THE OHM TOWN NEWS

Voice of the Bridgerland Amateur Radio Club

September 2009

>>>>>>>> http://www.barconline.org <<<<<<<<

PRESIDENT'S MESSAGE

I hope everyone has had an enjoyable summer. Fall is almost here and it seems that the summer always go too fast for me. As usual, I haven't got all the things done on my list. Oh well, they will be there for next year.

There have been some exciting things happen this summer. A repeater funding drive was started back in 2007 to help replace equipment at the BARC repeater sites. Along with this funding and funding from the VHF society and other outside sources, new equipment for Mt Logan was obtained. Some of the equipment on Mt Logan was over 30 years old. The new equipment includes Tait radios for the UHF 449.625 repeater, Motorola radios for the VHF 146.720 repeater, a TE Systems 160 watt VHF power amplifier for the 146.720 repeater, a Rig Runner 80 Amp DC power distribution system, a Duracom 70 Amp DC triple redundant power supply, a Telewave UHF antenna for the 449.625 repeater, a SWR sensor alarm to monitor forward and reflected power on the VHF repeater, and a Telewave VHF antenna for Mt Logan digipeater (digipeater is courtesy of the National Weather Service). There was a lot of work in obtaining, configuring and testing the new system. I would like to thank those who provided donations and time to replace the equipment.

Also Bill Neville WA7KMF has his D-Star repeater fully operational. This system is only useable with a D-Star type radio or a DV-Dongle with a computer. D-Star is a digital radio system. Bill's repeater is the first D-Star repeater system in Utah that has a gateway to the internet. The gateway allows a D-Star

(Continued on page 2)

HAM PROFILE

Val Campbell, KE7QHT
by Brent Carruth AD7VF

Val's father was in the Signal Corps in WWII working with radar in its earliest days. When Val was young he enjoyed discussing radios and electronics with his father who would explain these topics to him, which he found very interesting. A neighbor, Lonny Paul (spelling?), W7DLW, gathered weather information from the region and around the world with his HF radio and reported the weather on Utah State University's radio station KVNU for Bob Welti (a well-known weather reporter for KSL-TV News in Salt Lake City) when he lived in Logan and who is a USU alumnus of 1948. Val visited Lonny's radio shack and found this to be very interesting. He had an interest in the radios that were available at the time, their capability was nothing like those available today. Years went by then one day in mid-2007 Kevin Reeve, N7RXE, called Val and invited him to earn his amateur radio license, which he did and received his current call sign of KE7QHT on 11 Dec 2007. His radio today is the dual band Kenwood TH-D7A. He choose this radio because of its built-in terminal node controller (TNC) and its automatic position reporting system (APRS) capability. With a separate GPS unit the radio is able to report its position, a great asset for LOTOJA and for many other purposes.

Val studied math, physics, chemistry and business administration and graduated from Utah State University with a degree in chemistry wanting to become a chemical engineer. After graduation he met and married

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UPCOMING ACTIVITIES 2009

BARC Pot Luck Fall social — 10 September, 6:30 PM
At 360 East 450 North in Millville

LOTOJA — 12 September

Top Of Utah Marathon — 19 September

RACES HF Net — 19 September, 8:00 AM

BARC Board Meeting — 24 September, 7:00 PM

Bear 100 — 25-26 September

Swaptober Fest — 10 October, 8am to 3 pm
In Pavilion at Cache Count Fairgrounds

RACES VHF Net — 15 October, 8:00 PM

Jamboree On The Air — 17-18 October

BARC Club Meeting — 14 November

RACES HF Net — 21 November, 8:00 AM

BARC Christmas Party/Club Meeting— 3 December 6:30 PM
At The Bluebird Restaurant at 19 N. Main in Logan

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(Presidents Message Continued from page 1)
radio to connect the repeater via the internet to another D-Star repeater or reflector. A reflector is basically a conference bridge which allows multiple D-Star repeaters and DV-dongle users from around the world to be joined together at a single point and whatever information is transmitted across one of the repeaters is repeated across all of the connected repeaters. To find out more about D-Star, you can join the BARC DSTAR Users Google group and ask questions (http://groups.google.com/group/barc-dstar-users). The repeater call sign is NU7TS (Northern Utah Technical Society) and the frequency is 449.575-. Sometime this fall, the repeater will be moved to Murrays Hill, which is southwest of Wellsville. At this location, the repeater will have very good coverage to the valley and east bench.

