October 1993

The Ohm Town News

Voice of the Bridgerland Amateur Radio Club

Presidents Corner ...

By Joe Corbett N7NJR

We have had a busy month supporting the Boy Scout Fall Camporee and the La-To-Ja bike race. Thanks go to Dean N7WDY and Tammy N7YTO for organizing the camporee, and Don WA7VNQ and Khalil WA7SHW for chairing the bike race. I would also like to thank all the amateur operators for volunteering their time in helping with these two functions. Not only did we have fun, but it was good emergency training. After seeing the magnitude of the La-To-Ja operation I feel confident that we are capable of providing significant help in the event of a major emergency. As a matter of business, the BARC officers and board members have created two committees to help us better organize the net operations and manage the club supported equipment and plan for future equipment requests from the club members.

In addition to providing emergency and community service the major reason for the existence of amateur radio is to have fun and further the science of radio by developing new communication techniques and training members in existing modes. As a club we can jointly own, maintain, and use equipment that is beyond the reach of most of us. The repeater stations and the satellite station are good examples.

If each of us is willing to pay a modest amount at the start and a maintenance fee yearly, we can have more equipment such as a high speed digital link to the Salt Lake Valley, an Amateur Television repeater, additional UHF repeaters and such. We have the organization to make it happen. We have appointed John AE7T to chair this committee with Neil N7PEO, Wally WB7ASQ, Brian KB7FUB, and Tyler N7UWX as members. These people are asked to develop a plan for acquisition of hardware and its management and maintenance. These people will present the plans to the board and then to the club members. If you have ideas or desires, please contact John for coordination.

We have also appointed a Net Committee. The committee consists of Clayton AC7O, Dan KA0EOF, Jeff KF7ZX, and Mark N7EVJ. These people will coordinate the nets for Tuesday night, and also the MARA net on Sunday night. They will coordinate the training topics to prevent duplication, and will also see that our responsibility for emergency training for RACES and ARES is met. We hope that each of you will be a net control. We will try to arrange to have training sessions for net control such that a new person will be accompanied by a more experienced person during the net time. The new person will probably handle the roll call, and the experienced person will handle net business. Then as the

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Did you know ...

At the International Electric Congress in Chicago during 1893, the OHM was defined as the resistance offered to a steady current by a column of mercury 106.3 centimeters long, at zero degrees celsius, weighing 14.4521 grams, and contained in a capillary tube uniform bore, 1 square millimeter in cross sectional area. The founder of the OHM is George Simon Ohm.

October Exam Changes

By Paul Hansen W07N

Many may be aware that the Bridgerland Amateur Radio Club has administered license exams under the ARRL VEC program. Some of you may also be aware that the Novice Class License is now a part of that volunteer examiner program. Novice Class License exams can no longer be given by two General Class licensees and the results sent directly to the FCC as in the past. This change would typically make it less convenient to get started in amateur radio. To create greater opportunity we would like to have more exam sessions each year.

One of the new tools that the ARRL VEC has provided is computer software which will generate exams on computers. It is an exciting way to take the exams. You will not wait 15 or 20 minutes for the examiners to check your exam as in the past. You complete the exam, exit the program, and know the results immediately. Sounds like FUN! Perhaps this is even some incentive to upgrade your license just to try out the system.

We would like to begin testing with the new system on our next scheduled test session -- **October 9, 1993.** This will require a change of TIME and PLACE. Please note the new location is **USU Old Main Building, 4th floor, Room 404. The new time is 7:00 a.m. (Please arrive at the East Door of Old Main by 6:30 a.m.)** This arrival time will give you time to fill out your 610 form and pay the test fee. The test fee for 1993 is $5.60. We suggest that you park immediately to the south of Old Main on that day.

The room we will be using has a limited number of computer terminals. In an effort to serve you better, may we ask that you call WO7N, Paul Hansen, at 753-4843. He will register your name for the session. If this session goes well, we will create a new test schedule with more opportunities than just two each year.

Our thanks to Bob Wood, WA7MXZ for his efforts to get us up and running with this new technology.

73's and good luck on the exam. WO7N, Paul

October Club Meeting

Thursday October 14, 1993
7:30 pm EC 107

Engineering classroom building on the Campus of Utah State Universitry.

Ross Hansen WB7BY2, from Ross Distributing will be the speaker. Rumor has it that he will have some goodies to show.

VEC Exams

Saturday October 9, 1993
Old Main room 404
7:00 am

Please arrive by 6:30 am at east doors. See above article for more information

Cover Credit

The ham shack on the cover was drawn by Dave Rhodes N7PEI.

November

Club Officer Elections
November Club Meeting
November 11, 1993

Newsletter

Have you got an item for the newsletter. Send it to Kevin Reeve, 162 North 500 East "B" Logan Utah 84321

Send it on a floppy disk if you c a n .

Presidents corner

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operators gain more experience, they can handle more of the net business. All it takes is practice for operators to become more at ease behind the microphone.

