

# The *Microvolt*

November, 2009



Volume 52, Number 10, November, 2009 Periodicals Postage

**Please Send Dues to:**

**DATED MATERIAL — PLEASE DO NOT DELAY**

UARC  
c/o Dick Keddington  
1933 Woodside Drive  
Holladay, UT 84124-1632

The *Microvolt* (USPS 075-430) is published monthly except August for \$17.00 per year or \$1.50 per issue by the Utah Amateur Radio Club, 3666 South State Street, Salt Lake City, UT 84115-4848. Periodicals Postage Paid at Salt Lake City, Utah. POSTMASTER: Send Address changes to *The Microvolt*, c/o Dick Keddington, 1933 Woodside Drive, Holladay, UT 84124-1632.

Prologue

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 in room 1230.

Membership: Club membership is open to anyone interested in amateur radio; a current license is not required. Dues are \$17 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 \$17 may obtain a membership without a Microvolt subscription for \$9. Send dues to the Club Secretary: Dick Keddington, KD7TDZ, 1933 Woodside Drive, Holladay, UT 84124-1632.

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.

Publication: The Microvolt is the official publication of the club. Deadline for submissions to The Microvolt is the 24th of each month prior to publication. Submissions by email are preferred (uarc@xmission.com), but other means including diskettes and typewritten submissions can be mailed directly to: Gordon Smith, 632 University St., Salt Lake City, UT 84102-3213. All submissions are welcome but what is printed and how it is edited are the responsibility of the Editor and the UARC board. Reprints are allowed with proper credits to The Microvolt, UARC, and authors. Changes in mailing address should be communicated to the Club Secretary: Dick Keddington, 1933 Woodside Drive, Holladay, UT, 84124-1632.

UARC 2009 Board

- President: John Hardy, K7ALA 801 419-8378
Executive VP: Andrew Madsen, AC7CF 801 298-5399
Vice Pres: Brett Sutherland, N7KG 801 274-9638
Secretary: Dick Keddington, KD7TDZ 801 268-0153
Treasurer: Chuck Johnson, WA7JOS 801 582-2438
Microvolt Editor: Gordon Smith, K7HFV 801 566-6277
Asst. Microvolt Editor: Rick Asper, AC7RA 801 281-1752
Program Chair: Jed W. Petrovich, AD7KG 435 837-5646
Program Chair: Bryan Mogensen, W7CBM
Imm. Past Pres: John Brewer, N7MFQ

Committee Chairpersons and Members

- 'Book Lady': Fred Desmet, K17KM 801 485-9245
Historian: Ron Speirs, K7RLS 801 968-4614
Field Day Chair:
Club Trustee: Brett Sutherland, N7KG 801 298-5399
Engineer: Randy Finch, K7SL 801 556-7565
ATV Engineer: Clint Turner, KA7OEI 801 566-4497
Board Liaison &
Autopatch Engineer: Gordon Smith, K7HFV 801 582-2438
Provo Autopatch Host &
ATV Engineer: Dale Jarvis, WB7FID 801 224-3405

Contents

Prologue ..... 2
November Meeting: Amateur Microwave ..... 3
Latest News..... 4
An HF Mobile Installation ..... 5
Member of the Month ..... 7
Examination Schedule ..... 8

IRLP Information

For information on using the club's IRLP node on the 146.76 repeater, check http://www.utaharc.org/irlp.

For late breaking news listen to the UARC Information Net Sundays at 21:00 on 146.62 or set your browser to: www.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 52, Issue 10, November 2009

### November Meeting: Amateur Microwave

Have you operated the high frequencies? We mean the *really* high frequencies? Like up above 1000 MHz? If not, the coming UARC meeting may be a chance to find out what it's like.

Thursday, November 12, is the date of the next UARC meeting, and the program will be presented by the local microwave group. (More about the group at <http://groups.yahoo.com/group/utahmicrowave/> ) Learn about mountaintop expeditions to set new distance records, making an antenna with 40 dB of gain or more, and communicating on a light beam.

What bands are available? What does it cost to get started? How hard is it to build your own equipment? What does it take to compete in the Microwave contests? The group will be answering these types of questions and showing off the commercial and home-built gear.

