

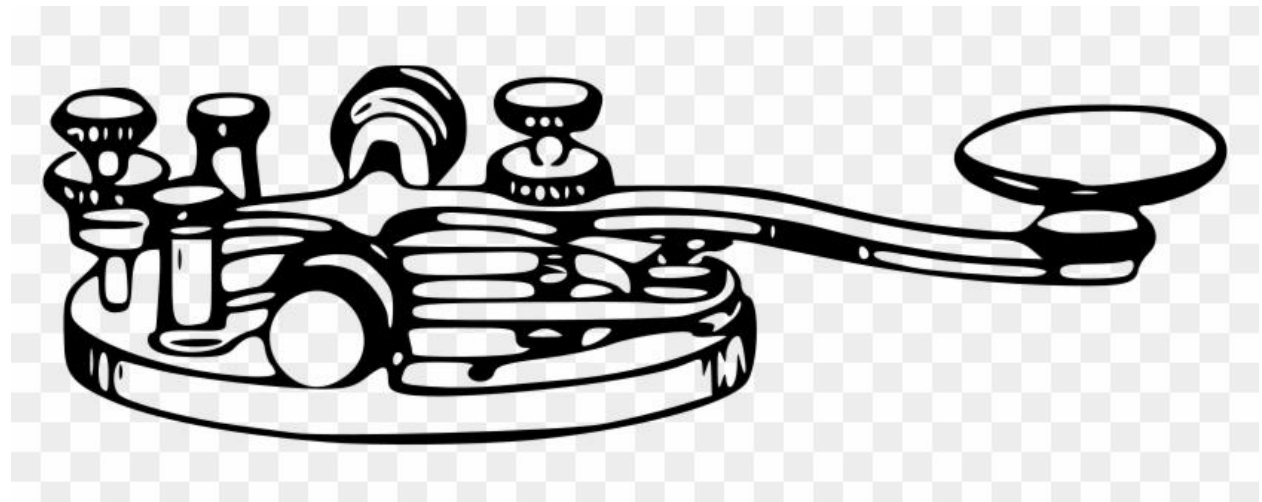


QSA-5

Marin Amateur Radio Society Monthly Newsletter

Established 1933

March, 2022



When all else fails, you can count on Amateur Radio

From Our President:

A picnic in February. I was born in San Francisco and grew up in Marin. In spite of our mild winters, I can't recall that we ever thought of having a picnic in February. Have a picnic we did. The weather was great, and we had a good turnout. The new Public Service team Rob Rowlands NZ6J, Stan Witherspoon AI6NF and Pam Witherspoon N6PDW brought the whole thing together quickly and efficiently. They provided a program full of useful information for the season to come. We owe them a thank you and a round of applause. We are all looking forward to a busy public service season this year.

We seem to be entering a new phase on the seemingly never ending covid saga. Hospitalization rates are dropping, and mask mandates are dare I say it coming off. We aren't where we were before covid, but things are looking up. Our policy remains to follow Marin County's covid guidelines at the club house. At this writing that means only unvaccinated people are required to wear a mask in an indoor gathering. Masks are optional for everyone else. As someone who takes an immunosuppressant drug, I am inclined to be extra careful, and I will be wearing a mask at club meetings for a while anyway.

Part of our monthly meetings involve some vestige of parliamentary procedure. I for one enjoy this bit of pomp. I am happy to say that we are a very civil group and that we don't seem to need a rigorous approach to govern who speaks when. We as a board have no intention of changing any of that, however we don't really conduct governance at general meetings. There are a few club actions that according to our bylaws may only be done at a general meeting. For example, at the November meeting we must present a slate of candidates for the board elections. We may only grant the award of life membership at a general meeting as well. To simplify our governing process, we have determined to no longer keep minutes of general meetings where no governance matters are decided. We will keep minutes of the November meeting as required and if there is a need to make a decision involving the membership at any other general meeting either the

secretary will keep minutes, or a secretary pro tempore will be nominated to keep the minutes. Of course, minutes will continue to be kept at board meetings.

73 de wa6uds

From the Editor:

Welcome to the third month of the new year and the March issue of the QSA-5. You'll notice that there is not as much new club news. This is because the beginning of the year tends to be a bit slow. However, we expect things to pick up, with more events being reported on as we approach spring and summer. As always, please feel free to send in ideas for stories you want to see within the club's newsletter. After all, this is your publication!

We have received emails regarding the links within the publication not working or being broken. I tested out the links from the PDF copy you will receive, and they work. However, if you are still having problems, we'll make sure to address those problems before next month's issue.

The QSA-5 is an experiment in progress. We'll introduce new stories and columns, seeing what appeals to its readers and what doesn't. Again, if you think there is something that would be of interest to our readers, send me an email with your thoughts. If its radio related, we'll include it.

With the pandemic seemingly slowing down and the world opening back up again, I suspect that we'll have plenty of content for the QSA-5 in the future. Of course, with the world changing so rapidly, one never knows what will await us down the road. I was thinking that it is great to be a member of a club whose members are

well prepared for anything thrown at them. Amateur radio operators are always ready for a potentially unforeseen future and that gives me great solace. Let's hope that we'll be back to normal, at least a new normal, come summertime!

QSA-5Editor@w6sg.net



General Membership Meeting: February 4th, 2021

Call to Order: Curtis WA6UDS called the meeting to order at 7:33 pm. 37 people attended on zoom and 4 people were at the club house.

Approve minutes: January Meeting - It was moved, seconded, and approved without objection that the January 2022 meeting minutes be approved.

Adopt Agenda: It was moved, seconded, and approved without objection that the agenda be adopted as presented.

New Members:

David Hansen KN6HFV - San Francisco

Ross Bogert KW6EZ – Larkspur

Frank Klebanoff KG6JHT – Novato

Charles Von Schaischa KN6SHX - San Rafael

Emily Yu KN6SKB - Mill Valley

Jaime del Palacio KN6SCB - Mill Valley

Marc Kohli KN6PNF - San Francisco

Steve Scheppelmann KN6RAZ - Santa Rosa

Board Actions: Approved moving forward with opening the club on Sunday 6 February for Babble Class. As well as boring procedural stuff.

Presentation: N/A

Fun with Ham Radio: A variety of topics were discussed including repairing a radio made with SMD technology just for the challenge of doing it.

Secretary – Communications: No report

Treasurer's Report: See QSA-5 for most recent numbers. Bruce Bartel N6VLB reported that Rich Slusher KI6UIM had completed the reconciliation of the club's books for 2021.

Committee and other Reports:

Membership: 100 current members 65% of the end of last year. Curtis WA6UDS reminded us that unrenewed members will be past due on 3/31/22 and the Past Due emails will go out on 4/2/22 with the QSA-5 mailing list to be purged of non-current members the following weekend.

Facilities: It was reported that the building was still there. This was confirmed by folks at the club house. We have had leaves and debris cleared in order to avoid any flooding, if it rains again.

Public Service: Pam N6PDW and Stan AI6NF reminded us that the Public Luncheon would take place on 19 February and the Marin Rod and Gun Club with lots of activities planned. You must email to rsvp@w6sg.net and reserve your spot.

