


Mike Collett, K7DOU, gave us a presentation on Direction Finding.

Volume 48, Issue 5, May 2005

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The

Microvolt

Please Send Dues to:
UARC
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1732 Woodside Drive #32
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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.

Meetings: 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 University of Utah Engineering and Mines Classroom (EMCB) building, Room 101.

Membership: 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. Send dues to the Club Secretary: Dick Keddington, KD7TDZ, 1732 Woodside Dr. #32, Holladay, UT 84124-1624. ARRL membership renewals should specify ARRL 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 appropriate arrangements.

Repeaters: UARC maintains the 146.62- and 146.76- repeaters. The repeaters are administered by the UARC Repeater Committee. Comments and questions may be directed to any Committee member. The Lake Mountain repeater (146.76-) 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 available to UARC members. 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.

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

Publication: *The Microvolt* is the official publication of the club. Deadline for submissions to the *Microvolt* is the 10th of each month prior to publication. Submissions by email are preferred (uarc@xmission.com), but other means including diskettes and typewritten submissions can be mailed directly to: Telvin Mills, 6864 Beargrass Rd., West Jordan, UT 84084. All submissions are welcome but what is printed and how it is edited are the responsibility of the Editor and the UARC board. Reprints are allowed with proper credits to *The Microvolt*, UARC, and authors. Changes in mailing address should be communicated to the Club Secretary: Dick Keddington, 1732 Woodside Dr. #32, Holladay, UT, 84124-1624.

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Repeater Monitor: Brett Sutherland, N7KG	298-5399

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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

We are grateful to the management of XMission, our Internet Service Provider (ISP), for the donation of this Web-Page service.

For account information go to:
http://www.xmission.com/
Or call 801 539-0852

The Microvolt

The Official Publication of the Utah Amateur Radio Club, Salt Lake City, Utah
Volume 48, Issue 5, May 2005

QST from the Prez

Glen Worthington, WA7X

Well, it's May already, and that means time to plan summer ham activities. You'll want to mark your calendars for several exciting events.

First to put on the calendar is Field Day 2005. It is always held the fourth full weekend of June. You may be interested in knowing that the first Field Day took place in 1933. During Field Day, operators set up radio transmitting and receiving equipment in local parks, at shopping malls or even in backyards, and get on the air using generators, battery or solar power to run their equipment. This type of exercise, along with the operators' dedication to public service, allows them to step in and help emergency officials and relief organizations when disaster strikes. Cell phones, the Internet and other communications technologies have yet to replace what Amateur Radio operators can do. They have a long track record of getting the message through when all other systems fail.

UARC has a tradition of going to an area in close proximity to Payson Lakes. While a new site would be exciting, we have yet to find one that is reasonably close to Salt Lake, can be gotten at with a trailer, is large enough to accommodate a group of our size, allows noise throughout the night, provides relief from the summer heat and is free. Should you come across a site that offers all of these amenities, please don't hesitate to speak up.

Additionally, Field Day offers many opportunities to the new ham. You will be able to learn about many aspects of amateur radio while helping the event be a success. Help is needed with station design and setup, antennas, power, facilities, food and, of course, operating. For those of you who would like to learn more about contest operating, you can observe first hand how different top notch contest operators work. Should you like to volunteer, you can contact Brett Sutherland, N7KG, at n7kg@arrl.net.

Second, you'll want to mark your calendars for the UARC Steak Fry. This is always a fun event with more than 100 attending. The steaks are great, the weather is wonderful in Big Cottonwood, and the camaraderie unparalleled. Additionally, for members, the cost is very modest. You'll want to bring the whole family. Many of the hams spend the weekend camping. For Steak Fry tickets, contact Dick Keddington, KD7TDZ, at 274-9638, or email rkeddington@earthlink.net. For camping, you'll want to contact Garth Wiscombe, W7PS, at 255-6347 or w7ps@arrl.net.

Last for the summer will be the Utah Hamfest, held at Bryce Canyon, Ruby's Inn from July 29-31. This is always a fun event combining both vacation and amateur radio. Events include seminars, dinners, bunny hunts, swap meet, drawings for prizes and more. You can find out about the Utah Hamfest at www.utahhamfest.org. Additionally, this year it will be combined with the Rocky Mountain Division Convention and should bring in hams from many states. I'll look forward to seeing you there.

