

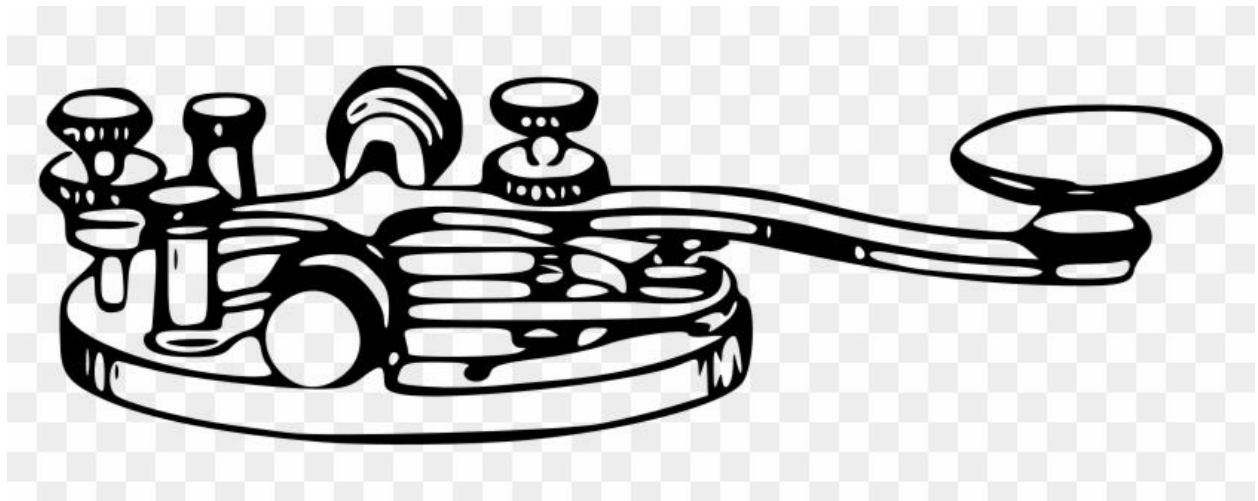


QSA-5

Marin Amateur Radio Society Monthly Newsletter

Established 1933

June 2023



When all else fails, you can count on Amateur Radio

From Our President:

Due to the large amount of work required for Field Day 2023, our club President, Ken Brown, will not be posting a letter this month.

From the Editor:

Summertime has arrived, and with it the promise of warm weather and longer days filled with fun. I want to thank everyone who contributed to this month's issue of the QSA-5. I received a good number of reports, stories, and suggestions over the last three weeks, which are included in this month's issue. Thanks to Curtiss, Steve, and Michael for all the great stories, suggestions, etc. I also appreciate that fact that you sent items to me early rather than at the last minute.

Just to clarify the deadlines regarding receiving items for the QSA-5, I prefer to get them no later than the week before the first of the month (publication date). However, there are some items for publication that suddenly change at the last minute. If you can get it in early, that's great. If it must wait until the last minute because you're still waiting for a piece of crucial information, that's fine as well. An example of this is Field Day 2023. The event is in June. There are some last-minute confirmations I'm waiting for, so the June QSA-5 may appear on the first or a day late. I'd rather have accurate information than not. Lastly, it's been brought to my attention that members want the QSA-5 to stick to club related topics, so I won't be doing any further QRP articles. Enjoy the start of summer and I'm looking forward to the MARS Field Day!

QSA-5Editor@w6sg.net



New Members:

Dave Kanter KM6MBA – Larkspur





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



Marin Amateur Radio Society – Board of Directors Meeting

May 11, 2023

Call to Order 2000 hrs. Zoom active at 1930 hours

Attendance

President: Ken Brownfield **AB6JR**

Director: Rich Cochran **AG6QR**

Vice President: Tom Jordan **KG6TCM**

Director: Jeff Young **KM6Y**

Secretary: Jim Saltzgaber **KM6WWY**

Trustee K6GWE: Brian Cooley **K6EZX**

Treasurer: Bruce Bartel **N6VLB**

Trustee W6SG: Marc Bruvry **KF6VNT**

Director: Steve Toquinto **KB6HOH**

MARS Members Present: Milt Hyams KM6ASI, Jerry Foster WA6BXV, Charles Benet AI6TT, Mark Klein KM6AOW, Larry Bradley KI6LNB, Curtis Ardourel WA6UDS, Rob Rolands NZ6J, Bob Salter AI6EE

Adopt agenda-MS

Approve minutes of April 13, 2023, MS

Secretary's Report – Jim Saltzgaber: Public Service Event managers are reminded that we need to get a Certificate of Insurance (COE) from each of the organizers of the Public Service Events that we do. Please forward them to me and I will file them on our Google Drive.