Education: Curtis WA6UDS reminded us that our education program has been in a medically induced coma since before covid appeared. He went on to ask folks to think about restarting our education team. We had planned to follow the MDARC model of reordering topics into sections that related to each other. We also liked the idea that people would only be expected to teach a single section rather than the whole course. Also, that for each section there would be Elmer's who would help students on an individualized basis.

Repeaters: Milt KM6ASI reported that they were planning to replace the 2-meter transmitter at Tam west because of random changes in transmitter output.

VE: Ken AB6JR reported that the next VE session was scheduled for 4/9/22 and that so far there were only two people signed up, but we are pretty far from the actual date.

VOAD/RCV: Skip KJ6ARL reported that they are waiting on the Marin Supervisors to approve RCV as an ongoing program rather than a piolet. That they would be looking for additional volunteers.

NBAM: Curtis WA6UDS reported that they were waiting for approval of a grant from ARDN to expand the Bay Area Mesh backbone through Marin and into Sonoma County.

Old Business: N/A

New Business: N/A

Good of the Order: A variety of topics were discussed.

Adjourn: It was moved, seconded, and approved without objection that the meeting be adjourned at 8:47 pm. The zoom call was left open for folks to chat.

Post-agenda Presentation: N/A

Respectfully submitted – Curtis Ardourel 2/26/22

Next General Meeting: March 4th, 2022



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

Marin Amateur Radio Society Board of Directors Meeting

President: Curtis Ardourel WA6UDS (1) **Director:** Skip Fedanzo KJ6ARL (2)
Director: Brian Cooley K6EZX (1) **Treasurer:** Bruce Bartel N6VLB (1)
Vice President: Tom Jordan KG6TCM (2) **Director:** Mark Klein KM6AOW (1)
Director: Ken Brownfield AB6JR (2)
Trustee K6GWE: Doug Slusher KF6AKU
Trustee W6SG: Mitch Martin WU1Q

Adopt agenda: No Additions M/S/A

Approve minutes: of 13 January M/S/A

Elect Officers: N/A

Motion: "General meeting minutes need not be kept on a regular basis unless official business is to be conducted in which case the presiding officer shall direct the Secretary to record such business or appoint Secretary pro-tem for that purpose". M/S/A

Brian Cooley was nominated and confirmed to continue as Club Secretary - M/S/A by show of hands.

Brian will contact George Petersen Insurance to cajole them to issue renewal notices. Curtis will add Brian K6EZX to the treasurer@W6SG.net email list which can be used for any paperless billing that we may not yet be enrolled in.

Secretary's Report/Communications: Brian reported that he helped Ann K6SHO get a Certificate of Insurance (COI) for Marin Rod & Gun Club where the P.S. Picnic

will be held. Some clarification needed to be provided as to the nature of alcohol availability, but Brian noted that Ann completed that dialogue with the insurance company and obtained the required COI.

Treasurer's Report: Bruce reported that clubhouse property taxes (coupon #2) have been paid. And he is working with Rich Slusher to chase down a lingering \$200 discrepancy in the books that is not material to club finances.

Committee and other Reports:

Membership: 104 | 67%

Education: No standing committee is active at this time, but Curtis urged the board to think about a candidate to lead a revived Education Committee. That person might not necessarily do training but arrange for a team that does the actual training and teaching, likely drawing from our membership and its inherent knowledge.

Facilities: Skip reported that the drainage project on the property is still underway. He is trying to arrange an on-site meeting with Armando Chan to look over the site and get a read on what [Chain Drainage](#) recommends.

Public Service: Pam reported we now have 48 RSVPs for the PS meeting out of a max capacity of 50 determined by physical space and catered lunch quantity. Pam will send Curtis a list of PS's volunteers to allow him to populate the [Public Service Honor Roll](#) on the club web site. A discussion ensued about the value of having a speaker talk to the attendees about county COVID protocol. But Tom recommended we handle any COVID training via simple reference to written policies of the county and our event partners, which should be in harmony and already exist. A further discussion arose about what your COVID policy should be for the coming P.S. season, and it was decided that we would follow the policy of each of our clients as they must get county approvals that necessarily mean they will confirm to county policy.

Technical: Milt reported that this past Sunday a UHF repeater was installed on Mt. Barnabe (444.125 +151.4). The frequency on San Rafael Hill will soon be changed so it does not tangle with Big Rock UHF, making it more robust to serve the needs of RCV. Also, the Big Rock machine was recently increased to 10 watts. It was also noted that the Barnabe VHF machine is not working properly within the simulcast system (lack of transmit). Steve KB6HOH reported that the new Barnabe UHF machine performs very poorly for Novato members; Milt recommended that complaints be sent to Jerry Foster WA6BXV to investigate

VOAD/RCV: Skip reported a couple of new RCV members. A drill is coming up this Saturday to check out the 3 new UHF machines ((Barnabe, San Rafael Hill, Big Rock) that have been recently activated, which will establish their usefulness for RCV purposes but also for the MARS membership in general.

VE Testing: Ken AB6JR has a scant 2 registrants for the next session.

NBAM (North Bay Area Mesh): No news.

Old Business:

1. **Frequency coordination:** No news.
2. **Drainage:** Covered above.
3. **Sunday morning meetings:** No news. The county is lifting the mask requirement from indoor meetings IF a person is vaccinated, which raises the question of whether we should adopt some mechanism to check vaccination status. It was decided to remain county-compliant, which does not require such a verification mechanism and relied on an honor system.

New Business:

1. **A life membership:** Curtis noted that Rich Carbine W6UDS was previously made a life member in recognition for his long and valuable service to the club,

but that his wife Marilyn Bagshaw N6VAW has not, in spite of her similarly long and valuable service to MARS. Curtis suggested this is an oversight that should be corrected, and that Marilyn be made a MARS Life Member. M/S/A by show of hands to nominate Marilyn for Life Membership, which will be voted on by the membership at the next General Meeting (Based on club [bylaws Section 4.G.\(4\)](#)) to be held on Friday, March 4, 2022.

Good of the Order N/A

Executive Session N/A

Adjourn

B. Cooley

Next General Meeting March 4th, 2022

Next Board Meeting March 10th, 2022

**Marin Amateur Radio Club
Balance Sheet Comparison
As of February 28, 2022**

Cash Basis Monday, February 28, 2022, 03:39 PM GMT-08:00 1/1
TOTAL

	AS OF FEB 28, 2022	AS OF FEB 28, 2021 (PY)
ASSETS		
Current Assets		
Bank Accounts		
Accounting services	240.00	
Auction	221.50	
B of A Building account - 8795	7,947.21	3,022.36
B of A General account - 4328	9,222.98	10,792.62
CD	25,000.00	25,000.00
Money Market	5,000.00	5,000.00
Public Service	2,216.02	
Skip Fedanzo	81.84	
Web Services	618.72	
Total Bank Accounts	\$50,105.27	\$43,814.98
Total Current Assets	\$50,105.27	\$43,814.98
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	\$109,088.27	\$102,797.98
LIABILITIES AND EQUITY		
Liabilities		
Total Liabilities		
Equity		
Opening Balance Net Assets	124,400.00	124,400.00
Retained Earnings	21,103.53	22,636.76
Net Income 5,791.80 1,034.74		
Total Equity	\$109,088.27	\$102,797.98
TOTAL LIABILITIES AND EQUITY	\$109,088.27	\$102,797.98

