

# UARC Elects 1999 Board



Gary Openshaw, KC7AWU, the new President-elect of The Utah Amateur Radio Club

Volume XLIII Issue 1, January 1999



# The MICROVOLT

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## 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.

The club meets each month except July and August. The meetings are held on the first Thursday of the month at 7:30 PM in the Doxey-Hatch Medical Building located at 1255 East 3900 South in Holladay, across the street from St. Marks Hospital.

Club membership is open to anyone interested in amateur radio; a current license is not required.. Dues are \$15 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 \$15 may obtain a membership without a *Microvolt* subscription for \$9. ARRL membership renewals should specify ARRL Club #1602.

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.

UARC maintains the following repeaters: 146.62 (-), 146.76(-), and 449.10. 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(-) has Autopatch facilities on both the Orem exchange (covering Santequin to Lehi) and the Salt lake City exchange (covering Draper to Layton). The 449.10 repeater has autopatch facilities into Salt Lake City only. Due to the volume of traffic, only mobiles should use this autopatch. Autopatch use is open to all visitors to our area and to all club members. Non members who wish to use the Autopatch are encouraged to help with the cost of maintaining the equipment by joining the club.

THE MICROVOLT: *The Microvolt* is the official publication of the club. Deadline for submissions to the *Microvolt* is the 10th of each month prior to publication. Submissions by email are preferred

(bbergen@xmission.com), but other means including diskettes and typewritten submissions can be mailed directly to: Bruce Bergen, 3543 Fieldstone Cir., SLC, UT 84121. In order to maintain ease of conversion it is suggested that you contact Bruce at 943-1365, or via e-mail before making electronic submissions.. All submissions are welcome but what is printed and editing are the responsibility of the UARC board. Reprints are allowed with proper credits to *The Microvolt*, UARC, and authors. □

## UARC 1999 Board - Partial Listing

|   |          |
|---|----------|
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| Exec VP: Maurine Streckenfinger, KC7HOZ | 254-1536 |
| Vice Pres: Gordon Smith, K7HFV          | 582-2438 |
| Secretary: Russell Smith, KC7ZDZ        | 463-2568 |
| Treasurer: Chuck Johnson, WA7JOS        | 268-0153 |
| Microvolt Editor: Bruce Bergen, KI7OM   | 943-1365 |
| Book "Lady": Fred DeSmet, KI7KM         | 485-9245 |
| □                                       |          |

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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](http://www.xmission.com/~uarc/announce.html) □



# The Microvolt

The Official Publication of the Utah Amateur Radio Club, Salt Lake City, Utah

Volume XLIII, Issue 1 January 1999



Photo: Steve Perry, N7SWP

## QST From the Prez

It is definitely an honor to serve as your President of the Utah Amateur Radio Club for 1999. I thank you for your support.

Looking back to the year of 1998, UARC certainly did accomplish an abundance of activities and projects. I would like to thank those persons who helped with their time, knowledge, time, skill, time, resources, time, money, and time. Time is very precious to all of us and every person has the same amount. The busiest people I know still find time to give to UARC. They still find time to give to Amateur Radio as The Amateur Code, written by Paul M Segal, W9EEA, in 1928 states:

“To have every Radio Amateur be:  
CONSIDERATE... Never knowingly operates in

such a way as to lessen the pleasure of others.

**LOYAL...** Offers loyalty, encouragement and support to other amateurs, local clubs, and the ARRL, through which Amateur Radio in the U.S. is represented nationally and internationally.

**PROGRESSIVE...** With knowledge abreast of science, a well-built and efficient station and operation above reproach.

**FRIENDLY...** Slow and patient operating when requested; friendly advise and counsel to the beginner; kindly assistance, cooperation and consideration for the interests of others. These are the hallmarks of Amateur spirit.

**BALANCED...** Radio is an avocation, never interfering with duties owed to family, job, school, or community.

**PATRIOTIC...** Station and skill always ready for service to country and community.”

My goal as President is to try and get members of UARC to improve in giving support to UARC and Amateur Radio; to become involved with your time, skills, knowledge, and trying to learn more through volunteering, upgrading, or helping others. There is still much more to accomplish in 1999. Thank you and 73.

Gary Openshaw, KC7AWU □

## Featured Member of the Month



Photo: Bruce Bergen, K17OM

Steve Perry, N7SWP, working a satellite QSO from the cab of his pickup truck.

This month we are featuring Steve Perry N7SWP, formally KC7IAS. Steve received his license in January 1995 and has his tech plus. Steve has been interested in amateur radio since he was 12 years old. His father Don Perry was the director of services for the visually impaired through which Steve met Jack Yeaman, W7JSS. Jack sparked his interest in amateur radio. Steve and Jack used to work on projects together. Steve stated what held him back was the Morse code and the fact that he was really busy getting his education. He has always been interested in electronics. He now works for a company out of Seattle, Washington, repairing research and hospital equipment. So, when the No Code License came along he decided to go for it. After letting the code be a barrier to entry into the hobby he ended up passing the 5 words per minute code a year later, in '96, and is now working on further upgrading to General Class..

Steve's favorite facet in amateur radio is HF Single Side Band (10 meters) and Satellite. He has received 2 awards: the VUCC ARRL award 100 grid squares and the W4AMI AMSAT award for making one thousand contacts by satellite. Steve said he is the 15th person to receive this award. He also said that he is close to getting his (WAS) Worked All States award on HF and satellite.

Steve is married and has 4 children one boy and three girls. His 18 year old daughter Carlene has her technician license with the call sign KC7IAR. She obtained her license at the same time as Steve.

