

ARRL - Utah Section

QUARTERLY NEWSLETTER



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MEET THE UTAH SECTION STAFF

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SECTION MANAGER'S DESK

QST QST QST

On April 13, 2022, the Utah Section of the ARRL was pleased to honor Gordon R Smith - K7HFV for his lifetime achievements in Amateur Radio. He is the first recipient of the Gordon R Smith, K7HFV, Lifetime Achievement Award, which bears his name.



Section Manager, Pat Malan - N7PAT, together with several ARRL and UARC members gathered at Litza's Pizza, a place near and dear to Gordon and UARC members, to present the award to Mr. Smith. The official citation read by Mr. Malan follows:

On behalf of the Utah Section of the American Radio Relay League, I am pleased to present to you the inaugural 'Gordon R. Smith, K7HFV Lifetime Achievement Award'.

You have notably displayed an outstanding record of technical achievement, practical knowledge, and public service within Amateur Radio as a CW operator, Volunteer Examiner, community leader, mentoring Elmer, and most of all as a great friend and example to countless HAM radio operators within the Utah Section of the ARRL and abroad. You are not only knowledgeable, but you are also kind, patient and willing to freely spend time helping others. You are truly an example of what is best and brightest within the Amateur Radio Service.

The 'Gordon R. Smith, K7HFV Lifetime Achievement Award' will continue to be presented to an individual Amateur Radio operator who, in the opinion of the Utah Section of the ARRL, is deserving of recognition for outstanding service and achievement during his or her lifetime to the Amateur Radio community as exemplified by you. This award may be presented to an Amateur Radio Operator with 25-years or more of service.

Thank you for your outstanding contribution.

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This is our second newsletter, and we are committed to producing this information on a quarterly basis to keep the Section informed. We have received very good feedback from the first newsletter and would welcome any suggestions for content or other things you would like to see going forward.

One of the things we are looking for is a new Section logo. We are having a competition and would like you to submit your design by June 15th. We will choose a winner who will also receive the prize of an HF End Fed Antenna.

We have also made some changes to our organization to continue to take the Utah section forward and improve our ability to serve the amateur radio community and ultimately the citizens of Utah. Hence the following...

Updates on Section Appointments

Please welcome those new to our Section Cabinet and supporting staff.

Webmaster - Rick Hanzlik KR7V, comes to us with a wealth of experience and is anxious to get started. He will be working with the PIC (Public Information Coordinator).

ASTM (Assistant Section Traffic Manager) - Tyler Griffiths N7UWX, has been introducing WinLink to ARES operators as the SEC. He recently presented on WinLink at the Digital Communications Conference. We could refer to him as the WinLink Czar. I have asked him to continue that outreach beyond EMCOMM to the whole Section. He will be working with Jim Brown, our STM (Section Traffic Manager). We will adjust down the road if needed to facilitate his efforts.

SEC (Section Emergency Coordinator) and **ASM** - Rick Mead W7VQ, is transitioning to be our new SEC. Rick is one of a handful of individuals to not only complete the ARRL EC-016 course but also level 3 in the ARES Task Book. He will continue to build on the foundation provided by Tyler.

ASM (Assistant Section Manager) - Lisa Cook K7LAC, was influenced by her dad (Silent Key K7OEC) who got her involved in Ham Radio. She earned her General ticket 2 weeks before he passed away at a ham radio convention in Albuquerque. Lisa attended the Teacher's Institute on Wireless Technology part 1 and 2 in Newington, CT at ARRL Headquarters. She also does volunteer work with the Salt Lake Bicycle Collective (where she learned to build a bicycle from scratch) where she focuses on including under-represented individuals. She will do the same in our Section by including under-represented groups/individuals, and other duties as assigned.

PIC (Public Information Coordinator) - We now have a vacancy and are looking for those interested in filling this position.

If you would like to contribute to the Section...



WE WANT YOU

Please send an email letting us know what skills/abilities you have. As opportunities come up we may tap you on the shoulder for some help.

Thank you for your support.
73
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SECTION EMERGENCY COORDINATOR'S REPORT

Tyler Griffiths - N7UWX

April is time for the Great Utah Shake Out! April 21, 2022 to be specific.

<https://www.shakeout.org/utah/>

Each year, millions of people worldwide practice Drop, Cover, and Hold On and other safety actions during *Great ShakeOut Earthquake Drills!*

Participating is a great way for [your organization](#) to be prepared to survive and recover quickly from big earthquakes - wherever you live, work, or travel.

I encourage each ARES group to participate in some way for this exercise.

If your county ARES or communications group does not plan on participating and you want to participate here is the plan I would like you to use. Also any county can use this plan as their group ARES exercise.

So a suitable exercise for a shake out...

In the Winlink template folder there is a great form that can be used to report an earthquake. It can also be used even if you did not feel the earthquake.

