RAINBOW CANYONS AMATEUR RADIO CLUB
CEDAR CITY, UTAH 84720

RCARC Minutes for
Nov 11, 2013

President Larry Heddings WD0CDG called the meeting to order at 7:3o pm.

Those in attendance:

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| N7KM | Ken Munford | WA7GTU | Don Blanchard | AL7BX | George Gallis |
| N7TCE | Merlin Mackay | KD7TTT | Terry Lee | KG7AHS | Travis Horton |
| N7SIY | Joel Clements | KB7UMU | Sylvia Clements | WD0CDG | Larry Heddings |
| K7ZI | Dick Parker | K6QOG | Bill Stenger | KF7GPZ | Fred Sheffield |
| KF7WIY | Denice Sheffield | K5JCA | Jim Ashby | AE7HY | Bob Vosper |
| KB7HHB | Mardi Biedermann | WA7HHE | Brad Biedermann | W7KBM | Ken Oliver |
| KF7YWY | Cameron Abbaticchio | | | | |
| GUESTS: | David William, Randy Dunning, Charles Young and Brant Palmer | | | | |

Bill Stenger K6QOG, secretary, asked for motion to approve the minutes. A motion was made and seconded with a unanimous vote.

Ken Oliver W7KBM, Treasurer, reported $773.40 last month. $30 income and $68 outgoing with a balance of $734.67.

Larry announced that the club tower trailer is now parked on the SW corner of the Sheriff's Search and Rescue lot. The trailer needs needs sanding and painting, however that will be a Spring job. There was also a coax problem during the Homestead Frontier Park Special Event station November 9th. We did make 54 contacts.

Sylvia Clements KB7UMU ask for a breakfast count. Sylvia asked for comments regarding having Saturday Club breakfast. A short discussion followed. Conclusion is to leave breakfast as is and will review as time goes on.

Larry called for nominations for club officers:

President: Cameron Abbaticchio KF7YWY

Co-Vice President: Richard Parker K7ZI
Denice Sheffield KF7WIY

Treasure: George Gallis AL7BX
Fred Sheffield KF7GPZ
Jon Rice NR7T

Secretary: Bill Stenger K6QOG

Next Meeting is November 12th - 7:30 pm Sheriff's Search & Rescue

Larry called for a motion to close the nominations: a motion was made and seconded and a unanimous vote.

Don Blanchard WA7GTU gave an update on the intertie. A new link was installed from Navajo Mountain to Mt. Eldon near Flagstaff, AZ. Also, the VHF Society purchased a new 440MHZ repeater and was installed on Navajo Mountain that will be connected to the intertie.

Terry Lee K7TTT mentioned several years ago when Charlie Morse was in charge of homeland security, two Icom 706s were lent out for people to try. One has been returned, but other is still missing. If anyone knows who borrowed the radio, please let Terry know.

Dick Parker K7ZI gave a presentation on antenna analyzers. Antenna analyzers analyzes SWR, impedance, length of coax, give values of capacitance and conductance and can be used as a frequency counter. He reviewed the definitions for all of the components measured. Dick gave a demonstration for measuring SWR and length of coax.

Ken Munford N7KM presented math formulas for calculating coax length and how to construct a phased vertical beam. The bottom line was that the antenna analyzer solves the calculations is a split second.

Larry had four guests introduce themselves.

Larry reminded everyone the next meeting will be the Christmas meeting. This year we have a kitchen with an oven and refrigerator.

Larry called for a motion to close the meeting. A motion was made and seconded and a unanimous vote.

The meeting was adjourned at 9:05 pm.

Respectfully Submitted:

Bill Stenger K6QOG
Secretary

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# FYI

## *Ham Radio in Space*: AMSAT-UK FUNcube-1 Satellite in Orbit

A Russian Dnepr rocket carried AMSAT-UK's FUNcube-1 -- now known officially as AMSAT-OSCAR 73 -- and 18 other satellites carrying Amateur Radio payloads to orbit at 0710 UTC on Thursday, November 21. Ground stations began receiving telemetry from FUNcube-1 soon after deployment and the satellite appears to be functioning normally.

One of the satellites on the launch, UniSat-5, will deploy a number of additional satellites. Among them should be the CubeSats PUCP-SAT-1, HumSat-D, estar-2, Icube-1 and the PocketQubes Wren, Eagle-1 (BeakerSat), Eagle-2 ($50Sat), QB-Scout1. PUCP-SAT-1 intends to subsequently release a further satellite Pocket-PUCP.