Also, this is a great time to plan antenna and tower projects. Better to be on the roof now than August or January! There are always those willing to help with these projects. You might try a post on the club Yahoo reflector (http://groups.yahoo.com/group/UtahAmateurRadioClub/), or an announcement at a UARC meeting that you need help.

In any event, best wishes to you all this summer and I'll look forward to seeing you!

73 de WA7X Glen

Technician Class

Utah Army MARS (Military Affiliate Radio System) is sponsoring a class for prospective Technician licensees. It will be held at Camp Williams and will be conducted over two intense weekends, May 13-14, and May 20-21. For more information, contact Roy Eichelberger, W7ROY, email w7roy@arrl.net or Steve Carver, N7VVW, email n7vvw@att.net.

Member of the Month

By Linda Reeder

This month we are featuring Tony Naef, KE7BBG. Tony is new to the hobby. He received his Technician license in the fall of 2004. Tony has always been interested in radio while he was growing up, but the code kept him away. He has always been interested in being able to use the radios and what makes the radios work. Tony loves to build things. In fact, Tony built one of his first computers when he was attending Highland High school. It was a COSMAC VIP (a close cousin to the COSMAC ELF). The RCA 1802 is the CPU chip used.

Tony is an electrical engineer by profession. He has worked for several different companies. He worked for Colmek Systems Engineering, the company that made the telemetry equipment for the Woods Hole Oceanographic Institute's Argo sled used to find the Titanic. They also did the telemetry control system for Jason Jr. that was used to go inside the Titanic. It's technology based on having several FM radios given specific frequency channels all attached to a single cable. This required fancy filtering to keep the signals from interfering with each other.

Later, Tony worked for a company called Mainstream Data. This is where he learned a lot more about RF and satellite communications. Tony worked with many types of satellite down-link receivers for data and/or audio along with commercial broadcast FM receivers. Tony has really grown to love RF in general, especially when a microprocessor gets included which is often the case. Tony says it is interesting to see all of the mixing up and down.

Tony has just recently received his first radio. It is a Yaesu 411 handheld. Willy Marshall, AC7DO, (whom Tony met at one of the previous month's meeting) gave it to Tony. Willy found the radio in a home he had just moved into. Someone had just left it there. The radio has lots of problems. Tony said the radio is still sick. But, with Tony's electrical engineering expertise he was able to get it limping along.

Tony had his first QSO this past month with Gordon Smith, K7HFV. Tony even participated in the round table portion of the UARC information net. Tony is a member of UARC. The reason he joined UARC is because he loves to help others and he enjoys the association with others who share his interests. Tony gave a presentation at the UARC February meeting on printed circuit boards. Tony received lots of positive feedback on his presentation. One ham said he had learned some new things and that he wished that Tony could come back every six months with updated information on working with surface mount technology and more PCB tricks.

Tony also likes flying model airplanes. Tony says planes, boats and helicopters are just another excuse to use radio. It also gives him a cheaper flying fix than if he had to pay for a real plane and fuel. Also, being in amateur radio helps because he can design his own transmitter. Other hobbies Tony enjoys are: mountain biking, hiking and snow skiing.

One of Tony's goals is to get his Extra Class license. Tony says he really needs to get busy learning the Morse Code. Tony, we wish you all the best.

73, N7HVF Linda Reeder.

May Meeting: Auction - (May 12th)

Who doesn't get excited about getting some new equipment? There may be a good chance to acquire some at the upcoming May meeting, which will be held Thursday May 12. (Note, that's the *second* Thursday of the month.) The meeting will feature an auction of excess equipment the club has obtained over the years from donations, estates, and purchases. We don't know yet exactly what the auctionable equipment will be, but we will update the club's web site.

Additionally, if there are those who would like to donate to the club equipment to be auctioned, this will be an opportunity. The details on how this would work are still being worked out, but we will announce them here as soon as they are available.

Please note that, this month only, the meeting will be on the second Thursday of the month instead of the usual first Thursday. This change is to avoid a conflict with finals week at the University.

