

QSA-5

Marin Amateur Radio Society Monthly Newsletter

Established 1933

July 2021

From Our President:

When I hear the phrase “The Long Hot Summer” the first thing that pops into my head is the Paul Newman 1958 movie which is strange because I was only two when it was released. The second thing that comes to mind is the summer of 1967 when race riots tore through our cities. Now thinking about the record temperatures around the country, and I thank God we are not feeling them here, combined with the frightening images of empty reservoirs, I am getting the feeling we are in for a Long Hot Summer.

As you have already heard our Public Service season has been pushed later in the year and further into what we used to call Fire Season. That means events may be cancelled at the last minute due to fire danger. That also means we may see Public Service Power Shutdowns, Rolling Blackouts, and fires close to home. In that light, now is a pretty good time to refresh your go bags, make sure you have necessities in stock, and generally emulate a boy scout by being prepared. Public Service may be more than an academic exercise this summer. On a lighter note, if they put a pipeline across the Richmond San Rafael Bridge again this year, I want to know who will be the first to load it up as a 2200 meter band antenna.

Today’s essay will be a little short but a couple of reminders. The club Picnic and Public Service Luncheon will be July 17th at the Marin Rod and Gun club. Lunch is on us and will be a boxed lunch with a variety of sandwiches on offer. The Marin Rod and Gun club requires us to have a complete guest list and that all attendees be vaccinated. As I am writing this, we have 59 people signed up. If you want to attend, you need to let us know by emailing us at rsvp@w6sg.net. I am really looking forward to seeing you all there and not in tiny rectangles on a screen.

I had a conversation with a member who asked if we could have time before the meeting to chat, so the invitation I sent for Friday’s meeting starts at 7:00 pm and I will call the

meeting to order at the usual 7:30 start time. I also look forward to seeing you in tiny rectangles

73 de wa6uds

From the Editor:

Happy Fourth of July! We have two reasons to celebrate: Our traditional independence as a nation and our success (thus far) in fighting the pandemic. Last summer at this time, our future looked bleak. This summer, the pandemic is becoming an object in our rear-view mirror rather than a darkening storm on the horizon.

This is my fourth edition of the QSA-5 newsletter. I am almost done finalizing the permanent content that will appear each month. However, with that said, I am always open to any changes you would like to see. After all, this is your publication not mine. My job is to supply you with information about our club's activities and amateur radio in general, and then throw it together into a readable publication. I again ask that if there is anything you want to see within the pages of the QSA-5 newsletter, let me know and I will include it. I want to thank those of you who have sent in ideas, photographs of club events, and links to items of interest, especially Rob Rowlands NZ6J. My goal is to make this publication a go to source of valuable information for its readers. With that said, keep those ideas, photographs, links, and thoughts coming. Doing so will make the QSA-5 newsletter the best that it can be.

QSA-5Editor@w6sg.net.

General Membership Meeting: June 4th, 2021

Call to Order: Due to technical difficulties beyond our control, the QSA-5 was unable to provide the general meeting minutes for June. We apologize for any inconvenience and have rectified the problem. The meeting minutes for July's meeting will be published in full in the next edition of the QSA-5 newsletter.

Adopt Agenda M/S/A N/A:

New Members:

Jatin Pandya K6OQ - San Rafael

Scott Corbin KN6OSA - Sausalito

Board Actions:

Procedural about frequency coordination

Clubhouse cleaning

Dealing with SK assets

Presentation: N/A

Fun with Ham Radio: N/A

Secretary – Communications: N/A

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Treasurer's Report: N/A

Committee and other Reports:

1. Membership: 128 | 92%

2. Facilities: N/A

3. Education: N/A

4. Repeaters: N/A

5. VE: 7/10/21

6. Public Service: N/A

Old Business: N/A

New Business: N/A

Adjourn: 21:01

Post-agenda Presentation: N/A

Next Meeting: July 2, 2021

Marin Amateur Radio Society Board of Directors Meeting June 10th, 2021

Call to Order 19:30 Hours (7:32 PM)

President: Curtis Ardourel WA6UDS

Secretary: Brian Cooley K6EZX

Vice President: Milt Hyams KM6ASI

Trustee W6SG: Mitch Martin WU1Q

Director/Trustee K6GWE: Doug Slusher KF6AKU

Director: Skip Fedanzo KJ6ARL

Treasurer: Bruce Bartel N6VLB

Director: Mark Klein KM6AOW

Adopt agenda: Milt: Need to go into Executive Session at end of meeting.

