



Radio Scouting

Radio Control & Ham Radio



Courtesy Antennas West - Jim - KK7C

Dave - KD7UM helps a scout with a HF contact at the '95 Jamboral



F-15 model in a low speed fly-by

Volume XLII Issue 3, March 1998

the MICROVOLT

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2684 Kenwood Street
Salt Lake City, UT 84106

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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 Exhibition hall located on the Salt Lake County Fairgrounds just south of Murray City Park.

Club membership is open to anyone interested in amateur radio; a current license is not required.. Dues are \$13 per year, including a *Microvolt* subscription. Those living at the same address as a member who has paid \$13 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 1998 Board - Partial Listing

President: Tom Schaefer NY4I	569-2664
Exec VP: Ray Allen N7TEI	963-0790
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
Asst Editor: Maurine Strecktenfinger KC7HOZ	254-1536

Note: Detailed listing of board members address's, phone numbers, and email address's will not appear in every issue. For current information either refer to the January '98 issue or to the club's web-page: www.xmission.com/~uarc □

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The Microvolt

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

Volume, XLII, Issue 3 March 1998

QST from the Prez

Fellow Club Members,

Another month has passed and the club is bustling with activity. Thanks to our wonderful volunteers, we are making great progress on the club station. Bruce is doing a bang-up job on *The Microvolt* and all is well on most fronts. There are a few items I hope to have accomplished this month, and maybe **you** can help.

The first item is the club station. We are actively finalizing plans to begin station installation at the Red Cross building at 5th South and 4th East in Downtown SLC. Alan Seyboldt, K7OPT, is leading this effort, so if you would like to get on the work team, give him a call.

The next item is the new meeting location. We are still working on a new location. There are several possibilities with the top of the list being a local school. If you know of some other possibilities, please check them out, and let me know.

The Scout-A-Rama is coming up on May 2. We will need operators to help at the Utah Fairpark on that day. Contact me for more information.

Field Day...We are still looking for volunteers for Field Day chairman. Most likely, we will hold the event at the Payson Lakes site. If you would like to be chairman, let me know. It really just takes some time and organizational skills. We already have a nice

committee forming, but they need is a leader.

On other subjects, ham radio is progressing nicely in the state. I noticed a large number of new hams at the February meeting. I'm glad to see that Utah's new ham numbers continue to climb even though the national average is falling. Keep up the good work. If you notice a place where you think we should have some club information (like Radio Shack, etc.), let us know and we will send you some literature. The best way to keep interest in the club and ham radio is to introduce new people to the hobby.

So remember, Field Day, club station, Scout-A-Rama, new hams; all these things need the help of volunteers. Please contact us if you want to help on any of these projects. With all of your help, we can continue to make this the year of Amateur Radio in Utah.

73,

Tom Schaefer, NY4I □

The Best Reasons Yet to Be the 1998 Field Day Chairperson

Well, we're almost three months into this year and as of this typing, there isn't a field day chairperson yet. Why has no one volunteered for this coveted position? If you are contemplating this position for yourself, or have someone you'd like to nominate, maybe this article will give you some incentive to help you get off the fence and do something. Though before you jump in and obligate yourself to this great task, there are a number of benefits that you should be aware of.

Benefit No. 1 *As the Field Day Chair, you can do no wrong!*

Just think of it. Everybody loves field day. They are going to have one on their own, if nobody organizes a group effort. You are coordinating a large group of people to get up in the middle of summer, pack up all their most precious belongings, and set up their electronic investments in the middle of nowhere. At such point, those same 'investments' will be subject to distressingly long amounts of use and abuse, in "less than ideal conditions." At the end of the long weekend, when everything is dusty, the group has only you to thank for the experience of a lifetime. The saying "the more the merrier" will work in your favor.

Benefit No. 2 *You can do as much, or as little as YOU want!*

Read through any amateur radio magazine and find just one article where someone complains that their group didn't do enough. In the articles, you will notice that any activity on field day is greatly appreciated by those that attended. No one says, "Gosh, I wish we would have set up 12 stations using bicycle generators." (12A) Those that participate in the annual ritual are impressed by any amount of effort put forth in the planning stages. One year I remember being grateful that someone remembered just the toilet paper! Comparative analysis is not something we do afterward.

Benefit No. 3 *Tinker, Tinker, Tinker.*

There is something that happens to us amateurs on field day weekend. All that

common sense we share during the rest of the year, it vanishes. If you've always wanted to try building a four element triple bazooka 160m vertical array, now is the time. Nothing is impossible on field day weekend, and better yet, the neighbors won't complain! If you're the tinkering type, this is the position for you!

Benefit No. 4 *Delegation!*

Everyone in the club. Let me repeat that. *Everyone in the club* is an eligible candidate for towing the porta-potties down to the campsite. Furthermore, anyone at the field day site is an eligible candidate for towing them back home! Needless to say, The power of delegation does have its privileges.

Benefit No. 5 *The Board supports you 100%.*

Above all you are the Ambassador of Fun. When approaching the UARC board, the high and exalted master of field day is treated as a foreign dignitary by the lowly members of the board. Those nice things you ask for are granted (with some prudence, of course) as if time stood still and all existence hung on the balance of granting your wish. (For those of you with teenagers at home, I highly recommend you consult your doctor prior to accepting this position. UARC assumes no liability for the shock of "asking for help and then receiving help.")

