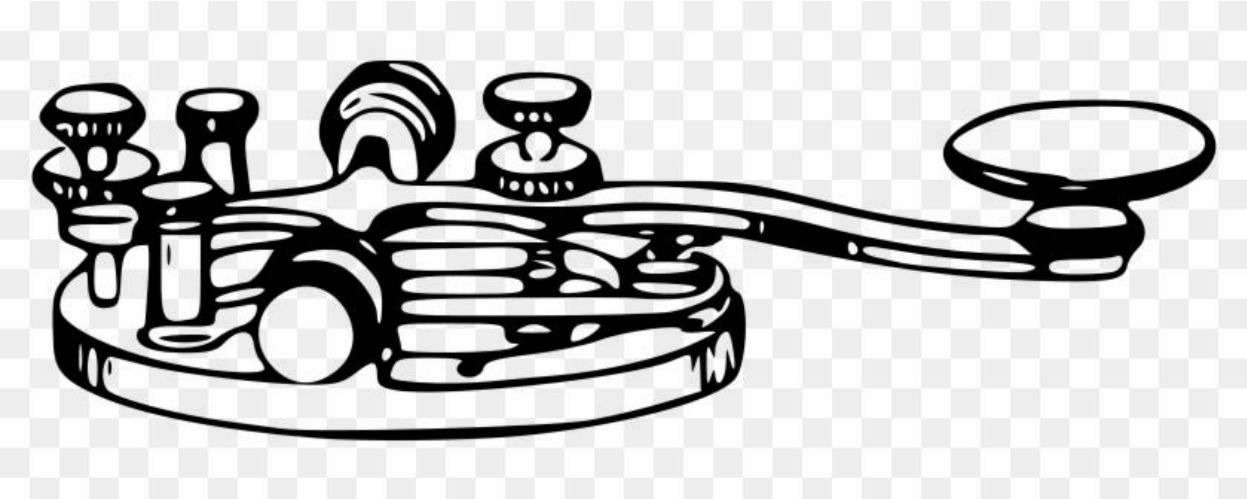
QSA-5

Marin Amateur Radio Society Monthly Newsletter

Established 1933 **April 2023**



When all else fails, you can count on Amateur Radio

From Our President:

Spring has sprung, albeit wet and cool. Spring also brings thoughts of Field Day. I hope to have a conversation regarding Field Day at the MARS General Meeting on April 7. We need to know how many participants to plan on. Are there any suggestions of a change in location or locations?

I want to remind everyone that the clubhouse is open on Sunday mornings for "Babble" class. The doors are usually opened at or near 10:00 am. Come and enjoy the company of old friends and make new ones.

Our clubhouse needs some love and sprucing up. We will be asking for volunteers to help join a work party to do minor wall repairs and apply a new coat of paint to the interior. This work will not happen until better weather arrives and we can compile a list of people willing to donate time and their painting skills. The worked performed by club members, or friends of the club, saves money that needs to be spent to do other clubhouse work. The carpeting is looking pretty bad, ceiling tiles need replaced and the reconfiguration of the entrance to the bathrooms would be a priority.

The Radio Communication Volunteers (RCV) is looking for more operators. This is a program to help Community Based Organizations with communications during emergency situations when the normal modes of communications are not available. If you would like to learn more contact Skip Fedanzo at KJ6ARL@arrl.net.

When the weather gets drier and warmer, we will be asking for help in separating accumulated items that are in the storage area of the clubhouse. Some items need to be kept, some needs to go to recycling and some unfortunately, will end up in the land fill. This is a daunting task and help is needed. If you would like to help fellow club members in any of the help requests mentioned, you can contact president@w6sg.net stating what you would like to help with.

This email was also created to provide an avenue of communication to the President and/ or the Board.

73

Ken Brownfield AB6JR

From the Editor:

The days are getting longer and the darkness of night is shortening. Of course, we could all do without so much rain! However, I'll take the rain in lieu of a drought! With the pandemic becoming more a piece of history than a day by day misadventure, things seems to be partially returning to a new normal. The Marin Amateur Radio Society has been moving along nicely, getting back to business. I joined this club at the start of the pandemic, so I don't know what it was like before Covid reared it's beastly head. However, I look forward to having that experience now.

A huge thanks to everyone who sent in reports, photographs, and story ideas over the last few months. I worry that, as editor, I miss publication worthy items when left to decide what gets included in our monthly newsletter. One of the lessons I've learned in older age is that my tastes and interests aren't for everyone. Therefore, a let out a sigh of relief when I receive items for the QSA-5 from you kind folks!

We got a hold of some equipment to test and report on, so that's in the works. The idea is that I'll test out this gear (Chinese made USDX radios, antenna tuners, etc.), and give you a report to help you decide whether you want to purchase one. Of course, with all this rainy weather, it's been hard to do any outdoor activities so event reporting will be a bit thin this month. Also note that we're having a problem with some of the links. If a link doesn't directly connect with a website, copy and paste it into your browser. We'll have the problem resolved by the May issue of the QSA-5.

Spring is here and soon we'll have summer, warmer weather, and better radio conditions. Keep those stories and ideas coming in and I'll make sure they are included in our publication's pages. Please note there wasn't a lot of club activity this past months, so there isn't much to report. Next month should make up for that.

QSA-5Editor@w6sg.net

New Members:

Jerry Back K6JB - San Francisco

David Chan NC6D - San Francisco

Victor Denisov N6DVS - Novato

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

Marin Amateur Radio Society

Board of Directors Meeting

March 9, 2023

Call to Order 19:30 Hours (7:30 PM) Actual: 19:33

Attendance

X	**President:** Ken Brownfield AB6JR	**X**	**Director:** Rich Cochran AG6QR
	Vice President: Tom Jordan KG6TCM	**X**	**Director:** Jeff Young KM6Y
X	**Secretary:** James Saltzgaber KM6WWY		**Trustee K6GWE:** Brian Cooley K6EZX
X	**Treasurer:** Bruce Bartel N6VLB	**X**	**Trustee W6SG:** Marc Bruvry KF6VNT
X	**Director:** Steve Toquinto KB6HOH		

Non-Board Members Present: Curtis Ardourel, Skip Fedanzo, Charlie Benet, Larry Bradley, & Milt Hyams

Adopt agenda MSC

Approve minutes of *February 9 & 13, 2023* MSC

Secretary's Report Jim Saltzgaber - Minutes of February 9 board meeting and February 13th continuation meeting are in this month's QSA-5. Comm Van committee did February service, and the report is in google drive. W6SG.net hosting account will expire June 16, 2023, at Network Solutions. Curtis Ardourel

has attempted to log in with last known credentials but is unable to do so. Curtis and I will work to transfer Principle Contact for that account to him.