**Marin Amateur Radio Club
Profit and Loss
January – February 2022**

	TOTAL	
	JAN - FEB, 2022	JAN - FEB, 2021 (PY YTD)
Income Donations	100.00	22.36
Dues	6,210.00	5,073.69
Income from club activities		
Rent	5,000.00	4,925.00
Sales of Product Income		
Total Income	\$11,310.00	\$10,021.05
GROSS PROFIT	\$11,310.00	\$10,021.05
Expenses Awards		
Car & Truck		648.09
Equipment < \$2,500		500.00
Food	1,536.00	104
Garbage	95.68	94.28
Insurance		
Job Supplies		
Legal & Professional Services		
Other Business Expenses		254.71
Reimbursable Expenses	803.71	
Rent & Lease		150.00
Repairs & Maintenance		546.34

Repeater		-177.27
Taxes & Licenses	3,925.64	4,000.56
Telephone		93.24
Uncategorized Expense		
Utilities	543.13	388.15
VE Session		
Water	150.04	138.80

Total Expenses	\$5,518.20	\$8,986.31
NET OPERATING INCOME	\$5,791.80	\$1,034.74
NET INCOME	\$5,791.80	\$1,034.74

Cash Basis Monday, February 28, 2022, 03:41 PM GMT-08:00 1/1

Questions and Answers

This section of our publication is dedicated to any questions you have. If there is something you need or a problem you cannot solve, this is the place to seek assistance. Who provides the answers? Readers of the QSA-5 publication!

This question was not directly sent to the QSA-5 Question and Answer section of the newsletter, I believe that the subject matter warrants our attention. This is the email I received from Steve & Melanie Kramme KD6KXT & KD6KXS:

Hello, my wife and I are licensed HAMs in Novato and have not been on the air due to location and HOA issues. We would, however, like to install a VHF / UHF radio into our truck camper. I am seeking advice regarding which brand and features that they have that would best fill the needs of our local area and when camping. I contacted you in hopes that you could put me in touch with someone in the club that could answer my questions. I was thinking maybe meeting someplace for coffee. Some time ago I attended meetings in Mill Valley, but my membership has lapsed. I know that with COVID concerns there may still not be any in person club meetings.

You can reach them via email at: skramme@gmail.com

Here are some links to get you started regarding an antenna mount for your rig and vehicle. Hopefully, some of our club members will follow up via email!

Here's a link to the Radio Reference website's forum page that discusses this question:

<https://forums.radioreference.com/threads/best-place-to-mount-dual-band-antenna-on-pickup-truck.324814/>

Here is a page dedicated to mobile antenna mounting from Comet Antenna:

<https://cometantenna.com/land-mobile/no-holes-mobile-mount/mobile-mount-faqs/>

This final link comes from KV5R and is nicely detailed and explains the subject clearly.

<https://kv5r.com/ham-radio/mobile-antenna-placement/>

LIFE IS SIMPLE



Marin Amateur Radio Society News

MARS Special Event: Presentation and Picnic

On Saturday, February 19th, 2022, the Marin Amateur Radio Society held a presentation and picnic. Here are some photographs from the event for those who missed it. Thank you to Marilyn Bagshaw for the photographs and your great work with Public Service:









VOAD: When All Else Fails: Part One

Imagine what would happen, due to a large-scale disaster, if internet and cellphone services went down. A service interruption of such services for 24 hours would certainly create problems, but we'd get through it relatively unscathed. However, what would happen if that time without internet or cellphone services extended to 48 or 72 hours? What would happen if the problem extended beyond a single county, such as Marin County? Things would become dire! This is where VOAD (Voluntary Organizations Active in Disaster) would come into play.

VOAD is a voluntary organization that help those who would be impacted the greatest due to a disaster. Who are those who would be affected the most? Seniors, people with disabilities, the economically challenged, house-bound members of the community, children and the homeless. When a disaster strikes, these members of our community are greatly impacted. Imagine being unable to leave your home due to a medical condition and having no way to contact the

outside world in an emergency. It's a situation that most of us don't give much thought to.

Marin VOAD is a collaboration of non-profits, faith-based, community and government agencies that help those who are most in need of service during a disaster. Most people don't know about VOAD because it works behind the scenes. However, VOAD covers about twenty to forty thousand members of our community. Their member organizations provide all sorts of services from legal to housing and all points in between. How does this fit into the world of amateur radio?

During a disaster, such as a large earthquake or fire, lines of communication are critical. Ironically, conventional communication is often the first part of the infrastructure to fail. Think back a few years to 2019. Marin County lost power for three to five days when PG&E shut down their power lines due to fire related issue and maintenance work. While some of us who worked outside the County could charge our cellphones, tablets, and laptops easily, those lacking access to an unaffected area weren't so lucky. While most larger communities within the County set up charging stations, those fortunate enough to get to those stations often had to wait in line for three to four hours.

In a large-scale disaster scenario that extends out further than 24 hours, a breakdown of goods and services occurs, and the problem becomes worse with each passing day. The biggest problem for VOAD members is that they depend on cellphones and the internet for their operations. When these services go down, member organizations cannot communicate with each other, and more importantly, their clients. The Marin Amateur Radio Society has stepped in, with our own Skip Fedanzo KJ6ARL, leading the charge.

The RCV (Radio Communication Volunteers) was formed, and a pilot program was created with the Marin County Department of Public Works. The sixteen member RCV team was designed to send and receive messages between Marin community organizations and government agencies during disasters or long power outages. The RCV does monthly field exercise to ensure they will be ready for the next disaster. Because the scope of the RCV and VOAD is so large, the QSA-5 will publish a second part to this article next month when we'll look at RCV operations in greater detail. We'll introduce you to Andrew LeBlanc, who plays a critical role

in this project. If you wish to volunteer for this worthy organization, contact Skip. In part two, we'll look at the mechanics of the RCVs response to a disaster and their field exercises. Here's a link to an article about the RCV from the Marin Independent Journal (2021):

