

# RAINBOW CANYONS AMATEUR RADIO CLUB NEWSLETTER

CEDAR CITY, UTAH



Club Websites: [www.rcarc.info](http://www.rcarc.info) OR [www.rainbowcanyons.com](http://www.rainbowcanyons.com) Number 3 – Vol. 9 – September 2021

## Club Meeting Information

The RCARC meets at 7:00 p.m. on the 2<sup>nd</sup> Tuesday of each month at the Cedar City Senior Center, 489 E. 200 South.

## 2021 Club Officer's

### President:

Fred Govedich  
KI7TPD

1-435-559-2682

[fred.govedich@gmail.com](mailto:fred.govedich@gmail.com)

### Vice President

Ron Shelley  
K7HDX

1-623-261-6555

[ronald.shelley@gmail.com](mailto:ronald.shelley@gmail.com)

### Secretary

Bonnie Bain  
K17WEX

1-435-865-1653

[Bonnie.bain@gmail.com](mailto:Bonnie.bain@gmail.com)

### Treasurer

Linda Shokrian  
KG7PBX

1-435-867-5914

[lgshokrian@gmail.com](mailto:lgshokrian@gmail.com)

### Newsletter Editor

Dennis L. West  
W6DLW

1-760-953-7935

[rcarcnewsletter@gmail.com](mailto:rcarcnewsletter@gmail.com)



CQ, CQ, Happy Labor Day



## Presidents Message

### Greetings fellow HAMs!

It has been a Crazy Summer! Our August BBQ was a wonderful gathering and it looked like everyone had a good time and a few even tried out the radio direction finding gear! The Book sale was good, but we still have lots of books for those who missed out. We had several of our new HAMs at the BBQ and it is always good to see their enthusiasm and seeing everyone helping out our new members. A big Thank you to Brody (K7VXV) and Terry West for helping with the cooking and to everyone who participated by bringing food and helping with set up and clean up. The Fire Road Race was also a lot of fun and as usual our local HAMs had an important role. I hope you can share your radio enthusiasm with others and I hope you will play on the radio more!

With the rain and flooding in Cedar City and now with Ida in the southeast our role as radio operators and the importance radio communications during natural disasters has been highlighted once again. I am confident that you are all helping in any way that you can with those who have experienced flooding from these storms. **Cont. on page 2**

## RCARC Club Nets:

7:00 a.m. Breakfast Net - Monday – Saturday – 146.760.

12:30 p.m. Daily – Utah Beehive Net On 7.272.

8:30 p.m. Tuesday's - ORCA Digital Net. Using FLDIGI, FLMSG AND FLAMP – 3.581 +, 1500/MFSK32.

8:00 p.m. Wednesday – Panguitch Net – 147.160.

7: pm. Thursday– Morse Code Net- This is a Zoom Meeting.

8:30 p.m. Thursday's - WDN Digital Net. Using FLDIGI, FLMSG AND FLAMP – 3.581 +, 1500/MFSK32.

8: p.m. Saturdays – SSTV – 449.925.

9:00 p.m. Daily – Friendship Net – 146.760.

11: a.m. Saturdays (Mtn. Time) QCWA – 160 Net, Utah Chapter, 12: p.m. Freq. 7.272.

## Local Repeaters:

146.980 MHz – Tone 100.0 Hz

146.940 MHz – Tone 100.0 Hz

146.760 MHz – Tone 123.0 Hz

147.160 MHz + Tone 100.0 Hz.

448.800 MHz – Tone 100.0 Hz

146.680 MHz – Tone 100.0 Hz

## Remote Bases:

449.500 MHz – Tone 100.0 Hz

449.925 MHz – Tone 100.0 Hz

ILRP/Echolink

449.900 MHz – Tone 100.0 Hz

## Save The Date

**September 14, 2021**

### **RCARC Club Meeting.**

7:00 pm. Cedar City Senior Center,  
489 E. 200 South. **This will be an  
Elmer Night.**

**October 12, 2021**

### **RCARC Club Meeting.**

7:00 pm. Cedar City Senior Center,  
489 E. 200 South. **Program to be  
determined**

**November 9, 2021**

### **RCARC Club Meeting.**

7:00 pm. Cedar City Senior Center,  
489 E. 200 South. **Program to be  
determined**

**December 14, 2021**

### **RCARC Club Meeting.**

7:00 pm. Cedar City Senior Center,  
489 E. 200 South. **Program to be  
determined**

## **President's Message**

**Continued from page 1.**

I hope everyone has been getting out on the radio! Have fun, and play on your radio. As we move into Fall the temperatures will be falling and you might want to get out a bit more. Remember if you need help with setting up your radio, software or other equipment please ask your fellow HAMs for help. Part of the fun is helping others! As always, I would like to thank everyone who makes our meetings great by asking questions. I would also like to thank all of our net controls for the nets and everyone who participates!

We will have our next monthly meeting Sept. 14<sup>th</sup> starting around 7:00pm at the Cedar City Senior Center. This month we will have an Elmer night and will look at small projects, soldering and coax cables. Hope you can all make it!

Cheers!

Fred (KI7TPD)

## **RCARC Club Breakfast**

Come join us the first Saturday of every month at 9:00 a.m. for breakfast at the Pastry Pub located at 86 W. Center Street, Cedar City. Check out their website at:

[www.cedarcitypastrypub.com](http://www.cedarcitypastrypub.com)



Happy Birthday and  
Anniversary to those  
celebrating in September



# Happy Labor Day



## Breakfast & Friendship Net Awards August 2021

Breakfast Net		Friendship Net	
First Place	Second Place	First Place	Second Place
KG7PBX - Linda	K7ZI - Dick	K7WEP - Paul	N7SIY - Sylvia
KI7TPD - Fred	N7SND - Larry	KG7VEJ - Jack	KI7SXJ - Isaiah
KI7WEX - Bonnie	KE6ZIM - Johnny	K7NKH - Lee	<b>Third Place</b>
N7SIY - Sylvia	<b>Third Place</b>	K7ZI - Dick	K7HDX - Ron
	KI7LUM - Tom	KI7LUM - Bruce	N7WWB - Darlene
		KI7DRE - Larry	KI7TPD - Fred
			KI7WEX - Bonnie
			KA7J - Lance
			W6DLW - Dennis

## Rainbow Canyons Amateur Radio Club Treasurer Report as of Aug 10th, 2021

Bank statement balance - June 1, 2021 \$2,350.58  
 Field Day - Food & Misc Expenses (ck #102) - 192.29  
 Deposits (see below) + **195.25**  
 Rocky Mountain Power - 20.90  
 Bank statement balance - July 31, 2021 \$2,332.64  
 Less Main St Park Fee for Aug BBQ -30.00  
 Total Funds available as of Aug 10<sup>th</sup>, 2021 \$2,302.64

Submitted by  
 Linda Shokrian KG7PBX  
 2021 RCARC Treasurer  
 435-867-5914



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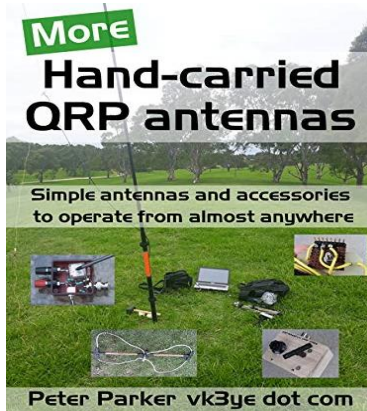
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## RCARC September

### Meeting Book Giveaway

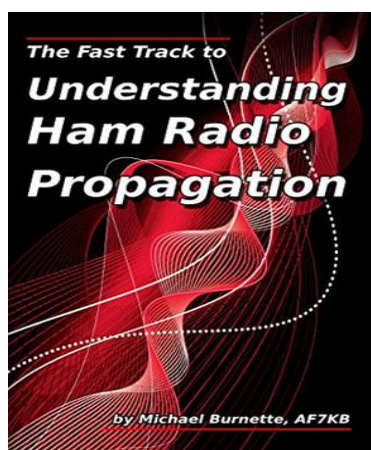
The book shown below will be awarded to one of our RCARC members at our club meeting on September 14, 2021.