Benefit No. 6 *Membership has its privileges.*

The primary reason that the Field Day Chairperson is not a standing Board member is that the general membership admires you. You are the Grand Pooba of Fun. In the months that follow the 'weekend of RF emission', more people will greet you at the meetings than all the other board members combined. Your knowledge and expertise will be called upon to clarify the finer points of club policy and government.

Benefit No. 7 *You're in-laws will finally think you've made something of yourself.*

They might not understand all this radio stuff, but they'll figure you must be important because everyone wants your opinion.

Benefit No. 8 *You make the rules.*

Of course, the ARRL has a few that we must adhere to so we may remain in harmony with 'the spirit of the day', but after that you're it.

Featured Member of the Month

The only thing that we have done out of tradition is, it's kinda nice if everyone leaves their clothes on while operating the radio. But hey, YOU are writing the rules!

Benefit No. 9 *You are initiated into the UARC Royal Order of Field Day Chairs Fraternity.*

By far this is the greatest of all the benefits of being a chairperson. For the rest of your life you hold a permanent place at the night time get-warm-by-the-fire circle. There you will continue to become enlightened with the company of other former chairs, basking in the brilliant light of knowledge, while the remainder of the attendees stay at a distance. Many shall follow in your stead, wanting, hoping that someday, they too, may join the ranks of the truly great and gifted!

Benefit No. 10 *Even the board stands in wonderment of your position.*

I can honestly say that in the times I have been the Field Day Chairman, the UARC board, and all the club members, are totally there to support you. Whatever you need or desire to make happen can be accomplished with very little effort on your part. Many times just prior to the big day I received calls from people I hardly knew, offering assistance to me. The first year I chaired, I brought nothing to the field day site, simply because everything that needed to be taken up, had been by members who have since become some of my closest friends. If you have ever thought of becoming the chairperson for field day, do it now. There is not a better radio club anywhere, where this much support will be at your disposal.

One final thought. If any of you no-codes want to try this hat on for size, go for it! The first year I chaired the committee, I too was a no-code tech. If you are indeed interested in becoming the 1998 field day chair, contact any member of the UARC board. There is still plenty of time for you to groom this field day into anything you want. The longer you wait, the less latitude there will be to plan.

73 and happy hamming,

Ray, N7TEI □

John Dinkleman, KC7AW, or "Dink", has been an amateur radio operator since 1956. Before he received his license he enjoyed listening to hams from all around the world on a Hallicrafters S-38 general coverage receiver. One day he saw a sign posted about Ham lessons given by Bob Bradley W7LKM. Bob later became his elmer. Dink continues to be very active in amateur radio. He is a member of UARC, MARA, ARES and participates in parades and Boy Scout events. He loves emergency communications and likes to help when needed. He says this is his way to help pay the rent for the use of the frequencies.

Dink is also a VE and works with Gordon Smith K7HFV at the test sessions. He has been the net manager for the Utah VHF Society Tuesday night net for 6 years. His favorite modality in amateur radio is teletype.

Dink got the opportunity to operate from the Marshall Islands with the call sign V73JD. His son was stationed on the Marshall Islands with the US diplomatic corps. Dink told his daughter-in-law that if she would get her ham license he would buy her a complete station. She studied on her own with a computer and the book *Now Your Talking*. She flew to Hawaii to be tested and obtained her general class license. Dink said it was a real pleasure having that kind of DX. He also took the opportunity to visit and operate from Yugoslavia and the Netherlands. When Dink visited his son, who would be stationed at various US embassies, Dink would obtain a license to operate in the respective countries.

Dink retired from the US Army as a Chief Warrant Officer in the Army Marine field as a deck officer (US Army vessels). He has 35 years federal service. After discharge from the army he worked for 10 years as a machine shop supervisor at the Utah State Prison.

Dink, we appreciate your contributions to amateur radio.

73 N7HVF Linda Reeder □

A Blast from the Past

In his book *200 Meters and Down*, Clinton Desoto describes a radio club in Salt Lake City as the very first organization of its kind. That organization was formed in 1909. It is possible that UARC's roots go back to that organization.

Is it possible that organization may have been the "old Utah Radio Association" referred to in these UARC minutes of August 27, 1928 and amalgamated with UARC as an outcome of this meeting? Mr Desoto refers to the "Salt Lake Radio Club". So what became of it in the intervening 18 years and is there a connection to "the old Utah Radio Association"?

The records extant show that the Utah Amateur Radio Club was formed under its current name in 1927. The club still has records containing the minutes of the first meeting. UARC became affiliated with the American Radio Relay League in 1928 as seems to be evidenced in these minutes.

MINUTES.

Aug. 27, 1928.

Special meeting at the instance of Mr. Huber, asst. to Comm. Ugr. A. R. R. I. held at the residence of Mr. James, GPJ.

Meeting called to order 8:20 PM. Mr. McRae, President acting Chairman.

By unanimous vote of those present the chair was turned over to Mr. Huber.

Parley James was officially installed as SW for Utah and Wyo. Having received the greater number of votes over Harold Bradford in the election just terminated.

Following a general discussion of 1928 type transmitters Mr. Huber addressed the meeting on the subject of league Policies and 1928 conditions, as anticipated by Headquarters.

Mr. McRae's motion making the meeting an official meeting of the Utah Amateur Radio Club was unanimously adopted.

Mr. McRae announced his resignation as President due to his change of residence to California.

Louis D. Stearns and Harold Bradford were nominated for the office of President. On the first ballot the candidates were tied, both receiving the same number of votes. On the second ballot Harold Bradford was elected President. The candidate receiving second number of votes to become Vice-President. Mr. Huber nominated Frank P. Newman for Secretary. No other nominations were made.

