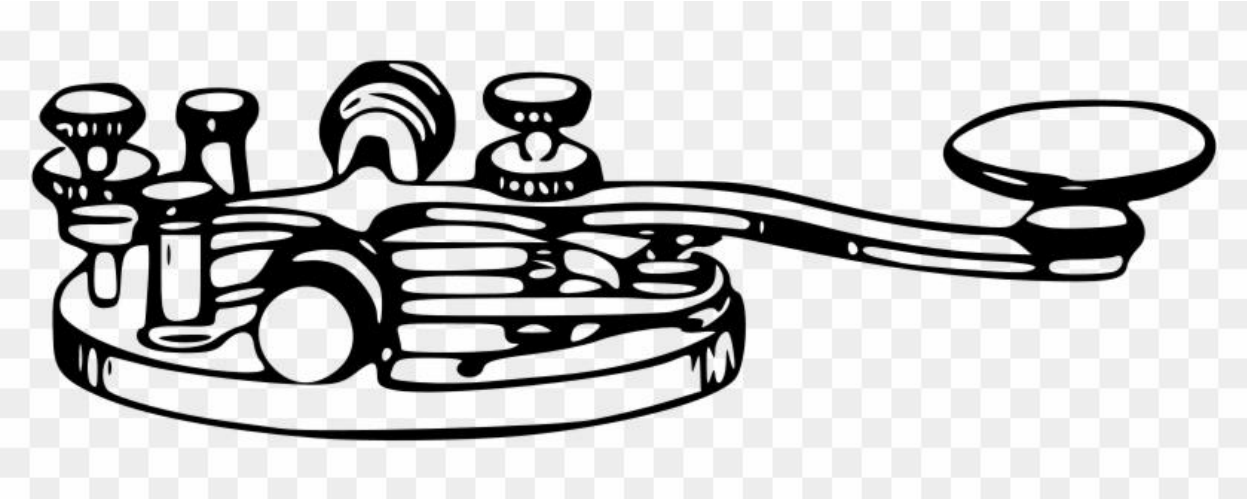
QSA-5

Marin Amateur Radio Society Monthly Newsletter

Established 1933 **January 2023**



When all else fails, you can count on Amateur Radio

From Our President:

Firstly, I want to wish you and yours a prosperous and happy 2023.

Along with a New Year the Marin Amateur Radio Society has a new President and four new Board Members. We all look forward to performing our duties with the Club interests in focus.

I want to thank Curtis Ardourel, WA6UDS for his past leadership. He has supported me in the transition, and I am sure to have questions for him soon. I look forward to his contributions to the Club in the future.

When I first visited MARS, the thing I noticed first was a poster referring to MARS as the “Premier” Radio Club in Marin County. I came to realize the statement was true. Our Club is more than a group of people that like to hold a microphone in their hand and speak into it.

Our Club is well known and respected for our work with Public Service events. The RCV group has been recognized by the county for its value to community-based organizations in Marin. It has also been recognized by State agencies for services it can and does offer. Another venture, NBAM, that our club supports is well on its way to reaching its mandate to create a backbone for Mesh up highway 1 and 101 to the North Sonoma County line.

I look forward to the future of Mars Amateur Radio Society.

73

Ken Brownfield, AB6JR

From the Editor:

Happy New Year! Congratulations to our new President, Ken Brownfield and a huge thanks to Curtis Ardourel who is the outgoing President. Curtis was extremely helpful and made me feel welcome when I joined the club back in 2020. I've gotten to know Ken a bit through the Volunteer Examiner program he runs, and I am a part of. Ken's great attention to detail will take the Marin Amateur Radio Society to new heights!

With the new year comes a promise of new things to come. While 2022 had its ups and downs, we all seemed to have landed on our feet. Of course, ham radio folks tend to be resourceful and able to cope with anything thrown at them! December was a relatively quiet month, in terms of club related news, due to the holidays. However, that doesn't mean the Marin Amateur Radio Society was stagnant. In fact, there was a DMR (Digital Mobile Radio) workshop that we'll be reporting on. With an interest in DMR, the QSA-5 has written a brief introduction to DMR with more detailed articles to follow. The QSA-5 will also start reporting on QRP radios and the newish Usdx SDR radios that are flooding the market as an inexpensive QRP choice. We've included a brief introduction to QRP in this month's issue and will cover these SDR radios in future issues. Note: Many of you probably have a basic knowledge of DMR, QRP and SDR. However, we've included an introduction to each for any of our newer club members who are still learning about the many aspects of amateur radio.

The great thing about amateur radio is that there are always new advances in radio technology to explore and improvements in older tech take advantage of. In short, there is always something to do for the amateur radio operator.

QSA-5Editor@w6sg.net

New Members:

Sandra Weeks KN6GST - Pleasant Hill
Curtiss Kim KM6GUY - San Anselmo
Michael Sitver KN6WUG - San Rafael
Kathleen Funke-Spicher KM6URP – Petaluma

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

Marin Amateur Radio Society

Board of Directors Meeting

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

Attendance:
President: Curtis Ardourel WA6UDS (1)
Director: Skip Fedanzo KJ6ARL (2)
Vice President: Tom Jordan KG6TCM (2)
Director: Ken Brownfield AB6JR (2)
Director: Mark Klein KM6AOW (1)
Secretary/Trustee K6GWE Brian Cooley KB6EZX (1)
Treasurer/Trustee W6SG: Bruce Bartel N6VLB (1)

Adopt agenda: M/S/A
Elect Officers:

President: Ken Brownfield AB6JR
Vice President: Tom Jordan KG6TCM
Secretary: James Saltzgaber KM6WWY
Treasurer: Bruce Bartel N6VLB

New Board Members:

Tom Jordan KG6TCM
Ken Brownfield AB6JR
Steve Toquinto KB6HOH
Bruce Bartel N6VLB
James Saltzgaber KM6WWY
Rich Cochran AG6QR
Jeff Young KM6Y