This book is being donated by Linda Shokrian (KG7PBX).



## RCARC Book Giveaway Winner.

The winner of the August 10, 2021 book giveaway is Kevin (K2MFK)



**Congratulations  
Kevin**

## Contact Us.

### Mailing Address:

195 E. Fiddler's Canyon Road #3.  
Cedar City, Utah 84721

### Club E-mail:

[cedarcity.rcarc@gmail.com](mailto:cedarcity.rcarc@gmail.com)

### Newsletter E-mail:

[rcarcnewsletter@gmail.com](mailto:rcarcnewsletter@gmail.com)

### Website

[www.rcarc.info](http://www.rcarc.info)

[www.rainbowcanyons.com](http://www.rainbowcanyons.com)

### Face Book Page:

<https://www.facebook.com/groups/440325486875752/>

### To Join RCARC or Pay Dues:

Go to [www.rcarc.info](http://www.rcarc.info) select "Club Info" and then "Join " RCARC. Follow the instructions on the template.

**Make check payable to RCARC.**  
**Please write call sign on check.**

**Thank You**





## Buzz's September Safety Tip(s)



# Ham Radio Safety Tips

## Introduction

Safety begins with a proper attitude. Make it a habit to plan your work carefully and always consider the safety aspects of your Ham Radio activities. It is also important to learn as much as possible about what could *go wrong* so we can avoid factors that might result in accidents. Amateur Radio activities are not inherently hazardous, but like many things in modern life, it pays to be informed. Stated another way, while we long to be creative and innovative, there is the need to act responsibly. A good attitude toward safety also requires us to be knowledgeable about common safety guidelines and follow them faithfully.

While these Web pages may offer some important safety guidelines, you should not consider them to be an all-inclusive discussion on this topic. Guidelines can't possibly cover all situations you might encounter, but if you approach a task with a measure of "common sense," you should be able to work safely. Several ARRL publications also provide additional information of safety guidelines and practices. Learning about safety should always be an ongoing process. *Always remember: There is no substitute for common sense.*

## Grounding

### Introduction

After antennas, station grounding is probably the most discussed subject in amateur radio and it is also the one replete with the most misconceptions. The first thing to know is that there are three functions served by grounding in ham shacks: 1. Electrical Safety 2. Stray RF Suppression (or simply RF Grounding) 3. Lightning Protection. Each has its own set of requirements, but not all station setups need every kind of ground. In fact, some setups don't use a ground at all! The articles on this page will help clear up some of the myths and mystery surrounding this popular topic.

Continued next column

## Grounding FAQ

**1. How important is a ground? Most people say that grounding is all- important, but I have had a few people tell me that grounds aren't necessary.**

Grounds fulfill three distinct functions. The best ground for one function isn't necessarily the best for another. The three are:

a. **Safety ground.** This protects you from a shock hazard if one of the mains or high voltage power supply wires contacts the chassis due to some kind of fault. The requirements for this ground are spelled out in your state's electrical code. I believe that most states adopt the National Electrical Code (NEC). The safety ground conductor in your wall sockets should be connected to ground according to this code, and your rig's chassis should be connected to the safety ground.

b. **Lightning ground.** The requirements for a ground for lightning protection are much more stringent than for a safety ground. The topic has been discussed in this group many times, and there are numerous resources available for learning how to make a ground system for lightning protection. (See the TIS Page on [Lightning Protection](#))

c. **RF ground.** This is required only for certain types of antennas-- ones which require current flow to ground to complete the antenna circuit. An example is a quarter-wave vertical. One wire of the feedline connects to the base of the antenna, and the other connects to ground. The connection to ground has to have a low RF resistance, or you'll expend too much of your power heating the ground. A few radial wires will provide a moderately low loss connection. A ground rod will help a little, but the RF resistance will be high, resulting in quite a bit of loss. Chapter 8 of the ARRL Antenna Book shows the approximate trade between resistance and number of radials. If your antenna is much shorter than  $\frac{1}{4}$  wavelength, you'll need many, many radials to get reasonable efficiency. If it's longer, you can get by with fewer

Continued on page 8.

# Cedar City Half Marathon



September 11, 2021 Rainbow Canyons Amateur Radio Club (RCARC) members are on target to support the Cedar City Half Marathon with race communications.

The Cedar City Half Marathon is a perfect high-altitude trainer for those preparing for full marathons, including the Saint George Marathon which is held only a few weeks later.

This 13.1-mile closed-canyon course is one of the nation's fastest courses. Runners descend from 8,408 feet in elevation to 5,600 feet at the finish line.



**If you are interested in participating in this event contact Ron Shelley (K7HDX) at [ronald.shelley@gmail.com](mailto:ronald.shelley@gmail.com)**



## A Great Big Thank You

Over the last two months several of our RCARC members have endured some very trying times.

The flooding in both Enoch & Cedar City have caused major damage to property and stressing the limits of one's sanity.

Therefore, as the Editor of this newsletter I would like to take this opportunity to personally thank our RCARC and community volunteers that responded to assist our members in their time of need.

Your quick response with both your time, labor and equipment is to be commended.

Again, thank you all for helping make a difference in their lives.

## New Intertie Repeater Coming

Thursday August 12, 2021 George (AL7BX), Bruno (KG7VFN) along with others traveled South and East of Hatch, Utah to install a new repeater at Tod Junction that will eventually be connected to the Intertie through Blowhard. Frequency 147.200 with a + offset and a PL of 100. The repeater is up and running as a standalone at this time. When this project is completed, the repeater will cover the SR89 corridor from Knab on the South to Bryce Canyon on the North. More detailed information to follow. See pictures below.



Checking the Harnesses

**Continued on page 18**



## Pastry Pub RCARC Breakfast Pictures



**Continued next column**



**Introduction to DMR and Digital Voice --  
Tim Deagan, KJ8U / Thursday, September  
9, 2021 at 3:30 PM EDT (1930 UTC)**



This webinar serves as an introductory overview of digital voice (DV) technologies for ham radio. This presentation focuses on DMR with notes on System Fusion, D-STAR, and more. Included will be a description of DV architecture and components, and the interesting opportunities and challenges that DV presents.

**Working the Pileup, presented by Ron  
Delpiere-Smith, KD9IPO / Tuesday, October  
5, 2021 @ 1:00 pm EDT (1700 UTC)**

Ron Delpiere-Smith, KD9IPO, Vice President of the Chicago Suburban Radio Association and an ARRL Assistant Section Manager in Illinois, will offer an enlightening discussion on working a pileup from both sides of the contact. Whether your interest lies in Field Day, contesting, special events, or rare DX, this is a must-see presentation.

