/antennas-propagation/dipole-antenna/hf-ham-band-dipole-construction-80-40-20-15-10-meters.php>

Introduction to antennas:

<https://www.onallbands.com/ham-radio-antenna-options-for-home-and-portable-operations/>

**Ham Radio QRP Transceiver Kits:** With the advent of SDR (Software Defined Radio), building fully functioning ham radios has become a lot easier and extremely inexpensive. While, having fewer bells and whistles, as well as being low power units, many have fully functional touchscreens and cover many of the HF bands:

An easy to build QRP transceiver. No soldering needed to build:

<https://www.hfsignals.com/>

An easy to build, single band CW kit:

<https://qrp-labs.com/>

Offering several kits and finished transceivers:

<https://youkits.com/>

**Propagation Websites:** Propagation is a key factor in successful radio communications. Here are some links to websites that will help you with all your basic propagation needs:

Real time band conditions:

<https://qrznow.com/real-time-band-conditions/>

VOACAP band conditions:

<https://www.voacap.com/hf/>

ARRL Propagation Page:

<http://www.arrl.org/propagation>

Real Time HF Propagation Prediction:

<https://hamwaves.com/propagation/en/index.html>

**Ham Radio Websites of general interest:**

**Ham Radio News:** Here are some sites and articles you may find of interest regarding ham radio.

ARRL News Page, which is a good place to find national news regarding ham radio:

<http://www.arrl.org/news>

QRZ Now. Another good site for ham radio news from around the globe:

<https://qrznow.com/>

The Amateur Radio Newsline. An AP styled news feel page for amateur radio:

<https://www.arnewsline.org/>