Treasurer's Report: Bruce Bartel - We have high cash balance in our account. Requested board's permission to explore an interest-bearing account. Discussion followed as to what type of account should be utilized. Previous CD has been cashed in. Motion made to allow Bruce to find the best interest-bearing account for the excess cash in our checking account. SC

Committee and other reports

Membership: Curtis Ardourel-118 current members, 76% of last year. Will send renewal emails out at the end of this month. Halfway through April he will purge the unpaid members from QSA-5 list with one last reminder to renew. Discussion regarding how far back in previous members lists should email renewal notices be sent to, 1 or 2 years previous. It was decided to send renewals to the last 2 years of members.

Facilities: Skip Fedanzo- Good news, the building is still there. Trash hadn't been collected, but it was determined that Dan Sobel, N6HLZ, had handled that at the last Sunday's Babble Class. Discussion as to whether Check book for facilities to remain with Skip. It was determined that he would keep it for facilities expenses. MBC desires to continue to use the clubhouse for their pre-event organizational meetings. Dates 3/21, 4/18 & 19, 5/16, 6/20, & 7/18. Skip would open the clubhouse for them. The Board approved, noting that insurance certificate(s) were in place. Curtis noted that VERY nice digital thermostat had been installed in the clubhouse, but it was being unplugged and plugged back in to turn off the heat when closing the clubhouse. He suggested that we put a proper program in to alleviate the need to do this. After discussion, Mark and Curtis will get together to program it so unplugging it to turn off the heat will not be necessary.

Public Service: No committee member present

Technical: Milt Hyams- **Mt. Tam Repeater antenna replacemen**t **-** Eric and county techs not available until after next week to install the new antenna. Eric will get the antenna from Milt and test it to make sure it's tuned for the

frequencies and that we have all of the correct hardware to install it. A new heliax line will also be installed from the antenna to the cable vault. Estimate at least two weeks out to install it. **Big Rock RCV repeater-** Complaints of interference from the Big Rock UHF repeater persist from owner of a south bay repeater on same frequency pair. Possible solution is to reverse xmit/receive frequencies with the same PL tone. This will be done early next week if possible. Layton Hills - Muir Beach community services district will meet next Thursday with Dan Healy, Milt Hyams and Ken to discuss using their water tank for future repeater and mesh node installation. **Mt. Barnabe Repeater -** The tone is present again on the repeater output. Milt will obtain another 2-meter repeater and when the weather is good enough to drive up there, will try swapping it out. If the problem persists after replacing the 2-meter repeater, it may be with the Link repeater.

VOAD/RCV: Skip Fedanzo - Not much new to add. Planning exercise to determine which CBO can communicate with what repeaters, including external repeaters. That info to be added to the ongoing CBO information guide along with the existing simplex exercise information. Asks everyone to encourage other hams for RCV and RACES. New Office of Emergency Services manager has stated that he is pro-radio.

VE Testing: Ken Brownfield - 6 signed up April 8 Jeff, would like to set up ham cram for the morning on date. NBAM may assist with costs. Agreed, provided that it can be done by that time.

NBAM: Jeff Young - Muir Beach next week meeting to set up installation of mesh node. New 2023 grant request has been submitted for approx. $35K. Grant committee has some questions; Jeff will provide answers. Questions answered, yes, Sonoma Mt. has mesh that tie to Big Rock and some other sites. All users can access sites that are and are not NBAM sites.

Comm Van: Jim Saltzgaber - Will keep the committee as presently set up and work towards gathering accurate costs to prepare a budget going forward. Additional members willing to be on or assist the Comm Van committee are needed.

Education: Not much new to report. Courtis has been a proponent of the Maker community. Make magazine now has Ham radio articles! Ken questioned "are we opposed to ham cram exams?" General consensus is that no, it has its place for young people interested in new technologies, people interested solely in EmComm and others. Jeff noted that he had several technician license candidates that would be interested in the "cram" class format. Ken suggested that we obtain Jeff suggested 15 Ham cram books for setting up. Motion to spend up to $300 for books. MSC

Old Business

1. Follow up on Donated funds for DMR - Per letter from Michael Fisher it will not be necessary for MARS to accept a donated DMR repeater for Wolfback Ridge. The site owner has decided to purchase and install that repeater directly. No further Board action required.
2. Zoom account - We have a MARS Zoom account now and it is available for club use, i.e., General Meetings, Board of Directors meetings, MARS committee meetings and any other official MARS use. Contact Ken Brownfield for use of the Zoom account.

New Business:

1. Discuss a letter from club member - The board has received a letter from MARS club member Peter Bland, KG6MZV, requesting that the board discuss the motion "This board supports the continued exploration and development of digital modes of communication, including Winlink, DMR, FUSION, DStar and any other viable modes proposed by the amateur radio community." It was discussed and decided that the "Objectives and Purposes" contained in our current Bylaws do in fact include for this support, and that a separate board resolution would not be necessary. It was agreed that MARS President Ken Brownfield will send a letter of thanks to both Peter Bland, KG6MZV, and Eric Steinberg, K6ER, thanking them for their efforts in getting DMR started in Marin, and for their repeaters and the use of them. And he will also explain to Peter why the board did not feel that his requested motion was necessary.

