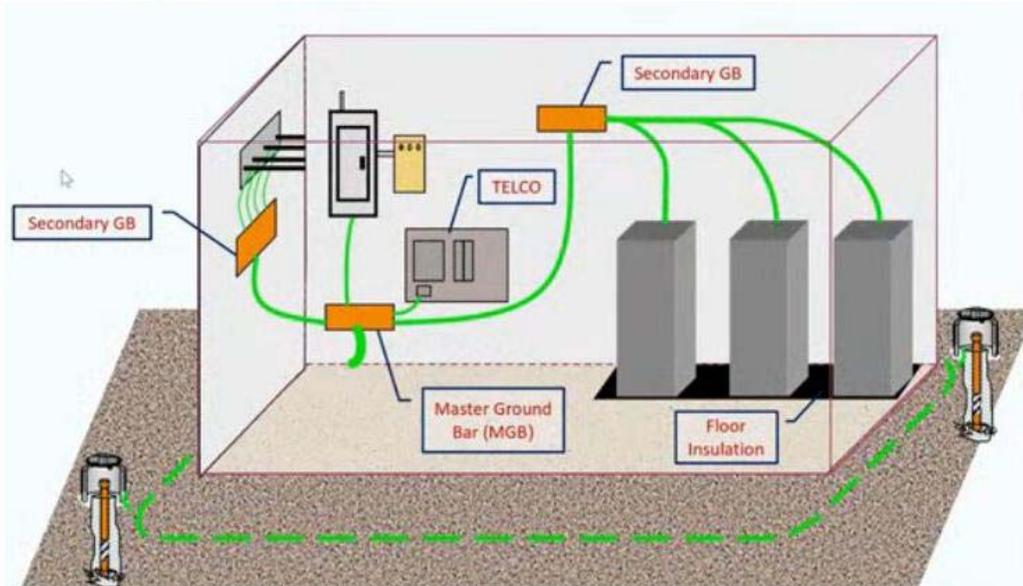
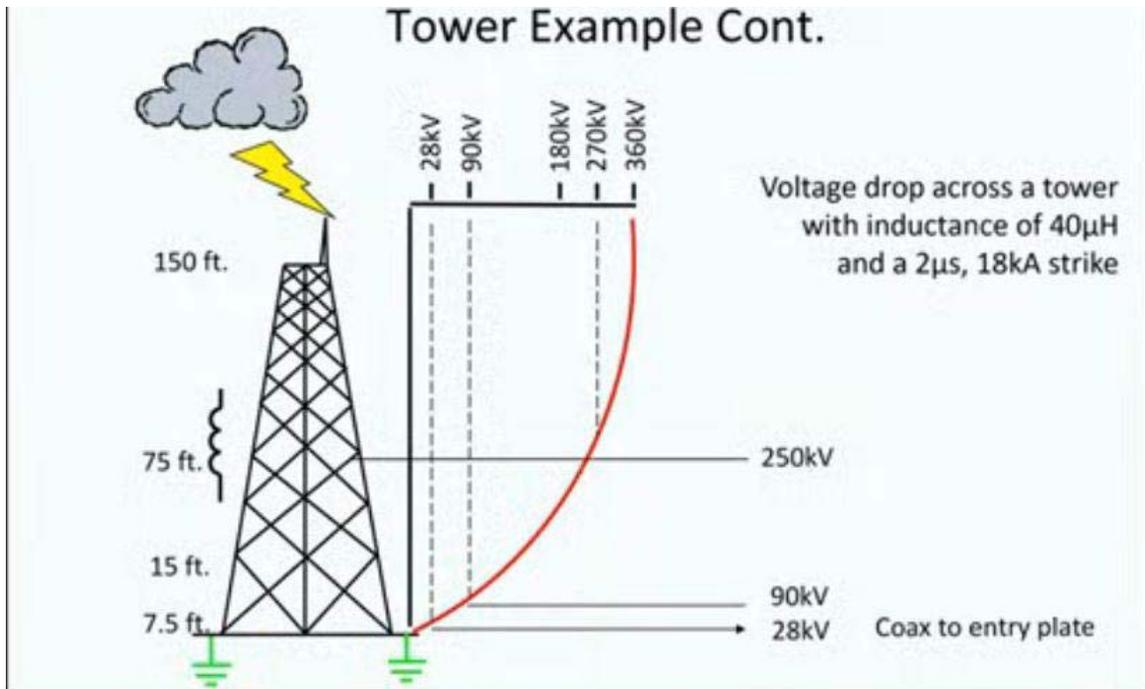