We have our end of summer BARC Pot Luck Fall social on September 10th @ 6:30 PM at 360 East 450 North in Millville (Providence South Stake Center Pavilion). Everyone is invited to this social. You don't have to be a member of BARC to attend this social. This is a way to get to meet those voices you have talked to on the radios in person and have an eye-ball QSO. Just bring a food item to share with the group. Please bring your own plate, eating utensils, and cup. Hope to see you all there.

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Answers to questions on page 8:
1-C, 2-A, 3-B, 4-C, 5-C, 6-D, 7-A, 8-B

(Ham Profiles Continued from page 1)
Jeanette. He worked for several years as a senior chemist at Thiokol in process and controls. He liked the people he worked with.

Val enjoyed making the two-meter, three-element Yagi tape measure antenna which was the May 2008 activity organized by then Bridgerland Amateur Radio Club president Jacob Anawalt, KD7YKO. Val participated with the Little Red Riding Hood women's century bicycle ride 7 June 2008 and worked with Bob Humpherys, KD7BHB, on Cache Valley net control for LOTOJA 6 September 2008. He really wanted to participate in other public service events but his health took a serious downturn. He has cystic fibrosis and had a life expectancy of one year in 1989. He is now one of the longest living survivors of this disease. Jeanette has been by his side all these years often not knowing if today would be his last day. Val and Jeanette's story is one of determination, indomitable spirit and of hope.

Breathing, and breathing easily, is a gift of life. For cystic fibrosis sufferers breathing is extremely difficult. Val required 6500 calories of energy per day just to breathe. One doctor likened it unto running a marathon 24/7.

Shortly after LOTOJA 2008, Val was fortunately placed on a lung transplant list and he and Jeanette found temporary housing in Salt Lake City where they lived for essentially all of the following year. At times when he was well enough he could check-in with the weekly BARC net reaching the 147.26 Promontory repeater from his daughter's home in Taylorsville. He received a double lung transplant, a very lengthy surgery on 4 June 2009. His recovery went well though there were a few complications. He and Jeanette are so happy to finally be able to return home and Val is anxious to participate with the Bear 100 event the end of September 2009 providing radio communication support.

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The ARRL Letter Vol. 28, No. 34 August 28, 2009

==> SUITSAT-2 NOW CALLED ARISSAT-1

The SuitSat-2 project -- an Amateur Radio satellite housed in a Russian spacesuit -- now has a new name to go with a new shape: ARISSat-1. On Wednesday, August 19, Amateur Radio on the International Space Station (ARISS) <http://www.rac.ca/ariss/oindex.htm> Chairman Gaston Bertels, ON4WF, announced the new name for the satellite and project. According to ARRL ARISS Program Manager Rosalie White, K1STO, the project team is moving ahead, using the same hardware that was to fly in the Russian Orlan suit. Russia will continue to call the satellite Radioskaf-2, so ARISS is designating it ARISSat-1/Radioskaf-2.

Plans to launch a second SuitSat-spacesuit-turned-satellite were the subject of discussions and presentations at the November 2006 AMSAT Space Symposium and ARISS International Delegates' meeting. Despite a weaker-than-anticipated 2 meter signal, SuitSat-1 sparked the imagination of students and the general public and turned into a public relations bonanza for Amateur Radio <http://www.arrl.org/ARISS/Suitsat.pdf>. ARISS hopes to capitalize on the concept by building an even better SuitSat that will include ham radio transponders. The SuitSat.org Web site <http://www.suitsat.org/> attracted nearly 10 million hits during the SuitSat-1 mission. Designated by AMSAT as AO-54, SuitSat-1 remained in operation for more than two weeks, easily outlasting initial predictions that it would transmit for about a week. SuitSat-1 re-entered and burned up in Earth's atmosphere in September 2006. ARISSat-1/Radioskaf-2 is expected to be live for at least six months.

Due to storage considerations, the two surplus Orlan space suits in storage on the ISS were discarded via the Progress Cargo Vessel earlier this year. One of these suits was to be used to house the electronics for the upcoming SuitSat-2 mission; the batteries were to be mounted inside the suit, solar panels attached to the extremities with the electronics, video cameras and antenna mounted on the helmet by the ISS crew prior to deployment during an extra-vehicular activity (EVA), commonly called a spacewalk. The removal of the Orlan space suits from ISS removes the "Suit" component of the deployment and the new name reflects the change in configuration.

White told the ARRL that the ARISSat-1/Radioskaf-2 team, through Gould Smith, WA4SXM, made the final decision for the satellite to be square, with solar panels on all 6 sides. "The team is mounting a 70 cm quarter-wave whip on the bottom and a 2 meter quarter wave whip on the top," she said. "All of the hardware and software goes inside the square, and cameras go on the outside." The experiment being developed by Russia's Kursk State University is expected to be integrated into the electronics once the US-produced equipment is delivered to Russia this fall.

