

Microvolt

February 2024



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**Online version only*

2024



As we ring in the new year, it's time once again to start thinking about **Field Day!**

Hams all across the nation are already starting to plan their summer activities around **ARRL Field Day**, perhaps the largest amateur radio event of the year.

Each summer, ARRL sponsors Field Day as an event whose purpose is to demonstrate rapid station deployment and readiness to get on the air and effectively communicate across the US. In a spirit of "coopetition" licensed amateurs operate their stations to contact as many others engaged in the same event, in a 24-hour period during the fourth full weekend of June. While not strictly a contest, participants submit logs of their contacts in exchange for points that reflect their relative scores that can be compared with those from others in similar categories.

UARC has consistently been the Utah leader in Field Day scores year after year for our category (3A, meaning three transmitters operating as a club). But, we've conceded our crown to the recently formed **UVARC** (Utah Valley Amateur Radio Club) the past two years. We're attempting to rally our membership this summer in an attempt to regain our rightful place as the **Utah Field Day champions**, but to achieve that, *we'll need your help.*

You can aid your club by volunteering your time, muscle, and/or knowledge to help setup the stations and antennas, operate the stations, and take them all down. We can use an hour, two hours, or more, of your time. You're free to visit our Field Day site for the short time you're there, or stay overnight in a tent or RV of your own, if you'd like to make a weekend out of it. You don't need to be an expert to help; even unlicensed operators are welcome to share the thrill of making contacts across the land. Experienced mentors will be present to help and direct you every step along the way.

UARC will be operating Field Day from noon June 22 to noon June 23, near **Payson Lakes Campground**. If you'd like to get involved, contact the club leadership at uarc@xmission.com

Microvolt editorial staff



Editorial – Only a Technician

You might have heard it from somebody announcing their insecurity or apologizing for their shortcoming : *I'm only a Technician*. So, what are you, as a Technician-class licensee, permitted to do in the world of amateur radio? As it turns out, quite a lot.

Here's a short list of some of the privileges afforded you when you earned your Technician-class license:

- Organize, govern, and operate a net
- Install, own, and operate a repeater
- Install a tower and any kind of antenna
- Communicate on HF
- All VHF, UHF, and GHz bands
- 1500 watts on all VHF and higher bands
- IRLP, EchoLink, APRS, and Winlink
- POTA, SOTA, DXpeditions, SES
- CW, AM, FM, SSB, FT8
- Work any and all digital modes
- Build any and all amateur radio gear
- Talk all over the country and the world
- DX with any legal country
- ARES, RACES, Skywarn, AUXCOMM
- Sporadic-E, meteor scatter, aurora
- Tropospheric scatter, gray-line, skip
- Communicate through any satellite
- Communicate with the ISS
- Earth-Moon-Earth (“moonbounce”) operation

As you can see, there's a lot you can do, and unfortunately many find it surprising. But, it doesn't stop there.

- Set up an emergency radio station
- Hold an SET (simulated emergency training)
- Allow third-party operation
- Teach amateur radio classes
- Initiate and hide a fox hunt transmitter
- Present ham radio topics to the public*
- Relay in behalf of any person
- Represent ham radio to government
- Apply for a vanity call sign
- Start and operate a ham radio club
- Host an amateur radio activity
- Promote ham radio in every way
- Author ham radio articles and publications
- Mentor (“elmer”) another ham or friend
- Provide weather and traffic updates*



- Save somebody's life, maybe your own

And on and on. **While you're providing public information updates, be careful to avoid one-way broadcasting and news collection for on-air distribution.*

Finally

There is absolutely no shame in being a Technician-class licensee; you have the world at your fingertips. You have the freedom to upgrade, but if you don't, you can still perform a lifetime of magic on and off the radio. Enjoy the craft, and let others see and share in your enthusiasm!