Steve is a member of UARC and ARRL. In the December UARC meeting Steve was elected Assistant Microvolt editor and is really looking forward to the work of his new office. He would like to encourage more people to contribute to the hobby and give back what they have been given. There are all kinds of ways one can help, such as, getting on a committee for Field Day, Steak Fry or helping ham radio to get involved with the 2002 Olympics. There is help needed at the Club Station and Scott's Peak. One can also get involved in helping with emergency services.

Steve, congratulations in your new office.

73, Linda - N7HVF □

## A Blast from the Past

I'm back,

What strikes one is how our concerns in 1998 are so similar to those of over 70 years ago. From establishing a weekly "QST Station", locating a permanent QTH for a club station, election of new officers, to getting public information out, the concerns are much the same as ours. It seems that the only thing we are missing are the refreshments. So who is bringing cookies to the next meeting?

Alan - K7OPT □

### MINUTES

APRIL 1, 1930.

Meeting called to order 8:30 Pm 15 Present. Harold Braiford Chairman, 537 Westminster Ave., WASH.

Mr. E. L. Yeates gave an interesting talk on "Vacuum Tubes" having for demonstration several foreign model tubes.

WQST was elected official "QST" station for the club to send most recent club news as a broadcast every Sunday at 1:00 PM using 85 meter hand voice and CW.

Morgan, DeBry and Carmen were elected a committee to investigate and report on the desirability of securing permanent club quarters. For this purpose a room was offered the club rent-free at rear of East South Temple Street and "B" Street by Morgan and DeBry.

Next meeting to be held at 447 So. 12th East St. WQST April 22 - at which time election of club officers to be held.

Discussion centered around possibility of getting WFL and WQST to announce our meetings.

Program for following meeting decided upon.

General discussion.

Refreshments served by Mrs. WASH.

*Jan*

**UARC 1999 Officers**



Photo: Steve Perry, N7SWP

Alan, K7OPT, and Venus, KB7FXB, count ballots to determine the election outcomes.



Photo: Steve Perry, N7SWP

Tom, NY4I, now the Past President, symbolically passes the mike to President-elect, Gary, KC7AWU, after announcing the election results.

*Note: Individuals with multiple jobs within the club, will only have the full listing of information on the first such job on this list.*

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Photo: Steve Perry, N7SWP

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Photo: Steve Perry, N7SWP

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Photo: Steve Perry, N7SWP

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Photo: Steve Perry, N7SWP

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Photo: Steve Perry, N7SWP

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Photo: Steve Perry, N7SWP

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Open

**Club WebMasters:**

Tom Schaefer NY4I  
Gordon Smith K7HFV  
Bruce Bergen KI7OM □

**Nephi Has a New Club**

**JARS (Juab Amateur Radio Society)** of Nephi is currently applying for ARRL affiliation and is in the first founding steps. According to A. J. Grantham, KF6LOR, JARS Co-Founder, elections and regular meetings are planned for the near future. The FCC has issued the club the call sign of KD7AGX. The Club newsletter the *JARS Roundtable* can be viewed on the Club's website: <http://members.xoom.com/kf6lor/jarssite.htm>. Dues range from \$3 to \$6 depending on the status of the prospective member. They hold a weekly net on 2 meter simplex, 144.330, at 20:00 Mountain Time on Thursdays. There is a SSB net on that frequency, but they have an agreement not to hold their net during the SSB net time.

Club contact person is A. J. Grantham, KF6LOR, who can be reached at (435)623-1179, and emailed at [kf6lor@broadcast.net](mailto:kf6lor@broadcast.net).

He is usually in by 21:00 on the weekdays, and all day during the weekends. On occasion, he is not available because of his American Red Cross DAT team obligations, but just leave a message and he'll try to get back with you as quick as he can. □

## Nickel Cadmium & Nickel Metal Hydride Rechargeable Batteries

These two chemistries of rechargeable cells have many of the same characteristics. One of the major differences is the number of different sizes that are available. The Nickel Cadmium, which I will refer to as NiCad, comes in numerous sizes. They are also available as wet cells, which are manufactured in larger sizes and use a liquid electrolyte. This article however will only pertain to the sealed smaller cells. They range in size from a small button cell to F size, with a 1.25" diameter and 3.5" tall, approximately 50% taller than a standard D cell. The smallest button cell has a capacity of 11 mAh, while the F cell has a capacity of 7.0Ah. At this writing the number of different sizes of Nickel Metal Hydride (Ni-MH) is limited to about 1 dozen. There are button cells and cylindrical cells available in the Ni-MH chemistry. Whereas the NiCad has many different sized cells. The major difference between the two chemistries is the capacity of the cells. For instance AA cells in NiCad may approach 800mA, while the Ni-MH may approach 1200mA or a 50% increase in capacity.

The cells have a nominal cell voltage of 1.2 volts. A 7.2 volt battery pack would consist of six 1.2 volt cells. A 12 volt battery pack would have a minimum of 10 cells. When the cells are connected in series the voltage increases, but the current remains the same. A battery can have a combination of individual cells connected in a series, and parallel. The parallel connections of cells in my experience is rare. In my opinion it is not a good idea because keeping the cells equalized is more trouble than it is worth. It is easier to go to a higher capacity cell to achieve the desired capacity than connecting cells in parallel.

