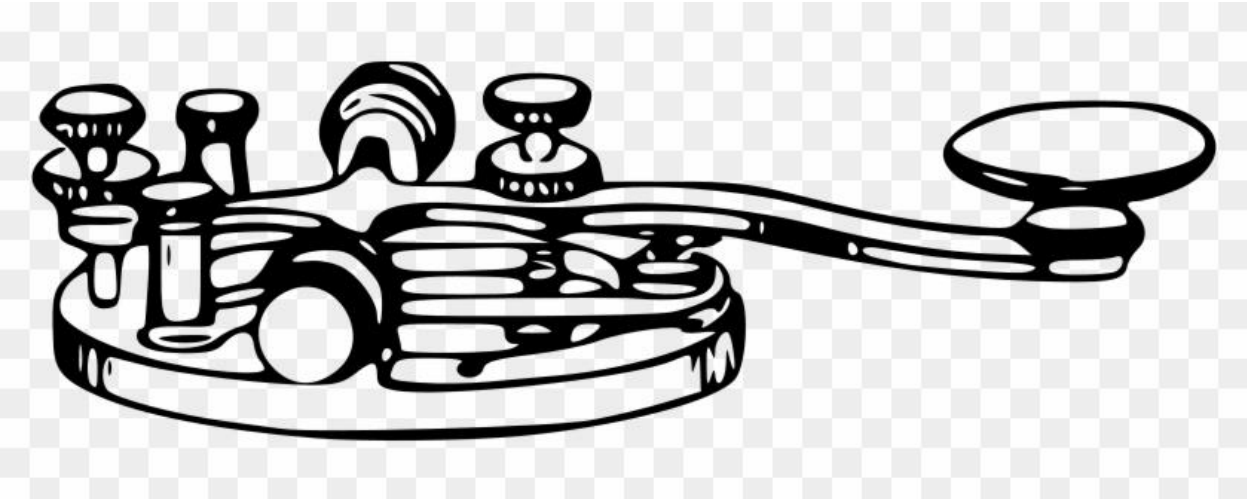
QSA-5

Marin Amateur Radio Society Monthly Newsletter

Established 1933 **July 2024**



When all else fails, you can count on Amateur Radio

From Our President:

Field Day was a blast this year. Our site at Area 1 of Stafford Lake park was both scenic and easy to access. It was a pleasure to see a group of folks come into the park, set up radio stations, publicity info, food services, and electricity quickly and safely. This was the second time in recent history that we had a Field Day station run by MARS without or earlier partner Redwood Empire DX Association with their organization and experience. We look at Field Day as an event to meet people face to face, as well as improving our readiness to get on the air in unexpected circumstances. The contest part is secondary. That said in 2023 we logged 222 contacts while in 2024 we managed 497 contacts, in spite of some technical glitches with our logging software.

We as a club owe a great debt of gratitude to everyone who helped out, and I will call out a few specific names, and I will omit some folks who contributed and also managed to slip out of my slippery mind. If I left you out, it was not my intention but rather my forgetfulness. In no particular order Dan Greeley KN6PNA, Scott Pasternak KN6ZDM, Jason Sloan KN6ROS, Dan Sobel N6HLZ, Mark Klein KM6AOW, Andy Briggs KF6ZSF, and Milt Hyams KM6ASI.

I particularly want to thank the folks who made QSOs: Ed Essick K6ELE, Michael Fischer K6MLF, Marc Bruvry KG6VMT, Geroge Crouch KK6UNO, Milt Hyams KM6ASI, Victor Denisov N6DVS, Marilyn Bagshaw N6VAW, Jerry Foster WA6BXV, John Woo WA6CR, and Louis Membrila WA6LM. If I missed you in this list, your QSOs are not in the log. If you have a record of your QSOs please send them to me as soon as possible.

I need to call out a few folks for service above and beyond. Dan Sobel N6HLZ for getting stuff done through the whole process, Gerald McCarthy W6NOV for a lot of work and keeping an eye on us for safety, Curtiss Kim KM6GUY for being our Public Information Officer and reporter. Cal Anber for food services, Jerry Foster WA6BXV for all parts of the endeavor and his Comm Trailer, Jim Saltzgaber KM6WWY who kept reporting to me that he had just finished some job that had entirely slipped my mind, and last but not least Steve Toquinto KB6HOH who put the whole thing together and without whom Field Day would not have come off.

I also need to thank the staff at Stafford Lake Park, particularly Ranger Adam Craig, Rangers Reilani and Kevin and the people of Marin for such a lovely spot for us. Thank you all including everyone I omitted, for making Field Day a success.

I can't help but remind you all that we are still looking for your support of our Paint the Clubhouse Fund. We are at $8690 which is only an S4. Please help us out at https://w6sg.net/donate-full-width-page.php

Lastly there will be no general membership meeting for July due to the 4th of July holiday. Have a safe and sane Fourth.