Good of the Order

Executive Session
Adjourn MSC - 20:55

Next Regular Meeting April 7, 2023
Next Board Meeting *April 13, 2023*

Attachments:
Michael Fisher Letter 2/26/2023
https://docs.google.com/document/d/15qPlRgrIO2o_uGqTU_J5uIFMww0T5fvOBpPjBLRhzLo/edit?usp=sharing

Peter Bland Letter 3/6/2023
https://docs.google.com/document/d/1Y-pJE6hsrLNqyZR1HaTxM3FlC_Sj0pzucgxMQvNlVrc/edit?usp=sharing

Marin Amateur Radio Club
Profit and Loss
January - March 2023

TOTAL

	JAN - MAR, 2023	JAN - MAR 2022 (PY YTD)
Income		
Auction Income		50.00
Donations	1,517.69	100.00
Dues	225.00	6,240.00
Interest Income	792.77	
Rent	7,800.00	7,600.00
Sales of Product Income		24.69
Total Income	**$10,335.46**	**$14,464.69**
GROSS PROFIT	**$10,335.46**	**$14,464.69**
Expenses		
Accounting	815.00	
Awards	299.99	
Car & Truck	1,016.59	588.49
Car & Truck Gas	60.59	54.49
Total Car & Truck	**1,077.18**	**642.98**
Field day	122.97	350.00
Garbage	143.52	143.52
Insurance	1,683.00	3,301.00
Comm Van Insurance	2,173.00	
Total Insurance	**3,856.00**	**3,301.00**
Other Business Expenses	104.93	
Public Service Expense	1,328.83	3,168.19
Reimbursable Expenses	2,403.01	1,071.12
Repair & Maintenance		1,100.22
Repeater	1,465.08	
Taxes & Licenses	25.00	3,925.64
Utilities	997.64	827.95
VE Session	87.00	0.00

Water	105.11	150.04
Total Expenses	**$12,831.26**	**$14,680.66**
NET OPERATING INCOME	**$ -2,495.80**	**$ -215.97**
NET INCOME	**$ -2,495.80**	**$ -215.97**

Marin Amateur Radio Club
Balance Sheet Comparison
As of March 31, 2023

TOTAL

	AS OF MAR 31, 2023	**AS OF MAR 31, 2022 (PY)**
ASSETS		
Current Assets		
Bank Accounts		
B of A Building account - 8795	5,917.13	7,034.95
B of A General account - 4328	36,773.50	11,704.18
CD	0.00	25,000.00
Money Market	0.00	5,000.00
VE Session Cash Received	-87.00	
Total Bank Accounts	**$42,603.63**	**$48,739.13**
Other Current Assets		
Uncategorized Asset	-95.00	
Total Other Current Assets $	**-95.00**	**$0.00**
Total Current Assets	**$42,508.63**	**$48,739.13**
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	**$101,491.63**	**$107,722.13**
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	-2,495.80	-215.97
Total Equity	**$101,491.63**	**$107,722.13**
TOTAL LIABILITIES AND EQUITY	**$101,491.63**	**$107,722.13**

Marin Amateur Radio Society News

It was a slow month due again to the rainy weather. While great for resolving the State's drought problem, it's made outdoor activities problematic. April promises to be drier, so we'll report on the usual outdoor events, etc.

Old Friends of the Club

Brough to our attention by Curtis Ardourel:

Fellow members,

When I returned to the Marin Amateur Radio Society after many years away and the merger of the Amateur Communications Society with the Marin Amateur Radio Club there was a new cast of characters to meet. One of the stars in that cast was Randy Jenkins KA6BQF, Life Member from 2017. When I met Randy he led our Public Service team, with Dave Hodgson KG6TCJ led our education team, was club Secretary, and schooled me in the ways of the MARS board I first became president. This list falls far short of his contributions to the club which also include the high-end office chairs we use today. I count Randy a friend and a mentor. A few years back Randy was diagnosed with an early onset form of dementia and had to pull back from club activities. His partner in life and club activities Rita Brenden KG6WPN keeps us updated on Randy's status. Michael Fischer K6MLF recently emailed Rita about the Davis Double Century a public service event that some MARS members including Randy and Rita participated in. Rita sent this response to Michael:

Sent: Tuesday, March 21, 2023 9:13 AM
To: michaelfischer149@gmail.com
Subject: Re: David Double Century May 20 RE: DC23 Callout

Thank you Michael for thinking of us and for honoring both Randy and Doug. I miss all the SK at the Marin club that we worked events with over the years. I think about those days often, the help we gave each other, and the good times experienced in camaraderie. I think of you and your wife (Jane?) and know you

are enjoying travel and other hobbies. I hope Steve and his family are doing ok. There are others, like Jerry, that I think of too. It is good some younger folks have joined and are participating in club events. I am grateful that HAM radio brought Randy and I together. There are so many genuinely nice people in the hobby.

Randy's weight is now 136 lb. & I cannot tell if he recognizes my voice. His gaze is typically fixed in looking down. He needs complete care. He might qualify for hospice by mid-summer. I hope you and club members have a few photos that can be used in a memorial to his HAM activities. …. when that time comes.

As you may have heard on the news, actor Bruce Willis was recently diagnosed with one of the frontal temporal dementias.

Take care of yourself and thanks for reaching out to stay in touch.

Rita Kg6wpn
For Randy KA6BQF

Proposed RACES/ACS Field Event Saturday May 5, 2023

Further to discussion at theRACES leadership meeting 1/14/2023, we could combine the MARS Public Service Event for the Miwok 100 with a parallel RACES exercise to ascertain baseline Marin repeater's performance.

As there is little Miwok 100 activity in the morning, I suggest from 10am to noon we run an overlapping repeater check. Operators additional to those assigned to the rest stops would need to deploy to non-Miwok 100 sites, as shown in table 2. Operators at Miwok 100 sites would of course defer to any Miwok 100 traffic!

Heres are the 2022 Assignments:
https://docs.google.com/document/d/1B3EbbmBZ3L0HZGHGqco_7vG1yMngiyST0G8OWITQj2w/edit?usp=sharing

Table 1:These are the Miwok 100 sites:

Site	Primary repeater	Other repeaters
Stinson Beach Net control at Fire Station	147.330 MHz PL **192.8** Tam West VHF	Simulcast (all 4 inputs), Tam UHF, Barnabe UHF, Big Rock UHF
BOFAX aka Bolinas Ridge (Trail & Bolinas Fairfax Road)	147.330 MHz PL **192.8** Tam West VHF	English Hill, Sonoma Mtn, Diablo, Simulcast, all UHF
Randall Trail (Hwy 1 and Randall Trailhead)	147.330 MHz PL **192.8** Tam West VHF	Simulcast, Barnabe UHF, English Hill
Muir Beach (Muir Beach Parking Lot)	147.330 MHz PL **192.8** Tam West VHF	Simulcast (all 4 inputs), Tam UHF, Barnabe UHF, Big Rock UHF
Tennessee Valley (End of Tennessee Valley Road)	147.330 MHz PL **192.8** Tam West VHF	Simulcast, Station 9 UHF, Tam UHF, K6ER UHF,
Gerbode Stables (Bunker Road)	147.330 MHz PL **192.8** Tam West VHF	Simulcast (all 4 inputs), Tam UHF, K6ER UHF
Cardiac Hill	147.330 MHz PL **192.8** Tam West VHF	Simulcast (all 4 inputs), Tam UHF, Barnabe UHF, Big Rock UHF. K6ER UHF, Station 9 UHF

