# The MICROVOLT

Volume XLVI Issue 3, March 2002 **Periodicals Postage Paid**

PLEASE SEND DUES TO:
U.A.R.C.
c/o Gregg Smith
7546 S. Uranium Dr.
West Jordan, UT 84084-3942

THE MICROVOLT (USPS 075-430) is published monthly except August for $15.00 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 UT. POSTMASTER: Send address change to " *The Microvolt*", c/o Gregg Smith, 7546 Uranium Dr., West Jordan, UT 84084-3942.


Photo: Ron Speirs, K7RLS

Peri Cope, WH6YT

## March meeting: QRP

Our March speaker is M. Peri Cope, WH6YT. Peri was first licensed as a teenager in 1981. He shared a ham shack with, and was mentored by his father, W7HKC (now a silent key). Very early on, Peri developed an interest in QRP operations and homebrew gear that continues to the present. Peri also participated actively in the Utah Army MARS program.

Peri is the founder of the newly organized Bonneville QRP Society and serves as acting chairman until a formal leadership is elected. He invites all hams throughout the Intermountain area who have an interest in QRP operations and homebrew equipment design to join him in building momentum within BQS.

For further information on the Bonneville QRP Society, please e-mail Peri directly at wh6yt@arrl.net or peri.cope@enableus.com, or visit the society's web page at http://www.bigiland.com/bqs.

Peri will be speaking on the topic of QRP.

The meeting will begin at 7:30 PM at the Infinia Medical Center, 1255 E. 3900 South, on the fourth floor. And while you are there, don't forget -

- to buy from Fred the "Book Lady", who has that ARRL book you've been looking for.
- to renew your UARC or ARRL membership at the Secretary's table.
- the Newbie meeting, which begins at 7:00 PM, for new hams and Elmers
- the meeting after the meeting, held at a restaurant nearby (listen for the location just after the meeting ends)

Ted, KC7PM ❑

## Announcing the 2002 UVHFS Swapmeet

It has been announced that the 2002 Utah VHF Society Swapmeet will occur on March 2, 2002 at the Utah Fairgrounds. The doors will open at 8 AM.

What is NOT known is precisely which building will be used for the event: With the Winter Games winding down at about that time, the management of the facilities is in a state of flux -this information will be published as soon as it has been finalized.

While it is specified by the UVHFS bylaws that the swapmeet/election be held "on or before March 1..." the fact that the logistics) very difficult. If you have any questions concerning the scheduling, feel free to contact one of the UVHFS officers.

More information about the swapmeet and a map to the fairgrounds may be found on the UARC Website. Remember: Your Utah VHF Society membership probably expires at the beginning of the year, so be sure to renew today and avoid the delay!

Gordon - K7HFV ❑

## Steak-Fry Scheduled

Picture a chance to spend an afternoon up in the mountains where you can enjoy cool breezes and escape the oppressive heat of the valley.

Oh, you say it's 30 below outside and cooling off isn't one of your top priorities? Well, remember summer is coming and we have to be ready.

One of UARC's big events of the year is the annual steak-fry. Dick Abbott has succeeded in getting reservations at our favorite site, so we can announce the date for those who have yet to plan their summers. The 2002 event will take place on the afternoon of Saturday, July 20. It will be held at "The Spruces," a campground in the national forest in Big Cottonwood Canyon. More details will be announced as the event gets closer.

And while you have the calendar open to July, you might want, also, to mark the Utah Hamfest. This event will be held July 12, 13, and 14, at Ruby's Inn, a short distance from Bryce Canyon National Park. For more information, check http://www.utahhamfest.org.

Gordon - K7HFV ❑

## Prologue

The Utah Amateur Radio Club was organized under it's 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 SaltLakeCityArea.

*Meetings:* The club meets each month except July and August. The meetings are held on the first Thursday of the month at 7:30 PMintheInfiniaMedical Building located at 1255 East 3900 South in Holladay, across thestreetfrom St. Marks Hospital.

*Membership:* Club membership is open to anyoneinterested in amateur radio; a current license isnot 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. Send duesto the Club Secretary: Gregg Smith, K7APW, 7546 S. Uranium Dr., West Jordan, UT 84084-3942 ARRL membership renewals should specifyARRL Club #1602.

*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 appropriatearrangements.

*Repeaters:* UARC maintains the 146.62- and the 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-) has Autopatch facilities on both the Orem exchange (covering Santaquin to Lehi) and the Salt Lake City exchange (covering Draper to Layton). The 449.10 repeater has autopatch facilities available to UARC members 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 clubmembers. Non-members who wish to use the autopatch are encouraged to help with the cost of maintaining the equipmentbyjoiningthe club.