73 de wa6uds

From the Editor:

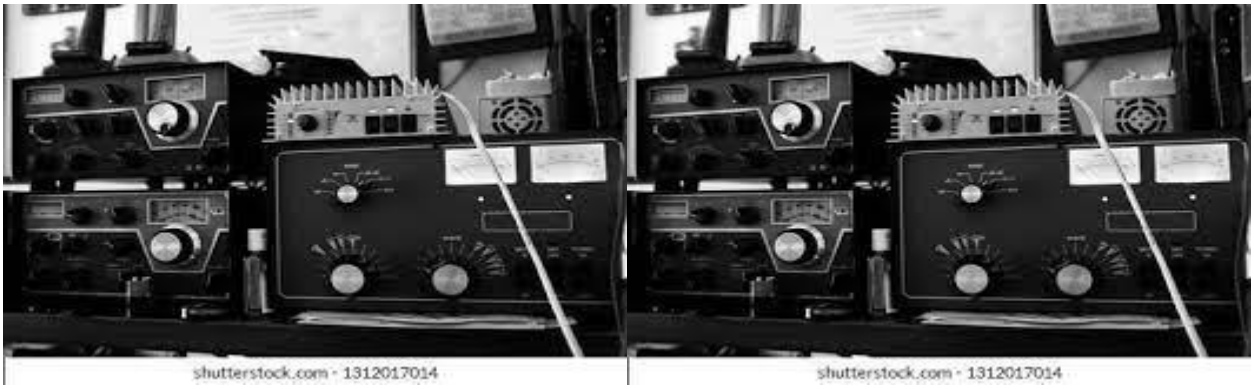
Greetings everyone! Happy Independence Day! We made it through Field Day 2024 with flying colors. Unfortunately, I was struck with Covid and still tested positive the day before Field Day. I was truly sorry to have missed the club's event. However, I spent a lot of time on the HF bands making contacts. Thankfully, our ace wordsmith, Curtiss Kim, was able to cover Field Day for the QSA-5. Thank you so much Curtiss. Thanks to Milt as well for his North Bay Critical Mass report.

I received news of the passing of **Alan Bowker WA6DNR** and there is a subsequent club event planned (see details in this month's QSA-5). While I enjoy being older, the one thing I don't enjoy is the more frequent passing of people I know. When I was younger, I had an aunt who started every telephone conversation with "so and so died." I assumed my aunt was simply a morbid individual and thought her a bit strange. I now see why she was that way! As we grow older, we lose those we came up with in the world. I think we need to hold onto our friends tighter and make more of an effort to get to know people. Life's too short.

Well, that was a bit morbid (especially after I just complained about my aunt's behavior). Let's get back to amateur radio. The club's VE team will be holding the next exam session on July 13th, our second of four testing sessions. Part of keeping amateur radio alive is ensuring that we get newly licensed people involved, especially younger folks. The Marin Amateur Radio Society does just that.

I've been reaching out to clubs around the country to see what they do in terms of events and the promotion of amateur radio. Over the upcoming months, I'll be reporting on some of the interesting ways in which radio clubs promote radio arts. With that said, thank you to the usual suspects for making the QSA-5 what it is. Happy July everyone!

QSA-5Editor@w6sg.net



New Members:

Christopher Slowe KO6EET - Corte Madera

Joseph Pascual KO6EFK - San Francisco

Bo Pitsker KO6EEW - San Francisco

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

Marin Amateur Radio Society

Board of Directors Meeting

6/13/2024

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

Attendance:

President: Curtis Ardourel WA6UDS

Director: Richard Cochran AG6QR

Director: Ed Essick K6ELE

Director: Steve Toquinto KB6HOH

Secretary: James Saltzgaber KM6WWY

Director: Jeffrey Young KM6Y

Treasurer: Bruce Bartel N6VLB

Trustee W6SG: Marc Bruvry KF6VNT

Trustee K6GWE: Brian Cooley K6EZX

Members Present: Milt Hyams KM6ASI, Dan Sobel N6HLZ, Skip Fedanzo KJ6ARL, Michael Ham, Rob Rolands NZ6J, Charles Benet AI6TT,

Adopt agenda W/amendments: Add Solar Panels Discussion in New Business as requested by Steve Toquinto -**MSC** without objection.

Approve minutes of: 9 May board meeting as published in QSA-5 -**MSC** without objection.

Secretary's Report/Communications: Nothing that is not on the agenda.

Treasurer's Report: Rent has been paid with increase. Report in QSA-5 **MSC** without objection.

Committee and other Reports:

1. **Membership** Curtis Ardourel: Current membership is 145, same as last month, 88% of end of last year.
2. **Facilities** Skip Fedanzo: Nothing major to report except toilet tank flapper valve, replaced by Rob Rolands. Jim S KM6WWY- Suggest we make a close-up checklist for the club house.

