

# 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 2 – Vol. 11 – November 2020

## 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. **On Hold UFN. COVID-19**

## 2020 Club Officer's

### President:

Fred Govedich  
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1-435-559-2682  
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### Vice President

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K7HDX  
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### Secretary

Bonnie Bain  
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1-435-865-1653  
[Bonnie.bain@gmail.com](mailto:Bonnie.bain@gmail.com)

### Treasurer

Larry Bell  
N7SND  
1-435-586-4651  
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### Newsletter Editor

Dennis L. West  
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[rcarcnewsletter@gmail.com](mailto:rcarcnewsletter@gmail.com)



CQ, CQ, Happy Thanksgiving



## Presidents Message

Greetings fellow HAMs!

Hope you had a good month! It is hard to believe but Fall is upon us and Winter is coming! That means cold weather is just around the corner, but we also have lots of opportunities to get on the air! See the ARRL special events page at: [http://www.arrl.org/special\\_events/search/page:2/model:Event](http://www.arrl.org/special_events/search/page:2/model:Event) for more information of events that are happening this month. Make this a great month for having fun on the radio.

It still seems like a long way off, but Winter Field Day will be here before we know it. It will be January 30-31, 2021. I have applied for the N7U callsign that we will use for Winter Field Day. Last year we did quite well (81 out of 300 outdoor stations) and we should be able to do as well if not better this year!

We had a great presentation (Zoom) for our monthly meeting. Thank you, Don Blanchard (WA7GTU), for presenting on repeaters!

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## RCARC Club Nets:

7:00 a.m. Breakfast Net - Monday – Saturday – 146.760.  
12:30 p.m. Daily – Utah Beehive Net On 7.272.  
7:00 p.m. Tuesday's Southwestern Utah Digital Net. Using FLDIGI, FLMSG AND FLAMP – 146.680, 1500/MT63-2KL  
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.  
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.  
7:00 p.m. Thursdays – RCARC CW Net on 146.980

## 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

November 10, 2020

RCARC Club Meeting.

We will vote for 2021 RCARC Board Officers.

Radio meeting

2021 Board Member Nominations & Voting

December 8, 2020

RCARC Club Meeting.

Radio meeting

2021 Board Members to be seated.

January 12, 2021

RCARC Club Meeting.

Radio meeting

Meetings start at 7 pm. on the Iron Mountain Repeater - 146.760, minus offset with a PL of 123.0

Also available through Echolink – KG7PBX.

### **President's Message Continued.**

This stirred up a lot of interest. The Beaver Canyon ½ and full marathon went well! Thank you everyone who participated.

As always, I would like to thank everyone who makes our meetings great by participating and asking questions. I would also like to thank all of our net controls for the nets and everyone who participates! Our next meeting will be on the air on November 10<sup>th</sup> and we will be having a virtual Elmer night!

I hope everyone has an opportunity to get out and play on the radio! We have our local nets as well as opportunities to participate on HF contests so get out there, have fun, and play on your radio.

Stay safe and healthy!

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 November**



Please come join other members on November 10, 2020 at our RCARC monthly Radio Meeting and vote for the 2021 club Officers. Additional, nominations can be made before the vote.

Meeting: 7:00 pm. Iron Mountain 146.760, minus offset with a PL of 123.0



## Breakfast & Friendship Net Awards

Breakfast Net		Friendship Net	
First Place	Second Place	First Place	Second Place
KI7WEX - Bonnie	KB7UMU - Sylvia	KI7WEX - Bonnie	K7ZI - Dick
KI7TPD - Fred	KF7WIY - Denise	KI7TPD - Fred	KJ7ZLTQ - Brant
KG7PBX - Linda	K7ZI - Dick	KA7J - Lance	<b>Third Place</b>
N7SND - Larry	<b>Third Place</b>	KJ7OZI - Paul	KB7UMU - Sylvia
KI7SDA - Jerel	K7DVP - Vernile	KI7SXJ - Isaiah	K7NKH - Lee
KK7ZL - Ed		KG7VEJ - Jack	
		N7TCE - Merlin	
		KI7LUM - Bruce	
		N7WWB - Darlene	
		K7HDX - Ron	
		W6DLW - Dennis	

## SKYWARN Recognition Day 2020 - Making Adjustments for COVID-19

Since 1999, the annual SKYWARN™ Recognition Day celebrates the long relationship between the amateur community and the National Weather Service program. The purpose of the event is to recognize amateurs for the vital public service they perform during times of severe weather and to strengthen the bond between radio amateurs and their local National Weather Service office. The event is co-sponsored by the ARRL and the National Weather Service.

Normally each year, radio amateurs participate from home stations and from stations at National Weather Service (NWS) forecast offices with the goal of making contact with as many offices as possible. However, this year, due to COVID-19 restrictions, participation from NWS forecast offices will be minimal at best. The focus will shift to contacting as many SKYWARN trained spotters as possible during the event.

Radio amateurs who wish to participate may sign up for a SKYWARN Recognition Day number by completing the form found on the SRD 2020 website. During the event, operators are encouraged to exchange their name, QTH, SRD number, and current weather conditions with other participating stations. See the event website for the full operating guidelines.

[SKYWARN Recognition Day 2020](#) will be held from 0000 UTC to 2400 UTC December 5.

## Rainbow Canyons Amateur Radio Club Board Nominees for 2021

President	Vice President	Secretary	Treasurer	Newsletter Editor
Fred Govedich KI7TPd	Ron Shelley K7HDX	Bonnie Bain KI7WEX	Linda Shokrian KG7PBX	Dennis L. West W6DLW



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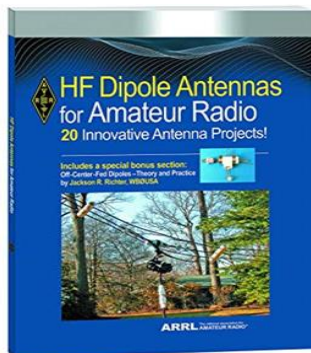
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## RCARC October Meeting Book Giveaway

The book shown below will be awarded to one of our RCARC members at our club meeting on November 10, 2020.

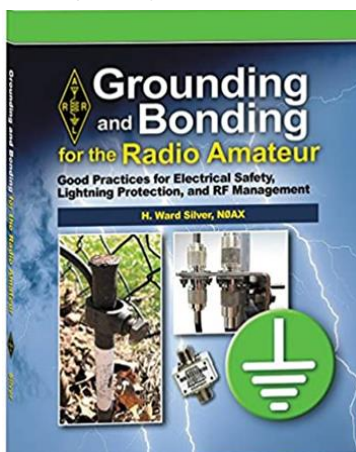
This book is being donated by Linda Shokrian (KG7PBX).