Marin enlists volunteer radio operators for emergency team

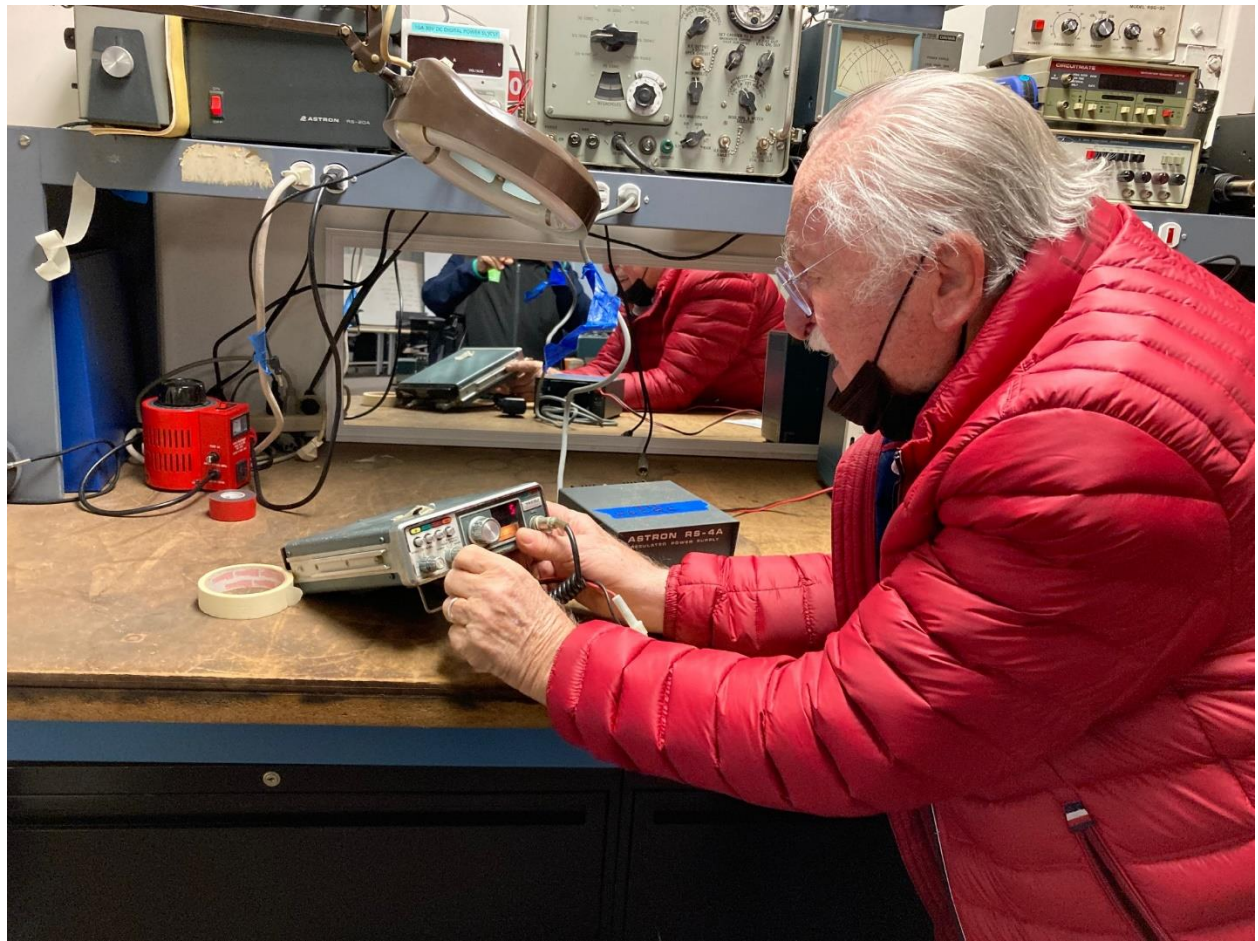
<https://www.marinij.com/2021/11/01/marin-enlists-volunteer-radio-operators-for-emergency-team/>

News Release from Marin County

<https://www.marincounty.org/main/county-press-releases/press-releases/2021/dpw-volunteerradio-092121>

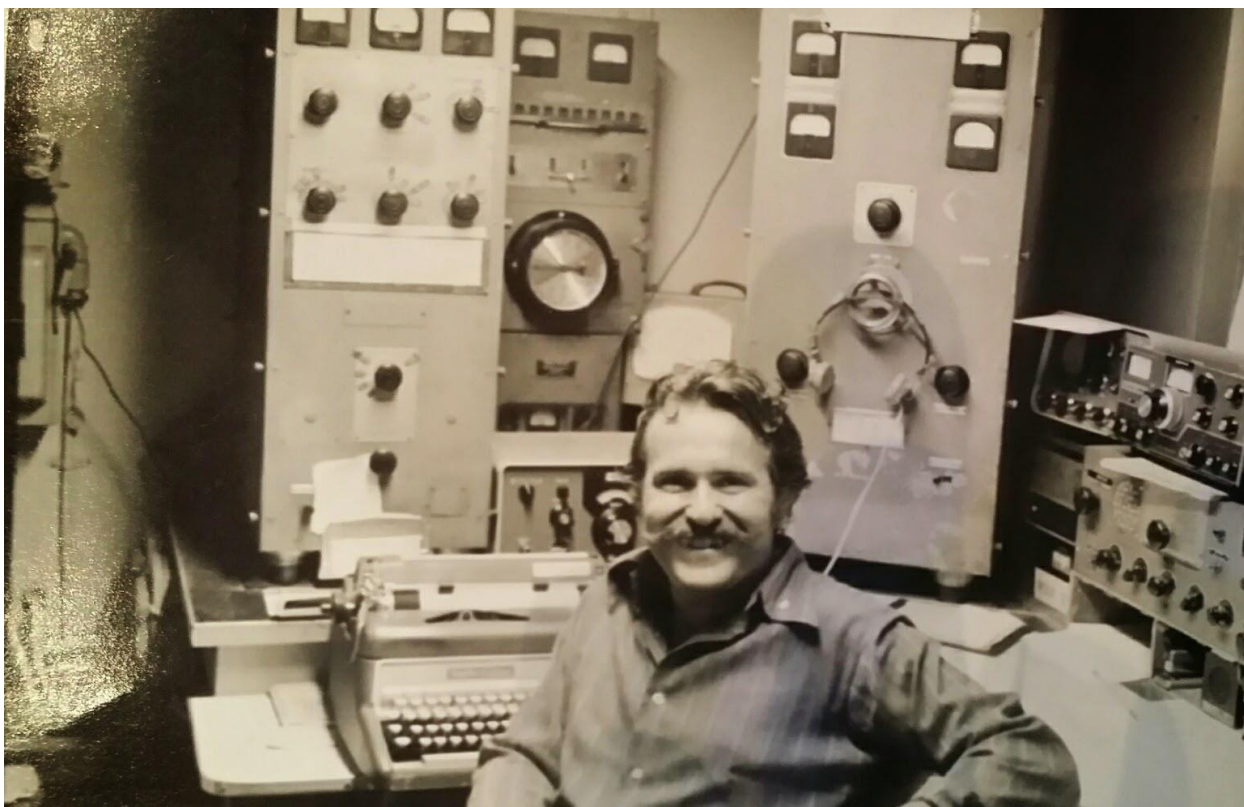
New Mirror Installed at the Clubhouse

This might seem like the QSA-5 is having a slow news month, but this is not a mirror in the traditional sense. This mirror is mounted on the back side of the primary work bench in our laboratory section of the clubhouse. Have you ever had to work on a large electrical device and find yourself constantly having to turn the device around to see its backside? If you had a mirror placed behind the device, you would be able to examine the opposite side without have to move the device around. This is a good idea for any electronics bench. Here are some photographs of the new mirror.









This last one is of Jan when he was a radio officer on a ship. We had to include this one since he is the King of the club's electronics lab!

ARRL Announcement

Curtis and Board Colleagues

At the request of our President, on Saturday December 4th, I participated in the ARRL Pacific Division meeting via Zoom. The meeting was chaired by Pacific Division Director, **Kristen McIntyre (K6WX)**. She introduced the new Assistant Director, **Anthony, W7XM**. The meeting opened with a recognition of members who became silent keys during the year. There was a total of 104 participants from all over the West Coast. The only attended that I personally knew was **Bill Smith (AB6MT)**. If Bill Hillendahl was there, I missed him.

