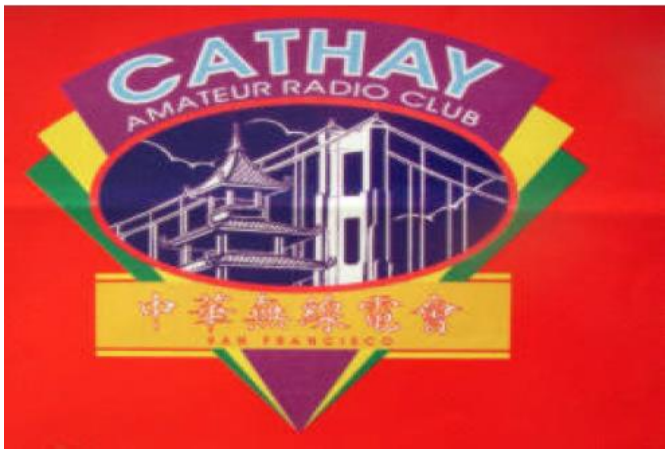

Cathay April 2019

www.cathayradio.org

President: George Chong, W6BUR **email:** *W6BUR@comcast.net*
Vice President North: Leonard Tom, *NX6E* **email:** nx6e@hotmail.com
Vice President South: Bill Fong, *W6BBA* - **email:** w6bba@arrl.net
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Treasurer: Vince Chinn aka Mingie, *W6EE* - **email:** vince@vincechinncpa.com
Web Master: Edison Fong – *WB6IQN* - **email:** edison_fong@hotmail.com
Mission: The Cathay Amateur Radio Club is basically an active social club of Ham Radio Operators and their spouses. We support local community requests for HAM emergency communications. Several of us are trained in CPR/ First Aid and are involved with community disaster preparedness.

Monday Night Net Time: 9 PM Local Time/PST, Repeater: WB6TCS - RX 147.210, TX 147.810, Offset +0.6 MHz, CTCSS/Tone PL100 Hz

Please note: Repeater: N6MNV UHF 442.700 Mhz, Offset +5MHz, CTCSS/Tone PL 173.8 Hz in South San Francisco is cross linked every Monday Night Net at 9 p.m. to WB6TCS 2-meter repeater.

The CARC Monday night net is the best way to find out the latest club news. All check-ins are welcome.

Message from the President: George Chong, *W6BUR*

Hello CARC Members and Friends;

Many thanks to Mr. Denis L. Moore – WB6TCS for the use of his repeater for our CARC Monday Night Net.

Foothills Amateur Radio Society Banquet Introduction:

The recent Winter FARS Banquet Dinner was held this past February 15, 2019. A summary write-up with a few pictures are in this newsletter. It was attended by several Bay Area HAM club members thought out the Bay Area.

Tech Article Introduction

Artist's rendering of the *OSIRIS-REx* spacecraft

This article is about a NASA space probe: OSIRIS-REx (Origins, Spectral Interpretation, Resource Identification, Security, Regolith Explorer) to the Bennu astroid.

Bennu orbits between of Mars and Earth, averaging around 100 million miles (160 million kilometers) away from the sun which qualifies it as a near earth orbit object. The average time for a radio signal from the probe is about 8.88 minutes (160 million kilometers divided by 300,000 kilometers per second speed of light). Thus, it would take on average 17.76 minutes for a earth bound radio station to send a radio signal of commands to the OSIRIS-Rex spacecraft and to get back acknowledgment of receipt of the commands.

The probe was launched on Sept 8, 2016 and reached Bennu in Dec 3, 2018. The probe traveled over 2 billion kilometers. At some point when deemed appropriate (approx July 4, 2020) the probe will retreive and return a Bennu sample to Earth in 2023.

On March 19, 2019 NASA NASA's OSIRIS-REx project reported that the Bennu is an active astroid and recorded activity where is it actively ejecting material ranging from dozens or hundreds of particles ranging in size from millimeter-sized sand grains up to several-centimeter cobbles. Some of the ejected material returned to the surface of the Bennu astroid and some of it was ejected beyond the gravity of Bennu.

More details are in the Tech Session, read the full article and enjoy..

Additional Thoughts

I wish to thank our CARC members that set aside their valuable time to participate in our Monday night's nets.

Chat sub s'em to all you CARC members! - George W6BUR.