<https://earthquake.usgs.gov/data/dyfi/>

WinLink DYFI - Did You Feel It - Great ShakeOut 2022

In conjunction with The Utah ShakeOut Day on April 21, 2022, we will be using the new WinLink template form. The new template is the **USGS DYFI.txt** and is available in the Standard Forms library in the USGS folder. **Create a New message, select the DYFI template, fill out and Post and Send.**

The following is from the WinLink.org site about the DYFI form.

The [Did You Feel It](#) (DYFI) system was developed by the USGS to tap the abundant information available about earthquakes from the people who experience them. By taking advantage of the vast number of Internet users, and Amateur operators with WinLink radio clients, the USGS gets a more complete description of what people experienced, the effects of an earthquake, and the extent of damage. And best of all, with Amateur radio's help they can do so rapidly.

By providing a DYFI report when you can do so safely after an earthquake you contribute to citizen science and further the understanding of earthquakes. You also ensure that your area has been represented in the compilation of the maps of shaking. This is a two-way street: not only will you add valuable information on the extent of ground shaking and damage, but in the process, we hope you will learn more about how other communities fared and gain a greater understanding of the effects of earthquakes.

Please view an excellent YouTube Video from Oliver K6OLI about how to use the WinLink DYFI form.

<https://www.youtube.com/watch?v=OutjBBfIVF8>

Or a longer newer version

<https://www.youtube.com/watch?v=Ao2WmypzVGg>

Please be very careful and follow the directions in the Video and examples below as this form will also be sent to the [United States Geological Survey](#) email address. We want our ARES Group to set a good example in submitting the DYFI Form for the ShakeOut 2022 Exercise.

On the first line of the DYFI Form, please make sure “**Exercise**” is checked, it is defaulted to “**Exercise**” for this Earthquake report. **DO NOT** check “**REAL EVENT**”

Optional Exercise ID: **Utah ShakeOut 2022**

Did you feel it? (REQUIRED) Check **Yes** or **No** If you check **Yes**, please answer the 15 Questions at the end of the form. If you check **No**, then the 15 Questions need not to be answered. **Your choice, REMEMBER this is an EXERCISE.**

Time of earthquake: (REQUIRED) The Date of this DYFI ShakeOut 2022 Exercise will be **4/21/2022** (Date in mm/dd/yyyy format:) please change as needed. The Time: will be **10:21** (Enter Time in 24 hour format:) please change as needed.

Click Date or Time field to Modify (Opening this form inserts your current Date & Time, you may manually change by click in the field). The date and time of the DYFI Exercise will need to be manually set to the suggested Date and Time for the International Great ShakeOut event. **The time will be local to your individual time zone. We will use 10:21 am Mountain Daylight Time.**

Your location - street address where the earthquake occurred: (REQUIRED)

Some participants might not be comfortable using their actual street address, you could use a local landmark or park address. It appears this field will accept a City, State entry also.

Optional GPS coordinates in the following format: please use standard decimal notation with 4 decimal place accuracy for this event. LAT (-)xx.xxxx LON (-)xx.xxxx (-) if needed for your location. Automatic insertion of GPS data is not working in this current version of the DYFI form. Ver 8.2 en

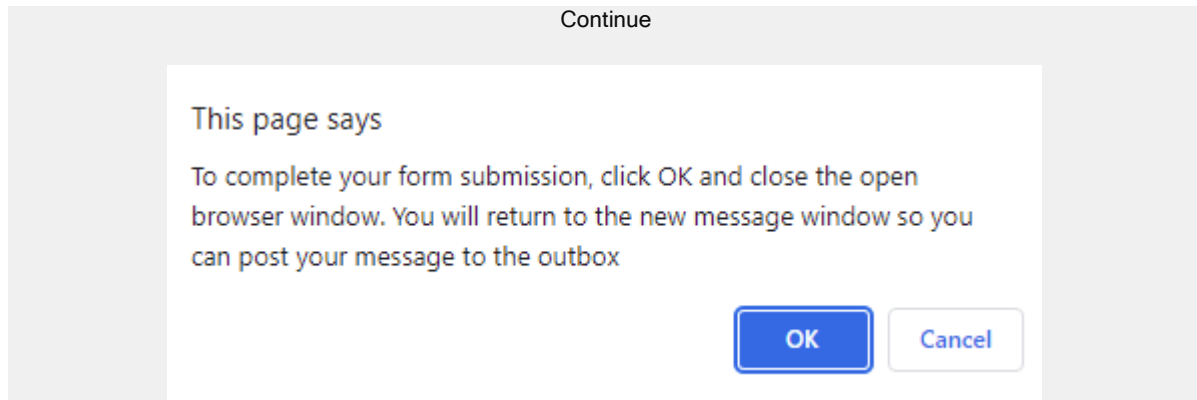
15 Questions follow, answer as needed. Instructions noted above.