The substance of the meeting opened with Kristen's report on the State of Ham Radio. She reported that the major issue is recruiting new members to the hobby. As I recall this was the lead issue at the last meeting I attended as well. The recruiting dilemma is how to appeal to younger people while still actively preserving the past. Recruiting young people will be essential to the hobby maintaining relevance. She thinks our stock with government agencies is in decline, particularly emergency services. The consequence will be increasing threats to spectrum preservation by the business sector. She noted that the ARRL's new magazine "On the Air" is proving more appealing to the masses as coffee table book as opposed to "QST" which is seen as most attractive to nerds. Popular outreach is going to be necessary to shore up the hobby.

Kristen is quite impressed with ARRL's new CEO, David Minster, NA2AA. She is convinced that he will be good for the organization and the hobby. The major problem at ARRL is staffing at the national headquarters in Connecticut. It is expensive to live there, and it is relatively remote. For example, ARRL computer development has slowed to a crawl due to thin staffing. There is only ½ full-time equivalent employee working on ARRL software and that person is devoted to Logbook of the World. Otherwise, the organization is relying on volunteers for development and maintenance. To expand the outreach of the organization, ARRL has changed its operating hours to be open later to serve the West Coast. This marks an apparent effort by ARRL to reach out and listen to the field more before acting and issuing policies. Bottom line is that she thinks the new CEO is taking the organization the right direction and she is optimistic.

The good news is that public gatherings will resume next year. Conventions up post COVID including the National Convention at Orlando and the Hamfest at Dayton. ARRL has also conducted an in-person Board meeting recently.

Politically there may be trouble on the horizon. The spectrum loss in the 3 GHZ region may be an indicator of things to come. ARRL recognizes this and they are prepared to spend money to defend the spectrum. Compounding the problem is that the FCC has been hard to get too due to COVID. They are only now returning to their offices. As a result, the license fee is set in concrete now due to the FCC's interpretation of the law. Therefore, ARRL will pay the license application fees for certain new young applicants. The ARRL has had to hire a lobbying firm to push through its latest revised version of the Parity Act (to minimize the restrictions in

CC&RS limiting amateur radio antennas in condominium complexes) through Congress.

ARRL is involved in a new significant project called the Public Clean Signal Initiative. They are building upon an earlier initiative in which the quality of receivers has been improved. They are now focused on working on transmitters that are non-linear. The goal is to get transmitters off the air that generate noise and garbage (such as harmonics) along with their signals. This will set new certification standards for manufacturers for clean transmitters. Noted ham gear tester Rob Sherwood is involved in this project. Their studies are discussed at Contest University.com. This project has enough traction that it is likely that their recommendations may be adopted by IEEE.

A new standing committee called the Emergency Communication Field Services Committee has been established in the ARRL organization. The role of this committee will be oversight of ARRL management of its emergency communications service support to hams and liaison to governmental agencies utilizing those services. This is in apparent response to the perception of decreasing relevance of amateur radio in this area.

The next portion of the meeting was entitled Q & A but was more an opportunity for the attendees to speak to matters they thought was important.

One question that was asked was about the adjustments made to the 220 MHz frequency band allocation. While the band has been expanded to 219 to 225 MHz, a couple of practitioners in that range noted that a portion was being carved out for digital only. They were seeking more guidance on that. It was the first that Kristen had heard about it and agreed to follow up. The take-away on this was that if you use that band, you should find out more about spectrum reservations.

Next was a discussion of emergency communications particularly to and within hospitals. A couple of ARES leads met with their hospital clients to talk about needs especially repeaters in hospitals to support HT use in hospitals when the power goes out. (I have some question about the legality of this). However, this discussion quickly morphed into the fact that hospitals generally state that their real need is for data communication for exchange of documents, not voice. It

became clear to all that the solution to this problem is a MESH network. This gave rise to a discussion of problems with use of amateur radio MESH in this environment. The first was the limited spectrum availability for amateurs in the 5 GHZ MESH bands. The second was passing HIPAA protected data unencrypted over amateur systems and encryption to protect it. This issue has apparently raised its head before when an FCC Commissioner raised the encryption issue on use of WINLINK and PACTOR for this purpose. Apparently, the FCC sees amateur radio encryption as a national security issue.

This discussion led to several discussions about MESH which is generally viewed as the wave of the future. For emergency services the capability of MESH to support voice communications with VOIP on desk phones has attracted much attention. Gateways utilizing TCP-IP and raspberry-pi computers were touted as being able to provide desk voice communication in emergencies easily and at relative low cost. Also, ARDN MESH in California is getting a number of new key partners such as CALFIRE and the DOD for emergency services. Again, encryption was identified as being a problem in this area as well.

The last substantive discussion was from the Inyo/Kern Section manager. They have a local Emergency Services Committee that includes all interested organizations from police and fire first responders to Red Cross and Salvation Army down to CERT leadership. Its mission is to identify needs and arrange for provision of services. The mission sounds much like the role of our EOC. The stated emphasis is to meet each served organization's needs rather than to try deciding for those agencies what their needs should be. Interesting concept.

It is always interesting to see what other folks are doing and what is viewed as important in the amateur radio hobby. I appreciated the opportunity to represent MARS at this meeting.

Milt Hyams

December Critical Mass Event

This is a reprint of the December Critical Mass Event because the QSA-5 has not yet received any reports of a January or February event. What's a critical mass event? It's an opportunity for amateur radio operators to practice their communication skills in preparation for emergency situations. Who can participate? Any licensed Amateur Radio Operators with any level of experience. All you need to do is bring your radio, paper, and pencil. It's important, as an amateur radio operator, to participate in these events because when all other forms of communication breakdown, amateur radio is the last line of defense. This is one of the few hobbies that can serve as something fun to do as well as a communication tool during disasters. Get involved!

Here are some photographs of the Critical Mass event that took place in December. A big thanks to everyone who participated!









If you're wondering what kind of individual events take place at these critical mass events, here's a breakdown of the club's agenda from the November Critical Mass Event:

- * Our usual phonetic alphabet practice as we self-introduce

- * A primer/refresher on the basics of NIMS (the National Incident Management System) and ICS (the Incident Command Structure.)

https://www.fema.gov/sites/default/files/2020-07/fema_nims_doctrine-2017.pdf

- * How to read and report your current latitude and longitude--and we will practice that

<https://medium.com/@thegeospatialnews/how-to-get-gps-coordinates-of-your-loc>

[ation-using-your-smartphone-1de312900e1d](#)

* Hopefully, a briefing by a fire department official on the communication challenges during a major fire

* We will close with hands-on practice in a controlled net and a Fox Hunt! If you have one, bring a directional yagi or Elk antenna with your HT.