Heber Nelson expressed the desire of the old Utah Radio Assn. to amalgamate with the U.A.R.C. Mr. Nelson was appointed to secure the necessary action by the old Assn., to merge the two clubs. All funds in the treasury of the U.R.A. to be transferred to the treasury of the U.A.R.C. and all members of the U.R.A. to become members of the U. A. R. C. on completion of the merger. These motion were unanimously approved.

A vote of appreciation was extended to Mr. McRae for his work in operating and organizing Amateur Radio in Utah, also to Mr. Huber for his activity with us.

A general discussion followed.

Meeting adjourned 10:30 P. M.

Am.

□

The Book Lady's Corner

Fred, KI7KM, our Club's "Book Lady" will have two new releases from the ARRL which we think will interest a number of the members. These will be available for sale at the upcoming Club meeting.

AMATEUR SATELLITES

The American Radio Relay League is pleased to announce publication of a new book, *The Radio Amateur's Satellite Handbook*. The most comprehensive book ever written on the Amateur Radio satellites, it will become the new standard for ham radio operators who want to experience the thrill of contacting other stations through an orbiting spacecraft.

The author, Martin Davidoff, K2UBC, also wrote the League's previous satellite book, *The Satellite Experimenter's Handbook*. First published in 1984, this book was the most authoritative source of practical and theoretical information available on the ham satellites.

The Radio Amateur's Satellite Handbook covers every aspect of the amateur satellite program:

- tracking (with the emphasis on software and how to use it),
- station equipment and antennas,
- the unique aspects of the analog and digital ham satellites,
- operating tips and techniques, and
- complete details on current and future ham satellites, including extensive coverage of AMSAT's Phase 3D.

In addition, *The Radio Amateur's Satellite Handbook* covers the SAREX (US Shuttle amateur in space) program and operation from the Russian, space station Mir Appendices include a list of the dates and frequencies of all amateur spacecraft beginning with OSCAR I in 1961, a summary of amateur operation from space, detailed profiles on all the active amateur spacecraft, computer programs to aid in tracking, Internet sites of interest, amateur-satellite-related FCC rules and regulations, and graphic tracking aids. Sample problems help the reader solve exercises involving satellite orbits and tracking.

Perfect for beginning as well as experienced satellite enthusiasts, *The Radio Amateur's Satellite Handbook* will be indispensable for anyone interested in space communication

The Radio Amateur's Satellite Handbook; Martin Davidoff, K2UBC; \$22; 372 pages; Feb 1998.

RF RADIATION SAFETY BOOK

The American Radio Relay League is also pleased to announce publication of another new book, *RF Exposure and You*. The Federal Communications Commission recently put into effect a new set of rules designed to ensure that Amateur Radio operators, their families, neighbors and passersby are exposed only to low levels of radiofrequency energy. This book explains the rules and provides simple worksheets to allow hams to determine if their stations are in compliance with the new rules, and if not, how to modify the station or antenna to comply.

RF Exposure and You contains eight chapters and five appendices. A set of instructions in the first chapter allows a ham to determine, quickly, and easily, what if any action must be taken to bring the station into compliance. Later chapters include a review of the basic electromagnetic theory upon which the rules are based and a plain English explanation of the rules. The complete text of the new rules as they apply to ham radio is included in an appendix.

Other chapters reprint pertinent sections of the FCC documents that explain how the rules were formulated. If an evaluation for compliance must be made, another chapter shows how to determine compliance, or how to bring a station into compliance. To simplify this process, a comprehensive set of tables is included. Finally, appendixes contain a list of additional resources and FCC information sources, primarily on the Internet.

RF Exposure and You; \$15; Feb 1998

Fred - KI7KM ☐

UARC Website News

The UARC website now contains three new features. The first is *The Microvolt* is now available online. You can find current and past issues from the homepage at <http://www.xmission.com/~uarc>. You will see a link to *The Microvolt* homepage. Try it out and let us know how you like it.

Additionally, the entire membership roster of UARC is available online. Any information that you have supplied to the club is available including address, home phone, and work phone. Again, you can find this via a link on the homepage. If anyone would like some information excluded, or to be omitted entirely, please let Russ, the club secretary, know. He will be glad to remove you from the web database.

Also, the plans for the club station are available online. This includes a map to the building, plans of the installation, equipment lists, and pictures of the site. Again, look for the link on the home page about the club station.

Tom Schaefer NY4I ☐

Other Club News

Elko ARC Nevada

The Elko A.R.C. advises that it has implemented a 100.0 Hz CTCSS (PL) tone on its 147.21 MHz repeater, to solve chronic intermod problems. Those traveling through Nevada on I-80 will want to make note of this change and program their rigs with the new tone.

The Elko club is ARRL affiliated, and supports repeaters in Wells NV: 146.96, Elko NV: 147.21+ (100.0~) and 444.95+, and Battle Mtn NV: 146.91. They hold a net for the Northeast NV ARES, 19:30 PST Wednesdays on 147.21 & 146.91. The Club meets 3rd Monday each month, at the High Desert Cookhouse, Spring Creek Shopping Center, Elko, 19:00 PST. Their web site can be found at: <http://members.tripod.com/~nhpk9/earc.html>. Contact: Ron Russell KG7OR, (702)738-7474, email: russell@sierra.net. Club U.S. Mail: Elko ARC, P. O. Box 5607, Elko, NV 89802.