The meeting start time is 7:00 PM. You have to be there to win. See you there.

## RCARC Book Giveaway Winner.

The winner of the October 13, 2020 book giveaway, ARRL's Grounding and Bonding is Lance (KA7J).



**Congratulations**  
**Lance**

## 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/>

Contact us through any of the forums above.

Phone numbers for Club Officers are on page 1

Thank you

## Reminder to Vote

Hello everyone, just a reminder that RCARC members will be voting for the coming year's 2021 club officers at the November 10, 2020 meeting. I'm encouraging each and every one of you to attend the radio meeting and be part of the election process. See the position nominees running for office on page 3. Please attend this month's meeting and vote for the person of your choice.

*Additional nominations will be accepted before the vote on November 10, 2020.*



## Buzz's November Safety Tips

By Kate Miller-Wilson



## Fall Season Safety Tips

As the air turns cooler and leaves drop from the trees, it's important to keep a few important fall safety tips in mind. With proper precautions and safety awareness, your family can enjoy that crisp autumn weather while avoiding some of the dangers that come with the season.

### **Service Your Furnace**

Before the cold autumn and winter weather sets in, be sure to call your heating and cooling company to service your furnace. A specialist should inspect the furnace to make sure everything is in working order and that there are no leaks.

### **Use Fireplaces Safely**

Keep that fire in its proper place by using a fireplace screen to keep sparks from flying out of the fireplace. Never leave a burning fire unattended and make sure a fire in [a fireplace](#) is completely out before going to bed.

### **Use Caution with Space Heaters**

A space heater can be an effective way to warm up a chilly room, but it's essential that you read the instructions on the unit before you use it. If your space heater requires venting, make sure you have vented it to the outdoors. Never use your stove or oven to heat your home; only use space heaters that are approved for this purpose. Always allow at least three feet of empty area around space heaters.

### **Reconsider Leaf Burning**

According to information from the [Environmental Protection Agency](#), burning leaves produces dangerous and cancer-causing chemicals. For this reason, homeowners should avoid disposing of leaves this way. If you decide to burn leaves, wear a protective mask. Burning leaves should only be attempted far away from a house or other structure on a homeowner's property. Always check the weather forecast before starting to burn leaves. This activity should not be attempted in windy conditions.

### **Exercise Candle Caution**

Candles are a great way to give a room that warm glow, but they can also cause fires. According to the [National Candle Association](#), almost 10,000 home fires start with improper candle use. Never leave candles burning if you go out or go to sleep and keep your candles away from pets and kids.

## Change Smoke Alarm Batteries

Change the batteries in your [smoke alarms](#) and carbon monoxide detectors when you turn back your clocks for Daylight Saving Time. Make sure to check the alarms with the new batteries installed. Check and replace any home fire extinguishers that have expired.

## Safety Tips for Fall Driving

There's nothing more beautiful than a [fall drive](#), but this season brings some unique hazards for drivers. Being aware of these potential dangers can help keep you and your family safe and prevent accidents.

### Be Aware of Poor Visibility

Falling leaves, while beautiful, can obscure your vision, as can rain and fog. Shorter days are part of the fall season, making it more difficult to see children playing or people walking and riding bicycles. Be aware of limitations in your visibility and slow down if you can't see well. Use your dimmed headlights in bad weather with decreased visibility. If possible, try not to be on the roads when it's hard to see.

### Watch for Children

Children love to play in piles of leaves, so use extra caution where leaves are piled at curbside. In addition, the school bus will be making its rounds now that school is back in session. In addition to educating children about [back-to-school safety](#), it's important to stay vigilant as a driver.

### Slow Down on Wet Pavement

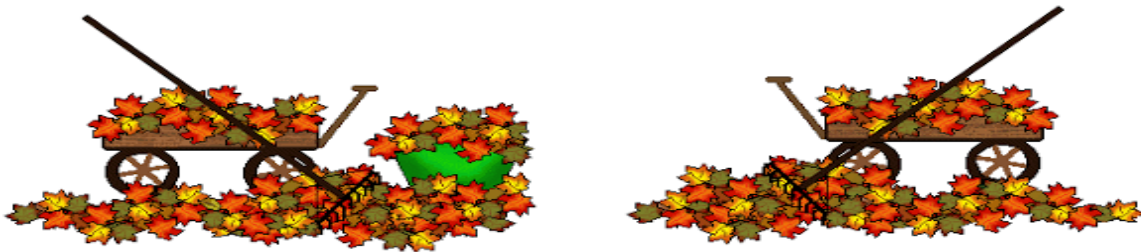
In many areas of the country, rain is common during the autumn. If it's raining, keep a safe distance from the car in front of you. Wet roads make it more difficult to stop. When wet leaves are on roadways, they make the pavement slippery, and it can be difficult for drivers to get good traction.

### Be Prepared for Bright Sunlight

When sunrise occurs later in the morning, it can also present challenges for drivers. Have [a pair of sunglasses](#) in the vehicle to wear when the sun is bright is a good strategy. If it becomes too difficult to see because of bright sunlight or glare, a good strategy is for the driver to pull over until he or she can see again.

### Watch Out for Ice

As the temperatures drop further at night, a driver will need to spend some extra time in the morning scraping frost off his or her vehicle. Shady spots on the roadway may be home to black ice, which a driver may not be aware of until his or her car starts to skid on it.



## ARLB028 FCC Orders Amateur Access to 3.5 GHz Band to "Sunset"

SB QST ARL ARLB028  
ARLB028 FCC Orders Amateur Access to 3.5 GHz Band to "Sunset"

Despite vigorous and continuing opposition from ARRL and others, the FCC has ordered the "sunset" of the 3.3 - 3.5-GHz amateur radio secondary spectrum allocation. The decision allows current amateur activity on the band to continue, "grandfathering" the amateur operations subject to a later decision. The FCC proposed two deadlines for amateur operations to cease on the band. The first would apply to the 3.4 - 3.5 GHz segment, the second to 3.3 - 3.4 GHz. The FCC will establish the dates once it reviews additional comments.