The *Microvolt*

December 2021



Prologue

Publication: *The Microvolt* (USPS 075-430) is the official publication of the Utah Amateur Radio Club, Incorporated, 632 S. University Street, Salt Lake City, UT 84102-3213. It is published monthly except August. Subscription is included with club membership at \$20 per year. Single copy price is \$1.50. Periodicals postage paid at Salt Lake City, Utah. Postmaster: send address corrections to *The Microvolt*, c/o Tom Kamlowsky, 4137 Clover Lane, Salt Lake City, UT, 84124-2711.

Deadline for submissions is the 24th of each month prior to publication. Submissions by email are preferred (k7hfv@arrl.net), but other means including diskettes and typewritten submissions can be mailed directly to: Gordon Smith, 632 University St., Salt Lake City, UT 84102-3213. Reprints are allowed with proper credits to *The Microvolt*, UARC, and authors. Changes in mailing address should be communicated to the Club Secretary: Tom Kamlowsky, 4137 Clover Lane, Salt Lake City, UT, 84124-2711.

Club: 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 non-profit organization under the laws of Utah. It holds a club station license with the call W7SP, a memorial call for Leonard (Zim) Zimmerman, an amateur radio pioneer in the Salt Lake City area.

Meetings: The club meets each month except July and August. The meetings are held on the second Thursday of the month at 7:30 PM in the University of Utah's Warnock Engineering Building, generally in room 1230 or 2230, sometimes in 2250 or 105.

Membership: Club membership is open to anyone 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 living at the same address as a member who has paid \$20 may obtain a membership without a *Microvolt* subscription for \$12. Send dues to the Club Secretary: Tom Kamlowsky, WA7ZRG, 4137 Clover Lane, Salt Lake City, UT 84124-2711. Let the Secretary know if you prefer the electronic edition of *The Microvolt* instead of the printed version.

Contributions: Monetary contributions are gladly accepted. Send directly to the Club Treasurer: Chuck Johnson, 1612 W. 4915 S. Taylorsville, UT 84123-4244. For in-kind contributions, please contact any board member to make appropriate arrangements.

Repeaters: UARC maintains the 146.62- and 146.76- repeaters. The repeaters are administered by the UARC Repeater Committee. Comments and questions may be directed to any Committee member. The Lake Mountain repeater (146.76-) is IRLP node 3352. Instructions for IRLP use are on the club website.

Ham Hot-Line: The Utah Amateur Radio Club (UARC) has a Ham Hotline, 583-3002. Information regarding Amateur Radio can be obtained, including club, testing, meeting, and membership information. If no one answers leave your name, telephone number and a short message on the answering machine, and your call will be returned.

UARC 2021 Board

President: Morris Farmer, AD7SR	801 278-4966
Executive VP: Lonnie Oaks, K7LO	801 255-1225
Vice Pres: Bruce Fereday, KF7OZK	801 883-9428
Secretary: Tom Kamlowsky, WA7ZRG	801 505-9134
Treasurer: Chuck Johnson, WA7JOS	801 268-0153
<i>Microvolt</i> Editor: Gordon Smith, K7HFV	801 582-2438
Asst. <i>Microvolt</i> Editor: Rick Asper, AC7RA	801 865-1693
Program Chairperson: Robert Jelf, KG7OHV	385 252-7900
Program Chairperson: Mary Jelf, KG7QNG	385 347-7900
Imm. Past President: Clint Turner, KA7OEI	801 566-4497