Approve minutes of: 13 May meeting

Secretary's Report/Communications: N/A

Treasurer's Report: Bruce will start publishing regular financial reports (income, balance sheet) which Brian will add to formal club Drive each time.

Committee and other Reports:

1. **Membership:** 129 | 93%

2. **Education:** N/A

3. **Facilities:** Skip: Rob and Skip, with another group of members, have made progress in clearing up the yard at the club and tearing down the canopy. We have located an e-waste firm in Reno that may come down and take away our unneeded gear. And we have located a garden service that will clean up the yard and fix the fence: Rob has spoken to one neighbor about sharing the fence cost, with one more neighbor still to be contacted.

Rob: Bo will start cataloging the excess gear imminently. That will result in a list we will send out for a potential silent auction before we dispose of the rest.

Milt: Cast a wide net as we sell surplus gear before we dispose of it.

Curtis: VE sessions are coming up on July 10th and that forces our hand on clearing up the surplus gear sitting on the clubhouse tables. Can we box up a lot of it to make room for the July 10th VE examination session? Rob thinks we can.

Bruce: We are finally getting the correct amount of rent deposited regularly from our tenant. This clears up a problem with the tenant paying less than the correct amount for a while (and often paying a variable amount) which was mostly rectified by a catch-up payment (though still shy by \$50).

Curtis: Will forward to Brian the rent increase and catch-up letters that were sent to the tenant and Rob will photograph the lease on 6/11 and send those images to Brian who will file all of those documents in the club Drive.

Brian: Will research a password vault platform for the board and exec leaders to have access to.

4. Technical: N/A

- 5. Public Service:** As of today, 40 RSVPs are in hand for the July 17th annual meeting picnic. Rob has created a Slack group for MARS. He is the admin and will send out an invite to the membership via next QSA-5.

Old Business:

1. Tower: Milt: Work site is progressing; drawings are being done.
2. Ward Peak: N/A.
3. MARS and VOAD (RCV): Approximately 14 operators have been recruited, and a drill is being planned soon. 443.250 may be nominated by Skip as a core machine for RCV use. The 147.330 machine as well. That keeps RCV off the MARS simulcast net during an emergency.
4. Encouraging membership: Curtis is working on the new recruitment handout to be used at VE examination sessions. It will be ready by July 10th session.
5. Life membership: Bruce and Curtis need to soon discuss how such an offer might affect MARS revenue over time.
6. Frequency coordination: Skip will check in soon to verify the status of our applications to [NARCC](#) to formalize allocation of our frequencies/pairs. Skip paid [NARCC](#) for a year membership recently.

(Doug Slusher joined at this point, 8:06 pm)

7. Club house cleanup: Covered above in Facilities.
8. Disposition of SK assets N/A
9. Public Service Luncheon Covered above.

New Business:

1. Tires for the Comm Truck: Bruce has done some shopping and tires for the comm truck will cost roughly \$750 - \$900 (see sample clip below). It was M/S/A to authorize Bruce to get tires on the truck per a Costco quote he described (not the clip below) and to have it done before July 17th (picnic).
2. In person meetings: Curtis: Much interest has been expressed in hybrid meetings, perhaps starting in August. A laptop in the clubhouse will need an external camera, and Doug will talk to Dan Healy about an audio setup so all parties can communicate well.
3. Disposition of new donations. Covered above.

Good of the Order N/A

Executive Session Non-board attendees exited the meeting at 8:24 pm and the board considered an executive committee issue. Its minutes are recorded separately, accessible to board members.

Executive session ended 8:35 pm

Adjourn 8:42pm

Next Regular Meeting July 2, 2021

Next Board Meeting July 8, 2021

Questions and Answers

This section of the QSA-5 newsletter is dedicated to questions you have regarding amateur radio. You can ask QSA-5 questions and we will try to find an answer for you, or you can reach out to members of our club for an answer. With that said, here is a question for our members, from last month's issue that still needs an answer, asked by David N6OVP who is looking for a large satellite dish.