November is also the month for nominations for 2010 officers. Please help choose people to lead the club in the coming year, or even volunteer to run for office yourself. Nominations will be accepted from the floor both before and after presentation of the names found by the Nominating Committee.

Meetings are now on the *second* Thursday of each month, so the coming meeting will be Thursday, November 12, at 7:30 P.M. Our meetings during the Fall semester are being held in room 1230 of the Warnock Engineering Building on the University of Utah campus. Our traditional parking on the east side of the building is blocked off for construction, so recommended parking is near the southeast corner of the Merrill Engineering Building lot. Go south along the east side of Merrill, then go in the north door of Warnock. For a map and directions for finding the building, check the club web site at [http://www.xmission.com/~uarc/ablip\\_meetmap.html](http://www.xmission.com/~uarc/ablip_meetmap.html) .

Of course, the meeting will include the “standard” meeting features:

- Availability of ARRL books from Fred, the “book lady”
- An opportunity to join UARC or renew your membership
- An opportunity to join ARRL or renew your membership
- The chance to meet face-to-face the people you talk to on the air
- The “Meeting after the meeting”: A chance to enjoy pizza or other gastronomic delights with other hams. It happens at Litz's Pizza, 716 E. 400 South.
- The “Meeting *before* the meeting”: A similar get-together for those who can leave work early enough to get there by 5:15 P.M. The November get-together will be at “Crown Burger,” 377 E. 200 South in Salt Lake City.

## Latest News

### Our Cover: '62 Linked System

Our cover this month shows two photos taken from some of the trips to repeater sites to get the new 146.62 MHz synchronous pair running. The system involves two repeaters at different mountaintops using the same frequency pair and linked together.

The main photo shows the receiver site on Farnsworth Peak. UARC President John Hardy, K7ALA, is on the tower installing a new receiving antenna. Clint Turner, KA7OEI, designer of the synchronous system, is on the ground. The inset photo is from an October 10 trip to the other repeater site, Scott's Hill, to install the repeater there. Standing in front of the new repeater are (l. to r.) Bruce Bergen, KI7OM; Clint Turner, KA7OEI; Gordon Smith, K7HFV; and John Hardy, K7ALA.

The new repeater extends the '62 coverage to include areas east of the Wasatch including Park City, Midway, Coalville, and even a hot spot in Evanston, Wyoming.

The "synchronous" linked pair was conceived over 11 years ago when Bruce Bergen, KI7OM, first made arrangements for UARC to acquire a lease for the Scott's Hill site, northwest of Brighton.

A package of two repeaters with overlapping coverage operating on the same frequency pair has been used in commercial service for years, but this could be the first instance of such a system in amateur radio. It requires that a "voter" unit choose the best of the received signals from the two sites and send it to both transmitters. It also

requires that the frequencies of the two transmitters be held to tight tolerances.

This spring, a new, simplified scheme for meeting these criteria was conceived. Clint designed and built most of the custom electronics required. Others helped by building 70-cm cavities, packaging electronic boards, getting the Scott's building in usable condition, modifying power supplies, building antenna brackets and antennas, and mounting antennas.

Final installation of equipment on the Scott's Hill site was done Saturday, October 10. Installation on Farnsworth started Friday, October 16 and continued through the 17<sup>th</sup> and 18<sup>th</sup>. Finally a trip to the Scott's site in the wee hours of the 19<sup>th</sup> was necessary to correct a squelch-setting problem.

The system is now up and working. There may be a chance for some fine tuning before snow makes access to the sites difficult. More tuning and enhancement are likely next year, but the system is fully usable as it stands. For more information see [http://utaharc.org/rptr/synchronous\\_62.html](http://utaharc.org/rptr/synchronous_62.html).

### Web Site Gets New Look

Those who visit the club website at <http://www.utaharc.org> have probably noticed a new look complete with an animated key sending...well, we'll leave the text as an exercise for the viewer. The new design was created by Gary Wong, AB1IP. Last spring we held a web design contest and Gary created the winning entry. It was also the only entry, but was still very nice. The club voted to incorporate it. UARC President John Hardy, K7ALA, recently applied the new design to all the most commonly accessed pages. Thanks to Gary and John!

