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Amateur Radio

COMMUNICATIONS & TECHNOLOGY
JUNE 2020

CQ

Take It To The Field Special

On the Cover:
Paul Signorelli, WØRW,
operating pedestrian-mobile
as W7L from Colorado's
7 Lakes Wilderness.
Details on page 95;
story on page 16.



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By Paul Signorelli, WØRW

On the Cover: Paul Signorelli enjoys operating pedestrian mobile with his station in a backpack. WØRW's visit to Colorado's rugged 7 Lakes Wilderness Area in harsh weather, which is also at an elevation of 11,000 feet, exemplifies our Take It To The Field Special. (Photo by Sharon Signorelli)



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Surviving COVID-19 or the Next Pandemic!

How We Survived a Pandemic by Loving Ham Radio

BY JIM MILLNER,* WB2REM AND GENE HINKLE,# K5PA

In the face of a common enemy, we in the amateur radio community have intrinsically become closer. COVID-19 has created universal anxiety never seen before in current times.¹ Our lives have been turned upside down, and the regular routines of going to work, spending time with family and friends and participating in fun activities have been curtailed. We have been confined by law and necessity to our homes and neighborhoods and feel compelled to sit and watch the TV news as if we were zombies awaiting the apocalypse while mourning the loss of our freedom.

We are so fortunate to be ham radio operators. Our hobby does not confine us to the physical world but gives us access to a world in which we can communicate with other human beings in a safe and fun environment. It allows us to reclaim losses that we've experienced from the COVID-19 virus and helps take our minds off the serious problems around us. This article addresses ways the amateur community can use the unique radio experience to help survive this world crisis. It will also present activities that you can pursue on the radio and tools that you can use to facilitate communications.

In normal times, we live a structured existence. However, when these routines no longer exist, anxiety comes from the fear of the unknown. From a positive standpoint, we can take a negative situation and make it positive. Instead of dealing in the unknown, take control of your life by setting up structures over which you have control. Plan to operate the radio more often, build that project

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Photo A. Co-author K5PA's drawing says it all!

that you've put off for years and which has been collecting dust in your basement, or even write an article. By taking control of your life and using the radio as a therapeutic tool, you may feel more encouraged and less anxious.

There is nothing abnormal about deriving support from each other as a supplement to the family. Just listen to the crowded bands as a crisis (such as COVID-19) emerges. In many cases, ham radio operators are lifelines to other operators who are alone and scared. When anxiety levels increase in situations like COVID-19, earthquakes and other disasters, our defense mechanisms come into full view. Among other things, we might withdraw within ourselves, minimize or deny what is happening, or project blame onto others. These reactions act to stabilize our own mental health. On the air, we are our own support group. It's sort of like group therapy. We listen, provide support, positive reinforce-

ment, and demonstrate a sense of consistent caring for each other and belonging. This is one of the many positives of ham radio. In these times of need, take a break from making quick contacts and become an active listener. You may not be a psychologist, but just your interest in another person could make the difference in the life of a fellow hobbyist.

Healthy Ham Radio Through Social Distancing

A new term to us is *social distancing*, deliberately increasing the physical space between people to avoid spreading illness.² We are fortunate in ham radio because our use of radios in our shacks automatically lends itself to social distancing (*Photo A*). There are many facets of our hobby in which we can still partake in self-interest, an interest in others and still have physical separation. In general, we have practiced

Healthy Ham Radio Through Social Distancing



Figure 1. Healthy ham radio through social distancing. (K5PA diagram)

many of the activities shown in *Figure 1*. At the top of the chart is what we do as ham radio operators. We have a keen desire to communicate through the magic of radio. Historically, we are global communicators through radio frequency communications. However, the emergence of smartphones and the internet have led to many ways we can communicate using new and interesting technologies. Marrying these technologies to radio makes it even more fun.

These are great times in which to improve your learning through books, magazines, web surfing, special interest groups (SIGs), and blogs. Downloadable eBooks and magazines make it easy to keep current with technology and events. Listening to ham radio nets is an excellent way to pique your interest, learn about new subject matter, and exchange ideas. A notepad by the radio is essential to keeping track of topics requiring further research. Web technology also provides great learning tools with applications such as YouTube. It seems like almost every topic has a YouTube channel.

During these stressful times, reaching out to teach others is a great way to improve one's own technical abilities. There is a saying that if you want to learn a subject matter in depth, become a teacher. Our hobby refers to a mentor as an Elmer and has a long tradition of helping new hams as they enter the hobby, or more experienced hams as they begin a new activity. Today, mentoring requires a different approach. You can teach others through exchanging ideas, providing solutions, and interacting with SIGs, websites and blogs. This can be a one-to-one or one-to-many approach. We have found that teaching a single ham about a facet of ham radio can be repeated many times over if we document what we learn and teach. The internet is a great place to post information and reach out to those who are trying to enter our hobby.