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# Ham Radio Safety Tips

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A ½ wavelength base-fed vertical needs only a very modest ground, and a ground rod is adequate. The requirements for various other end-fed antennas depend on their length. If you use a "complete" antenna like a dipole or a ground plane (that is, one that doesn't require your feedline to connect to ground), you don't need a RF ground, as long as you keep common-mode currents off your feedline. A "current" or "choke" balun is most commonly used for this.

**2. What are the ground/counterpoise alternatives to driving an 8-foot metal pole into the ground? I live in an apartment, and I highly doubt I can do this.**

Shallow-buried radial wires are the best. Connection to other conductors just under the surface, like a metal water pipe, is next. These are for the [RF ground](#) described above.

**3. I have heard that balanced antennas don't require grounds. How do I get a balanced antenna?**

See [RF ground](#), above.

**4. How do mobile HF operators get RF grounds? For obvious reasons, the 8-foot buried pole won't work.**

In a typical HF setup, the car is capacitively coupled to the ground, so the antenna is something sort of like a cross between a lopsided vertical dipole (with the whip being one side and the car the other) and a vertical with elevated radial system.

*Roy Lewallen, W7EL, ARRL Technical Adviser*

## RF Exposure

### Introduction

Amateur Radio is basically a safe activity. In recent years, however, there has been considerable discussion and concern about the possible hazards of electromagnetic radiation, including both RF energy and power-frequency (50-60 Hz) electromagnetic fields. To allay such concerns, the FCC set limits on the amount of RF energy people can be exposed to. Some stations need to be evaluated to see if they are in compliance with the rules.

If you do have to do a station evaluation for one or more powers or modes, use this [worksheet](#) to guide you through the process. This single page worksheet and instructions will suffice for many stations. You can keep this worksheet in your station records, you do not need to send anything to the FCC once you complete your evaluation. **Continued next column**

See Chapter 5 of the ARRL RF Exposure and You book for more information about multiple-transmitter sites. This book may be downloaded, although some of the information on categorical exemptions for amateur radio has been superseded by the new rule's changes. [The book can be downloaded for free.](#)

## Breaking News:

The FCC has made [changes to the RF-exposure rules](#) that change the ways that radio stations can determine whether they are exempt from the need to do a routine RF-exposure station evaluation. To answer the questions HQ staff are receiving about these changes, ARRL has prepared an [RF-exposure FAQ](#) to help hams understand the new rules. End.

## FCC Application Fees Unlikely to Go into Effect Until 2022

The previously announced schedule of FCC amateur radio application fees likely will not go into effect before 2022. FCC staff confirmed during a recent virtual meeting with Volunteer Examiner Coordinators (VECs) that the agency is still working on the necessary changes to the Universal Licensing System (ULS) software and other processes and procedures that must be in place before it starts collecting fees from amateur applicants. Earlier this year, the FCC said it would not start collecting fees from amateur applicants before this summer. The new estimate is that the fees won't go into effect until early next year.

Once it's effective, a \$35 application fee will apply to new, modification (upgrade and sequential call sign change), and vanity renew call sign applications. All fees will be per application. Administrative update applications, such as those to change a licensee's name, mailing, or email address, will be exempt from fees. ARRL VEC Manager Maria Somma, AB1FM, said Volunteer Examiner (VE) teams will not face the burden of collecting the \$35 fee.

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# Cedar City Fire Road Race



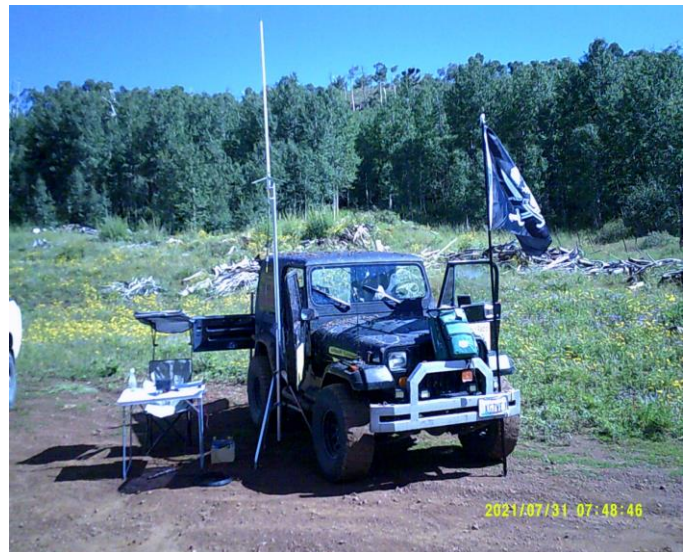
On Saturday July 31, 2021 as the Sun rose over Cedar Mountain RCARC members were on their way to pre designated locations along the race course. Their mission is to report to Race Control (EComm Unit) when race participants pass their station via the rider's bib number.

The Fire Road Race is two races in one with a 55-mile or 37-mile course, almost exclusively on dirt roads with some seriously steep climbs. The race reaches an elevation over 9,000ft.

Riders will see amazing bird's eye views towards Zion National Park and Cedar Breaks National Monument / Brian head, magnificent Cedar Canyon. The picturesque Kolob Reservoir. See pic's below:



Bruno (KG7VVN) at Kolob Reservoir



Jack (KG7VEJ) and his Pirate Station



Brad (WA7HEE) at Kolob Reservoir

**Continued next column**



Linda (KG7PBX) and George (AL7BX) at the turn off point.

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# Cedar City Fire Road Race

Continued from page 9



Dick (K7ZI) at the Start and finish line main street park. Assisting was Brant Palmer (KJ7LTQ)



Looks like Fred (KI7TPD) and Bonnie KI7WEX) had a great spot on the race course.



From front to back Dennis (W6DLW), Ron (K7HDX) and Darlene (N7WWB) in the EComm Trailer. Race Control.



Fred (KI7TPD) keeping cool.



From front to back Dennis (W6DLW), Ron (K7HDX) and Darlene (N7WWB) handling radio traffic and logging information.



Bonnie (KI7WEX) waiting for the next rider.

Continued next column



# PVC Headphone Stand



## Tools

- Measuring Tape
- Marker
- PVC Cutter – [Orbit 1/2-Inch – 1-Inch PVC Pipe Cutting Tool \(Amazon affiliate link\)](#)