The ambient temperature of the cell affects both charging and discharging. There are variations of the NiCad cells that are designed to be fast charged and/or fast discharged. Unlike the sealed lead-acid that bases its capacity on the 20 hour rate, the NiCad and the Ni-MH are at the 5 hour rate, yet it is possible to get 90% of the capacity when discharging at the 4C rate. (4 times the AH capacity of the battery). In fact if the cells get too hot, they can explode. This is a rare occurrence, but I have seen the results. This usually occurs during charge or discharge, as the cells can heat up during these two conditions. This fact coupled with the battery pack being placed in an environment that is hot can be a bad scene. Like a parked automobile with the windows rolled up on a

summer day. Most commercial battery packs have a built in thermostat that opens the current flow to and from the battery pack when the temperature reaches the cut-out setting of the thermostat.

In the NiCad cell, the nickel is the positive electrode and the cadmium is the negative electrode, with potassium hydroxide as the electrolyte. The cells are physically constructed with an automatic resealable vent for excess gas pressure. As with the sealed lead-acid batteries the NiCad batteries can be placed in service in any position. The construction of this resealable vent is of materials that can be damaged with the heat of soldering. For this reason soldering to the either electrode of the cell is not recommended. To my knowledge soldering to the electrodes of the cells voids the warranty. Connections to the cells are generally made with spring clips if the form of battery holders or with tabs that have been spot welded to the electrodes. The spot welded tabs are suitable for soldering.

The Nickel Metal Hydride, will be referred to as Ni-MH uses nickel hydroxide as the positive electrode, and metal hydride, a hydrogen storage alloy as the negative electrode. The electrolyte is potassium hydroxide aqueous solution. The Ni-MH cells are constructed like the NiCad. They can be placed in service in any position and, the connections to the electrodes are made in the same manner as the NiCad.

To create a universal charger for most NiCad's and Ni-MH batteries is not an easy task, because of the large variation in cell capacities (AH), battery voltages, and charge characteristics. The charger that will be published with this article has to be set up for the cell capacity, but can be left connected to the battery pack without danger of overcharge for extended periods of time. This is at room temperature 25 °C(77°F). The NiCad and the Ni-MH cells have three characteristics that all increase as the cell is charged. These are cell voltage, temperature and internal pressure. On all the different types of cells the voltage across the cell peaks at full charge, and if the charge current remains to the cell then the cell voltage decreases slightly. The other two characteristics do peak at some point near full charge, but this peak varies from type to type. The charge current affects the cell voltage at full charge and how pronounced the peak is. The internal pressure decreases as the ambient temperature decreases, but the recombination of this gas at the negative terminal also decreases with temperature, so the charge current should be decreased with a decreased temperature to

prevent excess pressure build up. There are a number of charger kits available. One from Ramsey Electronics (Model DN-1), uses the Benchmark BQ2003 chip. This IC was specifically designed for NiCad charging and conditioning. The Model DN-1 can be set to discharge the battery pack besides charging. For more information about this charger contact Ramsey Electronics @ 716-924-4560. The charger was also reviewed in the July 1997, 73 *Amateur Radio Today*.

The way to charge NiCad and Ni-MH batteries is with a constant current. If a specific charger for the battery to be charged is not available, the charger described in this article can be used. All the manufacturer's data that I have read, recommend 0.1C charging current for 14-16 hours. After the 16 hours the charger is disconnected from the battery. This is at room temperature. But by reducing the charge current by an additional 5% (.095C) then the charger can be left connected to the battery for extended periods.

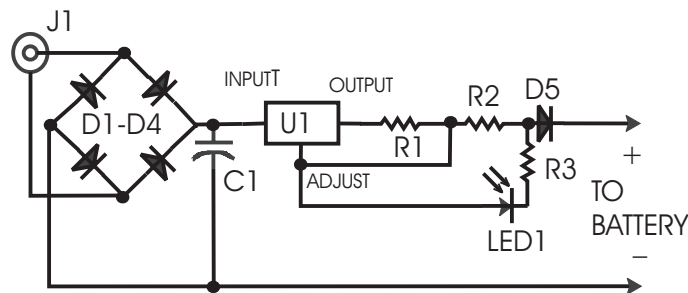


Figure 1 NiCad/NiMH Simple Charger

Diodes D1 thru D4 comprise a bridge rectifier that allows the input to be either polarity. C1 provides a low impedance for the regulator U1, which is connected as a constant current source. Resistor R1 determines this constant current. Resistor R2 develops approximately a 2 volt drop. This 2 volt drop is used to illuminate LED1. Resistor R3 is current limiting for LED1. When a battery is connected to the charger LED1 illuminates indicating that the battery is being charged. Diode D5 prevents the battery pack from discharging in the event the AC power is lost. With the DC adapter specified this charger batteries up to the 10.8 volts (9 cells) can be charged:

Another thing to keep in mind when home brewing (home building) a charger is that the cell voltage is about 1.5 volts per cell when fully charged. Therefore a 10 cell pack will need 15 volts at the specified charge current, across the battery terminals.

The latest information that I have shows that both the NiCad and the Ni-MH are capable of up to 1000 cycles, depending on temperature, charge and discharge conditions.

At one time the NiCad batteries suffered from a memory condition. That is, if the battery was cycled at less than its full capacity it remembered this and became a battery at this reduced capacity. This condition has been overcome. It seems as though the problem was a result of the manufacturing process. It is my understanding that the manufacturing process has changed, and as a result the memory problem doesn't exist as long as the cells are discharged to the 1.0 volt level.