"We adopt our proposal from the Notice of Proposed Rulemaking to remove the amateur allocation from the 3.3 - 3.5 GHz band," the FCC said in its R&O. "[W]e adopt changes to our rules today that provide for the sunset of the secondary amateur allocation in the band, but allow continued use of the band for amateur operations, pending resolution of the issues raised in the Further Notice."

The Report and Order (R&O) and Further Notice of Proposed Rulemaking in WT Docket No. 19-348 adopted on September 30 followed a 2019 FCC Notice of Proposed Rulemaking (NPRM) in which the FCC proposed re-allocating 3.45 - 3.55 GHz for "flexible-use service" and auctioning the desirable "mid-band" spectrum (generally defined as between 1 GHz and 6 GHz) to 5G providers.

The Report and Order (R&O) and Further Notice of Proposed Rulemaking in WT Docket No. 19-348 adopted on September 30 followed a 2019 FCC Notice of Proposed Rulemaking (NPRM) in which the FCC proposed re-allocating 3.45 - 3.55 GHz for "flexible-use service" and auctioning the desirable "mid-band" spectrum (generally defined as between 1 GHz and 6 GHz) to 5G providers.

These and other recent spectrum-repurposing actions stem from the MOBILE NOW Act, enacted in 2018, in which Congress directed the omission to make additional spectrum available to auction for mobile and fixed wireless broadband. The FCC action is consistent with worldwide allocations adopted by the ITU for these frequencies.

The Report and Order can be found online in PDF format at, <https://ecfsapi.fcc.gov/file/1002214202488/FCC-20-138A1.pdf>.

In the run-up to the Commission's decision, ARRL met with the FCC's professional staff to explain its concerns and to answer questions. Subsequently, ARRL met with the wireless advisors to the FCC Chairman and two Commissioners. In those meetings, ARRL reiterated that continued secondary status for amateurs will not impair or devalue use of this spectrum by the primary licensees intending to provide 5G or other service. ARRL noted amateur radio's long history of successful coexistence with primary users of the 9 cm band, sharing this spectrum with the federal government users and secondary, non-federal occupants.

ARRL pointed out that vital links in amateur television and amateur radio high-speed mesh networks using the band have been especially valuable during such emergency situations as the wildfires currently raging on the west coast. Deleting the amateur secondary allocation will result in lost opportunities for experimentation and public service with no public interest benefit to make up for that.

ARRL argued that deleting the secondary allocation would waste the scarce spectrum resource, particularly in areas where commercial services often do not construct full facilities due to small populations. The FCC action means that amateur radio will lose access to the 3.5-GHz secondary allocation even where commercial operations do not exist. ARRL told the Commission that it should not intentionally allow this spectrum to be vacant and unused, wasting the public resource, when amateurs can use some portion of it in many geographic areas with no detriment to any other licensee, just as it has in the past.

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## ARLB028 FCC Orders Amateur Access to 3.5 GHz Band to "Sunset"

ARRL argues that amateur operations should be permitted until and unless an actual potential for interference exists.

Deletion of the 3.3 - 3.5 GHz secondary amateur allocation will become effective on the effective date of the FCC's order, but amateur radio operation as of that date may continue while the FCC finalizes rules to license spectrum in the 3.45 - 3.55 GHz band and establishes deadlines for amateur operations to cease. The FCC proposed allowing amateur operation in the 3.3 - 3.4 GHz portion of the band to continue "pending further decisions about the future of this portion of the spectrum," the timing for which is unknown. The Commission proposed to mandate that operations cease in the 3.4 - 3.5 GHz portion when commercial licensing commences for the new 3.45 - 3.55 GHz "5G" band, which is predicted to begin in the first half of 2022.

"[W]e seek comment on whether it is in the public interest to sunset amateur use in the 3.3 - 3.55 GHz band in two separate phases, e.g., first above 3.4 GHz, which is the focus of [the R&O] and later in that portion of the band below 3.4 GHz," the FCC said.

ARRL expressed gratitude to the many members and organizations that joined ARRL in challenging the FCC throughout this nearly year-long proceeding. They included multiple radio clubs, weak signal enthusiasts, moonbounce participants, and the Amateur Radio Emergency Data Network (AREDN), the Amateur Television Network (ATN), AMSAT, and Open Research Institute (ORI).

ARRL will continue its efforts to preserve secondary amateur radio access to 3.3 - 3.5 GHz. Members are invited to share comments by visiting <http://www.arrl.org/3-GHz-Band>.

"We recognize that any loss of our privileges will most directly impact radio amateurs who use the frequencies to operate and innovate," said ARRL President Rick Roderick, K5UR.

Continued next column

"Such instances only embolden ARRL's role to protect and advocate for the Amateur Radio Service and Amateur Satellite Service. There will be continued threats to our spectrum. So, I urge all amateurs, now more than ever, to strengthen our hold by being ceaseless in our public service, experimenting, and discovery throughout the radio spectrum."



## ARRL Learning Network Webinars

Visit the ARRL Learning Network website to [register](#) for upcoming sessions and to view previously recorded session. The schedule is subject to change.

### How to Get Started in Amateur Radio Contesting: Anthony Luscre, K8ZT

Why do hams contests? How would I benefit from contesting? What do I need to get started in Contesting? What are good contests for beginners? Where can I learn more? This session will answer all of these questions and more.

Tuesday, November 3, 2020, 11:00 AM PDT / 1:00 PM EDT (0900 UTC)

### Learn and Have Fun with Morse Code: Howard Bernstein, WB2UZE, and Jim Crites, W6JIM

Morse code or "CW" is a popular ham radio operating mode. Learning CW does not have to be an arduous or lonely experience. Learn, practice, and enjoy CW with the methods used by the Long Island CW Club.

Thursday, December 17, 2020, 5 PM PDT / 8 PM EDT (0000 UTC on Friday, December 18)







## Iron County E-Comm & Community Emergency Response Team (CERT) participate in Joint Functional Exercise.

At 6:00 pm. on Thursday October 15, 2020 the Iron County E-Comm & CERT Groups came together at the Iron County Emergency Operations Center (EOC) to participate in a Functional Exercise with emphasis on Communications Skills.

### The Scenario

The general area of Iron County experienced a major earthquake this PM at approximately 1500 hrs. All major utilities have been affected; several major highways have been reported as damaged as well as an unknown number of unreinforced masonry buildings within the County.

### The Exercise

CERT members Teamed up with Ham Radio Operators and spread throughout the County to do Initial Damage Assessments (IDA's) and report back their assessments to the Iron County Emergency Operations Center (EOC) and Emergency Communications Center (ECC).