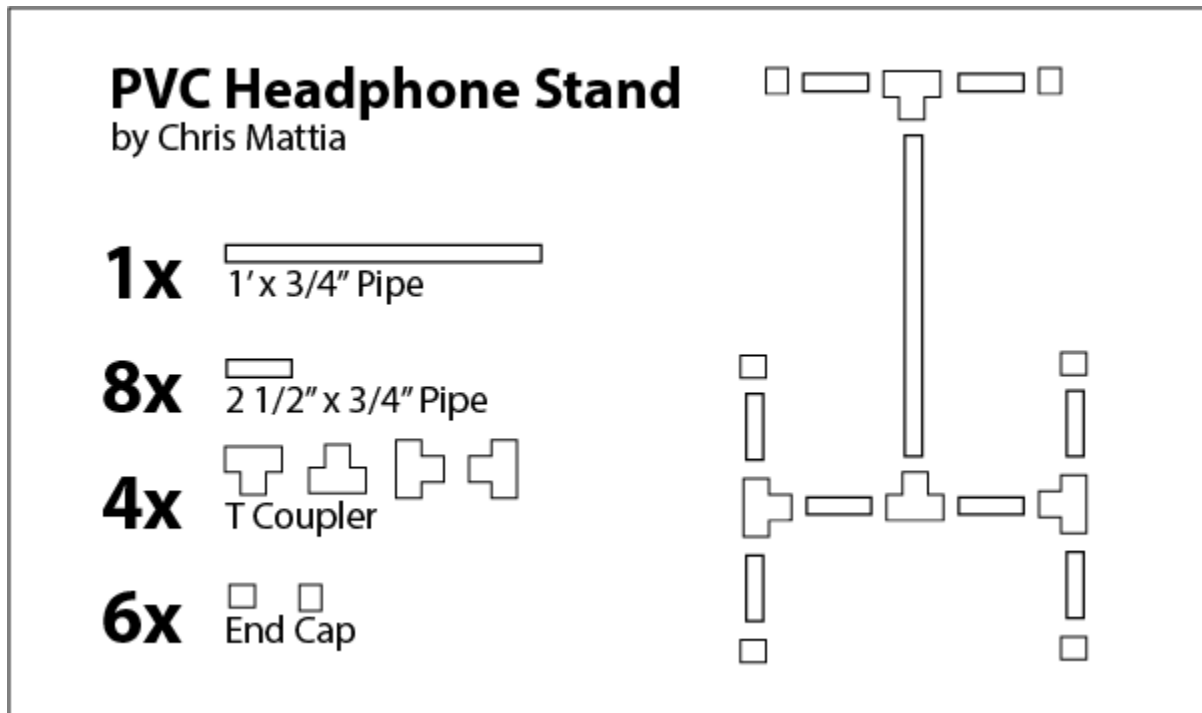
## Materials

- 3' of 3/4" PVC pipe
- 4x 3/4" T fittings
- 6x 3/4" end cap fittings
- 7x 1/4" round felt pads (optional)
- PVC Cutter
- Measuring Tape
- Marker - See how to assemble on U tube.

**Continued page 12**



## Layout Diagram



## Assembly

Assembly is really straight forward. Everything is dry fit together. I had considered glueing the stand together, but never found that I needed to do that.

Connect the center ports of 2x T fitting on either end of your long pvc pipe section. This will act as the central support for your stand. In my diagram I used a central pipe that was 12 inches long. Make sure that your two T fittings are aligned with each other by laying the parts down on a flat surface and pressing both T's into alignment with each other.

Next add the 4x short side arms, I used parts that were 2 1/2 inches long. On the top two arms add an end cap fitting. On the bottom two side arms add another T fitting.

Finally add the remaining 4x short PVC legs with an end cap on each one. The end caps help to balance the stand.

Make sure the headphone stand will stand up straight and press all of the parts together tightly.

Optionally add the felt feet to the bottom face of each of the base fittings.

## Notes

The only modification I ever made to the PVC headphone stand was to add the small felt pads to the bottom of the stand so that the stand didn't scratch my desk, and if it got accidentally bumped during a recording, the small pads would act as tiny silencers.

<https://chrismattia.com/projects/pvc-headphone-stand> - Check out this URL for a video of assembly.

## RCARC Members Enjoy Annual August Bar-B-Que

RCARC members and guests gathered at Cedar City's Main Street Park on Tuesday evening August 10, 2021 for the club's annual Bar-B-Que.

George (AL7BX) and Merlin (N7TCE) brought their Fox Hunting Equipment and several members spread out through the park to locate the mini transmitters.

In addition, our local Radio Shack Store donated all of the Ham Radio Books they had for sale as it appears they are getting out of the radio business. The books were placed on display and sold for a \$5.00 donation per book. *See pictures.*



**Freed (KI7TPD), Bonnie (KI7WEX), Linda (KG7PBX), George (AL7BX) and Terry West as the set-up crew.**



**Fred (KI7TPD) conducting a short business meeting as this is our monthly meeting night.**



**Ron (K7HDX) updating the group on the upcoming Cedar City Half Marathon and asking for member signups.**



**The burgers are on the grill**



**Chef Brody (K7VXV) checking the side dishes.**

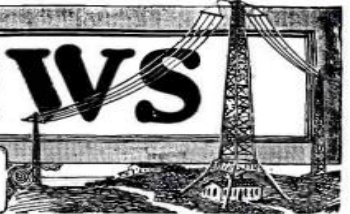
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# RADIO NEWS

H. GERNSBACK—Editor  
ROBERT E. LACAULT—Associate Editor



Vol. 3

SEPTEMBER, 1921

No. 3

## NEW USES FOR RADIO

**T**HE more we know about Radio in general the more applications we find for it. Radio is getting to be such a tremendous proposition that it fairly staggers the imagination when we try to think out what the future has in store for this youngest art of Electrical Science. That Radio should be used only for radio purposes seems a trite thought. Actually it is not. To how many persons would it occur to use a radio outfit for purposes other than Radio? But it seems that we are coming to just that, preposterous as the idea seems at first.

In the October issue of *Science and Invention* are described two applications for radio outfits that really have nothing to do with Radio primarily. The Westinghouse Electric Company now mounts a sensitive wireless receiving outfit on an auto truck using a loop aerial as antenna. And what do you suppose they do with it? They run the truck parallel to a high tension line to discover the leakage of the insulators! Wherever there is bad leakage, the crackling sound in the receivers of the radio outfit will reveal the energy going to waste. An insulator may look alright from the outside, but it might be porous and thus waste a lot of the company's power. The radio receiver will detect the bad insulator immediately. Then we have power companies in the West which are now opening and closing switches in distant sub-power plants by Radio. Instead of keeping an operator at each one of their substations to throw the switches in and out, this is now accomplished without the touch of human hands.

These ideas make one think of other purposes for which Radio might be used. At once the thought comes to mind of trailing an automobile by Radio. This is not as extravagant an idea as it seems at first. Every amateur knows that if his set is sensitive he will be able to hear in his phones the little Ford Car standing below his window,

provided it is running; in other words, the electrical waves given out by the ignition system are of sufficient strength to be recorded via radio.

It therefore should not be an impossibility to design a radio apparatus sensitive enough to hear an automobile as far as a mile away, once the set was attuned properly. Immediately, the police pursuing craft suggests itself. Often an automobile has gotten away far enough that it may use any one of two or three roads, thereby baffling the police, with the offending car making its getaway. If the pursuing car had a properly tuned radio outfit it should be simple to follow it, providing of course, the ignition system of the pursuing car is so screened that it does not affect its own radio set. This, however, could be accomplished and does not present an insurmountable technical difficulty.

Every amateur is familiar with the hum of the generators at the Power House. Perhaps this annoying feature can be used industrially to good advantage by constructing a special radio receiver to listen to the hum of various electrical machinery in order to find out if it is working correctly, as far as the electrical part is concerned. Sparking, uneven running, etc., would thus be readily detected.

Then we have the Fessenden Ore Detector, which uses radio to locate hidden and buried ores. The system was described some years ago in the *Electrical Experimenter*. It is a subject of a patent. It seems that the same system could be used for locating underground bodies of water, perhaps oil as well. It all depends upon the design of the outfit.