The discharge characteristic's of both the NiCad and the Ni-MH cells appear to be the same in regards to the cell voltage. I say appear to be the same, as I have no experience with the Ni-MH cells, and all the manufacturer's discharge curves I have on the Ni-MH cells duplicate that of the NiCad. Under discharge from full charge the cells start at 1.2 volts per cell and

| Charger R-1 and R-2 Values |           |                |               |              |
|----------------------------|-----------|----------------|---------------|--------------|
| NI-CAD CELL TABLE          |           |                |               |              |
| CELL SIZE                  | AH RATING | CHARGE CURRENT | R1 VALUE      | R2 VALUE     |
| AA                         | 600mA     | 57mA           | 22 ohms 1/4W  | 47 ohms 1/4W |
| SUB-C                      | 1.3 AH    | 124mA          | 10 ohms 1/2W  | 18 ohms 1/2W |
| C                          | 2.0 AH    | 190mA          | 6.8 ohms 1/2W | 12 ohms 1W   |
| D                          | 4.0 AH    | 380mA          | 3.3 ohms 1W   | 5.6 ohms 2W  |
| Ni-MH CELL TABLE           |           |                |               |              |
| CELL SIZE                  | AH RATING | CHARGE CURRENT | R1 VALUE      | R2 VALUE     |
| AA                         | 900mA     | 85 mA          | 15 ohms 1/4W  | 30 ohms 1/2W |
| C                          | 2.4 AH    | 228 mA         | 5.6 ohms 1/2W | 10 ohms 1W   |
| D                          | 4.5 AH    | 427 mA         | 3.0 ohms 1W   | 5.1 ohms 2W  |

Parts list for the NiCad and Ni-MH charger:

C1 100uf25V electrolytic  
 D1-D5 1N4001 Silicon Rectifier  
 J1 Switchcraft RAPC 722 2.1mm power jack  
 LED1 Red L.E.D  
 R1 see chart  
 R2 see chart  
 R3 22 ohm 1/4w 5%  
 U1 LM317T Linear regulator mounted on Thermaloy 6098 heatsink  
 DC adapter Triad WDU18-600



decreases as the cells are discharged. When the cells reach the 1.0 volt level this is considered the cutoff voltage. The cells can be discharged below this cutoff voltage with out danger of damage. In fact many times the cells are discharged to below this level.

The NiCad cells will self discharge in time if not recharged periodically. This is ok, in fact the cells can be stored for long periods without recharging. When the cells are charged and discharged in the future after being stored for a long period, they generally will have full capacity after three charge/discharge cycles.

I can be reached by landline @ (801)262-1419 if you have comments, need further information, etc. Please call before 9:30PM.

73 Ned K7ELP

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## Errata

Note: In the Gel-Cell article, November 1998 *The Microvolt* pp 14 - 15. The parts list for the BATTERY GAS GAGE, R 1 was listed as 10k(4k) 1/4w 5%. The (4k) 1/4w is not a standard value, but can be achieved by connecting two 2k ohms in series. The 2k is a standard value for 5% resistors. I apologize for any confusion in this matter.

Ned -- K7ELP. □

## The "Magic Band" Fun on Six!

Six meters is often called the magic band -probably because at the moment, it takes magic to make a contact on six! Six has been "dead" for quite a while, but that will change as we head into the next sunspot cycle. And, if we can talk ON six, we can at least talk ABOUT six!

The six meter band goes from 50 to 54 MHz. In a way, it looks like the 2 meter band-4 MHz wide, mostly FM at the upper end and SSB at the lower end. Most of the time, six also acts like two, except that it is much less crowded and it does not reflect as well in and out of mountain ranges as two.

But boy, let the sunspots hit and propagation gets better, the "skip" rolls in and you'll be talking to

Nebraska, Kansas, California, Washington and New Mexico on the "first" hop and Louisiana, Georgia and Tennessee or the Great Lakes on the second. "Hop" distances seem to be between 800 and 1000 miles per hop. I have also heard stories of overseas contacts on six, but I have yet to make one.

Equipment for 6 meters is becoming more common, with six often packaged into multimode HF transceivers. But what if you don't have over a thousand bucks for a new radio or you already have an HF radio that you don't want to replace? Well, that leaves you several options that we will talk about in a moment. But first you need to know why you want to be on six. Well, why?

Six meters is a lot of FUN. First, there is the instant status of simply being there. "Oh, you operate on six...?" your fellow hams will say admiringly, knowing that you are one of those technologically advanced hams who can run high power a few megahertz away from TV channel 2 without becoming the target of neighborhood wrath.

Then, there is the space. Six meters is uncrowded, wide, open like the American West -more mystique. You have what it takes to find your fellow amateurs while swishing the tuning knob across a whole 4 Megahertz of spectrum. But really, you will find the nicest hams on six. There are so few of us we can't be anything but neighborly. It's like seeing another car in the Yukon Territory -you stop and talk. For many years, there was very little equipment commercially available, and few hams occupied six. The ones who did often modified commercial radios, leading to a fairly technical but friendly crew on six.

You may find a few repeaters, but nothing like on two. No lost husbands in the supermarket discussing with their wives at home the different sizes of milk cartons and cereals. No hams with Ni-Cads going dead in their hand-helds (these are VERY rare on six) no kids or lady hams on 6 and very few discussions of SWR ... Six meters is more like 440 than two in the discussion content and "feel" of communications, and often six meter repeaters are cross-linked to 440 machines.

At the low end of the band, you have SSB and CW beacons (CW is also known as Morse code, an archaic form of manual digital communications used by radio operators in the last century before the invention of microphones). The SSB calling frequency is 50.125, and when conditions are right, it is quite busy from there all the way up to 50.180 or so. The FM calling

frequency is 52.525, with 52.540 also used as an alternate.