Approve minutes of: 10 November meeting

Secretary's Report/Communications: Brian K6EZX noted that he is standing by and ready to train Jim and Tom in the Secretary's duties at their convenience:

- Minutes & template
- Insurance
- Fictitious Business Statement
- CA Secty of State information
- Key/Keytag handoff
- General Google Drive awareness

Treasurer's Report: See Below

Committee and other Reports:

1. **Membership** – 155 | 101%.
2. **Facilities:** A lot of cleaning of the grounds was done by Arturo at Rob NZ6J's coordination. Physical keys are in the hands of Skip KJ6ARL and Rob NZ6J. They are remaining in their Facilities roles. Rob NZ6J commented on security cameras that we should have a plan to have more people than just him with access to the camera system and receiving motion detection alerts. To be finalized at the next meeting with the new board.
3. **Public Service:** Pam N6PDW reported that the majority of our 2023 PS dates are on the club site. Skip KJ6ARL motioned that Pam be authorized to the club site, with whatever assistance she wants to recruit, to consolidate all the public service content on the site into one place rather than the four places where the information exists now.
4. **Technical:** Rob NZ6J requested that we consolidate all repeater info that is currently on our web site into one place on it and clearly call out which machines are ours vs. other operators listed as a courtesy. Milt KM6ASI recapped a current need for a new antenna on Middle Peak at a time, now, when we have access to a certified climbing crew (Eric Steinberg's resource). The challenge is that the new antenna alone will cost about $650, though a previous approval from the board exists for this expenditure. NZ6J says a refurbished antenna that W6SDY has prepared would be a better antenna but that a new one might make more sense for expediency. Tom KG6TCM said that it behooves us to install a new antenna, to best utilize the limited access to the

site and a climbing crew to install it. KJ6ARL concurred with the notion of a new antenna, as did KM6Y, but with the additional recommendation that we choose a new antenna that is as good as any refurbished antenna we could install on the site. Steve KB6HOH reinforced that top quality gear is highly preferred. Milt was authorized to proceed accordingly, as funded to the tune of $3,000 by the board in the 11/10/22 meeting.

5. **VOAD/RCV:** Skip KKJ6ARL: RCV remains solid during the changes in the OES that is also affecting RACES. 2023 drill dates are being devices to work with RACES and MARS public service dates and drills. Skip is talking to outside groups that do similar work with community-based orgs to get a feel for their best practices, including an upcoming meeting with an ACS/RACES offshoot in Minnesota. Milt KM6ASI gave some input on the most recent DCCC meeting.
6. **VE Testing:** Ken AB6JR reports the next exam is 1/14/23 and that a new question pool is coming out July 1, 2023.
7. **NBAM:** KM6Y indicated that most of the hilltop sites desired are coming together well in terms of agreements, but there are some new equipment bottlenecks. Muir Beach is the next target site, with a verbal in hand but a formal agreement and equipment are pending, The former should happen by end of the year.

Old Business:

1. **Field Day – Settling up with REDXA**: Curtis has this still pending.
2. **Website password change**: Not happening imminently until members have more time to renew their memberships, Milt recommends that take place on April 1 which is the end of our annual membership grace period.
3. **Battery backup for entry system**: Curtis will handle, and he mentioned his pending retirement to part time, allowing him more time to field matters like this battery system.
4. **Signup for Babble Class:** This isn't working well in terms of door monitors signing up and showing up to open the club each weekend, The signup sheets is just inside the front door but Curtis will also create a site based signup form. Key tags are available without board approval to anyone who is on the board or one of its committees. All others must be approved by the board.

New Business:

- **Doug's Test Equipment**: Two pieces of gear (at end of this agenda) are being made available for sale to the club if we are interested. The board suggested the Rob NZ6J examine and assess it to that purpose in a meeting with Rich Slusher. Milt also asked that any Panasonic Toughbook from Doug's estate be examined as the likely "master" repeater programming machine from which we should secure and duplicate any software and config files for backup and preservation. Steve KB6HOH gave more information about identifying which Toughbooks are likely the important ones to preserve.
- **MailChimp account payment**: Detailed above.
- **NBAM's Future**: KM6Y asked that the new board **review** the below notes before the next meeting in preparation for a decision on the future of NBAM and its connection to MARS.

  Background: NBAM received funding via the RACES nonprofit (MAES) for funds to develop the backbone for the Mesh. The Grant funds are to be expended by April 1. NBAM plans to limit MARS future financial exposure by prepaying rent and otherwise expend all funds. (Current NBAM steering committee is Jeff Young KM6Y, Rob Rowlands NZ6J, Michael Fischer K6MLF, Ken Brownfield AB6JR, and current president of the MARS board.)

  Discussion for next board meeting:
  1. Does MARS wish to continue to be the organization responsible for NBAM?
  2. What level of activity should NBAM pursue?
  3. Increase accessibility to the Mesh by installing local nodes
  4. Work only in Marin
  5. Take an active role in demonstrating potential uses to First Responders/ACS/RCV/OEM/VOAD
  6. Continue to work with backbone sites
  7. STEM
  8. Encourage new hams at CBOs, schools…
  9. Who in MARS would lead NBAM after April1?
  10. Should NBAM apply for a second grant from ARDC (Feb 1, 2023) (MAES or MARS)?
  11. How should the MARS BOD proceed?

Good of the Order: Jeff KM6Y asked that Brian send out the bylaws to the new board. He will do that via email at the conclusion of tonght's meeting.

