The *Microvolt*

November 2022

If it's the October meeting...

It's Homebrew night!

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 exc0ept 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. 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 2022 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
Microvolt Editor: ***Position open***	
Asst. *Microvolt* Editor: Rick Asper, AC7RA	801 865-1693
Program Chairperson: Rian McKee, KF7QGY	801 548-1084
Program Chairperson: Mike McAinsh, KI7MTI	385 246-3981
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
License Trustee: Brett Sutherland, N7KG	801 298-5399
Repeater Engineer: Clint Turner, KA7OEI	801 566-4497

Contents

About the December meeting.....3
How YOU can contribute to the ***Microvolt***.....4
Upcoming online Amateur Radio classes.....4
A rundown of 2022 Homebrew Night projects.....4
Will you do Quartzsite in 2023?.....6
Candidates for the 2023 board as presented at the November UARC meeting.....7
Member of the Month.....8

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

Latest News

Upcoming for the December UARC meeting:

The scheduled presentation for the December UARC meeting is "An RF Propagation Model for the Salt Lake Valley" by Jed Marti, KI7NNP. If you are wondering how signals get around the valley - or how local terrain affects how far your signals go, this meeting is for you.

For the Elmer's Corner we are pleased to have Elisabeth Barry, KJ7MEB, talking about Women in Amateur Radio.

Being the December meeting, we'll again open the floor for nominations for the 2023 UARC board, followed by elections. ***See you there!***

In-person meetings have resumed!

You may have noticed that as of September, UARC meetings are being held ***in person*** – quite a welcome change to over two years of online meetings!

We encourage everyone who ***can*** come to the live meeting to do so and re-acquaint themselves to their fellow club members. We understand that there will be some who, for whatever reason, may not be able to attend the live meeting and we'll do our best to do a "live" stream via YouTube as we have been doing since early 2020, making available an edited version of the meeting a few days after the fact on YouTube, as we have also been doing for the past couple of years.

You can find the club material – including past meetings - on YouTube by going to: https:/www.youtube.com/c/UtahAmateurRadioClub.

At the time of the in-person meeting, look for the feature that is marked "live." The meeting should commence at 7:30. There should be some chatter on the channel by about 7 P.M. and you can connect in that period to make sure everything is working. Edited versions of the meeting are made available a few days after it occurs.

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

Our Cover

If it's October, it's the Homebrew Meeting!

Our cover shows some of the homebrew projects presented. In the article on page 4, we describe some of these projects and refer to the inset on the front cover where it and the presenter of that project are shown.

(Pictures by Ron Spiers, K7RLS)

Consider a UARC board position!

In addition to an editor, UARC is also looking for "new blood" for 2023 – and the future. If you are willing, please consider running for a club office.

All positions are available for nominations *(there are two individuals for the "Program Chair" positions)* so if you are interested in running for an office, be sure to let the UARC president *(or any UARC officer, for that matter)* know.

The initial slate of candidate officers were presented during the November meeting and nominations will occur during the December meeting, prior to the elections **- *See page 7 for more information about the slate of candidates.***

"How can I contribute to the *Microvolt*"?

Even though it's not a lengthy tome, it's still a bit of a challenge to find content to fill out the pages of the *Microvolt's* issues - but ***YOU*** can help!

We are happy to accept contributions of ***original*** articles from anyone - UARC member or not - on any amateur radio-related topic!

The range of topics is as wide as amateur radio itself and can be anything from operating practices to recent adventures involving radio, technical tips to lessons learned, off-air observations to suggestions for new activities.

While we aren't really expecting people to submit a "ready-to-print" article, *(although we wouldn't be adverse to this!)* even an ***idea*** that you have for an article that you would be interested in writing is worth contributing - as are suggestions for topics of future articles, ***whether you plan to write them or not: Again:*** *We are always looking for ideas!*

Because the *Microvolt* is an edited publication with certain restrictions on the amount of content *(e.g. length of article, number and types of pictures)* there *are* some constraints to the scope and types of articles that will work - and of course, it's the job of the editor to work with authors to figure what sort of articles work, are appropriate for publication, and how they might best be presented.

If you wish to contribute an article for *possible* publication in the ***Microvolt*** please email what you have in mind to: **microvolt@utaharc.org**

Upcoming amateur radio licenses classes

UARC President, Morris Farmer, AD7SR, will start another round of both Technician and General-class teaching sessions, live and online via Zoom.