Committee Chairpersons and Members

Bookseller: Rick Gregory, KG7GOW	801 582-7783
Historian: Ron Speirs, K7RLS	801 904-3587
Field Day Chair: (To be determined)	
License Trustee: Brett Sutherland, N7KG	801 298-5399
Repeater Engineer: Clint Turner, KA7OEI	801 566-4497
Autopatch Engineer: Gordon Smith, K7HFV	801 582-2438

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IRLP Information

For information on using the club's IRLP node on the 146.76 repeater, check <http://www.utaharc.org/irlp>. Members may contact to club Secretary for the necessary prefix code.

For late breaking news listen to the UARC Information Net Sundays at 21:00 on 146.62 or set your browser to: <http://user.xmission.com/~uarc/announce.html>

We are grateful to the management of XMission, our Internet Service Provider (ISP), for the donation of this Web-Page service.



For account information go to:

<http://www.xmission.com/>

Or call 801 539-0852



The Microvolt

The Official Publication of the Utah Amateur Radio Club, Salt Lake City, Utah
Volume 64, Issue 11, December, 2021

Latest News

December (Online) Meeting: “Doing Your Required Evaluation”

For a good part of a year the FCC has required that amateurs make an evaluation of their stations to ensure compliance with the rules of RF exposure to family and the general public. Too much exposure to radio transmissions can cause cancer, other health problems, and just plain damage to the body. But the tables and numbers involved in deciding just “how much is too much” can seem daunting.

Our December 9 meeting, will feature Paul Plack, AE4KR, who will be telling us why the required evaluation is not overly difficult. Exactly how close a radiating antenna can be to a person depends on a number of things including power output, frequency, plus antenna gain and pattern. But there are tables and tools that make the job quite manageable. Paul will give us the secrets.

The December meeting will also be when a vote for 2022 officers will be necessary. At this writing there is only one nominee for each office, so the vote may be fairly simple.

Again, the meeting will be held on-line via YouTube. Any time after 7 P.M. you can start looking for us at:

<https://www.youtube.com/c/UtahAmateurRadioClub>.

From there, look for the feature that is marked “live.” The meeting should commence at 7:30.

UARC meetings are held on the second Thursday of each month except for July (annual steak-fry) and August (vacation).

Officer Nominations

The standing nominations for 2022 officers of the Utah Amateur Radio Club are as follows:

President:	Morris Farmer, AD7SR
Executive Vice-President:	Lonnie Oaks, K7LO
Vice-President:	Bruce Fereday, KF7OZK
Secretary:	Tom Kamlowky, WA7ZRG
Treasurer:	Chuck Johnson, WA7JOS
<i>Microvolt</i> Editor:	Gordon Smith, K7HFV
Assistant Editor:	Rick Asper, AC7RA
Program Chairperson:	Mike Ainsh, KI7MTI
Program Chairperson:	Jeri Brummett, W7WJB

Our Cover

Our cover this month is from the November club meeting where Larry Labayen, an engineer for Lyncole in southern California, told us some of the techniques for protecting against lightning damage. One shows how large a voltage a tower may have to deal with. Another shows how to arrange grounds for best safety.

Upcoming Licensing Tests

Opportunities to visit volunteer examiners and test for the various classes of amateur radio license

City	Date	Day of Week	Contact Person	Call	Phone	To Sign Up Go To:
Hurricane	12-11-21	Sat	Gary Zabriskie	N7ARE		https://www.dixieham.org/meetings.html Scroll to "License Exams"
Provo	12-15-21	Wed	Steve Whitehead	NV7V	(801) 465-3983	https://hamstudy.org/sessions/61907fa6bd46f83d4923b784/1
Provo	12-18-21	Sat	Steve Whitehead	NV7V	(801) 465-3983	https://hamstudy.org/sessions/61907fd8a962e69547691f3b/1
Taylorsville	01-31-22	Mon	Garth Wiscombe	W7PS	(801) 558-5936	https://hamstudy.org/sessions/61987aa87f41bb7f949ed18b/1

The Beam Goes UP!