Can anyone there help me? I am looking for a larger dish for my EmE station here in Corte Madera. I have a 10-foot dish but wish to go larger and I was hoping that there was a way to list a request on a web page for someone out there who might have a lead? Thank you, David N6OVP.

n6ovp@pacbell.net

Hi David! While we are not sure whether you have received any input or solutions to your dish problem, so the QSA-5 did some digging around on your behalf. There is a section of Facebook's Marketplace that is dedicated to antennas and satellite dishes. Here is the link:

<https://www.facebook.com/marketplace/sac/antennas-dishes/>

There also appears to be a modest number of dishes for sale on Craigslist. Here is a link to that page:

<https://sfbay.craigslist.org/d/for-sale/search/sss?query=%22satellite%20dish%22>

The next question, also a holdover from last month's use, comes from the president of our club, Curtis WA6UDS, regarding the installation of our new antenna tower:

We need your help. To get a building permit for the installation of our antenna tower, we need a site map of the club house lot. Do any of you have the ability to produce such a map? We have an assessor's map which includes the PG&E right of way. If you can help us out or know someone who can please contact me at:

wa6uds@w6sg.net

Marin Amateur Radio Society News

If you are looking for equipment, look no further! There is a large collection of donated equipment that has piled up at the clubhouse over the last fifteen months and it needs to be cleared out. Volunteers have sorted and listed everything that is for sale. How do you get your hands on this great stuff? Read the following letter from our club's President to find out!

Greetings

We have recently received a number of donations of equipment, and we need to clear the tables at the club house before our next VE session on July 10th. You can help by taking some of these items off our hands. We are holding a silent auction using a google document. You can view the items and enter bids at:

https://docs.google.com/spreadsheets/d/1gSF4CBTt_xG2HE4VwbgkfHua9DF9-BbubkaJ94hRRHw/edit

You will find descriptions and pictures of each item. To make a bid enter your call sign in column B and your bid price in column C. If someone has already bid on an item, you must enter a bid that is at least a dollar more. I like to think that we are on the honor system, but google tracks changes so if there is a dispute we can look at the history.

You can also make an appointment for an in person viewing by contacting Skip Fedanzo KJ6ARL or Rob Rowlands NZ6J at facilities@w6sg.net at the following dates and times. If you have any questions or concerns, feel free to contact Bo KN6DBN (415) 521-4385 or Rob NZ6J (415) 849-5667.

You must contact either Skip or Rob with your choice to ensure that they will be there to let you in (a list of viewing dates and times appears on the following page).

- a. Monday 6/21 from 9AM - Noon
- b. Tuesday 6/22 from 1 - 4 PM
- c. Wednesday 6/23 from 9AM - Noon
- d. Thursday 6/24 from 1PM – 4 PM
- e. Saturday 6/27 from 9AM – Noon
- f. Sunday 6/27 from 2PM – 5 PM
- g. Monday 6/28 from 9AM - Noon
- h. Tuesday 6/29 from 1 - 4 PM
- i. Wednesday 6/30 from 9AM - Noon
- j. Thursday 6/24 from 1PM – 4 PM and 7 PM – 9 PM

Bidding will close at 7:00 pm on 2 July 2021 before the July meeting. Everything is sold AS IS and items cannot be returned. We are accepting cash or checks (payable to the Marin Amateur Radio Society) only for payment. Items can be picked up by appointment between 3 July and 9 July Skip Fedanzo KJ6ARL or Rob Rowlands NZ6J at facilities@w6sg.net.

Good luck, and good hunting.

73 DE WA6UDS

Curtis Ardourel

President and Membership Chair

Marin Amateur Radio Society

WA6UDS@W6SG.NET

Clubhouse Cleanup Progress Report

In response to our club President's call to action, club members have volunteered their time to clean up our beloved clubhouse to prepare it for in-person meetings and VE testing sessions. The first order of business was taking down the old metal frame carport and trimming the trees that hung over the driveway. While the carport's metal frame presented some challenges, our team of club members were up to task and removed it. We cut back the trees that hung over the driveway because they made it difficult to get our van out without damaging its antennas. The following week, the clubhouse cleanup continued with a team of members going through donated equipment, sorting, and preparing it to be cataloged for sale. The equipment has now been fully cataloged and a link to the inventory of items for sale can be found here:

https://docs.google.com/spreadsheets/d/1gSF4CBTt_xG2HE4VwbgkfHua9DF9-BbubkaJ94hRRHw/edit

Thank you to everyone who participated in the clubhouse cleanup. Here are some photographs of our club volunteers in action (see the following page):



Left to right: Milt Hyams KM6ASI, Skip Fedanzo KJ6ARL and Rob Rowlands NZ6J.