Bruce Bartel moved to recognize **Curtis's exceptional and long service as club president. All present agreed.**

Executive Session N/A
Adjourn 21:32

Next Regular Meeting 6 January 2023
Next Board Meeting 12 January 2023

B. Cooley

ADDENDA (on next Page)

Richard Slusher

August 15, 2022

To The Board of Directors – Marin Amateur Radio Society

Re: Doug's Test Equipment

Dear Sirs:

I have two pieces of Doug's (used) test equipment that I would like to offer to sell to the Club, if you are interested. They are:

1. HP 8920A 0.4 – 1000 MHz RF Communications Test Set. Photos of the front, back and inside cover are attached. According to the info on the back it has options 002, 003, 004, 005, 013, 014, and 050, whatever those are. A document in the case shows that it was calibrated in February 2019. Also included is binder with a printout of the manual.

2. Siglent SSA 3021X Spectrum Analyzer. This comes with a soft case and some adaptors and connectors.

I assume that these pieces are in working condition as they were in the back of one of Doug's SUV's waiting to find a repeater to trouble shoot. I can only answer non-technical questions about these items.

As to their selling prices, I will leave it to you to make me an offer as to what is fair. I know that the HP Test Set varies in value depending on the options it contains. I'm not looking for top-dollar. I would just like them to go to someone who will make use of them. Any sale would be contingent upon them being in working order.

I wanted to offer these first to the Club. If you don't want them, that is fine. I would then ask you to let the club members know that these are for sale and, if no takers, if they know anyone who would be interested.

Sincerely,

Rich Slusher

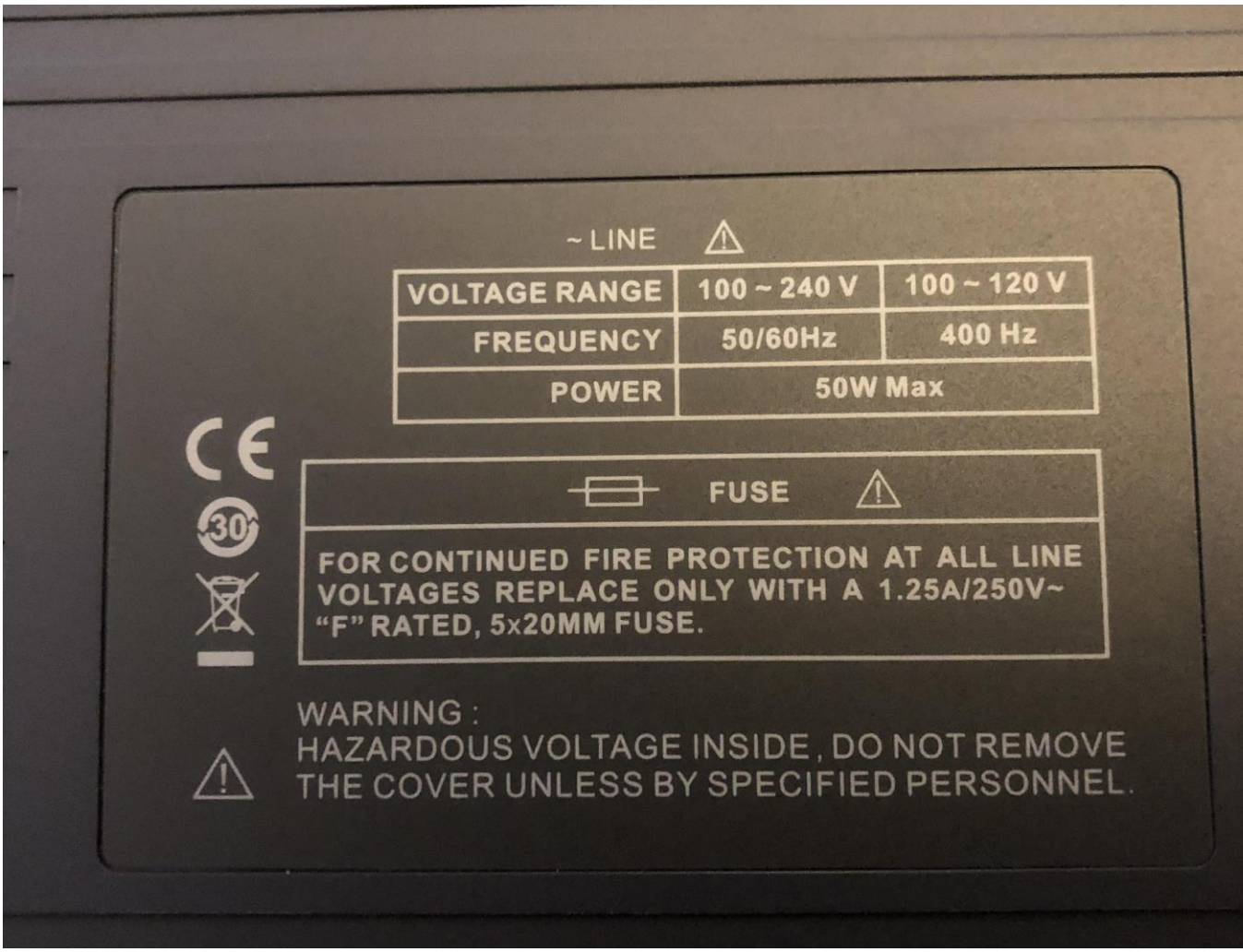
KI6UIM

50 Via Belardo #3, Greenbrae CA, 94904


HEWLETT PACKARD
8920A
0.4 - 1000 MHz
RF COMMUNICATIONS TEST SET
SCREEN CONTROL
MSSG
HELP
CONFIG
HOLD
PRINT
RX
TX
DUPLEX
PREV
TESTS
INSTRUMENT STATE
ADRS
SAVE
LOCAL
RECALL
MEAS RESET
PRESET
USER
k1'
k1
k2'
k2
k3'
k3
ASSIGN
k4
RELEASE
k5
DATA FUNCTIONS
REF SET
METER
AVG
INCR ÷10
INCR SET
INCR ×10
LO LIMIT
HI LIMIT
CURSOR CONTROL
PUSH TO SELECT
DATA
7
8
9
ENTER
4
5
6
1
2
3
0
.
+/-
SHIFT
CANCEL
YES
NO
ON/OFF
MEMORY CARD
POWER
RF IN/OUT
MAX PWR 60 W CONTINUOUS
DUPLEX OUT
ANT IN
MAX PWR 200 mW
MIC/ACC
VOLUME
SQUELCH
AUDIO OUT
MAX 12 V PK
AUDIO IN
HI
LO
MAX 42 V PK