Tnx & 73 Ron Russell, KG7OR
Russell@sierra.net ☐

RADIO SCOUTING



In the US it is estimated that 250,000 past or present scouts or scouters are active in Amateur Radio. The scouting community has uses for Amateur Radio as a primary means of communications for tens of thousands of hours of community service projects across the US as well as health and safety for hundreds of thousands of hiking, camping, and touring Scouts.

The 1997 Jamboree

(Jamboree: A national or international camping assembly of Boy Scouts) The National Boy Scout Jamboree is held every four years for 8 days at the end of July and first of August at Ft. A. P. Hill in Virginia and involves more than 30,000 scouts and leaders from across the nation. Quoting Mike Brown, WB2JWD, a scouter: "Who could forget the *Mir* pass? I remember walking to the tent at 4:30 in the morning, expecting a few dozen scouts at the most, to find 200 people waiting on the grass. All I could think was "what if this thing doesn't work?" But it did, and when we heard the voice of Mike Foale, the American Astronaut on *Mir*, calling us as the station rose above the horizon, it was one of the most exciting things I've seen in nearly 30 years of ham radio."



Courtesy ARRL

Mike goes on to report that during the Jamboree 357 scouts earned the Radio Merit Badge. By the fourth day, Station K2BSA had worked all states. By the last day K2BSA had also worked 64 countries, as well as the *Mir* space station.

K2BSA operators monitored the Jamboree repeater 24 hours a day during the Jamboree. A number of emergencies were reported during the week, from bicycle accidents, heat prostration and sprains to missing scouts and lightning storms.

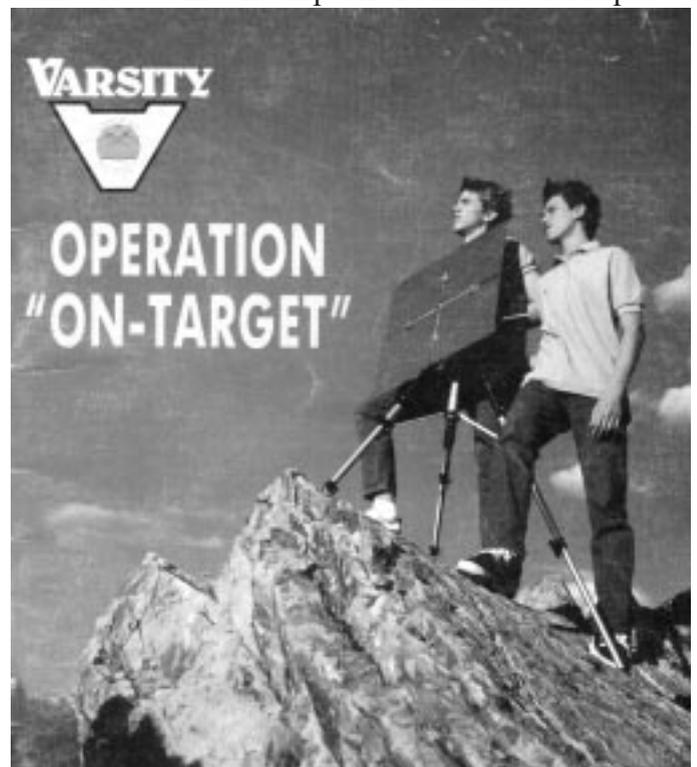
Jamboree-on-the-Air

The Jamboree-on-the-Air (JOTA) is an annual event in which scouts and scouters all over the world speak to each other by means of amateur radio contacts. Scouting experiences are exchanged and ideas are shared via radio waves. JOTA is organized to coincide with the third full weekend of October each year. The event starts at 00:00 hours local time on Saturday and concludes 48 hours later. This year it will be on the weekend of October 17 and 18- beginning at midnite Friday, October 16.

The Davis County Club under the leadership of Gary Smith, KC7IHZ, has undertaken a project to make this a Club sponsored event. The event is in the form of a campout in Clearfield and is now in its fifth year. DARC had multiple HF and VHF positions, and were able to give each scout the opportunity to talk to someone. They also ran a Radio Merit Badge Class with 106 completing the requirements. They attracted over 250 scouts and scouters for the '97 JOTA and are expecting more in '98..

Operation on target

Varsity Scouts (14 to 18 years old) on the third Saturday in July conduct Operation on Target. The team selects a mountain peak or other elevated spot



Courtesy Great Salt Lake Council of BSA

from which to signal other teams using mirrors. Many of these teams take "hams" with them to help coordinate locations of other groups and to confirm contacts. Every year there are units that go without "hams" because they can't find one.

ARRL

The ARRL (American Radio Relay League) supports the Scouting Program. Mike Brown WB2JWD (the ham at the National Jamboree) wrote the Radio Merit Badge Pamphlet for the BSA and the ARRL staff serve as technical advisors for the publication. If you are interested in becoming a Radio Merit Badge Counselor, the ARRL will help with ideas and materials. For more information contact them at 225 Main St., Newington, CT 06111.

Radio Scouting and You

Many hours are spent by members of UARC serving the scout programs in the local and surrounding areas and we congratulate those members, but the scouting program needs more help.