- The "Meeting(s) after the meeting": A chance to enjoy pizza or other gastronomic delights with other hams. One group goes to Litza's Pizza, 716 E. 400 South. Another goes to a restaurant that varies from month to month, but will be announced at the meeting.
- The "Meeting before the meeting": A similar get-together for those who can leave work early enough to get there by 5:15 P.M. This month it will be at the "Greek Souvlaki," 404 E. 300 South, in Salt Lake City.

SOME THOUGHTS ON STEP ATTENUATORS

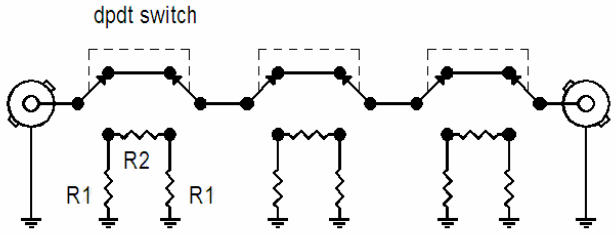
K7RJ
Ron Jones
K7RJ@arrl.net

After the April UARC meeting where Mike, K7DOU, did such a great meeting on fox hunting and showed some tricks using a step attenuator (or "switched attenuator"), a couple of people asked me if I knew what value resistors to use if they wanted to build a step attenuator. I have put together a couple of drawings and tables showing the basics of the mechanics of a step attenuator. This is not a construction article, but if you have been planning to build a step attenuator, perhaps this information will be helpful. If I get enough requests, I'll put together a real construction article on building one and include a couple of pictures and some theory, but for this article, I assume you already know what these things are and are interested in a few details.

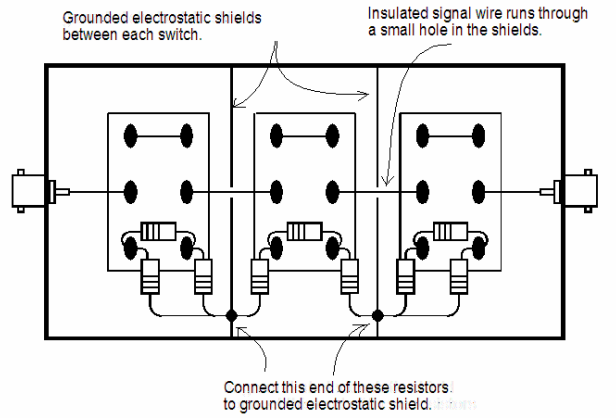
One note: these are great junk box projects that can be very inexpensive only if you happen to have lying around most of the components. It may not be economical to build one from scratch if you have to purchase every component new, especially if you want to have lots of very accurate steps. Although new step attenuators are very expensive, used ones often cost less than the price of the individual components.

Another note: used 75-ohm step attenuators common in the cable TV industry are much less expensive than 50-ohm ones, and they work fine for applications where you don't care about the absolute calibration, which is often the case (as in fox hunting). They can also be rewired for 50 ohms and customized, often for only the cost of the resistors.

The following pictures, drawings and tables may help you. Each switch is for one attenuation position. You may add as many positions as your pocket book will allow. Typically you will want between 5 and 8 switches. If you are using it to do measurements, you will probably want to be able have 1 dB resolution; if you are using it as an uncalibrated attenuator, 5 dB resolution will likely be fine. I'll talk about that more if I get requests for a real article.



STEP ATTENUATOR
schematic



STEP ATTENUATOR

Between each switch, you should put a shield that is well connected to the main chassis ground in at least one place. Each shield must make good electrical contact to the main chassis ground in at least one place, but they don't have to connect to ground all the way around; just make sure they fill the gap between the sides and covers of the box as much as possible. A bit of scrap aluminum or copper clad circuit board material works well. Notice from the above drawing that you will need to drill a small hole in each shield for the signal wire. Make the hole just large enough for the wire and, of course, its insulation.

REWARD OFFERED

A reward of 500 microfarads is offered for the information leading to the arrest of Hop-A-Along Capacity. This unrectified criminal escaped from a Western Primary cell where he had been clamped in ions awaiting the gauss chamber.