Table 2: Other sites to check. Require deployment of mast antenna and 50W mobile radio if none already exist. RCV has already tested many of these paths

EOC at Los Gamos, preferably from radio room	Simulcast (all 4 inputs), Tam UHF, Barnabe UHF, Big Rock UHF, English Hill, Sonoma Mtn
Coast guard station at Fort Baker	Simulcast (all 4 inputs), Tam UHF, Big Rock UHF, Station 9 UHF, K6ER UHF, W6PW Sutro
Nicasio School	Simulcast (all 4 inputs), Tam UHF, Barnabe UHF, Big Rock UHF, English Hill, Sonoma Mtn
Stinson Beach School	Simulcast (all 4 inputs), Tam UHF, Barnabe UHF, Big Rock UHF, W6ER, W6PW Sutro
San Geronimo Old Golf Course	Simulcast (all 4 inputs), Tam UHF, Barnabe UHF, Big Rock UHF
Walker Creek	
Valley Forde	
Tomales	
Fallon-Two Rock	

Please add comments or populate table 2!

Plan of Action

During the RACES activity each of the Table 2 stations should endeavor to get signal reports from each of the Table 1 Miwok stations as Event traffic allows. As well as testing Tam West, where possible as many of the external repeaters should also be tested. A spreadsheet

Rob Rowlands NZ6J
415 849 5667

VE News

The remaining testing dates for 2023 are April-8, July-8, and October-14. 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. The next exam is scheduled for April 8th and has two individuals signed up as of the MARS Board meeting.

Our next scheduled exam session is April 8, 2023., which is coming up. Make sure to get the word out. Also, make sure anyone you talk to abut testing in April brings the appropriate paperwork with them to the testing site.

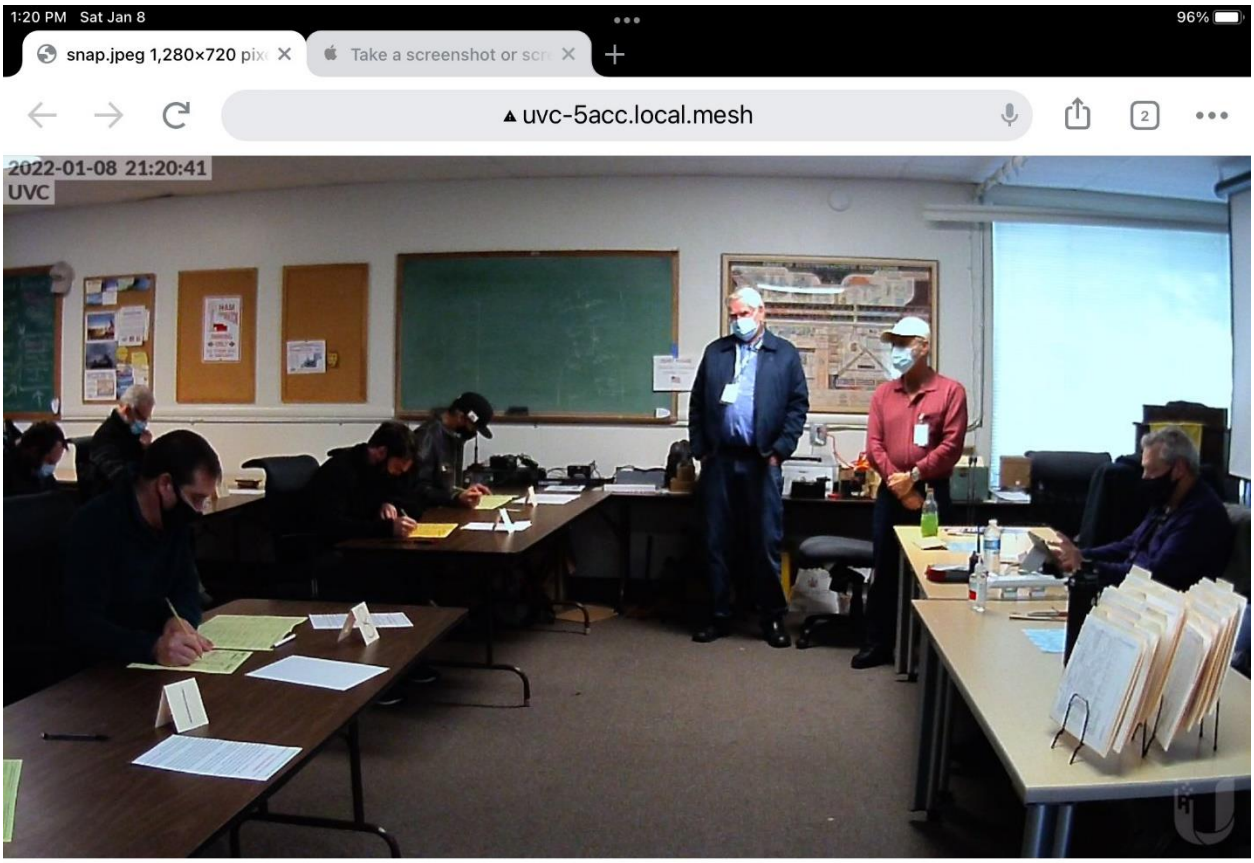
Why is the VE program so important?

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.

RCV News and Updates

The QSA-5 is now including monthly information from the RCV program. Here's an interesting piece from Curtiss Kim:

RCV Fact Finding Tour

A meet and greet turned into a huge fact-finding tour for member of the Radio Communication Volunteers. The get-together was meant to introduce management members of the Canal Alliance in San Rafael to the RCV members assigned to provide a communication link during a natural disaster.