These are just a few ideas showing what has been accomplished and what has been proposed. There is no doubt in our minds that in years to come the non-radio uses for radio outfits will be tremendous. We should be glad to hear from our readers of some new suggestions for radio.

H. GERNSBACK.



## RCARC Members Enjoy Annual August Bar-B-Que

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**Dennis's (W6DLW) Birthday Cake. Thank you, Terry.**



**Members chowing down on burgers & dogs.**



**Looking good guys**

Continued next column



**Isaiah (KI7SXJ), Mother & Sister enjoying the feast.**



**Ken (N7KM), Wife and Friend enjoying the Bar-B-Que.**



**Chef Brody (K7VXV) getting his chance to enjoy the Bar-B-Que.**

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**Continued from Page 16**



A man wearing a blue long-sleeved shirt, a blue baseball cap, and khaki pants stands on a green lawn. He is holding a small blue object in his right hand. Behind him is a large, rustic stone wall. To the left of the wall, three yellow poles are stuck in the ground, connected by a white horizontal bar. In the background, there is a covered patio area where other people are sitting at tables. The scene is outdoors on a sunny day.

A man wearing a light-colored patterned shirt and blue jeans stands with his back to the camera in a vast, green grassy field. In the background, a line of trees separates the field from a row of buildings, including what appears to be a gas station. The sky is overcast.

**Continued next column**

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**Continued on page 19**



## July Volunteer Monitor Program Report Released

The July 2021 activity report of the Volunteer Monitor (VM) Program has been released. This program is a joint initiative between ARRL and the FCC to enhance compliance in the Amateur Radio Service.

- Technician-class licensees in Spring Valley, Smith River, and Nipomo, California; Oneonta, New York; Idaho Falls, Idaho, and Center, Texas, received *Advisory Notices* concerning FT8 operation on frequencies not authorized to Technician licensees.
- General-class licensees in Marco Island and Arcadia, Florida, as well as in Maryland, received *Advisory Notices* for operation in the Amateur Extra-class portion of the 20-meter band.
- A licensee in Parks, Arizona, received an *Advisory Notice* concerning failure to abide by a request to stay off a repeater. The matter will be referred to the FCC for enforcement action.
- A General-class licensee in Acworth, Georgia, received an *Advisory Notice* concerning failure to identify properly and for repeated communications with unlicensed stations on 3.895 MHz.
- An Amateur Extra-class licensee in Keansburg, New Jersey, received an *Advisory Notice* concerning on-the-air threats directed at another operator on 3.844 MHz.
- The final totals for VM monitoring in July were 1,736 hours on HF frequencies and 2,185 hours on VHF and UHF frequencies.

## ARRL Now Provides Free RF Exposure Calculator

The FCC has adopted guidelines and procedures for evaluating environmental effects of RF emissions. The new guidelines incorporate two tiers of exposure limits based on whether exposure occurs in an occupational or "controlled" situation, or whether the general population is exposed or exposure is in an "uncontrolled" situation.



Under the new FCC rules, some amateurs need to perform routine station evaluations to ensure that their stations comply with the RF exposure rules. This can be as simple as running an online calculator to determine the minimum safe distance between any part of your antenna and areas where people might be exposed to RF energy from your station. Although amateurs can make measurements of their stations, evaluations can also be done by calculation.

To make this easy for amateurs, ARRL now provides an [RF exposure calculator](#) on its RF Exposure page. To use the calculator, enter your transmit peak-envelope power (PEP) and operating mode, and answer the questions about the maximum amount of time you might be transmitting. The calculator will give you the minimum distance people must be from your antenna and human exposure.

You can print the results and keep them in your station records. There is no requirement to send your results to the FCC.



## New Intertie Repeater Coming

Continued from page 6



Jon going up first.



Bruno (KG7VVN) midway the tower tracking tagline.



Yea! Jon back on the ground

Continued next column



Clouds are coming in looking bad



Working at the rack



Time for a breather

## RCARC Members Enjoy Annual August Bar-B-Que

Continued from page 16



Darlene (N7WWB), Terry West, and Linda (KG7PBX) posing just before leaving the BBQ.

## Winlink Training

RCARC Members participate in Winlink Training through Zoom.

Winlink, also known by its service mark, Winlink Global Radio Email, and as the Winlink 2000 Network (or WL2K), basically is a worldwide messaging system that uses amateur radio frequencies, as well as government frequencies, to provide email capability automatically and independent of the internet. This allows ham radio to step in when routine systems are down in disaster and emergency situations and still perform a routine function — email.

This has proven to be a great asset in amateur radio's emergency communications tool chest.

The Winlink training was presented by LAX ARES and EMCOMM. The training was held on 4 Sundays in August the 1<sup>st</sup>, 8<sup>th</sup>, 15<sup>th</sup> and 29<sup>th</sup> from 3:00 PM to 4:30 PM.

**The first class** was the introduction to Winlink Express and how to set up an account. Purchasing the Signal Link USB Sound Card.

Continued on page 22

## I Had 5 Minutes to Evacuate from a California Wildfire

There was no time. I figured whatever burned could be replaced and herded the kids, dog and cats out to the van. As we pulled out of the driveway, a fire truck with lights flashing and siren blaring pulled into our spot.

**(TNS)** - I had just changed into my pajamas when I smelled the smoke. I had heard the fireworks earlier, but fireworks aren't exactly unusual in Vallejo in the run-up to Fourth of July, so I didn't think anything of it. Still, I went to the window. What I saw was a wave of embers, like a wall of glowing red, raining down from the sky. I didn't know anything else; I couldn't see anything else, but I slammed the window shut and started shouting.

"Fire! Fire! Get out! Get out! The house is on fire!"

I ran through my mental checklist as I ran to the family: call 911, get the kids, get the pets, get out. As we assembled, I sent one kid around the house to close windows. My partner said the air conditioner's filter could help keep out smoke, too, so I cranked it down to 65. As I stood at the door, checking everything, ready to head out to our escape vehicle, I realized I couldn't remember where we had stashed the important documents, which had been carefully compiled in case of emergency.

There was no time. I figured whatever burned could be replaced and herded the kids, dog and cats out to the van. As we pulled out of the driveway, a fire truck with lights flashing and siren blaring pulled into our spot.

We spent several hours the night of June 21 mostly sitting in a Target parking lot as the firefighters contained and put out the 10-acre Swanzy Fire, which torched a few fences but didn't do any major damage to homes.

Continued on page 20



## I Had 5 Minutes to Evacuate from a California Wildfire

Continued from page 19

Our evacuation was relatively short compared with what many families face during California's increasingly brutal wildfires. But as peak fire season bears down upon us, I wanted to look back at how I evacuated with the help of experts to understand what I did well and what I absolutely failed at.

### How to plan

The first step to evacuating in an emergency, experts told me, comes long before any evacuation order: You need to have a plan.

"Create an evacuation plan, a place to go, a meeting place, numbers to call, family or friends outside the area that you can call and let them know that you are safe," said Christine McMorrow, a spokesperson with Cal Fire.

The meeting place, ideally, should be public, like a fairgrounds or parking lot where you can safely reassemble if you've been separated. It should also be far enough away from the evacuation zone that you don't risk having to move again if the evacuation order expands. We didn't have a plan in place but drove across town to the Vallejo Target because it seemed like a good thing to do, and because we'd all forgotten our phone chargers. This was fortunate because the evacuation zone did expand as the wind pushed the brushfire across the hill behind our house.

