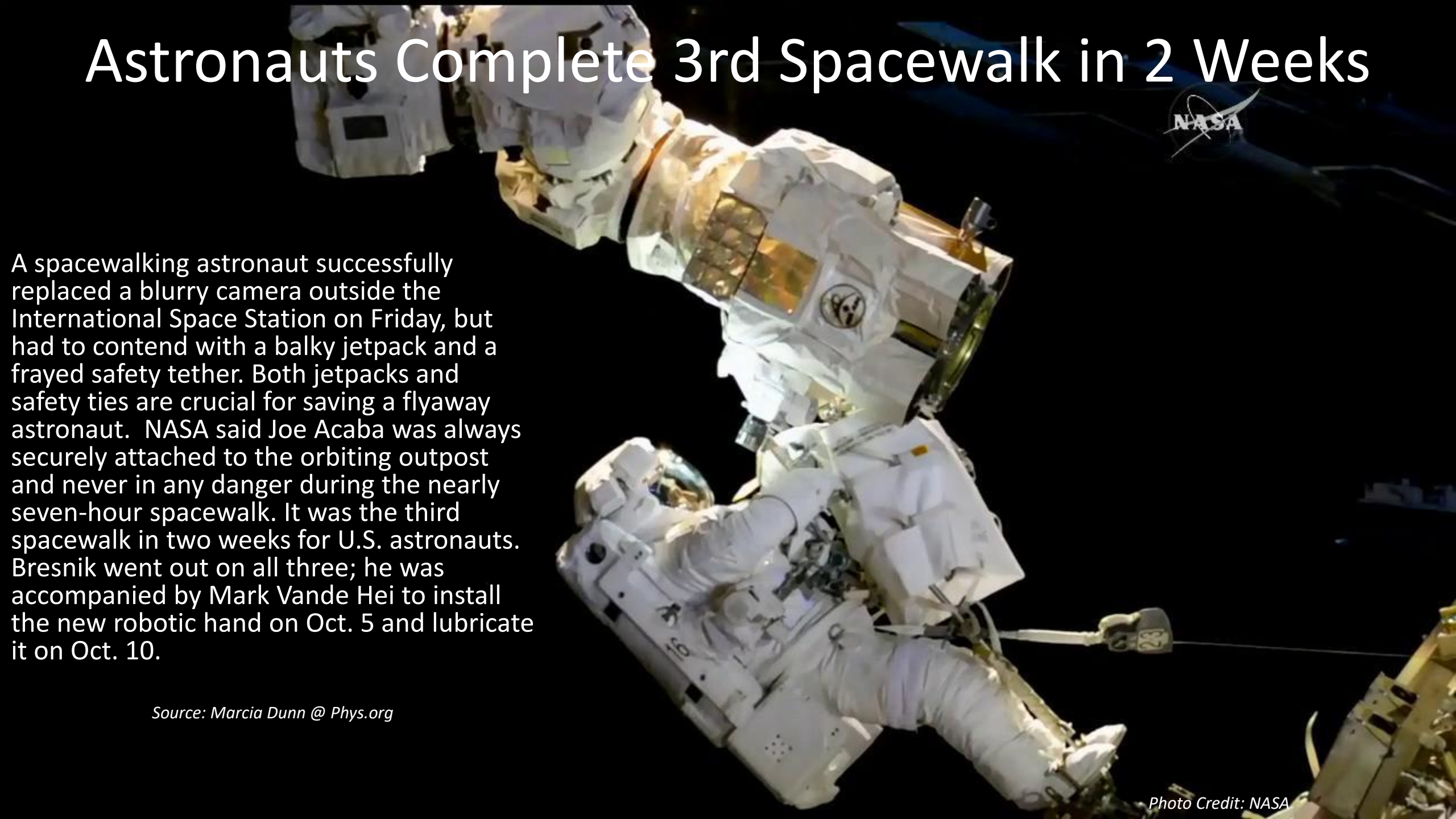
The Aerospace Update

Fidget Spinner Spinning in Space

Oct. 24, 2017

Video Credit: NASA

Astronauts Complete 3rd Spacewalk in 2 Weeks

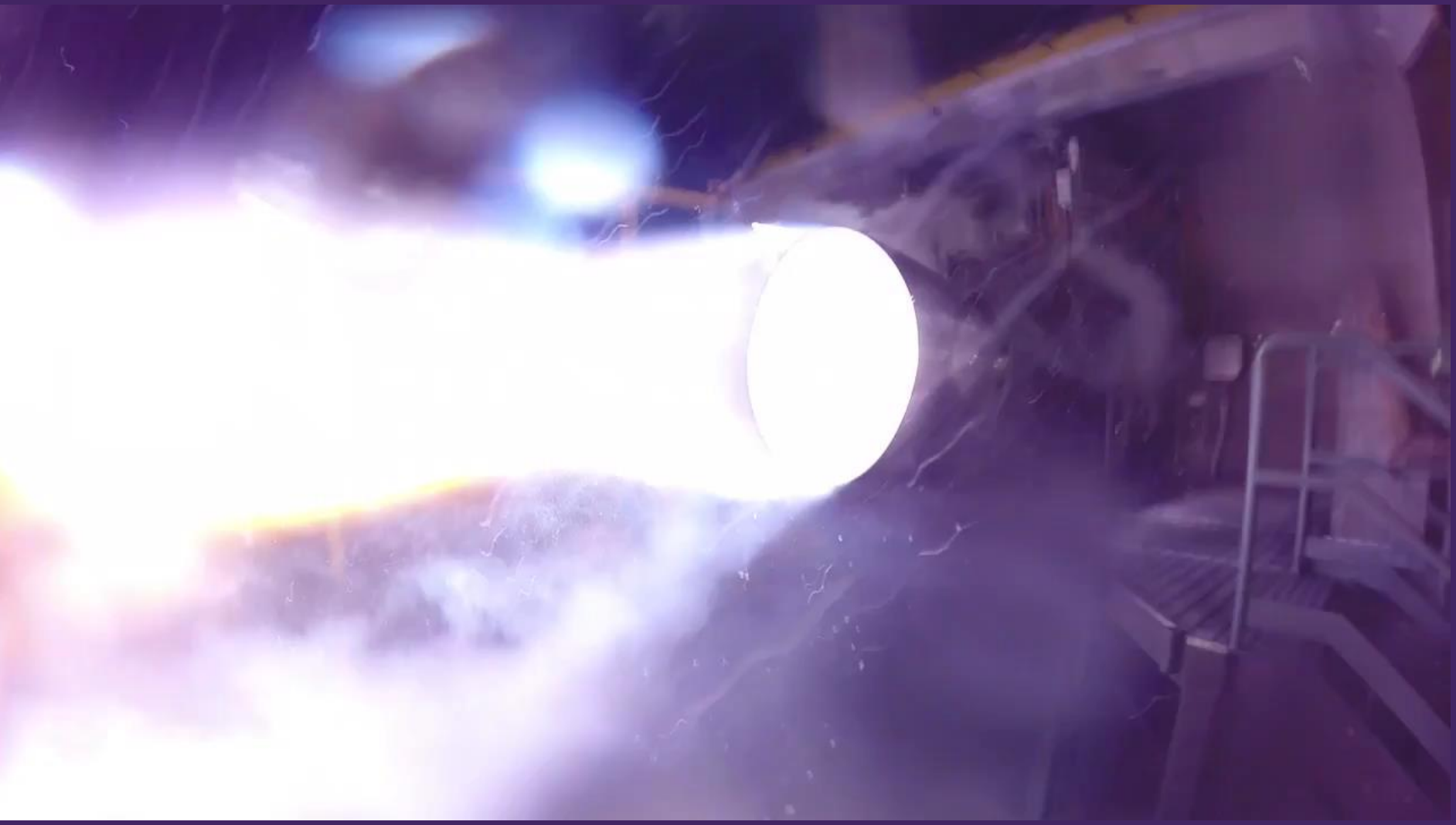


A spacewalking astronaut successfully replaced a blurry camera outside the International Space Station on Friday, but had to contend with a balky jetpack and a frayed safety tether. Both jetpacks and safety ties are crucial for saving a flyaway astronaut. NASA said Joe Acaba was always securely attached to the orbiting outpost and never in any danger during the nearly seven-hour spacewalk. It was the third spacewalk in two weeks for U.S. astronauts. Bresnik went out on all three; he was accompanied by Mark Vande Hei to install the new robotic hand on Oct. 5 and lubricate it on Oct. 10.