Public Service Announcements

HAM CRAM / HAM Licensing

For upcoming HAM Licensing locations please refer to:
http://www.arrl.org/find-an-amateur-radio-license-exam-session

Auxiliary Communications Service (ACS)

The Auxiliary Communications Service (ACS) was organized by the San Francisco Office of Emergency Services (OES) following the 1989 Loma Prieta Earthquake to support the communications needs of the City and County of San Francisco when responding to emergencies and special events.

The Auxiliary Communications Service holds General Meetings on the third Tuesday of each month at the San Francisco Emergency Operations Center, 1011 Turk Street (between Gough Street and Laguna Street), from 1900 hours to 2100 hours local time. All interested persons are welcome to attend.

The ACS Net begins at 1930 hours (7:30 p.m.) local time each Thursday evening, on the WA6GG repeater at 442.050 MHz, positive offset, tone 127.3 Hz. The purpose of this net is to practice Net Control skills, practice checking in with deployment status in a formal net, and to share information regarding upcoming ACS events. Guests are welcome to check in. ACS Members should perform Net Control duty on a regular basis. On the second Thursday of each month, the net will be conducted on the output frequency of the WA6GG repeater, 442.050 MHz no offset, tone 127.3 Hz, simplex.

For more information, please attend an ACS meeting or check in on a net, or call 415-558-2717.

Upcoming meetings: Tuesday 7pm, April 16, 2019
Tuesday 7pm, May 21, 2019
……Tuesday 7pm, June 18, 2019

Gilbert Gin (KJ6HKD)

Free Disaster Preparedness Classes In Oakland:
http://www.oaklandnet.com/fire/core/index2.html

CORE is a free training program for individuals, neighborhood groups and community-based organizations in Oakland. The underlying premise is that a major disaster will overwhelm first responders, leaving many citizens on their own for the first 72 hours or longer after the emergency.

If you have questions about the recertification process, you may contact the CORE Coordinator at 510-238-6351 or core@oaklandnet.com.

Free Disaster Preparedness Classes In San Francisco – NERT Taught by San Francisco Fire Department (SFFD).

http://sf-fire.org/calendar-special-events

Upcoming events

April
13 2MCM Ham Radio practice
No RSVP needed. Meet at Spreckels Lake in Golden Gate Park at 10am
20 NERT Citywide Drill, NERT graduates and victims needed
SAVE THE DATE!!

May
8 NERT Quarterly --- All NERTs welcome
12 Ham Radio Practice -- 2MCM
No RSVP needed. Meet at Spreckels Lake in Golden Gate Park at 10am
19 NERT Training Day - Third Saturday

***SFFD DOT** is the Fire Department Division of Training. All participants walking, biking or driving **enter through the driveway gate on 19th St.** between Folsom and Shotwell. Parking is allowed along the back cinderblock wall.

Visit ***www.sfgov.org/sffdnert*** to learn more about the training, other locations, and register on line. Upcoming Special NERT Events.

San Francisco Police Department: Auxiliary Law Enforcement Response Team (ALERT)

The Auxiliary Law Enforcement Response Team (ALERT) is a citizen disaster preparedness program designed. The ALERT program is for volunteers 16 years of age or older, who live, work, or attend high school in San Francisco.

Graduates of the San Francisco Police Activities League (P.A.L) Law Enforcement Cadet Academy are also eligible to join.

ALERT volunteers will first complete the Fire Department's Neighborhood Emergency Response Team (NERT) (www.sfgov.org/sfnert) training and then graduate into an 8 hour Police Department course specifically designed for ALERT team members.

ALERT members will work closely with full-time and/or Reserve Police Officers in the event they are deployed after a disaster. The Basic ALERT volunteer will have no law enforcement powers other than those available to all citizens.

SFPD ALERT Training

The next SFPD ALERT training class has been scheduled for Saturday June 1, 2019 and Saturday, September 28, 2019. The class will be held at the San Francisco Police Academy, in the parking lot bungalow, from 8am-5pm (one hour lunch break) on Saturday.

** Class date indicated are only for new members who have not completed either SFFD NERT training or the SFPD Community Police Academy.

IMPORTANT- All participants must complete the background interview process in order to be eligible to attend the ALERT training class.

Eligible ALERT participants may register for a training class by contacting the ALERT Program Coordinator, Mark Hernandez, at sfpdalert@sfgov.org, or by telephone at 415-401-4615.

SFPD ALERT Practice/Training Drill

All active/trained ALERT members are asked to join us for our next training drill, scheduled for on 9:00 am – 1:00pm Saturday May 4, 2019. Details will be emailed to active ALERT members, prior to the date of the exercise. Participation is not required, but strongly encouraged.