Additional comments: **(Max 400 Characters)** A quick "sent via VARA HF" or "Telnet" or similar shows USGS the diversity of paths available to amateur radio operators.

Click Submit at the bottom of the DYFI form, Display will now show the following. Click Continue and follow the standard procedures to Post to your Outbox and Send.

To complete your form submission, click Continue and close the open browser window.

You will return to the new message window so you can post your message to the outbox.



As noted in the video this form will automatically be sent to: **dyfi_reports_automated@usgs.gov** and the Subject: will be **DYFI Automatic Entry - Winlink EXERCISE**

NOTE: Please add N7UWX or UTARES-SEC tactical address to the Cc:

Other addresses can be added to the To: field or Cc: field. Do not remove the usgs.gov email address.

Post to Outbox and send via a Radio or Telnet WinLink Session.

SECTION CLUB COORDINATOR'S REPORT

Ted Cowan - NA7C

Why do clubs need funding and how do they get it?

Why do clubs need money, and what do they use it for? Certainly, if you have been a ham and you have been to "that annual meeting" where some clubs summarize their yearly financial, you have seen where they get their money and what they spend it on. In this two-part series of articles, I will summarize the finances of clubs great and small, and if you are a club leader, how you can finance that "big project" as well as the ongoing expenses of operating a ham radio club.

In this article, I will summarize where clubs spend their money and summarize the ways funds are raised. In part 2, I will name names (with their permission) about which clubs

in Utah are using creative ways to either save money or raise money, and who can clubs talk with to learn how.

What do clubs spend their money on?

- Recurring expenses, such as meeting room fees, door prizes, refreshments, handouts, web hosting and domain names, storage for equipment, insurance, postage and printing and repeater site fees
- Major events expense such as Forest Service fees for a Field Day site, porta pottys, rental fees for summer picnics and holiday parties and insurance
- Equipment such as computers, repeaters, test equipment, antennas and coax, tables, tents and towers
- Miscellaneous expenses related to any of the above, such as licensing of software and equipment maintenance

Can you imagine what costs the Dayton Amateur Radio Association has to put on the Dayton Hamvention with over 20,000 attendees?

Where do clubs get their money?

- Club Dues - the most common way
- Informal fundraisers - simply "pass the hat" among the club membership to pay a small amount
- Formal fundraisers - bake sales or swap meets
- Sales of ARRL books, and other merchandise
- Special products designed by the club and sold at a small profit, such as the Te-Ne-Key, manufactured and sold by the North Ottawa Amateur Radio Club.
- Grants from foundations such as the ARRL and the ARDC.
- Donations from served agencies
- Subsidies from organizations that give to non-profits
- Gifts from wills and trusts
- In-kind loans of equipment or gifts of equipment from members or served agencies
- Out-of-pocket payment of gas, mileage on personal vehicles, BYOB donations of food for the summer picnic

Most clubs rely on a combination of these methods to raise funds. In many cases some clubs are adept at raising funds and have a bank account with tens of thousands of dollars just waiting for that next big project.

The challenge of any organization is to fund their mission. Some ham radio clubs are social clubs without offerings of formal training to help their members upgrade their licenses and without expensive activities such as a major Field Day effort or swap meet. Some ham radio clubs aspire to be a Special Service Club with formal events, upgrade training, repeaters, swap meets, social activities for youth and family and weekly meetings. You will be hearing more from the Utah Section cabinet in the near future about just exactly what is a Special Service Club and why a club would want to be recognized as one.

Why Raise Funds?

It might be considered burdensome to a club's leadership to be expected to pay club expenses out of their pocket. It is difficult enough to get club members to run for club office. It's harder when those same club leaders are expected to pay for club expenses out of their family's budget. Even expenses such as gasoline and mileage can be a burden on club leaders and members. Gasoline is no longer 25 cents a gallon, its over \$4.00 a gallon as of April 2022. Clubs that aren't finding creative ways to raise funds (such as dues) might want to rethink how they are burdening some generous club members.

Dues

Most clubs (especially those who qualify to be recognized as Special Service Clubs) charge dues, a small annual amount that collectively meet the financial needs of the club and help that club accomplish its stated mission. Did you know that there are some large clubs in Utah that do not charge dues or that reduce or waive dues for family members or new hams and yet these clubs sponsor lots of activities? But dues are only one way to raise funds. There are many other ways to raise funds and here are a few:

Other ways to raise funds

- Grants - there are a number of organizations searching for qualified, worthy organizations to give money to. In part 2 we will name a few with contact information and show you how your club can qualify.
- Served agencies - for example, many clubs in the Utah section get their meeting room free of charge from their served agencies. Other clubs get gifts of equipment and Emergency Operations Center (EOC) facilities from their served agencies in exchange for an understanding of how that club will assist that served agency in the event of an emergency.
- Wills and Trusts
- In-Kind Donations
- Fundraisers including Amazon Smile

Summary

It requires funds to operate a fully functioning Amateur Radio club with meetings, training, and events. In cases like the Utah VHF Society, it requires major funds to achieve their stated mission with repeaters throughout Utah and technology that ties them together. Even a "coffee and doughnuts" club need to be protected with insurance when they organize a Field Day event.