These assessments are very quick and provided a preliminary picture of the damage and situation status to the Incident Command Staff in preparing resource deployment.

This exercise tested the ability of the CERT folks to develop an (IDA), how the Ham radio operator relayed the (IDA) information to the County (ECC) and how accurately the (ECC) radio operator transcribed the information received.

**Continued next column**

The size up of an (IDA) may include the following items:

Fires, are they burning or are they out?  
Hazards, gas leak, water leak, electrical or chemical. Structures, damage or collapsed?  
People, injured, trapped dead. Roads, access or no access? Animals, injured, trapped or roaming.

Thanks to George Colson, Iron County's Emergency Manager for this opportunity to train in doing (IDA).



**George Colson addressing the exercise participants before the exercise begins.**



**A few of the exercise participants attending the pre-exercise briefing.**

## RCARC Members Assist with the Beaver, Utah Marathon



The Marathon begins in the Tushar Mountains of Southern Utah and beautiful Beaver Canyon! Runner's begin their journey at iconic Eagle Point ski resort at 10,000 feet above sea level and ends in the historic town of Beaver while running past pristine scenery, lakes, forest, wildlife, and ends at 6,000 feet in the welcoming Beaver Valley in Beaver, Utah.

Rainbow Canyon Amateur Radio Club (RCARC) assisted with this year's event providing Race Communications. Several Club members Fred Govedich (KI7TPD), Bonnie Bain (KI7WEX) and Brad Biedermann (WA7HHE) were stationed along the race course route at Aid Stations and provided lead rider information back to Race Communications. This information will then be passed on to Race Command.

**See pictures below:**



**Fred (KI7TPD) & Bonnie (KI7WEX) set up at Aid Station 15.**

**Continued next column**



**Fred (KI7TPD) by his radio setup**



**Keeping the runner hydrated**



**God Bless the USA**



# Getting Connected

The world of electronics is populated by an almost countless number of connectors. We use them to attach wires and cables to various types of equipment, or to each other.

When you attach a lamp cord to a wall outlet, you're using an *ac plug*. Your smartphone battery might be recharged through a type of *USB plug*.

While radios and antennas use many specialized connectors, the four most common are PL-259, Type N, BNC, and SMA.



- |              |  |
|--------------|--|
| 1 Shell      | Screws on (or, in the case of the BNC, twists on) to attach to the female connector. |
| 2 Shield     | Attaches to the outer shield of the coaxial cable.                                   |
| 3 Insulator  | Separates the shield from the center pin.  |
| 4 Center Pin | Attaches to the center wire of the coaxial cable.                                    |
| 5 Gasket     | Keeps the inside of the connector free from moisture.                                |

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# The “Big Four” RF Connectors

RF (radio frequency) connectors are designed to connect coaxial cables to radios, antennas, or other cables (such as when attaching cable extensions to span a given distance). You’ll notice that they seem rather complicated, considering their only purpose is to make connections between two conductors — the center wire and the shield. How hard could that be?

But coaxial cables don’t behave like ordinary wires. Think of RF energy as stream of water flowing through a channel. If the walls of the channel are smooth, the water will flow unimpeded. Now add a small obstacle in the channel. When the water encounters the obstacle, it will flow around it, but the flow will be disrupted. It is no longer smooth and constant, at least not in the area where the obstacle is located.

Coaxial cable can behave in much the same way. It’s a channel for RF energy, and anything that changes the resistance to the flow of the current will disrupt the flow. There may be an increase in the standing wave ratio (SWR, see “What is SWR?” on page 17 of the January/February 2020 issue) at that location, and energy will be lost as a result.

So, when we connect one piece of coax to another, or to a device (including an antenna), we want that connection to cause as little disruption as possible. To that end, RF connectors are designed to “look” like just another piece of coax, as far as RF is concerned. This requires precision manufacturing, because even a small defect can have a major impact.

## PL-259

This is the most common RF connector you’ll encounter in amateur radio. It is designed to plug into a socket known as an SO-239. The PL-259 attaches to the SO-239 with a threaded metal shell that screws onto the outer portion of the socket. Once the shell is screwed on tightly, the connection is mechanically and electrically secure.

PL-259s have been around for decades, and are used mainly for applications in which the frequency of the RF energy is less than 150 MHz. At higher frequencies, the loss in a PL-259 connection tends to increase, which translates to less power at the antenna. So, this connector isn’t recommended for UHF gear, although you will often see it used there.

## Type N

This connector is considered the gold standard for RF because its loss is minimal, even at frequencies well above the UHF range. Like the PL-259, the Type N also has a threaded shell that screws onto its mating socket.

Aside from providing a more consistent electrical connection, the Type N improves upon the PL-259 by adding a rubber or plastic gasket that makes the connector highly water resistant. This is important when using coaxial cables outdoors as water intrusion is often the bane of antenna systems!

If Type Ns are so superior, why don’t more hams use them? There are two reasons: These connectors tend to be bulkier than PL-259s and they’re also more challenging to attach to coaxial cables.

## BNC

The name of this connector describes its design, and the two people who created it. “BNC” stands for Bayonet (its locking mechanism) and Neill-Concelman, the surnames of its inventors.

“BNC” connectors are not water resistant like the Type N, but their advantage over both the Type N and the PL-259 is that they can be quickly attached and removed. All it takes is just a twist of the locking shell, a slight pull, and the cable is free. To attach a BNC, you simply press the connector into its mating socket and then twist. The BNC locks into place with a click you can often hear.

The BNC creates low-loss coaxial connections primarily for thinner cables carrying RF energy at frequencies up to the low microwave range.

## SMA

If you own a handheld transceiver, chances are it has an SMA connector at the antenna. “SMA” is an acronym for SubMiniature version A. It is a small connector with a screw-on shell, and it is intended for use with small-diameter cables. The SMA can be used well into the microwave range, providing low-loss connections up to at least 18 GHz. For this reason, SMAs are favorites among engineers for interconnecting microwave components. They are popular in handheld transceivers because they are so small.



