

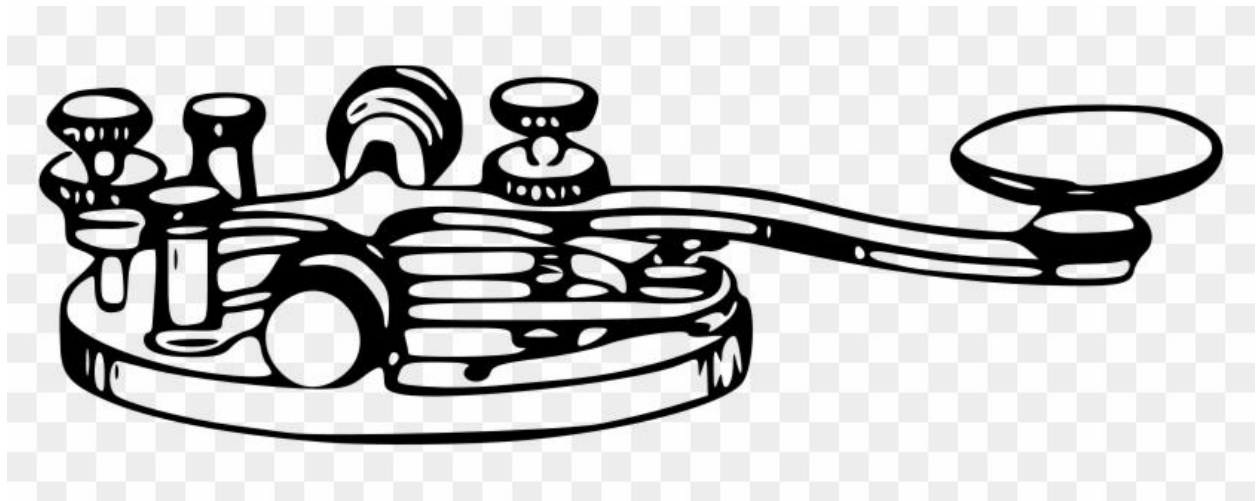


QSA-5

Marin Amateur Radio Society Monthly Newsletter

Established 1933

October 2024



When all else fails, you can count on Amateur Radio

From Our President:

Suddenly it is October, or soon will be. The end of the year is in sight. With that we start the long dash into the holidays. We also have all matter of club end of year activities. By November 1 we need to present a slate of candidates for the board of directors for 2025-2026. This year five seats are up for election. A board member serves a two-year term. As a board member you are expected to attend 12 board meetings each year. These meetings are on zoom. Some club members have lives and do not attend every meeting but need to let the president or secretary know if they need to miss a meeting. To qualify to be a member of the board you must be a club member in good standing and possess a valid and renewable amateur radio license. You also must want to join the board. Please do not nominate someone who is not interested in running. If you are interested in running or nominating someone please contact me wa6uds@w6sg.net or any of the other nominating committee members Jeff Young KM6Y, or Rich Slusher KI6UIM rlush@comcast.net.

The end of the year also brings up a Christmas celebration. We stopped having these during the plague but last year we held a luncheon instead of a dinner. The feedback I heard that it was a success. Are you interested in having a Christmas luncheon this year or some other kind of celebration? If so let me know. Along with the Christmas celebration which often doubles as the December general meeting we give out club awards. All awards are optional, and we don't give out every award every year. As president I get to make the final choices, but I need your recommendations. You can look up past recipients and descriptions of the awards at <https://w6sg.net/site/members/club-awards/> The shorter version is Ham of the Year – for significant contribution to the club in 2024. Hi Roberts Award for exceptional service over a number of years. John Butler 'Elmer' Award for elmering (mentorship) in the arts and sciences of ham radio. Ted McMillian Youth Achievement given to a member under the age of 18 who advanced their skills in amateur radio in 2025.

Of course I have to beat the drum for the Paint the Clubhouse Fund. Those of you who itemize your taxes can help yourselves and the club by donating to any of our funds but it is the Paint the Clubhouse fund that is on my mind. As I write this we

are at S4.5, which is right near the noise floor on some bands. Please make a generous donation to help us recoup the cost of the paint job.

73 de wa6uds

From the Editor:

It's hard to believe that Summer has passed, and Fall has begun. Of course, Fall and Winter, combined with reaching the zenith of Solar Cycle 25, means great HF radio and DXing. It's time to fire up your HF transceivers and prepare to make some awesome contacts. The 10-meter band is jumping (at least during the day), so technicians can experience HF radio. I hit Japan on 10-meters with a 20-watt transceiver. Of course, the band conditions are up and down and leave you feeling like you're riding a roller coaster. However, when conditions are right, the world is literally at your fingertips.

Because of better band conditions as we head towards winter, I'll be posting more articles on HF for beginners. I'll also be posting links to some great YouTube channels that will help beginners new to HF as well as experienced operators in the November issue of the QSA-5. I am asking anyone involved in HF to please contribute to the QSA-5. I also would like to see members with interests in other forms of radio communication contribute as well.

I spend a lot of time on the Parker Radio Association (a club in Colorado) website. I got their newsletter and was really impressed by the variety of radio arts that they are involved in. I've been seeking out other radio clubs to see what they have in the way of publications and what those publications cover.