3. **VOAD/RCV** Skip Fedanzo: VOAD Executive Director position (held by Adriana Rabkin) funding has been declined by Marin Community Foundation, the

original funders of the position. Conjecture is the newspaper was that it Office of Emergency Management (OEM) should be taking or that responsibility. Milt and Skip both monitored the DC3 (Disaster & Citizen Corps Council) meeting where OEM was making presentations, and nothing was mentioned regarding VOAD and we don't know what its future might be. RCV has agreements with and will continue serving CBOs until further notice. They are our clients and primary customers, the people in the organizations that we serve. Skip is optimistic that we will gain a pathway into the EOC via amateur radio or some reasonable substitute in the event of an emergency and our services are needed. RCV does not have a direct reporting responsibility to OEM or OEC, we are sponsored by the Department of Public Works (DPW) at Marin County. Unless they tell us to disappear, we are still in business. It is presently unclear to whom we would be delivering messages from the field when we are deployed.

4. **Technical:** Milt: **Portable Repeaters:** During the West Marin RCV Exercise we tested portable 2m and 70cm repeaters. Both worked well from Mt. Vision; however, they did not reach down to Stinson Beach as hoped. **Repeaters Donation** - A massive amount of repeater equipment has been received from Paul Mason. This equipment will be evaluated by the technical committee as soon as possible and disposition will be determined. Quality and condition is unknown. Some is commercial equipment and may be tunable on Ham bands. We will need to meet with Paul Mason for training on these repeaters. The usefulness of this equipment is undetermined at this point. Space is at a premium in the clubhouse. Paul Mason requested a Letter for the donation of the repeaters. Curtis will send him a donation letter; however, IRS does not allow the recipient to set the value of the donation. **Linking of UHF Repeaters** – Dan Healy and Milt met with Marin County DPW regarding the linking of the county's ham VHF repeaters. We have received communications from Randy Larson, Precision Wireless of Windsor. He is recommending IP linking for the UHF repeater system. His firm has expertise in IP linking systems. This may be contra to the "when all else fails" (including internet) emergency philosophy. Rich Cochran has been recruited onto the technical committee as IT liaison, and he does favor IP linking. County DPW feels that it may be the best cost-

efficient way to link them. We will need to get cost estimates, but Milt wants to be certain that a proposal would be something that we could do. **Packet station previously at Red Cross** – Sean Peisert is an active member of the San Rafael Racket Club, in west end up on the ridge overlooking Miracle Mile. It has good elevation and reach towards Ross Valley and San Rafael. This will be installed at San Rafael Racket Club. Steve Toquinto KB6HOH will put the station in a case, Sean is running an antenna like an X-50 by the racket club board of directors for approval. Good progress is expected in the next few weeks.

5. **Public Service:** Rob- Not present, no report.

6. **VE Testing:** Jim- Next Session 7/13. One applicant has applied, and Khal Anber has indicated his intention to test on the 13th. We also have a VE Examiner from Sonoma County has volunteered to work our sessions. Steve KB6HOH asked if I have heard from Luis Membrila WA6LM who has recently become a VE Examiner. I have not but will contact him.

7. **Comm Truck:** Jim- Registration is paid but needs smog before tags can be issued. The engine has been missing, and changing the spark plugs was recommended as a possible fix. Rob Rolands took the van for a smog test, but it failed. He then took it to a garage; we have received an estimate of $1,100.00 to do tune up and service to run well enough to pass smog. This was within the Comm Van budget so both Curtis and I authorized the repair so that it would be available for use on Field Day. There are other issues to be assessed and repaired. The X-50 dual band antenna on the mast was damaged. I have ordered and delivered a replacement to Rob. The console dual band radio has an antenna problem, and the back-up camera is not working. These items will be checked after Field Day. I asked Bruce if he had the Comm Van budget item as a separate financial category so we could track these expenses, and he said he did. Bruce did question the $1,100 estimate as possibly being excessive. Milt, Curtis, and Jim affirmed that this seemed to be a reasonable amount for the work.

8. **NBAM:** Bruce- Well, good news and bad news. We have received a $33,000.00 grant for NBAM. Non-profits need to receive more funds via individual donations than large organizations. Our apartment rental income is also a consideration in determining non-donation income. We must offset these funds so we don't lose our non-profit status. Working with our accountant to do correct filings for non-profit status. Jeff noted that we need do a new budget and spending plan for the Amateur Radio Digital Communications (ARDC) foundation's NBAM grant and have the MARS board approve it, so it can be presented to ARDC. Curtis and Bruce affirmed that they would do the budget and spending plan. Skip Fedanzo questioned whether the unused funds could be returned with/without penalty. Jeff replied that the NBAM steering committee had discussed the possibility of returning the grant money. Jeff then asked ARDC, and their reply was that there was no reason to return it. However, if we cannot come up with a viable plan and budget, then we should return it. New NBAM steering committee member is Dan N6HLZ. Plans include Sonoma County, and Sacramento OES. On Tuesday the 27th, will be meeting with emergency planners in Sonoma to see how we might better work together and serve each other. Another focus is to improve communication between Marin Community Based Organizations (CBO's). A trial with Community Action Marin and their kitchen at ground level, that was not successful. Rooftop equipment may be more successful but will take more effort. Installed mesh system up at North Marin Community Center pointing to Big Rock. Big rock has not been online, and Bob Salter has been consulted. Mark Kein has been extremely helpful, and Ken Brownfield is assisting with NBAM with background info.