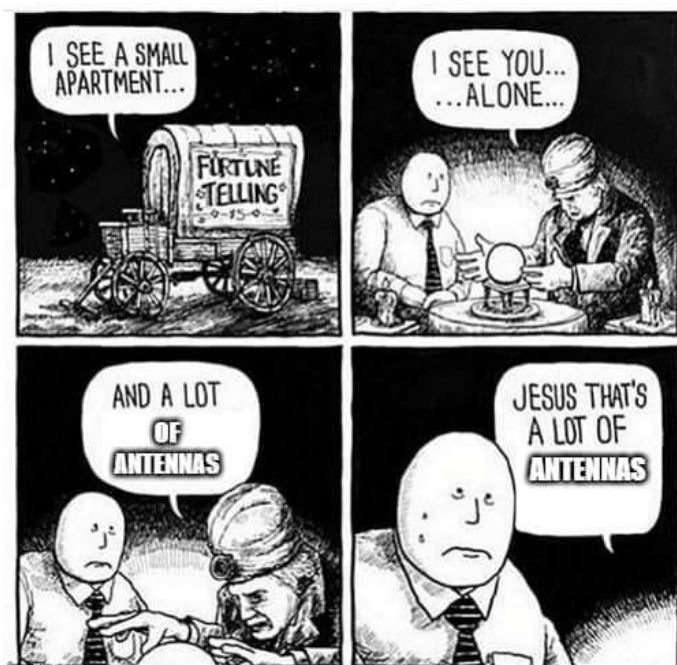
## Do you Remember Quiz

See if you can answer the following questions.

By Art Blessing

1. See the USA in your \_\_\_\_\_.
2. Melts in your mouth, not in your hands \_\_\_\_\_.
3. We'd like to teach the world to sing in perfect harmony \_\_\_\_\_.
4. 99 and 44 1/00's% pure \_\_\_\_\_.
5. Good to the last drop \_\_\_\_\_.
6. Like a good neighbor \_\_\_\_\_.
7. When you care enough to send the very best \_\_\_\_\_.
8. Away go troubles down the drain \_\_\_\_.
9. Not one \_\_\_\_\_ shingle has ever burned.
10. You'll wonder where the yellow went.
11. I'll bet you can't eat just one \_\_\_\_\_.
12. Ask the man who owns one \_\_\_\_\_.
13. I dreamed I was on a desert island in my M \_\_\_\_\_.
14. There's a \_\_\_\_\_ in your future.
15. Natures spelled backwards \_\_\_\_\_.

Answers on page 16.



## RCARC History

The following history is as accurate as any of us can remember - time takes its toll!

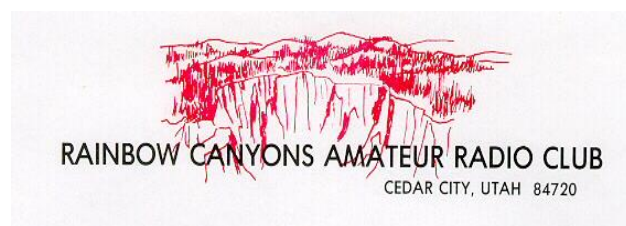
Although there had been discussions about forming an amateur radio club in Cedar City as early as 1961. The club was not formally founded until the spring of 1967.

An organizational meeting was held at the home of Roland and Phyllis Weir with the following amateurs making up the original charter members: Roland Weir, W6UCF, Phyllis Weir, K7WVT, Bob Williams, W7MUG (SK), Doris Williams, W7MXX (SK), Roger Chidester (call unknown (SK), Sharon Chidester, K7AOU, Ken Munford, W7IFJ (now N7KM), and Don Blanchard, WA7GTU.

The constitution and by-laws were written at this meeting. The name of Rainbow Canyons Amateur Radio Club was suggested by Sharon Chidester and was meant to describe the area in which we live.

The club letterhead (See below) was designed at a later date using a sketch by Jan Munford, KB7UVO and was printed in two colors by Don Blanchard, WA7GTU.

Club membership has grown over the years and while not everyone belongs to the club, we have approximately 200 amateurs in the area. A number of these are husband and wife teams.



## Amateur Radios of the past



**Ranger AR-3300 ssb radio. VARY RARE.**



**World War II vintage Abbot TR-4 "Ultra Short Wave" VHF Transceiver.**



**AMECO Model TX-62 was a popular late 1950's phone transmitter for the VHF 6 and 2-Meter bands.**

**Continued next column**



**The Gonset Communicator was a series of vacuum tube VHF, AM radio transceivers that were widely sold in the 1950's and early 60's.**



**Vintage Lafayette KT-320 Communications Receiver Vacuum Tube Shortwave Ham Radio.**



**Vintage Hallicrafters SX-71 Ham Radio Communications Receiver.**



SUCH A HAM



We thought **YOU** were bringing the food.

BE KIND TO  
EVERYONE YOU MEET.



THEY MAY BE  
STUDYING TO BECOME  
A HAM.

**YESTERDAY I SAW AN  
AD THAT SAID 'RADIO  
FOR SALE, \$1, VOLUME  
STUCK ON FULL'**

**I THOUGHT, 'I CAN'T  
TURN THAT DOWN'**

## Nationwide Red Cross Emergency Communications Drill Set for November 14

The nationwide American Red Cross Emergency Communications Fall Drill, a joint exercise with ARRL Amateur Radio Emergency Service (ARES®) groups, is set to take place on November 14. This exercise evolved from the highly successful spring drill that attracted hundreds of participants from some 40 states and Puerto Rico.

The fall drill will be a Winlink-specific event with these goals:



**American  
Red Cross**

(1) pass traditional American Red Cross (ARC) forms from as many states and as many radio amateurs as possible to one of six division clearinghouses, and (2), bring as many radio operators as possible up to a "basic" level of Winlink proficiency. A series of Winlink Workshops is held each Thursday at 0100 UTC on Zoom.

*Winlink Proficiency Goals* have been drafted, a Winlink technical support team has been formed, and *Metrics for Drill Success* have been developed. The proficiency goals are established as a training guideline and references online training resources. Many hams new to Winlink may find these resources helpful.

More than 300 radio amateurs have signed up for the event, and some 100 volunteers showed up for a pre-drill briefing call earlier this month. Another briefing call will be held in early November.

This event is open to *all* radio amateurs.

For more information, contact [Mike Walters, W8ZY](#), with ARES-related questions, or [Wayne Robertson, K4WK](#), with Red Cross-related topics.