Thank you, Curtiss Kim, for your contributions to the QSA-5 as well as the usual suspects. Your contributions make this newsletter better! Have a great October everyone!

QSA-5Editor@w6sg.net



New Members:

Ann Ivan KM6QIW – Greenbrae



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

Marin Amateur Radio Society

Board of Directors Meeting

09/12/2024



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

Attendance:

President: Curtis Ardourel WA6UDS

Director: Richard Cochran AG6QR

Director: Ed Essick K6ELE

Director: Steve Toquinto KB6HOH

Secretary: James Saltzgaber KM6WWY

Director: Jeffrey Young KM6Y

Treasurer: Bruce Bartel N6VLB

Trustee W6SG: Marc Bruvry KF6VNT

Trustee K6GWE: Brian Cooley K6EZX

Members Present: Skip Fedanzo KJ6ARL; Milt Hyams KM6ASI; Mark Klein KM6AOW; Dan Sobel N6HLZ; Gerald McCarthy W6NOV; Steve Wilson W6SDY; Rob Rolands NZ6J

Adopt agenda MSC to adopt agenda as presented.

Approve minutes of 8 August board meeting – Minutes in QSA-5 MSC to approve.

Secretary's Report/Communications Nothing new to report.

Treasurer's Report Bruce N6VLB Report is in QSA-5 Tenant deducted plumbing repair cost from their rent payment.

Committee and other Reports:

- 1. Membership** Curtis WA6UDS– Current membership is 153 representing 93% of year's total at this time.
- 2. Facilities** Skip KJ6ARL- The facility is still standing! The furnace filter has been replaced. Microwave antennae in clubhouse need to be moved back to storage. Yard cleaning -professional gardener cleaned leaves and bushes from west wall drainage ditch, he cut back overhanging limbs that were shedding leaves along the fence, cleaned a lot of growth along the fence from the gate and did a lot of weed whacking. Trees overhanging from neighbor's and our trees need trimming, we need an arborist to consult with. Curtis will give skip contact information for one he has used. Removing leaking front water spigot was discussed, Rich Cochran will check into that. The garbage can situation is unclear. Curtis has a MARS stencil and will drop it off. Rob Rolands will discuss this with our tenant, and we will stencil "MARS" on our cans. Club bill has only 1 32 gallon can. Rob will check with our tenant on what service she has. Skip requests that whenever food/drink is consumed in the clubhouse the trash from that be put in the OUTSIDE garbage receptacles, not left in trash cans inside. Skip will put together a check off list for closing the clubhouse, Curtis will have it printed and laminated.
- 3. VOAD/RCV** Skip KJ6ARL– RCV is working with ACS RACES to do The Great Shakeout Drill jointly. Will include doing a "no notice" activation, establishing a resource net and building a comm plan. The September tabletop workshop with CBO's was cancelled, they were not ready.
- 4. Technical** Milt- Steve Wilson W6SDY advised that the repeaters that we received from Paul Mason are commercial repeaters, not ham repeaters, and their technology is outdated. The board has never officially accepted them. Paul

has expressed a desire to take them back if we cannot use them. The technical committee does not feel we have any place to use them. Following discussion, it was decided that we would rent a lift gate truck and organize the return of the repeaters. Steve W6SDY agreed to handle the truck rental and return schedule with Paul. It was MS & Unanimously Carried by a show of hands to rent a liftgate truck NTE \$300 and return the repeaters. We would be interested in accepting one or two UHF duplexers, and Steve will discuss this with Paul.

5. **Public Service** Rob NZ6J- MCBC Adventure Revival is Saturday. Last event Escape from Alcatraz. The PS Committee will be requesting approx. \$1,000 for APRS infrastructure. Event organizer insurance certificates of coverage were discussed. Milt noted that we must be vigilant in obtaining sufficient coverage from the events that we serve. Scott Pasternack will be assuming the chair of the Public Service Committee in 2025. He will be put on our insurance as a driver of the comm truck.
6. **VE Testing** Jim -Next VE session is October 12th. We have 2 confirmed applications now.
7. **Comm Truck** Jim KM6WWY– Truck has been washed. The backup camera has been repaired and is functioning. Everyone who uses the van needs to make sure that the shore power cable is properly plugged in, and the battery charger is turned on. Milt KM6ASI- The van will be at the Picnic Saturday and at Nb2mCM Sunday. Van will be parked at his house Saturday night and he will drive it to Nb2mCM, Rob NZ6J or Michael K6MLF will return it to the club house.
8. **NBAM** Bruce N6VLB – Mark KM6AOW– An inventory and “flashing party” was held at the clubhouse and 50% of the Mesh equipment stored in the clubhouse has been updated. The antenna dishes that are in the clubhouse were not completed but will be done this coming weekend. Another equipment “flashing party” will be held to update the balance of the equipment. An NBAM Presentation was made to Napa Office of Emergency Services with a somewhat positive result and follow up will be done. Sonoma will be changing out the Schellenger/Cloverdale mesh node switch when Kathy Spicher can arrange transportation up to the site. Two of the NBAM Emergency Field Equipment Backpacks were loaned to Bodega Bay and they have been successful putting up a local net and testing the equipment. It is planned to get them wired on the net soon.
9. **Picnic** Steve KB6HOH- 64 confirmed rsvp’s- Set up will begin at 9am. Steve will arrange the time for Forest Fire BBQ to deliver the food. Curtis will be bringing the nametags. Dan N6HLZ will bring his Star Link system for Wi-Fi service. Jim KM6WWY will be bringing the Comm Truck and a 2M/70CM station, Jerry

WA6BXV will be bringing an HF station and a vertical multi band antenna to set up for demonstration. Charcoal and utensils will be available for anyone who wishes to cook their own food. Steve will set up a sign-in sheet so we can have an accurate count of attendees.