The Technician classes will begin on Monday, January 16 and the General classes will begin on Wednesday, January 18. Classes typically begin at 7 PM and will run for 9 weeks. An ***in-person*** series of classes for Extra Class licenses is being considered in January if there is enough interest.

If you are interested in signing up for these classes - especially in regard to the "Extra" class, email Morris at: **ad7sr@arrl.net**

A Rundown of UARC 2022 Hombebrew Night

A long-standing tradition of UARC's October meeting is **Homebrew Night** - the meeting where people describe a project *(or three)* on which they have been working. Traditionally, these projects have been amateur radio related, or in modern parlance, "Maker" projects. In other words, projects - usually involving some sort of technical skill *(radio, computer, mechanical, electronic)* that they do at home, for fun. The front-cover inset for the presenter is noted in the description.

This year the Homebrew portion of the UARC meeting was emceed by Glen, WA7X seen along the bottom-center of the front cover. No stranger to homebrew himself, Glen's job was to introduce the presenters, act as an intermediary between the presenter and the audience, and provide "color commentary" during and between presentations. Many of these projects may be seen in color on the front cover of this issue, and in the video for the October UARC meeting on YouTube.

Portable 40 meter antenna - John, WA7PZJ *(upper-left)*

First up was John who brought and described a portable, helically-wound vertical antenna. Built

using a 20 foot deep-sea fishing pole, it used a 4:1 balun as part of its matching network in addition to counterpoise wires. In contrast to many helically-wound antennas, the wire is not permanently wound on the vertical portion: When it is being deployed, John hooks the end of the wire to the top of the mast, pushes it up and spins it on the length, winding the helical *(coil)* portion of the antenna in just a couple of minutes. John has successfully used this antenna in the field - often for POTA *(Parks On The Air)* activations - typically QRP.

A clever addition shown by John to the "bag of tools" for portable operation is to get a chalk line spool and replace the line with small-gauge antenna wire, providing a handy means of reeling out controlled amounts of wire for end-fed antennas.

The "HFV-1" DSP transceiver - Gary, AB1IP *(Top-middle, center-left)*

The name of this radio, "HFV-1" could be considered to be "High Frequency VFO", but the name is *really* a nod to Gordon, K7HFV *(SK)* who had been an "Emer" to many over the years.

This radio is based on an FPGA *(Field Programmable Gate Array)* - a type of chip that contains many thousands of circuit elements that may be connected to each other in a programmable way. This makes it possible to produce many types of digital circuits - from counters to gates - and even microcontrollers.

With the FPGA, Gary produces the LO *(Local Oscillator)* for the receiver, is able to process the received signals after they are digitized, filter them and produce audio, and of course produce RF to transmit.

All of this magic was distilled into circuitry that fit on a circuit board roughly half the size of a sheet of paper that he'd designed, had manufactured, and had populated with parts. Even though the board is laden with small, surface mount devices - including the FPGA which has *hundreds* of pins to be soldered, he showed how this was done using a stencil provided by the board manufacturer, solder past, a hot plate bought from Smith's, a cheap Harbor Freight heat gun, and a bit of patience.

Still a work in progress, Gary was able to demonstrate that it did, in fact, generate a CW signal as received on a nearby radio.

3d printing and Amateur Radio - Chuck, WA7JOS *(upper right)*

Showing how "ham radio adjacent" topics can be made relevant, Chuck described how he was surprised to have unexpectedly received a 3D printer for Father's day. Chuck, who his very handy around his wood shop, hadn't thought that a 3D printer would be all that useful, but since then he noted that there hadn't been a week where he ***hadn't*** used it!

The October, 2022 QST cover article about 3D printing provided a springboard for ideas. At the "Thingiverse" web site, you can find *hundreds of thousands* of projects - including thousands of ham-radio related projects from project boxes to replacement knobs to antenna parts to Morse keys.

Chuck also reviewed a number of the types of "filament" *(raw plastic)* and their ups and downs: PLA is the cheapest and easiest, but PETG is a good compromise between ease-of-print and durability.