*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. 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 listed under "Submission Schedule of Editorial Content for The Microvolt." Submissions by email are preferred (KC7PM @arrl.net), but other means including diskettes and typewritten submissions can be mailed directly to Associate Editor Ted Cowan, KC7PM, 1889 E Foxmoor Place, Sandy, UT 84092. 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 withproper credits to The Microvolt, UARC, and authors. Changes in mailing address should be communicated to the Club Secretary: Gregg Smith, 7546 S. Uranium Dr., West Jordan, UT 84084.□

## UARC 2002 Board

| | |
|---|---|
| President: Mark Richardson, K7HPW | 465-7650 |
| Exec VP: Brett Sutherland, KC7WRR | 298-5399 |
| Vice Pres: Gordon Smith, K7HFV | 582-2438 |
| Secretary: Gregg Smith, K7APW | 255-0344 |
| Treasurer: Chuck Johnson, WA7JOS | 268-0153 |
| Microvolt Editor: Bruce Bergen, KI7OM | 943-1365 |
| Asst. Microvolt Editor: Bruce Leonard, KJ7HZ | 576-9162 |
| Program Chair: Steve Baxter, K7SRB | 265-9655 |
| Program Chair: Lauri McCreary, K7LMM | 571-5759 |
| Imm. Past Pres.: Dick Abbott, K7MZ | 943-0370 |

## Committee Chairpersons and Members

| | |
|---|---|
| Assoc. Microvolt Editor: Ted Cowan, KC7PM | 576-9942 |
| Book "Lady": Fred DeSmet, KI7KM | 485-9245 |
| Historian: Ron Speirs, K7RLS | 968-4614 |
| Field Day Chair: Open | |

## Repeater Committee

| | |
|---|---|
| Trustee: Tom Schaefer, NY4I | 501-0899 |
| Engineer: Randy Finch, K7SL | 277-7135 |
| ATV Engineer: Clint Turner, KA7OEI | 566-4497 |
| Board Liaison & Autopatch Engineer: Gordon Smith, K7HFV | 582-2438 |
| Provo Autopatch Host & ATV Engineer: Dale Jarvis, WB7FID | 224-3405 |
| Repeater Monitor: Allen Wright, N7QFI | 268-8482 |

□

## Exam Schedule

03/06/02(Wed.)Farmington
Contact: Fred Villanueva, N7FV
Phone: 801-295-6560

03/09/02 (Sat.) Logan
Contact: Clyde A. Best, AC7KN
Phone: 435-563-9492

03/13/02 (Wed.) Mantua
Contact: Jim Jones, KJ7VO
Phone: 435-723-1947

03/20/02 (Wed.) Provo
Contact: Steve Whitehead, NV7V
Phone: 801-465-3983

03/26/02* (Tues.) Salt Lake City
Contact: Eugene McWherter, N7OVT
Phone: 801-484-6355

03/29/02 (Fri.) Roosevelt
R Chandler Fisher, W7BYU
Phone: (435) 722-5440

04/06/02 (Sat.) Salt Lake City
Contact: Gordon Smith, K7HFV
Phone (H) 801-582-2438 (B) 801-534-8116

*Only Technician elements (1 and 2) given atthissession.

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

## Submission Schedule of Editorial Content for *The Microvolt*

The Microvolt editorial team has made a commitment to providing the club membership with a quality publication that will be in your hands prior to the meeting of the publication month. This means you should be able to count on being reminded of upcoming meetings and events before they happen. In order for this to happen we must have two things: quality material submitted to the associate editor, Ted Cowan, KC7PM, and submitted prior to the deadlines listedbelow.

| Meeting | Submission Deadline |
|---|---|
| Thu Apr 4 | Tue Mar 12 |
| Thu May 2 | Wed Apr 10 |
| Thu Jun 6 | Tue May 14 |

This schedule will be revised and published in subsequent issues of The Microvolt. We sincerely hope that this will help those who wish to make submissions make our deadlines.

*The Microvolt* Editorial Team -Bruce -KI7OM., Ted KC7PM, and Bruce, KJ7HZ □

## More on Editorial Content Submission Standards

The *Microvolt Editorial* Team wishes to make submitting documents for potential publication as easy as possible. A contributor or writer should feel free to submit text, preferably via email, in any format, within reason, of popular wordprocessors they are comfortable using. Writers should keep in mind that the Editors in producing *The Microvolt* use a standard font and layout. All submitted material used will be stripped of formatting and converted to these standards. Please keep your formatting of submitted documents as simple as possible. Simple ASCII text is easiest to handle - the less stripping we have to do, thelesstimeittakestoprepare.