<https://www.youtube.com/watch?v=eQSiTqH9Dzw>

We were privileged to have Chief Gerald McCarthy, Deputy Chief in Novato, give us a great briefing on NIMS and the ICS system. See his handout copied above. We urged all hams interested in emergency communications to take FEMA's on-line courses ICS 100 and 200:

<https://training.fema.gov/is/courseoverview.aspx?code=is-100.c>

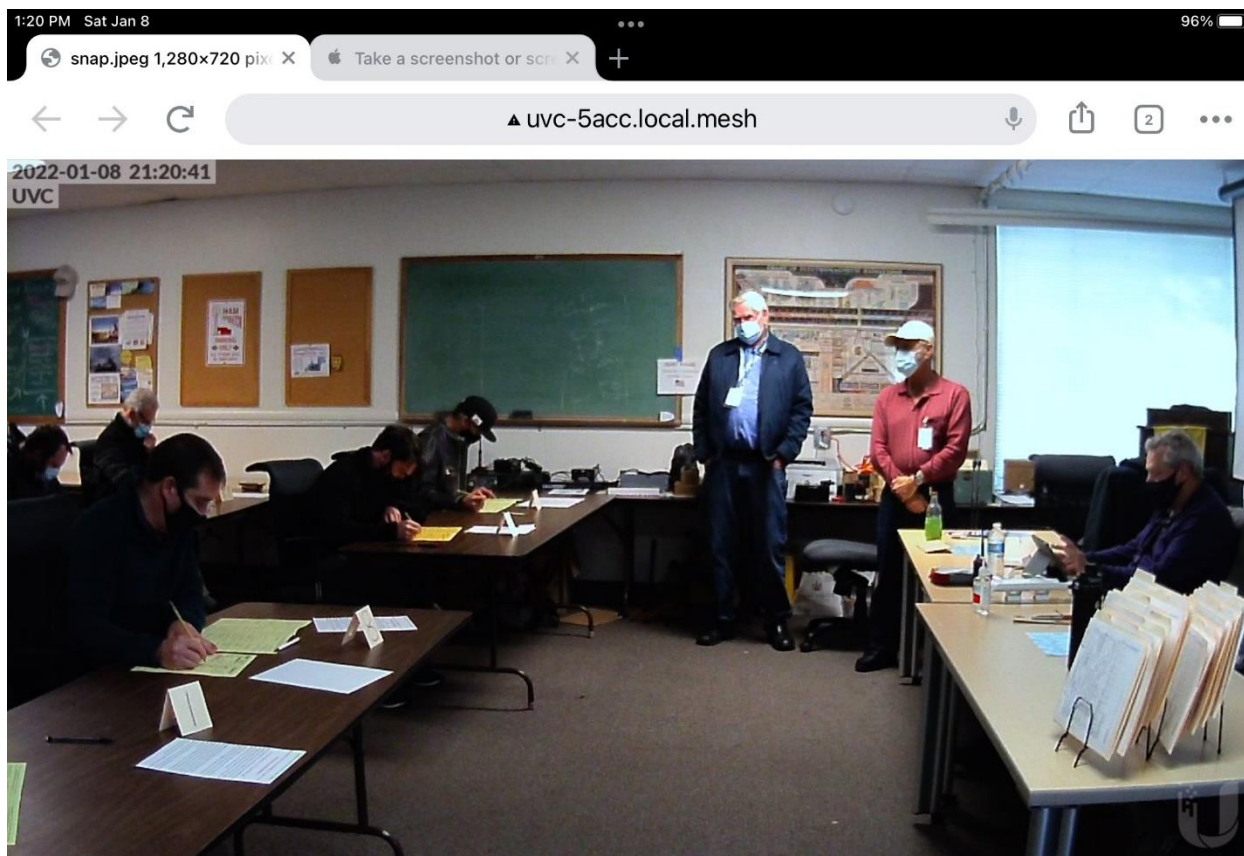
We practiced using our smartphone to get your location's latitude and longitude. Oftentimes, when we are calling 911 to report an emergency, we are not near a street address or a roadside mileage marker. The dispatchers CAN make use of GPS coordinates, which you can access through some of the compass apps. Since the meeting, I have also learned of the app called Context Camera. With that app, you can take a photo of the event and the date, time, GPS coordinates and the direction your camera is pointing is embedded. That photo can then be texted to the responding emergency crews. In one of the photos, you can see Rich AG6QR demonstrating the HAMGPS app. Try them out!

With Rob NZ6J's good-humored leadership, we closed the meeting with a Fox Hunt, using directional antennas to locate a stealth radio that was hidden in a bush, silently transmitting away--until its battery died!

January VE Test Session Report

The Marin Amateur Radio Society held its first Volunteer Examination session of the new year on January 8th, 2022. One of the reasons the number of amateur radio operators grow each year is because of the dedicated work of Volunteer Examiners. **Ken AB6JR** and his team of Volunteer Examiners did a great job of testing new licensees and individuals upgrading their current licenses. Those who sat for their license exams on the 8th, had a seamless experience. It is extremely important to run a problem free, smooth testing session because the VE program has a great responsibility to both the examinees and the FCC. As always, Ken and his team did a brilliant job. Here is part of Ken's report:

Five applicants passed the Technician exam with one of those also passing the General exam. Three others passed the General exam for a total of four new General Class license holders. We had two applicants upgrade to Extra class, one from San Francisco and one from Novato. We only had one applicant fail an exam and it was for General.



Here's a photograph of January's Volunteer Examination test session

2022 VE Test Sessions

Ken AB6JR and his team of volunteer examiners has sent three dates to the ARRL for examination sessions. Those dates are Jan 8, April 9, July 9, and Oct 8, 2022. The testing sessions will start at 1:00 PM and will take place at the Marin Amateur Radio Society's clubhouse. Ken noted that the club is not restricted in the number of exam sessions taking place, meaning more could be added if need be.

There's been some discussion about possible evening examination sessions as well. Ken has also requested some information regarding do online exams, which would extend the scope of the VE team's abilities. Jim Saltzgaber KM6WWY, has volunteered to take the position of Assistant Lead Examiner, should anything happen to the lead examiner, Ken.

2022 is going to be a great year for the club's VE program! Again, a big thank you to Ken and his VE team for bringing new amateur radio operators in the fold. You can only grow interest in an endeavor by increasing the number of people involved. Anyone who has VE credentials and wants to help should contact Ken.

New Garage Installed at the Clubhouse

Reprint from the December issue: The gang's hard work at the clubhouse deserves an extension of this piece from last month's issue of the QSA-5. Considering the rain we've had over the last month, it's a good thing this even took place! There's been a great deal of activity at the MARS Clubhouse as we head towards getting back to business as usual in 2022. One important activity was the replacement of the garage used to house our mobile radio station. As always, our crack team of volunteers made quick work of the project. Thank you to everyone who participated. Here are some photographs from this event. Again, a big thank you to all who participated in the project!







Help Extend the SF Emergency Wireless Emergency MESH (Update)

Reprint from the December issue: The MESH network is not simply an idea being employed by our club for emergency communications. The MESH system was recently on the news in New York City where it's being used to provide affordable WiFi for city residents (note, this is a different MESH system than our club is using). MESH networks are becoming commonplace and easily available. The router needed for a MESH network connection can be found on Amazon. While the MESH system in New York City is being used for internet connectivity, it still serves an emergency service in that people can receive important information via the MESH system in times of disaster. Here's a link to a news story about the installation of a MESH internet system in New York:

Sick of Traditional Internet Providers, BK Neighbors Are Setting Up Their Own WiFi with NYC Mesh

<https://bkreader.com/2021/05/10/nyc-mesh-brooklyn-new-york-community-mutual-aid-pandemic/>

Because the San Francisco Emergency Wireless Emergency MESH is such an important project, we are once again reposting this writeup about it.