- 10. Bylaws** -Curtis WA6UDS- We need to form a committee to review and propose changes updates to the club by laws. Changing the Board Meeting date from the second Thursday of the month to the Thursday after the General Meeting is one item. Milt KM6ASI- Getting a quorum necessary to approve changes can be a problem. A possible solution would be to put changes on the ballot for the board of directors. The committee will be Milt KM6ASI, Ed K6ELE, Curtis WA6UDS, Bruce N6VLB. A meeting will be scheduled soon.

Old Business:

1. Paint the Clubhouse \$9280 Website S meter is still at "S4.5".
2. Revitalizing Babble Class - Postponed
3. Donations Committee Charter – Curtis WA6UDS The proposed charter needs more work. Consideration of ramifications of sales tax for equipment that may be sold, as well as other fine points need to be included in the final charter.
4. Clearing foliage, especially bamboo in clubhouse back lot- Getting an arborist recommendation. – See **Facilities** committee report above.
5. Project storage in clubhouse – Curtis WA6UDS Definition of "Project Storage" needs to be determined. It was determined that Skip KJ6ARL will be the go-to for projects being done in the clubhouse that need some storage space.
6. Nominating committee – Board terms up for 2024:
 - a. Jim Saltzgaber KM6WWY
 - b. Steve Toquinto KB6HOH
 - c. Bruce Bartel N6VLB
 - d. Richard Cochran AG6QR
 - e. Jeffery Young KM6Y

A slate of candidates for 2025 needs to be presented to the general membership by the November Meeting. Only 2 incumbent members will be in the second year of their terms. We are currently electing 5 members one year and 2 members the next, although our bylaws do not specify a particular pattern in terms, most small corporation bylaws do. For a seven-member board that typically would be 3 one year and 4 the next. This way there is more continuity on the board from year to year. We need to form a nominating committee and figure out how we can correct the system. A discussion of possible solutions

decided that a nominating committee be set, Curtis will get committee members. The committee will prepare a slate of nominees for the 5 vacancies for 2025 and present it at the November general membership meeting.

New Business:

1. New Public Service Committee Chair Scott Pasternack KN6ZDM- Rob NZ6J- Nominated Scott Public Service Chair starting with next year's season. MSC
2. Bylaws committee – See 10. **Bylaws, Committee and other Reports**, above.

Good of the Order Nothing noted

Executive Session

Adjourn MSC, 21:43 hours.

Next Regular Meeting 4 October 2024

Next Board Meeting 10 October 2024

Marin Amateur Radio Club

Balance Sheet Comparison

As of September 29, 2024

		TOTAL
	AS OF SEP 29, 2024	AS OF SEP 29, 2023 (PY)
ASSETS		
Current Assets		
Bank Accounts		
B of A Facilities Account - 8795	3,489.90	5,948.61
B of A General account - 4328	77,477.81	82,810.45
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	\$80,967.71	\$88,630.06
Other Current Assets		
Uncategorized Asset	385.00	-95.00
Total Other Current Assets	\$385.00	\$ -95.00
Total Current Assets	\$81,352.71	\$88,535.06
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	\$140,335.71	\$147,518.06
LIABILITIES AND EQUITY		
Liabilities		
Total Liabilities		
Equity		
Opening Balance Net Assets	124,400.00	124,400.00
Retained Earnings	13,748.91	-20,412.57
Net Income	2,186.80	43,530.63
Total Equity	\$140,335.71	\$147,518.06
TOTAL LIABILITIES AND EQUITY	\$140,335.71	\$147,518.06

Marin Amateur Radio Club

Profit and Loss

January 1 - September 29, 2024

TOTAL

JAN 1 - SEP 29, 2024

JAN 1 - SEP 29, 2023 (PY YTD)

Income

Christmas Party Income	640.00	
Donations	23,370.00	1,699.17
Dues	8,920.51	7,074.75
Interest Income		792.77
Public Service Refund	168.15	450.00
Rent	26,400.00	23,400.00
Unapplied Cash Payment Income	385.00	
Total Income	\$59,883.66	\$33,416.69
GROSS PROFIT	\$59,883.66	\$33,416.69
Expenses		
Accounting	1,540.00	1,155.00
Awards		299.99
Car & Truck	2,224.89	2,327.80
Car & Truck Gas	152.42	258.02
Total Car & Truck	2,377.31	2,585.82
Christmas Party	2,970.23	
Contractors	21,109.00	
Field day	854.66	659.26
Food	256.16	
Garbage	455.22	435.54
Housekeeping	839.85	
Insurance	4,506.00	5,537.00
Comm Van Insurance	2,313.35	2,721.00
Total Insurance	6,819.35	8,258.00
Meals	235.24	