Source: Marcia Dunn @ Phys.org

Photo Credit: NASA

World’s Largest Methane-Fueled Rocket Engine Test-Fired by Blue Origin



Blue Origin has conducted the first hotfire test of its BE-4 rocket engine in West Texas, a powerplant fueled by liquified natural gas and liquid oxygen that will power the company’s heavy-lift New Glenn rocket and perhaps United Launch Alliance’s next-generation Vulcan launcher. Blue Origin’s New Glenn rocket, set for an inaugural launch around 2020, will have seven BE-4 engines on its first stage, and a single BE-4 engine on its second stage. United Launch Alliance has tapped the BE-4 as the primary engine option for the Vulcan rocket, a replacement for the company’s Atlas 5 rocket scheduled to debut around the end of 2019.

Video Credit: Blue Origin

Source: Stephen Clark @ SpaceFlightNow.com

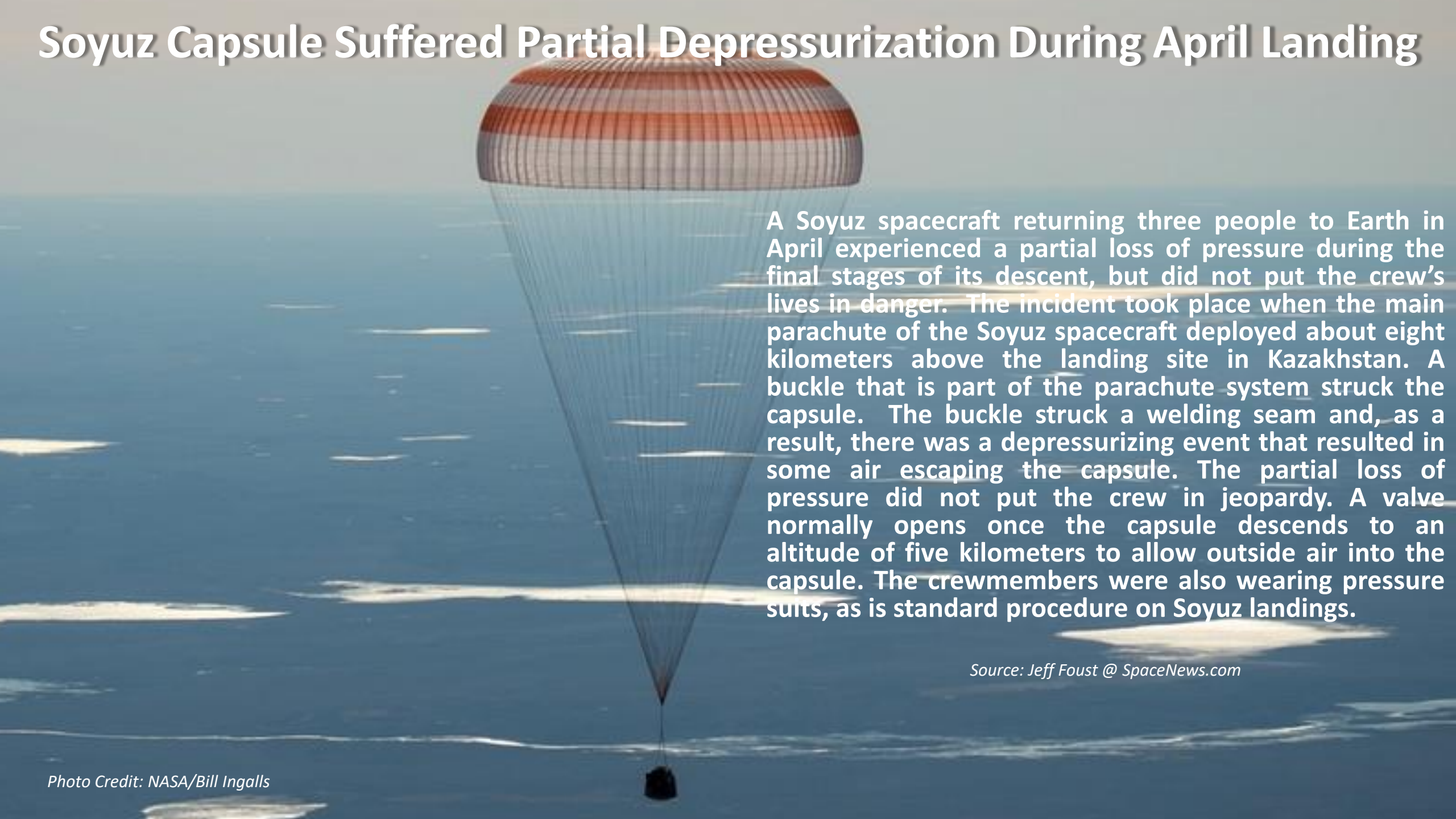
Hubble Unravels a Twisted Cosmic Knot

This image, captured by the NASA/ESA Hubble Space Telescope, shows what happens when two galaxies become one. The twisted cosmic knot seen here is NGC 2623 — or Arp 243 — and is located about 250 million light-years away in the constellation of Cancer (The Crab). NGC 2623 gained its unusual and distinctive shape as the result of a major collision and subsequent merger between two separate galaxies. This violent encounter caused clouds of gas within the two galaxies to become compressed and stirred up, in turn triggering a sharp spike of star formation.

Text Credit: ESA (European Space Agency)

Image credit: ESA/Hubble & NASA

Soyuz Capsule Suffered Partial Depressurization During April Landing



A Soyuz spacecraft returning three people to Earth in April experienced a partial loss of pressure during the final stages of its descent, but did not put the crew's lives in danger. The incident took place when the main parachute of the Soyuz spacecraft deployed about eight kilometers above the landing site in Kazakhstan. A buckle that is part of the parachute system struck the capsule. The buckle struck a welding seam and, as a result, there was a depressurizing event that resulted in some air escaping the capsule. The partial loss of pressure did not put the crew in jeopardy. A valve normally opens once the capsule descends to an altitude of five kilometers to allow outside air into the capsule. The crewmembers were also wearing pressure suits, as is standard procedure on Soyuz landings.