Electronic files for graphics, photos, and spreadsheets will be accepted in most standard formats without problem, thoughtoavoidpotentialproblems pleasecheckfirst. □

## Net Schedule

### VHF Nets

| Day | Time | Freq. | Name/Purpose |
|---|---|---|---|
| Sun. | 2100 | 146.62 MHz | Utah Amateur Radio Club Information Net |
| Mon. | 2100 | 147.18 MHz | High Valley Net (Ragchew) |
| Mon. | 2100 | 144.25 MHz | Weekly 2-meter SSB net |
| Tues. | 1900 | 146.98 MHz | West Desert Amateur Radio Club & 145.37 MHz |
| Tues. | 1930 | 146.90 MHz | Ogden Amateur Radio Club |
| Tues. | 2000 | 146.94 MHz | Utah VHF Society (business and swap) |
| Tues. | 2100 | 147.34 MHz | Utah Valley Amateur Radio Emergency Service |
| Tues. | 2100 | 146.72 MHz | Bridgerland Amateur Radio Club Net |
| Wed. | 2000 | 146.88 MHz | SL County Amateur Radio Emergency Service |
| Wed. | 2000 | 145.43 MHz | Utah Box Elder -Thiokol Net & 145.20 MHz & 448.43 MHz |
| Wed. | 2100 | 146.74 MHz | Mercury Amateur Radio Association, SL area |
| Wed. | 2100 | 145.49 MHz | Mercury Amateur Radio Association, Ogden area |
| Wed. | 2100 | 145.37 MHz | Mercury Amateur Radio Association, Provo area |
| Wed. | 2100 | 50.125 MHz | Weekly six-meter net |
| Thu. | 1900 | 147.42 MHz | Davis County Amateur Radio Club & 449.925 Mhz |

### HF Nets

| Day | Time | Freq. | Name/Purpose |
|---|---|---|---|
| Daily | 1230L | 7272 kHz | Beehive Utah Net (formal traffic handling) |
| Daily | 0200Z | 3937 kHz | Farm Net (Same UTC summer and winter) |
| Daily | 1930L | 3708 kHz | Utah Code Net (formal traffic handling) |
| Sat. | 1100L | 7272 kHz | Quarter Century Wireless Association (QCWA) |

## Contents



*For net times and frequencies, testing details and 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 Publcation of the Utah Amateur Radio Club, Salt lake City, Utah

Volume XLVI, Issue 3, March 2002


Photo: Ron Speirs, K7RLS

## QST From the Prez

Amateur radio is unique in history. Nothing quite like it has ever before existed. It is as old as radio; the great Marconi himself having started as an amateur and being truly typical of one. From the earliest days there has been something about communicating across space that has fascinated those of us who are technically inclined. There is a scientific romance to it that profoundly moves certain of us regardless of the social or financial status to which we happen to have been born. Rich and poor, educated and uneducated, old and young, with the product of our hands and our own brains, we are able to reach out into empty space and make contact with another intelligence.

It is difficult to explain the thrill that accompanies an experience such as this. It is sublime, and carries with it a sort of uplift that makes us better and deeper-thinking. By careful management and team play the amateur as a whole is constantly training himself or herself. Include those new amateurs who constantly join, to become expert radio operators and available in time of need. For many years not a single major breakdown in general communications has occurred that amateurs have not played a major part in providing radio communications for summoning and directing relief.

Does it not mean something that the amateur has developed this invaluable service voluntarily? There is nothing in any amateur's federal license that requires him to perform this service. The amateur serves without compensation, and desires none. We work for the pure love of the thrill of doing a public service by means of our beloved radio. Is this 100 percent altruism, or no? Is it worth preserving, or no?

Become a part of the amateur community; involve yourselves in the preservation of amateur radio. I would like to encourage each of us to support and contribute to the ARRL's defense fund. Amateur frequencies are under constant siege and we had better be vigilant or we may be found wanting.

73, Mark W7HPW ❑

## ARRL Section Manager Comments


Photo: Ron Speirs, K7RLS

Politics!!! A short discussion about civics. We all are involved in a very political world and Amateur Radio is no exception. Many of you sent me comments about the recent session of the Utah Legislature, expressing your concerns about the proposed House Bill H.B. 67, "Penalty for Distracted Driving." This bill will not go away and even though it failed this year I'm certain it will eventually pass and become law in some form. I'm sure Representative Kory M. Holdaway, who sponsored this bill is already working on obtaining support for it in 2003.