In part 2 I will discuss these various ways of fundraising, cite some examples, and provide the contact information of resources that can help clubs take advantage of these alternate fundraising methods. I will also talk about the process of being legally recognized in the state of Utah as a non-profit organization and why a club might want that designation.

SECTION TRAFFIC MANAGER'S REPORT

Jim Brown - NA7G

Now that regular traffic reports and updates are being included in the quarterly newsletter, I wanted to provide some additional information on what ORS and PSHR mean. An ORS is an Official Relay Station. The detail for an ORS appointment can be found on the ARRL website. A link is provided here:

<http://www.arrl.org/official-relay-station>

This is a traffic handling appointment and is open to any licensed amateur radio operator who is also a member of the ARRL. It does not require that you be proficient in all modes used to pass traffic.

Public Service Honor Roll (PSHR) is a means to recognize those hams who are active in public service activities such as net operations, traffic handling, emergency operations and public service communication support. As with ORS detail information for PSHR is on the ARRL website.

<http://www.arrl.org/public-service-honor-roll>

To summarize PSHR scoring, points are awarded in each of six categories.

Category 1: One point for each traffic or public service net that is checked into during the month. Maximum of 40 points.

Category 2: One point for each piece of formal traffic handled during the month. Maximum of 40 points.

Category 3: Serving in an ARRL sponsored volunteer position. Ten points for each position. Maximum of 30.

Category 4: Participation in a scheduled public service event such as a parade or simulated emergency test. Five points for every hour or portion of an hour. No limit on points for this category.

Category 5: Participation in an unplanned emergency response where you are on the scene as well as unplanned incident requests by public served agencies. Five points for every hour or portion of an hour. No limit on points for this category.

Category 6: Providing and maintaining an automated digital system that handles ARRL radiograms or a web page oriented toward Amateur Radio Public Service. Ten points per item.

Again, more information on each of these categories and the PSHR system can be found on the website listed above.

January			February			March		
Station	ORS	PSHR	Station	ORS	PSHR	Station	ORS	PSHR
K7BWO	57		K7BWO	54		K7BWO	54	
NA7G	132	120	NA7G	132	120	NA7G	139	120
N7IE	231	120	N7IE	275	120	KD7UM	13	
KD7UM	21		KD7UM	44		N7UWX		91
W7VQ	30	110	N7UWX	--	82	W7VQ	162	120
			W7VQ	20	100			
Total	471		Total	525		Total	368	

TECHNICAL COORDINATOR’S REPORT

Alan Bloom - N1AL

Radio Direction Finding

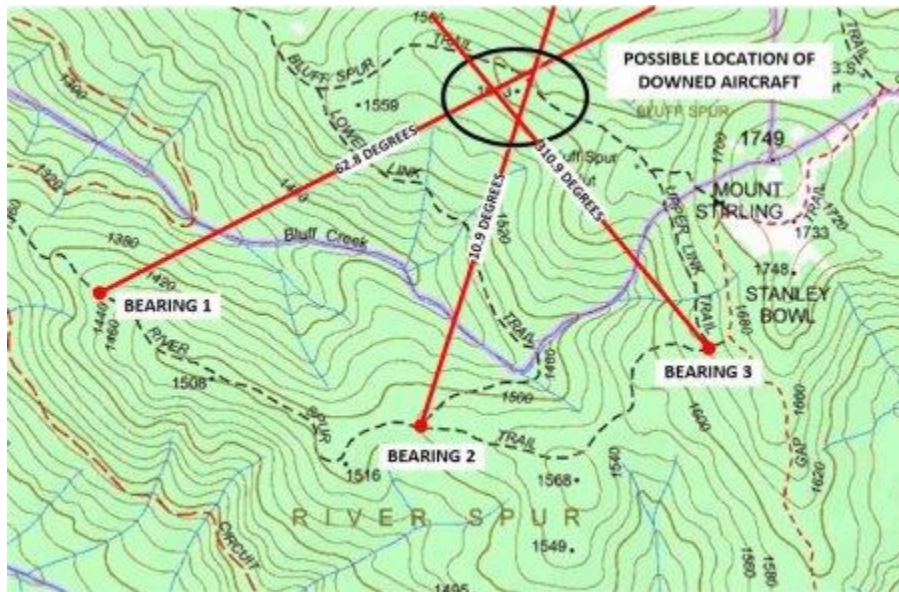
One of the earliest uses of RDF (Radio Direction Finding) was by the military, to track down the location of enemy transmitters. Today radio amateurs use it primarily for four purposes - to track down intentional jammers, to locate unintentional sources of radio-frequency interference, for rescuing lost hikers, downed aircraft and the like, and for sport - the traditional "fox hunt".