Canal Alliance is a nonprofit champion of immigrants who are challenged by a lack of resources and an unfamiliar environment providing food, health and legal services. The organization serves thousands of clients.

A tour of the facilities in the Canal neighborhood revealed the community-based organization works out of two separate buildings with part of the organization's management team moving into a third building several miles away. "This is why RCV is described as a mobile communications unit", according to RCV Organizer, Skip Fedanzo (KJ6ARL) who took part in the meeting. He went on to say, "you have to be flexible; you have to move and you have to adapt."

Also in attendance, ham radio operators Dirck Brinckerhoff (KM6VKQ) and Curtiss Kim (KM6GUY) who are assigned to set up radio ops between Canal Alliance and the emergency operations center during a major incident.

The meetup was arranged by Adriana Rabkin. Director, Marin VOAD (Voluntary Organizations Active in Disaster) who stressed, "This is an opportunity for RCV operators to see a CBO, meet the key people, see their facilities and for CBO members to understand a little more about the RCV program."

The visiting group was led through each building by Javier Villafane and Carla Acevedo prior to a round table with others of the Canal management team. "The issue is what if the Canal buildings come down?" Brinckerhoff said. "Where are we going to go? Radio operators can carry their gear, but it won't be easy for these people."

Fedanzo pointed out ham operators would be willing to help Canal members earn their FCC operator's license if there was interest.

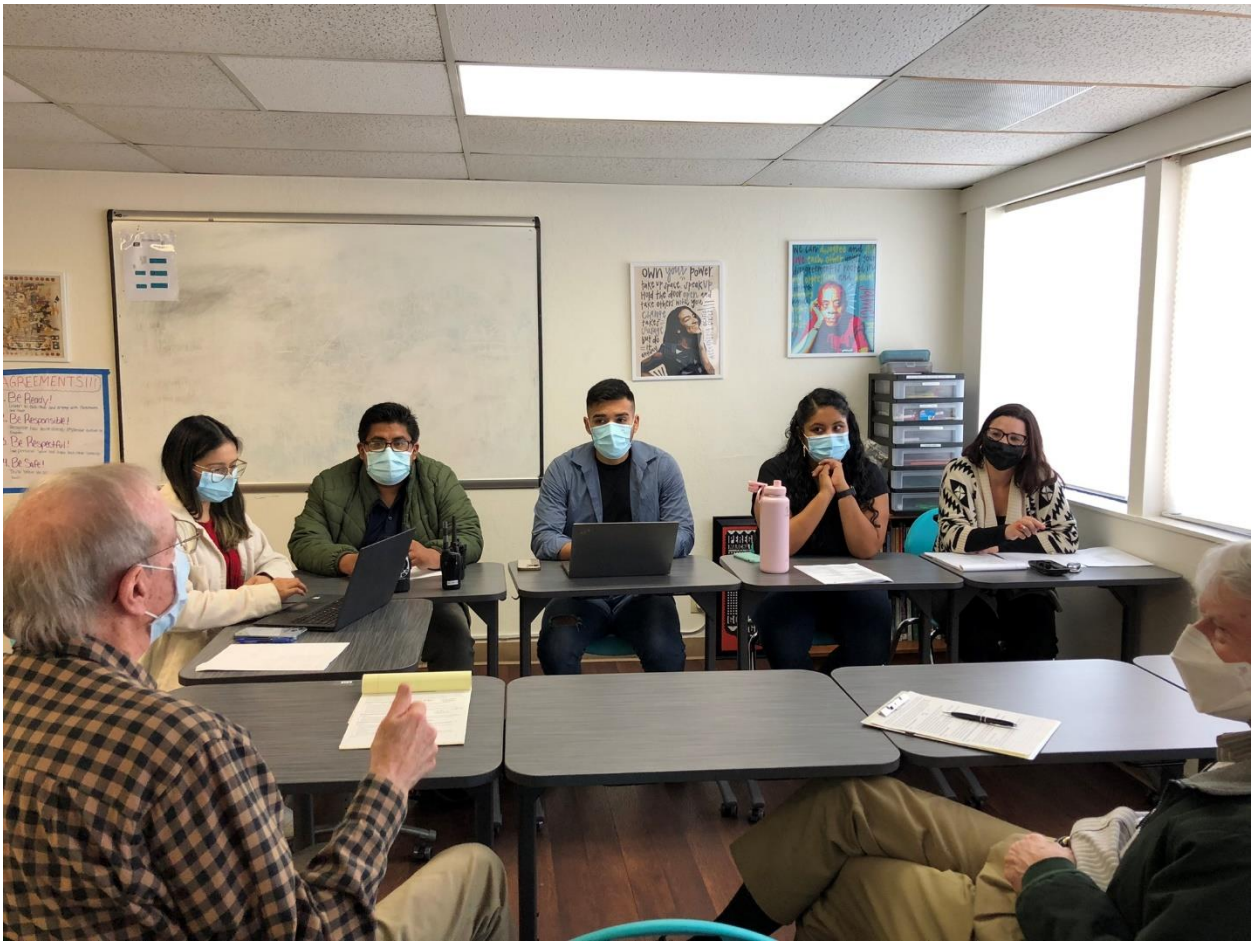
The RCV team came away with a better understanding of the obstacles they face

in the Canal should a major incident occur.

“I think these connections are critical” said Rabkin.

Any licensed ham radio operator who would like to become a RCV member should contract Skip Fedanzo at KJ6ARL@ ARRL.net

Here are some photographs of the event:




BYD CARE
SURGICAL MASK
SINGLE-USE
BYD CARE
Surgical Mask

Big Rock UHF Repeater Problems

The Big Rock repeater has been having some technical issues. Here's the latest update from Skip Fedanzo:

The Big Rock UHF repeater will be off the air Monday (4/3) through Friday (4/7) next week. When it comes back up any changes to its frequency settings will be provided ASAP. Big Rock will be on-air for the Sunday morning RCV net with the current frequency settings.