## Answers

### Do You Remember Quiz

Don't look until you tried your best

1. Chevrolet
2. M&M's
3. Coca Cola
4. Ivory Soap, Ivory Snow Flakes
5. Maxwell House Coffee
6. State Farm
7. Hallmark Cards
8. Roto Rooter
9. Asbestos Shingles
10. Pepsodent
11. Lays Potato Chips
12. Packard Automobiles
13. Maidenform Bra
14. Ford
15. Serutan



## FCC Headquarters Relocates

FCC Headquarters has moved. The new address is 45 L St. NE, Washington, DC 20554. The change is effective immediately. The FCC announced plans to move last spring, but the transition was delayed by the COVID-19 pandemic.

The FCC, like many federal agencies, has its own zip code, so there will be no disruption in mail delivery sent by USPS to the former address. The FCC still prohibits the delivery of hand-carried documents, and all COVID-19 restrictions or instructions regarding access to FCC facilities remain in place at the new location.

"The FCC continues to balance its efforts to be accessible to the public with the need for heightened security and health and safety measures and encourages the use of the Commission's Electronic Comment Filing System (ECFS) to facilitate the filing of applications and other documents when possible," the FCC said in an October 15 [Public Notice](#).

Due to the pandemic, the move was accomplished by professional movers without the presence of any employees, all of whom had been working from home. An attempt was made during the summer to let employees back into headquarters for a day to pack up their offices and remove personal belongings, but that plan had to be scrapped after several employees tested positive for COVID-19.

Most FCC staff continue to work from home and are not expected to be physically present in their new offices before next June.

In anticipation of the planned move, the FCC last spring also announced the adoption of a new FCC seal. The redesign is the product of an agency-wide contest that solicited proposals from employees and contractors.

The revised design incorporates several elements: communications technologies; four stars on the outer seal border, drawing from the legacy of the predecessor Federal Radio Commission (FRC) seal, retaining the three-wire dipole supported by two towers; 18 stars on the shield, recognizing the current number of bureaus and offices; and the eagle and shield, identifying the FCC as a federal government agency.

Official use of the new seal was to begin following completion of the FCC's move from The Portals to its new location on L Street NE.



## Japan's "Experience Stations" Enable Contacts Between Two Unlicensed Girls

What is believed to be the first ham radio contact in Japan between two unlicensed individuals took place on October 11 between "Experience Stations" 8J1YAB/1 and 8J3YAA/3. Both were licensed through the 7-CALL Amateur Radio Club.

"Today is my first amateur radio," one young girl said, as she



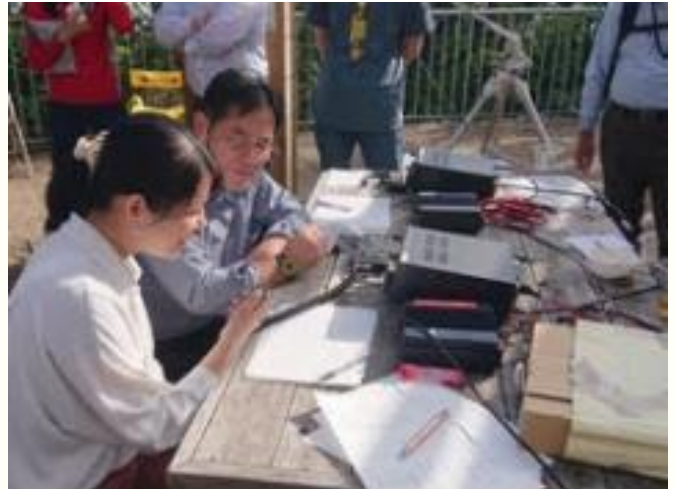
Wielded the mic. "Me too," the girl on the other end replied. The contact, on 40-meter SSB, was between Tokyo and Osaka. Licensed individuals were on both ends of the contact to serve as control operators. One operator reported, "There was applause at the Osaka venue."

"Congratulations on your first attempt and great success," Toshiaki Tsunashima, JA4DLF, tweeted.

Satoshi Yamaguchi, 7M4VQJ, the President of 7-CALL Amateur Radio Club, called CQ and made initial contact with Yasukuni Suzuki, JJ0RHL, from the "sister station" 8J2YAB/1 in Tokyo. The licensed supervisor of 8J3YAA/3 in Osaka was Sam Yoshida, JS3CEQ.

**Continued on next column**

The Experience Stations are licensed under special permission, allowing unlicensed people to operate the station under the supervising of a licensed amateur. The idea is to promote experience with wireless communication technology.



Before the noteworthy contact, the first contact by an unlicensed guest operator was made with 8J1JARL, a Japan Amateur Radio League special event station hosted by the Kanto Region Society of JARL, and operated by Yamaguchi Takahiko, JL1USZ.

Puntoshi, JN1VVR, remarked on Twitter, "Thank you for your hard work. It is necessary and important to prepare and experiment so that [unlicensed] people can feel the excitement of 'something amazing' while watching the operation. This [Experience Station] operation has just begun, and the know-how that will be accumulated for the future is important."



## WSJT-X Developer Expresses Puzzlement over FT8 Contest Use

WSJT-X co-developer Joe Taylor, K1JT, recently expressed puzzlement over the use of FT8 in contests -- rather than FT4, which was designed for contesting.

"I fail to understand why anyone who uses FT8 in a contest would fail to use FT4 for much of the time," Taylor said.



"FT4 is about 3 dB less sensitive than FT8, but it's twice as fast."

Taylor offered the comment in the Mt. Airy VHF Society's [October 2020 Cheese Bits](#), regarding the September ARRL VHF Contest. Taylor said a large fraction of stations that are worked with FT8 are much more than 3 dB above the FT4 decoding threshold.

"With FT4, you can still work anyone that can be worked with CW, and near the CW threshold, you'll do it faster using FT4," he said.

"For speed, flexibility, and ease of running the bands, yes, you should use SSB and CW when there are stations to work," Taylor said in summary. "When you run out of those, use FT8 and *especially* FT4."

Taylor also remarked, "In my 80th year, I can no longer call on my past stamina for contesting."

## The Long and Winding Road



View from the top of Eastern Tennessee and Western North Carolina Mountains

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**Remember to change your clocks at 2:00 am.  
On Sunday November 1<sup>st</sup>. Fall back to 1:00 am.**





## The Uncertain Future of Ham Radio

### Software-defined radio and cheap hardware are shaking up a hobby long associated with engineering

By Julianne Pepitone

Will the amateur airwaves fall silent? Since the dawn of radio, amateur operators—hams—have transmitted on tenaciously guarded slices of spectrum. Electronic engineering has benefited tremendously from their activity, from the level of the individual engineer to the entire field. But the rise of the Internet in the 1990s, with its ability to easily connect billions of people, captured the attention of many potential hams. Now, with time taking its toll on the ranks of operators, new technologies offer opportunities to revitalize amateur radio, even if in a form that previous generations might not recognize.