9. **Field Day:** Steve- Last Field Day Committee meeting was held last night – 6/12. Curtis has put out email blast today to QSA-5 mailing list for volunteers to sign up. Steve has been announcing it on the Sunday MARS nets and the Tuesday RACES net. The loading of clubhouse equipment will be Friday 6/21, Dan Greely KN6PNA will be dropping off his trailer at the clubhouse to transport equipment to field day. Khal Anber will be getting food together for the event.

Curtis has three laptops with updated N1MM logging software that have been tested with an Icom IC-7300 and will have documentation available at Field Day. Michael Fischer has laminated the band pass filter instruction placards as well as band plan placard. We would like to have more people sign up to participate and come out and join us. Additional emails will be sent out, including the Thursday lunch group email list. You do not have to be a MARS member. Jim S.- Anyone wanting anything from the clubhouse at Field Day, please let me know what that is.

10. **Picnic:** Steve- He has been in contact with Forest Murphy from Forest Fire BBQ and has received menu choices and prices. We will need to decide upon a menu and get board approval at least two weeks before the picnic. We will discuss the menu and other picnic details after Field Day.

11. **Bylaws:** -Curtis- Nothing this month.

Old Business:

1. Paint the Clubhouse- Curtis A., Donations equal $8690 to date, hoping for additional donations.
2. Clubhouse cleaning- Jim S. – as requested, has asked our insurance broker about insurance for cleaners that we hire. They recommend that we either purchase workers comp. coverage on them, or preferably, have them provide a certificate of insurance with workers comp coverage. Our insurance only covers people who would be injured
3. Revitalizing Babble Class - Nothing new this month.
4. Donations Committee – Rob, Steve, Milt, Richard, Curtis – Will schedule a first meeting.
5. Expanding the NBAM locker – Current locker is 4’ X 8’ if the locker is extended across the back wall an additional 4’ X 7’ could be added. NBAM steering committee will provide a proposal for expanding the storage space.

New Business:

1. iGATE antennas for Barnabe $259.90 – These are for Public Service and within the Public Service existing budget. No action required. Rob has submitted the receipt, and he has been reimbursed for the antennas.
2. Clearing foliage, especially bamboo in clubhouse back lot – Gerald McCarthy recently noted to Curtis that the weeds in the back lot need clearing. Rob will ask his gardener to get a quote to do it. The discussion noted that there is bamboo from the adjacent lot and determined that removing the bamboo may be a larger issue.
3. Solar Panels- Donated solar panels are at clubhouse (Added agenda item)- Steve T. inquired about how the disposition of the solar panels and equipment will be determined. Following discussion, it was decided that the Donation Committee will be responsible.

Good of the Order-Nothing noted

Executive Session- Not Required

Adjourn – MSC 2110 hrs. (9:10pm)

Next Regular Meeting 2 August 2024 – There will be **no July 2024 meeting** due to Independence Day Holiday

Next Board Meeting 11 July 2024

Marin Amateur Radio Club

Balance Sheet Comparison

As of July 2, 2024

	TOTAL	
	AS OF JUL 2, 2024	AS OF JUL 2, 2023 (PY)
ASSETS		
Current Assets		
Bank Accounts		
B of A Facilities Account - 8795	5,170.90	5,948.61
B of A General account - 4328	58,383.26	48,822.68
Cash on hand		
MESH Grant (deleted)	0.00	500.00
Total Cash on hand	**0.00**	**500.00**
CD	0.00	0.00
Money Market	0.00	0.00
VE Session Cash	0.00	-129.00
VE Session Cash Received	0.00	
Total Bank Accounts	**$63,554.16**	**$55,142.29**
Other Current Assets		
Uncategorized Asset	385.00	-95.00
Total Other Current Assets	**$385.00**	**$ -95.00**
Total Current Assets	**$63,939.16**	**$55,047.29**
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	**$122,922.16**	**$114,030.29**
LIABILITIES AND EQUITY		

Liabilities		
Total Liabilities		
Equity		
Opening Balance Net Assets	124,400.00	124,900.00
Retained Earnings	13,748.91	-20,412.57
Net Income	-15,226.75	9,542.86
Total Equity	**$122,922.16**	**$114,030.29**
TOTAL LIABILITIES AND EQUITY	**$122,922.16**	**$114,030.29**