## An HF Mobile Installation

Installing the Yaesu FT-857D and Yaesu ATAS-120 Antenna for use on the MF/HF/VHF/UHF bands in a 2005 Toyota Tacoma Regular cab Pick-up.

By Noel Ladle, KC7DWL

After obtaining my General License and setting up my base HF station in the basement, I wanted a mobile HF transceiver in my pickup.

After reviewing the available compact MF/HF/VHF/UHF transceivers currently on the market, I purchased the Yaesu FT-857D with the optional ATAS-120 motorized screwdriver antenna. The small remote control head just fit on the lower left hand area of the dash. Being left handed, this worked best for me.



The first task was to hook up the power cable to the truck battery. I secured the cable with plastic ties and used heat shrink sleeves on each lead for watertight connections. I placed the cable with red (+) and black (-) leads from the battery along the radiator then back to the passenger door. The cable was fished through the fender and around the door jamb into the cabin and placed under the plastic panel in the passenger foot well. It then went under the door sill and carpet to the floor behind the seat. I decided to use a Battery Booster since a recent article in *QST* reviewed

battery boosters and pointed out that the voltage from the vehicle's battery would drop, while transmitting, to as low as 11 volts.



I chose the MFJ Battery Booster. The booster keeps the voltage to the transceiver at 13.8 ( $\pm 0.2$ ) volts as measured on the FT-857D's display. The power cable was wired to the input and output connectors of the booster, then to the transceiver. The unit was mounted to the left of the transceiver with sheet metal screws. I fed RF from the radio's antenna line to a "T" connector attached to the unit. This automatically boosts the voltage only when the high current demand of transmitting is required.

The transceiver was mounted with sheet metal screws into a horizontal brace on the back of the cab. A good ground was obtained with the mounting screws screwed into the truck frame. A diplexer was mounted close to the unit to accommodate using both MH/HF and VHF/UHF antenna inputs. The microphone holder and an auxiliary speaker were mounted high behind the



driver. The control head's mounting bracket was attached with small screws over several small plastic knock-outs. The control head is snapped in place over the mounting bracket.



The control head cable was snaked back through the dash, then down and under the driver's door sill protector to behind the seat and attached to the transceiver.



The antenna base was screwed tight to a steel bracket which was secured with heavy screws to the inside of the truck bed to secure a good ground, and leaving room for the tailgate to close. The ATAS-120 antenna is screwed finger tight on to the mounting base.

The antenna cable was attached to the outside of the aluminum camper shell with clips and run forward to the cab. It then went down between the cab and the truck bed and entered the cabin at the bottom rear of the driver's door.

Tuning the antenna is done by selecting the band you wish to use, then pushing the tune button on the control unit. The transmitter will automatically be activated, a carrier will be sent, and the antenna will go up or down for the best SWR. The antenna can be "parked" all the way down for travel using the manual tuning procedure.

So far I have made contacts on 20 & 40 meters with this radio. I enjoyed several QSOs in Grand Teton National Park this spring. This installation was enjoyable to do and required only a small battery-powered drill to drill and screw the units into place.



**UNITED STATES POSTAL SERVICE® (All Periodicals Publications Except Requester Publications)**  
**Statement of Ownership, Management, and Circulation**

1. Publication Title: Microvolt  
 2. Publication Number: 0757-930  
 3. Filing Date: 10/1/09  
 4. Issue Frequency: Monthly except Aug  
 5. Number of Issues Published Annually: 11  
 6. Annual Subscription Price: \$17.00  
 7. Complete Mailing Address of Known Office of Publication (Not printer) (Street, city, county, state, and ZIP+4®):  
3666 South State Street  
Salt Lake City Utah 84115 SCrandy  
 Contact Person: Ricky Asper  
 Telephone (include area code): 801-339-7705  
 8. Complete Mailing Address of Headquarters or General Business Office of Publisher (Not printer):  
3666 South State Street  
Salt Lake City Utah 84115  
 9. Full Names and Complete Mailing Addresses of Publisher, Editor, and Managing Editor (Do not leave blank):  
 Publisher (Name and complete mailing address):  
Utah Amateur Radio Club  
3666 South State Street  
Salt Lake City UT 84115  
 Editor (Name and complete mailing address):  
Gordon Smith 632 University St.  
Salt Lake City UT 84102  
 Managing Editor (Name and complete mailing address):  
Assistant Ricky Asper 3815 South 1915 East  
Salt Lake City UT 84106  
 10. Owner (Do not leave blank. If the publication is owned by a corporation, give the name and address of the corporation immediately followed by the names and addresses of all stockholders owning or holding 1 percent or more of the total amount of stock. If not owned by a corporation, give the names and addresses of the individual owners. If owned by a partnership or other unincorporated firm, give its name and address as well as those of each individual owner. If the publication is published by a nonprofit organization, give its name and address.)  