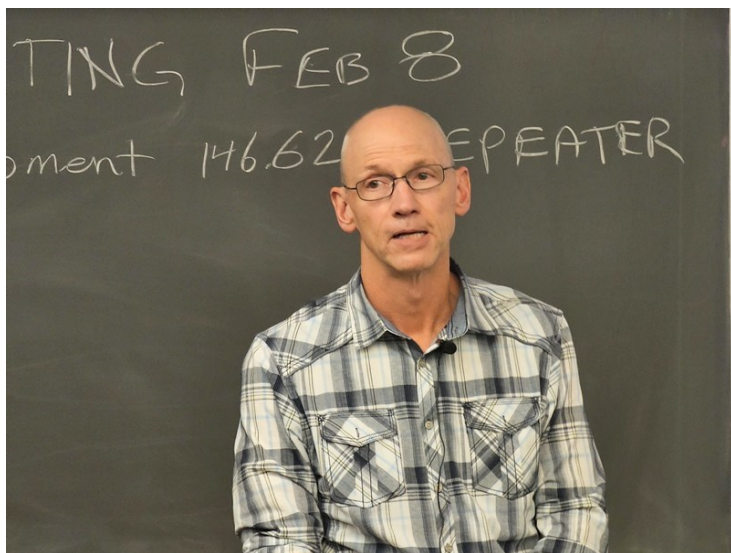
Anything to add? Email editor@utaharc.org

Amateur Radio Technician Class Licensing

For 2022 through 2026 License Examinations

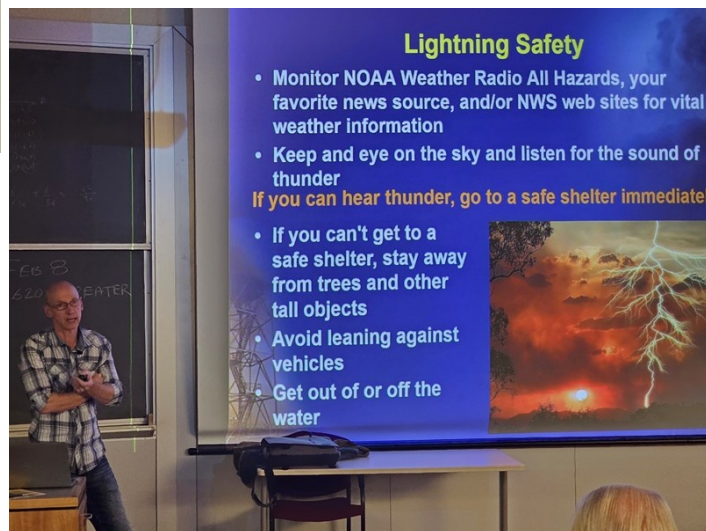


Club news



Mark Twain said, *Everybody talks about the weather, but nobody does anything about it.* Well, UARC did something about it at the January meeting! Kevin Barjenbruch, the Warning Coordination Meteorologist for the [National Weather Service Weather Forecast Office](#) in Salt Lake City presented us with some fun Storm-Spotter training.

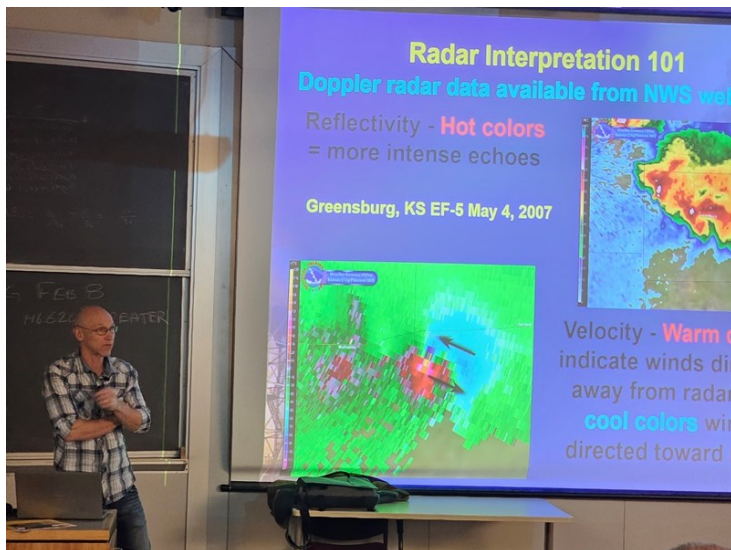
Kevin is a rural Nebraska native, and the impact of weather on his family's livelihood had much to do with his career choice. After receiving a BS degree in meteorology, he began his career with the NWS in



1988 and has been at his current position in Salt Lake City since 2004. This signaled a move from 16 years as an operational forecaster, to a position where education and outreach are his focus.