I am excited about these committees. Through them we hope to improve our capabilities in the valley, both in equipment and also in training.

During the last club meeting we discussed a change in the By-laws of the club. Article VIII - General Meetings Section 4 currently states:

At all meetings, two-fifths (2/5) of the total club membership shall constitute a quorum for the transaction of business.

Since we very rarely, if ever have two-fifths of the membership present at our monthly meetings I propose to change Article VIII to read:

All business items, where a vote of the membership is deemed necessary, shall be published in the Ohm Town News and voted on during the next regular general meeting of the club. The issue will be decided by a majority vote of the members present at the meeting.

We would like to vote on the above change during the elections in November. If you have comments on the above change, please let me know, and perhaps we can have a discussion during the meeting in October on this change.

I would also like to encourage the members to consider running for one of the officer positions in the club. We could use active participation from each of you.

73 for now. Joe N7NJR

Antenna Theory

By Dr. Clayton Clark AC7O

Many of our new club members have had very little exposure to antenna theory. Antennas are as important as our radios in getting our signals out. It would seem useful to have an elementary article in the club news letter to help in basic understanding. This is the first of what may turn out to be a series.

RADIATION. Whenever radio frequency current flows in a wire electric and magnetic fields are set up around that wire. The fields pulse and change direction with each cycle of RF current. Close to the wire are the induction fields. They are energy stored but not radiated just as in a capacitor or a coil. Farther from the wire, actually predominant at distances greater than a sixth of a wavelength, is the radiation field which "snaps off" and goes out into space. This represents real energy sent out and is detectable by receivers. A receiving wire can gather some of this energy. Rectified by a diode and then put into earphones it allows you to hear the transmitter without any other energy input. It may be several milliwatts. I lighted my neighbors bedroom light once with radiated power and he did not like it. The point is that it is real energy going out. This radiating power reduces as the square of the distance it goes but the electric field (volts per meter) and the magnetic field (amps per meter) each reduce linearly with distance so at two points, one twice as far away as the other, the far one will have half as much electric field strength as the near one (but only a fourth of the power per square meter).

RADIATION RESISTANCE is actually the absorber of the energy that goes out into space. Your transmitter puts power into the antenna. The antenna looks like a resistive load to your transmitter provided power is allowed to radiate. If you put the antenna in a closed metal can, or a tin building, the radiation resistance goes to zero because there can be no radiation. The radiation resistance of an antenna can be high, medium or low depending on the nature of your antenna and where you are connected to it. It does not matter what value the radiation resistance has as long as you transform it to the value your transmitter needs, usually 50 ohms. A half wave antenna has a radiation resistance of 40 to 100 ohms at its center depending on how high it is above ground. At a height of 0.16 wavelength above ground it will have 50 ohms at its center to match your feed line, providing there are no other wires around. Radiation resistance at the end of a half wave dipole is several hundred ohms depending on the thickness of the wire or pipe it is made of. This high impedance can be matched to your radio with a quarter wave shorted line as we do with a J-pole antenna or with a resonant coil like the ones used on the "hot rod" half wave antenna for

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Antenna Theory

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your handheld radio.

ANTENNA IMPEDANCE is the combination of the radiation resistance and the REACTANCE which comes from the dipole being too long or too short. Reactance can be tuned out with a coil or capacitor leaving a pure resistance for the antenna impedance. That is the purpose of your antenna tuner. The tuner also can act like a transformer to change radiation resistance from whatever it is to whatever you need to match your transmitter. Transmitters with transistors in their output must not put out power unless the connected load is between about 40 and 60 ohms and not very much reactance or they will be damaged. Most sets have built-in protection for that. Let me know if other articles like this would be helpful to you.

HAM RADIO CAMP-O-REE

By Dean Stevens N7WDY

On September 18, 1993, 18 memebers of the Bridgerland Amateur Radio Club, and six scout leaders blended their skills together to pull off the first ever Ham Radio Communication Camp-O-Ree, at the Cache County Fair Grounds in Logan Utah. Talk about a success! It was totally awesome.

Jeff Tingey; KF7ZX, and Blaine Hancey; KI7KA, handled the CW. They discusswed code, and let the boys hear a QRP contact, then gave them a compass course using CW. A good portion of the boys found their destination. Suprisingly, they did better that we had anticipated.

Do Rawlinson; WA7VNQ, controlled the HF rig, by making contacts with many people and allowing a few boys from each group to talk on the radio. One boy had a wonderful QSO with a genteleman that had been to the same tractor show back east that he had been to several weeks before our camp. He was very excited!

Mike Farr; KG7FZ and Jeff Farr; N7UWW, handled the semaphore flags, helping each boy send and receive a message in morse code using the flags. That was quite a challenge for them, where you have to "SEE" the dit and dah, rather than hear it. Everyone had a great time and the boys did an excellent job.