H.B. 67 is intended to target drivers whose actions are distracting them from driving in a safe manner, and offenders will be fined. This bill has the potential to target Amateur Radio operators as well. The bill in its present form had no exception for Amateur Radio. What can we do about this? Well, to those who have called me or sent email I have recommended that they contact their local elected officials and explain how and why Amateur Radio should be exempt. This becomes an educational process and we need to work at ensuring our elected officials understand the impact this bill could have on Amateur emergency services if it is passed and enforced.

Please become familiar with the web site for the State Legislature, http://www.le.state.ut.us/. Here you can register to be sent email about the status of any bill that is of interest to you. At a minimum I would suggest we each look up our Senator and Representative and get to know them, call them, email them, and let them know your interest and concerns not only about the Amateur Radio Issues but any issues concerning you.

Another item we should begin to work on is a UTAH PRB-1 bill. This has been done in a number of other states and usually requires a lot of ground work to get legislation of this type passed. Please contact me at ac7cp@arrl.org if you have any ideas or suggestions on any issues related to the above topics.

Mel Parkes, AC7CP

## Featured Member: Steve Baxter, K7SRB

Photo: Ron Speirs, K7RLS

Steve Baxter, K7SRB

Thismonth we are featuring Steve Baxter, K7SRB. Steve got his novice license in December of 1980 as KA7JXR and upgraded to Technician in April of 1981. In April 2001 he obtained his General license and is now working on upgrading to Extra.

Steve was exposed to shortwave listening during his youth and his high school had an HF ham station, but the electronics teacher, with a technician class license, could not operate the transmitter. It wasn't until Steve met Jerry Wellman, W7SAR (ex WB7ULH) in the Civil Air Patrol that he became interested enough in amateur radio to get his license. Steve's first radio equipment were CAP loaners -- a Motorola 2m "brick" and a Heath HW-18, both on CAP frequencies. Jerry also got him interested in computers.

In the mid 80s Steve became very active in packet radio, and quickly realized the limitations of conventional packet. While attending a UPRA (Utah Packet Radio Association) meeting, he met Chris Clark, N7GNT, who introduced him to both TCP/IP and the UNIX operating system, for which he immediately dumped MS-DOS and conventional packet radio.

This mix of technologies was just what Steve was looking for, and in 1987 he returned to school to study networking. Six long years of full time work and part time school eventually got him a Bachelor's degree in Computer Science from Weber State University. He says that the encouragement of Ted Cowan, KC7PM was instrumental in keeping him going on the degree. Steve is currently employed as a Senior Network Engineer at Ovid Technologies in Sandy.

Steve enjoys APRS, yet another application of packet radio, where one can track the location of individuals by way of computer. He is also involved in PSK-31. In case you haven't noticed, Steve's love is in making all the toys play together.

Steve is also getting involved in QRP. This is where you try to make contacts with individuals with the lowest power possible. You will hear all about this in theUARCmeeting inMarch.

Steve is active in ArmyMARS, a member of UARC and has been involved in Salt Lake County ARES and Murray City CERT. He assisted with communications for the 2002 Winter Olympics with both MARS and UOPSC.

Steve and his wife Carol have five children, two girls and three boys. Carol was in the UARC women's class inMarch of 2001 and received her technician license. Her call sign is K7CAB.

Steve is one of the UARC program cochairs for 2002. He is always open for suggestions of topics for the UARC meetings. After all, it is your club.

Steve, we wish you all the best in all of your endeavors and the best of luck in getting your Extra class license.

73 N7HVF Linda Reeder ❑

## New SPARC Officers

Congratulations to the new officers for the Saltlake Peaks Amateur Radio Club (SPARC):

President: Larry Benson (N7GY)
Vice President: W. Kent Anderson (KB7YAN)
Sec./Treas: J. D. Wallis (KC7FOF) ❑

## RMRA Leadership Changes

The Rocky Mountain Radio Association new board of directors has the following individuals:

Marc Peterson -KA7SLC President
Alan Muenzel -N7GAD VPresident
Jon Van Allen -KF7YN -Board
Pat Schouten -K7LNP Board
Sean Dorsey -KC7GSG ❑



## Free "DX-News" Mailing List

73 to you! It is with pleasure that I send you this invitation so that you can become a member of my free "DX-news" mailing list. If you choose to subscribe to this "free" mailing-list (for ham radio operators) you will receive the latest DX-news via your e-mail address everyday. Thesemailingswillinclude: (as listed).

DX bulletins, satellites, vhf-uhf-psk31, rtty-sstv, news from I.S.S, keplers, propagation, 29MHzFM,50MHz,skeds, bulletins, activities IOTA, DFCF-DMF etc...etc...