OK, lets talk equipment. You have to decide whether you want only FM, only SSB or both. Both will let you work DX when the conditions are right, and both will let you make a few local contacts (you are not in California, you know!). I am using converted commercial equipment for FM, and it would cost you about \$135 to get set up with a 50W or 100W radio on just 52.525. This would allow you to monitor 52.525 in the car, and it would also make pretty good contacts. There is no special place in Heaven for 6 meter QRP operators, especially on FM. The other FM option would be to buy a synthesized radio. Azden and Alinco make 6m FM mobiles (about \$250 used), and some of the other makes have multibanders with 6 meter optional.

On SSB it gets a little more interesting. SSB only can be had brand new from MFJ for about \$250. That's right, 250 bucks. It comes with a mike, and it puts out 12 watts which is sufficient for band openings, but it won't set any land distance records. You can buy a nice six meter linear for about \$350, but by now it would make more sense to buy a different radio. The MFJ rig also does not have a squelch which you must have since the band is dead most of the time. You can buy a nice integrating squelch from Ten-Tec for under \$20, but now you have to drill a hole in the front panel and plug in a soldering iron. Not for everybody. Buy one please and sell it to me, cheap. There are also the occasional older used SWAN and Clegg radios with SSB only, but you may be faced with some work in restoring those.

Multi-modes can be had used for about \$300 on up. I have used an ICOM 551 (digital allmode, 80 watts) for several years with good success. You can also find Kenwood 680s for around \$700, and once in a while, a Kenwood 670 for \$500 (that radio had 15-12-10 and six with 10 watts out). {Editor's note: This was 6-10-15 & 40 meters only, designed for the Japanese market} There is also the older Kenwood TS-600 with analog dial (about \$300) and a Yaesu SSB and AM only rig (\$300). Good hunting! At the high end, you can get a Kenwood TS-60, 6 meter multimode for about \$800 used if you are really committed (your wife may think you ought to be committed).

What about transverters? Ten-Tec makes a good one (8 watts out from 20 meters for about \$100), but I am not a believer in transverters for six unless you have an HF rig that you can dedicate to just run the

transverter. Why? Because to do anything on six, you must monitor the calling frequencies constantly. Band openings are rare, although you will learn to predict them -Lots of sunshine, good conditions on 10 meters... You know the story. So, I think you need at least one radio dedicated to six. I use two,, one on 50.125 SSB and one on 52.525 FM. The more advanced radios can scan both frequencies and even switch to the correct mode, but if that's what you want, make sure you try before you buy. My TS-690 will do it but my older ICOM 551 won't.

And that gets us down to about the bottom of the barrel. What's going on here in Utah? Precious little, to be precise. There is a remote base at the Point of the Mountain, crosslinked to a UHF repeater. Wonderful, now you can listen to repeater chatter on 52.525 (supposedly a simplex only frequency.) If you like it more power to you. A 6-meter repeater is being prepared by some friends of mine who you will hopefully meet soon. Maybe one of these days the 43 will have a six meter side-330 watts on six. As I said a medium power station. See you on six.

73 Mike - KB7CVH

Editors Note: Mike's earlier reference to Six meter openings being related to increasing sunspots with the new sun spot cycle is a bit misleading. Actually, he is referring to "Sporadic E" propagation which occurs on 12 meters, 10 meters, 6 meters, 2 meters & 220 MHz. This Es skip happens yearly and is independent of the sunspot numbers. The Es happens from mid-June through August, and again for a couple of weeks in late December & early January...like clockwork. What DOES increase with Solar activity is "F2" layer propagation which supports world-wide six meter communications, even from Utah...just talk to KE7NS in Ogden about his many countries on 6 meters using modest power (50-100 watts) and modest beams (1-5 element with ~9 dBd gain). □

## Local Repeater News

There was a change in November on the 146.940 Repeater with a new tone of 88.5 Hz. This was to accommodate a few users that had radios with only one PL capability. These people were active with the Salt Lake County ARES group which uses the 88.5 Hz PL on their 146.880 Repeater which is now located on Ensign Peak.

John Lloyd, K7JL □

## QTX from the ex-Prez

As I write this column, I am sitting in my car (as a passenger), driving through 50 miles of alligator-infested swamp called Alligator Alley in Southwest Florida. Of course, this is possible thanks to the wonders of laptop computers that are amazingly portable. Connected to the same laptop is a GPS unit to receive positional information from 4-5 satellites orbiting the Earth. This GPS receiver tells a computer program on my computer where I am, so as we travel, I can see, in real-time, where I am in the desolate stretch of mangroves and man-eaters. Aside from the obvious literary value of this introduction, I say this to remind each of us about the wonders that technology can add to our lives. But, the ease of technology also lets us spend more time with our families. With the upcoming holiday season, it is important to remember that Amateur Radio is "an avocation, not an occupation."

With most reasonable sophisticated technologies, we can usually adapt some part of it into Amateur radio. The latest "thing" I am into is APRS. This system allows mobile (and fixed) hams to send position reports to each other over packet radio. These reports can then be sent to the Internet so people all over the world can find YOU at any time of the day. Now this may thrill you, or scare you, but the point is that technologies like this do exist in Amateur radio. If you are interested in something, we will find out how to do it.

As this is my last column as President of UARC, I think it is important to reflect on all the club has accomplished this year. We have a club station for members to use, we have a great looking building and towers at the Scott's Hill site. We dodged another bullet on the Farnsworth peak issue for this season, we had a great Field Day, Steak Fry, and Scout-O-Rama. All of these things were made possible by **you**. This club is absolutely nothing without its members. You are the life blood of this club and you will decide what kind of club UARC becomes in the future.

As I am not seeking re-election as President, I wish to thank the current members of the UARC board. Your patience and example have made leading the club for the past year a joy of a task. I look forward to continuing my work with the UARC board as Immediate past president. I encourage each of the new officers (all candidates at this point) to learn from the experience of the current officers. You can learn a

lot from a ... (Oh, that is not the quote I wanted; Well, you know what I mean).