DC CURRENT MEASUREMENT
(OPTION)
50 VDC MAX
15 A MAX
MODULATION INPUT
CRT V.DEO OUTPUT
EXT SCOPE TRIGGER INPUT
10 MHz REF OUTPUT
10 MHz REF INPUT
AUDIO MONITOR OUTPUT
SERIAL PORT
(OPTION)
HEWLETT-PACKARD U.S.A.
OPT 002 003 004
005 013 014 050
HEWLETT-PACKARD U.S.A.
SER 3417A04585
3405
HP-IB
(OPTION)
WARNING! NO OPERATOR SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.
X-RAYS GENERATED IN THIS INSTRUMENT ARE SUFFICIENTLY SCREENED
DIE IN DIESEM GERÄT ENTSTEHENDE
RÖNTGENSTRAHLUNG IST AUSREICHEND
ABGESCHIRMT ACCELERATED VOLTAGE
BESCHLEUNIGUNG SPG ≤ 20 kV
AMITRONIX
CALIBRATION
VOID IF BROKEN
VOID


SIGLENT
SSA3021X
Control
Frequency
Span
Amplitude
Auto Tune
Setting
BW
Sweep
Trigger
Trace
Detect
Limit
Demod
Preset
Couple
Marker
Peak
System
Display
Help
Mode
File
Save
Measure
Meas
Meas Setup
Edit
Back
Esc
Enter
TG SOURCE
RF INPUT


~ LINE
VOLTAGE RANGE
100 ~ 240 V
100 ~ 120 V
FREQUENCY
50/60Hz
400 Hz
POWER
50W Max
FUSE
FOR CONTINUED FIRE PROTECTION AT ALL LINE VOLTAGES REPLACE ONLY WITH A 1.25A/250V~ "F" RATED, 5x20MM FUSE.
WARNING :
HAZARDOUS VOLTAGE INSIDE, DO NOT REMOVE THE COVER UNLESS BY SPECIFIED PERSONNEL.

Marin Amateur Radio Club
Balance Sheet Comparison
As of January 1, 2023

	AS OF JAN 1, 2023,	AS OF JAN 1, 2022 (PY)
ASSETS		
Current Assets		
Bank Accounts		
B of A Building account - 8795	5,899.44	2,132.43
B of A General account - 4328	9,199.99	16,822.67
CD	25,000.00	25,000.00
Money Market	5,000.00	5,000.00
Total Bank Accounts	**$45,099.43**	**$48,955.10**
Other Current Assets		
Uncategorized Asset	-95.00	
Total Other Current Assets	**$ -95.00**	**$0.00**
Total Current Assets	**$45,004.43**	**$48,955.10**
Fixed Assets		
Clubhouse - 27 Shell Rd. MV	58,983.00	58,983.00
Total Fixed Assets	**$58,983.00**	**$58,983.00**
TOTAL ASSETS	**$103,987.43**	**$107,938.10**
LIABILITIES AND EQUITY		
Liabilities		
Total Liabilities		
Equity		
Opening Balance Net Assets	124,400.00	124,400.00
Retained Earnings	-20,412.57	-16,461.90
Net Income		
Total Equity	**$103,987.43**	**$107,938.10**
TOTAL LIABILITIES AND EQUITY	**$103,987.43**	**$107,938.10**

Marin Amateur Radio Club
Profit and Loss
January - December 2022

	TOTAL	
	JAN - DEC 2022	JAN - DEC 2021 (PP)
Income		
Auction Income	60.00	171.50
Donations	142.99	3,916.03
Dues	6,305.00	6,711.47
Field day refund	1,375.00	
Income from club activities	90.00	828.00
Public Service Refund	450.00	475.00
Rent	31,700.00	30,055.00
Sales of Product Income	24.69	40.20
Unapplied Cash Pay Income	250.00	
Total Income	**$40,397.68**	**$42,197.20**
GROSS PROFIT	**$40,397.68**	**$42,197.20**
Expenses		
Accounting	165.00	
Awards		300.00
Car & Truck	54.49	1,348.94
Equipment < $2,500		322.79
Field day	2,184.67	
Food	850.00	1,536.00
Garbage	526.24	427.76
Insurance	7,386.00	6,450.00
Job Supplies		87.37
Legal & Professional Services	575.00	25.00
Meals	3,788.00	
Public Service Expense	841.09	
Reimbursable Expenses	5,801.27	7,972.12
Rent & Lease		150.00
Repair & Maintenance	2,063.50	2,461.66
Repairs & Maintenance	2,880.00	895.18
Repeater		-3,764.68

Taxes & Licenses	11,911.04	8,476.20
Telephone	94.47	93.24
Uncategorized Expense	275.00	1,981.50
Utilities	3,683.88	6,476.93
VE Session	275.00	188.00
Water	777.70	768.00
Total Expenses	**$44,348.35**	**$36,730.21**
NET OPERATING INCOME	**$ -3,950.67**	**$5,466.99**
NET INCOME	**$ -3,950.67**	**$5,466.99**

Marin Amateur Radio Society News

Due to the holiday, there were few events to report on. However, after the few reports regarding upcoming club activities, there will be a few short introductory articles on subject matter that will be a regular monthly offering.