As a group, ham radio operators are very creative, especially while building their stations. They have developed the skills needed to design and modify, build, test, and use their stations effectively. Social distancing is compatible with this

activity since it provides more time to spend on the projects and document the results. An easy way to begin new projects, especially starting out, is to purchase a complete electronic kit. This allows for fun, entertaining projects to be completed when bored or experiencing "cabin fever."

Ham radio operators also like challenges and competitions during different phases of the hobby. An example is setting goals to achieve awards, such as CQ's WAZ or the ARRL's DXCC. The downtime could be used to sort your QSL cards into new countries, rummage through your log for needed cards and make applications to CQ or the ARRL for the certificates. Each person can set individual challenges and goals. Some hams like "personal best" achievements, while others prefer comparing results between their circle of friends. Others like to publicly achieve their goals through national and international competitions.

One way to handle these stressful times is to set personal goals, no matter how small, and seek a path to accomplish them. This will provide purpose and the feeling of achievement in your life. It is important to set goals that are achievable, so you are not discouraged. Therapeutically, it is better to accomplish many smaller goals as part of reaching a loftier one.

Finally, volunteering your expertise is a great activity to support the ham radio community. Social distancing demands we support others from afar. This could include helping someone set up an FT8 station, a remote link, or fine tune a radio. Programs on the computer through internet connections, such as *TeamViewer*³ and *Any Desk*,⁴ can be used to help accomplish this goal.

One way we like to give back is by volunteering with the Volunteer Examiner Coordinator (VEC) program for testing of FCC license candidates. During social distancing, the VEC program is essentially shut down, and this will create a larger need for examinations once things are back to normal. Now is the time to prepare to qualify as an accredited VE with

the VEC of your choice. You can later volunteer as a VE to assist in candidate testing. We see a pent-up demand in the future for testing due to the current hiatus, and you can be part of the solution as the situation improves.

Our challenge to all amateurs is to look at your interests and set some goals that you can achieve. Because of your knowledge and love of ham radio, you all have the unique ability to learn, teach, build, operate, or be a volunteer. Social distancing can be a catalyst to call you to action for achieving your goals in ham radio or life in general.

Social Gathering, Then and Now

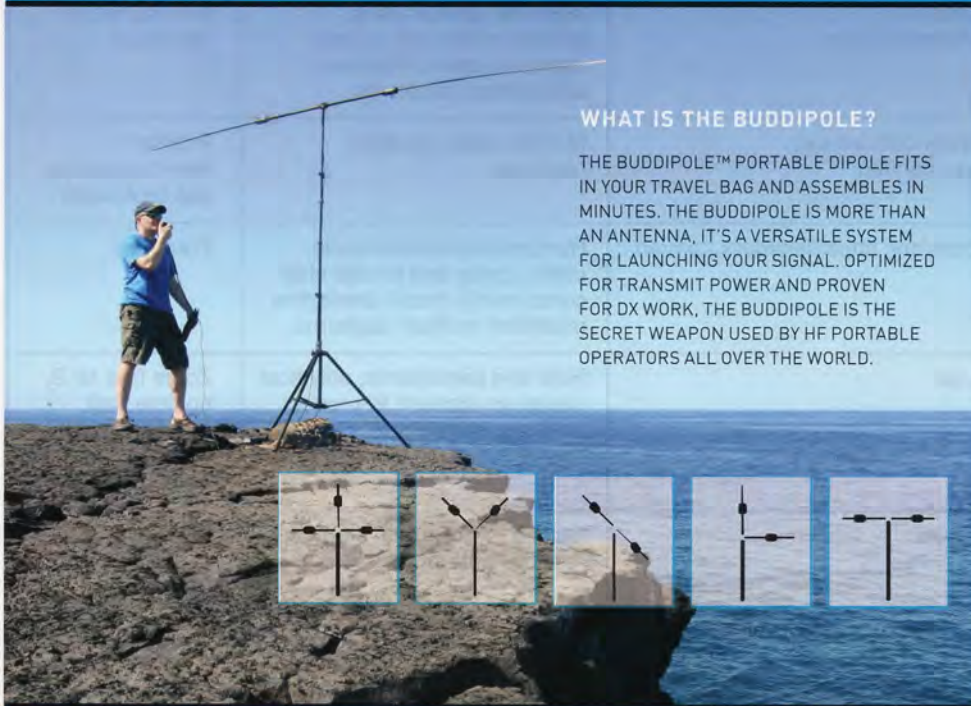
Ham radio is a social activity and not totally conducive to social distancing. However, there are ways we can practice better distance separation during times of need. *Table 1* shows a summary of group size versus activities. Different ham radio activities are shown in the first column and begin with the smallest group size (eyeball QSOs) and gradually increase to conventions. Each of the group sizes poses its own challenges for how we historically (pre-pandemic) assembled to our current condition (during pandemic). The table provides ideas in using technology for virtual gatherings. Examples of technologies are shown in the last column.