RDF at VHF/UHF frequencies uses different techniques than at HF so we will treat them separately. Let's look at VHF/UHF first.

RDF at VHF/UHF

The first step is to get a rough idea of the location of the transmitter. If the interference is to a repeater, the location of the repeater's receiver antenna(s) can narrow it down to a general region. The signal strength gives a rough idea of the distance to the repeater.

Next is to see which fixed stations can hear the signal and how strong the signal is at their location. (Of course, they should be listening on the repeater's input frequency.) The person coordinating the search may want to plot these results on a map to help narrow the search.



Plot the location and signal strength received by each station. And don't forget to plot the location of stations that *can't* hear it because that is also an important clue. If some home stations have beams, plot the direction from each one on the map. With luck, most of the plots will converge in a small area. The term for this is

"triangulation".

To narrow the search further will probably require mobile stations. Compared to fixed stations, mobile stations are more subject to multi-path propagation, which can confuse whatever RDF equipment that may be in use. The solution is to drive to the top of a hill or other area that is in the clear, that is, there are not a lot of buildings, trees or other nearby objects that can reflect radio waves.

Equipment

So what equipment is required for RDF? The minimum is just a **receiver and antenna**. If the receiver has a signal-strength meter, that is a plus, although the S-meters on most VHF/UHF FM transceivers have such a narrow range they are of limited usefulness.

A **variable attenuator** on the antenna input is a very useful accessory. It ideally should be adjustable from a minimum of 0 dB to a maximum of 60 dB or more – a 5 or 10 dB step size is probably fine. With an attenuator, you can reduce the signal level to within the S-meter range or to the level where you can start to hear some noise. The attenuator setting gives a good idea of signal strength. It is a good idea to temporarily

unplug the microphone from the radio, so you don't destroy the attenuator if you accidentally hit the PTT button.

A **Yagi or quad beam antenna** can be used mobile as well as at fixed stations. Drive to a clear area, preferably on top of a hill, set up the antenna and rotate it for maximum signal. Some operators have a beam mounted on the car so that readings can be taken while in motion. For safety reasons, don't try to do this while driving – have a passenger handle the antenna rotation and radio operation.

"Body Shadowing" with a hand-held transceiver is a very simple RDF technique that requires minimal equipment. If you hold the HT close to your chest, the signal will be weakest when your back is toward the transmitter. Just watch the S-meter, if available, or listen for maximum noise. When the signal gets too strong, removing the antenna acts as a crude attenuator. You can also try tuning the receiver 5 kHz or 10 kHz off-frequency or (when you get really close) listening to the third harmonic of a two-meter signal between 432 MHz and 444 MHz.



Doppler DF: Using a beam or body-shadowing has the disadvantage that it takes at least a few seconds to get a reading. If the interference is happening in short bursts, you need faster readings. One popular option is the so-called "Doppler DF". This uses four antennas mounted in a square on the roof of the vehicle (or other metal ground plane) and a control box that rapidly (at an audio rate) switches between the four antennas in sequence. Each time the antenna is

switched, the phase of the received signal changes depending on the distance between and orientation of the antennas and the direction of the incoming signal. Circuitry uses this information to plot the direction, typically on a circular display of LEDs.

You can easily see the effects of multi-path propagation as the LEDs flicker back and forth. Some Doppler units include circuitry to average the readings to reduce this effect. Many also lock in the displayed direction after the signal leaves the air, which is very useful for tracking short-duration transmissions. It is worth mentioning that this technique is inherently more susceptible to multi-path propagation than using a directional antenna, so it is important to be aware when you are driving in areas with lots of reflectors and give more credence to readings that are taken in the clear.

Some Doppler RDF units are APRS-compatible. When properly configured, the unit's data can be used to display the bearing lines on an APRS map. Two or more mobile stations equipped in this way can quickly triangulate the transmitter with little effort. Other units offer special software that plots the readings on Google Earth Maps.¹ If you

have an iPhone or Android phone, there is an app developed by Jim McCullers WA4CWI called SigTrax that displays bearings and allows sharing of data on Google Earth.²



TDOA: When you get close to the interferer, a system with 4 antennas mounted on the roof of the vehicle may not be convenient. You need a system that can be used on foot. One option is a "TDOA" (Time Difference Of Arrival) unit, which consists of only two antennas in a self-contained hand-held unit integrated with the controller. Like the Doppler systems, the controller switches between the two antennas at a rate of a few hundred Hz. You can hear this tone superimposed on the receiver audio because the signal arrives at the two antennas at slightly different times, resulting in a phase difference that is demodulated by the FM detector in the receiver. When the signal arrives perpendicular to a line between the two antennas, it reaches them simultaneously, there is no phase difference, and the tone disappears.