Putting a beam atop a tower, atop a tower

By Clint Turner, KA7OEI

Having had its remote HF station near Leamington in service for several years, the UARC Board was looking into further improving the club's remote HF station near Leamington, Utah — and with the propagation gradually improving on the higher HF bands with the upswing of solar cycle 25, a beam was the natural choice — but *which* beam? After perusing the offerings of several manufacturers, we chose the Cushcraft ASL2010, a log-periodic antenna that provides continuous coverage of 20 through 10 meters. Larger and heavier than a traditional beam, this offers coverage of the 17- and 12-meter bands without compromising performance: Choosing a log-periodic we traded traps, which require occasional maintenance and initial, iterative tuning, for a few more metal elements.

The club had on-hand two 10' sections of Rohn 55G tower, so we set about designing and building the necessary complimentary hardware — namely a very thick steel plate for the tower base and pieces of solid, round bar stock, both of which were machined and welded with the help of Bryan, W7CBM, and later hot-dip galvanized and for the rotator and mast. Bryan also designed and arranged for the manufacture of the mounting plate to fit our heavy-duty Yaesu rotator and the thrust bearing plate at the top of the tower — not to mention locating a 21-foot log length of suitably stout, thick-wall pipe as the mast.

With hardware on-hand, a caravan headed down to the site on Saturday, June 19, and getting to work, the "ground crew" assembled the beam on sawhorses while the "tower crew", with the help of the folks on the ground, pulled up the hardware-

including the two, hundred-pound (*each*) 55G tower sections, assembling them on the large platform at the 65' level. The base of the tower was bolted to the stout grid on the platform and the now-assembled 20-foot tower was mated to it and stood up — confirming what we suspected: Raising the tower alone could be done with three people, but adding the weight of the mast and the beam itself — which constitute another 130 pounds — would require a “skyhook” and complete cooperation of mother nature in the form of still air to be safely done.

On the ground, we discovered a few parts shortages for the beam and corrected a few potential issues with its balanced feed where the crossfeed could come in contact with the boom hardware and managed to test it on the ground, pointing skyward, finding that its VSWR was as per the manufacturer's specifications. For safe-keeping, we put the beam on the roof of the building, secured the hardware on the tower and departed.

It wasn't until August 28 that another major trip was made to put finishing touches on the beam, but in the meantime we'd had time to think about the means by which we could *safely* raise a tower atop another tower. With the goal of being able to raise the full weight of the tower, beam, and mast *without* requiring anyone doing *any* lifting, a long (12') piece of stout, 4" diameter galvanized pipe and pieces of heavy steel angle were located (*for free!*) and welded together to produce a heavy mast, braced by two outriggers, to which an electric winch and pulley could be mounted. This mass of metal was pulled to the top of the tower and bolted in place a few feet behind the tower, the winch mounted, and a “test lift” conducted. Even with an extra 130 pounds of dead weight, the winch and mast worked well — but we added a backstay connected to the superstructure of the tower for good measure. Our lifting mechanism proven, we departed, knowing that we had solved this problem.

On October 23, a work party headed down to do the “official” antenna and tower raising. With the mechanism already tested, we waited for a lull in the wind and hoisted the beam aloft, utilizing a set of four ropes to allow it to be rotated and tilted to clear elements of the main tower. After wrestling it onto the mast, we installed the rotator and its mounting plate, bolted the tower into its tilt base, and attached the winch cable. Upon having determined the length of temporary guy wires, we pressed the “up” button and watched, from a safe distance, the tower and beam slowly raise itself to vertical. After attaching the the temporary guys, the now-upright tower sections were climbed and the permanent guy wires were rigged while other members of the tower crew proceeded to run the rotator and coaxial cables. By the time we were done, we had an antenna that we could rotate via remote control, but due to a bad RF jumper, we had no signal from the beam or the just-repaired 160-meter end-fed halfwave.