Office Supplies & Software	18.00	
Other Business Expenses		104.93
Picnic	1,705.10	
Public Service Expense	4,188.44	1,379.96
Reimbursable Expenses	20.00	2,448.73
Repair & Maintenance	2,362.06	
Repeater	2,138.67	1,567.50
Taxes & Licenses	4,099.67	25.00
Utilities	3,327.74	3,417.12
VE Session		129.00
Water	1,330.79	797.25
Total Expenses	\$56,647.49	\$23,263.10
NET OPERATING INCOME	\$3,236.17	\$10,153.59

Marin Amateur Radio Club

Profit and Loss

January 1 - September 29, 2024

TOTAL

JAN 1 - SEP 29, 2024

JAN 1 - SEP 29, 2023 (PY YTD)

Other Income		
MESH Grant Income		33,500.00
Total Other Income	\$0.00	\$33,500.00
Other Expenses		
MESH Grant Disbursement	1,049.37	122.96
Total Other Expenses	\$1,049.37	\$122.96
NET OTHER INCOME	\$ -1,049.37	\$33,377.04
NET INCOME	\$2,186.80	\$43,530.63

LIFE IS SIMPLE



MARS Club News

Presentation at October 4 Regular Meeting

Greetings

This Friday we are doing something we have not done in a long time. We are having a speaker at the regular meeting. The meeting will be held in its regular format both in person and on zoom. However we will have an in person presentation and for the best seats I urge you to come in person. We are once again providing Pizza and sodas for those who show up. Our presentation will be done by Mohit Bhoite KE0JVM who joined the club back in August of this year. His notes about the presentation follow:

Title: Building free-formed electronic circuit sculpture

Description: Take a look at the art of building free-formed electronic circuit sculptures. Learn how anyone with the right tools can get involved in this art form. He'll explore ways to make these sculptures interact with the environment around them or with their user.

About:

Mohit Bhoite (KE0JVM) works as a senior hardware engineer at Particle, where he designs and builds their flagship IoT products. He is also an avid maker who dedicates his personal time to building free-formed electronic circuit sculptures. He combines his background in electronics and robotics to create static and kinetic sculptures that convey information fetched over the internet through sound, light, and motion. These sculptures sometimes take on an anthropomorphic form thereby leading the viewer to attach personalities and emotions to them.

Links:

<https://www.bhoite.com/sculptures/>

<https://www.instagram.com/mohitbhoite/>

I urge you to take a look at his website the work is impressive both from a technical standpoint and an aesthetic perspective.

I hope to see you there.

73 DE WA6UDS
Curtis Ardourel
President and Membership Chair
Marin Amateur Radio Society
WA6UDS@W6SG.NET

2024 MARS Picnic

From Curtiss Kim: “Eat up, there’s plenty.” was the word of the day at the annual MARS picnic held at Stafford Lake Park in Novato. The September 14th event was held under ideal weather as an estimated crowd of 45 plus turned out for conversation, friendship and bbq. Picnic organizer, Steve Toquinto, KB6HOH declared the gathering a total success reminding everyone MARS is a social club not a DX organization. On display, the club’s live van, portable remote gear and some museum piece field radios from World War II and the Vietnam era. The radios are part of a collection from Jerry Foster, WA6BXV. The center piece was a transceiver known by the letters, TBY-6 Radio CRI-43044 which was used by the famous Navajo Code Talkers, Marines who created a code based on the complex, unwritten Navajo language. Despite the thousands of messages that Code Talkers sent during WWII, it remains the only code never broken by the Japanese or the Germans, who were very good at decryption. Other radios on display, the instantly recognizable BC-611 walkie talkie. Called the “fightingest radio set in the Army”, it was developed in 1940 and was the first true self-contained hand-held unit to be widely deployed. The unit was mass produced from July 1941 onwards. By the end of WWII, 130-

thousand units had been made by Motorola. Also shown in working condition, the Vietnam War vintage US Army Rt-196/prc handheld walkie talkie. There were also several backpack radios from the same war eras. All proved to be the center of conversation. As usual, the picnic featured BBQ ribs, chicken, potato salad, beans and cold slaw, expertly provided by Forrest Fire BBQ who supplied the meal last year as well. The annual picnic has been a regular feature of the club but has not always been well attended. According to club president, Curtis Ardourel, WA6UDS, the event has been held at various locations including Piper Park in Larkspur, Samuel P. Taylor Park in West Marin and Miwok Park in Novato. One event drew only four picnickers. 64 members RSVP'd this year which was up from 47 last year not including spouses and family members. Ardourel says the picnic is a great way to place the faces with the call signs. Though it takes time and effort to organize and orchestrate a picnic of this size, coordinator, Steve Toquinto says, "I'm up for it next year". Based on the success and turnout this year...there were no objections.



California QSO Party on October 5-6, 2024

From Michael K6MLF: Calling all amateur radio operators! We're looking for volunteers to participate in the following event:

The California QSO Party (CQP) is held every year on the first weekend of October. The first CQP took place in 1966. Since 1974, the Northern California Contest Club ([NCCC](#)) has sponsored CQP. CQP has traditionally opened the annual contest season by providing an opportunity for contesters to prepare for the ARRL November Sweepstakes since the format is similar.