Treasurer's Report – Bruce Bartel: Report is in QSA-5. Jeff Young questioned if Bruce had received a \$500.00 check from NBAM, to be held in a separate account, for future NBAM site expenses. Bruce

Committee and other reports

Membership - Curtis Ardourel: Membership is currently at 140, 90% of 2022. Will purge QSA-5 list to only paid-up members and change website password on Monday to only those on QSA-5 List. Are we interested in alternate domain names.

Facilities – Skip Fedanzo (not present) Curtis Ardourel: Only 2 members present in person for Friday's meeting. Rob Rowlands - Our tenant, Sharon, is having a garage sale Saturday. No pressing facilities issues noted.

Public Service – Rob Rolands: Miwok was a great event, best Miwok ever in terms of safety. Lots of mud and slower times! Next event is Dipsea on June 11th. We have a full roster but will take extra operators if interested.

Technical – Milt Hyams – 3 THINGS: Reversal of Big Rock Frequencies completed. ARRL complaint regarding Big Rock repeater was received by Dan Healy. Dan will send them a report that the interference has been solved. Mt. Tam's new Antenna has not yet been installed, county people have had higher priority work, but will do it ASAP, possibly in a week or so. Muir Beach Water tank – Leighton Hills @ Muir Beach Community Services District has suggested various options on vaults for our equipment. Milt will work with Dan Healy to accomplish this.

VOAD/RCV- Skip Fedanzo (not present) –Milt Hyams: RACES and RCV will be participating in the Golden Eagle Exercise May 18. Rob Irrelson will be Controller for RACES, Milt for RCV. MISALs to be added and formal scenario sent out by beginning of the week.

VE Testing – Ken Brownfield – Last VE session was in April. 11 people tested. 2 are for July at this point, and we may have some additional VOAD people.

NBAM – Jeff Young: Submitting final funds dispersal report for last year's grant this week. Awaiting approval for our new grant request. Working with agencies in Marin and Sonoma, trying to get more people involved in NBAM so as not to tax the MARS people as much. Great signal connection with 4C's in El Sobrante. This will be useful for transmitting signals back to Sonoma and Marin. Will be putting MESH station up at MARS clubhouse as a demonstration for people to see MESH in action. Bob AI6EE will add his demo station also if needed. Will possibly be taking the demo on the road. Would also like to get Commonweal in Bolinas connected to SF. Rob and Jeff will be setting that up.

Education – Curtis Ardourel: Nothing new to report.

Communication Van-Jim Saltzgaber: Stan Witherspoon had reported shuddering at freeway speeds and going uphill. East Bay Tire diagnosed that as tie rod ends, and that repair, replacement of 3 tie rod ends, was completed 5/3. Check engine light was also on, code was for cylinder misfiring. New spark plugs

and an oil change/service will be done. Bob Salter inquired about replacement of house battery. That is in progress. No April maintenance check list was completed, although Stan noted any problems found during the Miwok event. May maintenance check will be scheduled and any remaining deficiencies after the service will be handled then. Need tires rotated and balanced, can be done free at Costco.

DMR – Rob Rowlands: Bolinas NZ6J repeater up and running at Commonweal, from Bolinas Lagoon to GGB and Highway 280 corridor south. Thanks to anonymous donor of repeater.