The number of U.S. amateur licenses has held at an anemic 1 percent annual growth for the past few years, with about 7,000 new licensees added every year for a total of 755,430 in 2018. The U.S. Federal Communications Commission doesn't track demographic data of operators, but anecdotally, white men in their 60s and 70s make up much of the population. As these baby boomers age out, the fear is that there are too few young people to sustain the hobby.

“It's the \$60,000 question: How do we get the kids involved?” says Howard Michel, former CEO of the American Radio Relay League (ARRL). (Since speaking with *IEEE Spectrum*, Michel has left the ARRL. A permanent replacement has not yet been appointed.)

This question of how to attract younger operators also reveals deep divides in the ham community about the future of amateur radio. Like any large population, ham enthusiasts are no monolith; their opinions and outlooks on the decades to come vary widely. And emerging digital technologies are exacerbating these divides: Some hams see them as the future of amateur radio, while others grouse that they are eviscerating some of the best things about it.

No matter where they land on these battle lines, however, everyone understands one fact. The world is changing; the amount of spectrum is not. And it will be hard to argue that spectrum reserved for amateur use and experimentation should not be sold off to commercial users if hardly any amateurs are taking advantage of it. **Continued on page 20**

## The Uncertain Future of Ham Radio

Before we look to the future, let's examine the current state of play. In the United States, the ARRL, as the national association for hams, is at the forefront, and with more than 160,000 members it is the largest group of radio amateurs in the world. The 106-year-old organization offers educational courses for hams; holds contests where operators compete on the basis of, say, making the most long-distance contacts in 48 hours; trains emergency communicators for disasters; lobbies to protect amateur radio's spectrum allocation; and more.

Michel led the ARRL between October 2018 and January 2020, and he fits easily the profile of the “average” American ham: The 66-year-old from Dartmouth, Mass., credits his career in electrical and computer engineering to an early interest in amateur radio. He received his call sign, WB2ITX, 50 years ago and has loved the hobby ever since.

“When our president goes around to speak to groups, he'll ask, ‘How many people here are under 20 [years old]?’ In a group of 100 people, he might get one raising their hand,” Michel says.

ARRL does sponsor some child-centric activities. The group runs twice-annual Kids Day events, fosters [contacts with school clubs](#) across the country, and publishes resources for teachers to lead radio-centric classroom activities. But Michel readily admits “we don't have the resources to go out to middle schools”—which are key for piquing children's interest.

Sustained interest is essential because potential hams must clear a particular barrier before they can take to the airwaves: a licensing exam. Licensing requirements vary—in the United States no license is required to listen to ham radio signals—but every country requires operators to demonstrate some technical knowledge and an understanding of the relevant regulations before they can get a registered call sign and begin transmitting.

For those younger people who *are* drawn to ham radio, up to those in their 30s and 40s, the primary motivating factor is different from that of their predecessors. With the Internet and social media services like WhatsApp and Facebook, they don't need a transceiver to talk with someone halfway around the world (a big attraction in the days before email and cheap long-distance phone calls).

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## The Uncertain Future of Ham Radio

Instead, many are interested in the capacity for public service, such as providing communications in the wake of a disaster, or event comms for activities like city marathons.

“There’s something about this post-9/11 group, having grown up with technology and having seen the impact of climate change,” Michel says. “They see how fragile cellphone infrastructure can be. What we need to do is convince them there’s more than getting licensed and putting a radio in your drawer and waiting for the end of the world.”

The future lies in operators like Dhruv Rebba (KC9ZJX), who won Amateur Radio Newsline’s 2019 Young Ham of the Year award. He’s the 15-year-old son of immigrants from India and a sophomore at Normal Community High School in Illinois, where he also runs varsity cross-country and is active in the Future Business Leaders of America and robotics clubs. And he’s most interested in using amateur radio bands to communicate with astronauts in space.

Rebba earned his technician class license when he was 9, after having visited the annual Dayton Hamvention with his father. (In the United States, there are currently three levels of amateur radio license, issued after completing a written exam for each—technician, general, and extra. Higher levels give operators access to more radio spectrum.)

“My dad had kind of just brought me along, but then I saw all the booths and the stalls and the Morse code, and I thought it was really cool,” Rebba says. “It was something my friends weren’t doing.”

He joined the Central Illinois Radio Club of Bloomington, experimented with making radio contacts, participated in ARRL’s annual Field Days, and volunteered at the communications booths at local races.

**“We want to be making an impact... The hobby aspect is great, but a lot of my friends would argue it’s quite easy to talk to people overseas with texting and everything, so it’s kind of lost its magic.”**

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## The Uncertain Future of Ham Radio

But then Rebba found a way to combine ham radio with his passion for space: by an international consortium of amateur radio organizations, which allows students to apply. He learned about the Amateur Radio on the International Space Station (ARISS) program, managed to speak directly with crew members onboard the ISS. (There is also an automated digital transponder on the ISS that allows hams to ping the station as it orbits.)

Rebba rallied his principal, science teacher, and classmates at Chiddix Junior High, and on 23 October 2017, they made contact with astronaut Joe Acaba (KE5DAR). For Rebba, who served as lead control operator, it was a crystallizing moment.

“The younger generation would be more interested in emergency communications and the space aspect, I think. We want to be making an impact,” Rebba says. “The hobby aspect is great, but a lot of my friends would argue it’s quite easy to talk to people overseas with texting and everything, so it’s kind of lost its magic.”

That statement might break the hearts of some of the more experienced hams recalling their tinkering time in their childhood basements. But some older operators welcome the change.

Take Bob Heil (K9EID), the famed sound engineer who created touring systems and audio equipment for acts including the Who, the Grateful Dead, and Peter Frampton. His company Heil Sound, in Fairview Heights, Ill., also manufactures amateur radio technology.

“I’d say wake up and smell the roses and see what ham radio is doing for emergencies!” Heil says cheerfully. “Dhruv and all of these kids are doing incredible things. They love that they can plug a kit the size of a cigar box into a computer and the screen becomes a ham radio.... It’s all getting mixed together and it’s wonderful.”

But there are other hams who think that the amateur radio community needs to be much more actively courting change if it is to survive. Sterling Mann (NoSSC), himself a millennial at age 27, wrote on his blog that “Millennials Are Killing Ham Radio.”