That still leaves an ambiguity: is the transmitter in front of you or behind you? Most TDOA units include circuitry to determine whether the signal is arriving to the right or left when not pointed at the transmitter. That removes the ambiguity.³

Sniffer: When you get *really* close to the transmitter, the signal may overload your receiver and you may have better luck with a "sniffer". It is basically a sensitive field-strength meter connected to a small directional antenna, such as a portable Yagi. There is a suitable design in April 2001 QST⁴ for a unit that indicates the signal strength by means of a variable-frequency tone, which allows you to keep your eyes peeled for the transmitter (or tripping hazards!).

Fox Hunting

Fox hunts, also known as "bunny hunts", "transmitter hunts", and "T-hunts" have been a popular club activity for many years. The idea is that a small team acts as the "Fox". – They hide a transmitter that the rest of the participants, the "hounds", try to locate. Some fox teams get very creative in creating hiding places and using other techniques to confuse the hounds.

Driving safety is an important issue. It is a good idea to have the hounds work in teams of two or more so that the driver is not distracted by operating the DF equipment. The club may also want to consider determining the winner based on miles driven rather than elapsed time so as to reduce the incentive to speed.

Training for a fox hunt is important to familiarize yourself on how to use the equipment. Try driving around while DFing known signals. With a Doppler or TDOA system, a raspy tone in the speaker is a good clue that signals are coming in from more than one direction at once. Another clue to multipath propagation is an unsteady directional display. With practice you can get a good feel for what types of locations are best and worst for getting accurate directional readings.

Jammer hunting is the ultimate goal of all this training for many clubs. Most of the same techniques used in a friendly fox hunt apply equally to searching for a jammer. One difference is that is important not to coordinate the search on the air. Even if done on a different frequency band, the jammer may have a scanner and can spy on your communications so that he can take countermeasures. Using cell phones for this is much more secure.

RDF at HF

Shortwave signals tend to have much less of a problem with reflections than VHF/UHF signals. The reason is that the signal is often coming in by skywave (bouncing off the ionosphere), which is typically much stronger than any reflections. There are exceptions of course – for example trans-equatorial backscatter, but those types of signals tend to be weaker and are less common sources of interference. On the other hand, it is harder to tell distance from signal strength. A signal from thousands of miles away is often stronger than one from 100 miles away.

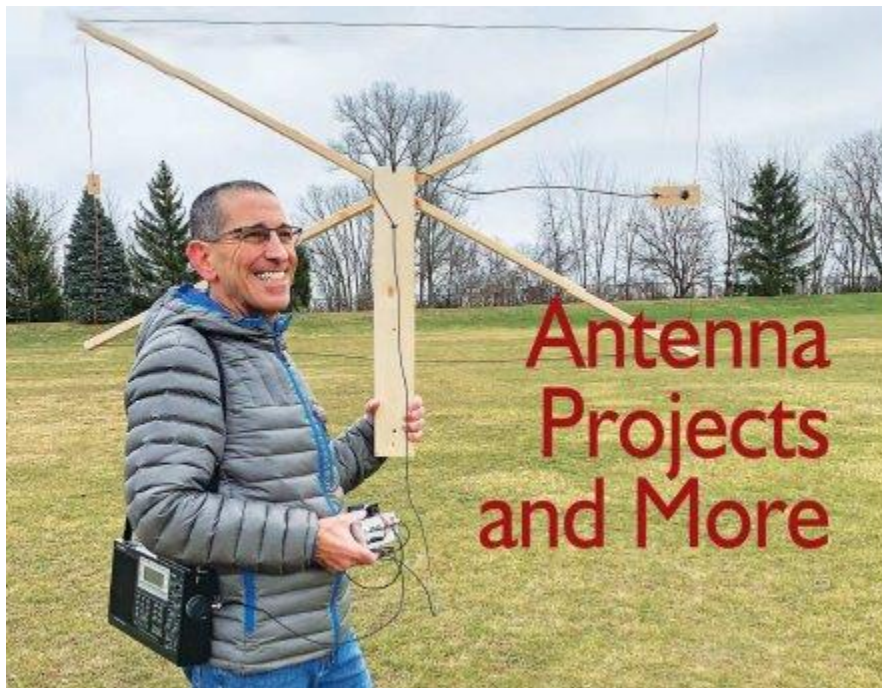
As with VHF/UHF DFing, the first step is to try to get a general idea of the transmitter location. This is normally done with **directional beam antennas** located at fixed stations. The idea is to triangulate from several receiving stations located far enough apart from each other that the direction plot lines are as close to right angles as possible when drawn on a map. However, the main lobe of an HF beam antenna is broad enough that you can't get a highly accurate directional fix. An antenna with a sharp null at a known angle, such as a vertically mounted loop, can give a more accurate direction. The goal is to narrow the search to a small enough area that further DFing can be done local to the transmitter.