Old Business

- 1. Update Field Day 2023-** Field Day participation by MARS was discussed, and it was determined that we would have a Field Day Event. REDEXA has indicated that they will not be having an event this year. Steve Toquinto, Ken Brownfield, and Jerry Foster did a Recon at Stafford Lake Park with Ranger Adam Craig. The park can provide a space to host our event. Discussion on when to start setup and whether we would do an overnight was held. It was agreed that an overnight field day would be best. It was MSC for Steve T. to work with Adam at the park and schedule and reserve June 24th and 25th. Ken will send out an email to announce MARS Field Day plans and request membership participation. Steve T. will also invite REDXA to participate with us if they desire. Food and whether any catering will be needed is TBD. Curtis A. will work with Steve T. on food. MRE's were suggested by Jeff Young and discussed (cue laugh track). Advertising of the Field Day to the public was suggested and discussed. Curtiss Kim and Hugh Patterson KN6KNB were suggested as possible PIO's. Larry Bradley noted that RF exposure surveys should be done and on site for any antennas we put up. The overall planning committee will be Steve T., Curtis A., Rich C., and Jerry F.

New Business

- 1. ARRL Survey** Ken Brownfield: ARRL has requested radio clubs to encourage its ARRL members to participate in a survey regarding ARRL dues increase. The board is in favor of membership answering survey. Ken will send it out to members.

- 2. FCC 60 Meter response** – Curtis: FCC wants to hear about this proposed action. Club should respond and members should be encouraged to respond. Responses must be filed online. Curtis will file the MARS club response but will need direction from the board. Discussion on merits of contiguous frequencies and flaws of the proposed power reduction. FEMA nets will have problems, and some radios are hard programmed. Rob Rolands noted that the proposal grants Ham operators a contiguous frequency block vs. the current discrete channels. Power would be reduced from 100 W to 9.15 W ERP. We need to tell the membership step by step how to get into web site to comment. Curtis will do the step by step to access the website for comment on this proposed rule change. The board consensus is to keep 60-meter band and power as it is. Some radios, FT-857 for instance, are channelized and cannot be easily changed.
- 3. Start discussions for Club picnic** – Stafford Lake Park, Area 1, with a large gazebo, may be a good possibility in lieu of Miwok park (last year's venue) for 2023. We can set up antennas better at Stafford. and have more room to roam. Electricity is available and we can park the Comm Van there. Casual board survey was in favor of pointing the Picnic committee towards this venue. We wish to let the park staff know that we are interested in this site and get the date formalized.

Good of the Order – Bruce Bartel: Are we still interested in painting the club house. Ken B: Yes, would like to get a group together to clean and paint the clubhouse interior. Also see about getting the front cleaned and repaired and painted.

Executive Session – Not Necessary.

Adjourn - MSC @ 2102

Next Regular Meeting June 2nd, 2023
Next Board Meeting June 8th, 2023

Marin Amateur Radio Club

Profit and Loss January 1 - May 29, 2023

TOTAL

	JAN 1 - MAY 29, 2023	JAN 1 - MAY 29, 2022 (PY YTD)
Income		
Auction Income		50.00
Donations	1,549.17	118.98
Dues	7,044.75	6,305.00
Income from club activities		90.00
Interest Income	792.77	
Public Service Refund	450.00	450.00
Rent	13,000.00	12,900.00
Sales of Product Income		24.69
Total Income	\$22,836.69	\$19,938.67
GROSS PROFIT	\$22,836.69	\$19,938.67
Expenses		
Accounting	925.00	
Awards	299.99	
Car & Truck	1,841.12	637.04
Car & Truck Gas	194.19	111.43
Total Car & Truck	2,035.31	748.47
Field day	122.97	350.00
Garbage	239.20	239.20
Insurance	1,683.00	3,495.25
Comm Van Insurance	2,374.75	
Total Insurance	4,057.75	3,495.25
Legal & Professional Services		575.00
Other Business Expenses	104.93	
Public Service Expense	1,328.83	3,168.19

Reimbursable Expenses	2,448.73	1,701.12
Repair & Maintenance		1,100.22
Repairs & Maintenance		2,880.00
Repeater	1,567.50	
Taxes & Licenses	25.00	3,950.64
Uncategorized Expense		25.00
Utilities	1,685.90	1,409.36
VE Session	129.00	90.00
Water	210.22	255.53
Total Expenses	\$15,180.33	\$19,987.98
NET OPERATING INCOME	\$7,656.36	\$ -49.31
NET INCOME	\$7,656.36	\$ -49.31