The ARRL lists these 5 steps to become a Radio Scouter:

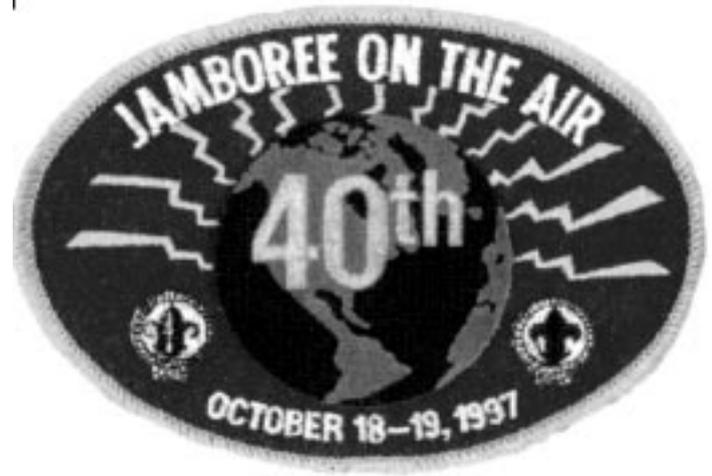
1. Register and serve as a Radio Merit Badge Counselor.
2. Set a personal goal to help 10 Scouts earn the merit badge this year.
3. Publicize Amateur radio in scout troops in your area
4. Assist scout units in any activity where your special skills are needed.
5. Develop a plan to achieve these goals

The ARRL has posted an excellent Radio Scouting Handbook on its web-site which is certainly worth visiting and downloading. Set your browser to: <http://www.arrl.org/ead/scouthbk/> or send an 8 ½ x 11 inch self-addressed, stamped envelope (SASE) with 78 cents of postage, to ARRL, Educational Activities Department, 225 Main St, Newington, CT 06111.

QRT

Watch the Mircovolt for up coming **Radio Scouting** events.

73 Keith - KI7SL □



When I first found out about Jamboree On The Air (JOTA) I quickly realized what a great opportunity this was for having a positive influence on the lives of Scouts. When Scouts want to meet young people from another country, they think of attending a World Jamboree. But few people realize that each year more than 400,000 Scouts and Guides "get together" over the airwaves for the annual Jamboree On The Air (JOTA). JOTA offers Scouts the exciting opportunity to make friends in other countries without leaving home.



I took this project on some four years ago, along with several good people that are on my committee (The Davis County JOTA Committee). We have made it an extremely successful and effective event which has provided an exposure to Amateur Radio which young people and their leaders would be unlikely to have otherwise. We took the bull by the horns, dug in our heels and made this one of the neatest events that anyone could be involved with.



I started four years ago by asking a couple of hams from the Davis County Amateur Radio Club if they would help me set up a small station in the church parking lot behind my home here in Kaysville. As a scouter, I was not even a licensed ham at the time. From that point in time in 1994, JOTA in north Davis County has grown from approximately eight Scouts to approximately two hundred and fifty Scouts and leaders taking part in JOTA in Davis County in 1997.

Scouts and scouters, amateurs and nonamateurs enjoyed the thrills of communicating by voice, digital, morse code and RTTY via HF and repeaters to others, doing the same in Mexico, Canada, Japan, Australia, many of the states such as Alabama, Georgia, New Mexico, Ohio, Minnesota, Arkansas, Montana, Indiana, Texas, Virginia, Hawaii and others.



What is most appealing about all this? Two years ago we started a Radio Merit badge course at JOTA. The Radio Merit badge is one of the most difficult for a scout to achieve. In 1996 we issued 26 blue cards for this badge. In 1997 we issued 106 blue cards for the badge! A 400% increase over the previous year! The Trapper Trails Council Scout office people probably wondered what happened all of a sudden to get that many Radio Merit badge requests.

The committee and I see this event in many different ways. On a personal level one realizes what a person can do if he or she is willing to do something, set a goal and then determine the means to achieve it. For some just the focused positive exposure to ham radio for a large number of scouts and leaders has been very rewarding. The team effort involved was essential for the projects success, without team effort not much will happen. Central to all of this is the fact we are helping youth to learn and grow, youth who will be future fathers and mothers, citizens and community leaders. If we set the example today then our sons and daughters can be the role models in the future. There are many more that I could relate to you and I am sure that upon an interview with those that have helped me with JOTA that you would get many neat remarks.

I think it was a very exciting weekend event for everyone who participated. I did not hear one sour note or remark from anyone.

There are already volunteers who want to help with the DARC JOTA 1998. How about you? Mark your calendars now with the dates October 16 and 17, 1998 with one big word JOTA. I will be most pleased to take your name and phone number any time between now and Oct. 16 and 17, 1998. Don't wait until it is too late.

Gary KC7IHZ □

Editors Note: We will publish in September's issue of *The MicroVolt*, a listing of some of the international and national JOTA stations you might want to work along with a listing of the HF frequencies.

For those in The Great Salt Lake Council area who would like to be involved locally in JOTA, Eugene McWherter, N7OVT, is organizing an activity in the Salt Lake Area. Please contact Eugene directly at 484-6355. By the way, Eugene will be honored by the Great Salt Lake Council with the Silver Beaver Award on March 17. Eugene indicates that Amateur Radio has played a significant role in his scouting. □

Radio Control of Model Aircraft

or

From combat missions in F-100's to flying scale model Radio Control Aircraft*.

Radio lets us communicate without wires over distances, both long and short. This includes data communication as well as voice and picture. An outgrowth of “not having to run wires” sparks our imagination to extend our abilities to many things. Controlling models over a distance lets us vicariously experience the thrills of “Top Gun” without actually having to subject ourselves to intensive training, heavy “g” forces, extremely large bank account expenditures, or the dangers of hitting the ground at high velocity.