As well as UniSat-5 and its associated CubeSats and PocketQubes these Amateur Radio satellites were also on the launch:

HinCube FUNcube-1 Zacube-1 First-MOVE UWE-3 Velox-PII CubeBug-2
Triton-1 Delfi-n3Xt GOMX-1

For a frequency list, see http://amsat-uk.org/2013/11/13/three-amateur-radio-satellite-deployments-in-november/.

The latest orbital elements for FUNcube-1 are available at http://funcube.org.uk/working-documents/latest-two-line-elements/.

# ARRL Helps Manufacturer to Resolve Arc Fault Circuit Interrupter RFI Problems

The ARRL Lab has worked with a manufacturer of arc fault circuit interrupter (AFCI) breakers to resolve complaints that Amateur Radio RF was causing certain breaker models to trip unnecessarily. Like the more common ground fault circuit interrupter (GFCI), the AFCI is a safety device. Primarily designed to detect problems that could result in a fire, AFCIs detect potentially hazardous arc faults that result from often unseen damage or poor connections in wiring and in extension cords and cord sets. "Several months ago we started receiving reports from amateurs that when they transmitted, their AFCI breakers were tripping," said Mike Gruber, W1MG, the ARRL Lab's EMC specialist. He noted that the issue has been a topic of online ham radio discussions as well as on homeowner sites; it seems that stray RF is not the only thing that can cause a "nuisance trip" of an AFCI. Gruber pointed out that the National Electrical Code (NEC) already requires AFCIs in some household circuits, but not all US jurisdictions have adopted the requirement.

W1AW Station Manager Joe Carcia, NJ1Q, with the AFCI test stand. [Mike Gruber, W1MG, photo]

Gruber said that as AFCIs became more common in new construction in the US, reports started coming in that AFCIs in the vicinity -- not just in the radio amateur's home -- would trip in the presence of RF from an Amateur Radio transmitter. While each manufacturer's design is proprietary, most AFCIs detect arcs by monitoring the shape of the alternating current waveform, changes in current levels, voltage irregularities, and the presence of high frequency emissions or "noise." The ARRL Lab dug into the problem.

"Last summer we built a test fixture in which we could test any type of circuit breaker," Gruber said. It involved using W1AW as an RF source. Gruber said he bought one of "every AFCI that I could get my hands on," but when the Lab began testing them during W1AW transmissions, none of the devices tripped.

A ham in New Mexico who had reported AFCI problems sent some of his breakers to the ARRL Lab, "and those tripped when we tested them," Gruber said. The problematic breakers were certain models made by Eaton Corporation. "We already had an Eaton breaker, an older model, but it did not trip," he noted, adding that the breaker had a yellow button. The newer model, which had a white button, did trip in the presence of RF, however, even at power levels down to about 50 W on 17 meters.

Gruber contacted Eaton, and two of the manufacturer's engineers visited ARRL Headquarters in August. "Eaton was extremely cooperative and eager to resolve this," Gruber recounted. "They spent the day with us, going over our test methods and took some of the problematic breakers back with them, eventually developing a modified version.

"We have just finished testing the new version of the breaker, and it did not trip during W1AW transmissions and in other tests," Gruber reported. He said the new breaker is still in the queue for UL approval.

Eaton Engineering Director Andy Foerster said arc fault detection is challenging, in part because so many

common household devices -- such as vacuum cleaners and power tools that use motors with brushes -- create arcing. In information provided to ARRL Eaton engineer Lanson Relyea said that because AFCIs rely on HF emission detection to verify arcing, "any signal that conducts or radiates a signal within the detection band of the AFCI can cause interference and cause the device to trip without the presence of a true arcing condition."

Eaton and ARRL agreed that when the manufacturer comes out with any new models of breakers, it will ask the League to test them at W1AW. "It's a win-win situation," Gruber said. Eaton also has agreed to work with anyone having a problem with RF tripping its AFCIs.

Hams experiencing unwanted tripping problems with their or their neighbors' AFCIs should first contact the manufacturer. In the case of Eaton breakers, contact Bob Handick (412-893-3746) or Joe Fello (412-893-3745). Read more.