You can see the video presentation here: <https://www.youtube.com/live/UmmjHiDL48o>. You can also view past club meeting presentations on our YouTube channel: <https://www.youtube.com/@UtahAmateurRadioClub>

(Photos courtesy Jeri Brummett WJ3RI)



Letters to the editor

Starting with the March 2024 issue of *Microvolt*, we'll print selected letters to the editor. Please email submissions to editor@utaharc.org. We invite thoughtful, humorous, technical, and even controversial questions, but please include your name and town. Entries will be accepted and edited for content at the discretion of the editorial staff. Speaking of which, if you're interested in joining said staff or would simply like to help proofread issues prior to publication, please also contact us.

Utah DCC

Utah Digital Communications Conference

Program Announced - February 3, 2024

The annual Utah Digital Communications Conference welcomes hams of all ages and experience levels. It offers a valuable opportunity to learn from experts and connect with fellow amateur radio operators who share your interests. Join us this year to gain insights from our exceptional presenters and get hands-on experience with amateur radio applications at our demonstration tables. To reserve your seat, please register today using the link below.

Main Presentations

The future of National Traffic System Digital
A Multimode Reflector for D-STAR, DMR, P25, Fusion, YSF

Breakout Sessions

Basic Antenna Modeling
Advanced Antenna Modeling
Remote Station Set-Up and Operation
D-Star via Satellite
Getting Started with DMR
Intro to D-STAR
Intermountain Intertie presentation
Direction Finding for All Ages
Decibels -- What They Are, What Do They Mean, and How Are They Used in Amateur Radio

Register early to be eligible for door prizes. Registration and schedule information can be found at UtahDCC.org For questions contact utahdcc@gmail.com.

Utah VHF Society Annual Business Meeting

As part of the conference schedule, the Utah VHF Society will be hosting its annual business meeting at 5:00 pm. This meeting is open to the general public, and registration is not necessary to attend the business meeting. The Utah VHF Society has been a longstanding supporter of the conference, and this year, our collaborative efforts aim to make the conference the best one yet. We look forward to your participation.

Demonstration Tables

Are you working on a project, have something to share, or would like to promote your club? Email utahdcc@gmail.com to reserve a free table. (Tables are limited, and no sales are allowed)

[Register Here](#)



For your information

Microvolt has expanded!

Your club newsletter *Microvolt* is now longer than the 8 pages you're used to. The material after page 8 and the embedded links are available only in the [online version](#). You might have noticed other changes; send your feedback to editor@utaharc.org

License classes

Salt Lake:

General : Tuesdays 7:00 pm to 9:00 pm
147.160+ MHz (127.3 Hz tone)

Orem:

General : 4 Tuesdays, 6:30 to 8:30 pm
Mar 19, Mar 26, Apr 2, Apr 9
Extra : 5 Tuesdays, 6:30 to 9:30 pm
Jul 16, Jul 23, Jul 30, Aug 6, Aug 13
Visit psclass.orem.org to register (\$10)
Orem Traffic Training Room, 95 E Center St
HamStudy.org account required
Email nojiratz@hotmail.com for more info

Eagle Mountain:

Technician : 5 Thursdays, 7 to 9 pm
01 Feb, 08 Feb, 15 Feb, 22 Feb, 29 Feb
General : 5 Thursdays, 7 to 9 pm
04 Apr, 11 Apr, 18 Apr, 25 Apr, 02 May
Email ki6oss6365@gmail.com to register (free)
Eagle Mountain City Hall, 1650 Stagecoach Run

Exam sessions

Salt Lake County:

- Email Garth Wiscombe W7PS w7ps@arrl.net
- Email Rick Morrison W7RIK w7rik@arrl.net

Utah County:

- Sat 17 Feb 2:30 pm : **Provo** : [signup](#)
- Wed 21 Feb 7:00 pm : **Provo** : [signup](#)
- Sat 02 Mar 10:00 am : **Eagle Mtn** : [signup](#)

How can I help?

