

Sierra Signals

Sierra Foothills Amateur Radio Club
Auburn, CA
An ARRL Special Service Club

May 2008

P.O. Box 1005, Newcastle, CA 95658

Satellite Cycle of Life

(Submitted by Greg, KO6TH)

Two announcements occurred this past week that nicely frame up the progression of life, death, and renewal. Renewal, in this case, is technological progress and evolution of amateur satellites. The final report on UOSat-Oscar 11 was issued, outlining the satellite's silence and the grim prognosis for its future. At the same time, final preparations are being made for next week's launch of six tiny cubesats, all carrying amateur radio payloads.

UO-11 was launched on March 1, 1984, becoming only the eleventh successful satellite built by amateurs, and the second built by the University of Surrey. To top it off, the satellite was built and launched in only 6 months, using off the shelf parts. The result was a

At the Key of S.F.A.R.C.

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REPORTERS

Satellites: Greg, KO6TH
History: Gary, KQ6RT
Misc Radio: Fred, K6DGW

RESOURCES

REPEATERS

145.430 (-0.6 MHz/PL 162.2)
440.575 (+5.0 MHz/PL 94.8)
223.860 (-1.6 MHz/PL 100.0)

CLUB NET

Thursdays, 7:30PM, K6ARR/R
145.430

CLUB MEETINGS

Second Friday of the month,
7:30PM at the Library, 350
Nevada St, Auburn CA

CLUB BREAKFAST

Last Sat of the month at Susie's
Café, Cirby at Riverside, Roseville
- 8:00 AM

NET CONTROL OPS

Dave Jenkins, WB6RBE
Gary Cunningham, KQ6RT
Norm Medland, W6AFR
Casey McPartland, W7IB

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satellite that weighed some 60kg (132 pounds), and contained one of the first non-military digital store-and-forward facilities in orbit. This was also the test bed for the many other digital packet-radio based satellites that followed, including, if you follow their family history, the six cubesats.

24 years in space has taken its toll on UO-11. Its battery pack has undergone something like 100,000 partial discharge and charge cycles, and can now power the satellite for less than 10

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2008 Calendar of Events

May 3	VE Session
May 9	Regular Meeting
May 31	Club Breakfast
June 7	VE Session
June 14	Regular Meeting (Meeting to be held at the Newcastle United Methodist Church)
June 28	Club Breakfast

We encourage members to receive Sierra Signals via email to save the Club the cost of reproduction and mailing

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Thirty Years Ago At The SFARC

(Reported by Gary, KQ6RT)

May 11, 1978

The meeting was called to order by the president at 7:40 P.M. at Placer High School Cafeteria.

Minutes of the April meeting were approved as read.

Treasurer's report \$458.79.

Next order of business was the introduction of visitors, guest and members.

Jim, K6ARR reported the WR6ADI will be changed to the new frequencies this weekend. (144.83 in - 145.43 out).

Floyd, W6OZH reported on the progress of arrangements for Field Day to be held on June 24/25th at the Blue Canyon airport. The chairman also said that there is still a need for more operators.

Our Club is still looking for a permanent meeting place. Fred, K6DGW is looking into the possibility of obtaining the Multi-use room at the Bowman School.

It was moved and seconded to upgrade the repeater controls. Motion passed.

The members enjoyed an excellent slide presentation of the OSCAR program by Ross Forbes, WB6GFJ. Ross is an AMSAT/OSCAR director.

The meeting adjourned at 9:45 P.M.

Sincerely, Al Schweigert, Secretary

73,

Gary - KQ6RT

Satellite Cycle of Life...

(Continued from front page)

minutes after the satellite enters the Earth's shadow. The computer and other control functions failed years ago, and the satellite's orientation has been controlled by its passive "gravity boom", a long weighted arm that functions something like the tail on a kite. The transmitter is being managed only by the watchdog timer, with a 20.7 day cycle of 10.3 days on, and 10.4 days off.

For the past 12 years, Clive G3CWV has been tracking and recording UO-11's health, status, and any telemetry received.

He records that the last time the transmitter switched off was on March 14th of this year. At that time, the eight digital status channels were still operating. When last received, the spacecraft telemetry indicated that one of the solar array panels had failed, and there was a large and unexplained drain on the main 14 volt power bus. This, coupled with the state of the batteries, means that the spacecraft cannot withstand any but the most fleeting eclipses. The watchdog timer should have activated the satellite on March 24th, but nothing has been heard.