**Marin Amateur Radio Club
Balance Sheet Comparison
As of May 29, 2023**

TOTAL

AS OF MAY 29, 2023

AS OF MAY 29, 2022 (PY)

ASSETS

Current Assets

Bank Accounts

B of A Building account - 8795	5,948.61	7,053.93
B of A General account - 4328	47,436.18	11,851.86
CD	0.00	25,000.00
MESH	-500.00	
Money Market	0.00	5,000.00
VE Session Cash	-129.00	
Total Bank Accounts	\$52,755.79	\$48,905.79

Other Current Assets		
Uncategorized Asset	-95.00	
Total Other Current Assets \$	-95.00	\$0.00
Total Current Assets	\$52,660.79	\$48,905.79
Fixed Assets		
club house- 27 Shell Rd. MV	58,983.00	58,983.00
Total Fixed Assets	\$58,983.00	\$58,983.00
TOTAL ASSETS	\$111,643.79	\$107,888.79
LIABILITIES AND EQUITY		
Liabilities		
Total Liabilities		
Equity		
Opening Balance Net Assets	124,400.00	124,400.00
Retained Earnings	-20,412.57	-16,461.90
Net Income	7,656.36	-49.31
Total Equity	\$111,643.79	\$107,888.79
TOTAL LIABILITIES AND EQUITY	\$111,643.79	\$107,888.79

LIFE IS SIMPLE



MARS Club History Information Needed

CQ old timers:

For the last several months you have been spared my rambling musings. For a brief moment, I am back asking your help. In my role as membership chair, I get the contact emails that come in through the website. A recent request came in asking about the history of the club's repeaters. In some ways I guess I qualify as an OM not just because I am old, but because I joined the Amateur Radio Society back in the late 1960s. I answered what I could, but it dawned on me that there are some of you out there who were in the Amateur Radio Society and the VHF Expeditionary Society before that. Getting to my point I would like to interview any of you who were involved in the early days of the club to create an oral history. We can do this either face to face or by phone or on zoom. Please let me know if you would be willing to help me out. Email me at wa6uds@w6sg.net or call me at 510-290-6069.

73 de wa6uds

Curtis Ardourel

Membership Chair, Marin Amateur Radio Society

Marin Amateur Radio Society News

Training Document Volunteers Needed!

Hi all,

As discussed at our monthly RCV meeting, the RCV team is asking all to consider assisting the program with compiling, updating, and in some cases, the developing of training documents. The Golden Eagle exercise, previous repeater testing, information gleaned from CBO interviews, and some existing RACES/ACS documents are rich with lessons and some issues that invite creation of standard

practices. It makes sense to be able to maintain an organizational record of those lessons along with a repository of documents that one may access to train new RCV members.

We are looking for two (or more) volunteers to focus on this need. It may make some sense that one volunteer is newer to RCV and one may have more experience (to vary perspectives).

Anyone interested in helping with this project or with questions can send their responses to Kevin Johnston/W6KPJ via email.

Thank you for your help!

Kevin W6KPJ

kpj60sf@gmail.com

RCV News

The first article comes from Curtiss Kim and ran in last month's issue. We've included it again so that any new members not familiar with the RCV program can be brought up to speed. Thanks to Curtiss Kim for this article!

The Radio Communication Volunteers (RCV) continued their readiness preparations conducting an exercise to access the use of repeaters located outside of Marin. The drill had various RCV members stationed at community-based organizations from Petaluma to Sausalito and as far west as the San Geronimo Valley. The group conducted roll calls on seven repeaters testing signal quality, accessibility, and whether UHF or VHF made a difference. The repeaters tested included Mt. Diablo, San Pablo, Vallejo, Sonoma Mountain and both the UHF and VHF repeaters in Berkeley. The newly installed repeater at Fire Station #9 in Tiburon was also included.

Each RCV operator kept reception reports on each of the repeaters. According to

Skip Fedanzo, Lead Operator of RCV, the exercise had one primary goal to discover which CBO locations could reach repeaters outside of the area. In the event the local repeaters are knocked out of service during a natural disaster, tests of this type give RCV members knowledge of what other resources might be available for use.