You could subscribe on DX-news mailing list via this address on the internet :

http://fr.groups.yahoo.com/group/f5asd-dx-news//
or If you meet a problem to subscribe , let me message with your call and e-mail F5ASDJEROME@AOL.COM

I hope to see you on "DX-NEWS mailing list later ..."!
73's F5ASD Jerome


THIS IS A QSL CARD FROM THAT GUY THAT'S ALWAYS TELLING ME WHERE TO GO!

From "The Best of Beasley", Worldradio Books

## Blast From the Past

It seems that with ARES's predecessor, Civil Defense, we also struggled with many of the same challenges. This September 21, 1959 letter from the Salt Lake City Civil Defense agency to "Fellow Hams" outlines RACES involvement with the city's program and encourages the participation of licenced Hams.

Alan - N7OI ❑

SALT LAKE CITY CIVIL DEFENSE
165 East Broadway
Salt Lake City, Uta h

September 21, 1959

COMMUNICATIONS SERVICE

Dear Fellow "Ham":

The following information is intended to answer your questions and bring you up to date on Civil Defense Communications. Much misinformation has recently been circulated, among which has been the statement "CD doesn't want "Hams". Nothing could be further from the truth as this memo will show--and actually CD feels that the Hams have let it down.

The present Communications Service was organized in 1948 and was begun with a membership entirely of Hams. A select group numbering about 28, each having his own mobile equipment, was trained by the Police Department and deputized as Auxiliary Police. This was done at a public ceremony at Derk's Field in July of 1951 by Mayor Earl J. Glade after the completion of over 700 hours of training. This group was of real assistance in the 1952 flood and helped Salt Lake City furnish and maintain emergency communication for all services.

During their training period, this same group built six portable transmitters, for phone and c.w., in the Disaster Communications Service and these have become the backbone of our present system.

With these two activities, Salt Lake City became one of the very first in the nation to deputize amateurs and to obtain a license under the D.C.S. system -- and all by amateur

"RACES" at this time was not available, but as soon as it was finalized, Salt Lake City and Salt Lake County filed a plan to utilize it. WTJPH was registered as the call sign for the City, and WTDMX for the County.

For the next several years, a routine of weekly drills and bulletins was employed in conjunction with Provo, Ogden, and Utah and Weber counties. But during this period, many Hams dropped out and appeared to lose interest; CD, faced with the necessity of keeping the organization running, was forced to use non-amateur people to an ever-greater extent. The legality of all this has recently been reviewed again by F.C.C., F.C.D.A., the U.A.E.C. and the A.R.R.L. and everything found to be in proper order.

Now, to make sure you have correct information, many of the controversial points are listed below, along with current drill schedules and a brief "who's who".

1. RACES may use any class of licensed operator for AS operation, including temporary restricted permits.

2. RACES may use as many stations as it needs, using the same call sign but a different numeral suffix for each.

3. The D.C.S. Service, call sign KOAA4, has the right to make cross-band contact with stations of all other services including amateur.

4. RACES does not have the exclusive right to the frequencies assigned to it but may request cooperation of all other amateurs during drills or incidents to keep clear of those channels.

-2-

5. Civil Defense presently will accept applications for membership from any amateur who has station equipment of his own. CD does not presently have any equipment for assignment to amateurs.

6. Applicants must be U.S. citizens; be 21 or more years of age; minors may be accepted with a letter of clearance from their parents but may not be used in hazardous assignments.

7. The present drill schedule is:

Wednesday nights, 7:30 p.m., a bulletin over KOAA4 on 1761.6 kilocycles addressed to all members. Then a re-transmission of this bulletin on each RACES channel by the RACES control station, followed by check-ins and roll-call credit. Lastly, the control stations report to KOAA4 their attendance roll and sign the whole operation clear.

8. The RACES frequencies for Salt Lake City are:

3995 kilocycles
39,626 kilocycles
50,480 kilocycles
145.5 megacycles

9. Present control stations are:

KOAA4, Captain W. T. Young, Salt Lake City Police.
3995 kc., WTQWH, Tom Miller.
39,626 kc., WTPHY, Kimball Sant.
50,48 mc., WTDMX, Dee Howsell.
145.5 mc., Charles Gilden, WTSPO.

10. Organization officials are:

Lt. Wm. F. Heninger, Director of Salt Lake City Civil Defense.
Sheriff George Beckstead, Director for Salt Lake County.
E. H. Morgan, Director, Communications Service.
Charles Dee Howsell, Director for Salt Lake County and Assistant for Salt Lake City.
Douglas E. Butler, WTPSC, Emergency Coordinator for A.R.R.L. and for A.R.E.C.