You should also plan for how to get people with mobility issues, like older family members, and pets out of the house, McMorrow said.

Sometimes evacuation warnings are issued, giving you plenty of time to grab everything and get out, and sometimes, as in my case, the fire is right outside and you have no time to reflect, so plan for multiple contingencies.

Continued next column

You have your 5-minute plan, your 15-minute plan and your 1-hour plan," McMorrow said.

Evacuation orders mean you must leave immediately. Evacuation warnings, on the other hand, can give you as much as several hours' notice before an evacuation order is issued. But if you're given an evacuation warning and know from your planning that there's only one road out of where you live, you may want to consider leaving early to avoid traffic jams, McMorrow said.

Finally, make sure everyone in your household knows the evacuation plan and have it posted somewhere in your home that is visible to everyone. [ReadyForWildfire.org](https://www.readyforwildfire.org) has more information on how to create an evacuation plan that's right for your circumstances, as well as an app to help you build your plan and get alerts in the event of a fire.

"Once you have a plan in place, what you're going to want with that is a go-bag," McMorrow said.

### What to pack

Like planning for a possible evacuation, a go-bag should be packed ahead of an emergency. Essentials include food, water, a change of clothes, any medications or eyeglasses and money.

"If you only have 5 minutes, if you only have 15 minutes, you know steps one, two and three to take. It's pick up the go-bag, grab grandma, grab the cat carrier," McMorrow said.

If you haven't packed those items ahead of time, think about grabbing what you most need to function before you head out the door, said Don Ryan, emergency services manager for the Solano County Sheriff's Office.

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## I Had 5 Minutes to Evacuate from a California Wildfire

Continued from page 20

"The real important ones would be medications if you need those to maintain your health and life, then you can go down to money would be helpful, if you can grab your wallet or ATM cards, credit cards, and then take care of your family members," Ryan said. "Like the airplane model where [you] put the mask on yourself before helping others, make sure you're ready to go, make sure your family members are ready to go, and then you can get pets."

My partner and I learned this the hard way when we were sitting in the Target parking lot and realized I'd forgotten my glasses and he'd forgotten his medication and phone. I wasn't legally allowed to drive, and if we'd been evacuated for an extended period, his stomach would have started paining him and both of us would have been at the mercy of our allergies.

"Whatever you need to function as a human being, that's the stuff you want to grab first," Ryan said.

If you're given an evacuation warning and know you have more time, that's when you can think about packing mementos and photographs, items that would be irreplaceable if lost in a fire.

Cal Fire advises people to remember the "Six P's" when evacuating: — People and pets — Papers, phone numbers and important documents — Prescriptions, vitamins and eyeglasses — Pictures and irreplaceable memorabilia — Personal computer hard drives and disks — "Plastic" (credit and debit cards) and cash.

Ryan also added that if the smoke is very thick, you can use a wet towel or cloth as a mask to help you breathe as you evacuate.

Continued next column

## How to protect your home

Both Ryan and McMorro agreed that closing windows as we left our home was the right move. And though it's hard to protect your home when a fire is at your doorstep, both of them recommended tips to fire-proof your home ahead of time.

"The only thing you can do really quick is basically close the house down like you did, but in the long term, you should take the steps to remove any flammables away from your home," Ryan said.

That includes stacking firewood away from the house, clearing dried brush and either keeping patio furniture far away from the house or storing it inside when not in use. Ryan also advises regularly cleaning the areas where leaves pile up during windstorms because "the wind will take the embers to the same place that they take leaves."

If you are given an evacuation warning and have some time to prepare, McMorro suggests taking down flammable window treatments and bringing in doormats and other items that could catch fire.

Ryan also recommended unlocking gates, especially in rural areas, so that fire crews can get to the fire and so that animal rescue organizations can rescue livestock, if needed.

Unfortunately, neither my partner nor I thought to unlock our gate when leaving and returned to find it axed down by firefighters, which is a small price to pay for being safe and having a home that's still standing. But as a firefighter told my partner when he apologized for leaving the gate locked, "You were told to get out and you did exactly what you were supposed to do. We'll get through."

## What not to do

"I have never heard turn the air conditioning on," Ryan said. "An air conditioning unit out by the side of your house that's blowing a lot of air could fan a fire."

Continued on page 24

## Winlink Training

Continued from page 19

Installing the sound modem by UZ7HO. Formatting and sending Telnet Winlink messages to become familiar with the compose, post to outbox, open a session and send functions. Introduction to the templates.

**The second class** focused on forms/templates and getting on the air, gateways (A **gateway** is a node (router) in a computer network, a key stopping point for data on its way to or from other networks) and packet with sound modem vs. VARA FM (VARA is a software program. It serves as a "sound card TNC" for use with radios) what's the difference and why. There were a number of demos.

**The third class** delt Peer to Peer (P2P) sending. More about VARA and Digipeating and how does all this come together using Winlink Software.

**The fourth class** delt with Regional Winlink, Hybrid Gateways, VARA FM, VARA HF and NVIS Antennas (Near Vertical Incidence Skywave). Orville, W6BI gave an overview presentation on the Arden (Amateur Radio Emergency Data Network) – [www.ardenmesh.org](http://www.ardenmesh.org) Mesh Networks.

In addition, check out the Rhode & Schwarz You Tube video on NVIS Antennas at [https://www.youtube.com/watch?v=k3k32lFi\\_Z5cLM&t=11s](https://www.youtube.com/watch?v=k3k32lFi_Z5cLM&t=11s).

All four Winlink session are archived and can be viewed at [wavetalkers.com](http://wavetalkers.com). Skim through at your own pace.

**Group Purchase.** If you are interested in getting in on the group purchase of the VARA FM/HF lifetime license which is \$70.00 the group buy will be \$20.00 off the regular price making it \$50.00. See below URL for access: <https://forms.gle/qEvCebWNfXV963Yx7>.

Please see this highly recommended: ARRL "On the Air" Podcast featuring ARES LAX DEC Oliver Dully interviewed on Winlink - <https://blubrry.com/arrlontheair/78772205/arrl-on-the-air-episode-20/>. End

## FCC Application Fees Unlikely to Go into Effect Until 2022

Continued from page 8

"Once the FCC application fee takes effect, new and upgrade applicants will pay the exam session fee to the VE team as usual, but they'll pay the \$35 application fee directly to the FCC using the [FCC Pay Fees](#) system," she explained. When the FCC receives the examination information from the VEC, it will email a link with payment instructions to each successful candidate, who then will have 10 days from the date of the email to pay.

After the fee is paid and the FCC has processed an application, examinees will receive a second email from the FCC with a link to their official license. The link will be good for 30 days. Licensees also will be able to view, download, and print official license copies by logging into their FCC ULS account. The FCC no longer provides printed licenses.

Licensees can log into the [ULS](#) with their 10-digit FRN (FCC Registration Number) and password at any time to view and manage their license and application, [print their license](#), and update anything in their FCC license record, including adding an email address.

Read [an expanded version](#) of this story. End.

### A Little Humor

The other day I was travelling down one of those spiral type car parks. As I set off, on the top floor, I spotted someone smashing a car window and attempting to steal the radio.

On the 2nd floor I saw a youth key right down the side of another car.

On the bottom floor, I saw a couple throw a load of rubbish out of their car window.

I couldn't believe my eyes.