For more information on the San Francisco Police Department ALERT Program, email us at sfpdalert@sfgov.org, or call Sergeant Mark Hernandez (SFPD, Ret.), SFPD ALERT Program Coordinator, at (415) 401-4615.

For additional information on the web please refer to:
http://sf-police.org/index.aspx?page=4019

Foothill Amateur Radio Society (FARS) Dinner Banquet Summary

By Rodney Yee – KJ6DZI
April 4, 2019

As many of you know that the CARC and many other HAM Bay Area clubs were invited to the Friday February 15, 2019 FARS Winter Dinner Banquet and about 10 of our CARC members attended it. It was held at Michael's Restaurant in Mountain View. There were 84 dinner guests in attendance and served a variety of delicious pre-ordered dinners (Prime Rib, Salmon, Chicken Florentine, and Spinach with Cheese Tortellini Alfredo). There were several other HAM radio groups represented at the dinner.

After opening statements by FARS president Mikel Lechner - KN6QI (FARS President) it was turned over to guest speaker: Bob Rydzewski, Deputy Archivist from the California Historical Radio Society (CHRS).

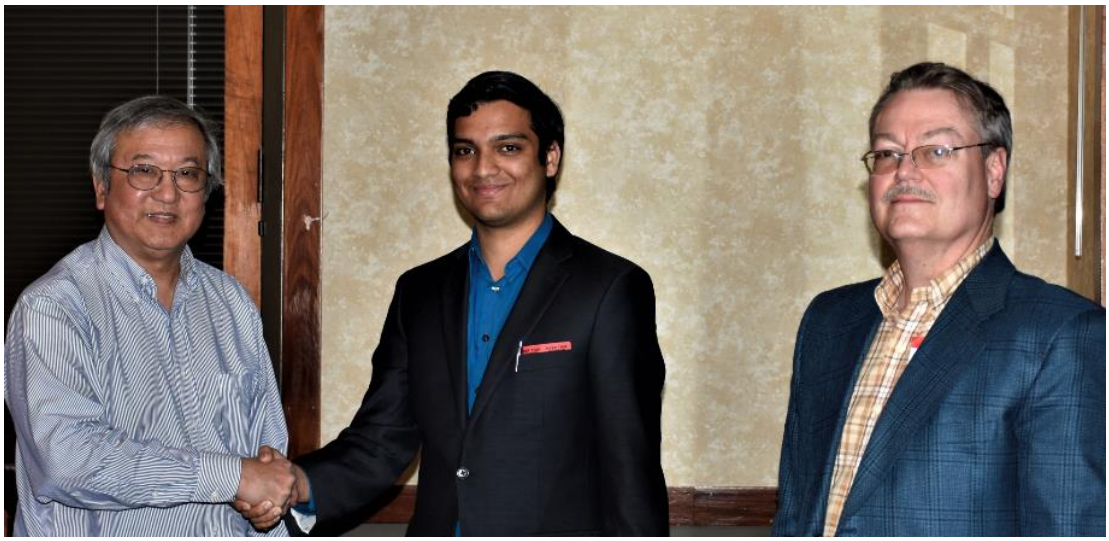
Mr. Rydzewski using CHRS archival material in a specially prepared Microsoft PowerPoint presentation spoke for about 45 minutes about the early history of the HAM radio pioneers. And it only scratched the surface of the vast amount of historical material contained within CHRS archives.

Mikel Lechner and Ed Fong then presented a FARS scholarship award to a Rohan Agrawal -KJ6LXV, a senior Monte Vista high school student for his interest and work with HAM radio. The newly created FARS scholarship of $1,000.00 was started and funded by the generosity of Ed Fong - WB6IQN, Ron Quan – KI6AZB, and Nick Cassarino – N6VOA.

The dinner concluded with a very well received raffle of various brand new and high-quality HAM radio gear along with miscellaneous electronic items. Ed Fong – WB6IQN conducted a flawless raffle.