Marin Amateur Radio Club

Profit and Loss

January 1 - July 2, 2024

	TOTAL	
	JAN 1 - JUL 2, 2024	JAN 1 - JUL 2, 2023 (PY YTD)
Income		
Christmas Party Income	640.00	
Donations	3,350.00	1,549.17
Dues	8,920.51	7,044.75
Interest Income		792.77
Public Service Refund	168.15	450.00
Rent	18,300.00	15,600.00
Unapplied Cash Payment Income	385.00	
Total Income	**$31,763.66**	**$25,436.69**
GROSS PROFIT	**$31,763.66**	**$25,436.69**
Expenses		
Accounting	1,360.00	980.00
Awards		299.99
Car & Truck	2,224.89	2,306.02
Car & Truck Gas	88.02	194.19
Total Car & Truck	**2,312.91**	**2,500.21**

Christmas Party	2,970.23	
Contractors	21,109.00	
Field day	802.24	156.97
Food	68.20	
Garbage	297.00	287.04
Housekeeping	448.65	
Insurance	1,698.50	1,683.00
Comm Van Insurance	2,097.84	2,444.00
Total Insurance	**3,796.34**	**4,127.00**
Meals	76.86	
Office Supplies & Software	18.00	
Other Business Expenses		104.93
Public Service Expense	3,960.47	1,328.83
Reimbursable Expenses	20.00	2,448.73
Repair & Maintenance	34.06	
Repeater	2,138.67	1,567.50
Taxes & Licenses	4,099.67	25.00
Utilities	2,218.54	2,118.68
VE Session		129.00
Water	757.84	319.95
Total Expenses	**$46,488.68**	**$16,393.83**
NET OPERATING INCOME	**$ -14,725.02**	**$9,042.86**

Marin Amateur Radio Club

Profit and Loss
January 1 - July 2, 2024

	TOTAL	
	JAN 1 - JUL 2, 2024	JAN 1 - JUL 2, 2023 (PY YTD)
Other Income		
MESH Grant Income		500.00
Total Other Income	**$0.00**	**$500.00**
Other Expenses		

MESH Grant Disbursement	501.73	
Total Other Expenses	**$501.73**	**$0.00**
NET OTHER INCOME	**$ -501.73**	**$500.00**
NET INCOME	**$ -15,226.75**	**$9,542.86**

MARS Club News

Alan Bowker WA6DNR Celebration of Life

Louise Fay and the Marin Amateur Radio Society Invite you to meet and remember our friend and mentor

On Sunday 14 July 2024 we will gather at the Marin Amateur Radio Society at 27 Shell Road, Mill Valley California.

The doors will open at 11:30 with the celebration beginning at noon and refreshments served at one. Alan was the kind of man who both charmed you and encouraged you. We invite you to share your thoughts and a story or two about your experiences with him. The setting is informal and a place he visited often. We do need to know how many folks will attend so please let us know by emailing us at RSVP@W6SG.NET If you have questions you can send them there as well.

I you cannot attend in person, we will have a zoom meeting. You can join at
https://us02web.zoom.us/j/87978537733?pwd=YnWZtATl5anXfzAEZc5BuLXMUN41T5.1
Meeting ID: 879 7853 7733
Passcode: 969721

2024 Field Day Review

While everything is still fresh in your mind.... Steve Toquinto KB6HOH and Curtis Ardourel WA6UDS want to get your feedback

From everything I have heard Field Day went well. We were certainly better organized, and our location was easier to navigate. That all being said, it makes sense to, while memories are fresh, think about how we can do better next year. Fear not, there will be a next year. The same location at Stafford Lake is already reserved for us.

If you participated in this year's Field Day which includes everything from being on the committee to just showing up to visit please join us for a review on zoom on Wednesday 3 July at 7:00 pm on zoom:

Join Zoom Meeting
https://us02web.zoom.us/j/85476295881?pwd=BiMFfoly2TC70RhXjXIMkAfDl7XqzQ.1

Meeting ID: 854 7629 5881
Passcode: 590243

We want to hear from you! We also don't want to take up too much of your time. Think about the following topics:

1. What did you like about our Field Day?
2. What went well?
3. What did not go well or work as expected?
4. What would you suggest to make a better Field Day in 2025?

Since note taking in real time is a challenge we will record the session so we can review your comments carefully.

Once again, thank you for participating and I look forward to seeing you again on Wednesday even if just in a little zoom rectangle.