Our group sizes cover a large range. At the lower end, there are technologies available to keep similar type interactions for small groups and gatherings using text and video chatting. Many of the technologies are free or low cost, which will be discussed later. As we get to the larger group gatherings, it is currently more challenging, and thus an area needing greater creativity, to add the tools to host virtual conventions. A current example is using webinars to reach a larger audience and posting technical sessions online via websites. More work is needed in these larger group settings to support virtual gatherings. There are solutions for medium and small groups via video chat technology.

We added VEC FCC license testing at the end of the table to touch on the current state of remote testing. The FCC and VECs have allowed, under special circumstances and in remote locations (e.g., Antarctica, Hawaii, Alaska), to provide remote ham testing.^{5,6} In one example, it was still necessary to have a physical presence of one examiner while the others were connected via a video link. In ongoing cases in Alaska, remote testing is allowed using a qualified proctor to physically oversee the test while VE examiners are connected via a video link. More recently, there is an example of remote testing with complete physical separation of the can-

Social Interactions (# Participants)	Pre-Pandemic	During Pandemic	Examples
Eyeball QSOs (2)	Social gathering of friends at homes, restaurants, events	Limit exposure by using video chat or amateur television (ATV)	Zoom.us, Skype, Google, etc. (Free), Remote Desktop Apps.
Group Lunches (3-8+)	Gathering of friends at lunches and dinners at homes and restaurants	Seek audio/video resources like ham radio local nets, Internet video chat	Zoom.us, Skype, Google, etc. (Free or \$)
Club Meetings (10-50+)	Club members with common interests meeting at restaurants, meeting rooms or centers (e.g., libraries)	With effort, can produce materials for posting on club websites, newsletters, local nets, Internet chat	Zoom, Skype, Google, etc. (Free or \$)
Swap Meets (50-500+)	Local and regional gatherings at parking lots located with businesses and organizations	Use local ham radio swap nets, provide drop off service, integrate with club newsletter/website; national web-based swap pages	QRZ.com Swapmeet; CQ and QST classified ads; QTH.com ham radio classified ads; eHam.net classified
Conventions (500-2500+)	Regional/national/international gatherings at hotels and convention centers	Vendors provide convention pricing for online purchases, produce video presentations for convention websites, provide live streaming of webinar and record for future viewing	Live streams via web; Vimeo uploads (\$), recordings
FCC Licensing (3-7+)	FCC-authorized Volunteer Examiner Coordinators (VEC) and VE teams	ARRL/VEC Alaska remote testing approval with proctor present (https://kl7aa.org/vec/); Remote testing in general via ARRL, W5YI, other VECs (future potential)	In the USA, there are 14 VECs with authority to manage VE teams and process paperwork. On special case basis, remote testing has been allowed.
Contest Competitions (3-10+)	Multi-operator teams or clubs at contest/club stations	Teams using virtual radios scattered across geographic areas. Host site has equipment.	WW2DX in 2020 CQ WW WPX SSB Contest

Table 1. Social Gathering in Ham radio, Then and Now



WHAT IS THE BUDDIPOLE?

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- Rotating Arm Kit allows users to instantly change antenna configurations
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didate and the VE team.⁷ These are examples of what has been and could be implemented in some fashion. The VECs are considering a quasi-remote or totally remote testing administration, but as of today, these have not become commonplace. We are hopeful that it will be routine in the future.

Team Competition Reconfigured

The pandemic has allowed us to reconsider how to provide team competition in contesting. Recently, the CQWW WPX SSB Contest was entered by WW2DX, consisting of 10 operators using virtual radios scattered across the U.S. and operating an unmanned station via Remote Ham Radio.^{8,9} This successful application may provide insight into how we compete in future contests or operating events (e.g., ARRL Field Day, multi-operator contesting). The key to success is to design, build, deploy the hardware / software, and train the operators to compete. Our hope is that these successful models can be used by others to overcome the shortfalls of using disadvantaged stations (e.g., HOA antenna restrictions, low power) or something akin to a pandemic.

Helper Technology We Already Use

There are existing technologies, mostly using computers / smartphone and the internet, to assist in achieving our social distancing goals of physical separation. Ham radio operators still need to communicate and now have a large set of tools in their bag-of-tricks. *Table 2* shows some of the “helper” technologies that can be deployed today. We have been using many of these for years, and they’ve proven to be reliable and effective.