11. If you're an amateur, you belong in Civil Defense and A.R.E.C. Get your membership in order and take an active part with us in these drills.

Cordially yours,

E. H. Morgan
Director, Communications
Salt Lake City Civil Defense

or

## Modern Lightning Protection For Radio Facilities: Control Lines

Most communication facilities have a variety of unshielded control line wires used for antenna switching, sensor monitoring, antenna rotation, telephone service delivery, or other local functions. While these lines are a necessary part of overall station design, they also complicate matters from a lightning perspective because they offer multiple entry ports for large and potentially damaging EMP currents during storms. The same lines also couple into transmitted RF energy and often re-radiate the signal at ground level where interference is likely to occur.

Protection from both of these possible ailments is a necessity in modern facility design, and the best way to achieve such protection is in the station's bulkhead grounding system. Both protective and bypass devices can be easily fitted into the scheme if the lead length from the connection point to earth ground is kept short. The length of attached leads running to ground is far more important than the specific material used for the connections, but heavy copper wire in the size range of #12 or larger is recommended.

Here are a few reminders when feeding station equipment with control lines...

1 ) Make a map of the entire control line layout to assure that no lines are missed when designing protection schemes. Include the estimated length of lines between destinations and include overvoltage protection and bypass devices for any lines exceeding about 25 feet. Make the map in pencil so changes can be made easily and date the map for future reference.

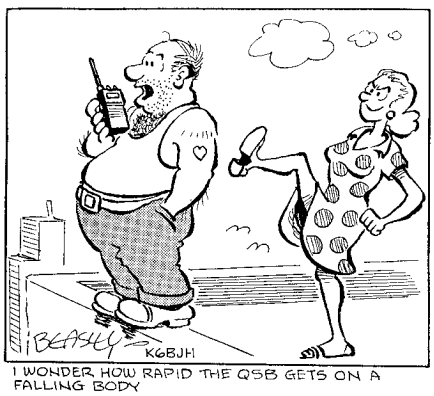
2) Try to keep control lines bundled together where possible but group them separately from RF transmitting coaxial lines. Coupling of RF signals into control lines can be severe if they are bundled together and run considerable distance due to coax cable shield leakage. It's best to run RF lines up one tower leg and attach control lines to another tower leg to help decouple the two.

3) The use of lumped inductance in control line leads is generally a good idea. An inductor should have the same wire size as is being used for the lead and a measured inductance of 100 uh or greater should be used. The effect from inductance in lightning protection is that it slows down the incoming wavefront from the reactance of the coil presented to the incoming wave risetime. In RF interference it acts like an RF choke to help stop re-radiation of signals. Bypass both sides of the choke for additional RF decoupling with capacitors rated to 1,000 volts or greater.

4) Installing rotator/control line protection devices provide an excellent method of shunting overvoltages to a grounding bulkhead termination. Always try to shunt all lines to a single bulkhead point close to where the connected equipment is located. If the station is elevated (2nd floor or higher) always bring lines to ground level first for the installation of protective and bypass devices, then route the cables upward to the equipment. Never run coaxial or control lines from antennas or towers directly to an elevated faci1ty. That type of layout has the very unfortunate effect of placing your delicate equipment chassis in series with any incoming lightning currents, possibly causing both damage and injury if you're hit.

5) It is generally a good idea if you can to install control line runs in conduit or buried plastic pipe . Not only does the pipe protect cables from weather but they are also protected from small animals (who like to chew on them) and the appearance of the facility improves!

Reprinted with permission from Industrial Communications Engineers, LTD. ❑




From "The Best of Beasley", Worldradio Books

I WONDER HOW RAPID THE QSB GETS ON A FALLING BODY

## Radio Direction-Finding ("RDF")

Radio Direction Finding (RDF) of signals is nearly as old as the art of radio itself. In the early days, not only was being able to communicate over long distances found to be invaluable, but so was being able to locate the source of such a signal, especially during emergencies. Although the technology has changed over the many decades, the essential elements of the techniques have not. Despite advances in technology, it is still largely up to the skill of the RDF equipment operator to sense out of the information gleaned from the RDF gear.

RDF for fun:

Amateur Radio has had a long history of RDF as well: It is not surprising that radio enthusiasts would make a sport out of their hobby as well. This sportmost often involves so-called "transmitter hunting" or "fox hunting" in which amateurs compete against each other (individually or in groups) to be the first to locate a hidden transmitter.