Stations outside of California, worldwide, workstations in California only. The 58 counties of CA are the [multipliers](#). California stations work all stations in or out of CA. The 50 US states and 13 Canadian provinces/territories are the multipliers. Stations outside of Canada and the US add to one's QSO total but do not count as multipliers. See the full set of [CQP Rules](#) for more details.

On this site you will find lots of information, so peruse the index above and learn all about the California QSO Party! Also, be sure to visit the [NCCC](#) website for the latest scoop on a super contest club. Here is a link to the event's website:

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

Contact Michael K6MLF for further information about the event. As of the second week of September, there were very few club members signed up for this event. We could use your support.

PACIFICON IS Less than a Month Away

From Rob Rowlands: This annual convention is a big deal—lots of learning, lots of browsing of antennas, radios, connectors—good deals to be had if you're in the market for anything ham radio.

Carpool over to the San Ramon in the deep East Bay with a friend—make new acquaintances over an al fresco lunch. You can learn a LOT crammed into two days! (Or even in a half-day drop-by.)

Highly recommended. You just HAVE to meet and chat with Gordon West, the closest thing to a ham rock-star that you'll ever meet.

The QSA-5 highly recommends this event. Amateur radio conventions are a great place to meet some of the people you talk to on the radio, as well as finding out about new technologies. It's a great place to learn more about amateur radio. Then there's the swap meet! If you're looking for parts or a used rig and a decent price, the swap meet is the place to go.

Sonoma County Radio Amateurs are looking for a couple of SAG operators for October 5 2024



Hi MARS Public Service volunteers,

I'm the comm boss for the Women on Wheels ride, co-hosted by the Sonoma County Bicycle Coalition (SCBC) and the Santa Rosa Cycling Club (SRCC). They requested that SCRA provide radio SAGs only for this ride (no aid station comms).

Our usual radio SAGs are unavailable, and I was hoping you could pose this to your MARS volunteers and see whether any are available. **We just need one SAG per shift:**

Shift B 1000h - 1330h

Shift C 1300h - 1630h

Signups here: <https://srcc.com/event-5815825>

Start/finish is at the Sebastopol Center for the Arts. They are riding [three courses](#), 12 mi, 50k and 100k. Let me know if you have any questions, and thanks for your consideration.

Erin Casteel K6ERI
(she/her)
Chair, Repeater Committee
Webmaster
Sonoma County Radio Amateurs

Canal Alliance is Connected

From Curtiss Kim: Canal Alliance which serves the needs of thousands in the east area neighborhood of San Rafael is getting ready to move into their new headquarters at 711 Grand Avenue. The new 7-million-dollar headquarters is larger than their current facilities at 91 Fairfax Street and will ensure strategic growth,

organizational sustainability and permanency for the Latino community. The organization will keep both locations in operation and the Radio Communication Volunteers (RCV) of MARS has been working closely with the Alliance to setup a General Mobile Radio Service (GMRS) network that is linking the two sites together. After two weeks of testing frequency availability, the non-profit has chosen both a primary and secondary channel along with CTCSS tones to reduce interference. According to Javier Villafane, Facilities & Technology Coordinator for Canal, the base stations are next to the reception desks at each location and are working flawlessly. Spearheading the RCV team was Skip Ferdanzo, KJ6ARL, who provided guidance on radio selection, antennas and coax cabling. Dirck Brinkerhoff, KM6VKQ, and Curtiss Kim, KM6GUY were also part of the GMRS team. But the installation is still not complete. Villafane was so taken by the go-boxes used for testing he is moving to construct a remote unit for the Alliance. The GMRS effort is expected to reduce communication problems brought about by a major disaster incident. The use of GMRS Radios is not new to emergency response in Marin. The Tomales Emergency Response Network (TERN) is an all-volunteer member organization in the northwest corner of the county. It relies on two-way, handheld GMRS radios to provide emergency communications among the residents. GMRS frequencies range from 462.5625 to 467.7250 on the UHF band. A license is required but no test is involved. TERN members actively participate in the West Marin Disaster Council drills and work closely with the [Marin County Fire Department](#) and the Tomales Volunteer Fire Company. The mission statement of TERN is to serve the Tomales community in the event of a natural disaster or other emergency by helping first responders keep the village safe, functioning, and informed.

Mastering
GMRS
RADIO 2024
Comprehensive User Guide to Unlocking the Full Potential of General Mobile Radio Service with Expert Tips, Techniques, and Real-World Applications



((.TERN.))
TOMALES EMERGENCY RESPONSE NETWORK



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.arri.org/field-day-rules>

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

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

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

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

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

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

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

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

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

North Bay Critical Mass Report

Here is a report from James Renney KI6RGP:

We had a great group of radio folks that turned out yesterday to play with radios, practice our phonetic alphabet and discuss various aspects about the RF spectrum. Thank you to all who attended! Welcome to a couple of new faces - Frank Alvarado KM6ZSW and Mike Abrahams, who is returning to radio after a long sabbatical.

A special thanks to Rob NZ6J for joining in with his very informative discussion & demo on using cross-band repeaters on VHF & UHF! Here are some photographs from the event:







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 Volunteer Examiners are holding the final testing session of the year on October 12th, 2024. Testing starts at 1:00pm. All test candidates should plan on arriving 30 minutes early.

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 (Completed) The third session of the year.