From Rob Rowlands: We have about 6 nodes working in Marin so far and need people with property in high places to host more nodes. The mesh depends on line-of-site (LOS) paths between nodes interworking and while we have a great site on Wolfback ridge above Sausalito, there are multiple places we can't reach, for example the Club house! If you have access to homes or buildings with great views, we may be able to mount a node, regardless of whether you want to connect (see the following page for a picture of the node).

http://meshmap.sfwem.net/map_display.php#11/37.8586/-122.3836



This is an example of a MESH Node

All it takes is space to mount a \$50 radio on a wall and connect it via ethernet cable to a power feed adapter. The radio node is about the size of a small loaf of bread and can be painted to appease your family! Call Michael Fisher (415) 519-2201 or Rob Rowlands (415) 849 5667 if you can help.

New Slack Chat Channel for MARS Members

Join our new Slack channel to chat about ham radio!

We still need to build up the club's Slack Chat Channel, so sign up: From Rob Rowlands: "Slack" is used extensively in industry and academia to network people, especially since Covid-19. MARS now has a Slack channel, "Marin Amateur Radio Society". Go to https://join.slack.com/t/marinamateurr-sq15924/shared_invite/zt-r9ocah4l-4G7PI8LAOssMMsnfIQ8QcQ. There is also a slack channel for the San Francisco Amateur Radio club that is highly active.

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 two stories come from Rob Rowlands:

Russian Forces Invading Ukraine Using Civilian (Baofeng) Radios: Invading Russian forces in the Ukraine are using civilian radios such as the Baofeng UV-82. Here's a link to an image from Twitter:

https://twitter.com/CITeam_en/status/1498233574834716674

Here is another link from Reddit with an image of captured gear, including a Baofeng UV-82.

https://www.reddit.com/r/ukraine/comments/t2mj0i/they_really_are_using_baofeng_radios/

The last mile and the longest! Communications challenges February 2022: An interesting piece on the James Webb Space Telescope and the great complexities involved in communicating across vast distances in space.

https://docs.google.com/presentation/d/1VyQ2NRQhzpRPd7-qcyWB9TwFjFNwdV3XANcGoaLZgY0/edit#slide=id.g1152e6bfe65_0_1

4 Companies Partner on High-Altitude Connectivity: Our first story was passed on to the QSA-5 from our own Rob Rowlands: This first piece is regarding collaborating on future high-altitude platform stations (HAPS)-based connectivity services as part of a future space-based wireless connectivity ecosystem. It's a very interesting idea. Thanks Rob!

<https://www.rrmediagroup.com/News/NewsDetails/NewsID/21279>

Tragedy in Petrópolis: Radio amateurs provide support: Amateur radio operators offer support during the Brazilian landslides.

<http://www.southgatearc.org/news/2022/february/tragedy-in-petropolis-radio-amateurs-provide-support.htm#.YhewoOjMLIU>

Amateur radio operators use analog tech for pandemic communications #COVID19 #HamR: An interesting piece about amateur radio operators using their radios to check each other's health status.

https://blog.adafruit.com/2020/04/15/amateur-radio-operators-use-analog-tech-for-pandemic-communications-covid19-hamr/?gclid=CjwKCAiA9tyQBhAIEiwA6tdCrOn6dSZgtclLRaBgkvG4QuKnNc5XVQT1CqMg2ae21NmrtPwUqW-haRoCG6YQAvD_BwE

Pirates Spammed an Infamous Soviet Short-wave Radio Station with Memes: This is a fun article for all you fans of classic cold war Numbers Stations:

<https://twiar.net/?p=7365>

Strong Winds Power Electric Fields in the Upper Atmosphere: From Ken AB6JR regarding electric fields in the upper atmosphere. Some interesting news from the NASA/Goddard Space Flight Center

<https://www.sciencedaily.com/releases/2021/11/211129172751.htm>

Is the Game Up for Baofeng in Europe? Yes, an article, thanks to Rob Rowland, about the radio many Hams love to hate. However, there's a review of the Baofeng GT-5R in the ARRL's QST January issue (page 39 Product Reviews).

<https://hackaday.com/2021/12/05/is-the-game-up-for-baofeng-in-europe/>

Senator Blumenthal Supports Amateur Radio at Senate Confirmation Hearing: This next piece just goes to show that amateur Radio has friends everywhere. Brought to you by the ARRL.

<https://www.arrl.org/news/senator-blumenthal-supports-amateur-radio-at-senate-confirmation-hearing>

Ham radio users reach across world: Our next story comes to us from The Vindicator newspaper in Pennsylvania. An interesting article about the power of amateur radio:

<https://www.vindy.com/news/local-news/2021/06/ham-radio-users-reach-across-world/>

ARDC Grants Will Expand Emergency Capabilities in Haiti and the US Virgin Islands: This article from the ARRL discusses how ARDC Grants will help build up emergency capabilities for radio communication on these Caribbean Islands.

<http://www.arrl.org/news/ardc-grants-will-expand-emergency-capabilities-in-haiti-and-the-us-virgin-islands>

Indian Radio Amateurs Help to Coordinate Disaster Relief in the Wake of Flooding:

This article comes from the ARRL regarding Amateur radio operators in India assisting in the relief efforts going on after massive flooding has left many parts of the country devastated:

<http://www.arrl.org/arrlletter?issue=2021-10-28#toc10>

FCC Regulatory News

As of February 23, the ARRL has not posted any new FCC news, so there are no new items in this month's column. Here are the current regulatory changes and FCC news as it applies to Amateur Radio. This section of the QSA-5 newsletter was introduced earlier this 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 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:

Two Radio Amateurs Appointed to the FCC Technological Advisory Council (TAC)

FCC Chairwoman Jessica Rosenworcel named two prominent radio amateurs among her appointments to the FCC Technological Advisory Council:

<https://www.arrl.org/news/two-radio-amateurs-appointed-to-the-fcc-technological-advisory-council-tac>

FCC Seeks Attorney-Advisor for its Mobility Division. The Federal Communications Commission (FCC) has [posted](#) an opening for an attorney-advisor in the Mobility Division of its Wireless Telecommunications Bureau in Washington, DC:

<https://www.arrl.org/news/fcc-seeks-attorney-advisor-for-its-mobility-division>

FCC Orders Amateur Access to 3.5 GHz Band to “Sunset” It doesn't look for amateur access to the 3.5 GHz band. While many amateur radio operators, especially those who hold new licenses, may not be familiar with this band, some older license holders (especially those with specialty interests) use it. Here is the article from the ARRL:

<http://www.arrl.org/news/fcc-orders-amateur-access-to-3-5-ghz-band-to-sunset>

The FCC Headquarters Relocates: The government organization that regulates amateur radio is moving their headquarters. Here's a piece on the move from the ARRL:

<http://www.arrl.org/news/fcc-headquarters-relocates>

ARRL Urges Members to Join in Strongly Opposing FCC's Application Fees Proposal: The ARRL is asking their members to oppose the FCC application fee proposal. Here's the article:

<http://www.arrl.org/news/arrl-urges-members-to-join-in-strongly-opposing-fcc-s-application-fees-proposal>

FCC Extends Filing Deadlines for Affected Louisiana Parishes and Mississippi Counties: Because of the devastation of Hurricane Ida, the FCC is extending filing deadlines for ham radio operator:

<https://www.arrl.org/news/fcc-extends-filing-deadlines-for-affected-louisiana-parishes-and-mississippi-counties>

FCC Grants 60-Day Waiver of Part 97 Data Rate Rules for Hurricane Relief Traffic: The FCC has granted a sixty-day waiver permitting radio amateurs handling hurricane relief communications on HF to use any protocol that would comply with the FCC's rules but for the symbol rate limits.