Stay safe & 73,
Skip Fedanzo KJ6ARL
RCV Lead Operator

RCV Operators Meeting Agenda

Here is the agenda from the March RCV meeting, in case you're interested in joining RCV and want to know more about their meetings:

RCV Operators VIRTUAL Meeting

The monthly RCV Operators meeting is Monday March 27th at 1730.
Join Zoom Meeting
https://us06web.zoom.us/j/4159240584?pwd=bndqeFMwa2o5NHJOcXdTVlIyWjh6UT09

Meeting ID: **415 924 0584** Passcode: **94925**
One tap mobile
+16694449171,,4159240584#,,,,*94925# US
+12532158782,,4159240584#,,,,*94925# US (Tacoma)
Find your local number: https://us06web.zoom.us/u/kbPFnHLt2

Primary Agenda items are:

1. What's up with Big Rock UHF repeater?
2. Volunteers needed to help manage/run/administer parts of RCV.
3. RCV Operator outreach to CBOs – who has made contact? (Adriana will contact CBOs to expect your call or email next week.)
4. Out of county repeater testing on April 22nd
5. Golden Eagle 2023 – multiday or single day exercise?
6. Other_____

Next meeting is April 24th **2023** on Zoom. Agenda, relevant documents and Zoom login to follow.

North Bay Critical Mass

Unfortunately, we didn't receive any reporting regarding the North Bay Critial Mass event this past month. The QSA 5 will give you updates as we receive them in next month's issue.

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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. Added this month is an article on the mysterious world of code plugs. 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.

Code Plug Terminology

The most difficult part of the transition from analog to DMR radios is the code plug. A Code Plug is nothing more than a fancy name for the software file that gets loaded into your radio to tell it what to do. Thanks to Miklor for the following information.

There are two stages to programming a DMR radio. The first stage is very similar to an analog radio. It determines the transmit and receive frequency of your repeater. The second part directs you through the network. Here are some terms you need to be familiar with:

TDMA / Time Slots

TDMA stands for Time Division Multiple Access.

A standard FM handheld transmits a single carrier from the time you press the PTT to the time you release it. With the digital magic of TDMA, your signal is divided into alternating 30ms segments. This allows two signals to interweave, so two different conversations can take place on the same frequency at the same time.

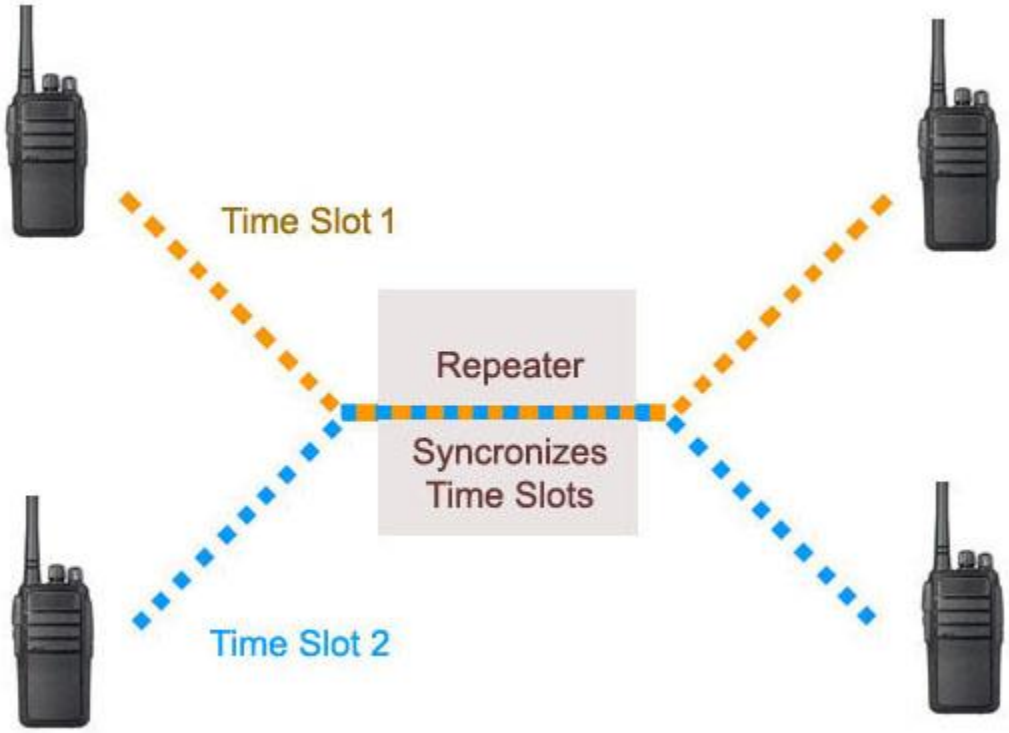
The graphic below illustrates the splitting of a transmitted digital signal into these 30ms time slices. These are called Time Slots.

The code plug's Time Slot (TS) parameter determines which path you will be using, TS1 or TS2.

Tier II TDMA 30ms Time Slots

The code plug's Time Slot (TS) parameter determines which path you will be using,

TS1 or TS2.



Color Code

The digital Color Code (CC) has nothing to do with a color. Compare it to a CTCSS or DCS code. Its function is to prevent interference between two repeaters with overlapping coverage. The proper CC is required for access and is assigned by the repeater's owner. (normally, but not always CC1)

Talk Groups (TG) / Digital Contacts

There are well over a thousand different Talk Groups worldwide, each with its own assigned network ID. These TGs fall into various categories, such as States, Regions, Countries, Languages, etc. as well as general chat channels.

When you determine which TG's you want to use, you would then add them to your Digital Contact list.

Channels

This is what ties everything for a specific channel together. Channel information contains information such as frequency, power, time out, TG, CC, etc. A further example is found below.

Zones

A Zone is the area in your radio where you group together related Channels. You can set up the zones in groups such as:
- *Your local repeater's channels*
- *Simplex channels*
- *Most commonly used channels, etc.*

Admit Criteria

This determines when you are allowed to transmit. The options are:

Color Code (preferred) - Allows you to transmit only when the time slot is available.

Channel Free - Allows you to transmit when the channel is clear, however there may be someone using the same time slot.

Always - This allows you to transmit even if there is another QSO on a different time slot. This would interrupt the current QSO. The only time 'Always' should be used is if on a simplex channel or in the analog mode.

Setting up a Code Plug

Although code plugs are not interchangeable between models, the basics are the same.