VE News

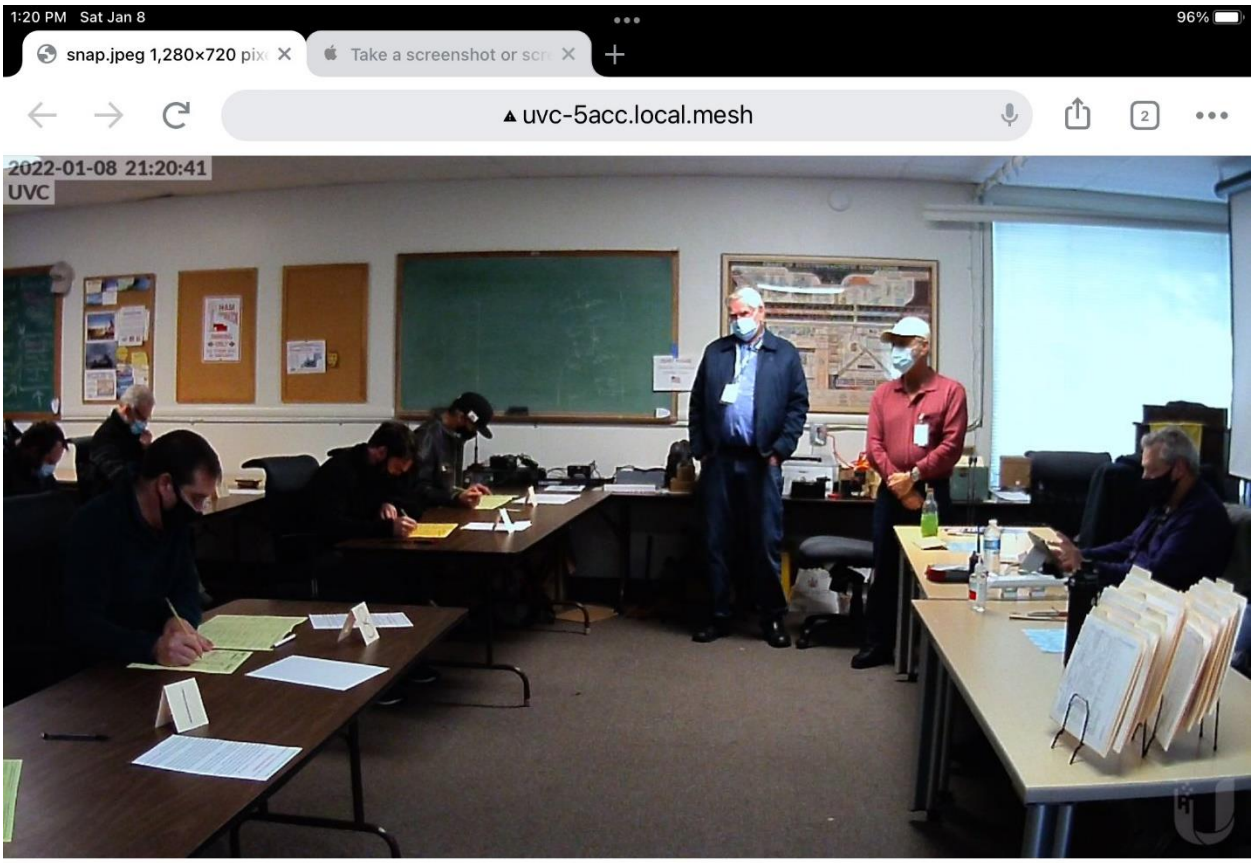
This is a reprint from last month's issue: The Marin Amateur Radio Society's VE team had a successful year bringing new ham radio operators into the fold and help existing license holders upgrade their licenses. VE team leader, Ken Brownfield AB6JR, has announced the 2023 examination schedule: The dates are Jan-14, April-8, July-8 and October-14 (2023). The examines start at 1:00 but attendees should arrive early and follow the guidelines regarding what you need to have with you when you sit for a license exam. Why is the VE program so important?

To keep our passion alive, we need younger generations of people to join the ranks of amateur radio operators. Any interest can only be kept alive by bringing in new blood, younger members willing to keep that interest going into the future. Amateur radio clubs around the country partake in the Volunteer Examiner's program, providing examinations for those new to ham radio or those upgrading their existing license. The VE program keeps amateur radio alive by giving license examinations and then sending the paperwork of successful examinees to the FCC where a Callsign is issued.

To become a Volunteer Examiner, you must read the VE manual and take a test. That's exactly what I did. My reasons for doing so were simple: I took all three license tests during the Covid-19 Pandemic. There were no physical testing sites available, so I had to sit for my exams online. The Lake Washington Radio Club did online testing, so I signed up. Online testing, due to the stringent testing requirements of the FCC was daunting at best for the Washington based radio club. However, they did it. I had several issues with my computer while testing and

the club patiently worked with me to ensure I made it through the exam. This inspired me to say “thank you” by becoming a VE. Of course, radio clubs are now opened to in-person testing and the Marin Amateur Radio Society is one of those clubs that offers testing opportunities to both new hams and hams upgrading their licenses. With that said, please consider joining the VE program. You can find further information at the ARRL website:

https://www.arrl.org/volunteer-examiners



The Marin Amateur Radio Society did four testing sessions during 2022 (one was a last-minute testing opportunity brought about due to the change in the question pool). Once again, Ken and his team did a great job.

Critical Mass

Again, due to the holidays, there isn't anything to report for the month of December. However, the next critical mass event will take place on January 21, 2023, 10am in the jury parking lot of the Marin Civic Center. For those who are curious, here's a little history regarding this monthly event:

How Critical Mass Started

The QSA-5 often reports on critical mass events in the Bay Area. While the QSA-5 has provided the "what is" regarding critical mass, we had not given you the "how" of the story, as in how critical mass started. Thanks to Michael Fischer, who forwarded this piece, you can now learn about the founding of this crucial service. A typical day's schedule and what you need to bring with you is presented at the end of this article.