A homebrew 49:1 "Un-un" for an end-fed half-wave antenna - Doug, KD7NZA *(right-middle, bottom right)*

When Doug decided that he wanted to try an end-fed half-wave antenna, he didn't go out and buy a pre-made balun - or even a kit - but rather he found the *parts* to build it. Did the fact that he'd never done such a thing stop him? No - quite the contrary, it was ***because*** he'd not done this before that he undertook this project.

With plenty of web sites and YouTube videos as a guide, Doug wound a 49:1 transformer using #14 wire on three stacked FT-243-43 toroidal cores. Constructed inside an electrical "J" box, it has two lugs for the antenna wires, a hanging hook, and a

coaxial connector - plus two drain holes on the bottom.

The intent is to use the antenna on both 80 and 40 meters - possibly the higher bands as well. He looks forward to testing this on the air soon and learning more about building antennas and other projects.

Homebrew antenna tuner and "Joule Thief" flashlight - Clint, KA7OEI *(bottom right)*

Not typically one to use resonant antennas, Clint showed off an antenna tuner that he'd built as a teenager. Constructed largely of World War II surplus parts given to him by his elmer, it has two large variable capacitors *(a.k.a. "bread slicers")* and a roller inductor. It also sports an SWR bridge, built from the guts of a unit that he'd found surplus.

Wired as a "Pi" type of circuit *(capacitor-inductor-capacitor)* it had originally been built with the capacitor frames just wired together, but this didn't work at all as the interconnecting wire itself formed part of the antenna tuner's circuit. Taking that as a lesson, he rebuilt it, lining the wooden box in which it was built with galvanized sheet metal, forming a solid, RF ground plane, dramatically improving its performance and stability.

Much more recently, Clint also demonstrated a "Joule Thief" flashlight constructed on a circuit board that he'd recently designed for a Scouting event. During this event, volunteers - some from UARC - helped teach both the Radio and Electronics merit badges.

For the Electronics merit badge, a simple circuit was needed that would be reasonably constructed during an hour-long session and the "Joule Thief" - an inverter-based LED flashlight - was built.

This circuit, which consists of only a handful of components, was built into a custom-designed circuit board, given the participants the gratification of a project that not only works, but is also useful!

Will we see *your* project next year?

Homebrew night ***is*** a yearly tradition with UARC, so we hope that you will join us in October 2023 and present a homebrew project that you have put together!

Will you make the journey to Quartzsite in 2023?

by Laird Severinsen, WB7TGP

Tired of the cold and snow, want to get away to relax for a week, unwind, or maybe enjoy a desert experience with other Hams? The event for you is Quartzfest 2023.

This amateur radio event is held in the Sonoran desert, about 7 miles south of Quartzsite, Arizona, on highway 95. Quartzfest is a week-long ham radio off-grid camping *(boondocking)* event with plenty of opportunity to learn, socialize, and play in the desert. Best of all, Quartzfest is ***free*** - and camping on BLM land is free for 14 days.

You will need to prepare with food, water, shelter, and restroom facilities. I have attended multiple times and found hams camping in cars, trucks, tents, enclosed trailers, camp trailers, RV's, and just about anything you can imagine. Enjoy warm days and cool nights, maybe a little wind and rain, but always beautiful sunsets and the night sky is incredible.

The schedule is being planned, but past activities include ham and non-ham events such as EMCOMM, mobile ham shacks, solar and battery power, gold panning, ATV/UTV or other off road 4x4 vehicle day-long events, hiking, biking, lectures on area geology, training and information on multiple topics, and much more.

Head to town for the annual RV/Trailer or rock/gem show. Get on the air using the special event station and take the challenge for the furthest HF contact. At the end of the week, wander around the Saturday swap meet.

Want to be part of the live entertainment? Bring along your musical instrument and join the band. Spend mornings and evenings around the campfire, I am sure you can find something you will enjoy. You can arrive early, stay late, or checkout as your schedule requires.

Visit quartzfest.org for additional information.

Plan to attend Sunday, January 22, to Saturday, January 28, 2023. Plenty of prizes, ARRL representatives, trainers, speakers, and maybe Gordon West himself!

Note: *I don't represent Quartzfest, but have attended the event and had an enjoyable week with family and friends. Feel free to contact me with questions about QuartzFest.*

Laird, WB7TGP, is a long-time member and supporter of UARC.

Proposed candidates for the 2023 UARC board

During the November, 2022 in-person meeting, the floor was opened for those present to suggest candidates to run for positions on the 2023 UARC board. Following this, the UARC election committee presented its slate of candidates.