Float plane starting takeoff run on Utah Lake

Modelers of all sorts construct cars, tanks, dune buggies, boats, ships, hang gliders, jets, old time aircraft, scale models, just fuselages with wings – even submarines. Some model railroaders use radio to control their layouts. With model aircraft, we use



Inverted pass over Utah Lake at a Float Fly

our imagination to accomplish a variety of challenges whether it is simply us against the elements, or pitting pilot against pilot. One of my favorites is a closed course race of up to four aircraft circling a closed course for ten laps. This pylon racing emulates a long history of aviation racing dating back to the 1920's. The adrenaline flows, the heart pumps fast, and a tremendous feeling of adventure flows through the body as pilots use every skill at their disposal to outdo each other.

Another of my favorites is called the Fun Fly. Each pilot performs a maneuver against a set of specs and is graded. The high score wins, yet everyone who flies wins by increasing their flying skills. Some Fun Flies have a spot landing contest, some count the number of loops or rolls or landings a pilot can do within a specified time limit. Others drop bean bags as bombs, or require rolling doubles with dice before taking off, or landing on specified parts of the runway five times to “build” a poker hand. One especially demanding event was to fly as high as one could in 30 seconds, stop the engine, then glide as long as possible. Nearly everyone brought a racing plane and flew straight up. We had to decrease the time to 20 seconds to keep from flying out of sight. The winner on that one stayed in the air for 3 minutes and 45 seconds.



RC Helicopter picking up a simulated load with the landing skids

Planning, building, and vindicating aircraft designs are just as much a part of modeling as flying, And all aspects of the hobby can be enjoyable. You only need to select the one that interests you to join in the adventure. But radio is an integral part of much of this hobby. We don't “talk” to the airplane in the conventional sense. The radio link transmits data between the pilot and the aircraft. The transmitter senses control position and movement from the various control sticks, switches, and potentiometers; uses these positions to adjust the width of the pulses in the pulse train; modulates the pulse information; and

sends it to the aircraft. Some of the more expensive units use 1024 discrete digital bits to define the position of each control sent to the aircraft. Both AM and FM modulations are used, with FM being the more reliable, more widely used, and of course more expensive.



Excalibur Helicopter hovering in Milt's backyard: 54 inch rotor blades, 10.5 lbs.

The aircraft receiver separates the data from the incoming signal, synchronizes the pulse train to determine which data goes to which aircraft control; sends the pulse width information (or digital bits) to a servo actuator for each control (throttle, elevator, Aileron, rudder, bomb release, retractable landing Gear, etc.); then waits for the next pulse train to come in. The pulse trains are typically 1500 milliseconds



100 inch wingspan sailplane for soaring in thermals

long, with pulses varying from 100 to 200 ms in length following the synch pulse. The actuators are geared motors with electronics that match the position of the motor with the width of the pulse received, so that the actuator position is fully proportional to the position of the control on the transmitter. If you really enjoy the intricacies of the electromechanical interfaces, there is virtually no limit to what you can control – lawnmower, snowblower, etc. (spouses excluded).

Frequency allocation for model use includes part of the 6 meter ham band (license required of course – technician) 50 and 53 MHz, plus unlicensed 72 MHz and 75 MHz. The 72 and 75 MHz are sets of 10 kHz spaced discrete frequencies allocated just for models. The 50 MHz frequencies are older allocations spaced 100 kHz apart starting at 50.1 MHz, while the 53 MHz frequencies are a newer allocation with the 10 kHz spacing. Needless to say, modelers would appreciate any voice operations staying off these frequencies. A 50 pound model at 100 mph experiencing interference can be a deadly, uncontrolled missile. Even a three pound model at 150 mph, or even 50 mph can do considerable damage.

Models are always planned to be flown within sight of the pilot (more than a few have gotten away though) because of the eye-hand-radio link coordination necessary. If you can't see it, you can't properly control it. The transmitters are nominally 750 milliwatts into the final, with an operable range on a well-tuned system of 1.5 miles. A six foot wingspan at 1 mile is just a tiny dot. However, following a plane in a car, while controlling it at the same time in a long distance cross country race gives you an appreciation for the coordination, reliability, practice, proficiency, vagaries of weather and winds, and the thrill of being in the wild blue yonder instead of comfortably sitting in your shack trying to copy a weak CW signal. This could be the change you need to bring some new adventure into your life.

Good Flying!

Milt Sanders - KJ7KP

* Milt flew T37's and T38's in pilot training, went on to F100 Super Sabre for his Vietnam 251 combat missions; came back to the T38 as an instructor pilot for 4 years, flew the T39 Saberliner for awhile, then went to the A7 Corsair II. He got a couple rides in a Navy TA4J, F101 Voodoo; both the Hughey and Husky helicopters; a C45 and a C47. □

R/C Aero ATV

Near the end of January, 1996, Clint (KA7OEI) and Gary (KK7DV - KB7EEC at the time), with the aid of a lot of duct tape and rubber bands, strapped a B&W CCD camera, a transmitter, antenna, and batteries to an R/C airplane. Clint supplied the ATV gear, while Gary provided the airplane "Knight Hawk" model by U.S. AirCore. It is described with some specifications <http://www.usaircore.com/airplanes/usaa2020.htm> The wingspan is 64 inches and although the recommended engine size is .40.51 2stroke, Gary had installed a .60 size 2stroke engine, an O.S. Max FP60. Another important contribution from Gary was the skill to fly it (and land it, too!)

One of the landings (with the camera and ATV transmitter on board) was short of the runway! But, Gary was flying very slowly with help from flaps and the airplane bounced and flipped upside down and was not damaged. We have to be careful when we're flying with a relatively heavy load like this one.