Recently I talked about the AO-51 satellite, and it's orbital situation. For AO-51, the satellite had a few months where the orbit placed the satellite continuously in full sun, giving it a temporary problem with too much heat. UO-11 had been operating nicely in such an orbit for some time, but a few days prior to the March 24th activation date, it too shifted ("precessed" is the term they use) to where there is an eclipse on every orbit. Long term predictions indicate that this situation will continue until about the year 2019. So, for the foreseeable future, UO-11 will only transmit under the unlikely combination of its watchdog timer just turning the satellite on, with the satellite in an orientation favoring the remaining working solar panels, and at the beginning of the non-eclipse part of the orbit. It then might be able to squeeze out a frame of telemetry, before falling silent again, with an under-voltage reset of the timer. Hams will be listening, but little hope is held for anything meaningful to be heard. (You can read more about UO-11 at Clive's website at <http://www.users.zetnet.co.uk/clivev/oscar11.htm>)

The six new satellites are about as different from UO-11 as their 24 year evolutionary path can take them. Each measures 10 cm (4 inches) on a side, and weighs 1kg (2.2 pounds). With modern electronic component fabrication, satellite designers are now able to place an entire management computer, power system, radio transmitters, receivers, and antennas, and their scientific experiments all within that tiny space. You can literally hold one in the palm of your hand. Instead of being a rocket payload on their own, they are stuffed into a spring-loaded launch cannister that functions something like a "Jack in the box", and looks more like a cosmic Pez dispenser. Several of these cannisters, known as P-POD (Poly Picosatellite Orbital Deployer), are then mounted on the rocket for launch, along with the primary (usually big!) payload.

Each of the satellites in this group has its own name and mission. For example, Delphi-3C is a test bed for a new solar electric power array. For several months, the satellite's builders will be conducting scientific tests and measurements on the bird, using amateur radio for the communications. When these have been completed, the satellite's Mode B transponder will be switched on, and the satellite opened for general "bent pipe" SSB/CW satellite communications. More will be published as I can research the various missions and their status. Or, you can follow along at <http://www.amsat.org>. There are links to the various satellite home pages at the bottom of the page.

73,

Greg KO6TH

NEWS FLASH: As of this writing, the cubesat rocket launch occurred successfully about 3 hours ago, and all of the tiny satellites were deployed. Several have been reported operational, and we are awaiting information on the rest.

April Meeting Minutes

(Reported by Leslie, K7NYE)

Minutes of the SFARC Board and General Meeting, April 11th at the Auburn, CA main library:

Board of Directors meeting began at 7:00 PM with a quorum officers and directors in attendance. New business discussed planning for 2008 Field Day, transitioning the clubs finances to a new bank and discussion surrounding a regional hamswap with other amateur radio clubs. It was determined these topics would be brought to the general membership for review and discussion. No old business discussed. Meeting was adjourned at 7:25 PM.

SFARC General Meeting Minutes:

7:39 PM Meeting began with introduction by SFARC Club President, Don Hay, WB6LPJ and Pledge of Allegiance. Introductions were made of the club members and guests in attendance, approximately 28 in total. Officers and Committee members in attendance gave their reports.

New Business brought to the members included information about 2008 Field Day. Casey, W7IB talked to the members about some changes proposed for this year's field day, including hosting a dinner, forgoing the lunch and asking for a \$5.00 deposit for all attendees which would pay for giveaways. Another topic centered around a regional hamswap. This idea, proposed by another local ham, Carl, WF6J would aggregate multiple clubs into one event. It was suggested that a jointly-operated hamswap would help boost attendance, add additional equipment for the swap, promote camaraderie between all the clubs and cut total operating costs. The consensus of the membership was favorable.

Other business brought up included other volunteer activities coming up, such as the need for radio volunteers for the Enduro activity on the 3rd and 4th of May. Jim, K6ARR said that the club repeater would be discussed at an upcoming school meeting on May 14th at Alta Vista Elementary in Auburn. All club members are invited to attend to show SFARC's support for keeping the repeater on site. Several members volunteered to show up at the meeting. Finally, the upcoming nomination for 2009 officers has also begun in earnest, as several positions are up for new volunteers, including President and VP.

Presentation: Sonya Vargas, Community Outreach Coordinator for CALSTAR presented information about the regional air ambulance service. As a private, non-profit organization, CALSTAR serves a number of counties within California and has reciprocal agreements with other air ambulance services across the Pacific Northwest. Started in

1983 as a 501C-3 non-profit organization, CALSTAR has served over 30,000 patients since its inception. Over 75% of their work is accident response, with the balance being inter-hospital transfer of patients. Applications were provided to SFARC attendees and emailed to others not attending the meeting. As a club, SFARC qualifies for \$35.00 annual fee for a family, which formally was \$50.00. SFARC needs at least 15 applications to obtain the group rate of \$35.00 for each family.

Gene, KG6NYH held the monthly Drawing. Meeting was adjourned around 9:50 PM.

Respectfully submitted:

Leslie, K7NYE

Treasurer (on behalf of Secretary, W6DT, Wayne Stilwell)

North Hills Hamfest

That time again. North Hills Radio Club is holding their annual Hamfest this year on Sunday, May 18th.

Location: (Sacramento)

Bella Vista High School

8301 Madison Avenue, Fair Oaks, CA

halfway between Sunrise & madison Aves.

Time: 7am - Noon

Talk in: K6IS 145.190 (-) PL 162.2

Free parking, spaces \$20 for 2,

Food & Beverages,

Raffle and hourly prizes.

NHRC is an ARRL Club

Contact:

www.k6is.org

Maynard, W6PAP (916) 726-1673

North Hills Radio Club

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