"Serious" RDF:

There is an aspect of RDF that goes along with the notion of "Amateur Radio Self-Policing." Amateur radio operators have largely looked out for each other: If an radio station unknowingly broke the law due to operating practices or due to equipment problems, he/she would often be informed of such an infraction by another amateur radio operator and the problemwould be solved quietly.

A matter more serious is the fact that some stations (amateurs and non-amateurs) also break the law, either inadvertently or maliciously: Occasionally a transmitter (amateur or commercial) will malfunction or be inadvertently keyed up (e.g. sitting on a microphone, etc.) causing interference to amateur (or other) services. There is also the (hopefully) rare individual that insists on operating in an unlawful manner.

It is at these times that RDF skills are invaluable. Being able to quickly locate and identify the offending transmitter (and/or operator) is important, especially if such disruptions have the potential of impacting communications that may be critical to life/safety.

RDF for fun and enforcement...

RDF can be great fun. A lot of amateurs (perhaps even you) get a kick out of using their wits and skills to be the first to locate a hidden transmitter (often called a "fox hunts" or "bunny hunts" -depending on your area...) These activities sharpen skills that may be called on to locate the source of illicit operations.

How do I get practice?

In theUtah area, DFing hasn't caught on to the extent that it has in some other parts of the country: There are occasional transmitter hunts sponsored by Salt Lake County ARES, or one of the ham clubs (e.g. the Davis County Amateur Radio Club has occasional DFing activities.) If your club doesn't do as much DF activity as you'd like to see, then by all means, be the one to "take the bull by the horns" and create some activity (in a legal manner, of course!)

One of the people that has been heavily involved with DF activities is Mike Mladejovsky, WA7ARK. With respect to DFing, Mike's specialty has been locating downed aircraft for the Civil Air Patrol and he has been directly responsible for the Utah team winning the national CAP DF competition on at least one occasion, using equipment of his own design. Needless to say,Mikehasappliedsomeof his talent to amateur-related DFing as well. Follow the link listed at the end of this articlefor information on how to build some ofMike's circuits.

What equipment do I need?

It might be instructive to help answer this question by giving a brief breakdown of three of the most common classes of DF devices:

Passive Devices: This class consists of antennas (beams of all types, verticals, and even rubber duckies.) Use of these types of devices require that the antennas (as in the case of beams) or reflectors (as in the case of the "body shield" method) be physically rotated in order to discern a change in signal quality that can reveal a bearing to the signal. This method also includes using the "signal strength method" (using received signal strength or attenuators) to determine how the proximity of the receiver to the signal source is changing. A possible disadvantage to this method is that as the signals get stronger, one must somehow attenuate the signals enough to be able to determine bearings of signals -something that may take additional equipment, or knowledge of how one's radio responds to strong signal. On the other hand, you probably are already equipped to do this sort of DFing!

Homing Circuits: This sort of equipment has an electronics package to help determine the bearing of the signal. Instead of relying on a peak (or a null) of a signal to determine its direction (i.e. with a beam) a pair of switched antennas is used to give a left/right indication - a particularly useful feature when one gets closer to the source and is likely to drive right past it. Unlike passive devices, these do not require that the users somehow attenuate the signal when one gets closer to the signal source. This sort of system still requires that the antennas be physically moved in order to discern a bearing. The circuits described on the web-page are of this type.

"Doppler Circuits:" These are considered to be the "ultimate" in DF devices. More complicated than homing circuits, these devices "electrically" rotate an antenna array, providing a direct readout of the bearing to the signal -even on very short transmissions. This is the type of system that can be interfaced with APRS (and similar) systems. The major disadvantage of this sort of system is that it is somewhat complicated (both electrically and mechanically) and can be expensive to purchase.

How I "do" Dfing?

Rather than duplicating effort, we'll defer to links by others who have already put together some fine❑ pages related to DFing:

The "Homing In" web page This page is provided by Joe Moell, K0OV, co-author of Transmitter Hunting: Radio Direction Finding Simplified -This book is recommended reading to anyone interested in DFing (and is usually available for purchase at the UARC meetings from the UARC "book lady," Fred Desmet. Fred can also be reached at (485-9245.) This page has not only "how-to" links but explanations of techniques, and calendars and results of events pertaining to DFing. Hudson Valley Direction Finding Association A group dedicated to direction finding activities in New York State. This has some "how to" information as well as some information on equipment you can get/build.

