

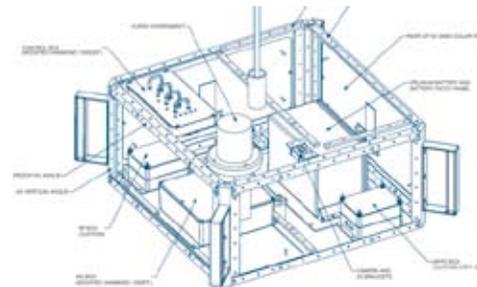
FEBRUARY 2011

THE MONTHLY NEWSLETTER of the SANTA CRUZ COUNTY AMATEUR RADIO CLUB

# SHORT SKIP



## ARRISat-1 to be deployed Feb. 16 2011



Earlier this year, astronauts living on the International Space Station (ISS) had to discard two surplus Orlan space suits. With the loss of the suits, those involved with AMSAT and Amateur Radio on the International Space Station (ARISS) were at a loss. 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, with video cameras and an antenna mounted on the helmet. But even though the removal of the space suits took away the "Suit" component of the deployment, AMSAT and ARISS forged ahead, changing the configuration of the satellite and Amateur Radio experiment and giving it a new name: ARISSat-1/RadioSkaf-V.

According to ARRL ARISS Program Manager Rosalie White, K1STO, the AMSAT engineering team made the final decision for the

satellite to become a cube 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 explained. "All of the hardware and software goes inside the cube, with the cameras on the outside. ARISS sees this mission as another opportunity for 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."

Students at Russia's Kursk State University are developing an experiment that will measure the vacuum of space; it is expected to be integrated into the electronics once the US-produced equipment is delivered to Russia this fall.

A band plan for ARISSat-1, including CW beacon, SSB/CW 16 kHz transponder (70 cm uplink/2 meter downlink), BPSK telemetry (satellite status and experiment telemetry)

### February 18th Club Meeting

We are going to try something rather different at this meeting in the form of a 4-person panel who will share their views on the future development of our services and infrastructure. The process will begin to lay the foundation for future projects and will only work well with constructive interaction by the audience.

I have learned to always be prepared to answer three questions.

1. Why are we doing X, 2. Why are we doing X this way, 3. Why are we doing X now. The answers reflect one's personal philosophy. Here succinctly is my response

1. The status quo is unsustainable if we are to remain relevant, we need to plan ahead

2. A moderated forum is an effective way to explore the needs of the future with the technical means

3. We are faced with near-term issues that can have longer term implications both locally and regionally

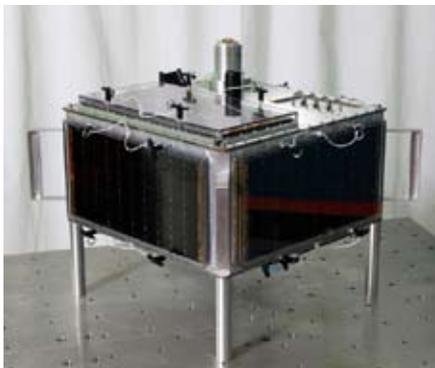
Panel members will be announced shortly and I am probably going to be the moderator

I hope to see and hear from you on the 18th

—Ron W6W0

**CLUB MEETING FRIDAY FEBRUARY 18, 7:30PM**

## ARISSat-1 continued



and FM (announcements, slow scan television [SSTV] transmissions and telemetry) is now available.

ARISSat-1 will boast:

24 different student greetings -- transmitted in 15 languages -- on the FM downlink.

SSTV shots taken by the spacecraft and transmitted to the ground on FM.

Telemetry from Russia's Kursk State University experiment that will measure of the vacuum of space. The experiment will be sampling the amount of vacuum each day for 90 minutes, then sending down the data to map the vacuum change as the satellite slowly spirals into the atmosphere. According to AMSAT ARISSat Project Manager Gould Smith, WA4SXM, this is a unique experiment, "as we understand that such measurements have not been taken previously at the altitudes at which ARISSat-1 will operate."

Ground station software for both the PC and Mac platforms. This software will be useful to demodulate and display the new BPSK1000 downlink that will include data from the experiment and satellite telemetry, as well as demodulate the older BPSK-400 format used by the Phase III satellites, such as AO-40. Audio from a 2 meter SSB receiver/scanner can be fed into a computer soundcard and the software will demodulate the downlink. Separate programs for displaying SSTV images and decoding CW are currently available from other sources.