AMSAT <http://www.amsat.org/> and ARISS pointed out that the importance of this project to both organizations is not diminished. "ARISS sees this mission as an important component of education outreach, as it will provide an opportunity for students around the world to listen for recorded greetings from space, as well as learn about tracking spacecraft in orbit," White said.

The ARISSat-1/Radioskaf-2 transmitter and receiver will be based on a Software Defined Transponder (SDX) system. It will consist of two major components: The RF Module and the Digital Signal Processor (DSP) module. In the RF module, there will be an up converter that receives a signal from the DSP module as a 10.7 MHz intermediate frequency RF signal with a 50 kHz bandwidth, and up converts it to 145 MHz signal of 50 kHz bandwidth centered on 145.9375 MHz. The receiver is a down converter with a 50 kHz bandwidth centered on 437.6125 MHz. The output of the receiver is a 10.7 MHz RF signal with a bandwidth of 50 kHz. The DSP processor receives the 10.7 MHz signal from the receiver down converter and processes it and outputs a 10.7 MHz signal to the transmitter up converter. The DSP can also inject signals such as the CW ID, telemetry, audio and packet signals as determined by the software on the DSP.

AMSAT calls the deployment of the SDX "a critical milestone" for the organization. "This upcoming flight provides an opportunity to flight test the next generation of spacecraft hardware," Bertels said. "Lessons learned from this deployment will be applied to future flight opportunities as AMSAT moves towards a 'modularization approach' to spacecraft development with the expectation the future spacecraft missions will utilize a derivative of SDX and the associated hardware."

The ARISS International Team has been informed that there is still space available for shipment of the ARISSat-1/Radioskaf-2 electronics on the projected cargo flight to the ISS in January 2010, and the extra-vehicular activity scheduled for April 2010 still has a SuitSat-2 deployment on the schedule.

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ARRL Bulletin 23 ARLB023
Newington CT May 21, 2009

ARLB023 May Section Manager Election Results Announced

In the only contested Section Manager race this spring, Mel Parkes, NM7P, of Layton, was re-elected as the Utah Section Manager with 480 votes. His opponent, Lauri "Mac" McCreary, KG7C, of Lehi, received 147 votes. Parkes, who has held the Section Manager's post since 1999, begins his sixth consecutive two-year term of office on July 1. Election ballots were counted on May 19 at ARRL Headquarters.

Bridgerland Radio Rocket Recovery

Activity Report

Guy Hatch KE7WAT

Dr. Paul Mueller, head of the Experimental Sounding Rocket Association, contacted BARC earlier this year to ask for assistance with finding rockets at the ESRA competition. Previous competition experience revealed the need for some means of tracking the rockets after landing, since they can drift quite a distance after parachute deployment and can end up in a concealed location, such as in a gulley, and difficult to spot. BARC offered to field a team of amateur radio operators, with beacon transmitters and directional antennas, to assist with this effort. At the BARC club meeting in March, 2009, a group of hams interested in knowing more about the activity stayed after the regular club meeting. With Cordell's encouragement, Guy Hatch KE7WAT, was selected to chair a group of 8 – 9 club members to prepare for this activity.

As part of the preparation, we were introduced to the "Beeline" radio transmitters offered by BigRedBee, LLC, which transmit in the 70 cm ham band. These tiny transmitters can be programmed, via serial or USB ports, by means of software provided by the manufacturer. Settings include transmit power level, transmit frequency, audio tone, beep duration and rate, and identifying call letters in CW. The club purchased two of these in March, which provided us the opportunity to practice with antennas and attenuators prior to the competition. Antennas were built by Dale Cox, Wally Kohler, and Guy Hatch and attenuators were either home-brewed or purchased kits.

The purchased attenuator circuits appeared to be most reliable and helpful in providing an up-close directionality to the signal from the transmitters. We also discussed and prototyped several designs of containers for the transmitters. A pill bottle and plastic tube model was used in a test launch in April in the west desert of Utah. Sadly, the rocket engine performed poorly, resulting in a low altitude flight and powered crash landing; and the near-total destruction of the rocket airframe, along with the nosecone in which the transmitter container was taped. The container broke free on impact and suffered major damage, but the plucky little transmitter continued to operate normally and was later used at the competition in Green River.