73,

Tom NY4I

## FCC Enforcement Honcho Done "Taking Names"

The FCC's Riley Hollingsworth, K4ZDH, is making his list and checking it twice. And now that he knows which hams are naughty, not nice, he's ready to take enforcement actions against the most flagrant amateur offenders.

"Fully half of the amateur problems on HF relate to a specific group of jammers--malicious interferers who apparently enjoy disrupting as much amateur communication as possible," said Hollingsworth, the FCC's point man for amateur enforcement within the Compliance and Information Bureau. "Enforcement action against this group is long overdue."

Coal could be showing up in some Christmas stockings. Hollingsworth has prepared a report to his boss, CIB Chief Richard D. Lee, detailing his findings and fingering the most serious violators in a "top 10" list which he declined to make public just yet. His memo urged "immediate enforcement action."

Hollingsworth said he's talked with more than 250 people on the amateur enforcement line (202-418-1184) since the end of September, when the FCC's latest amateur enforcement initiative kicked into high gear. In addition, he has received more than four dozen letters and e-mailed comments concerning problems in the Amateur Service. Hollingsworth has concluded that, while most amateurs abide by the rules, a few habitual offenders continue to flout the law.

"We are not going to stand for the Amateur Service to be further degraded or destroyed by them," he said.

Hollingsworth says that jamming and deliberate interference is the most common problem, accounting for 31% of all complaints. Repeater misuse and jamming account for another 29%. But he considers the HF abuses--most typically reported on 75 and 20 meters--to be the more serious offenses

because they can be national or international in scope. Other general problems accounted for another 17% of the complaints, Hollingsworth said. A full 10% of complaints concerned an unlicensed individual in California who already has spent time in jail for past convictions.

Hollingsworth has sent out 30 informal "warning letters" to individual operators as a result of complaints. The letters warn the recipients that a complaint has been received about the recipient or someone using his or her call sign, indicate that the allegations--if true--could jeopardize the amateur's license, and request the recipient to contact the FCC to discuss the matter.

"In almost every case the recipient has contacted us," he said. "In one case, the licensee contacted us, apologized, and reports since that time indicate that the licensee has become a model operator." Some amateurs have reported to the ARRL that amateur behavior has improved--dramatically in some areas--since word hit the street that the FCC was taking amateur enforcement seriously. For its part, the League has said it is willing, for now, not to pursue its request to further privatize amateur enforcement.

Hollingsworth says the warning letters will continue, but now he's taking aim at the hard-core scofflaws within the Amateur Radio community. "We have now let everyone out there know we're back," he said. Continued violations will "guarantee" license revocations, fines, or--in extreme cases--equipment seizures.

"Church is out now," he said. "We mean business and we're strapped in and ready to ride." Hollingsworth said Amateur Radio rulebreakers "continue these violations at their own risk."

The ARRL Letter 11 December 1998 □

## January Meeting: The Packet Cluster Network

If you've worked much DX, you know that there can be a lot of patience and just plain luck involved in getting one of the rare ones. Sometimes you must wait for hours while a station works all the other folks in the pileup before he gets to your call area

and to you. If only you could know when and where he would first pop on the air, and work him before he was discovered by the rest of the pack.

But, now, suppose you had several hundred people out tuning the bands, ready to notify you if something worthwhile turns up? Some inventive hams have created a system that lets you have that kind of information, and the system can be accessed here in Utah.

Matt George, NG7M, operates the Utah node of the packet cluster system, and he will be showing it off at the January UARC meeting, Thursday, January 7, 1999. If you have Internet access, you can get a preview of what the packet cluster is all about by pointing your web browser to <http://ng7m.qrq.com> and following the link to the description.

A packet cluster is a group of individual nodes that let people exchange DX information using their home computers. If you check into a node, you can see what people have been hearing recently, you can look for "spots" in a particular country or call area, you can talk, live, to other DXers, and you can check on the latest propagation conditions.

You can access the cluster node via 2-meter packet radio, almost anywhere in the state, or you can get into it via Internet. Matt's node is interconnected to the west coast system, and there are typically 300-500 users at any given time.

This kind of assistance to the DXer was unheard of ten years ago, but is now one of his most valuable tools.

Matt will have a complete demonstration running at the January meeting. He will show how to use the system and just what it can do for you. He has spent the last ten months getting the system running, streamlined, and debugged, and is now ready to show off how effective it can be.

Of course, there are other reasons to attend a UARC meeting. Fred, the book lady, will be there with all the latest ARRL publications. There will be lots of people to meet in "eyeball QSO's," some of whom you may already have worked on the air. And, the famous "Dime Lime" or "Meeting After the Meeting" allows a chance to check out the most popular kinds of pizza. Don't miss the fun!

Gordon, K7HFV □

## UARC 1999 Meetings

Our Program Chairpersons, Linda, N7HVF, and Jack, KC7KEL, have tentatively scheduled our 1999 meetings as follows:

Jan 7 - Packet Cluster -. Matt George, NG7M

Feb. 4 - Lightening Protection and the Eyring Buried Antenna - Glen Foster, KD7BHG

March 4 - Transmission Lines - Dave Fischer, W7FB

April 1 - Radio Scouting - Gary Smith, KC7IHZ, and Cliff Jenkins, N7ZTY

May 6 - Morse Code can be Fun - Mat George, NG7M

June 3 - Field Day.

Sept 2 - Swap Meet

Oct 7 - Personal Computer Uses in Amateur Radio

Nov 4 - Home Brew

Dec 2 - Elections □.