Other ARISSat-1 upgrades include:

ARISSat-1 will transmit four different modulated signals across a 48 kHz band, including a 16 kHz wide SSB/CW transponder, extensive BPSK telemetry downlink, CW beacon and FM downlink capabilities. SuitSat-1 did not have a receiver, so it was transmit-only with canned voice messages and a pre-recorded SSTV image, plus CW telemetry downlink on a single FM channel.

ARISSat-1 will have a student experiment; the system can handle up to three experiments. SuitSat-1 did not carry student experiments.

ARISSat-1 has 4 SSTV cameras and software to select photos taken with illuminated pixels to be transmitted to the ground on the FM channel. SuitSat-1 did not have SSTV photo capability, only a prerecorded SSTV image to transmit.

ARISSat-1 has more pre-recorded student messages to transmit -- 24 messages in 15 languages. SuitSat-1 had prerecorded student messages in only 6 languages.

ARISSat-1 has several "challenges" that students and others will be encouraged to meet, including decoding CW transmission of call signs of those involved with the project, recognizing a "secret word" at the end of the greetings and hearing a recording of a two-way transmission from former Soviet cosmonaut Yuri Gagarin, the first human to orbit the Earth.

ARISSat-1 is a technology demonstrator, featuring the first use of a software defined transponder (SDX) in an Amateur Radio spacecraft. According to one of the team leaders, Gould Smith, WA4SXM, SDX uses software to modulate/demodulate radio signals, rather than analog hardware. SuitSat-1 used a modified Kenwood analog transmitter.

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 -- a surplus Russian Orlan spacesuit fitted with an Amateur Radio transmitter -- sparked the imagination of students and the general public and turned into a public relations bonanza for Amateur Radio. ARISS hoped to capitalize on the concept by building an even better SuitSat that will include ham radio transponders. The SuitSat.org Web site attracted nearly 10 million hits during the 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. It re-entered the atmosphere and burned up in September 2006.

"Though ARISSat-1 won't sport as charming an exterior as its predecessor, it embodies significant enhancement in capability and longevity," said ARRL Education Services Manager Debra Johnson, K1DMJ. "The ham radio community and schools with access to Amateur Radio ground stations can begin planning their mode of conversation with this new space inhabitant that will be arriving on the scene in just a few months!"

—from Amsat.org

## EVENTS

Upcoming DX Contests:

February

12-13 CQ WW RTTY WPX Contest

14-18 School Club Roundup

19-20 ARRL International DX Contest, CW March

5-6 ARRL Inter. DX Contest – Phone

26-28 CQ WW WPX Contest, SSB

More contest listings and info at:

<http://www.arrl.org/arrl-dx> ,

<http://www.ncdxc.org/> and

<http://www.hornucopia.com/contestcal/index.html>

Upcoming Events of interest:

Sat, February 12th and 26th

CAKE Meeting

Coffee Assisted Knowledge Exchange

All welcome at Gigi's Bakery & Cafe.

10am – 12pm

550-A River Street, Santa Cruz, 95060 (Gigi's)

Bring questions, items of interest, your interests.

March 5, 2011—Monterey

Swap meet & free ham exams

Contact:

Jim Lacalamita WB6YAM

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

March 12, 2011—Cupertino

De Anza Electronic Flea Market

<http://www.electronicfleamarket.com/>

April 14-17, 2011—Santa Cruz Co.

Sea Otter Classic

XBE&XMY ARES/ACS

Contact: Tim Takeuchi W6TST

<http://www.seaotterclassic.com/>

April 15-17, 2011—Visalia

The 62nd Annual International DX Convention sponsored by the Nor Cal DX Club will be held at The Holiday Inn Hotel & Conference Center in Visalia, California

More information at:

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



By Art Lee WF6P

## CHATTER

Was happy when I heard over the Baja Maritime Mobile Net that single-hander cruising sailor Janice (58) was safe. On 7 January, while at the beginning of her around-the-world cruise, her yacht NEREDA rolled over in a storm off the Pacific coast. She reported that the boat rolled 360 degrees, righted itself and surprisingly, did not lose its mast or rigging. She was able to get her engine started and reported a line wrapped around her prop shaft. A day or two later, she made it safely into port.

Terry Parks, N6NUN, aboard his 53-foot yacht in Sausalito, mentioned that his electric bill was \$242 for December. He's a live aboard and relies on electric power for heating and cooking, plus electrical appliances. At his marina, he is not hooked up to natural gas. That bill was not too bad, but a surcharge of \$162 was tacked on by Marin County to keep it Green. Terry said the surcharge was optional. Optional? That's unusual. Terry said he could work me on the K6BJ repeater on his IPAD.