October 12th Fourth and final 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

From Curtiss Kim: 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>



HF Radio 101

How HF Signals Travel: A Detailed Journey

From Hugh Patterson KN6KNB: This is from a larger body of work that I plan on using for a beginner's guide to HF radio available to anyone interested.

HF radio signals, unlike VHF or UHF signals, don't travel in a straight line. Instead, they rely on a phenomenon called skywave propagation to reach distant locations. This process involves the ionosphere, a layer of the Earth's atmosphere containing charged particles. When an HF radio wave encounters the ionosphere at the correct angle, it's refracted or bent back towards the Earth. This allows signals to travel hundreds or even thousands of kilometers.

The effectiveness of skywave propagation depends on several factors, including the frequency of the signal, the time of day, the season, and solar activity. Lower frequencies tend to penetrate the ionosphere more easily, while higher frequencies are more likely to pass through it. Additionally, the ionosphere is constantly changing, affecting the way radio waves propagate. This variability makes HF communication a challenging but rewarding endeavor.

By understanding the principles of skywave propagation, ham radio operators can optimize their equipment and operating techniques to achieve successful long-distance contacts. Factors such as antenna height, power output, and antenna direction play a crucial role in maximizing the chances of successful communication.

From Transceiver to Receiver

HF (High Frequency) radio communication involves the transmission and reception of information over long distances. The process begins at the transmitter, where the desired message, whether voice, data, or Morse code, is converted into electrical signals. These signals are then used to modulate a high-frequency carrier

wave, creating the modulated signal that will be transmitted.

The modulated signal is amplified and fed to the transmitter's output stage, which drives the antenna. The antenna converts the electrical signals into electromagnetic waves, radiating them into the atmosphere. These radio waves travel through the ionosphere, a layer of the Earth's atmosphere that reflects and refracts the signals. The specific propagation path depends on factors such as the frequency of the signal, solar activity, and time of day.

As the radio waves travel through the atmosphere, they can be affected by various factors, including atmospheric noise, interference from other sources, and attenuation. Despite these challenges, the signal may eventually reach the receiving antenna of a distant station. The receiving antenna captures the radio waves and converts them back into electrical signals.

The received signals are then amplified and demodulated to extract the original information. This process involves reversing the modulation technique used by the transmitter. Once the information is recovered, it is presented to the receiver, allowing the recipient to hear the voice, read the message, or decode the data. The entire journey, from transmission to reception, can take place within milliseconds or even seconds, depending on the distance between the stations and the propagation conditions. By understanding these steps, ham radio operators can appreciate the complexity and beauty of radio communication. If this seems a little confusing, here's an analogy to simplify the concept! Imagine sending a message across a vast ocean. First, you write the message you want to transmit. Then, you put the message in a bottle and throw it into the ocean. The bottle drifts through the ocean currents, similar to how a radio signal travels through the atmosphere. Eventually, the bottle washes ashore, just like a radio signal is received by an antenna. You open the bottle and read the message, similar to demodulating a radio signal to extract the original information. The recipient can then respond by writing their own message and putting it in a bottle, simulating the transmission of a reply back to the original sender.

Here are some key concepts from last month's article and the last few pages of

this article, broken down into an easy to digest format. This will give you a little more detail regarding each step in the journey an HF signal takes. The following is meant to fill in some of the specific details left out in “From Transceiver to Receiver.” An analogy will be provided at the end of each concept’s bullet points to ensure that you understand each part of the overall process.

1. Signal Generation:

- The heart of a transceiver is an oscillator that produces a stable, high frequency alternating current (AC). This is the carrier wave.
- Information (voice, data) is converted into electrical signals (audio or digital).
- This information signal modulates the carrier wave, changing its amplitude, frequency, or phase to carry the information.
- Analogy: Imagine you're playing a guitar. The strings vibrate to create sound waves. In a radio, the electronic components vibrate to create radio waves. This process of generating these waves is called signal generation. The specific vibrations determine the frequency and characteristics of the radio wave, just like the tension and thickness of a guitar string determine the pitch and tone of the sound.

2. Antenna Radiation:

- The modulated carrier wave is fed to the antenna.
- The antenna converts electrical energy into electromagnetic waves, which radiate outward in all directions.
- Analogy: Imagine shining a flashlight. The beam of light spreads out as it travels. This is similar to how an antenna radiates radio waves. The shape and design of the antenna determine how the waves spread. A directional antenna focuses the waves in a specific direction, like a spotlight, while an omnidirectional antenna spreads them out in all directions, like a floodlight.

3. Propagation through the Atmosphere:

- **Ground Wave:** For shorter distances, the signal travels along the Earth's surface.

- **Skywave:** For longer distances, the signal is refracted by the ionosphere, bouncing back to Earth. This can happen multiple times, allowing for global communication.
- **Line-of-Sight:** For VHF and UHF, signals travel directly from transmitter to receiver without bouncing off the ionosphere.
- **Analogy:** Imagine throwing a ball into the air. The ball's path is affected by gravity, wind, and other atmospheric conditions. Similarly, radio waves are affected by the atmosphere. The ionosphere, a layer of the Earth's atmosphere, can reflect or refract radio waves, just like a mirror or a lens can bend light. This affects how far the radio waves travel and how strong they are when they reach their destination.