RCV members taking part included, Dirck Brinckerhoff (KM6VKQ), Bob Salter (AI6EE), Bruce Bartel (N6VLB), Brian Cooley (K6EZX), Kevin Johnson (W6KPJ), Warren Leiden (K6WRL), Charlie Benet (AI6TT), Ken Brownfield (AB6JR), Ed Essick (K6ELE) and Curtiss Kim (KM6GUY), Working out of the EOC as the main net controller was Rob Ireson (K6RGI). Each member used personal battery-operated radio gear with portable antennas.

Thanks went out to those clubs who maintain the repeaters that were used including the Mt. Diablo Amateur Radio Club, Northern Alameda County Amateur Radio Operators, Contra Costa Communication Club, North Bay Amateur Radio Association and the Sonoma Mountain Repeater Society.

The goal of RCV is to help local community organizations operate and communicate in an emergency while letting the agencies focus on what they do best: serving vulnerable Marin residents.

Anyone interested in joining Radio Communication Volunteers can contact Skip Fedanzo at KJ6ARL@ARRL.NET.

(picture 1, RCV member Curtiss Kim (KM6GUY) taking part in the out of county repeater exercise from the San Geronimo Valley.)

(picture 2, One of the repeaters that seem to work well outside of Marin County was Mt. Diablo in Contra Costa County.)

(picture 3, the drill could not have happened without the help of neighboring radio clubs such as the Sonoma Mountain Radio Society)





RCV Operators VIRTUAL Meeting May 2023

The monthly RCV Operators meeting: **Monday May 22nd at 1730.**

Topic: Marin RCV Operators Meeting

Time: May 22, 2023 05:30 PM Pacific Time (US and Canada)

Meeting facilitator: Ann Shores, K6SHO

Primary Agenda items are:

1. Golden Eagle 2023 Exercise Review & Discussion (Rob, All)
2. Request for volunteers for RCV Training Documents (Kevin)
3. Vest update (Kevin)
4. Overview of CBO Operator Assignments & Forthcoming CBO Template (Rob)

Next meeting is June 26th, **2023** on Zoom. Agenda, relevant documents and Zoom login to follow.

Critical Mass

The North Bay 2-Meter Critical Mass was held (as usual) on Sunday, May 12th. 10am.

It was held in the usual place: the Jury Parking Lot behind the Frank Lloyd Civic Center, just across from the south end of the lagoon.

The agenda:

1. 10am – 10:15—self-introductions phonetically, and spell the name of your favorite vacation spot phonetically;
2. 10:15 – 10:45—another slice of DMR best practices. We will initially focus on the basics of building your code plug, then answer a few questions;
3. 10:50 – 11:40—we will break up into the duty stations of a “virtual” Miwok 100, passing traffic. Net control duties will be rotated every 10 minutes. Here’s the Miwok duty roster: https://docs.google.com/document/d/1dqcZ_BPjwpcHFtfvmXCG2Xdmm4BMCYxJyBaXq1oAim0/edit Would you please print out and bring it with you?
4. 11:40 – noon (a hard closure is guaranteed at our Critical Mass gatherings!) Open time for questions, suggestions, discussion about what could’ve been done better in the “real” Miwok 100. Doug K6DRK has been working on spreadsheet improvements (but he’ll be on Maui when we gather...)

If you’re a new member of MARS and want to get to know the other members of our club, come on down to next month’s event. Here are some pictures from this monthly event.









2023 ARRL Amateur Radio Field Day

“They’re Back!” The evil spirit of the mad MARS ham radio operator will be creeping around Stafford Lake Park in West Novato. This year’s Field Day is all set for the last weekend in June and it’s time to pack the go-box, the lunch pail and tool kit. Officially it starts on Saturday the 24th at 11am and will run till Sunday, the 25th at 11am. ARRL Field Day is the single most popular on-the-air event held annually in the US and Canada. The contest part is simply to contact as many other stations as possible and to learn to operate the ham radio gear in abnormal situations and less than optimal conditions. More than 35-thousand radio amateurs will be taking part throughout the country with their clubs, groups or

simply with friends. And yes while the competitive juices kick in others will use the opportunity to practice their emergency response capabilities. Come one, come all. What is the best antenna for Field Day? Does a longer antenna get better reception? What are the frequencies for Field Day? Come on down and find out. Plenty of “Elmers” will be on hand to share their knowledge.