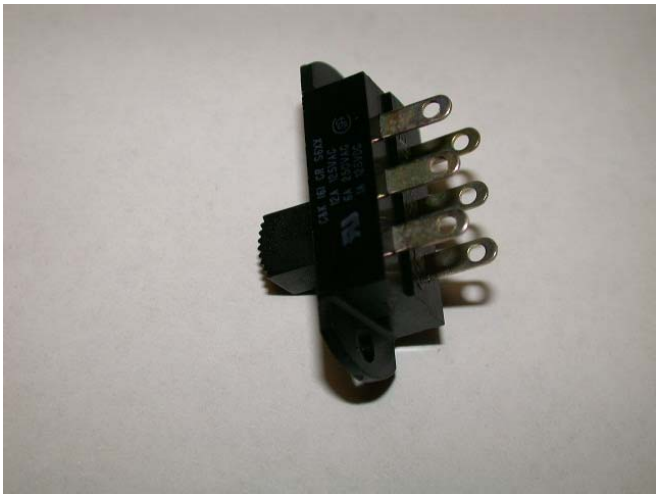
He is charged with the induction of an 18 turn coil named Milli Henry who was found choked and robbed of valuable joules. He is armed with carbon rod and is a potential killer. Capacity is also charged with driving DC Motor over a Wheatstone bridge and refusing to let the band-pass.

If encountered, he may offer series of resistance. The Electromotive Force spent that night searching for him in a magnetic field, where he had gone to earth. They had no success and believed he had returned ohm via a short circuit.

He was last seen riding a kilocycle with his friend Eddy Current who was playing a harmonic.

A bit of humor written by Mr. Mark Bushnell, Director of Engineering at CCA Electronics, the transmitter people.

Types of switches you can use:

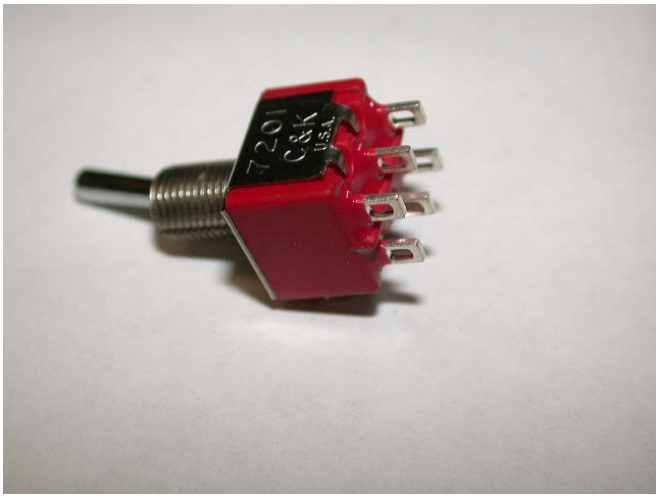


Slide switch: 2 position, notice 6 places to solder wires.

Advantage:
- Can be very inexpensive.
- Generally have good frequency response

Disadvantage:
- Hard to mount.
- RF can leak through the hole for the plastic slide.

Use only if you have them in your junk box.



Toggle switch. 2 positions, notice 6 places to solder wires.

Advantage:
- Easy to mount, requires only one hole. RF tight.

Disadvantage:
- Expensive. (>$2 new each)

Use small ones, not the big automotive type with screw wire connections.

Now for the resistor values to use. First, don't use wire wound resistors. Any of the various types of quarter watt or half watt carbon resistors will work fine.
Below are two tables showing the resistor values for various attenuations. I wrote an Excel program that calculated the required resistors values. Naturally, the values came out to be odd ball values that you can't just go to the store and buy. For the second table, I have the program calculate the error you will get if you use standard value resistors that you can go to the store and buy, or you may have lying around. Notice that by using standard resistors, the error in the attenuation value is never much more than 3%. That little error is not worth worrying about especially considering that there are a number of other sources of error that will creep in. Use the values in the table, don't substitute values or you will start accumulating too much error.