A few days later — on the 29th — a small group headed back down to sort out the remaining problems. The bad coaxial jumper — connected to a remote relay that allows a single feedline to select either the 160 meter antenna or the beam — was replaced and the RF transformer for the 160-meter end-fed half-wave — which had failed months earlier and only “partially” repaired during the previous trip due to lack of time — was fixed, bringing both antennas online. Back on the ground, VNA plots were recorded for all of the site's HF antennas and we observed that everything was working to our satisfaction, proven by the fact that the very first QSO made with the beam was with a station in New Zealand!

As you can imagine, a project like this is the effort of too many people to mention individually, but it would not have been possible without the time and talents of everyone who helped out on the many day-long trips to the Leamington remote site — and the result is a station of which any amateur would be proud.

Don't let this happen to YOU!

By Mike, KI7MTI

Baofeng! ... -, you make my heart sing! ... -, You make everything...5 over 9! (with apologies to the Troggs).

Please don't sing this over the radio! The FCC won't approve, and your friends will think you're nuts!

However, if you, like so many hams today, like to use your HT or mobile rig in the car with a mag-mount antenna, you'll be singing a sad song when you discover the kind of damage that you can do to the coax, if you slam the door on it.

I learned this lesson the hard way by not placing the coax so that I could close the door without damaging it.

If you drive a car, the obvious solution is to snake the cable through a gap between the rear window and door-frame. However, I drive a truck, and have no rear window through which to place the coax. After ruining one mag-mount coax by door

damage, I purchased another, and placed the coax so that it couldn't be damaged—or so I thought.

Several months later, Marty, N7XHB, helped me mount an antenna on the roof. Upon removing the mag-mount antenna, I was chagrined to discover the damage that had occurred to the coax from this supposedly safe placement. You can see the damage to the coax in the photo on page 8.

I am very pleased with the permanent roof-mounted antenna, and highly recommend it. However, there is a problem with the hole in the roof when you want to trade up to a new vehicle! The answer then is to install an antenna that mounts to the rear bumper or the lip of your car's trunk.

For me, a hole in the roof beats a hole in the coax that could lead to big consequences for my radio. I might not mind it so much if it's just a Baofeng that I destroy, but I might be upset if it were my Kenwood that I turned into a brick due to carelessness!

A Local, *Free* Exchange for Ham Gear

By John Titus, KZ1G

Hello fellow Salt Lake Valley hams.

As a ham and experimenter I often need one simple part to complete a project. Or, perhaps, I want to contact someone with expertise to help me tune an RF circuit.

I bet many of us face the same situations. You can ask club members but suppose you could “broadcast” your request or offer to like-minded hams and electronics enthusiasts the entire valley? At *NO* cost?

A colleague—also a ham—and I just set up a FREE NON-COMMERCIAL discussion forum at slegex.groups.io for the “Salt Lake Equipment Exchange” so hams, experimenters, electronics and computer hobbyists, students, and others people can ask for or offer LOCAL help with projects.

For example, you might ask if anyone has a 49.9-ohm 5W 1% resistor or you can let people know you have extra 2N2222 transistors and germanium diodes to share.

The moderated group generates messages with several delivery options, so group members may choose what information they want to receive and when. (I prefer a daily summary.)

This site aims solely to help people make local connections and exchange equipment or devices. All personal information is confidential and is *never* sold, traded, exchanged, or used for anything outside the slegex.groups.io community.

If you purchase something, the deal is between you and the seller. No commissions or fees on the slegex.groups.io group.

To start, I have posted an offer for some CAT-5E cable and will post some other “surplus” equipment in the next day or two.

This is *not* a commercial site. If you have a mobile dual-band radio to sell, post it. But if you have a *buisness* that sells these radios, use EBay.

Feel free to pass on this info.

Member of the Month

Pat Malon, N7PAT

By Linda Reeder, N7HVF

Our featured member this month is Pat Malan, N7PAT, who was elected as Utah’s ARRL Section Manager last summer.

Pat was introduced to amateur radio 34 years ago while living in Sunnyvale, California, where he landed after completing his enlistment in the Navy at nearby Moffett Field Naval Air Station.