Loop antennas are traditionally used for HF direction finding. They can be much smaller than a full-sized resonant antenna like a Yagi beam.^{5,6,7} For that reason, they can be used mobile or on foot once the general location of the transmitter is known. For the best null, the loop should be shielded so that it responds only to the magnetic component of the electromagnetic wave, rather than the electric part.

There is a 180-degree ambiguity when using a loop since it has a null in both directions that are perpendicular to the plane of the loop. A small vertical, called a "sense antenna" can be added to provide a unidirectional null.

An **Adcock antenna** is another option. This consists of two dipoles, mounted vertically a small distance apart, and fed out of phase. It has a null in the directions perpendicular to the line between the two dipoles. The advantage over a loop is that the null is good at

all elevation angles. If the verticals are mounted horizontally, it is called a W8JK antenna after its inventor, John Kraus W8JK, a world-famous astrophysicist and antenna expert at Ohio State University.



A **Flag antenna** has the advantage that the null is inherently in one direction only. WD8DSB had a nice portable design in an article in March 2021 QST⁸.

Any of those antennas are suitable for locating locally generated noise such as power line interference. However, DFing interfering stations at HF can be more challenging than at VHF/UHF because of the much larger geographic area that may be involved. Typically, the search team must be assembled from hams over a large portion of the country or even internationally.

References:

The ARRL Handbook has a nice overview of RDF antennas: 2021 ARRL Handbook, Chapter 21 "Antennas", pp 21.65-21.71.

1. "KN2C DDF2020T Radio Direction Finder" (Review), Jerry Clement VE6AB, QST, November 2016, pp 58-62.
2. "A New Tool for 21st Century Direction Finding" (Eclectic Technology), Steve Ford WB8IMY, QST, November 2019, p 66.
3. "National RF Vector-Finder VHF Direction Finding System" (Review), Larry Wolfgang WR1B, QST, June 2007, pp 67-69.

4. "The NVARC FoxFinder", Bob Reif W1XP, Ralph Swick KD1SM, Stan Pozerski KD1LE, QST, April 2001, pp 35-39.
5. "The Principles of HF Radio Direction Finding Loops", George Brown G1VCY, QST, September 1995, pp 19-23.
6. "A Simple Direction-Finding Receiver for 80 Meters", Dale Hunt WB6BYU, QST, September 2005, pp 36-41.
7. "Effect of Small Loop Near Fields on Direction Finding" (Technical Correspondence), Kai Siwiak KE4PT, QST, July 2015, pp 63-64.
8. "Portable Flag Antenna for MF/HF Radio Direction Finding", Don Kirk WD8DSB, QST, March 2021, pp 33-36.

SECTION YOUTH COORDINATOR'S REPORT

Every Ham Can Share the Hobby

Kevin Reeve N7RXE

ARRL Utah Section Youth Coordinator

In late 2021 I sent out a message to all the amateur radio club presidents that we had contacts for in Utah, inviting them to consider one activity their club could do to introduce youth to amateur radio. On an individual level there is something each of us can do to introduce amateur radio to youth. Many of us have kids, grandkids, nieces and nephews, neighbors, and acquaintances with local girl and boy scout units, church groups, 4-H clubs, and other organizations. Not all will have the desire to get their license. For some it will come later. A great simple hands-on activity will plant a seed. I meet amateur radio operators all the time that got into the hobby because their father, uncle or grandfather or friends dad introduced it to them. It may have been years later before they were able to make it happen. In my own family it was public service and going to field day as a family that encouraged two of my children to get their license.



For years members of the Bridgerland Amateur Radio Club in Cache County Utah, have done activities to involve youth. From building tape measure antennas and hunting down a hidden transmitter to soldering their own FM receiver, to building a payload with

APRS, and LoRa onboard and launching it onto a high-altitude balloon. Currently the club has 16 girls ages 11- 17 and 4 college age girls learning about amateur radio and space science through fun hands-on activities. The club has put together a group of experts in amateur radio, electronics, and space science to mentor these girls. They are working to launch a high-altitude balloon with amateur radio on board. They will use APRS and LoRa, soldering their own Arduino based ground station with display to receive telemetry data directly from the balloon as they chase down the payload as it parachutes down to earth.



Every ham can do something to introduce amateur radio to youth they know. Consider what you can do, or you and your amateur radio friends or club can do. You will have just as much fun as the youth will. If you do an activity or your club does one to involve youth, let me know about it.