73 de WA6UDS
Curtis Ardourel
President and Membership Chair
Marin Amateur Radio Society
wa6uds@w6sg.net

2024 Field Day

MARS Field Day June 22nd & 23rd, 2024

From Curtiss Kim: “W6SG calling CQ on 40, Field Day.” And with that MARS Field Day 2024 was off and running from Stafford Lake Park in Novato. The annual event is billed as a nationwide contest put on by ARRL to see which amateurs can log the most contacts in a 12-hour period. “It’s a contest, but that’s not why MARS participates,” according to Curtis Ardourel, WA6UDS, Club President. “It’s an exercise to get all

of our equipment out in the field to learn stuff and second, it's a social event to get together, meet each other and socialize." Participants set up three locations in the picnic area in an effort to make contacts on three different frequency bands. The club's comm van sat on one side of the grassy area in the picnic location, the comm trailer on the other side. A third station was near the picnic tables and a GOTA (Get On The Air) rig was also put into play. In addition, operators also set up an AREDN MESH network station. Simply put a mesh system is a private, self contained wireless computer network. It's designed to be up and running should standard internet systems fail. Anything that can be done on a regular internet network can be done on this private Wi-Fi network. Club members were treated to a pizza lunch and a hot cooked dinner and breakfast the following day. At one point, younger club members were reporting three field day contacts a minute. The event was organized by Steve Toquinto, KB6HOH. "It takes a lot of good effort and people coming together to pull this thing off" according to Toquinto. Ask to compare last year's Field Day event with the most recent edition, the organizer said , "we were much better prepared." The amateur operator cited the use of band pass filters this year which help eliminate interference between the competitors. To make it easier as operators moved from station to station, each location utilized an ICOM 7300 transceiver mated to a laptop with logging software. And yes, a handful of hardy souls spent overnight logging contacts. As an added bonus Critical Mass was held on site giving new operators a chance to learn how to work HF frequencies. When the reviews were tallied the event garnered a hardy "job well done". See you next year.

Field Day pictures by Michael Ham, WA6LCN and Curtiss Kim, KM6GUY


HAM RADIO
WORKS


PIZZA


2024 MARS Public Service dates

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

1. **Kaiser 5k and half marathon: SFARC Sunday, February 4, 2024**

DMR Radio required DMR Repeater (W6PW) Digital channel RX:444.225, TX:449.225 Color Code (CC): 1 Timeslot (TS): 2 Talkgroup(TG) 9

2. Public service briefing and lunch: Saturday April 6, 2024,1100 to 1400 hrs, Location: to be decided

3. Ridge to Bridge: Saturday, April 14 Requesting 16 MARS volunteers:

4. MCBC Jane Fondo Saturday April 27 2024 Womens mountain bike event
18 at aid stations, 3 accompany SAGs, 1 moto, 1 biker
Don Magdanz, Event Organizer at Net Control

5. Miwok 100K, Saturday, May 4, 2024
18 at aid stations, 3 hikers

6. Dipsea: 113th Annual Dipsea will be run on Sunday, June 9th, 2024 7am-2pm 20 needed
(Stinson/County CommTruck)
Don Magdanz, Finish Truck and Information Tent

7. Field Day: June 22/23, 2024 Stafford Lake Park 1800z (11am) to 2100z (2pm Sunday) http://www.arrl.org/field-day-rules

8. MCBC Dirt Fondo: Saturday, July 20, 2024, 6am - 3pm 18 needed (/Fort Cronkhite/CommTruck)
Don Magdanz, Event Organizer at Net Control

9. San Francisco Marathon **Saturday/Sunday July 27-28, 2024**

10. **Marin Century**: **Saturday August 3, 2024,** 5:00am-8pm 34 needed (Stafford Lake/CommTruck) Don Magdanz, Event Organizer at Net Control

11. Double Dipsea: **Saturday August 24, 2024**, (Comms Organizer TBD) 6:30am-1:30pm 18 needed (Stinson/CommTruck)

12. MCBC Adventure Revival. Saturday, September 21, 2024 7:30am-3pm. 15 needed. (San Geronimo former golf course/CommTruck?) Don Magdanz, Event Organizer at Net Control

13. ZBC Dipsea Hike: Saturday, September 21, 2014 (Comms Organizer TBD) 7am-2pm, 8 needed (Old Mill)

14. Breast Cancer Prevention Partners Peak Hike: Moved to Pacifica in 2023, no MARS radio support required.

15. MDARC Pacificon ham convention San Ramon Marriott **October ? 2024**

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

North Bay Critical Mass Report

From Milt Hyams KM6ASI: The June North Bay 2 Meter Critical Mass was held on June 23rd in conjunction with the MARS 2024 Field Day at Stafford Lake. Approximately 14 members participated in the training session which focused on the HF contest activities. A number of those attending the class had spent the better part of the two-day Field Day working the HF bands. As you know, Critical Mass is usually devoted to training new hams and hams interested in FM net communications in support of our Public Service events. This session was intended to introduce those hams who normally do not work HF to the HF spectrum and give them a taste of contesting.

The session opened with introductions and the usual Phonetic Phun training on use of the phonetic alphabet. Michael Fischer, K6MLF, and Milt Hyams, KM6ASI followed with a short class on HF operation and HF contesting procedures and etiquette, followed by a tour and introduction to each of the three club stations operating in the contest.