The local rocket building effort, headed up by Dr. Mueller, was unable to recover from the crash of their rocket in time for the competition, but did provide a successful demonstration of their hybrid sugar candy-nitrous oxide hybrid engine at the Green River launch site. A total of three static test firings of the hybrid engine were performed at the Logan airport in April. Due to difficulty with the igniters, which provided heat needed to decompose the nitrous oxide gas to produce oxygen to burn the fuel, none of these tests were successful in producing thrust measurements or prolonged fuel burns. The igniter design and chemical composition were improved by the time of the competition demonstration, resulting in a spectacular, bright yellow, very noisy flame and significant thrust from the engine. I think they got it!

The trip to Green River City began on Wednesday, June 24, 2009. The group from BARC included Dave Allen, Dale Cox, Guy Hatch, Gary Hawkins, Wally Kohler, and Rik Stallings. Dave, Dale, and Gary brought their wives with them and the ladies reported having a great time with their own activities. The initial meeting of the ESRA groups and the BARC team was held at the JW Powel Museum on the bank of the Green River on Thursday morning, June 25. After a quick review of the day's plans, we adjourned to the parking lot for a photo opportunity with all of the team members and their rockets. It was a sight to behold! There was an endless supply of enthusiasm and optimism as we all headed for the launch site about ten miles west of Green River City. The launch site was adjacent to the access dirt road and included a mostly flat area about two miles wide and five miles long. The prevailing wind during the launch periods caused all of the launched rockets to drift into the center or East edge of this flat area. For those of us (Dale, Rik, and me) who walked out to help find the rocket carrying one of our transmitters, the apparent flatness of the area was deceptive, as we had to cross several ravines that were three to five feet deep and had rather steep banks. Needless to say, this was a challenge for an old fat man! To make it even more exciting, as we were coming back from our little two-mile walk, we received a very nice request on our HT's to "please hustle just a little bit" so another launch attempt could be made, since the wind had died down and there was only another hour of launch time. Dave told me later that I looked kind of spent as I climbed back up to our little radio station. Well, I was a bit thirsty and hot, but recovered quickly enough.

Our radio activity included erecting the PVC pipe mast that I brought to position a "slim-jim" omni-directional 2 meter antenna at about 35 feet in the air. We chose a little hilltop, about 30 feet above the basin, to put up Wally's Easy-Up shade tent and located the mast close enough to the tent for the feed wire to reach Wally's mobile radio on his folding table. Wally's big trolling motor battery supplied the radio well and we had no difficulty communicating with the others

in the area on our 146.54 simplex frequency. Our site also offered an excellent view of the rocket team preparation tents and the launch rails. However, the safety officer pointed out that we were about 300 feet too close to the launch rails and needed to join the others on an adjacent hill to observe the launches.

If I remember right, there were four successful launches and one that blew up on the pad. Yup, BYU's rocket motor apparently pushed through the thrust plate of the rocket and basically disassembled the rocket about ten feet in the air. The motor then fell to the ground and burned for a minute or so. So sad. This was a very attractive rocket, too. The rocket that ended up winning first place, built by the team from UC Long Beach, carried one of our transmitters inside its nosecone. The flight was spectacular! Big red flame at least ten feet long and a very smooth flight path to over 8000 feet by its altimeter. The parachute deployed after free-falling to about 2000 feet and, due to the 5-10 mph wind, caused the rocket to drift, initially to the South East. After a very nice, soft landing of the rocket, the parachute continued to fill with air, dragging the rocket to the North-East (yes, further away from us!) along the ground. When recovered, the rocket appeared to have landed intact, but got quite damaged from being bounced and dragged along the ground and into and out of at least three gulleys for almost a mile before the recovery team could reach it. Our transmitter worked flawlessly and we had great directional signals the whole flight and recovery time.

The second place rocket, built by the team from University of Washington, carried its own home-brew beacon radio, which Rik found to be transmitting at 433.85 MHz. This rocket's motor put out a bright green flame, taking the long, slender rocket for the smoothest of the flights to well over 8000 feet. I believe their transmitter was putting out a bit more power than ours, because the signal was very strong as we tracked it. Since our radio was not in this rocket, we did not feel obliged to hike the 5+ miles that this rocket appeared to drift in the wind following parachute deployment. Fortunately for the UW recovery team, the continuation of the access road allowed them to get a lift for part of their return trip.

Thursday evening, we all met, including the three wives, at the Tamarisk Café for dinner. We had a great time getting better acquainted and bragging about our exploits in rocket science and amateur radio and telling our best stories about our kids and grandkids. The food was great and the endless soft drinks were very welcome. I estimate it took a little over a gallon of water and pop for me to catch up from the day's hiking, heat and wind.