We flew at the Jordan River Parkway Model Port, which is a Utah State Park and just northeast of the 2200 North exit of I-215. Salt Lake International Airport property is on the other side (the west side) of the freeway. It is not known to what altitude the plane flew. Gary said the he'll definitely have to use his altimeter next time..

The Radio Control (R/C) used was Futaba FPT6NFK radio design using FM on 72 MHz R/C channel 57 (72.930 MHz). Some R/C control radios use AM and some use PCM (Pulse Code Modulation). Most R/C radios are crystal controlled, although there exist some frequency synthesized models which cost around \$1500.



The R/C plane with ATV gear taxiing

On this day, we didn't get started until late in the afternoon. For starters, we decided not to put Clint's Color (expensive!) CCD camera on the plane until we



Gary with the aircraft

knew how it would handle and opted instead to tack the cheaper (and lighter) B&W camera onto the bottom of the fuselage. Even though various repairs on the transmitter weren't complete (i.e. it was running at a fraction of it's normal power) the system worked fairly well.



The R/C airport from above

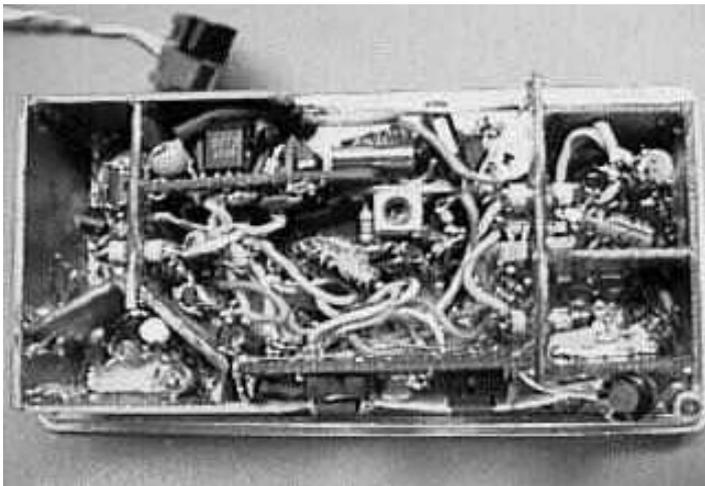


A view of the valley at sunset



A look outside the 33cm FM ATV transmitter

The transmitter used was a synthesized homebrew 33cm transmitter, complete with audio subcarrier generator, capable of over 200mW output over a 10-15 volt range.



A look inside the 33cm FM ATV transmitter

The entire system was powered by 10 rechargeable alkaline batteries mounted, along with the transmitter, in the "bomb bay" of the airplane. A simple quadrafilar helix was used for transmitting to reduce "dead spots" due to antenna pattern nulls and crosspolarization.

For receiving, an old 70 MHz satellite receiver, with 12 MHz bandpass filter and IF amplifier, in conjunction with a Radio Shack "TV Rabbit" type receive converter. In front of the converter was a MAR6 MMIC preamplifier (NF of about 3db.) The receive antenna was a 4 1/2 turn helix antenna, wound to match the polarity of the transmit antenna. Tracking of the aircraft was done manually: One simply pointed the receive antenna in the direction of the aircraft and got a signal. An 8 MM video recorder was connected to the receiver to record the video (and audio) from the airplane.

Next time we plan on using my new 6meter (Ham) control transmitter on 50.880 MHz, and I could even put my altimeter watch in the cargo bay and get a good altitude reading. We would like to fly over Canyon Country (down around Moab). That'd be fun.

Clint Turner - KA7OEI

Gary Crum - KK7DV □

March Meeting - How to Participate in Emergency Communications

Hams throughout the world have been noted for their ability to rise to the occasion when an emergency occurs. During the aftermath of Hurricane Andrew, the Loma Prieta earthquake, the recent ice storms in the east, and numerous similar occasions, they have put in countless hours providing communications when normal channels were not available. But, for some reason, many hams are much less eager to prepare for an emergency than participate in one. Sometimes this lack of preparation has been disastrous.

At the March 5 meeting of the Utah Amateur Radio Club, Susan Boman, AA7HD, will make a presentation telling how amateurs can prepare themselves and their equipment for an emergency and why preparation is important. Susan represents the Salt Lake County Amateur Radio Emergency Service (ARES). ARES is part of the field organization of the American Radio Relay League, and has chapters throughout the country.

Salt Lake County ARES has been very active in recent years and has had many successes assisting various agencies. Come hear what they have learned. Find out what you can do so that you will be an asset rather than a liability in time of emergency.

UARC meetings are held in the Little Theater building in the Salt Lake County fairgrounds on the first Thursday of each month (except July and August). Neither the building nor the street is marked with a number, but the address is approximately 5150 South and 150 East. Follow the sign that says "Square Dancing". This meeting place will be changing sometime before fall of 1998, so watch this page for more information.

Gordon K7HFV □

How to Conduct a Noise Audit of Your Shack

The success of all receiving operation, regardless of frequency or application, can be defined as the pursuit of a single goal - maximum signal to noise ratio. The larger the signal and the lower the background offending noise the better the reception.

Unfortunately, the strength of the received signal is, for the most part, a fixed quantity. With the antenna and receiver in use not much can be done to improve the delicate balance between signal strength and atmospheric noise.