A joke from The American Legion Magazine: "Two Antennas met on a roof, fell in love and got married. The ceremony wasn't much but the reception was excellent."

Recently I had brunch at Rocky's café in Felton with Leon Fletcher, AA6ZG. Soon the table adjacent to ours was filled by JV, K6HJU, Jeff, AE6KS and two other SLVARC hams. It was like ham radio old-home-week as immediately the talk switched from the topic of ham and eggs and barbecue beef sandwiches to antennas, commercial radio broadcast station calamities, and even some repeater and computer talk. JV told several tower removal stories. I reminded him of one that I helped him take down over 25 years ago for the widow of a SK. He tried unsuccessfully to break up the concrete base with sledgehammers. He finally broke one sledgehammer handle with a mighty blow. It was then that we gave up and neatly covered the base with a layer of topsoil.

## Fractal Antennas: Hype or Hope?

By Dan Romanchik, KB6NU

QRZ.Com currently has a very interesting item on fractal antennas (<http://forums.qrz.com/showthread.php?t=277623>). While the idea of applying fractals to the design and construction of antennas has been around for quite some time, very few hams have actually built them, and there are currently no companies building commercial fractal antennas for the ham radio market. The question, of course, is why?

Those that are hyping fractal antennas—most notably W1YW, CEO of Fractal Antenna Systems—claim several advantages. These advantages purportedly include wider bandwidth and smaller size when compared to traditional antennas, such as verticals and dipoles. Those that are trying to debunk these claims contend that this is all just hogwash, and that there's no real scientific basis for these claims.

One thing that's confounding this debate is that there have been very few articles published on the topic. For commercial reasons, W1YW has made his articles unavailable. He says that he will be publishing something real soon now, but there is nothing definite at this point.

There is at least one article on the Internet that describes the construction of a fractal antenna for amateur radio use. "FYI:FYQ: Another look at the Fractal Quad Yagi" (<http://www.scribd.com/doc/18788401/FYIFQY>) was published in the October 1999 issue of 73 magazine. It describes the construction of a two-element, 10m antenna. Like most 73 articles, it's not incredibly technical, though, and doesn't really contribute to the technical debate, except to demonstrate that physically small antennas can be made using fractal design.

The PDF contains several photos of the antenna. It's a crazy contraption that looks relatively difficult to build. So difficult, in fact, that it makes me wonder if it's even worth it to try building one. After all, 10m antennas are not really all that big or all that difficult to build to begin with.

Even more interesting than the antennas are the personalities on both sides of the debate. The QRZ.Com discussion quickly devolved into a flame war, with neither side scoring a knockout.

Personally, I think the brouhaha is much

ado about nothing. It seems to me that it's been demonstrated that you can build antennas using fractal design techniques. They are physically smaller than traditional antenna designs, but you really don't get something for nothing. Overall, they don't have as much gain as yagis or quads, and they're more complex to build.

My opinion on this is that if W1YW can build antennas that radiate a signal and can sell those antennas to someone, then more power to him. In the end, his company will live and die by how well, his antennas work and how much they cost when compared to antennas from other companies.

As for me, I think I'll stick with the more traditional HF antennas. If I need to make my antennas smaller, I'll use loading coils or designs such as the Moxon. I may not be on the bleeding edge of technology, but I'll certainly avoid a lot of headache trying to figure out who's right.

When not avoiding flame wars on QRZ.Com, Dan, KB6NU, operates CW on the HF bands, writes and publishes license exam study guides, and teaches ham radio classes. You can find his ham radio blog at [www.kb6nu.com](http://www.kb6nu.com).

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## WELCOME NEW MEMBERS!

The following members joined (or rejoined) us during January 2011:

Fletcher Arnold KJ6LDC

Jon Bennett KB6JON

Alan Hawrylyshen K2ACK

Barry Norris NR6S (returning)

David Shoaf KG6IRW

John Sigismondi W2FLB

Bob Wolbert K6XX (returning)

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## Treasurer's Report

The December 31, 2010 Treasurer's Report presented to the Board of Directors showed that at the end of 2010 the SCCARC treasury had \$3,950.21 in cash and bank accounts (total less encumbrances: \$3,037.02). At that time all financial obligations for which invoices had been received had been met. The full Report, incorporating the current working budget as well as actual and projected income and expenditure figures for the full calendar year, will be available for review at the February 18 Club meeting.