For the most part, the board positions are currently un-contested, with several of the former board members agreeing to server another year. Those who have chosen to ***not*** run again are Morris Farmer, AD7SR *(UARC President),* Lonnie Oakes, K7LO *(UARC Executive Vice President)* and Tom Kamlowsky, WA7ZRT *(UARC Secretary)*.

As of the November, 2022 meeting, the current slate of candidates is as follows:

UARC President: Marvin Match, KA7TPH

Executive Vice President: Linda Reeder, N7HVF

Vice President: Bruce Fereday, KF7OZK

Treasurer: Chuck Johnson, WA7JOS

Secretary: James Bennett, KK7AVS

Program chairs:
Jeri Brummett, WJ3RI
Mike Mc Ainsh, KI7MTI

Please note that there are <u>two</u> program chair positions to fill on the UARC board.

Microvolt Editor:
Noji Ratzlaff, KN0JI
Jed Marti, KI7NNP

Assistant Editor: Ricky Asper, AC7RA

Based on the slate presented at the November meeting, the only contested board position is that of the Microvolt editor.

Nominations are still open!

If you have a suggestion for a UARC board member *(including yourself)* please let any UARC officer know. If you nominate someone else, please have that person contact a club officer as well.

The slate will open again for nominations during the December meeting and potential candidates - particularly for contested positions - are encouraged to speak to the assembled crowd.

Following the closing of nominations, the election will occur - ***See you there!***

Member of the Month:
Gale Wolfenbarger, WK8G
by Linda Reeder, N7HVF

This month we are featuring Gale' Wolfenbarger WK8G. Born in Stockton, California, he lived there until he met and married his wife Analia and from there, they moved to San Jose and lived there for 30 years, having one son and one daughter. 16 years ago Gale and Analia moved to Utah so that they could be closer to their children.

When Gale moved to Utah he became interested in amateur radio. The scout master for his church was a general class operator and wanted to teach his boys about amateur radio. He didn't have many boys so he decided to open the class to anyone who wanted to attend. On the day of the class there between 70 and 80 people there. Shortly thereafter Gale got his technician license in May of 2013. and his first callsign was KG7EVL. Gale's first contact was Gordon Smith, K7HFV, who was his Elmer. The following year he got his general. It was Gale's neighbor who lived down the street from him who influenced Gale get certified as a VEC for ARRL. His name is Mike Stout AG7AS , he is a VEC. Gale was helping with the technician testing and Mike wanted Gale to start helping with the general class testing so he encouraged Gale to test for his extra and is now a VEC for both ARRL and W5YI. Eventually, Gale decided he wanted to get a vanity and got the call Wk8G.

Even though Gale has his extra class license he hasn't gotten into HF radio yet, being more involved with UHF and VHF. Gale uses an ICom ID-5100A for VHF, UHF and D-Star, and an Anytone 578 for. DMR. Fortunately for Gale, he got permission from the HOA to put his antenna on top of the roof of his house.

When I asked Gale what his favorite thing about amateur radio was, he said getting to know new people. Gale loves to work with emergency communications and has helped with the 5 Canyons Bike Challenge which benefits Wheels of Justice, a nonprofit dedicated to putting an end to child abuse.

The Microvolt (USPS 075-430) is published monthly except August for $20.00 per year or $1.50 per issue by the Utah Amateur Radio Club, 632 S. University St., Salt Lake City, UT 84102-3213. Periodicals Postage Paid at Salt Lake City, Utah. POSTMASTER: Send address changes to *The Microvolt*, c/o Tom Kamlowsky, 4137 S Clover Lane, Salt Lake City, UT 84124-2711

Gale is an emergency response specialist in a stake with between 70 and 80 amateur radio operators, often working the emergency response team, meeting once a month to encourage people to keep their radios charged and to make sure they still know how to use them.

Gale worked most of his life in the computer industry as a programmer and a IT manager, having graduated as a computer science major. After retiring gale discovered raspberry pi's and his done several things with them including putting together a hotspot is for D-star and DMR.

Gale maintains his own web site utahgale.com and he and his wife are building a house in Orlando Florida, leaving sometime in the next 18 months. Gale, thank you for your contributions to amateur radio and we wish you the best in all of your endeavors.