Whether you're an experienced professional or a raw beginner, the club can always use your help. To learn more, email uarc@xmission.com
Also, if you'd like to see something added to this page, please email editor@utaharc.org



Club repeaters

- Farnsworth Peak** : 146.620- MHz (no tone)
- Scott Hill** : 146.620- MHz (no tone)
- Lake Mountain** : 146.760- MHz (no tone)

UARC Financial Statement 2023

Income	6,931.25
ARRL Dues.....	116.00
Book Sales.....	697.00
Donation	0.21
Dues.....	4,645.00
Future Dues	348.00
Interest Inc.....	185.04
Steak Fry Income	940.00
Expenses	12,262.30
Administrative	183.36
ARRL Membership	93.00
Books	831.96
Capital Equipment	4,525.56
Field Day	894.27
Insurance	200.00
Meeting Expense	306.63
Microvolt	3,055.68
Postage.....	1,000.00
Printing.....	2,055.68
PayPal Fees	233.71
Remote HF	808.88
Repeater	517.54
Sales Tax	60.23
Square Inc Fees.....	22.42
Steak Fry Expenses	529.06
Net 2023 gain	-5,331.05

Spotlight – Doug Bosen W7GPD

When Doug was a lad of about 7 or 8 years old, he became mesmerized by watching and listening to his uncle calling CQ on amateur radio. In the 70s, he got hold of a CB radio, and enjoyed the social network that technology provided. Once part of the US Coast Guard, he started operating a marine band radio for them, learning the protocol and the operating procedures, and was attracted to the way they organized things on the air.

It was in the Coast Guard that Doug met Morris Farmer AD7SR, who introduced him to amateur radio, but the code requirement scared Doug enough to shy him away from ham for awhile. When the FCC dropped the code requirement, Doug attended Morris's amateur radio course, and got his Technician license. After a couple of years, Doug attended the Extra class by Ron Speirs K7RLS and upgraded to Extra.

Since that class, Doug has spent quite a lot of time on the air, up to a couple of hours a day, making DX contacts. He's a regular on the daily Beehive Net. Doug has little interest in using ham radio to serve in parades, marathons, and other events that require aid stations, but he said he wouldn't mind getting involved in EmComm (emergency communication) some day. This interest in EmComm was sparked by an incident he heard on the Beehive Net during Field Day out at Black Hawk, in which various operators were organizing a search for a man near Green River. They eventually located the man, and this use of radio fascinated Doug.

One day, while mobile and preparing for his check-in on the Beehive Net, Doug's granddaughter Brielle said, *I want to check in for you, grandpa!* Once Doug was assured that the little girl could manage the protocol, he turned the mic over to her. With a confidence approaching that of a young adult, little Brielle said, *This is W7GPD. No traffic.* To which, the Net Control station replied, *Your voice is changed, Doug, but I got you checked in.* Then Brielle turned to Doug and asked, *Why do we say "No traffic" when there's lots of traffic around us?*



Doug's equipment includes

- G5RV-Jr HF antenna
- 5-BTV HF antenna
- Icom IC-7610 transceiver
- Ameritron ALS-1306 1.2 kW amplifier
- LDG AT-1000proII tuner
- Xiegu X5105 portable QRP rig
- Icom IC-7000 in the Jeep
- Icom IC-7100 in the truck

To this day, Doug mostly operates FT8, and has amassed well over a thousand QSL cards. Well done, Doug!



Microvolt is the official publication of the Utah Amateur Radio Club, Inc. (UARC), 3815 S 1915 E, Salt Lake City, UT 84106, and published monthly except August. Reprints are allowed with proper credits to *Microvolt*, UARC, and authors. Send changes in your mailing address to the club secretary, James Bennett, kk7avs@gmail.com

We encourage you to submit original pictures (highest resolution), articles, book reviews, software and hardware descriptions, nuggets of humor, and responses to editorials. Email the content, pictures attached, to the editor at editor@utaharc.org by the 24th just prior to the target month.

The **Utah Amateur Radio Club** was organized under its present name in 1927, although its beginnings may date back as early as 1909. In 1928, it became affiliated with the **American Radio Relay League** (club #1602) and is a 501(c)(3) non-profit organization. It holds a club station license with the call sign W7SP, a memorial to Leonard "Zim" Zimmerman, amateur radio pioneer in the Salt Lake City area.