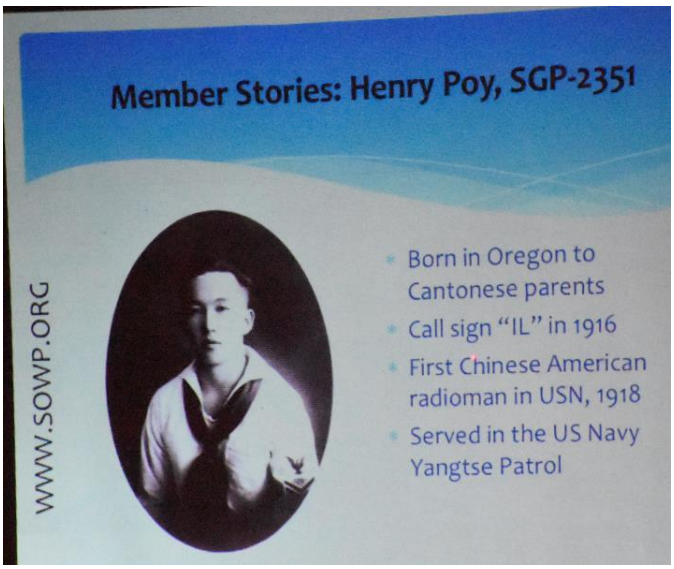
FAR's banquet dinner at Michaels At Shoreline restaurant in Mountain View

CARC member Ed Fong - WB6IQN preparing the tickets for the raffle prizes.



Left to right: Ed Fong - WB6IQN congradulating the first ever FARS scholarship winner: Rohan Agrawal -KJ6LXV with Mikel Lechner - KN6QI (FARS President) looking on.

Left to right CARC members: Dave Gomberg – NE5EE and Diana Lum – KG6IOH



An early radio operator mini-biography from the presentation

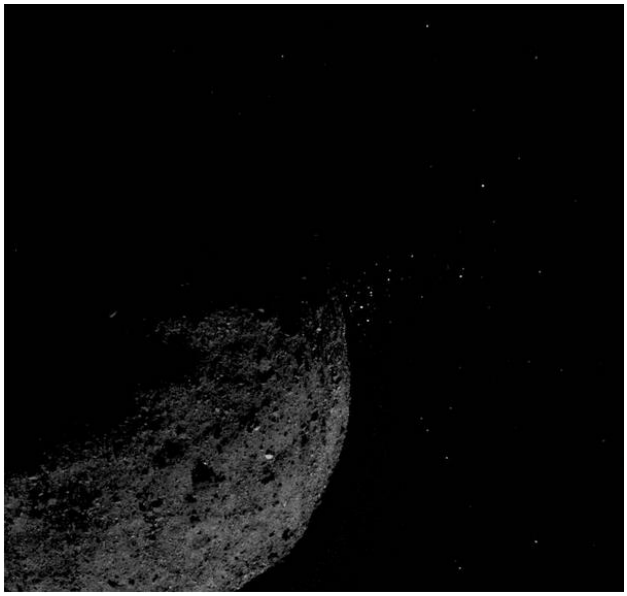
Bob Rydzewski- KJ6SBR during his presentation on early radio pioneers

For additional pictures from the FARS Winter Dinner Banquet, please visit the FARS website: http://www.fars.k6ya.org/banquet/banquet2019/

Ham Tech Article

NASA Mission Reveals Asteroid Has Big Surprises
March 19, 2019 RELEASE 19-020

https://www.nasa.gov/press-release/nasa-mission-reveals-asteroid-has-big-surprises



This view of asteroid Bennu ejecting particles from its surface on January 19 was created by combining two images taken on board NASA's OSIRIS-REx spacecraft.

Other image processing techniques were also applied, such as cropping and adjusting the brightness and contrast of each image.
Credits: NASA/Goddard/University of Arizona/Lockheed Martin

A NASA spacecraft that will return a sample of a near-Earth asteroid named Bennu to Earth in 2023 made the first-ever close-up observations of particle plumes erupting from an asteroid's surface. Bennu also revealed itself to be more rugged than expected, challenging the mission team to alter its flight and sample collection plans, due to the rough terrain.

Bennu is the target of NASA's Origins, Spectral Interpretation, Resource Identification, Security-Regolith Explorer (OSIRIS-REx) mission, which began orbiting the asteroid on Dec. 31. Bennu, which is only slightly wider than the height of the Empire State Building, may contain unaltered material from the very beginning of our solar system.

"The discovery of plumes is one of the biggest surprises of my scientific career," said Dante Lauretta, OSIRIS-REx principal investigator at the University of Arizona, Tucson. "And the rugged terrain went against all of our predictions. Bennu is already surprising us, and our exciting journey there is just getting started."