Friday's launch time was initially blessed with beautiful blue, clear sky and almost no wind. However, the rocket teams that wanted to launch that day were still building their machines after lunch time as the clouds began to gather. We really wanted to watch the two-stage rocket brought by Arizona State University, and we were going to have one of our radios in its second stage. However, they were still not ready to launch when a storm bore down on us from the North East and the wind picked up about 2 p.m. The 2-stage rocket launch, hoping to reach at least 15,000 feet, was scrubbed! Since Field Day started the next day, and since we had done all we could do for the teams wanting our assistance, we decided to call it a day on Friday afternoon and head for home.

Several excellent suggestions were made by team members at the end of the activity. One of the best, I think, was the suggestion that we offer to provide a communications net, with a net control station on the launch observation hill, and an assigned ham operator with each rocket team and with the safety officer. This would allow us all to be better informed about the progress of each team and to help coordinate launches with less running around and yelling. Some of the teams had FRS radios that they used within their group. We could also bring some of these to monitor and assist as they need. We can also improve our transmitter container design to better integrate with the lighter, more slender rockets. If we assigned a team member to each prospective launch team at least a couple of weeks prior to the competition, the final transmitter package design for each rocket could be worked out while the teams still had access to their workshop tools and time to integrate the package. I believe Wally was able to work the Cedar Mountain repeater with his mobile radio. If we had an injury and needed help, this could be an important link. Since the next closest repeaters are quite distant from Green River City, a 2 meter Yagi on the antenna mast could also be a useful addition to the station. Our band plan should list the linking numbers for all of the potentially accessible repeaters so we could more effectively place a call for help, if needed. Okay, there WAS what appeared to be a huge cell phone tower on the east side of the launch area about two miles away and Rik's cell phone sometimes showed some bars, but, hey, we're hams, aren't we?

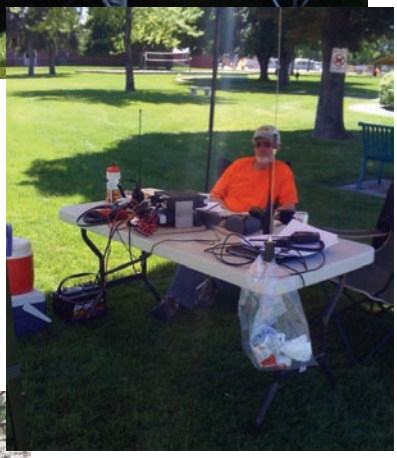
Well, that's about it. I think I can speak for the others and proclaim this as a very successful activity. We all learned a lot and had great fun together. And, we got cool T-shirts saying that we are "real rocket engineers!" Can't get much better than that.

73

Guy KE7WAT

Mud Slide Command Center


Wassach Back Relay




Field Day


CACHE COUNTY
SHERIFF
INCIDENT COMMAND

Questions for Extra Class License

1. (E1A03) With your transceiver displaying the carrier frequency of phone signals, you hear a DX station's CQ on 14.349 MHz USB. Is it legal to return the call using upper sideband on the same frequency?
A. Yes, because the DX station initiated the contact
B. Yes, because the displayed frequency is within the 20 meter band
C. No, my sidebands will extend beyond the band edge
D. No, USA stations are not permitted to use phone emissions above 14.340 MHz

2. (E2A06) On what band would a satellite receive signals if it were operating in mode U/V?
A. 432 MHz
B. 144 MHz
C. 50 MHz
D. 28 MHz

3. (E3C08) What is the name of the high-angle wave in HF propagation that travels for some distance within the F2 region?
A. Oblique-angle ray
B. Pedersen ray
C. Ordinary ray
D. Heaviside ray

4. (E5A11) What is the half-power bandwidth of a parallel resonant circuit that has a resonant frequency of 7.1 MHz and a Q of 150?
A. 157.8 Hz
B. 315.6 Hz
C. 47.3 kHz
D. 23.67 kHz

5. (E6C01) What is the recommended power supply voltage for TTL series integrated circuits?
A. 12 volts
B. 1.5 volts
C. 5 volts
D. 13.6 volts

6. (E7C05) Which filter type is described as having ripple in the passband and a sharp cutoff?
A. A Butterworth filter
B. An active LC filter
C. A passive op-amp filter
D. A Chebyshev filter

7. (E8A01) What type of wave is made up of a sine wave plus all of its odd harmonics?
A. A square wave
B. A sine wave
C. A cosine wave
D. A tangent wave

8. (E9B14) What does the abbreviation NEC stand for when applied to antenna modeling programs?
A. Next Element Comparison
B. Numerical Electromagnetics Code
C. National Electrical Code
D. Numeric Electrical Computation

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PO BOX 111
PROVIDENCE, UT 84332

September, 2009

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