First written by AA6SF - SK - April 24, 2012)

Way back in early 2010, I was sitting at home looking at my HT radio that hadn't needed charging in some time. Since I got my license in January 2009 (Technician & call sign KI6NYQ), I had taken all the HCT (Ham Communication Team) classes offered by SF NERT and many emcomm classes offered by Santa Clara County ARES/RACES, even participated in their drills, volunteered as a radio operator for Bay to Breakers, SF Marathon, SF Nike Marathon, joined SF ACS; but I still did not feel like I knew that much about my radio and emergency communications and needed more radio practice opportunities.

I came to the realization that here in San Francisco there were few opportunities to learn more about my radio, simple UHF/VHF radio communications and few opportunities to practice using my dual band HT.

I decided to start a radio practice group. I thought I would gather together other ham radio operators to learn and practice with them and help them to learn and practice– about simple UHF/VHF radio communications. For weeks I scouted many venues in San Francisco and chose Spreckels Lake in Golden Gate Park. I

announced the radio practice at the end of weekly ham nets, handed out announcements at an ACS meeting and an SFARC meeting.

Two of my best friends, Jan WB6SPX and Jim KI6RYE, said they would help and we three met over a nice bottle of red wine at Jim's house to work out (loosely) the details of the first practice. (Better than a garage in Los Altos.) I told them I had a name for the radio practice: "The 2 Meter Critical Mass Amateur Radio Practice". **On July 10, 2010, the first 2 Meter Critical Mass Amateur Radio Practice took place from 1000 hours to 1200 hours at Spreckels Lake in Golden Gate Park.** Twenty (20) hams were in attendance. Imagine that!

We talked on our radios. Some had trouble with Tone, Tone Frequency, offsets, phonetics, low battery power. There were lots of questions and the Elmers answered them.

I learned a lot that day. Exactly what I had wanted. Since then, when we meet, we continue to talk on our radios, solve problems and learn new things about our radios. I have learned something every time we met. Only once a month. Only two hours from 1000 to 1200 hours on a Saturday. Where else can you go in the city to learn about ham radio and help others learn? If you know of another place for radio practice, please tell me.

Thank you Peter McElmury AA6SF-SK for developing this for our community. We look forward to carrying on your tradition.

Here’s a breakdown of the San Francisco Critical Mass monthly event, to give you a feel of how these events work:

Here's what you need to know:
Let's practice 2 Meter radio communications. We look forward to seeing you this coming Saturday

We want everyone to stay safe.
Please stay home if you aren't feeling well, have flu-like symptoms, or have had a positive Covid test result in the last 14 days.

Bring your freshly charged 2M radio, your user manual, a clipboard (and pens or pencils), and a filled water bottle.

- **What:** 2 Meter Critical Mass Radio Practice
- **Where:** Northwest Corner of Spreckels Lake (Near Fulton and Spreckels Lake Drive
- **When:** 10:00 AM to 12:00 AM Saturday, November 12th

Please program your radios in advance; here are the frequencies we'll use.

1. Channel Alpha 146.475 Pl 100
2. Channel Bravo 147.585 PL 100
3. Channel Charlie 146.445 PL 100

You are all set if you have the NERT Band Plan on your radio.

December Babble Class

On Sunday, December18th, 2022, the Marin Amateur Radio Society had a Babble class. What’s a babble class, you might be asking? It’s a chance to get together and spend a morning and afternoon doing all things radio related. On the 18th, the Babble Class project was to work on the club’s communication van. Here’s a photograph from the event:


BROADCAST ROOM
THE RADIO AMATEUR's WORLD MAP
American Radio Relay League Amateur Radio Map of the USA
CANADA
MARINES
GIANTS

DMR Workshop

With the advent of DMR or digital mobile radio within the ham radio world, a workshop was held at the Marin Amateur Radio Society's clubhouse on Tuesday, December 20th, 2022, at 10:00am. Participants were encouraged to bring their DMR radios and laptops and learn more about the use of these digital radios in emergency situations. More workshops are going to be scheduled. Here's a breakdown of the day's event and what was being discussed:

DMR workshop Tuesday 20 December 2022

Purpose:

1. Dusting off the radios we have or having Santa bring inexpensive ones
2. Evaluating what we can use them for on public service
3. Identifying what MARS might need to do to deploy in 2024
4. Being prepared to walk away if necessary

Where we stand in 2022

1. Mototrbo proprietary standard became public domain in 2005 as DMR ETSI TR/TS 102 open standard
2. Market is flooded with radios from Motorola, Hytera and Chinese manufacturers
3. None of the big 4 Japanese manufacturers have DMR radios because they want to flog their proprietary D-Star or System Fusion
4. DMR was designed for business, not ham radio
5. Overwhelming complexity is not for the faint hearted
6. Significant advantages obtain for public service, but only with careful planning and training
7. The days of "charge your batteries the night before" and "wing it on the day" don't cut it
8. Many hams will never make it away from FM to DMR, nor should they

Key DMR elements

1. Repeaters organized as clusters, eg Bay Area, Sierra Nevada
2. Internet connectivity to all repeaters

3. Gateways such a Brandmeister et al to facilitate connectivity, also to cross connect proprietary standards such as D-Star and Fusion.
4. Talk groups, static and dynamic, to address user needs San Francisco TG: 311040; Orinda (NorCal) TG: 31068 (How to set up a private talk group on Orinda by hitting disconnect?)
5. Universal user IDs to control access from RadioID.net
6. Standard code plugs that users can modify: San Francisco ARC "starter" code plugs: https://www.sfarc.org/repeaters--nets.html or buy (expensive!) from https://www.bridgecomsystems.com/search?type=article%2Cpage%2Cproduct&q=code*+plug*

Droidstar

https://github.com/nostar/DroidStar

This software connects to M17, Fusion (YSF/FCS, DN and VW modes are supported), DMR, P25, NXDN, D-STAR (REF/XRF/DCS) reflectors and AllStar nodes (as an IAX2 client) over UDP.

