

January Newsletter



Issue:1 Volume:4

LETTER FROM DIRECTOR



SHUTTLE CHALLENGER WHERE WERE YOU?

Remembering Astronaut Ellison Onizuka: 30 years ago the Space Shuttle Challenger Explodes During Liftoff.

This month, we collectively stop for a moment to remember the 30th anniversary of the tragedy of the Space Shuttle Challenger on January 28, 1986....claiming the life of Hawaii's first astronaut, Ellison Onizuka.

The shuttle exploded 73 seconds after liftoff on an extremely cold morning at the Kennedy Space Center, killing the seven crewmembers. The excitement and hope during launch soon gave way to horror. The accident would ultimately change the space program forever.

In the early 1980's, Ellison and I were teamed together at NASA to work on the first secret Shuttle mission to launch a classified Department of Defense spacecraft. For two and a half years, Ellison and I prepared and trained for this mission launched in January 1985. I was responsible for the flight operations in NASA's Mission Control Center (MCC) between the Shuttle and the DOD spacecraft while Ellison was responsible for spacecraft activities onboard the Space Shuttle.

Shortly after landing, Ellison was assigned to another mission scheduled less than a year away in January 1986STS-51L.

Challenger's crew for STS-51L included commander Dick Scobee, pilot Mike Smith, mission specialists Ron McNair, Judy Resnik and Ellison Onizuka, payload specialist Gregory Jarvis and Teacher-in-Space Christa McAuliffe.

Freezing temperatures at the launch site on that January 28th had compromised an O-ring seal on one of the shuttle's two solid rocket boosters, resulting in hot gas burning through the right booster, damaging the hardware that connected it to the vehicle and causing the structural failure of the space shuttle's external fuel tank. Challenger then broke apart, succumbing to aerodynamic forces, and fell in pieces into the ocean.



Ellison Onizuka

Not only was the Shuttle Challenger and its NASA communications satellite lost in the explosion, but the loss of the first school teacher in space. In 1985, Christa McAuliffe was selected from more than 11,000 applicants to participate in the NASA Teacher in Space Project and was scheduled to become the first

teacher in space. As a member of mission STS-51-L, she was planning to conduct experiments and teach two lessons from Space Shuttle Challenger. Since the Shuttle was carrying the first teacher in space, millions of school
continue reading on page 3.



The following image shows PISCES' robotic rover Helelani atop of the recently completed bullseye. Our engineers, along with scientists at NASA Kennedy Space Center, remotely controlled the rover to place the basalt pavers onto the landing pad as seen below.



PISCES COMPLETES BULLSEYE IN VERTICAL TAKE-OFF/VERTICAL LANDING PAD PROJECT!

Next step for our VTVL project will be to blast a rocket engine off the pad to test the strength of the pavers!

Last month PISCES completed a major milestone with the finalization of our lunar landing pad bullseye!

Part of PISCES' Space Act Agreement with NASA on the Vertical Take-off/Vertical Landing Pad project required our team to finish construction of the pad by the end of 2015. Thanks to the hard work of our dedicated staff, we were able to lay down the 100th basalt paver by the end of the year.

PISCES Project Manager Rodrigo Romo administered work at the test site near Puna, while PISCES Operations Manager Christian Andersen spent the past few months baking the basalt pavers that were placed onto the site with our robotic rover.

The VTVL pad is part of PISCES' Additive Construction for Mobile Emplacement (ACME) project and is a partnership with NASA Swamp Works, Honeybee Robotics, ARGO, Hawaii County Department of Research and Development and the state of Hawaii.

Landing pads will become vital to space exploration in the future, as they prevent dust and debris from damaging spacecraft landing on planetary objects.

The next step for the project will be to check the pad's durability with a simulated rocket engine plume thrust testing!

SUBSCRIBE TO OUR YOUTUBE CHANNEL FOR THE LATEST VIDEOS OF THE VTVL PROJECT!



children and teachers around the world tuned-in to their televisions to watch this historic launch.