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**SCCARC Board - 2011**

|                       |                     |        |          |
|-----------------------|---------------------|--------|----------|
| <b>President</b>      | Bruce Hawkins       | AC6DN  | 689-9923 |
| <b>Vice President</b> | Brandon Bealer      | KJ6DKK |          |
| <b>Secretary</b>      | David Copp          | WS2I   | 708-2206 |
| <b>Treasurer</b>      | Kathleen McQuilling | KI6AIE | 476-6303 |
| <b>Board</b>          | Christopher Angelos | KG6DOZ | 688-3562 |
|                       | Mike Doern          | KM6IKE | 477-1161 |
|                       | Rich Olsen          | W1WUH  | 464-7474 |
|                       | Cap Pennell         | KE6AFE | 429-1290 |
|                       | Doug Burklo         | KI6ZIB |          |
| <b>K6BJ Trustee</b>   | Allen Fugelseth     | WB6RWU | 475-8846 |

**MONTEREY BAY REPEATER ACTIVITY**

|                    |  |
|--------------------|--|
| Santa Cruz County  | K6BJ 146.790- PL 94.8 Santa Cruz (linked to K16EH)<br>K16EH 147.945- PL 94.8 Watsonville (linked to K6BJ)<br>K6BJ 440.925+ PL 123.0 Santa Cruz (not linked)<br>• SCCARC Net Monday 7:30 PM 146.79- /147.945- /147.180+ linked<br>• SCCARC 10 Meter Net Monday 7:00 PM 28.308 MHz USB |
| ARES Net           | SC County Wide ARES Tuesday 7:30 PM on 147.180+ PL 94.8 and 443.600+ PL 110.9 linked   |
| San Lorenzo Valley | WR6AOK 147.120+ PL 94.8 Ben Lomond<br>• SLV Net Thursday 7:30 PM   |
| Loma Prieta        | AB6VS 440.550+ / AE6KE 146.835- PL 94.8 (linked for net)<br>• LP ARES / LPARC Net Tuesday 7:15 PM  |
| Monterey           | K6LY 146.97- PL 94.8 / 444.700+ PL123 (linked for net) Monterey<br>• Monterey Co. ARES Net Wednesday 7:30 PM K6LY 146.970- (PL 94.8)<br>• NPSARC Net Wednesday at 8 PM on K6LY/R   |
| LPRC               | WR6ABD 146.640- PL 162.2 / 442.900+ PL 162.2 (winsystem.org)<br>• LPRC Net Tuesday 8:00 PM 146.640-(PL 162.2)<br>• Amateur Radio Newslines broadcast Tuesday   |

• Santa Clara Valley Section Traffic NET Tuesday 9:00PM 146.640- (PL 162.2)

**FOR MORE INFO SEE: <http://www.k6bj.org/freq.html>**

**SCCARC Calendar of Events**

|                                      |          |            |
|--------------------------------------|----------|------------|
| ARES Meeting (prior to club meeting) | Friday   | Feb 18     |
| SCCARC Meeting                       | Friday   | Feb 18     |
| Cake Meetings                        | Sat      | Feb 12, 26 |
| Board Meeting                        | Thursday | Feb 24     |
| Short Skip articles due              | Mon      | Mar 7      |
| SCCARC Meeting                       | Friday   | Mar 18     |

**MONTHLY MEETINGS.**

The SCCARC Meets at 7:30 PM, on the **THIRD FRIDAY** of the each month (except December). Meetings are at Dominican Hospital, Education Center, 1555 Soquel Drive, Santa Cruz.

**NET CONTROL SCHEDULE**

(Subject to Change)

|      |              |
|------|--------------|
| 2/14 | Greta K16NTL |
| 2/21 | Phil KE6UWH  |
| 2/28 | Tom K6TG     |
| 3/7  | Chris KG6DOZ |
| 3/14 | Byron N6NUL  |

Short Skip is published 12 times per year. Free to members.

**Santa Cruz County Amateur Radio Club, Inc.**

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SANTA CRUZ, CA 95061-0238

**SCCARC Membership Renewals**

If you have already renewed your membership for 2011, thank you! If you haven't, please do it now. Annual dues are \$25 for full members, \$6 each for each additional member at the same mailing address, and \$10 for full-time students age 18 or under. Dues may be paid in cash or check (payable to SCCARC) in person, at regular Club meetings, or checks may be mailed to SCCARC, P.O. Box 238, Santa Cruz, CA 95061-0238.