Useful references
https://docs.google.com/document/d/1fEix5qQGkuolxfktV2uGYHuq69oXmZN3GfDzsgDTdPc/edit

https://www.n1clc.com/2019/06/dmr-tip-3-digital-monitor-modes.html

https://www.miklor.com/DMR/DMR-Tutorial.php
https://www.repeaterbook.com/repeaters/feature_search.php?state_id=06&type=DMR
https://m.youtube.com/watch?v=5FAFt1QCtC0
https://hose.brandmeister.network

Saturday morning net on Worldwide talk group 91 starts about 8AM

https://www.pistar.uk/dmr_bm_talkgroups.php - list of Brandmeister talk groups

Callum shared this simplex info:

They are:
433.50
441.00
446.075
446.50
CC1
TS1
TG99

DMR Repeaters accessible from Marin and Sonoma

Sutro tower, W6PW 444.225 MHz
Orinda, K6LNK 443.500 MHz
Diablo W6CX 145.000/147.500 MHz
Vallejo K6LI 145.310 MHz
English Hill W6SON 443.1 MHz
Santa Rosa K6ACS 442.1125
Bodega Bay KJ6QBM 440.325 MHz
Sonoma W6AJF 441.0125

This cohort of Santa's DMR elves have promised to mentor others:

Michael K6MLF
Larry KK6QPE
Dan N6HLZ
Brian K6RJR
Andy KF6SZF
Jim KM6WWY
James KI6RGP

Dan KN6PNA
Callum KN6KQR
Charlie AI6TT

Rob Rowlands NZ6J
415 849 5667

PROGRAMMING CABLES SOURCE: Jim S., KM6WWY
Ebay.com Seller: **bluemax49ers** KJ6ZWL, Campbell, CA
I have purchased 2 or 3 of his cables, they have been good quality and guaranteed to work.

New Monthly Columns for the QSA-5

We're going to start covering DMR in more detail, and on a regular basis. We'll also start covering QRP radio which is becoming extremely popular. We'll start with a very brief introduction to DMR radio. Please note that this is a very basic introduction to DMR, meant for radio operators new to this type of communication tool. With each passing article, the material will become more advanced. However, we wanted to make sure everyone was on a level playing field, so we started at the beginning.

DMR Radio

What is DMR or Digital Mobile Radio

Digital Mobile Radio (DMR) is a type of digital radio communication technology that is used for voice and data communication. It is used primarily in professional mobile radio (PMR) systems, such as those used by public safety organizations, businesses, and transportation companies.

DMR is a two-slot TDMA (Time Division Multiple Access) technology, which means that it can transmit two independent channels on a single frequency band. This allows for greater capacity and efficiency in communication systems, as more users can be accommodated on a single frequency. DMR also uses error-

correction techniques to improve the reliability and quality of the transmitted signals.

One of the key advantages of DMR is that it is interoperable with other digital radio systems, such as TETRA (Terrestrial Trunked Radio) and P25 (Project 25). This means that users of different digital radio systems can communicate with each other using DMR equipment.

In addition to voice communication, DMR also supports data transmission, including the transmission of text messages, GPS location information, and other data. This makes it a versatile technology that is suitable for a wide range of applications, including public safety, transportation, utilities, and other industries.

How does Digital Mobile Radio work

DMR uses Time Division Multiple Access (TDMA) technology to divide a frequency channel into two time slots, allowing two users to communicate over the same frequency channel simultaneously. This allows DMR systems to increase the capacity of a single frequency channel, as well as to improve the efficiency and clarity of voice communication.

In a DMR system, each user is assigned a unique identifier called a "radio ID," which is used to identify the user on the network. When a user wants to initiate a call, they send a request to the network, which then assigns them one of the available time slots on the frequency channel. The user's radio then transmits their voice data during their assigned time slot, and the receiving radio listens for and receives the transmission during its assigned time slot.

DMR systems use error correction and encryption to improve the reliability and security of voice communication. They also support a range of features, such as group calling, individual calling, and text messaging, as well as GPS tracking and location services.

Overall, DMR is a highly efficient and reliable technology that is widely used in professional mobile radio systems for voice communication.

How can Digital Mobile Radio Be Used in an Emergency

Digital Mobile Radio (DMR) can be used in emergency situations to provide reliable and efficient communication between first responders and other emergency personnel. In an emergency, the ability to quickly and accurately communicate is critical, and DMR can help to facilitate this communication by providing a secure and reliable means of communication.

One of the key advantages of DMR in emergency situations is its ability to transmit voice and data simultaneously. This allows emergency responders to not only communicate with each other, but also to transmit important information such as location data, incident details, and other relevant information.

DMR also offers a number of features that are specifically designed for use in emergency situations. For example, DMR supports group calling, which allows multiple users to be part of a single call, making it easier for emergency responders to coordinate their efforts. DMR also supports emergency calling, which allows users to send an emergency alert to all other users on the system, alerting them to the need for assistance.

Overall, DMR is a reliable and effective technology for emergency communication, and is widely used by public safety organizations, as well as other emergency responders, around the world.

QRP Radio

While many ham radio operators dream of having a huge ham shack, full of equipment, there' a growing group of hams that like take their radios with them as they travel around the country and the world. This is where QRP radio comes into the picture. This is a brief introduction to QRP radios meant for those hams new to the subject. As with the above article DMR radio, the subject matter will become more advanced with each passing issue of the QSA-5.