The club meets each month except July and August. The meetings are usually held on the second Thursday of the month at 7:30 PM in the University of Utah's **Warnock Engineering Building**, room 2230.

Club membership is open to anybody interested in amateur radio; a current license is not required. Dues are \$20 per year, including a *Microvolt* subscription. The *Microvolt* and membership cannot be separated. Those at the same address as a member who has paid the \$20 can obtain a membership without a *Microvolt* subscription for \$12. Send dues to the club secretary James, 4960 W 5400 S, Kearns, Utah 84118.

Tax-deductible monetary contributions are gladly accepted. Send directly to the treasurer Shawn Evans, 1338 S Foothill Dr, #265, Salt Lake City, Utah 84108-2321. For in-kind contributions, please contact uarc@xmission.com to make arrangements.

UARC maintains the 146.620- and 146.760- repeaters, which are administered by the **UARC Repeater Committee**. Direct comments and questions to any committee member. The 146.760- repeater is on IRLP node 3352.

The **UARC Ham Hotline** at **801-583-3002** is for information regarding amateur radio, including club, testing, meeting, and membership information. Leave your name, number, and a short message, and we'll make a good-faith effort to return your call.

Microvolt (USPS 075-430) is published monthly except August for \$20.00 annually by the Utah Amateur Radio Club. Periodicals postage paid at Salt Lake City, Utah.

POSTMASTER: Send address changes to *Microvolt*, c/o James Bennett, 4960 W 5400 S, Kearns, Utah 84118.

UARC 2024 Board

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For late breaking news listen to the UARC Information Net Sundays at 9:00 pm on 146.620- or visit the [announcement page](#).

We are grateful to the management of our internet service provider XMission, for the donation of our web service. For account information go to <http://www.xmission.com/> or call 801-539-0852

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Tech corner – Decibels

The term *decibel* often shows up in literature, specifications, and exams. Many believe it's a standard of audio loudness, while others in the technical world find it to be a somewhat cryptic way of measuring things. Turns out it's a method of describing a ratio between two values, making it a unitless descriptor.

History

In the early days of telephone, it was well-known that the longer the wire, the more the phone signal degraded. So, engineers came up with a way to measure the loss by MSC, or *miles of standard cable* for wire close to today's 19 gauge. In 1924, Bell Telephone came up with the TU, or *transmission unit*, which is a logarithm-based value that allowed for easy calculations of both small and large numbers. In 1928, ten TUs were declared to be equal to a *bel*, in honor of Alexander Graham Bell.

As the bel began to replace the TU, it soon became more popular to refer to *tenths of a bel* instead of bels for two reasons. One is that a tenth of a bel is the smallest difference in loudness discernible to the human ear, as had been determined in that day. Another is the convenience of calculation, as will be shown here. This tenths of bels, therefore, came to be called **decibels** (abbreviated "dB"), and is defined as

$$1 \text{ dB} = 10 \log_{10}(S_o/S_i),$$

or ten times the based-ten logarithm of the measured (output) signal divided by the reference (input) signal.

Keep it simple

We can simplify many dB calculations and conversions by using only the following:

$$\begin{array}{ll} 3 \text{ dB} = \text{two times} & -3 \text{ dB} = \text{half} \\ 10 \text{ dB} = \text{ten times} & -10 \text{ dB} = \text{tenth} \end{array}$$

This means, if a signal changes by 3 dB, its strength doubles; if it changes by 10 dB, it's ten times as strong. But remember that decibels are based on logarithms, and one reason that decibels make calculations easier is that when values multiply, logarithms add, and when values divide, logarithms subtract.

This way, if a signal changes by 9 dB, its strength increases by $3 \text{ dB} + 3 \text{ dB} + 3 \text{ dB} = 2 \times 2 \times 2 = 8$ times. And if a signal changes by 23 dB, its strength



increases by $10 \text{ dB} + 10 \text{ dB} + 3 \text{ dB} = 10 \times 10 \times 2 = 200$ times! Similarly, if a signal changes by -12 dB , its strength becomes $-3 \text{ dB} -3 \text{ dB} -3 \text{ dB} -3 \text{ dB} = \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = 1/16$ as much.