Source: Jeff Foust @ SpaceNews.com

Photo Credit: NASA/Bill Ingalls

Dawn Mission Extended at Ceres

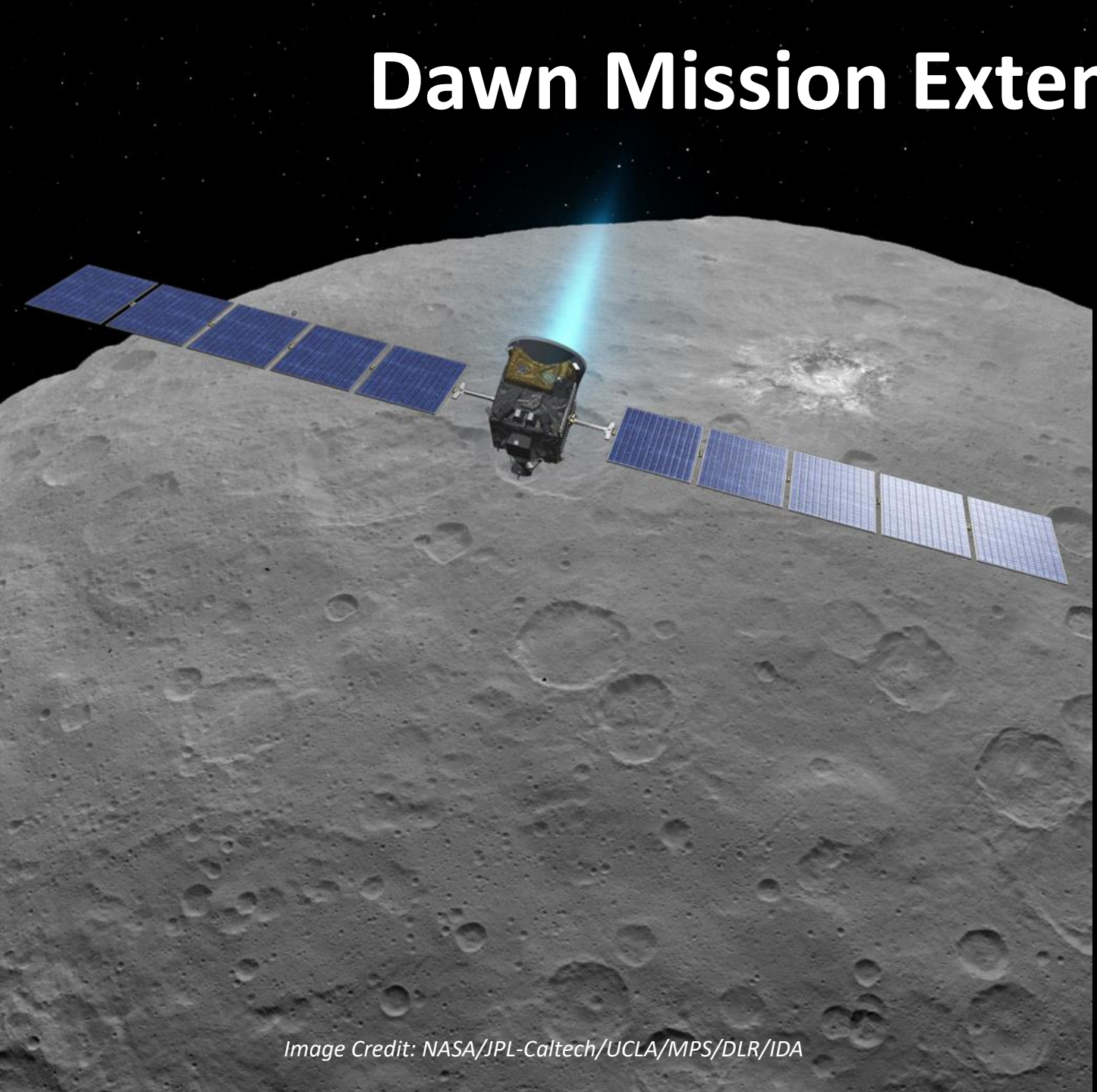


Image Credit: NASA/JPL-Caltech/UCLA/MPS/DLR/IDA

NASA has authorized a second extension of the Dawn mission at Ceres, the largest object in the asteroid belt between Mars and Jupiter. During this extension, the spacecraft will descend to lower altitudes than ever before at the dwarf planet, which it has been orbiting since March 2015. The spacecraft will continue at Ceres for the remainder of its science investigation and will remain in a stable orbit indefinitely after its hydrazine fuel runs out. The Dawn flight team is studying ways to maneuver Dawn into a new elliptical orbit, which may take the spacecraft to less than 120 miles (200 kilometers) from the surface of Ceres at closest approach. Previously, Dawn's lowest altitude was 240 miles (385 kilometers).