Rob Rowlands NZ6J in action, taking down the old carport.



Milt Hyams KM6ASI cutting down the carport frame.

Upcoming Licensing Test Session

The Marin Amateur Radio Society will hold its next VE examination session on July 10th. Contact Ken AB6JR for further information: ab6jr.ken@usa.com

Help Extend the SF Emergency Wireless Emergency MESH

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

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



This is an example of a MESH Node

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

New Slack Chat Channel for MARS Members

Join our new Slack channel to chat about ham radio!

From Rob Rowlands: "Slack" is used extensively in industry and academia to network people, especially since Covid-19. MARS now has a Slack channel, "Marin

Amateur Radio Society". Go to https://join.slack.com/t/marinamateurr-sq15924/shared_invite/zt-r9ocah4l-4G7Pl8LAOssMMsnfIQ8QcQ. There is also a slack channel for the San Francisco Amateur Radio club that is highly active.

Free Introduction to Winlink Class

From Rob Rowlands: That's right, a free class that introduces amateur radio enthusiasts to Winlink. MDARC (Mt. Diablo Amateur Radio Club) is hosting a free auxiliary class on "An Introduction to Winlink." The class will feature our own Rob Rowlands. The class takes place on July 6, 2021; the sign-up info was kindly given to us by the Mount Diablo Amateur Radio Club and is open to all Marin Amateur Radio Society members. Here is a link to the signup page:

<https://events.r20.constantcontact.com/register/eventReg?oeidk=a07ehyrzdpb5ca8ef42&oseq=&c=&ch=>

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 on their message or content. Our first story comes from Spectrum News Channel 13 in Florida. When major communication systems went down, amateur radio operators stepped in:

Ham radio operators provide vital information when storms disrupt communications

<https://www.mynews13.com/fl/orlando/news/2021/06/22/ham-radio-operators-play-role-when-storms-disrupt-communications>

Our next submission comes from Parkersburg Ohio regarding Field Day 2021. It is always interesting to see how radio clubs around the country and world celebrate Field Day:

Ham radio operators on the air this weekend

<https://www.newsandsentinel.com/news/local-news/2021/06/ham-radio-operators-on-the-air-this-weekend/>

Here is another story about Field Day 2021 from the Twin Cities in Minnesota. This article is brought to you by The Twin Cities Pioneer Press:

24 hours of ham radio demonstrations this weekend in Cottage Grove

<https://www.twincities.com/2021/06/22/24-hours-of-ham-radio-demonstrations-this-weekend-in-cottage-grove/>

Here is an article from the ARRL regarding the CHESS Cubesats satellite, which will not carry amateur payloads. The satellite is due to launch in 2022:

CHESS CubeSats Will Not Carry Amateur Radio Payloads

<http://www.arrl.org/news/chess-cubesats-will-not-carry-amateur-radio-payloads>

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 in last month's issue. We will add new regulations to the existing articles, removing the older regulations as new regulations are introduced. As of the August issue of the QSA-5 newsletter, this list of FCC regulations and changes will be greatly reduced, only covering the last two months. 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:

FCC Seeks Comment on Potential Impact of Global Semiconductor Shortage:

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

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

FCC Seeks Comments in Proceeding Involving 70 and 5 Centimeters:

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

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

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

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

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

FCC Issues Enforcement Advisory: Radio Users Reminded Not to Use Radios in Crimes:

If you have an amateur radio license, then you most likely received an email from the FCC regarding this issue. As the editor of QSA-5, I am bound to present

information to you in an unbiased manner and offer no opinion on the subject matter, leaving that to you, the reader. However, you can find some interesting video responses from Amateur radio operators on YouTube by searching under the heading “FCC Enforcement Advisory”. Here is a link to the ARRL article regarding the advisory notice, which was sent to licensed radio operators twice this year:

<http://www.arrl.org/news/fcc-issues-enforcement-advisory-radio-users-reminded-not-to-use-radios-in-crimes>

Updated Radio Frequency Exposure Rules Become Effective on May 3, 2021:

Rule changes have been put into effect (based on a 2019 report) on May 3rd, 2021, regarding RF Standards. The new rules do not change the existing RF exposure (RFE) limits. However, the changes do require that stations in all services, including amateur radio, be evaluated against existing limits, unless they are exempt. Here is a link to the ARRL article:

<http://www.arrl.org/news/updated-radio-frequency-exposure-rules-become-effective-on-may-3>

FCC Not Yet Collecting \$35 Application Fee:

In 2020, the FCC stated that it would be increasing licensing fees. Initially, a fee of \$50.00 was set for each license and any license renewals. However, that number was brought down to \$35.00. Here is the latest news regarding the implementation of this new fee from the ARRL:

<http://www.arrl.org/news/fcc-not-yet-collecting-35-application-fee>

ARRL to FCC: Additional Volunteer Examiner Coordinators Not Needed:

The FCC was considering expanding the number of VECs (Volunteer Examiner Coordinators). However, the ARRL has indicated that the existing number is adequate. Here is an in-depth article from the ARRL:

<http://www.arrl.org/news/arrl-to-fcc-additional-volunteer-examiner-coordinators-not-needed>

April 2021 Volunteer Monitor Program Report Released:

Here is the latest report on the Volunteer Monitor Program, a joint effort by the FCC and ARRL to monitor the airwaves and enhance compliance regarding FCC rules and regulations:

<http://www.arrl.org/news/april-2021-volunteer-monitor-program-report-released>

Amateur Radio Gets a Partial Reprieve on 3.5 GHz:

Usable bands are of constant concern to amateur radio operators. With commercial entities competing for space within the radio spectrum, the ARRL has been fighting the good fight for the amateur radio community. Here is an article from the ARRL:

<http://www.arrl.org/news/amateur-radio-gets-a-partial-reprieve-on-3-5-ghz>

Cooperative Effort Under Way to Resolve Potential 70-Centimeter Interference Issue:

The U.S. Military, The FCC and The ARRL are trying to resolve the problem of possible interference by amateur radio operators and a new missile system at the White Sands Missile Range in New Mexico. Here is the full article:

<http://www.arrl.org/news/cooperative-effort-under-way-to-resolve-potential-70-centimeter-interference-issue>

Propagation News

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

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

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

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

SunSpotWatch.com:

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

<http://sunspotwatch.com/>

ARRL:

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

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

DIY Radio References

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

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 ham 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 Newslane. An AP styled news feel page for amateur radio:

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

Fun With Radio

Since I have not had any submissions for this month's column, I thought I would address how much more fun you can have with radio if you have the right tools for the job! Prior to becoming involved in amateur radio, I was a paperclips and duct tape kind of guy. It might take me hours and lots of swearing, but I would get the job done (poorly, but done) with whatever tool I had at hand. After passing my technician's test, I realized that this approach would not work for the delicate

electronics that make up most radios. No longer would I use a flathead screwdriver that three sizes too big to tighten a microscopic Phillip's screw. No more using a blow torch to solder for this fellow!

I started researching electronics tools and made a list of everything I would need to build an electronics workbench that had everything I would need to both repair and build radios. Being new to amateur radio, I had to learn how to use many of the tools I sought out. Seeing as I was poorer than Jed Clampet prior to striking oil in his backyard, I had to find gear that was inexpensive yet decent. I literally build my workbench up, one screwdriver at a time.

You might think that there is nothing to learn about using a screwdriver. However, I found that there are many tricks and tips I never knew existed until I started watching videos online regarding the use of electronics tools. I spent countless hours watching videos and taking copious notes. Take the multimeter, for example. I knew the rudimentary basics but after watching a few videos on digital multimeters, I realized I was now able to do so much more with mine. The same held true for my handheld oscilloscope. When I needed a soldering iron, I watched online videos and learned that I needed one that had the ability to control the temperature. I purchased a soldering station.

Because I was on a budget I had to hunt around for deals on equipment. Thankfully, I was able to find deals on everything I needed. Of course, I used the recommendations made in the videos I watched as a guide. Today, when I need to repair a radio or build something, I can reach for the right tool for the job. However, I keep a fresh roll of duct tape and a few loose paperclips for the times when nothing else will work! Lastly, I religiously read the manuals that come with every piece of equipment I purchase which may explain why I no longer use the fire extinguisher as much these days (just kidding, sort of). While this is not exactly a traditional "fun with radio" topic, it certainly has made radio more fun!