Of those attending Critical Mass, four members had never worked HF before, including one who had only a Technician class license. With Milt acting as control operator, all four got on the air and established contacts with contestants throughout the west. The training exercise was a success and all those participating were excited at having expanded their amateur radio experience.

RCV News

We're leaving this in from last month's issue for any new club members interested in the great volunteer group: This article was written by Curtiss Kim, who is a

member of the RCV. Thank you, Curtiss, for this insightful piece on the RCV (and all your many contributions)! This article is a holdover from last month's issue of the QSA-5:

Members of the Radio Communication Volunteers met across the table with representatives of the various Marin County community-based organizations they will partner with during a major incident. The March workshop was the third such meeting in as many years. RCV is still considered a pilot program designed to

provide emergency communications to organizations that offer support services to various communities in the county. The agenda included practice activation scenarios, turnaround response times and expectations from both the RCV members and the community-based organizations. “Everybody knows what the right thing is to do. It’s nice to have a reminder once in a while. The intent of these workshops is to have a consistent annual touch, “according to Tom Jordan, KG6TCM, Petaluma’s Emergency Manager who served as the meeting’s facilitator. There are currently eight community-based organizations taking part in the program. They include Canal Alliance, Community Action Marin, Homeward Bound, Marin County Cooperation Team, SF-Marin Food Bank, San Geronimo Valley Community Center, North Marin Community Services and West Marin Community Services. RCV members are not expected to be first responders when a major incident or disaster strikes Marin.

According to Adriana Rabkin, Director of Marin’s Voluntary Organizations Active in Disaster (VOAD) RCV members will be officially called out once the situation

has been assessed. “Everybody was very engaged. I think they learned a lot about the process. They understood how they respond in a disaster, when their RCV operators will show up, what types of messages they might want to pass, and how we are all connected,” according to Rabkin. Each participating organization along with their respective RCV members shared their concerns and criticisms during the three-hour meeting. “I think these meetings are good and I see the need to bring these lessons learned immediately to key staff members so they will know how to communicate effectively with the RCV operators,” according to Vivian Alatorre, Office Manager for Canal Alliance. According to Michele McCourtney, Director of Operations for the San Geronimo Community Center, “these meetings are good. I think practice and collaboration and having a cadence is very important for the actual event that can happen.” Other service agencies have shown interest in becoming part of the RCV program and more amateur radio operators are encouraged to volunteer. According to Skip Fedanzo, KJ6ARL, the RCV Lead Operator, “this is a pilot program because Marin County has never been impacted by a major disaster in the lifetime of many Marin residents. We’re not in a hurricane belt, tornado alley, or flood country and we’ve hadn’t had to build a complete response recovery organization.”

1 Tom Jordan, KG6TCM

2 Adriana Rabkin, VOAD

3 Skip Fedanzo, KJ6ARL

Any license amateur radio operator who would like to take part in RCV can contact Skip Fedanzo at KJ6ARL@arrl.net

ACS/RCV Mission Statement

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

Capabilities: Proven ability to establish and maintain radio communications between OA EOC/VOAD and CBOs during exercises including the three annual

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

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

1. Operators – A corps of trusted radio operators with: (1) basic skills and a commitment to establishing radio communications when needed; (2) ongoing participation, training, and practice in accurately passing message traffic using a variety of basic analog and specialized digital means.

2. Mobile stations – Individual operators routinely test and maintain their own radio transceivers and related equipment including power supplies, which can be deployed to locations otherwise lacking reliable communications with the EOC/VOAD or between two or more CBOs.

3. Relationships – Establish on-going relationships of familiarity and trust between RCV operators and with key staff of served agencies, including EOC and VOAD.

VE Examination News

The Marin Amateur Radio Society's VE Program is an extremely important component of amateur radio. The national program MARS is a part of allows member radio clubs to administer licensing tests on behalf of the FCC. What this means to people getting into ham radio is that there are more test locations and a more flexible schedule for taking the license exam. Jim Saltzgaber, KM6WWY, is the Lead VE. There has been some disruption to the VE services at the ARRL. Here's an article from the ARRL:

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

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

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

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

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

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

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

October 13th Fourth session of the year.
All exams are held at the MARS clubhouse. Check-in is 1:00pm. Information on Exam Registration is at: Register for the Exam | Marin Amateur Radio Society (w6sg.net)
The application form can be found at: MARS VE Exam Application Form

Jim S. KM6WWY

From Curtiss Kim, regarding the April 2024 testing session:

VE Reminder

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

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

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

Budget Friendly Radios

If you really want an inexpensive HF rig that is portable and does some amazing things, then the Xeigu G90 is for you. I own one of these and I am stunned at how well this worked out of the box. This is my new favorite HF rig!