Source: Elizabeth Landau @ Jet Propulsion Laboratory

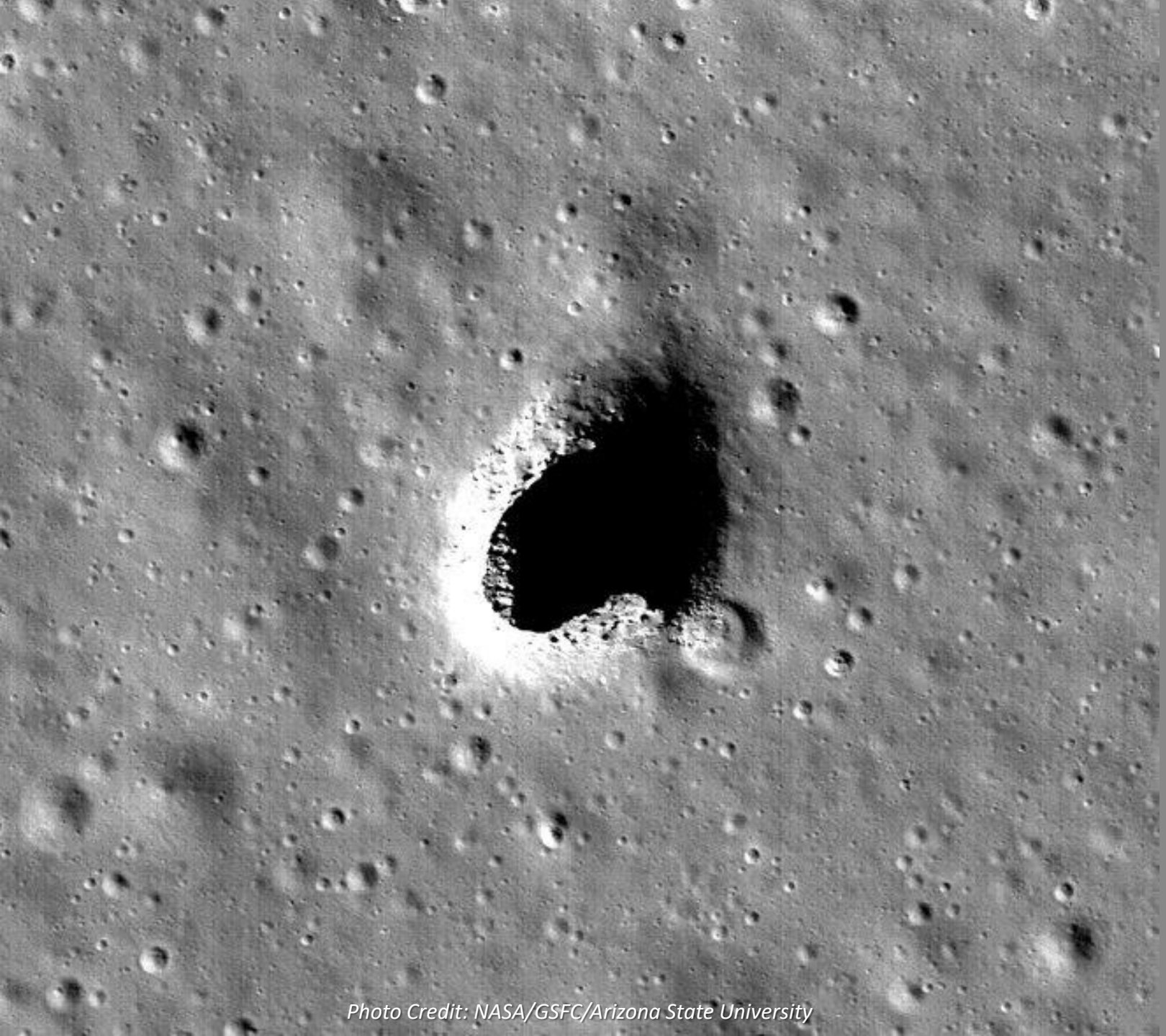


Photo Credit: NASA/GSFC/Arizona State University

Moon Caves Could Protect Astronauts

A new analysis of data gathered by NASA's twin Gravity Recovery and Interior Laboratory (GRAIL) spacecraft, which mapped the moon's gravitational field in unprecedented detail, turned up a number of new candidates for lava tubes — cave-like structures that could be large enough to house supplies and astronauts. Radiation from the sun, galactic cosmic rays and constantly falling micrometeorites all present a threat to human explorers. A lava tube could provide a safe haven from all these hazardous environmental conditions.