4. Reception:

- A receiving antenna intercepts the incoming radio wave.
- The antenna converts the electromagnetic energy back into electrical signals.
- The receiver amplifies and demodulates the signal to recover the original information.
- **Analogy:** Imagine listening to a radio station. The radio antenna captures the radio waves from the station's transmitter. These waves are then converted back into electrical signals, which are amplified and processed to produce the sound you hear. It's like catching a ball and turning it into a sound. The quality of the reception depends on factors like how strong the signal is and how clear the path is between the transmitter and your receiver.

Factors Affecting Signal Path

- **Frequency:** Higher frequencies tend to penetrate the ionosphere more easily, while lower frequencies are more susceptible to absorption.
- **Time of Day:** The ionosphere changes throughout the day, affecting signal propagation.
- **Season:** Seasonal variations in solar radiation impact the ionosphere.
- **Sunspot Activity:** Solar activity influences the ionization of the ionosphere, affecting signal strength and propagation.
- **Antenna Efficiency:** The design, orientation, and height of the antenna

significantly impact signal strength.

- **Noise:** Interference from other electronic devices or natural sources can degrade signal quality.
- **Propagation Modes:** Different propagation modes (ground wave, skywave, line-of-sight) have different characteristics and limitations.
- **Imagine radio waves like travelers on a journey. An analogy:**
 - **Frequency:** Different frequencies are like different vehicles. Some (lower frequencies) can travel farther and through tougher terrain, while others (higher frequencies) are faster but might need smoother roads.
 - **Time of day:** Think of the time of day as the weather. Some weather conditions (like ionospheric storms) can make the journey tougher for certain frequencies, while others (like calm conditions) can make it easier.
 - **Season:** The season is like the time of year. Different seasons can have different weather patterns, affecting how the radio waves travel.
 - **Sunspot activity:** This is like a solar storm. A strong solar storm can disrupt the path of radio waves, making the journey more challenging.
 - **Antenna efficiency:** Imagine your vehicle's engine. A more powerful engine (efficient antenna) can travel farther and faster.
 - **Noise:** This is like other travelers on the road. If there's too much noise (interference), it can be harder to hear the message.
 - **Propagation modes:** These are like different routes a traveler can take. Some routes (like ground waves) are shorter but might be more crowded, while others (like skywaves) are longer but might be less crowded.

Visualizing the Journey

I'm going to give you a final analogy. Why all the analogies? Most books I've read about radio propagation have provided clear but advanced explanations. I found myself having to go over a specific concept many times to really grasp its meaning. What was missing was a simple analogy that would have made it easy to understand the concept. Therefore, I'm using as many analogies as possible to ensure that you don't have to become stuck.

Imagine a stone skipping across the water. Each bounce of the stone is like a radio wave reflecting off the ionosphere. The distance the stone travels depends on the angle of the throw and the water's surface conditions, just as radio wave propagation depends on frequency and ionospheric conditions.

By understanding these fundamental principles, you can better appreciate the complexities of radio communication and make informed decisions about your equipment and operating practices. There is much more I could include in this introduction to propagation. However, this article was written as a general introduction to HF radio. Next, we will look at HF antenna and antenna theory. Here's an introduction (next month we'll really dig into the subject):

Introduction to Antennas

An antenna is a critical component of any ham radio station. It is responsible for converting electrical signals into electromagnetic waves and vice versa. The efficiency of an antenna significantly impacts the performance of your radio system. I cannot stress enough the importance of antennas and their use in HF radio. How good an experience you have will heavily depend on the antenna you use. While you could simply get recommendations from other amateur radio operators regarding what antenna you should own, there are so many variables involved in successful antenna deployment, that you could easily end up with an antenna that doesn't work well in your using environment. Therefore, you need to really know something about antenna in order to get the most out of them.

We're going to look at antenna theory and antennas in this chapter. This is meant as an introduction to the topic. Antenna theory is such a critical topic in amateur radio that hundreds of books have been written about the subject. If this book, I'm just providing enough information to get you started. I highly recommend you acquire a copy of the ARRL Antenna Book. This is the amateur radio antenna bible and will give you much more detailed information about antennas.

Antennas serve as the crucial interface between electronic devices and electromagnetic waves. They are essential components in any radio communication system, converting electrical signals into radio waves for transmission and vice versa for reception. The design, characteristics, and installation of antennas significantly impact the efficiency and effectiveness of a

radio system.

The physical dimensions of an antenna are closely related to the frequency of operation. This relationship is known as resonance, and it's essential for achieving optimal performance. Antennas are typically designed to be resonant at a specific frequency or range of frequencies. By matching the antenna's dimensions to the desired frequency, operators can maximize signal transmission and reception. Antennas can be classified into various categories based on their radiation patterns. Omnidirectional antennas radiate equally in all directions, while directional antennas focus the signal in a specific lobe. The choice of antenna depends on the desired coverage area and operating conditions. For example, a directional antenna can be used to target a specific location, while an omnidirectional antenna is suitable for general communication.

Antenna gain is another important factor to consider. Gain refers to an antenna's ability to concentrate radio waves in a specific direction. A higher gain antenna can improve signal-to-noise ratio and extend communication range. However, higher gain often comes at the expense of bandwidth, which is the range of frequencies an antenna can efficiently handle.