## Davis County Amateur Radio Club Elects New Officers

Saturday, December 12 DCARC, held it's annual election. The following people have agreed to serve and were elected to the respective positions.

### President:

Clark Dowding, N7TDT  
863 South 175 West  
Bountiful, Ut 84010  
(801) 296-1797  
clarkdowding@hotmail.com (hm)  
clarkd@tfcu.net (ofc)

### VP:

Steve Carver, N7VVW  
3586 S. Acoma St.  
West Valley, Ut 84120-2802  
(801) 965-1707  
n7vvw@worldnet.att.net

### Secy:

Starli Taft, KJ7IA  
80 N. Mountain Road  
Fruit Heights, UT 84037  
(801) 546-8074  
starli@juno.com

### Treas:

Karin Smith, KD7CHP  
51 East 350 South  
Kaysville, Ut 84014-2513  
(801) 544-7865  
smithg@vitrex.net

### Cheers

Lon WM7E □

## *UARC Invites You to Become Radioactive Posters*

Some posters were shown at the October UARC meeting. If you would like to get one or more copies for posting at an electronics retail/ wholesale outlet or on a company bulletin board please email me at bbergen@xmission.com or call 943-1365 □.



## Utah Amateur Radio Club

Invites you to become radioactive!

When: First Thursday of each Month (except July & August)  
7:00 PM - Newcomers  
7:30 PM - General Meeting  
Where: Doxy-Hatch Medical Center  
1255 E 3900 S 4th Floor

Questions about Amateur Radio?  
Call the Ham Hotline 583-3002  
Or visit our website at:  
[www.xmission.com/~uarc](http://www.xmission.com/~uarc)

## Bulkhead Grounding for Telecommunication Facilities

Most telecommunication facilities in the Land Mobile Services, Broadcast, Amateur and Personal Services are woefully under-grounded. Each year insurance companies pay out thousands of claims for lightning damage to installations that are "fully lightning protected". When inspecting these facilities it's easy to see why lightning damage is so easily caused, or why the station suffers from high noise levels and lots of interference.

Proper grounding is almost always the culprit, and it is so often the result of the ground system being installed as a quick, cheap afterthought to radio equipment placement. A really good engineer knows that the first item designed, constructed, and installed in a telecommunication facility is the ground system. And of the many ways that a grounding system can be employed, one type stands out as most often the best performer. Better yet, it costs less to build, involves less materials, and takes less time to implement.

Bulkhead ground systems are very easy to understand. They consist only of a place and a single metallic fixture. The bulkhead is most often a metal plate made from aluminum but almost any metal will do just fine. A bulkhead could also be a piece of heavy wire several feet long to which station cables and protective devices are attached. It's not what you have, it's what you do with what you have. Most installations consist of an outside antenna with a coaxial line downlead connected to bonded equipment frames, and then a wire running from that point to ground. This has the unfortunate effect of placing the equipment chassis (and hence the operator if he is there) in series with an incoming lightning surge, nearly always causing equipment damage and often injuring the operator. A bulkhead grounding system overcomes this deficiency by intercepting the incoming surges and shunting them to ground BEFORE they reach the equipment.

A bulkhead plate is defined as a high integrity, zero or low inductance earth terminal connection. For that reason a bulkhead plate should always be placed very close to or on the ground with its lead connections to earth entry point very short - preferably less than a foot long. All incoming lines to the facility (coaxial cable, rotator lines, control lines, AC power lines, telephone lines, etc.) pass across the plate where they are connected to various lightning protective devices.

The radio equipment should be located close by to take advantage of short distance grounding to the bulkhead plate, thus reducing or preventing harmful local interference in transmission and reception. No other grounds should be employed or lightning current division may occur if the facility is struck. Division is what causes induced currents to flow across equipment chassis, resulting in circuitry damage.

What makes a good bulkhead? A commercial relay rack panel of 1/8" thick aluminum is quite nice and easy to obtain through electronic distributors. Copper plate is ideal if available, but even a steel plate is acceptable. Mount antenna switches, transmitting and receiving filters, and lightning protective devices all on the same plate, and be sure to use an anti-oxidant between metal surfaces to ensure good long term metal-to-metal electrical bonding. Examples of good anti-oxidants are Burndy Penetrox, Ideal Noalox, or I.C.E. Model 601 or 602. Mounting the bulkhead indoors against an exterior wall is suggested so that access may be obtained and protection from weather is assured. Keep all leads short and connections tight. And try to obtain a plate that is bigger than what you expect to need so that some room is left for facility expansion. Once you find out how nice the bulkhead system works, you'll probably want to build a bigger station!

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### General Class Upgrade Course

UARC is offering upgrade classes, beginning Wednesday February 3<sup>rd</sup> at 7 PM, for those wishing to obtain the General Class License. We expect all participants to hold a Technician Plus License and be able to send and receive code at a rate of at least 5 wpm. The classes will be held in the Board Room of the Red Cross Building, located at 465 South and 400 East near downtown Salt Lake City, and will run for 6 weeks. This is also the location as our new Club Station. If you are interested, please contact Gary Openshaw at 484-3407. If you get the answering machine leave your name and telephone number.

Gary, KC7AWU □

## What Is Club Policy?

It seems to come up at every meeting. Someone asks what the club policy is regarding any number of amateur topics. The inquiries originate from people ranging from seasoned hams to pending licensees. As your duly elected Vice President, and with the approval of the Board, I submit to you the "Utah Amateur Radio Club Policy" regarding repeater and autopatch use.

There are basically just two things the club asks of its repeater users: obey the FCC rules, and observe common courtesy.