Kevin Reeve; N7RXE and Tammy Stevens; N7YTO, directed the direction finding and bunny hunt. The boys were instructed on how direction finding works, and given a demonstration. They were then sent out to locate the FM transmitter (Bunny) that Tammy had hid. They used there own FM transistor radios and had a total blast finding the transmitter using the body shield method.

Jami Forbush; N7XLH, Kevin Humphreys; KB7RAQ, and Scott Hart; N7YTF, gave the boys another twist in sending morse code with the signaling method using flashlights. They all seemed to have a lot of fun. Then Jamie discussed briefly, repeater operation using 2 meters and demonstrated it by making contact with Bart and Annette Casidy; N7VGS & KB7RCL, in Star Valley Wyoming. Contact was made with several other stations as well.

Joe Corbett; N7NJR had his ATV set up with Darrell Brown; KB7VMK; in M8illive, transmitting the picture back to Joe. The boys had many laughs while talking back and forth. "You know, Darrell don't look to bad on TV! HI HI!" This was a neat experience for everyone.

Stan Wellard N7UXC had help from several troops getting two balloons up in the air to hold the weather station that Dan Anderson; KA0EOF, made for us. It was a great success. Tyler Griffiths; N7UWX, had his packet hooked up to monitor the weather station hanging from the balloons, and the boys that were computer buffs, really enjoyed that. When the rain finally brought the balloons down, the boys made the best of the situation, by seeing how fast they could get te wind meter to go. I did hear one boy yell out "21 MPH!". I knew we had some windy scouts there, but I think that sets the record. Many scouts and adults had Stan cornered, talking about balloons, and the flights we have had.

When it was all said and done, I can honestly say the whole camp was a great success. many scouts and leaders commented on what a great time they had, and how much was learned. They all think you ham operators are **neat**!

I realize ther were many hours donated and money used to help the boys have a good

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Camp-O-Ree

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experience. I want to say to all of you great Men and Women, **THANKS** for helping to make this camp a success. With everyone doing their part and being willing to volunteer their time and money, we could not have pulled it off. I salute each one of you for a job well done. Just as the Scouts and Leaders said. "**ALL OF YOU ARE NEAT!**"

Thanks & 73,
Dean Stevens N7WDY

Editors Note: As a camporee participant I think a big thanks goes out to Dean for orgainizing the camporee. He is the one who had to stress over the whole event, we just showed up and had a great time.

Patch from the Camp-O-Ree

How Long Could You Operate?

By Dan Anderson KA0EOF

Here is a guide to help you determine how long you could operate your radio, with the batteries you have. Power consumption can be approximated by calculating the average current required by your radio. This average current drain is primarily determined by the percentage of time "active" (transmitting) versus "quiescent" (receiving).

Example: Kenwood TH26AT

Receive: 14 mA, No Audio
Receive: 75 With Audio at comfortable level.
Transmit: 1.5A
7.2VDC Source (2.5W)

Since it is very difficult to "predict" how much operating time you will do, several assumptions have to be made. The assumptions below vary widely from person to person and is for an exercise only.

Assumptions

1. Duration of each transmission (Talk Time)
2. Duration of contact (QSO)
3. Number of Transmissions per contact
4. # of Contacts per day
5. Monitor Time (# of hours each day)

Average Current Drain

$$\frac{[\text{Time Active} \times \text{Current}] + [\text{Time Quiescent} \times \text{Current}]}{\text{Total Time}}$$

Example for 6 hours of operation:

Transmitting 1/2 hour total (1.5A)
Receiving 1 hour total with audio (.075A)
Monitoring 4.5 hours total with no audio (.014A)

$$\frac{(5 \text{ hour} \times 1.5\text{ A}) + (1 \text{ hour} \times .075\text{A}) + (4.5 \text{ hours} \times .014\text{A})}{6 \text{ hours}}$$

$$= 148 \text{ mA}$$

Calculating Battery Life

To determine how long a battery pack will last, simply take the Average Current Drain of your radio (from above) and divide it into the Amp Hour Rating of the the battery. HT's canbe purchased with a long life 1100mAhr battery.

$$\frac{1100 \text{ mAhr}}{148 \text{ mA}} = 7.4 \text{ hours of operation given the operating scenario above}$$

From The Editor

By Kevin Reeve N7RXE

Wow! putting together a newsletter is a little bit harder than I thought. I am sure you have seen the mistakes. Some how they always seem to slip by even when you read it over and over again. I usually find them once its has gone to press. I just want to thank all those who have contributed items to the newsletter. It makes my job a lot easier. If you have a story or article you would like seen in the newsletter, please send it my way. If you have any comments or ideas for the news letter, please drop me a line or catch me on he radio . I am waiting to hear from you.

Thanks to the following for calling the Tuesday Net this past month.

Clayton Clark AC7O
Brett Butler N7UXA
Cristi Anderson KB7RAV
Bart Cassity N7VGS