Proper installation and tuning are crucial for optimizing the performance of an antenna. The antenna should be placed in a location with minimal obstructions and adequate height. Additionally, impedance matching between the antenna and the transmitter or receiver is essential for efficient power transfer. By understanding antenna principles and selecting the appropriate type for their needs, ham radio operators can maximize their communication capabilities and achieve successful results.

Antenna Theory for HF Radio

As previously stated, an antenna is a critical component in any radio communication system, acting as the interface between electrical signals and electromagnetic waves. In the realm of HF (High Frequency) radio, antenna design and performance are paramount for effective communication. The fundamental principle behind an antenna is its ability to efficiently radiate and receive electromagnetic energy. The physical dimensions of an antenna, particularly its

length, are closely related to the frequency of operation. This relationship is crucial for achieving optimal performance.

The efficiency of an antenna is determined by factors such as its gain, bandwidth, impedance, and radiation pattern. Gain refers to an antenna's ability to concentrate radio waves in a specific direction, while bandwidth determines the range of frequencies it can handle effectively. Impedance matching between the antenna and the transmitter or receiver is essential to prevent power loss. The radiation pattern describes how an antenna distributes radio waves in space. Understanding antenna theory is essential for ham radio operators. By selecting the appropriate antenna for a given situation and optimizing its installation, operators can significantly improve the quality and range of their communications. Factors such as antenna height, ground conditions, and nearby objects can also influence antenna performance.

In conclusion, antennas are the cornerstone of radio communication. Their design and characteristics directly impact the efficiency and effectiveness of a radio system. By applying fundamental antenna principles, ham radio operators can optimize their equipment for various operating conditions and achieve successful communication.

Here are some basic concepts to learn as we work our way through antenna theory. They will serve you well in your antenna building endeavors and make reading the ARRL Antenna Book a bit easier. I've included a simple analogy with each term to make grasping that term easier.

Basic Antenna Theory Terms

- **Resonance:** An antenna is most efficient when it is resonant at the operating frequency. This means its physical dimensions are matched to the wavelength of the signal. Imagine tuning a guitar. When you pluck a string, it vibrates at a specific frequency. If you pluck another string at the same frequency, the first string will start to vibrate too, even if you're not touching it. This is called resonance. In radio, resonance happens when an antenna is the right size for a specific frequency, making it vibrate most efficiently and send or receive signals better.
- **Impedance:** The impedance of an antenna is the opposition it presents to

the flow of alternating current. It's essential to match the antenna impedance to the transceiver's output impedance for efficient power transfer. Imagine trying to push a swing. If you push at the right time (matching the swing's rhythm), it's easy to keep it going. But if you push at the wrong time, it's harder. This is like impedance in radio. If your equipment matches the antenna's impedance (rhythm), the signal flows smoothly. If it doesn't match, the signal gets "stuck" or "bounces back," which can weaken it.

- **Polarization:** Refers to the orientation of the electric field of a radio wave. Antennas can be vertically or horizontally polarized. Imagine a rope. If you shake it up and down, the waves travel vertically. If you shake it side to side, the waves travel horizontally. In radio, the direction of the waves is called polarization. Some antennas work better with vertical waves, while others work better with horizontal waves. It's like choosing the right tool for the job.
- **Gain:** A measure of an antenna's ability to concentrate radio waves in a specific direction. Imagine a megaphone. When you shout into a megaphone, your voice sounds louder because the megaphone focuses the sound in one direction. In radio, gain is like a megaphone for your signal. A high-gain antenna focuses the radio waves in one direction, making the signal stronger and easier to hear from far away.
- **Bandwidth:** The range of frequencies over which an antenna operates efficiently. Imagine a highway. A narrow highway can only handle a few cars at a time, while a wider highway can handle many more. In radio, **bandwidth** is like the width of the highway. A wide bandwidth means you can send more information (like data or voice) at once, while a narrow bandwidth limits the amount of information you can transmit.

Next month, I'll be going into antenna theory in greater detail. The material I introduced in the previous section was meant as a starting point.

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 Great Falls regarding introducing non-hams to ham radio:

Masonic Amateur Radio Club demonstrates ham radio hobby in Great Falls: A nice piece on what all amateur radio clubs should be doing to keep amateur radio alive.

<https://www.krtv.com/news/great-falls-news/masonic-amateur-radio-club-demonstrates-ham-radio-hobby-in-great-falls>

Amateur Radio is Put in A New Light Thanks To Brandon Radio Club: The Brandon Radio Club is getting people interested in amateur radio by getting them on the air at their events.

<https://www.ospreyobserver.com/2024/07/amateur-radio-is-put-in-a-new-light-thanks-to-brandon-radio-club/>

Estate Planning for Hams (What happens to all your stuff?): This is an important topic. Brought to you by the ARRL.

<https://www.arrl.org/news/estate-planning-for-hams-what-happens-to-all-your-stuff>

Amateur Radio Communications SAG Wagon Support for Cycling Events: A great Article from Cycle Chat regarding the assistance that amateur radio clubs provide for cycling events.

<https://www.cyclechat.net/threads/amateur-radio-communications-sag-wagon-support-for-cycling-events.299152/>

Ham radio may be more important than you think: Addressing the importance of amateur radio.

<https://www.mystateline.com/news/ham-radio-may-be-more-important-than-you-think/>

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

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

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

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

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

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

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

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

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. Looks like there's nothing new at 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-847>

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/>