| Full Name                                      | Complete Mailing Address   |
|--|--|
| <u>Utah Amateur Radio Club</u><br>(Non Profit) | <u>3666 South State Street</u><br><u>Salt Lake City Utah 84115</u> |

  
 11. Known Bondholders, Mortgagees, and Other Security Holders Owning or Holding 1 Percent or More of Total Amount of Bonds, Mortgages, or Other Securities. If none, check box  None  

| Full Name   | Complete Mailing Address |
|-------------|--------------------------|
| <u>None</u> |                          |

  
 12. Tax Status (For completion by nonprofit organizations authorized to mail at nonprofit rates) (Check one)  
 Has Not Changed During Preceding 12 Months  
 Has Changed During Preceding 12 Months (Publisher must submit explanation of change with this statement)  
 PS Form 3526, September 2007 (Page 1 of 3 (Instructions Page 3)) PSN 7530-01-000-9931 PRIVACY NOTICE: See our privacy policy on www.usps.com

13. Publication Title: Microvolt  
 14. Issue Date for Circulation Data Below: July 2009

15. Extent and Nature of Circulation

|   |  | Average No. Copies Each Issue During Preceding 12 Months | No. Copies of Single Issue Published Nearest to Filing Date |
|---|--|--|---|
| <b>a. Total Number of Copies (Net press run)</b>  |  |  |   |
|   |  | 282  | 290   |
| <b>b. Paid Circulation (By Mail and Outside the Mail)</b>   | (1) Mailed Outside-County Paid Subscriptions Stated on PS Form 3541 (include paid distribution above nominal rate, advertiser's proof copies, and exchange copies) | 49   | 55  |
|   | (2) Mailed In-County Paid Subscriptions Stated on PS Form 3541 (include paid distribution above nominal rate, advertiser's proof copies, and exchange copies)      | 207  | 223   |
|   | (3) Paid Distribution Outside the Mails including Sales Through Dealers and Carriers, Street Vendors, Counter Sales, and Other Paid Distribution Outside USPS®     | 0  | 0   |
|   | (4) Paid Distribution by Other Classes of Mail Through the USPS (e.g. First-Class Mail®)   | 0  | 0   |
| <b>c. Total Paid Distribution (Sum of 15b (1), (2), (3), and (4))</b>   |  | 256  | 278   |
| <b>d. Free or Nominal Rate Distribution (By Mail and Outside the Mail)</b>  | (1) Free or Nominal Rate Outside-County Copies included on PS Form 3541  | 7  | 7   |
|   | (2) Free or Nominal Rate In-County Copies included on PS Form 3541   | 5  | 5   |
|   | (3) Free or Nominal Rate Copies Mailed at Other Classes Through the USPS (e.g. First-Class Mail)   | 0  | 0   |
|   | (4) Free or Nominal Rate Distribution Outside the Mail (Carriers or other means)   | 0  | 0   |
| <b>e. Total Free or Nominal Rate Distribution (Sum of 15d (1), (2), (3) and (4))</b>  |  | 12   | 12  |
| <b>f. Total Distribution (Sum of 15c and 15e)</b>   |  | 268  | 290   |
| <b>g. Copies not Distributed (See Instructions to Publishers #4 (page #3))</b>  |  | 16   | 12  |
| <b>h. Total (Sum of 15f and g)</b>  |  | 284  | 302   |
| <b>i. Percent Paid (15c divided by 15f times 100)</b>   |  | 95.98  | 95.68   |
| 16. Publication of Statement of Ownership<br><input checked="" type="checkbox"/> If the publication is a general publication, publication of this statement is required. Will be printed in the <u>November</u> issue of this publication. <input type="checkbox"/> Publication not required. |  |  |   |
| 17. Signature and Title of Editor, Publisher, Business Manager, or Owner<br><u>Assistant Editor Ricky Asper</u>   |  |  | Date<br><u>10-1-09</u>                                      |