Ham radio operators like to talk and listen using transceivers connected to outdoor antenna systems. However,

many homeowners’ associations (HOAs) and local authorities have placed severe limitations on using outdoor antennas that are effective for communications over the radio. Fortunately, through the development of remote radio using the internet, it is now commonplace for ham operators to use these remote stations around the world. Our experiences have led us to “socialized” remote radio that is ideal in our current crisis. What we mean by this is a remotely-operated radio that is shared simultaneously by many hams during an over-the-air net activity. Specifically, we are using Remote Hams *RCForb Server* and *Client* to provide this communication application.¹⁰ The sharing of this one resource allows multiple licensed operators to sign into the radio server and talk and listen as they participate in a net. There is also chat capability, giving those logged into the radio the ability to text amongst themselves. This is neat for giving great social interaction and allowing all participants to share in the conversations over the air. One aspect of this application is the ability to permit non-licensed persons, pre-hams, to become acclimated to ham radio as a learning tool to the hobby. There are other similar services available, including W7DXX¹¹ and Remote Ham Radio.¹²

To augment the over-the-air net experience, we also use Skype chat communications to provide a backchannel for exchanging messages, web links, photographs, and other documentation in real-time during net operation.¹³ We have set up a Group within Skype for all participants to gather and exchange ideas. This includes a Group Chat (one-to-all) and a Private Chat (one-to-one) capability.

The social power of marrying Remote Hams’ remote radios and Skype together is to bring together large numbers (10s to 100s) of ham radio enthusiasts who are all practicing social

Function Needed	Example Links	Features / Platforms	Costs
“Socialized” remote radio	www.remotehams.com/ ; http://w7dxx.com/ ; www.remotehamradio.com	Multiple simultaneous users for radio sharing and text chats with current logged-in users; Windows and Android platforms	Free, fee, or contribution to developer
Desktop sharing	www.teamviewer.com/en-us/ ; https://anydesk.com/en	Multiple users, multiple platforms	Free for non-commercial use (enforced)
Text chats	www.skype.com/en/ ; https://anydesk.com/en	Hundreds of simultaneous users, group and private chat concurrently; social interaction multiplier! multiple platforms	Free App
Video chats	https://zoom.us/	Host and participants; only host needs an account; in-product desktop, white board, chat sharing; multiple platforms	Zoom free for 2, no time limit; greater than 2-100 users have a 40-minute limit
Video sharing	https://vimeo.com www.youtube.com	Upload to cloud with storage; multiple platforms	Vimeo modest costs; YouTube free

Table 2. Helper Technologies We Use

distancing through the use of radio and the internet. Our outreach is local, regional, national, and global at the same time over a diverse ham population. Ham radio is the ultimate social distancing medium.

Computer desktop sharing technologies are helping hams to set up their applications, exchange information and manage remote radio sites. Again, these applications can share desktops with more than one user, making this an ideal platform to help others. We use both TeamViewer and AnyDesk, and there are certainly many other candidates to try. Do a web search on “remote desktop software,” and you will be able to evaluate many candidates that are either free or low cost.

Video chatting is a prime way of staying in touch with fellow hams. Such applications as Zoom¹⁴ provide a free or low-cost application across all the user platforms. These are valuable for converting face-to-face meetings at restaurants or other places to virtual face-to-face over the Internet. Participants can view and speak with each attendee during these get-togethers. The sessions are AES encrypted that will keep all information private. There has been a boom in the use of these video chat technologies lately due to social distancing requirements. They can be used for small groups or even groups of hundreds of participants (e.g., club meetings or conferences). The application can record the session on the host computer or the cloud for viewing later. This adds a new capability for clubs and organizations to reach beyond their current membership and to the greater community at large. Plus, since these are virtual meetings, they can be viewed anywhere connectivity is provided.

For larger groups and conventions, video sharing in real time is possible, as well as the recording of meetings and presentations for later use. We are using video storage and playback services, such as Vimeo,¹⁵ to reach a greater audience through time-shifting, meaning they can be watched on-demand.

Everyone knows of the popularity of YouTube¹⁶ and how it is used in every corner of our society, including ham radio. There is a great opportunity to learn how to produce, edit,

and publish video for information exchange, education, training, and entertainment. This is an area ripe for self-improvement while practicing social distancing.

Summary

COVID-19 has placed tremendous stress on society, including our amateur radio community. It is unclear how we will be individually affected, but in one way or another, we will experience loss. This loss could come in the form of family tragedy, job loss, financial hardship, and feelings of insecurity. Therefore, as our article has discussed, there are many ways in which we can cope with these uncertain times as amateur radio operators. We can communicate with each other and provide support through one-on-one conversations and nets. We can assist others in improving operating techniques. We can build kits and complete other projects to occupy our minds. We can learn through virtual seminars or acquire skills to become volunteer examiners.

Amateur radio operators have always been there in times of need. We have helped in emergency situations by providing comfort to families who needed to hear from their loved ones. Now, it is time for us to help ourselves!

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