**It was just wrong on so many levels!**



# **Petitions for Reconsideration of Part 95 Personal Radio Services Rules Report and Order Memorandum Opinion and Order on Reconsideration**

**July 15, 2021 FCC FACT SHEET\*** Petitions for Reconsideration of Part 95 Personal Radio Services Rules Report and Order Memorandum Opinion and Order on Reconsideration – WT Docket No. 10-119 Background:

In the May 2017 Part 95 Personal Radio Services Rules Report and Order, the Commission reorganized and amended Part 95 of its rules governing various short-range, low-power radio services generally for personal use, including the CB Radio Service, General Mobile Radio Service (GMRS), and Family Radio Service (FRS). Uses of these services include, among other applications, voice and data communications by families and other groups during outdoor recreational activities like hiking, skiing, and hunting, and during emergencies and natural disasters.

In this Memorandum Opinion and Order on Reconsideration, the Commission would grant three petitions for reconsideration of the Part 95 Personal Radio Services Rules Report and Order filed by Cobra Electronics Corporation (Cobra), Motorola Solutions, Inc. (Motorola), and Medtronic, Inc. (Medtronic).

What the Memorandum Opinion and Order on Reconsideration Would Do: • Grant Cobra’s Petition requesting that the Commission allow FM as an optional modulation scheme for all existing 40 CB Radio Service channels (with AM remaining mandatory). Dual modulation would improve the user experience since FM provides benefits for some types of communications.

• Grant Motorola’s Petition requesting that the Commission allow automatic or periodic location and data transmissions in the GMRS and FRS. The Commission’s rules currently permit the transmission of location information and brief text messages initiated by a manual action and automatic responses of location information.

This action would assist users in tracking friends and family in remote outdoor locations (e.g., hikers, skiers, hunters). o This action would permit automatic location information transmissions, as conditioned, on all GMRS/FRS channels where the Commission has allowed manual data transmissions, subject to the same technical limitations as manual data transmissions. • Grant Medtronic’s Petition requesting the correction of typographical errors and rule changes in the Part 95 Personal Radio Services Rules Report and Order that inadvertently altered the substance of the Medical Device Radiocommunications Service (Med Radio) rules.

## I Had 5 Minutes to Evacuate from a California Wildfire

Continued from page 24

McMorrow also mentioned that you should turn your gas, electricity and air conditioning off when leaving, before I even mentioned my own a/c folly.

You should also never try to hose down your house or lawn, or turn on the sprinklers. Because of how dry California has become, it would take huge amounts of water to wet the earth and plants enough to do any good, Ryan said. Most of the water will just evaporate. In addition, running hoses and sprinklers can lower water pressure for fire hydrants, making it harder for firefighters to do their job.

And absolutely do not ignore an evacuation order, Ryan stressed.

"If you get an evacuation warning, that means pack your bags, get prepared, get ready to go. If you get an evacuation order, that is immediate," Ryan said.

"It's better to leave immediately than wait," he added. "There's too much fire for too few engines and we can't get in and rescue everybody." End

### For Sale

Several sections of fiberglass military tent pole tubes that can be used as masts.

**Dimensions** similar to aluminum mast sections and interchangeable.

**Price:** Negotiable.

**Contact:** Richard Parker, K7ZI.

1 (435) 586-2167

1 (435) 590-3150



Continued from page 7

Ron will discuss search-and-pounce and running techniques, when to use them, and some tips on working them to your advantage.

ARRL members may register for upcoming presentations and view previously recorded Learning Network webinars. ARRL-affiliated radio clubs may also use the recordings as presentations for club meetings, mentoring new and current hams, and discussing amateur radio topics.

The [ARRL Learning Network](#) schedule is subject to change. End.

### California Man Gets Alarming Call from Friend on Ham Radio – Jumps into Action to Save His Life.

I thought it was a prank call at first, "said Bill Scott, whose wife was the one to realize that his friend was having a stroke. Please access the below URL to get the full video/audio report.

<https://youtu.be/JHq8UtipfPs>



CQ, CQ Happy Labor Day



# Winlink — Amateur Radio's Email Network

**I**magine you're a ham who has been tasked with providing communication to an American Red Cross shelter in an area devastated by a hurricane. While traditional voice communication can be important in these situations, critical information today travels more often by email. Agencies such as the American Red Cross and many others have come to depend upon internet email as their primary means of exchanging information with support facilities that may be tens or hundreds of miles away — or even farther.

But there is a problem in our imaginary situation. The hurricane has destroyed the commercial communications infrastructure. Email is useless because a connection to the internet doesn't exist. Now what do you do?

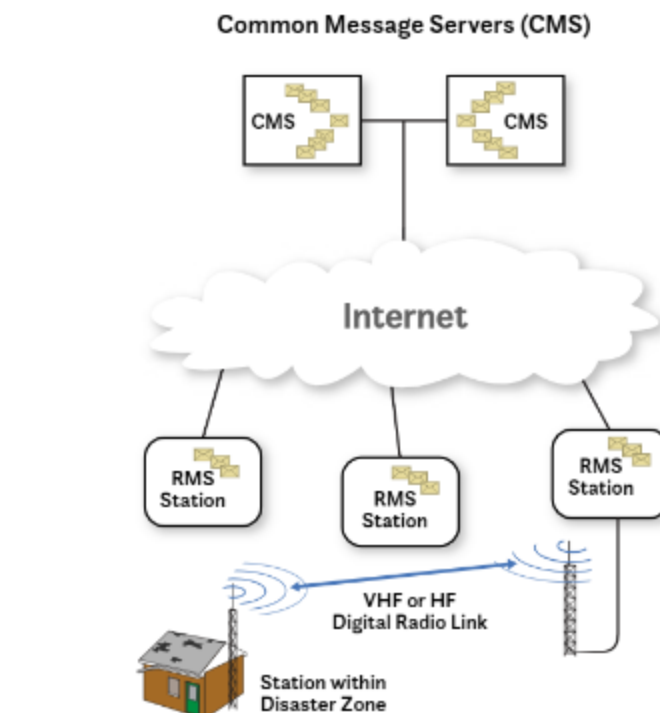


Figure 1: The Winlink network consists of Common Message Servers (CMSs) that are connected via the internet to hundreds of Remote Message Servers (RMSs) at ham stations throughout the world. You can access a Remote Message Server by radio and use it to send emails to and from the internet. [ARRL 1977]

## Bridging “the Last Mile”

While the internet may be unavailable inside the disaster zone, if you travel far enough beyond the affected area, you'll discover that the internet is still very much alive. Your challenge will be to bring internet access *into* the disaster zone so that support personnel at the shelter can communicate effectively. In telecommunications this is sometimes called a *last-mile* solution. It means using wireless technology to span whatever gaps may exist between the nearest access point on a commercial network and the area where the network connection is most needed.

Fortunately, hams have a number of last-mile solutions in their public service toolkits. Among the most popular of these is a wireless network known as *Winlink*.

## The Winlink Network

Winlink is an amateur radio network that supports wireless email communication to and from the internet. It was designed and built by hams, and it is maintained by hams.

At the core of Winlink are computers known as *Common Message Servers*, or CMSs (see Figure 1). These computers reside in secure, protected facilities, safe from hackers or other disruptions. They connect to the internet through high-speed fiber-optic cables. The CMSs send, receive, and store email messages traveling to and from the internet.