The STS-51-L had long lasting impacts to NASA and the Shuttle program including:

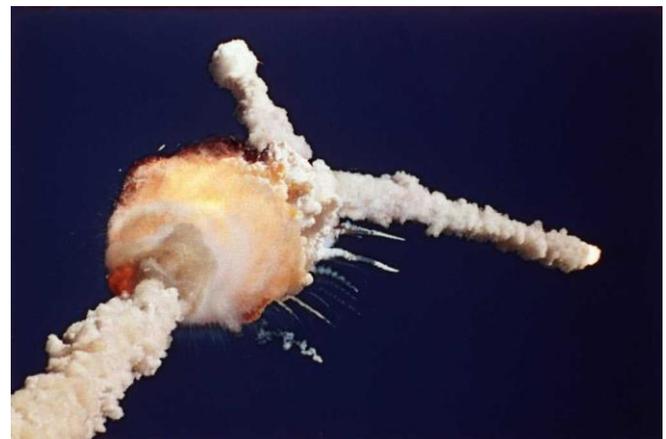
1. Plans to fly other civilians in space (such as journalists) were cancelled for 22 years, until Barbara Morgan, who was McAuliffe's backup, flew aboard Endeavour in 2007.
2. Commercial and DoD satellite launches were shifted from the shuttle to reusable rockets.
3. The very large Shuttle Centaur rocket, scheduled to fly in the cargo bay on two Shuttle missions for deploying advanced scientific satellites to the Sun and Jupiter, was deemed too risky after the accident and cancelled.
4. Additionally, astronauts were pulled off of duties such as repairing satellites, and the Manned Maneuvering Unit was not flown again, to better preserve crew safety.

But, here in Hawaii, we remember our friend Ellison Onizuka. He attended Konawaena High School on Big Island and was also an Eagle Scout. The visitor center on Mauna Kea is named in his honor. He is buried in Punch Bowl Cemetery in Oahu.

For many of us, the images of the sudden Challenger explosion are as vivid as they were 30 years ago. We will forever remember our good friend and Big Island brother Ellison Onizuka. Much Aloha to all those effected by this tragedy. Our hearts reach out to you.



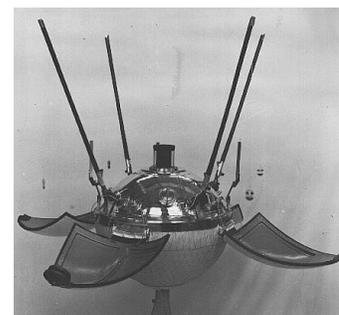
Upper: A section of space shuttle Challenger's fuselage and the window frames from space shuttle Columbia are part of a new memorial, titled "Forever Remembered," at NASA's Kennedy Space Center Visitor Complex in Florida. Credit: collectSPACE.com/Robert Z. Pearlman
Lower: The following image is of the Shuttle Challenger explosion.



This Month in Space History *First Spacecraft to Soft-land on the Moon*

Fifty years ago this month, the Soviet Luna 9 launched to the Moon on January 31, 1966..landing on the Moon a few days later on February 3, 1966 to become the first spacecraft to make a controlled, rocket-assisted soft landing on the Moon! It also became the first spacecraft to return photographs from the surface of another planetary body. Luna 9 was the twelfth attempt at a soft-landing by the Soviet Union.

Luna 9, a 2-foot diameter sphere, continued to send data from the Moon until its batteries ran out on February 6, 1966.



PISCES INTERNS PRESENT FINAL RESEARCH

Several university interns at the Pacific International Space Center for Exploration Systems (PISCES) presented their research last month.