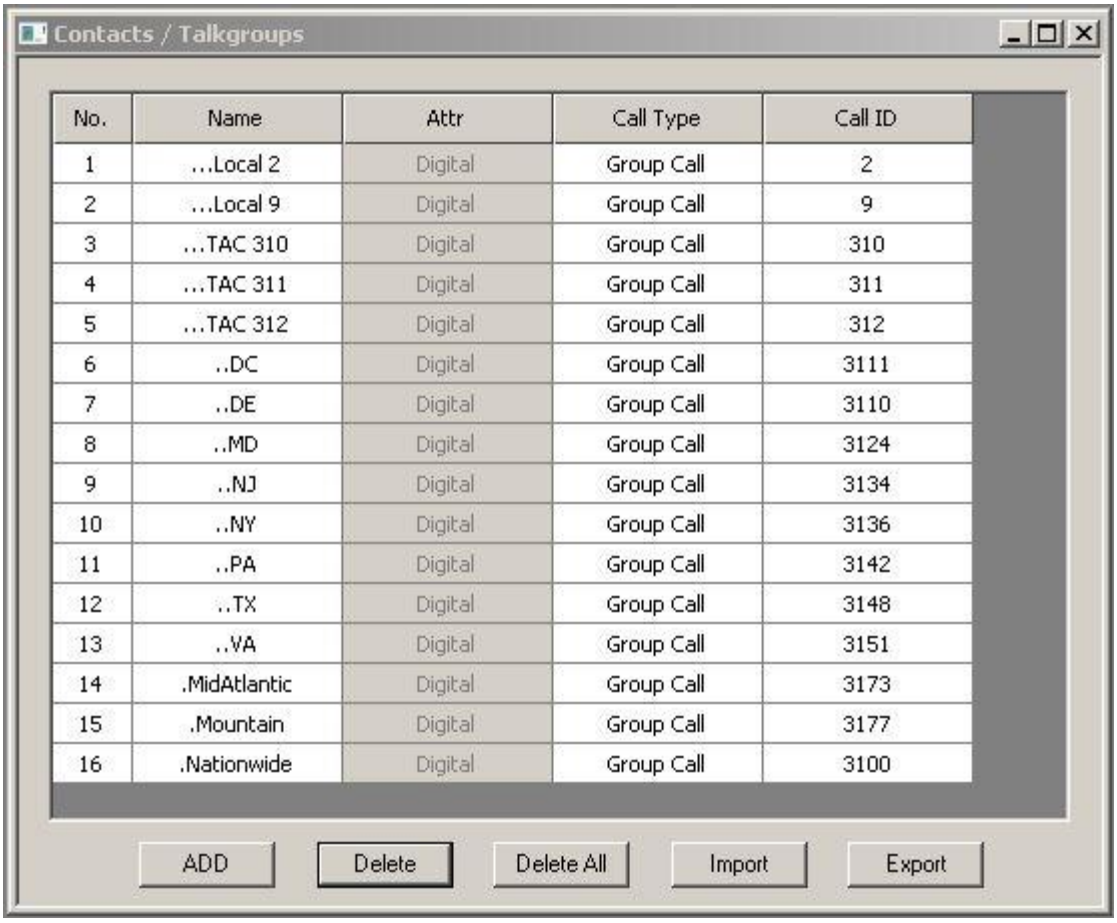
Step 1 – Transmit Talk Groups

The first step is to identify the Talk Groups desired by Name and Group ID.

The TG fields may be labeled differently, depending on your radio's software, but they all serve the same purpose.
For example: Tx Contacts / Digital Contacts / Talk Groups are all the same.

* When entering the TG ID, you are required to enter either 'Group Call' or 'Private'. Always enter 'Group Call' for all Talk Groups.

** You will also notice below that some software will sort the name column alphabetically. If it does, preceding the contact name with a period or comma will help categorize items by group names.



To start, I would suggest the following TGs:

TG 9 (repeater)

Connects to your local repeater only.

Does not apply to a hotspot

TG 2 (repeater)

Connects to your local repeater and those repeaters connected to the local network cluster. This could be upwards to a dozen or more repeaters across your state or region.

Again, does not apply to a hotspot.

Statewide Groups

Your state, and surrounding states. You do not need to be located in the state to use a state group, but it must be available in your repeater's active TG list. It

serves as a meeting place for those in your general area.

Nationwide 3100

This is a National Talk Group, sometimes referred to as a calling channel. Please use with courtesy. This TG links all repeaters nationwide. Although it is not a requirement for use, consider moving to a TAC channel for long conversations.

TAC channels

Secondary channels for long conversations or group chats. Common TAC channels are TG **311, 312**…

A sample of these and other TG's as can be found at:
BrandMeister and ***DMR-MARC***.