QRP is a term used in amateur radio to refer to low-power communication, typically using transmitters with output power of 5 watts or less. QRP operations are popular among amateur radio operators because they can be accomplished

with relatively simple and inexpensive equipment, and because low power consumption allows for portable and handheld operation.

There are many different ways that amateur radio operators can participate in QRP operations. Some operators build and operate their own QRP transmitters and receivers, using kits or plans available from various manufacturers. Others use commercially available QRP transceivers, which combine both transmit and receive capabilities in a single unit.

Amateur radio operators who participate in QRP operations often enjoy the challenge of making contacts using a minimal amount of power, and often use portable or mobile setups to operate from a variety of locations. QRP operations are also popular among amateur radio operators who are interested in emergency communication, as low-power setups can be used to communicate when other forms of communication are not available.

What are the advantages of QRP radio?

QRP radios are radios that are designed to operate with a low power output, typically 5 watts or less. QRP stands for "low power" or "reduced power" in amateur radio terminology.

There are several advantages to using QRP radios:

1. Cost: QRP radios are typically less expensive than high-power radios, making them an affordable option for hams on a budget.
2. Portability: QRP radios are often smaller and lighter than high-power radios, making them easier to carry and use in a variety of locations.
3. Battery Life: QRP radios generally require less power to operate, which means they can run longer on a single charge or set of batteries. This can be especially useful in emergency situations or when operating portable.
4. Efficient use of the radio spectrum: By using less power, QRP radios generate smaller signals that are less likely to interfere with other users of the radio spectrum. This can be important in crowded frequency bands where high-power signals can cause interference.
5. Challenge and skill-building: Some hams enjoy the challenge of using low-power radios to make long-distance contacts or to operate in difficult

conditions. Using a QRP radio requires the operator to have a good understanding of propagation, antenna design, and operating techniques, which can be a rewarding and educational experience.

What is the best antenna for QRP radios

The best antenna for a QRP radio will depend on a variety of factors, including the type of radio, the frequency or band being used, the location where the antenna will be used, and the goals of the operator. In upcoming articles we'll look at some specific antennas that are easy to build and will cover more generalized needs. Some general considerations for selecting an antenna for a QRP radio include:

1. Frequency and band: Different antennas are designed for specific frequency ranges and bands. Make sure to select an antenna that is suitable for the frequency and band you plan to operate on.
2. Antenna type: There are many different types of antennas, including dipoles, verticals, yagis, and more. Each type of antenna has its own characteristics and advantages, and the best choice will depend on your specific needs and goals.
3. Antenna length: The length of an antenna can affect its performance. In general, shorter antennas are better suited for QRP operation because they are easier to transport and require less space. However, longer antennas can often provide better performance in certain situations.
4. Antenna location: The location of the antenna can have a significant impact on its performance. In general, an antenna that is higher off the ground and away from objects will perform better than one that is closer to the ground or surrounded by objects.
5. Antenna gain: Antennas with higher gain can focus their signal in a specific direction, which can be useful for making long-distance contacts. However, high-gain antennas may also be more directional, which can make it more difficult to hear signals coming from other directions.
6. It may be helpful to consult with other hams or research online to find out which antennas are popular and perform well for QRP operation. It may also be a good idea to experiment with different antennas to see which one works best for your specific situation.

Modern QRP Radios are based on SDR or Software Defined Radio

Software defined radio (SDR) is a type of radio communication system in which the functions of a traditional radio receiver or transmitter are implemented using software running on a computer or embedded processor. SDR systems are characterized by their ability to be reconfigured or "defined" by software, allowing them to support a wide range of communication standards and protocols.
In a traditional radio system, the various functions of the radio, such as demodulation, frequency synthesis, and filtering, are implemented using dedicated hardware components. In an SDR system, these functions are implemented using software running on a general-purpose processor or computer. This allows SDR systems to be more flexible and adaptable than traditional radio systems, as the software can be easily modified or updated to support new standards and protocols.

SDR systems have a wide range of applications, including wireless communication, radio astronomy, and radio frequency identification (RFID). They are also used in a variety of settings, including military, commercial, and amateur radio. SDR technology has the potential to revolutionize the field of radio communication by enabling the development of more flexible, adaptable, and cost-effective radio systems.

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. The news was a bit slow during the holidays. Our first story regards the military using amateur radio to build up their communications skill set:

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

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

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

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

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

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

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

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

Amateur Radio Operators Continue Response to Hurricane Ian: One of the most important aspects of amateur radio is assisting when disaster strikes. Here's a piece from the ARRL about the role amateur radio has played during this devastating event.

http://www.arrl.org/news/amateur-radio-operators-continue-response-to-ian

Local ham radio operators providing help as Hurricane Ian sweeps across Florida: This comes from TV Station WTVA (TUPELO, Mississippi). This piece covers how amateur radio operators connect family members with loved ones in the path of the hurricane.

https://www.wtva.com/news/local-ham-radio-operators-providing-help-as-hurricane-ian-sweeps-across-florida/article_f2fda4e8-3f6c-11ed-bd5f-97a1bad70dad.html

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. Also note, due to the holidays it was a slow month regarding FCC news:

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

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

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

FCC Hiring for High Frequency Direction Finding Center: Just in case you're looking for a career change:

http://www.arrl.org/news/fcc-hiring-for-high-frequency-direction-finding-center

FCC Legacy CORES System to be Retired: It seems that the FCC is retiring their CORES system:

https://www.arrl.org/news/fcc-legacy-cores-system-to-be-retired

FCC Proposes Record $34,000 Fine for Alleged Interference and Unauthorized Transmissions During Idaho Wildfire: The FCC takes using unauthorized frequencies very seriously.

http://www.arrl.org/news/fcc-proposes-record-34-000-fine-for-alleged-interference-and-unauthorized-transmissions-during-idaho

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:

http://www.arrl.org/news/the-k7ra-solar-update-december-29-2022

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/