GOVERNMENTAL AND LEGISLATIVE UPDATE

Jeri S. Brummett - WJ3RI

2022 General Session of the Utah State Legislature wrapped up on March 4, 2022. The section State Government Liaison team paid particular attention to two bills which had potential to affect Amateur Radio operators in Utah:

SB-102 WIRELESS COMMUNICATION DEVICE USE IN A MOTOR (Sen. Chris H. Wilson)

This bill is the current iteration of the “wireless bill” that we have opposed in the past; however, this year we testified in favor of the bill as this version continued to include our language which exempts mobile radio (including HAM radio) from the prohibitions set forth in the bill. We expressed our appreciation that language protecting two-way radio was included in the bill and careful to point out the over 100-year exemplary safety record of mobile two-way radio. Of course, safety and responsibility for our actions are hallmarks of Amateur Radio operators in Utah. The bill passed.

HB-368 VEHICLE LICENSE PLATE AND REGISTRATION (Rep. Norman K. Thurston)

Although this bill was not specifically directed at Amateur Radio, its passage would have resulted in the loss (at least temporarily) of Utah’s Amateur Radio license plate. The bill sought to place a moratorium on vanity and other custom license plates. Fortunately, the bill was defeated.

As most of you are aware, The U.S. Forest Service is proposing a \$1400 annual "communication facility fee" to be collected from any individual or entity maintaining a communication facility on Forest Service lands. This fee is in addition to any existing rental fees currently being charged. The ARRL has filed comments requesting that amateur radio facilities be exempted from the fees based on the service's statutory non-commercial status, the fact that amateurs maintain their own facilities and the public

service provided by amateur radio during fires, search-and-rescue operations and other critical activities on Forest Service lands. The public comment period is now closed (after being from late February to March 31st). There is some hope that Amateur Radio will be heard ... we will keep you posted.

2022 ARRL Field Day is June 25-26. The section will be requesting a formal proclamation from Governor Cox. Local clubs are encouraged to seek proclamations from their local governmental executive councils. Anyone needing assistance with this process is urged to contact WJ3RI.

PUBLIC INFORMATION COORDINATOR'S REPORT

Rick Mead - W7VQ

As many of you are aware, the FCC is implementing a \$35 fee for licensing. This is down from the initial cost proposed of \$50 but is still a fee that may impact new hams from being licensed. On April 4, 2022, the ARRL published an update on the new license fee stating "[w]e are pleased that the FCC will not charge licensees the FCC application fee for license upgrade applications," said ARRL Volunteer Examiner Coordinator (VEC) Manager Maria Somma, AB1FM. "While applicants for a new license will need to pay the \$35 FCC application fee, there will be no FCC charge for future upgrades and administrative updates, such as a change of mailing or email address. Most current licensees, therefore, will not be charged the new FCC application fee until they renew their license or apply for a new vanity call sign."

The full ARRL update may be read at:

<http://www.arrl.org/news/new-fcc-application-fee-will-not-apply-to-amateur-radio-license-upgrades>

World Amateur Radio Day is April 18. This is the day in 1925 that the International Amateur Radio Union (IARU) was established. Hiram Percy Maxim was its first president. To read more please go to:

<http://www.arrl.org/news/world-amateur-radio-day-is-april-18-1>

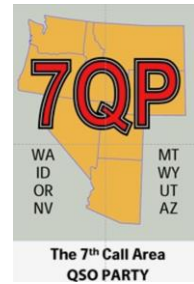
UPCOMING EVENTS AND ONLINE RESOURCES

- ARRL annual Field Day is the fourth full weekend of June each year. Put June 25, 2022, on your calendar.
- Mark your calendar for May 4, 2022. This is the scheduled date for the first public webinar on ARRL grant applications to



a maximum of \$25,000. Look for more information from the section club coordinator, Ted Cowan.

- The seventh area QSO party, also known as the 7QP Contest is Saturday, May 7, 2022. More information is available online at www.7QP.org. This contest is the third largest QSO party according to Dick Frey, K4UX, who is the 7QP Chairman. Have some fun contesting.
- ARRL Rocky Mountain Division Convention will be held in Cheyenne Wyoming October 7-9, 2022, for more information go to https://rockymountaindivision.org/?page_id=78



ONLINE RESOURCES

The following is a list of online resources for your reference

- www.arrl.org
- www.winlink.org
- <http://www.felge.us/tfctools.html> contains several links providing information and tools for traffic handling
- <https://sites.google.com/view/ares-utah/home>

REMEMBERING FRIENDS NO LONGER WITH US



For silent key notice to be placed in the newsletter, please forward a copy of the obituary notice to UtahARRLPic@gmail.com. For Silent Key notice inclusion in QST, Utah ARRL will submit the Silent Key notice to ARRL headquarters.