Shortly after the discovery of the particle plumes on Jan. 6, the mission science team increased the frequency of observations, and subsequently detected additional particle plumes during the following two months. Although many of the particles were ejected clear of Bennu, the team tracked some particles that orbited Bennu as satellites before returning to the asteroid's surface.

The OSIRIS-REx team initially spotted the particle plumes in images while the spacecraft was orbiting Bennu at a distance of about one mile (1.61 kilometers). Following a safety assessment, the mission team concluded the particles did not pose a risk to the spacecraft. The team continues to analyze the particle plumes and their possible causes.

“The first three months of OSIRIS-REx’s up-close investigation of Bennu have reminded us what discovery is all about — surprises, quick thinking, and flexibility,” said Lori Glaze, acting director of the Planetary Science Division at NASA Headquarters in Washington. “We study asteroids like Bennu to learn about the origin of the solar system. OSIRIS-REx’s sample will help us answer some of the biggest questions about where we come from.”

OSIRIS-REx launched in 2016 to explore Bennu, which is the smallest body ever orbited by spacecraft. Studying Bennu will allow researchers to learn more about the origins of our solar system, the sources of water and organic molecules on Earth, the resources in near-Earth space, as well as improve our understanding of asteroids that could impact Earth.

The OSIRIS-REx team also didn’t anticipate the number and size of boulders on Bennu’s surface. From Earth-based observations, the team expected a generally smooth surface with a few large boulders. Instead, it discovered Bennu’s entire surface is rough and dense with boulders.

The higher-than-expected density of boulders means that the mission’s plans for sample collection, also known as Touch-and-Go (TAG), need to be adjusted. The original mission design was based on a sample site that is hazard-free, with an 82-foot (25-meter) radius. However, because of the unexpectedly rugged terrain, the team hasn’t been able to identify a site of that size on Bennu. Instead, it has begun to identify candidate sites that are much smaller in radius.

The smaller sample site footprint and the greater number of boulders will demand more accurate performance from the spacecraft during its descent to the surface than originally planned. The mission team is developing an updated approach, called Bullseye TAG, to accurately target smaller sample sites.

“Throughout OSIRIS-REx’s operations near Bennu, our spacecraft and operations team have demonstrated that we can achieve system performance that beats design requirements,” said Rich Burns, the project manager of OSIRIS-REx at NASA’s Goddard Space Flight Center in Greenbelt, Maryland. “Bennu has issued us a challenge to deal with its rugged terrain, and we are confident that OSIRIS-REx is up to the task.”

The original, low-boulder estimate was derived both from Earth-based observations of Bennu’s thermal inertia — or its ability to conduct and store heat — and from radar measurements of its surface roughness. Now that OSIRIS-REx has revealed Bennu’s surface up close, those expectations of a smoother surface have been proven wrong. This suggests the computer models used to interpret previous data do not adequately predict the nature of small, rocky, asteroid surfaces. The team is revising these models with the data from Bennu.

The OSIRIS-REx science team has made many other discoveries about Bennu in the three months since the spacecraft arrived at the asteroid, some of which were presented Tuesday at the 50th Lunar and Planetary Conference in Houston and in a special collection of papers issued by the journal Nature.

The team has directly observed a change in the spin rate of Bennu as a result of what is known as the Yarkovsky-O'Keefe-Radzievskii-Paddack (YORP) effect. The uneven

heating and cooling of Bennu as it rotates in sunlight is causing the asteroid to increase its rotation speed. As a result, Bennu's rotation period is decreasing by about one second every 100 years. Separately, two of the spacecraft's instruments, the MapCam color imager and the OSIRIS-REx Thermal Emission Spectrometer (OTES), have made detections of magnetite on Bennu's surface, which bolsters earlier findings indicating the interaction of rock with liquid water on Bennu's parent body.

Goddard provides overall mission management, systems engineering, and the safety and mission assurance for OSIRIS-REx. Dante Lauretta of the University of Arizona, Tucson, is the principal investigator, and the University of Arizona also leads the science team and the mission's science observation planning and data processing. Lockheed Martin Space in Denver built the spacecraft and is providing flight operations. Goddard and KinetX Aerospace are responsible for navigating the OSIRIS-REx spacecraft. OSIRIS-REx is the third mission in NASA's New Frontiers Program, which is managed by NASA's Marshall Space Flight Center in Huntsville, Alabama, for the agency's Science Mission Directorate in Washington.

To find out more about the OSIRIS-REx mission, visit:

https://www.nasa.gov/osiris-rex

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