But there is another type of noise that is all-too-common in the modern receiver setup, and it may be described as environmental noise. This is a type of noise that is usually wide spectrum, amplitude modulated (AM), and locally generated. It is especially a problem of the modern computerized world. Environmental noise is caused by local arcing connections on AC power lines, computer "hash" type noise emitted by typewriters, fax machines, television sets, VCRs, heating & cooling systems, and just about anything else electric in the home or office. Most of the noises do not travel a great distance but can cause harmful effects to radio reception and can be difficult to find and correct.

We have seen many sad cases of environmental noise. Station owners purchase expensive, delicate receiving equipment costing thousands of dollars and then suffer poor performance because of local noise generated on their own property or from a nearby source. So here's a simple, almost costless method of hunting down these insidious noise gremlins. It's cheap, easy, and you may even enjoy the "hunt".

Put a PL259 or other connector on about 50 feet of RG58 coaxial cable. On the other end of the cable fray back the ends, cut back the shield, and attach about 18" of wire to the center conductor (clip leads work well). What you have created is a simple sensing antenna. Connect the cable end with the connector to a receiver that covers the 25 to 50 Mhz. frequency range, select a clear channel in that spectrum area, and place the receiver in the AM mode. Then move around the house or property with the sensing antenna and listen for noises -in the receiver. Moving the sense antenna near electrical appliances will be very educational. It's almost hard to believe how much noise is generated by the

computer in a fax machine or other computerized devices. And fluorescent lights can be nightmarish! Best bet if you're a serious listener issue a total ban on fluorescent lightning for as far away as you can dictate or negotiate. Fluorescent lights are based on an arcing principal and are real bad offenders.

Fixing noise problems in your own home or office is usually not difficult. Installing EMI filters on AC power leads of computerized devices ordinarily stops the AC line cord and house wiring from acting like a transmitting antenna for the noise. Commercial telephone RFI filters work well to prevent the same effect from fax machines. Just about any grounding, shielding, or filtering methods are helpful if you're after a secure, noise-free environment. And remember - those generated noises only have to transmit the distance between the noisy device and your receiving antenna, and that may be only a few dozen feet!

Power line noises must be repaired by local electric company workers, but most power companies accept noise complaints and deal with them internally. Finding the noise source yourself with an AM radio in your car or handheld unit is a big help to getting quick service. Keep in mind that an arcing high voltage line connection is both a point of power (and revenue) loss for the company as well as a fire and/or service loss hazard. Be sensible-take noise reduction just as seriously as you take receiver choice, antenna choice, or any other facet of good station design.

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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 □

UARC 1998 Meeting Schedule

March 5	How to Participate in Emergency Communications
April 3	Ham Radio at the Friendship Cruise
May 7	How does FM really work
June 4	Field Day's Past Slide Show and Preparations for this year' FD
July 18	No Meeting - Steak Fry
August	No Meeting
September 3	Swap Meet
October 1	Greyline Propagation
November 5	Home Brew
December 3	Elections and planning for 1999 □

Little Farnsworth Repeaters off the Air

On Monday, February 2, five amateur repeaters were turned off. The repeaters were all located in the Oquirrh Mountains on a site called "Little Farnsworth". The problem apparently involves a dispute or misunderstanding between the amateur groups involved and the landowner of the site. At this time it is not clear whether an agreement can be reached, but it is possible the repeaters may have to be relocated and may be off the air for some time. The affected repeaters include:

- 146.94 (Utah VHF Society)
- 146.88 (Salt Lake County ARES)
- 449.9 (Salt Lake County ARES)
- 224.78 (Operated by KD0J)
- 449.125 (9600baud packet repeater)

The weekly Utah VHF Society Net, normally held on the 146.94 repeater, is now being conducted on UARC's 146.62 repeater. This net meets each Tuesday evening at 8 P.M. Mountain Time.

Gordon Smith, K7HFV □

The Joys of QRP

Before a UARC board meeting at Gary Openshaw's

place last year, Gary asked me to come and look at his radio. As I walked into his shack, I saw an **interesting** assortment of equipment. On the desk, was a small box with an analog (non-digital, for the newcomers) dial. It was a single band QRP (low-power) radio with a single straight Morse code key connected to it. Now, I have operated some massive stations in the past. From 40 foot crank-up towers with tri-band beams, to 6 element monster beams on 100 foot towers, and I have enjoyed the thrill of calling stations in far off lands only to be answered after my first call. But the thrill of calling CQ on this 3 watt radio hooked to a simple wire dipole **and** receiving a reply, cannot be matched in my 17 years of operating. Through the noise of the 40 meter CW band, a California station answered my CQ. We had a nice little chat about our equipment and the weather. We continued to chat for a while, but then I was called back to the meeting. I will always remember this contact because it was a real challenge to make and finish. As you can imagine, a 3 watt station faces quite a bit of competition when faced with 1000 watt monsters with highly-directional antennas. A contact like this offers tremendous satisfaction. I highly recommend it to old and new Hams alike. And for those that say it costs too much money to get on HF, I think the total cost of that station was probably \$50 dollars including the antenna. Happy Hamming.

Tom Schaefer, NY4I □

Wasatch Front Amateur Radio Examination Schedule for March

03/04/98 (Wed.) Farmington
Contact: Brent Thomas, AC7H
Phone: H 292-8110 B 538-3700

03/18/98 (Wed.) Provo
Contact: Steve Whitehead, NV7V
Phone: H 465-3983 B 225-5200

03/31/98* (Tue.) Salt Lake City
Contact: Eugene McWherter, N7OVT
Phone: H 484-635

*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> □