Attenuation Using Ideal Resistors

dB	R1	R2
1.00	869.55	5.77
2.00	436.21	11.61
3.00	292.40	17.61
5.00	178.49	30.40
6.00	150.48	37.35
10.00	96.25	71.15
20.00	61.11	247.50
30.00	53.27	789.78

Attenuation Using Standard Resistors

dB	R1	R2	%error from the ideal attenuation
0.97	910	5.6	-3.0%
2.06	430	12	3.1%
3.05	300	18	1.5%
4.94	180	30	-1.1%
5.85	150	36	-2.6%
10.24	100	75	2.4%
19.71	62	240	-1.5%
30.50	51	820	1.7%

Cell Phone CW

By Steven Campbell, WA2WVU
Reprinted from *"The Eagle"*, Otschodela Council Amateur Radio Club

Ham radio is a wonderful hobby. We get to play and tinker with all sorts of technology just for FUN. Recently I programmed my cell phone to ring in Morse code when someone calls me. Rather than listen to the traditional telephone ring on my cell phone, the cell phone `rings` by sending CQ CQ CQ de WA2WVU QRZ? in Morse Code. This is a great way to know that my phone is ringing and the phones of the ten people standing around me. It is a GREAT

way to introduce and start conversations about ham radio to non hams.

My interest in cell phone CW began with an article *"BEEP, BEEP! How to Make your Cell Phone Ring in Morse Code"* in the *K9YA Telegraph,* Volume 1 Issue 5, May, 2004, written by Steve Wolfcale, N9WAT. For more information on the *K9YA Telegraph* go to http://www.k9ya.org/. On the left side of the page there is a box to click for more information. *(Ed. If anyone would like a copy of that article, please contact me and I can send you a copy.*)

IMPORTANT IMPORTANT IMPORTANT

You will need a DATA CABLE to connect your COMPUTER to your CELL PHONE.

There are many third party companies that make data cables. Just search the web. Make sure you get the data cable for your specific phone. There are three ways to make your cell phone ring CW. The easiest method is to directly program your phone using the music generator that is installed in your cell phone. Follow the instructions in the next paragraph for creating musical tones. Not all cell phone have this feature so the next method is to purchase third party software for your cell phone. The software I use is Susteen Data Pilot Data Transfer Suite. Data Pilot allows you to download and save to your computer your cell phone contact list, then add or subtract contacts, including home, cell, business, fax, and phone numbers. Saving the contact list is a great feature for backing up your cell phone. Data Pilot has a ring tone creator for creating your very own personalized ring tones.

Upon opening the ring tone creator, a piano keyboard is displayed. The keyboard functions just like a modern musical keyboard. You can make the key board sound like a guitar, banjo, tuba, trumpet, drum, or any of the numerous musical sounds and instruments that come with the software. I choose the "Recorder" instrument sound for my CW ring. The recorder sounds like Aurora on 20 meters, including slight fading! The length and spacing of the CW tones is created using musical "notes" and musical "rests." A note is the sound generated by clicking on a piano key. A rest is the time spacing between notes. A 32 note is much shorter in time length than a 4 note. A 32 rest is much shorter in time length than a 4 rest. I discovered the CW character length and spacing by experimenting. The CW speed is determined by the tempo which also is adjustable, from 5 wpm to 20 plus wpm. I did discover there is some type of ratio when setting the code speed. I`m not sure what the ratio is. I just know that the sound of CW is affected by the speed being too fast or too slow. Experiment with the different sounds and speed of CW.

The third method for creating CW ring tones is to go to NAT Radio http://www.natradioco.com/ and download FREE software, CW Midi. This is a program for creating CW in Midi files. There are several versions of the software available.

My next project using CW ring tones is creating ring tones for specific callers. I will try to create a ring tone for when my mom calls. CQ de MOM in CW sounds nice. Hummm, now what can the CW ring tone say when my boss calls?

de Steven Campbell WA2WVU

Exam Schedule

5/18/05 (Wed.) Provo
Contact: Steve Whitehead, NV7V
Phone: (801) 465-3983

5/18/05 (Wed.) St. George
Contact: Ronald C. Sappington, WI7Z
Phone: (435) 673-4552

5/26/05 (Thu.) Roosevelt
Contact: R. Chandler Fisher, W7BYU
Phone: (435) 722-5440

5/31/05[1] (Tues.) Salt Lake City
Contact: Eugene McWherter, N7OVT
Phone: (801) 541-1871

6/01/05 (Wed.) Ogden
Contact: Mary Hazard, W7UE
Phone: (801) 430-0306

6/04/05[1] (Sat.) Salt Lake City
Contact: Gordon Smith, K7HFV
Phone: (801) 582-2438

6/11/05 (Sat.) Logan
Contact: Heidi Black, AC7ZC
Phone: (435) 753-7487

6/15/05 (Wed.) Provo
Contact: Steve Whitehead, NV7V
Phone: (801) 465-3983

6/15/05 (Wed.) St. George
Contact: Ronald C. Sappington, WI7Z
Phone: (435) 673-4552

[1] Pre-registration required. Contact the contact person prior to the examination date.