Clint - KA7OEI

*Links to the web-pages referenced here can be found on Clint's posting of this article: http://www.ussc.com/~uarc/rptr/UARC_RDF1.html* ❑

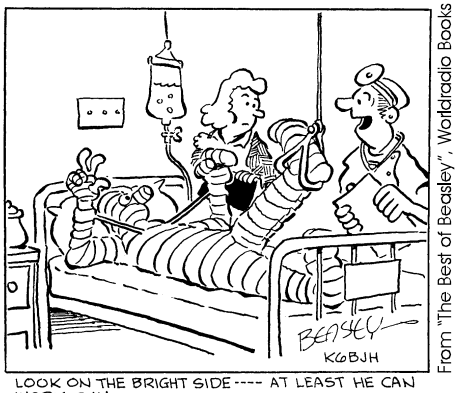
## FLASH - '62 Fails.

02-16-02

Sometime between about 1800 and 1900, the 146.62 repeater stopped repeating. Some quick checks with the personnel on the mountain indicate that the power supply and transmitter are working normally, but there has been a failure in the receiver, the cable from the receive site, the receive antenna, or the squelch logic.

Further diagnosis and repair will have to wait until we can make a trip to the mountain. Those trips aren't exactly trivial this time of year. Bad weather is predicted for the next several days. After that, we may be able to work out a snowshoe or snowmobile trip.

*Editors Note: This situation may possibly be cured before you receive this issue of The Microvolt but then again your '62 engineering team may be worn out from all of the Olympic activities and not want to attempt reaching the mountain top till Spring Thaw.* ❑




LOOK ON THE BRIGHT SIDE---- AT LEAST HE CAN WORK C.W.

## Bylaws Study to Commence

From time to time it is necessary to examine the UARC Bylaws and see if there are changes that could be made to benefit the club or to put the bylaws more in line with current practice. Ted Cowan, one of our committee members, has suggested it is time we did such a study, and the Board of Directors has concurred.

The most urgent item that needs attention is thematter of how dues are collected and by whom. The bylaws specify that dues will be sent to the Treasurer. However, over a decade ago, UARC switched to a practice used other such organizations. Dues are sent to the Secretary (who is charged with maintaining the membership list). He makes deposits in bulk and sends an accounting to the treasurer. This practice has worked much better than the previous one because it results in minimum delay both for checks to get deposited and for new members to get on themailing list.

The current bylaws can be read on the club website. Anyone who would like to serve on the Bylaws Committee should contact either Gordon Smith, K7HFV (582-2438, k7hfv@arrl.net) or President Mark Richardson, W7HPW (465-7650, w7hpw@arrl.net)❑.

## Take Our Survey

Our new Program Chairpersons would like to find out how they can give you what you want...uh, in terms of programs at the UARC meetings. Lauri McCreary, K7LMM, has prepared a survey form where you can let us know your interests and what kinds of things you would like to see.

These forms were available at the February UARC meeting and appear on the back of this issue of The Microvolt. Either tear off this sheet or better yet photocopy it (we assume that you are saving all your copies of *The Microvolt* to hand down to your grandchildren). Either bring the completed Survey Form to the next UARC meeting ormaildirectly to:

Lauri ("Mac")McCreary, K7LMM
1863 E. 10980 South
Sandy, UT 84092

If you haven't been able to use either of those methods to fill out the questionnaire and return it, another option is to complete it on-line.

Go to
http://www.xmission.com/~uarc/survey/survey.html, answer the questions and press the "submit" button. Help us give you the best possible programs. ❑

# Utah Amateur Radio Club Membership Survey - February 2002

Name:_____ Call Sign:_____

Amateur Class:_____

Are You still active in the hobby? ❑YES ❑ NO
If YES skip to **Special Interest** question and complete the survey.

Do you attend UARC meetings? ❑YES ❑ NO
If NO please answer the next two questions and complete the survey.

Why do you NOT attend the UARC meetings?

_____
_____

What would it take to get you to attend UARC meetings?

_____
_____

Indicate you **Special Interests** in amateur radio (check all that apply):

❑ Contesting
❑ CW
❑ Net Control
❑ QRP Phone
❑ Public Service
  ❑ ARES
  ❑ RACES
  ❑ MARS
  ❑ Other_____
❑ DX
❑ Phone
❑ Field Day
❑ QRP CW
❑ Homebrew/Porject building
❑ Digital Modes
❑ Awards
❑ Elmering
❑ Mobile HF
❑ EME
❑ Mobil Operation
❑ VE Activities
❑ Portable HF
❑ Ragchew
❑ Traffic Handling
❑ Satellite

Please list several suggestions for meeting programs:

_____
_____
_____

Would you be willing to participate in a program presentation? ❑YES ❑ NO

If YES indicate topics that you are willing to present or help present:

_____
_____
_____

Please list below any additional feedback/suggestions/complaints or kudos for the Club board. Feel free to offer any information that will help this year's board serve you ant the Club better.

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