CMSs are also connected via the internet to *Remote Message Servers*, or RMSs, at amateur radio stations around the world (see Figure 2). RMS stations are also referred to as *gateways*.

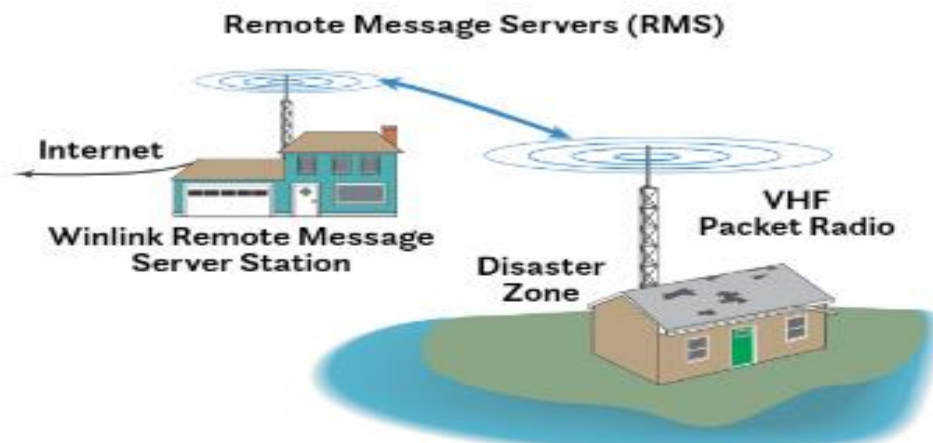


Figure 3: Using VHF packet radio to connect to an RMS station outside a disaster area. [ARRL 1978]

Every RMS, regardless of where it is located, has access to all email traffic stored at the CMSs. This means that if one RMS goes offline for some reason, users can still retrieve their messages by simply connecting to a different RMS. Putting it a different way, what one RMS "knows," all the others know as well.

An RMS station acts as the last-mile connection to the "client" — that's you. It can communicate with you by VHF *packet radio* (a form of digital communications), or it may be able to link to you

on HF frequencies using other digital systems, such as PACTOR.

Let's say there is an RMS station just outside the disaster zone, and you can reach it on VHF. By using packet radio and your FM transceiver, you can connect to the RMS and provide internet email access to the staff at your shelter. They can use your amateur radio connection to send vital information to their headquarters and other facilities (see Figure 3). Read "Packet Radio and the Terminal Node Controller" in this issue to learn more about packet radio.

#### Live System Information



Figure 2: A map of all Winlink Remote Message Server (RMS) stations within the US, Canada, and Central America that can be accessed by VHF packet radio.



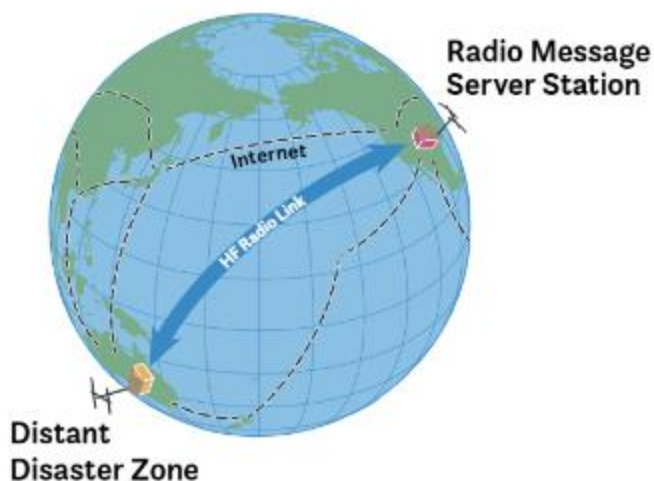


Figure 4: When disasters strike isolated areas, hams use HF frequencies to access Winlink RMS stations over hundreds or even thousands of miles. [ARRL 1979]

But what if the nearest RMS is hundreds or even thousands of miles away? (This could occur if you are providing disaster support on an isolated island, for example.) With an HF transceiver and the appropriate hardware and software, you will be able to exchange emails with one of the many RMS stations that have HF digital capability (see Figure 4).

Because of the limitations of VHF and HF radio, Winlink emails must be limited in size to no more than 12 kilobytes. That's adequate for most text messages, but it cannot support images or other large files.

first time, you'll be asked to set up a Winlink account. The account, like the software, is free.

If you plan to access the network through VHF/UHF packet radio, *Winlink Express* can be set up to work with a packet radio *terminal node controller* (TNC) hardware device or software. As you'll discover elsewhere in this issue, a TNC makes it possible to communicate digitally using an ordinary FM transceiver.

By establishing a VHF link to your nearest RMS, you'll be ready to send and receive emails through the Winlink system.

To access an RMS on HF frequencies, you will need to use *Winlink Express* with an HF transceiver that is connected to a PACTOR modem. PACTOR is a type of digital communication used at HF frequencies. *Winlink Express* can also use software alternatives to PACTOR that require only an inexpensive interface between your radio and your PC.

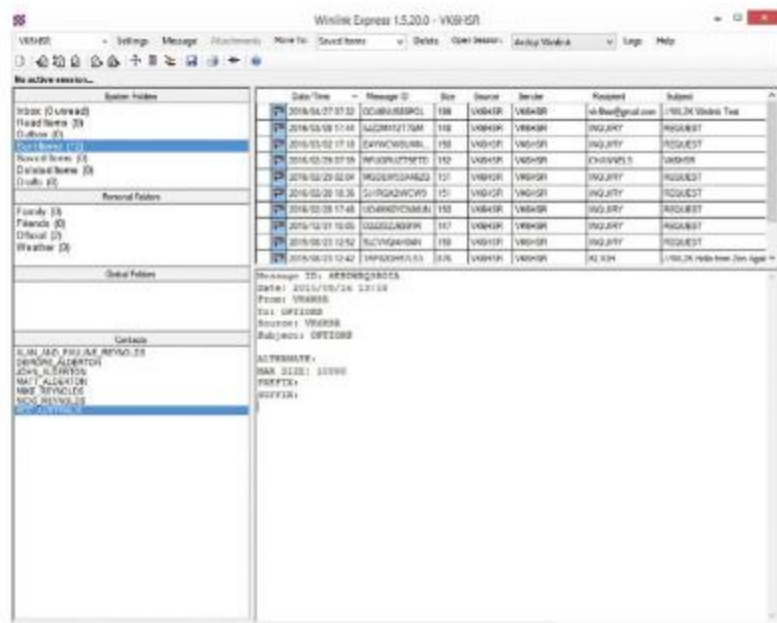
Winlink is a sophisticated, complex system, so you'll need to wade through a lot of specialized information and terminology. Fortunately, Winlink offers a wealth of information online in their "Book of Knowledge" at [winlink.org/content/winlink\\_book\\_knowledge](http://winlink.org/content/winlink_book_knowledge).

## What You Need to Access Winlink

The first thing you'll need is a copy of the *Winlink Express* software (see Figure 5), which you can download at [winlink.org](http://winlink.org). This is the preferred software for communicating with the Winlink network.

Install the software on a Windows computer that has internet access. When you start *Winlink Express* for the

Figure 5: An example of *Winlink Express* software.



Information taken from ARRL's "On the Air" Magazine for July & August, 2021.

**Have a great Labor Day**