For more detail either call the contact or checkout the information on our webpage:

http://www.xmission.com/~uarc/

Steak Fry

UARC's annual steak-fry will be held on the afternoon of Saturday, July 16th. Tickets will be available at the May and June meeting. The deadline for purchasing your tickets will be July 11th.

The steak-fry is one of the club's most popular activities each year: a steak dinner in the mountains combined with a mini swap meet and a chance to get acquainted or reacquainted with the people we talk to on the air.

The event will be held again in the campground called "The Spruces" in Big Cottonwood Canyon. (That's the canyon that goes to Brighton and Solitude.)

It may seem awfully early to be thinking about a mid-summer event, but there will only be two opportunities to buy tickets in person at a meeting.

The prices for this years steak fry are as follow:

Adults	$4.00
Non-member adults	$12.00
Children (12 and under)	$5.00

Contact the club secretary Dick Keddington, KD7TDZ, to get your reservations.

Utah Hamfest

The Utah Hamfest will be held July 29 – 31 at Ruby's Inn near Bryce Canyon. For additional information or go to www.utahhamfest.org.

Ham Radio Tailgate SWAP MEET!

Sponsored by the Pocatello Amateur Radio Club.

This is a free swap meet, just for fun and friendship. Bring as much RADIO stuff as you like!!!! The more the better.

The swap meet will be held, Saturday, July 16th. Starts at 9 AM, ends whenever.

WHERE ?? Idaho State University, Pocatello, Idaho.
This is just off Interstate 15, take exit 69, Clark Street , go west, downhill, to 15th, the stop light turn left at the light, go about 1/2 mile it will be in the parking lot on your right. Talk-in 147.060+ repeater no pl needed!

There is plenty of room, maybe 150 parking places, just park, open you tail gate, and GO. Let the fun begin.

We decided on 9 AM start time, so you folks from out of town, can sleep in to a somewhat civilized hour before leaving for Pocatello. This is a Ham Radio Swap meet, you can bring computer stuff, but try to limit it. Old computers are junk at best!

The club will have Coke and hot dogs to keep you from starving, coffee and donuts too! There are many restaurants within 1 mile.

Pocatello is only ~2.5 hours drive from SLC, 2 hours from Twin Falls, 4.5 from Boise.. LETS do it; plan on attending!! BRING A FRIEND!, it's more fun. See you Saturday, July 16th. email K0IP for more info or call 208-251-6441, jcwilson@ida.net

http://www.ida.net/users/k0ip/parc/swapmeet.htm, this is the link to the Swap Meet info page..

Should We Sponsor a Hamfest?

UARC has been asked if it would be interested in sponsoring a statewide hamfest in 2006. We would need volunteers to handle various aspects of the hamfest such as seminars, swap-meet, awards, contests, commercial displays, etc. But most of all, we would need someone to be in charge of the whole operation and make sure all the duties are parceled out. Is anyone interested?
Every three years (including 2005) Utah sponsors a hamfest that is also the ARRL Rocky Mountain Division Convention. The Division includes Colorado, Wyoming, and New Mexico in addition to Utah. That hamfest is generally held at Ruby's Inn near Bryce Canyon National Park. (See www.utahhamfest.org.) In other years, the duty for the Division Convention rotates to other states.

It would be nice in those "off" years (such as 2006) to have at least a one-day hamfest in Utah. This is what UARC is being asked to organize. It could be a somewhat less ambitious project than the Ruby's Inn hamfests. The hamfest committee could select a place, time, and length for such an event. They could draw from resources in other clubs and other parts of the state.

If anyone is interested in taking on such an event, contact one of the UARC officers.

Ham Humor

A television news cameraman had just arrived at the scene of an accident. As he exited his vehicle, he heard a policeman on the scanner using the radio phonetic alphabet to alert other officers. "Be aware that the Mike Echo Delta India Alpha has arrived," he said.

The cameraman approached the officer, looked him in the eye and said, "You might be surprised to know that some of us in Mike Echo Delta India Alpha can Sierra Papa Echo Lima Lima."