Application

As much as we tend to use decibels for radio and electricity, it can be used for nearly any ratio. If I have five marbles on one day, and twenty marbles the next day, my quantity of marbles increased by $20 \div 5 = 4$ times, which equals 2×2 , or $3 \text{ dB} + 3 \text{ dB} = 6 \text{ dB}$.

For added convenience, we sometimes append a modifier to the dB, such as dBi (referenced to an isotropic radiator), dBd (referenced to a dipole), and dBm (referenced to a milliwatt).

Finally

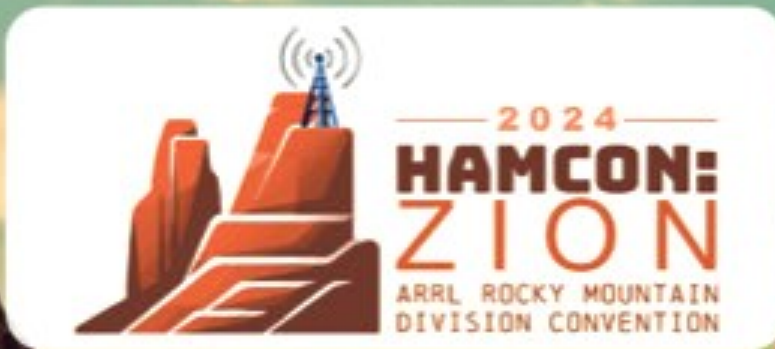
More typically, the unitless decibel is used to denote a ratio in antenna gain or signal strength in our amateur radio world. On HF, for example, according to Part 97.307(d), the largest spurious emission legally permitted is -43 dB of the primary or fundamental signal, or $-10 \text{ dB} -10 \text{ dB} -10 \text{ dB} -10 \text{ dB} -3 \text{ dB} = 1/10 \times 1/10 \times 1/10 \times 1/10 \times 1/2 = 1/20,000$ of the primary signal. This means if I've set my HF power to 100 watts, then the largest allowable spurious signal is $100 \text{ watts} \times 1/20,000 = 1/200$ of a watt, or 5 mW!

Any thoughts on this? Email editor@utaharc.org

Noji Ratzlaff KNØJI (kn0ji@arrl.net)



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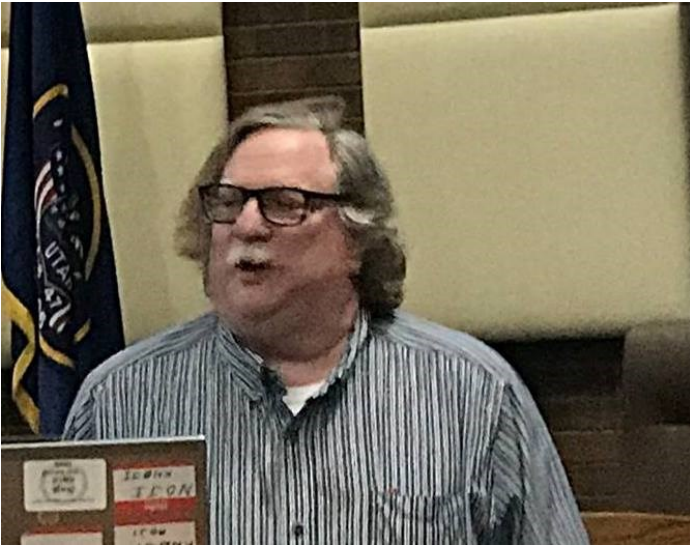
<https://HamConZion.com>



Silent key– Mickey Applebaum KE7NZA



Fellow ham, club member, and good friend Michael “Mickey” Applebaum KE7NZA passed away on 22 February 2023 at age 66. Many people remember Mickey as the [UtahSAG](#) promoter, always keeping us informed about upcoming opportunities to serve in SAG (support and gear) endurance bicycle events. In fact, he got involved in amateur radio only after his wife, an avid cyclist, talked Mickey into helping out with a SAG event, and he witnessed ham radio in ac-