The Xeigu G90

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

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

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

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

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

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

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

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

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

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

Other features:

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

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

Xeigu G90 Review and Unofficial Field Test

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

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

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

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

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

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

The JPC-12 Vertical Antenna

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

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

I have seen many YouTube videos with POTA and SOTA operators using this antenna with great results. I wasn't disappointed. However, there is a bit of a learning curve with this type of antenna. With wire antennas, there are less compromises to be made. With ¼ wave vertical antennas, you must work around the compromises which means making multiple adjustments to find the sweet spot. The other issue has to do with radials. The JPC-12 comes with a ribbon cable you can split into individual radials (ten total). The cable is 18.5 feet long. The radials work great, except you must have space for them (37 feet from one radial tip to the other). I was able to do some research and, discovered that 15 radials at 2.5 meters (8 ½ feet) gave me just as good a signal. This information came from Callum who is the head big wig at DX Commander antennas.

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

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

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

Ham Radio News

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

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

https://lufkindailynews.com/news/local/ham-radio-operators-showcase-emergency-readiness/article_976174fe-f0b1-527d-a56a-4d2dd1614c0b.html

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

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

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

https://www.arrl.org/news/arrl-systems-service-disruption

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

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

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

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

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

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

World Amateur Radio Day is April 18, 2024: Its that time again everyone, so set your calendars!

https://www.arrl.org/news/world-amateur-radio-day-is-april-18-2024

Amateur Radio Operators Needed for Help with Solar Eclipse Project:

https://www.arrl.org/news/amateur-radio-operators-needed-for-help-with-solar-eclipse-project

FCC Wants to Bolster Amateur Radio: The FCC will vote in November on a plan to remove outdated technical restrictions.
https://www.radioworld.com/news-and-business/business-and-law/fcc-wants-to-bolster-amateur-radio

Ham Radio May Speed Up Soon: An interesting piece from a online journal dedicated to advances in technology.

https://hackaday.com/2023/10/29/ham-radio-may-speed-up-soon/

Ham radio operators practice for emergencies, build community: A nice article regarding the importance of amateur radio.

https://www.southernminn.com/faribault_daily_news/news/ham-radio-operators-practice-for-emergency-build-community/article_c305405c-1446-11ee-9e1c-17bef3ed0921.html

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

FCC Regulatory News

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

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

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

FCC to Require Two Factor Authentication for CORES Users: It seems that the powers that run the big show have found yet another fee to tack on to the amateur radio operators ability to operate:
https://www.arrl.org/news/fcc-to-require-two-factor-authentication-for-cores-

users

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

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

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

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

FCC Grants an ARRL Emergency Request to Permit Higher Data Rate Transmissions for Hurricane Relief Communications: The FCC has granted an ARRL emergency request for a 60-day temporary waiver intended to facilitate amateur radio emergency communications for hurricane relief.

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

Propagation News

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

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

https://www.arrl.org/news/the-k7ra-solar-update-834

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

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

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

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

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

SunSpotWatch.com:

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

http://sunspotwatch.com/

DIY Radio References

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

Microcontrollers and Single Board Computers: With the advent of the Arduino micro-controller board, the Raspberry Pi (a single board minicomputer) and Texas Instrument's Launchpad (also a single board microcontroller), Amateur Radio

enthusiasts can build both accessories, such as antenna tuners, and fully functioning transceivers. I have spent the last year at the University of California studying these devices, learning how to use them and incorporate them into electronic projects. I was able to build two HF receivers based on the Arduino and Raspberry Pi devices. The best news of all is that these devices are inexpensive! I encourage you to check these websites out!

Arduino: The Arduino microcontroller board was the first to popularize these devices. They are inexpensive and can be used for a variety of radio related projects. I will include some links to radio related Arduino projects in the next issue of the QSA-5. Here's a link to the Arduino homepage:

https://www.arduino.cc/

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

https://www.raspberrypi.org/

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

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

Tools for electronics: It is a lot easier to build or repair your electronics if you have

the right tool. Paperclips and duct tape are not the solution to everything (unless you are McGyver – hopefully, you got the reference). Therefore, we added some links to suppliers of electronics tools.

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

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

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

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

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

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

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

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

https://www.electronicplus.com/

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

https://www.digikey.com/

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

https://www.jameco.com/

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

Antenna building basics:

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

Good Reference for several antenna types:

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

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

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

Instructions for a VHF/UHF dual band antenna:

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

Build an HF dipole antenna:

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

Introduction to antennas:

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

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

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

https://www.hfsignals.com/

An easy to build, single band CW kit:

https://qrp-labs.com/

Offering several kits and finished transceivers:

https://youkits.com/

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

Real time band conditions:

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

VOACAP band conditions:

https://www.voacap.com/hf/
ARRL Propagation Page:

http://www.arrl.org/propagation

Real Time HF Propagation Prediction:

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

Ham Radio Websites of general interest:

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

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

http://www.arrl.org/news

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

https://qrznow.com/

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

https://www.arnewsline.org/