As a licensee of repeaters, the club has a responsibility and commitment to ensure that use of its repeaters is in compliance with the Part 97 of the FCC's rules. Operators must be properly licensed, must transmit their call signs at the required intervals, must not engage in any communication in which they have a pecuniary interest (including, particularly, sending messages to or for an employer), and must avoid any kind of intentional interference.

We hope that the need for actual enforcement will continue to be rare, but the club reserves the right to shut off a repeater, when necessary, to protect the licenses of the club and its trustee. Regular users may help keep the repeaters clean. Every operator should obtain and read a copy of Part 97. Repeater users are encouraged to help educate new operators in a friendly way. Let them know that transmission of a call sign is necessary at the end of a QSO, and that using amateur radio to inform an employer that one will be late to work is a violation.

Occasionally an unlicensed operator, or one who refuses to give a valid call sign, will appear on the air. These people are looking for attention, so don't give it to them. Ignore the unlicensed station. If a QSO was in progress, continue, and try not even to acknowledge that you have heard the problem station.

Courtesy is more difficult than rules compliance to define and enforce. The club officers do not intend to act as enforcers, but recommend that operators show consideration for each other. The club has over 600 members, so no one has an exclusive right to the repeaters. Multi-station QSO's or "roundtables" are effective ways to let a repeater serve more users. Operators should always leave space between transmissions so other stations may break in.

Newcomers and visitors should be made welcome. We strive to make our repeaters as fun and as memorable as the sites and attractions our guests visit.

As with other repeater groups in the region who sponsor "ragchew" repeaters, the use of DTMF paging or digital communications is not permitted. This is to ensure that our repeaters are open to all.

We admonish our members to expand their horizons in the hobby: to meet new people, to explore different modes and bands, and to increase their operating privileges. We recognize that, without exception, everyone who has taken the time and effort to enter our hobby has something to contribute to it.

Most 2-meter repeaters in our area are free-access. Most autopatches and remote stations are not. We advise all operators who wish to use an autopatch or a remote-controlled station to contact the owner, be it a club or an individual, to ascertain the proper procedures and whether users are expected to contribute financially.

The UARC autopatches are open to members, to out-of-town visitors, and, in an emergency, to anyone. We require all frequent and local users of our autopatches to contribute to their operation, maintenance, and improvement, by joining UARC. Obtain a copy of the autopatch procedures (available from the club secretary) and read them thoroughly.

The Utah Amateur Radio Club prides itself on the heritage, traditions and technology of amateur radio in Utah. We recognize it as a global resource and an avenue of international good will.

Gordon, K7HFV □

## Ham Hot-Line

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

Gary, KC7AWU □

## Examination Schedule for January

01/20/99 (Wed.) Provo  
 Contact: Steve Whitehead, NV7V  
 Phone: H 465-3983 B 225-5200

01/26/99\* (Tues.) Salt Lake City  
 Contact: Eugene McWherter, N7OVT  
 Phone: 484-6355

\*Only Novice and Technician elements (1A, 2, and 3A) given at this session.

For more detail either call the contact or checkout the information on our webpage  
<http://www.xmission.com/~uarc> □

### Some Comments on “Past Blasting”

*Editors Note: For over a year now Alan has been sifting through the document archives and other memorabilia that have been handed down within UARC for generations. He has provided us with some fascinating insights to the early days of our Club.*

I have enjoyed rounding up the information and making it available to you each month. I have noticed a few things as I have read the history that is contained in the old documents that were kept by our predecessors.

The first thing I noticed was how detailed they were with the history of Ham Radio. Many Hams were inventors, leaders, educators, and volunteers.

The second thing that I noticed was how VALUABLE these first hams were to the community and to the nurturing of a new club.

Look at your contribution to Ham Radio over the past few years and see if you fall into one of those categories, if you are one that enjoys the club and all the fun activities then make your mark in the Clubs history. I want to see many new faces at the club station and at work projects.

Many of you have what it takes to upgrade and push on, many of you already have the knowledge and have put many years of service in over the years and need to recommit to nurturing others that may need your help. I hope that 40 years from now someone will look back on us and see some sort of contribution that we made

that caused a difference.

I should hope that even those of you that have served in positions in the past will (come out of retirement) and encourage those now to learn and also volunteer to help again.

What do you think this club will look like 40 years from now? It is up to us.

Cul, Alan Seyboldt K7OPT □

### Erv Greene a Silent Key

It is with regret that we note the passing of Ervin N. (“Erv”) Greene, W7EU, on Tuesday, November 17. He died of pneumonia, apparently a complication of treatment for a heart condition.

Erv had a long history of involvement with ham radio. His original call was W7RDE. He served multiple times as President of UARC, dating back to the 60s, but most recently in 1991. Erv was the one who instigated the project to put a 146.76 repeater on the air, back in the 70's, effectively getting UARC involved in repeaters.

Erv was involved in many aspects of amateur radio, including DX, repeaters, digital modes, and Amateur Television (ATV). He operated the 146.70 repeater from his home for several years. At various times it was an RTTY repeater, a stand-alone voice repeater, and a voice repeater linked to the Lewis Peak (147.36) system.

Erv's career also had many links to radio and electronics. He served in the Signal Corps during World War II, ran a TV repair business for many years, and held several technical positions with television stations.

Many hams may remember Erv as the man who ran the Heathkit Store. For a number of years in the 80's, Erv ran a retail outlet near 7200 South and State Street where Heathkit's famous electronic kits could be purchased. Their line included many amateur radio transceivers and accessories.

Erv will be surely remembered a long time for his many contributions.

Gordon, K7HFV □