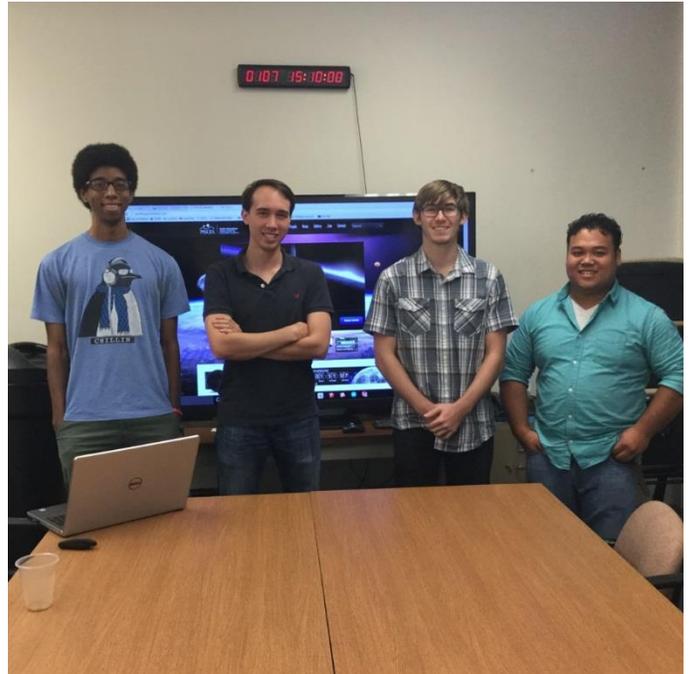
Kicking off the day's presentations were Colin Milovsoroff, a geology major at the University of Hawaii at Hilo, and Niki Thomas, currently studying astronomy and biology at the university.

The two provided an overview of their most recent work with PISCES. Niki, with the help of Colin, recently used lava terrains at the Hawaii Volcano National Park for Mars analog research in conjunction with the BASALT NASA program. Both interns also attended the Mars Landing Zone Workshop on behalf of PISCES and UH in October. Colin also discussed his work on Mauna Loa, where he and other researchers have been looking for ice caves on the Hawaiian volcano.

Another intern and Big Island native Akil Marshall presented his research on the Russian Marsokhod Friday afternoon. PISCES acquired this 1990's Mars Rover Prototype this year. Its history and capabilities have been difficult to uncover, but Akil was successful in digging up some background on the device and provided an overview of some of the machine's mechanics.

PISCES' long-term intern Ethan Paguirigan, gave a detailed examination on PISCES' recently-built lunar landing pad, and Teddy DeRego, a computer science major at UH-Hilo, discussed our robotic rover's software system.

Casey Pearring, also studying computer science, finished up the day's presentations with a review of our rover systems upgrade program.

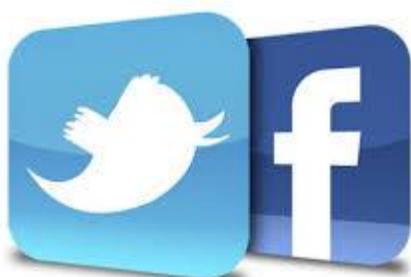


Akil Marshall, Casey Pearring, Teddy DeRego, and Ethan Paguirigan are among the interns who gave presentations at the Pacific International Space Center for Exploration Systems' headquarters on Dec. 11, 2015.

REQUEST FOR PROPOSALS ONLINE

We are currently conducting a feasibility study for expansion of the existing scientific research facilities near the National Oceanic and Atmospheric Administration (NOAA) Mauna Loa Observatory on the upper north slope of Mauna Loa, County of Hawai'i. The proposed 4-acre site is located at the terminus of Mauna Loa Access Road.

There are two Requests for Proposals (RFP) issued by the Research Corporation of the University of Hawaii (RCUH) on behalf of PISCES: One for a geotechnical survey, entitled Geotechnical Engineering Exploration, and one for a power and ground communications survey, entitled Electrical Power and Telecommunications Assessment. A firm fixed-price contract will be awarded to the selected Offeror of each RFP.



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