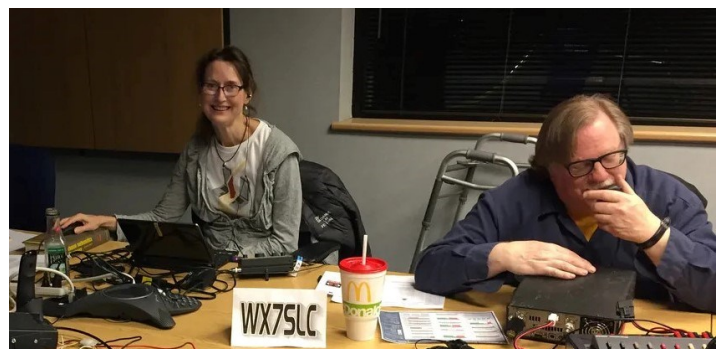
After volunteering, and then co-hosting shows on KRCL Radio (Salt Lake City), Mickey hosted his own late-night radio show on KRCL for fifteen years. So, he was no stranger to the workings of radio when he started helping out with SAG events. When friends Danny Fullerton KC7RUF, Garth Wiscombe W7PS, and JJ Wallace KE7GHK encouraged Mickey to take the



plunge, he did, and passed both Technician and General. Later, Mickey attended Noji’s Extra course and right afterwards passed the Extra exam.

Recently, Mickey has had to endure several surgeries, some of which included his back. The latest surgery caused him to take a break from SAG promotions, club attendance, and other activities that took him out of his home. It was during a rehabilitation session with physical therapy that Mickey slipped away.

[His obituary](#) was sparsely populated at the time of this writing, but [his QRZ page](#) has more details of his life history. Also, once Garth announced Mickey’s passing online, numerous people added their condo-



Elisabeth Barry KJ7MEB and Mickey at ARES

lences, repeating the fact that he was one of the most dedicated people they knew, and that he’ll be sorely missed. Many had mentioned that Mickey was the reason they got into ham radio in the first place. Others say that they were privileged to have worked with him.

Mickey was a regular attendee at the UARC monthly meetings when health permitted, and was often seen helping people program their radios. Mickey now joins [his sweetheart Barbara](#), who passed away ten years previous.

73, and rest in peace, good friend.

Strays – The benefit of the doubt

In all your online adventures, you might have come across somebody who has asked a very rudimentary question, like *What frequencies can I use on ham radio?* Your first inclination might have been to answer the person by drawing from your own deep pool of wisdom and experience. But after a second or two, you might also have begun to wonder where this question came from. I mean, *shouldn't he already know this? Didn't he take a ham radio course like the rest of us? Wasn't that question on the exam?*



When we do encounter a question as seemingly simple and fundamental as this one, we have two options: **1) offer a helpful and intelligent answer**, or **2) let somebody else answer**. When we choose to answer the question, we should give the person what we call the *benefit of the doubt*. That old phrase means that, *since we might not know the origin or background of the question, we should presume the person asking does have some baseline knowledge of the topic*, and maybe is looking for further information.

In college, we're taught that we write essays and articles geared toward a particular audience. We can't know exactly what our audience will know in advance, while writing the paper, so we're also taught that we must presume that our readers are *intelligent but uninformed*. When answering people's questions, our habits should reflect that same approach and attitude, that our listeners are *intelligent but uninformed*.



What this means is, belittling or berating a person for asking a seemingly fundamental question is completely inappropriate in any kind of setting. Telling the person to **RTFM (read the flippin' manual)**, or to Google for the answer, or to get licensed, is not in keeping with the spirit of amateur radio. It's much better to point out in the manual where you got the information, or what links to visit. Often, a person who's new to the craft *might not even know* what questions to ask, let alone know what to Google for.

For the question that was asked above, *What frequencies can I use on ham radio?* It's very possible that the person is unlicensed, and is investigating whether to get into the hobby, maybe to satisfy a communication need. It's possible that the questioner is disabled, very young, or elderly, and does not have the same access to information that you do. It's also possible that his native language is not English, or that he has a learning issue.

Finally, it's possible that the person has passed the exam, but missed this particular question. I mean, did you get a perfect score on the exam? If so, congratulations! But the overwhelming majority of normal candidates did not. And why not? There can be a number of reasons, but again, I will presume that it's because they are intelligent, but were uninformed...or just forgot.

What are your thoughts? Email editor@utaharc.org