One day he was on a hike with his friend Mike Gordon, AG7MG. Mike brought his 2-meter HT and started talking on it, demonstrating the sport of hill topping and being able to communicate always. Pat was hooked. As soon as Pat finished hiking it was off to the ham radio store. Pat bought an Icom 2GAT HT radio and started learning Morse Code right away. Pat received his Technician license (KC6DII) soon thereafter.

Pat has experienced natural disasters from an early age. Being in a military family as a young child stationed in 1962 on the Island of Guam, Pat remembers the family had to hide in their stairwell closet because of Super Typhoon Karen registering over 180 knots.

In 1988 Pat was diagnosed with Multiple Sclerosis. Everyone has his cross to bear. It is what it is, and life goes on.

In 1989 Pat survived the Loma Prieta earthquake in the San Francisco Bay Area, measuring 7.1 on the Richter scale. There, he spent four days helping with radio communications. The first day was at the city Public Safety building. The second and third days were with the American Red Cross. On the fourth day, along with others, he accompanied a semi-truck of supplies to the epicenter in the Santa Cruz Mountains to help people there. Following that, he assisted with communications in the Oakland Firestorm of 1991.

In 1993 Pat and his wife moved to Utah. He worked in hi-tech manufacturing followed by 10 years with the Postal Service. Pat and his wife, Shawnette, have one son and three grandchildren. Pat's wife, Shawnette, KA7SKM, and his 83-year-old mother, N7PAB, hold Technician licenses.

Since retiring from the US Post Office in 2005 he has volunteered in a variety of public service roles. He loves to help people get into amateur radio; sometimes offering them an HT when they

get their license. He upgraded to General over four years ago and changed his call sign from N6VLU to the vanity call, N7PAT.

Pat loves to get involved in public service events. He has assisted with the Days of 47 Parade as net control, Wasatch 100 endurance run, and other events. He has been a club president and the Emergency Coordinator for Salt Lake County ARES.

Pat supports getting our youth involved, strengthening clubs, ARES, and amateur radio operators pursuing their interests.

Pat, we wish you the best in your new office.

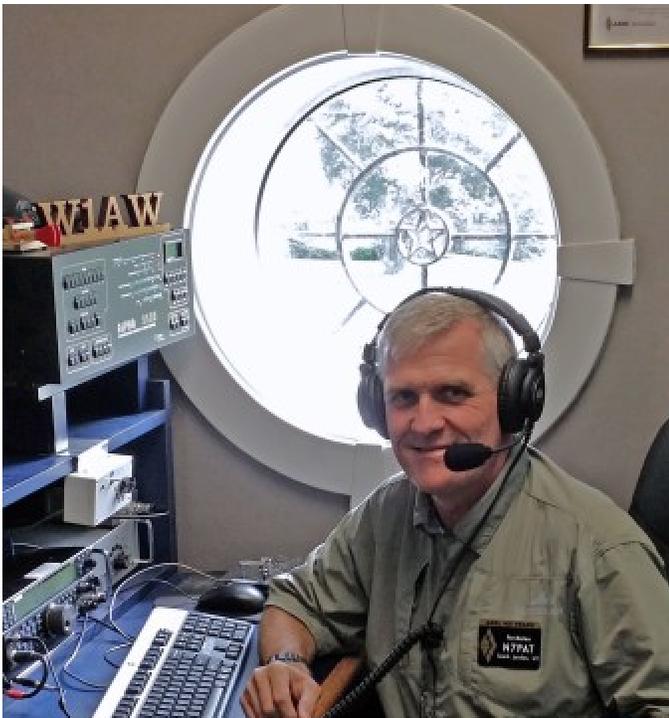
73 N7HVF Linda Reeder

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Illustrations from “Don’t Let This Happen” (Page 6)



Door-Closing Coax Damage



Pat Malan, N7Pat at ARRL’s W1AW during the 2014 W1AW Centennial



Nick’s Atlas Mount on car