It’s a clickbait title, Mann admits: His blog post focuses on the challenge of balancing support for the dominant, graying ham population while pulling in younger people too.

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## The Uncertain Future of Ham Radio

“The target demographic of every single amateur radio show, podcast, club, media outlet, society, magazine, livestream, or otherwise, is not young people,” he wrote. To capture the interest of young people, he urges that ham radio give up its century-long focus on person-to-person contacts in favor of activities where human to machine, or machine to machine, communication is the focus.

These differing interests are manifesting in something of an analog-to-digital technological divide. As *Spectrum* reported in July 2019, one of the key debates in ham radio is its main function in the future: Is it a social hobby? A utility to deliver data traffic? And who gets to decide?

Those questions have no definitive or immediate answers, but they cut to the core of the future of ham radio. Loring Kutchins, president of the Amateur Radio Safety Foundation, Inc. (ARSAFi)—which funds and guides the “global radio email” system Winlink—says the divide between hobbyists and utilitarians seems to come down to age.

“Younger people who have come along tend to see amateur radio as a service, as it’s defined by FCC rules, which outline the purpose of amateur radio—especially as it relates to emergency operations,” Kutchins (W3QA) told *Spectrum* last year.

Kutchins, 68, expanded on the theme in a recent interview: “The people of my era will be gone—the people who got into it when it was magic to tune into Radio Moscow. But Grandpa’s ham radio set isn’t that big a deal compared to today’s technology. That doesn’t have to be sad. That’s normal.”

Gramps’ radios are certainly still around, however. “Ham radio is really a social hobby, or it has been a very social hobby—the rag-chewing has historically been the big part of it,” says Martin F. Jue (K5FLU), founder of radio accessories maker MFJ Enterprises, in Starkville, Miss. “Here in Mississippi, you get to 5 or 6 o’ clock and you have a big network going on and on—some of them are half-drunk chatting’ with you. It’s a social group, and they won’t even talk to you unless you’re in the group.”

But Jue, 76, notes the ham radio space has fragmented significantly beyond rag-chewing and DXing (making very long-distance contacts), and he credits the shift to digital. That’s where MFJ has moved with its antenna-heavy catalog of products. **Continued on page 24**

## The Uncertain Future of Ham Radio

“Ham radio is connected to the Internet now, where with a simple inexpensive handheld walkie-talkie and through the repeater systems connected to the Internet, you’re set to go,” he says. “You don’t need a HF [high-frequency] radio with a huge antenna to talk to people anywhere in the world.”

To that end, last year MFJ unveiled the RigPi Station Server: a control system made up of a Raspberry Pi paired with open-source software that allows operators to control radios remotely from their iPhones or Web browser.

“Some folks can’t put up an antenna, but that doesn’t matter anymore because they can use somebody else’s radio through these RigPis,” Jue says.

He’s careful to note the RigPi concept isn’t plug and play— “you still need to know something about networking, how to open up a port”—but he sees the space evolving along similar lines.

“It’s all going more and more toward digital modes,” Jue says. “In terms of equipment I think it’ll all be digital at some point, right at the antenna all the way until it becomes audio.”

### The Signal from Overseas

Outside the United States, there are some notable bright spots, according to Dave Sumner (K1ZZ), secretary of the [International Amateur Radio Union \(IARU\)](#). This collective of national amateur radio associations around the globe represents hams’ interests to the International Telecommunication Union (ITU), a specialized United Nations agency that allocates and manages spectrum. In fact, in China, Indonesia, and Thailand, amateur radio is positively booming, Sumner says.

China’s advancing technology and growing middle class, with disposable income, has led to a “dramatic” increase in operators, Sumner says. Indonesia is subject to natural disasters as an island nation, spurring interest in emergency communication, and its president is a licensed operator. Trends in Thailand are less clear, Sumner says, but he believes here, too, that a desire to build community response teams is driving curiosity about ham radio.

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## The Uncertain Future of Ham Radio

“So,” Sumner says, “you have to be careful not to subscribe to the notion that it’s all collapsing everywhere.”

China is also changing the game in other ways, putting cheap radios on the market. A few years ago, an entry-level handheld UHF/VHF radio cost around US \$100. Now, thanks to Chinese manufacturers like Baofeng, you can get one for under \$25. HF radios are changing, too, with the rise of software-defined radio.

“It’s the low-cost radios that have changed ham radio and the future thereof, and will continue to do so,” says Jeff Crispino, CEO of Nooelec, a company in Wheatfield, N.Y., that makes test equipment and software-defined radios, where demodulating a signal is done in code, not hardwired electronics. “SDR was originally primarily for military operations because they were the only ones who could afford it, but over the past 10 years, this stuff has trickled down to become \$20 if you want.” Activities like plane and boat tracking, and weather satellite communication, were “unheard of with analog” but are made much easier with SDR equipment, Crispino says.

Nooelec often hears from customers about how they’re leveraging the company’s products. For example, about 120 members from the group Space Australia to collect data from the Milky Way as a community project. They are using an SDR and a low-noise amplifier from Nooelec with a homemade horn antenna to detect the radio signal from interstellar clouds of hydrogen gas.

“We will develop products from that feedback loop—like for hydrogen line detection, we’ve developed accessories for that so you can tap into astronomical events with a \$20 device and a \$30 accessory,” Crispino says.

Looking ahead, the Nooelec team has been talking about how to “flatten the learning curve” and lower the bar to entry, so that the average user—not only the technically adept—can explore and develop their own novel projects within the world of ham radio.

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## The Uncertain Future of Ham Radio

“It is an increasingly fragmented space,” Crispino says. “But I don’t think that has negative connotations. When you can pull in totally unique perspectives, you get unique applications. We certainly haven’t thought of it all yet.”

The ham universe is affected by the world around it—by culture, by technology, by climate change, by the emergence of a new generation. And amateur radio enthusiasts are a varied and vibrant community of millions of operators, new and experienced and old and young, into robotics or chatting or contesting or emergency communications, excited or nervous or pessimistic or upbeat about what ham radio will look like decades from now.

As Michel, the former ARRL CEO, puts it: “Every ham has [their] own perspective. What we’ve learned over the hundred-plus years is that there will always be these battles—AM modulation versus single-sideband modulation, whatever it may be. The technology evolves. And the marketplace will follow where the interests lie.” End.

*HAPPY THANKSGIVING EVERYONE*