<https://www.arrl.org/news/fcc-grants-60-day-waiver-of-part-97-data-rate-rules-for-hurricane-relief-traffic>

FCC Grants Temporary Waiver to Permit Higher Symbol Rate Data Transmissions for Hurricane Ida Traffic: The FCC has granted an ARRL emergency request for a temporary waiver intended to facilitate relief communications in the wake of Hurricane Ida.

<https://www.arrl.org/news/fcc-grants-temporary-waiver-to-permit-higher-symbol-rate-data-transmissions-for-hurricane-ida-traffic>

FCC Application Fees Unlikely to Go into Effect Until 2022:

Last year, the FCC announced that they would be increasing the cost of Amateur Radio licenses. It has drawn both criticism and support from radio operators across the United States. Here's a link to the ARRL reporting on the increase.

<http://www.arrl.org/news/fcc-application-fees-unlikely-to-go-into-effect-until-2022>

FCC to Re-Establish Technological Advisory Council, Solicits Membership Nominations:

The FCC is seeking nominations for a chairperson and members of the Technological Advisory Council (TAC). Here is a link to the ARRL article.

<http://www.arrl.org/news/fcc-to-re-establish-technological-advisory-council-solicits-membership-nominations>

FCC Investigating Alleged "Jamming" on 40 Meters:

Amateur radio operators have reported that there is some sort of signal jamming on the 40-meter band. Here is an article from the ARRL that covers the story in greater detail.

<https://www.arrl.org/news/fcc-investigating-alleged-jamming-on-40-meters>

FCC Reaffirms Nearly \$3 Million Fine for Marketing Unauthorized Drone Transmitters: While not directly related to amateur radio, this article from the ARRL reminds consumers that manufacturers of any device that uses a radio frequency based control or communication system is regulated.

<https://www.arrl.org/news/fcc-reaffirms-nearly-3-million-fine-for-marketing-unauthorized-drone-transmitters>

FCC Seeks Comment on Potential Impact of Global Semiconductor Shortage:

This is an important read for anyone that is involved in electronics, or anyone who owns or is considering the purchase of “smart” electronic devices. There is a global semiconductor shortage, and the FCC is asking for commentary regarding this potentially serious problem:

<http://www.arrl.org/news/fcc-seeks-comment-on-potential-impact-of-global-semiconductor-shortage>

FCC Seeks Comments in Proceeding Involving 70 and 5 Centimeters:

This article from the ARRL was published on June 24th, 2021. The gist of the article is this: The FCC is soliciting a second round of comments regarding the use of portions of the 70cm and 5cm bands for commercial space entities. Here’s a link to the full article:’

<http://www.arrl.org/news/fcc-seeks-comments-in-proceeding-involving-70-and-5-centimeters>

First-Time Exam Applicants Must Obtain FCC Registration Number before Taking Examination:

As of May 20th, 2021, the FCC now requires that all examination applicants must provide an FCC Registration Number or FRN to the Volunteer Examiners at the testing site before taking the actual examination. Here's link to an ARRL article regarding this rule change:

<http://www.arrl.org/news/first-time-exam-applicants-must-obtain-fcc-registration-number-before-taking-exam>

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-720>

Solarham.com: This is a great resource for all things related to solar cycles and ham radio:

<http://www.solarham.com/index.htm>

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/>

ARRL:

Here is an update from the ARRL regarding solar flare activity. The article appeared on May 25th, 2021: Weekend Solar Flare Frenzy Could Spark Geomagnetic Storms:

<http://www.arrl.org/news/weekend-solar-flare-frenzy-could-spark-geomagnetic-storms>



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/>

DMR Radio

Creating a Codeplug

I've been using DMR radios for roughly one year. I was attracted to DMR because it allowed me to easily communicate, via radio, with people around the world. While there is no replacement for setting up an HF rig and antenna, it can be expensive and difficult, especially if you need to work with an HOA (homeowner's association). DMR gives amateur radio operators, especially those new to the hobby, an opportunity to rag chew around the globe!

In many ways, DMR is easier for global radio communication. You don't have to worry about mastering the use a bunch of knobs and buttons that fine tune your signal, as is the case with traditional, old-school HF rigs. However, the initial set up of a DMR radio can be daunting. You must first set up a WiFi hotspot and then create a codeplug. We examined setting up the WiFi connection last month. This month, we'll look at setting up a codeplug. What's a codeplug?

A codeplug is simply a name for a software file that gets uploaded to your radio. That's it. There is no great mystery to it! Well, in all honesty it is not as easy as conventional analog radio software used for a similar purpose.

Most new radios are programmed via a software program. You connect your radio to a computer, open the radio's software program and start entering frequency data. Each radio today comes with its own software for programming it. This can be a real pain if you own three or four radios, all with their own software program. Enter the CHIRP software program. CHIRP allows you to program a variety of radios from a single software program. CHIRP covers a large

number of radio brands and models. However, when program a DMR radio you need to use a DMR software program, which is a bit more complicated!

I had problems when I first tried to program my DMR radio. I'd follow a set of instructions that came with the software, and it wouldn't work! When I did a Google search, I discovered that plenty of other radio operators had trouble with the programming of their DMR radios. There's a consensus that codeplugs are difficult to create. The problem people run into is that there are a few additional steps to creating the codeplug and you need to follow those steps in a specific order. When you program an analog radio via a software program, it is very straight forward. All pertinent data is entered left to right, with one frequency per program line. DMR radio programming is similar, but you need to bounce back and forth between files and that is where things become seemingly complicated. It's in this back-and-forth action that things go wrong.

What I decided to do was to provide you links to the websites and webpages that I used to be able to program my DMR radio successfully. I suggest reading through them and watching the videos first, taking notes, and then start programming. Look at all the links, not just one. While the radio brands differ, the basics are the same.

Videos:

How To Write a DMR Codeplug in 2021:

<https://www.youtube.com/watch?v=T3sUntEVqCY>

How to program a DMR radio Codeplug:

<https://www.youtube.com/watch?v=VExx628R0DM>

How to Build your own DMR Digital Radio Code Plug - Ham Radio Q&A

<https://www.youtube.com/watch?v=h0ssXJUT458>

Articles:

Creating a DMR Codeplug

<https://www.jeffreykopcak.com/2017/06/11/dmr-in-amateur-radio-programming-a-code-plug/>

How to Build Your Own DMR Digital Radio Codeplug

<https://www.jpole-antenna.com/2018/02/20/how-to-build-your-own-dmr-digital-radio-code-plug/>