I certify that all information furnished on this form is true and complete. I understand that anyone who furnishes false or misleading information on this form or who omits material or information requested on the form may be subject to criminal sanctions (including fines and imprisonment) and/or civil sanctions (including civil penalties).  
 PS Form 3526, September 2007 (Page 2 of 3)

## Member of the Month

### Carol Quist, KE7HDA

By Linda Reeder, N7HVF

This month we are featuring Carol Quist, KE7HDA. Carol received her Technician license in March of 2006. Carol and her husband William decided to take the amateur radio class that was being offered at Welfare Square because she is involved in emergency preparedness. Carol said her favorite thing about amateur radio is assisting others in emergencies.

One day she reported a car in the middle of a driveway in a parking lot. Carol also likes the idea of being able to check in with her husband by way of amateur radio.

Carol has been interested in radio in a different way: she enjoys radio and television production. Carol attended Stanford University in northern California where she obtained her Bachelor of Arts degree in radio and television production with a minor in German and French. After getting that degree she worked at KGO radio in San Francisco as a production assistant. Later she worked at KUTV Channel 2 in Salt Lake City. She worked there until she and her husband decided to start a family.

They have four boys who are all grown now. Their eldest son had a brain tumor and passed

away in 2005. Carol and William have 15 living grandchildren. Three of their grandchildren have passed away.

Carol and her family have lived in eight different states because of her husband's work in engineering. They even lived outside of the United States for two years. When they moved back to the United States and their sons were in college, Carol went back to college. She obtained her Masters degree in women's history literature at the University of Utah. Carol has taught for several years at the Salt Lake City Community College. Carol now works for *Sunstone Magazine* as an Associate Editor. She has been working for *Sunstone Magazine* for 16 years.

Carol is a professional writer. She writes short stories, fiction and poetry. She has done translations of French and German short stories and poetry in to English. Carol has received several awards for her publications.

Carol is a member of UARC. Carol and her husband joined UARC right after they obtained their amateur licenses. She enjoys going to the UARC meetings with her husband.



**Carol Quist, KE7HDA**  
*(Photo by K7RLS)*

Carol, we wish you the best in all of your endeavors.

## **Examination Schedule**

|          |        |                |  |                             |
|----------|--------|----------------|--|-----------------------------|
| 11/04/09 | (Wed.) | Clearfield     | Mike Youngs, KK7VZ   | (801) 573-3922              |
| 11/18/09 | (Wed.) | Provo          | Steve Whitehead, NV7V  | (801) 465-3983              |
| 11/18/09 | (Wed.) | St. George     | Gary Zabriskie, N7ARE  | (435) 674-2678              |
| 11/24/09 | (Tue.) | Salt Lake City | Eugene McWherter, N7OVT  | (801) 541-1871 <sup>1</sup> |
| 11/30/09 | (Mon.) | Ogden          | Mary Hazard, W7UE  | (801) 430-0306              |
| 12/05/09 | (Sat.) | Salt Lake City | Gordon Smith, K7HFV  | (801) 582-2438 <sup>1</sup> |
| 12/12/09 | (Sat.) | Logan          | V.P. Rasmussen, N7JFG  | (435) 770-0630              |
| 12/16/09 | (Wed.) | Provo          | Steve Whitehead, NV7V  | (801) 465-3983              |
| 12/16/09 | (Wed.) | St. George     | Gary Zabriskie, N7ARE  | (435) 674-2678              |
|          | (Tue.) |                | <i>(Last Tuesday test in Salt Lake City omitted in December)</i> |                             |

<sup>1</sup> Preregistration required. Contact the indicated person.