This year’s event takes on an added responsibility given the recent fire storms, flooding events and power outages. Ham radio operates completely independently of the internet and landline phone systems. A remote Ham station can be set up almost anywhere in minutes. With the use of alternative power sources such as generators, solar panels and batteries Hams can quickly communicate with others nearby or across the country. It goes without saying Field Day highlights ham radio’s ability to work reliably under any conditions from almost any location and create an independent, wireless communications network.

Field Day takes place just three miles west of downtown Novato. Stafford Lake Park is one of the more popular Bay Area locations for family picnics, outdoor fun & games, or a sunset stroll. The 139-acre site features an undeveloped, countryside feel and has hosted musical performances and other festivities. Here is what you need to know:

A parking plan is in the works...you will not be charged a parking fee. Gates open at 7:30am and the contest begins at 11am on Saturday. Popup shade canopies are okay as are sleeping tents and sleeping bags. Gas BBQ grills are okay. No charcoal. A special BBQ meal is being planned by the club for those who show up. It’s understood tripods and extendable masts will go up for antennas which need to be guyed and guy wire clearly marked. Note: antennas and coax in the trees will depend on nesting birds. NO climbing trees. We are allowed to use generators of the less noisy variety. The MARS Com truck and the Com trailer will both be onsite.

For contest rules, radio bands, merchandise <https://www.arrl.org/field-day>

That's it...let's roll....and let's be careful out there....



VE Examination Report

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.

MARS President, Jen Brown, runs our VE (Volunteer Examiner) program. The MARS VE program has had two of the four scheduled testing sessions. The next

test session is scheduled for July 8th, 2023, at 1:00pm. The exam session takes place at the MARS clubhouse: 27 Shell Road Mill Valley CA 94941. Those taking their tests should arrive early and be prepared. Examinees will be required to bring valid identification and their FRN number. Those examinees who reserve a place on July 8th will be emailed with specific instructions regarding identification and the procedure for getting an FRN number. What is an FRN number? Before getting your ham radio license, you must first register for your FRN. An FRN, or FCC Registration Number, is a ten-digit number that identifies your business dealings with the FCC. The FCC requires a permanent address, so they can reach you if need be.

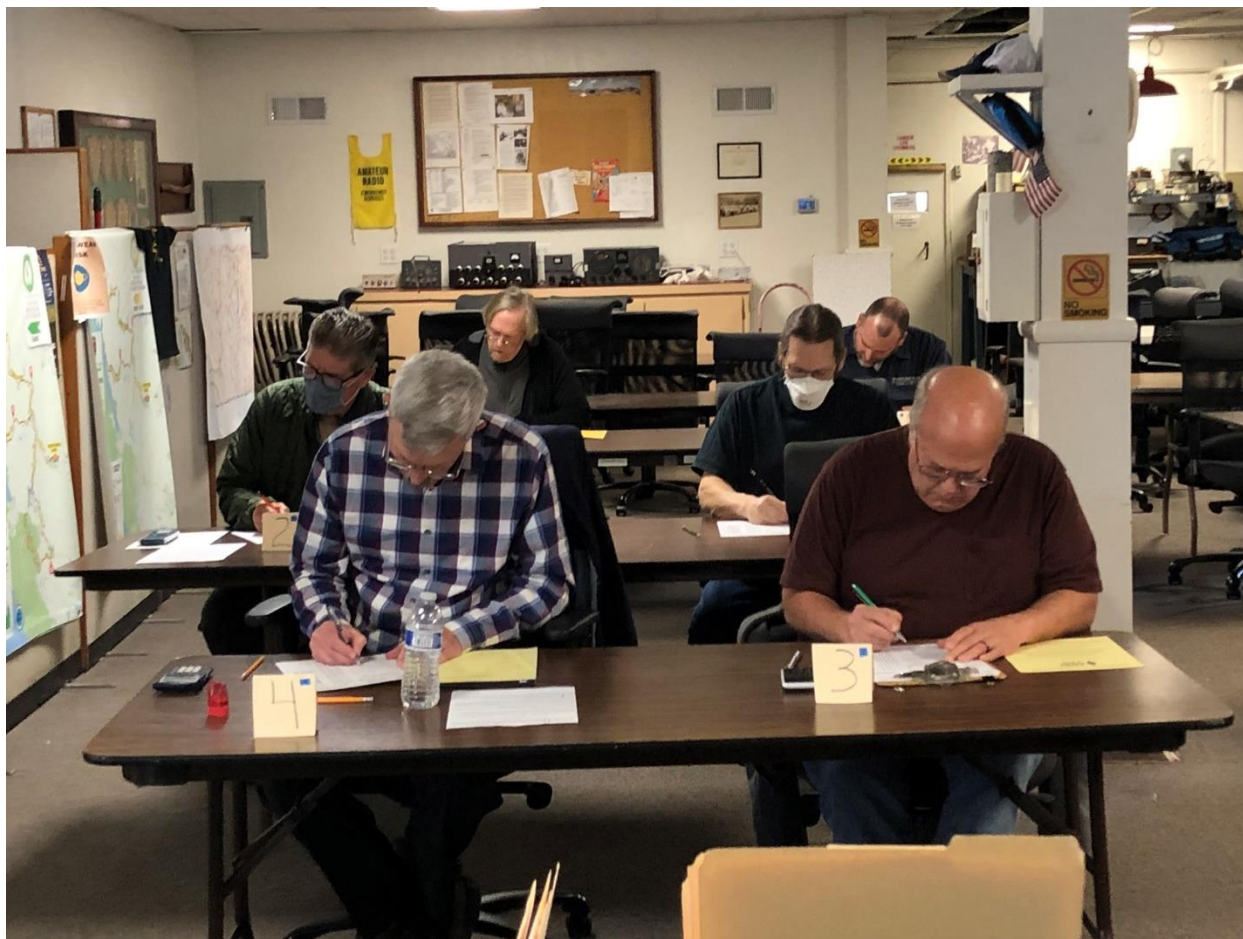
Here's a link to Ham Radio Prep's article on getting an FRN number. It's fairly easy and is required in order to get your license:

<https://hamradioprep.com/how-to-register-for-your-frn/#:~:text=Before%20getting%20your%20ham%20radio,reach%20you%20if%20need%20be.>

The last session of the year will take place on October 14th, 2023, at 1:00pm. Here are some photographs from the April MARS VE session:







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 is a call for assistance from NASA Thanks to Michael Fischer for the first two articles):

Ham Radio Operators, We Need Your Help During Solar Eclipses! NASA is looking for help in their study of solar activity.

<https://science.nasa.gov/science-news/citizenscience/ham-radio-operators-we-need-your-help-during-solar-eclipses>

How Far Will A Radio Transmit? This is very useful information to have, and it's well explained.

<https://www.radioddity.com/blogs/all/how-far-will-a-radio-transmit>

ARRL and FEMA Sign Agreement: Ham Radio is as Relevant as Ever: Proof that ham radio is here to stay.

<https://www.arrl.org/news/arrl-and-fema-sign-agreement-ham-radio-is-as-relevant-as-ever>

Marines To Gain Radio Op Experience Via Amateur Radio: A good article from the ARRL.

<https://www.arrl.org/news/marines-to-gain-radio-op-experience-via-amateur-radio>

Ham radio operators: A long-lasting technology: An interesting piece about the longevity of radio.

<https://www.winknews.com/2022/06/24/ham-radio-operators-a-long-lasting-technology/>

Amateur Radio Club Members Assist Law Enforcement: A local radio club provided surveillance for a large state fair.

<http://www.arrl.org/news/amateur-radio-club-members-assist-law-enforcement>

If China declares war, these ham radio enthusiasts could be crucial: An interesting piece from the Los Angeles Times:

<https://www.latimes.com/world-nation/story/2022-10-27/taiwan-ham-radio-amateurs-civil-defense>

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. There has been little FCC news over the last few months:

FCC Grants an ARRL Emergency Request to Permit Higher Data Rate Transmissions for Hurricane Relief Communications: The FCC has granted an [ARRL](https://www.arrl.org/news/fcc-grants-an-arrrl-emergency-request-to-permit-higher-data-rate-transmissions-for-hurricane-relief-c) 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-arrrl-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-779>

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 Newslane. An AP styled news feel page for amateur radio:

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