Parrot / Echo test - TG 9998, TS 2

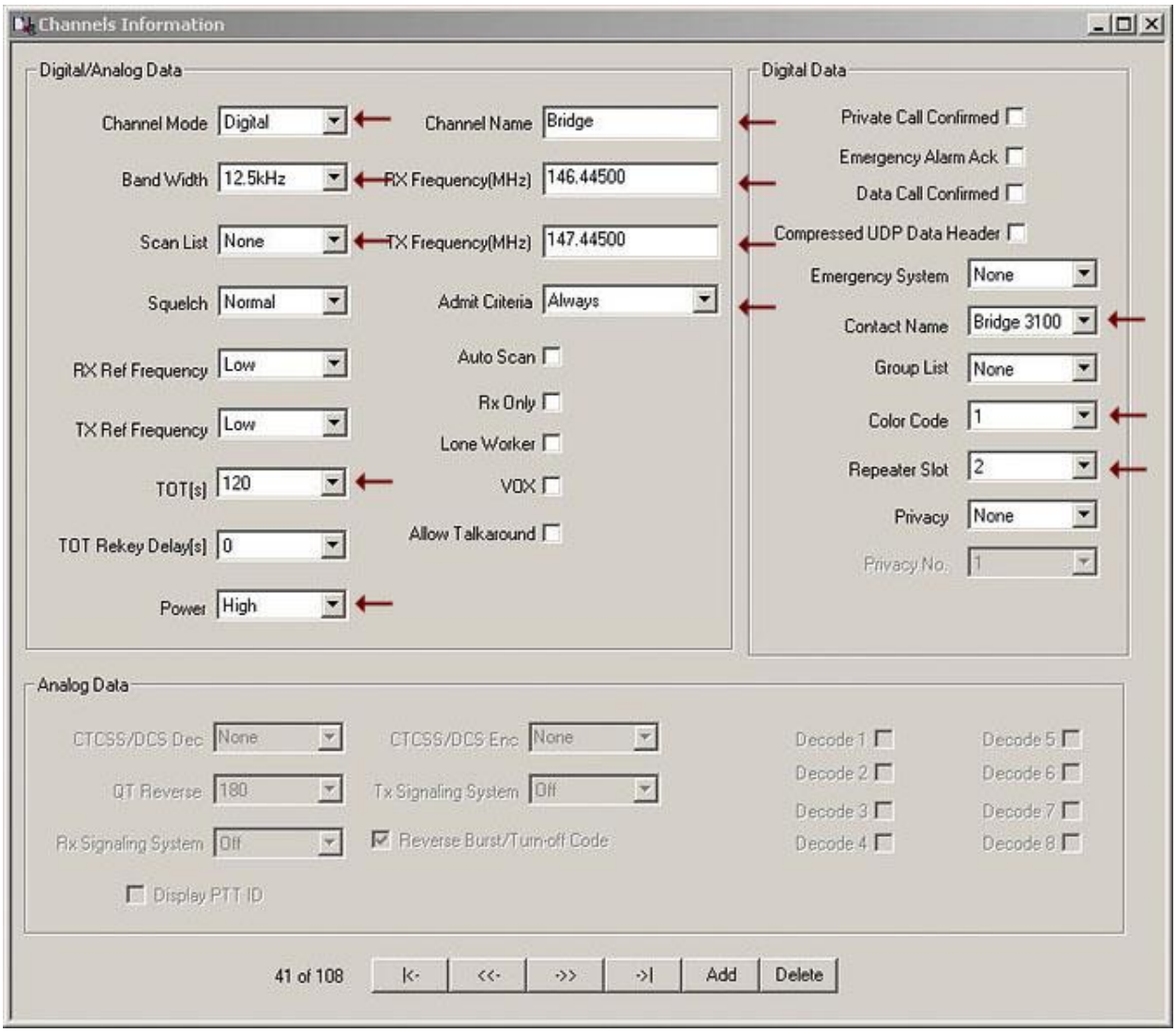
This is a network echo test that allows you transmit up to 90 seconds, and after a 5 second pause, will repeat back to you exactly what the network users hear on their end. Excellent for audio level and distortion testing.

Note: On the Brandmeister network, the echo test is TG **9990, TS 2**

Step 2 - Channel Information

This is where the control information is entered. The data required here is the Frequency, Power, Color Code, TG, and Time Slot where the desired TG can be found. The main items required are shown below.

* Pay special attention to the Time Slot. If the wrong time slot is selected, you are going nowhere. This can easily be overlooked.



- Channel Mode = Digital
- Band Width = 12.5 kHz
- Scan List = (save this option for later)
- Time Out Timer = 120 is a good starting point
- Power = Least amount needed to get into repeater
- Channel Name = Name that appears in your channel list
- Tx and Rx Frequency = Operating Frequency
- Admit Criteria = Color Code (repeater) or Always (simplex)
- Contact Name = This is the TG name
- Color Code = Determined by the repeater owner
- Repeater Slot = Determined by the repeater owner

Step 3 - Zone

After your Channels have been set up, you will need to place them into areas called Zones. The channels in a Zone can be arranged in any order. The same channel can appear in multiple zones.

So there you have it. Hopefully this has made you feel a little bit more comfortable about creating a code plug. A good recommendation would be to acquire a sample CP for your radio, examine it, and build upon it.

Next month, we'll look at Wi-Fi hotspots and how to set them up. I'd like to thank the folks of Miklor for the bulk of the information presented in this article.

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.

USDX Transceivers

In next month's issue of the QSA 5, we'll introduce the Chinese made USDX QRP transceiver. The USDX is a simple and experimental (Class-E driven) SSB and CW SDR transceiver. It can be used to make QRP SSB contacts, or (in combination with a PC) used for the digital modes such as FT8, JS8, FT4, depending on the specific model you use.

Because these transceivers are made in China and are sold by a number of different companies, not mention limited quality control, you might end up with one of poorer quality. However, the majority of transceivers have worked well according to their owners. I was loaned one to test and review, which is what I'm going to do over the next two weeks. Here's how I'm doing the testing and review:

First, I'm tearing the entire rig down and examining all the components. I'll test them as well as check solder joints. One problem that has been reported is the encoder. The quality of the encoder seems to be a primary problem, so I'll be putting it at the top of the testing list.

I'll use a NanoVNA to perform further signal testing and then try the transceiver

out with a variety of antennas. Radio operators who own these rigs have given them glowing reviews for the most part. While there have been a some negative reviews, many of them seem to be from people who expected too much from a transceiver that costs under $200.00. The most common problem was a faulty encoder.

What makes these rigs so popular is not just the cost but the fact that it is an open-source software/hardware device. These means that mods are possible. I'll run the tests, photographically document the process, and present it to you in next month's issue.

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 this last month. Our first article regards World Radio Day:

World Amateur Radio Day is April 18: World Radio Day is upon us. Here's a nice article about this global event from the ARRL.

https://www.arrl.org/news/world-amateur-radio-day-is-april-18-2

Tornado Season and Amateur Radio: Another example of the importance of amateur radio during a disaster.

https://www.arrl.org/news/tornado-season-and-amateur-radio

W8LT - A History of Amateur Radio at Ohio State University: A nice article on ham radio at the University.

https://www.arrl.org/news/w8lt-a-history-of-amateur-radio-at-ohio-state-university

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

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

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

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

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

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

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

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

FCC Regulatory News

Here are the current regulatory changes and FCC news as it applies to Amateur Radio. This section of the QSA-5 newsletter was introduced last year. We will add new regulations and rules monthly, removing the older regulations and rules as new regulations/rules are introduced. As of the August 2021 issue of the QSA-5 newsletter, this list of FCC regulations and changes will be reduced, only covering

this year's new regulations and rules. The newest regulations and changes will appear at the top of the list. Note that we are not able to cover every change the FCC has made this year within our publication. There has been little FCC news over the last few months:

FCC Grants an ARRL Emergency Request to Permit Higher Data Rate Transmissions for Hurricane Relief Communications: The FCC has granted 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:

https://www.arrl.org/news/the-k7ra-solar-update-771

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/