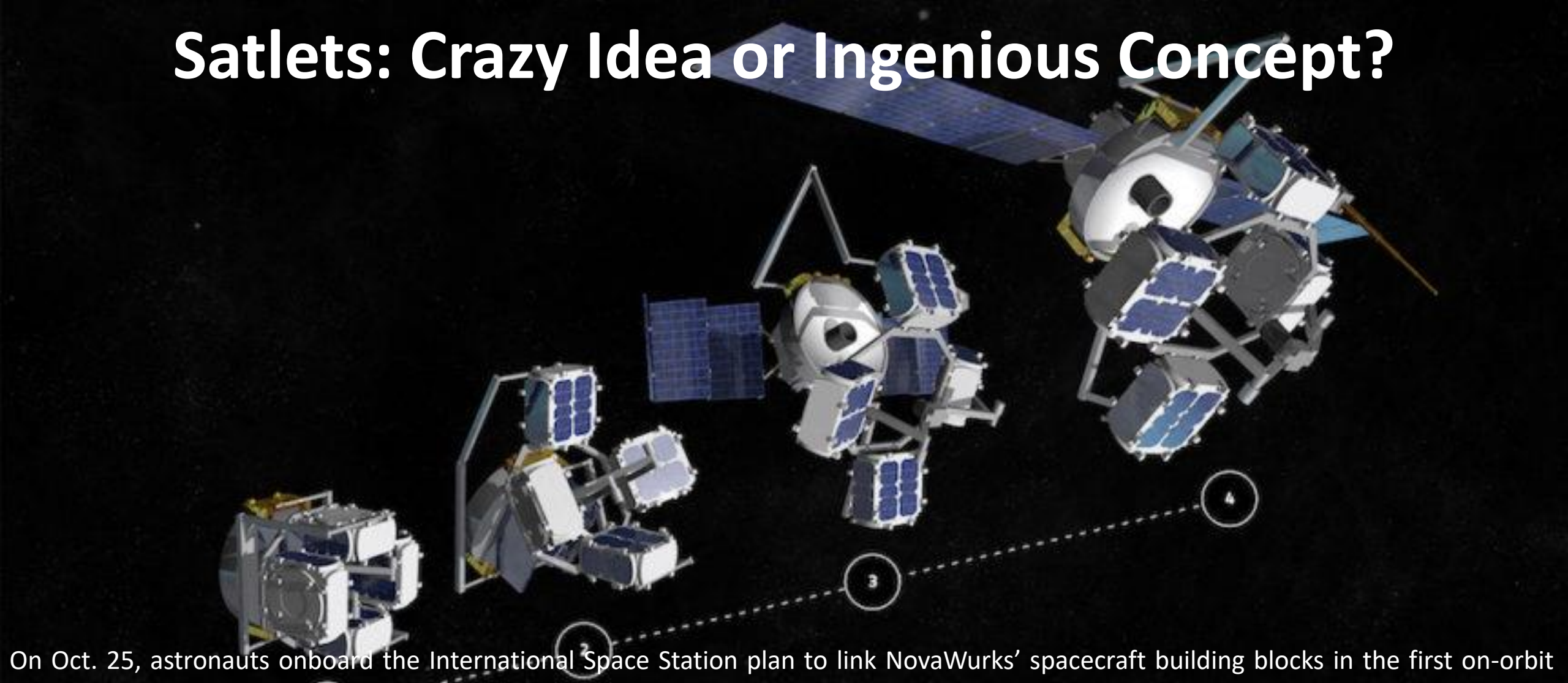
Source: Nola Taylor Redd @ Space.com

Impact of Northern California Fires Seen in New NASA Satellite Image

As firefighters continue to work toward full containment of the rash of wildfires burning in Northern California, a new image from the Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) instrument on NASA's Terra satellite shows the growing fire scar on the landscape. In this ASTER image, acquired Oct. 21, 2017, vegetation is red, while burned areas appear dark gray. The image covers an area of 38 by 39 miles (60.5 by 63 kilometers) and is located near 38.5 degrees north, 122.4 degrees west.

Text & Photo Credit: NASA.gov

Satlets: Crazy Idea or Ingenious Concept?



On Oct. 25, astronauts onboard the International Space Station plan to link NovaWurks' spacecraft building blocks in the first on-orbit test of a radically new approach to satellite design and manufacturing. Instead of fitting spacecraft components into a rectangular bus as companies have for decades, NovaWurks invented Hyper-Integrated Satlets (HISats), identical seven-kilogram modules with everything a satellite needs to function, including communications, pointing, power, data processing and propulsion. Satellite builders can mate any number of HISats, which measure 20 by 20 by 10 centimeters and snap together like Legos, to their payloads on Earth or in orbit. Software determines the role each HISat should play. If one HISat subsystem begins to fail, for example, the same subsystem on other HISats can help.

Text Credit: Debra Werner @ SpaceNews.com

Image Credit: NovaWurks

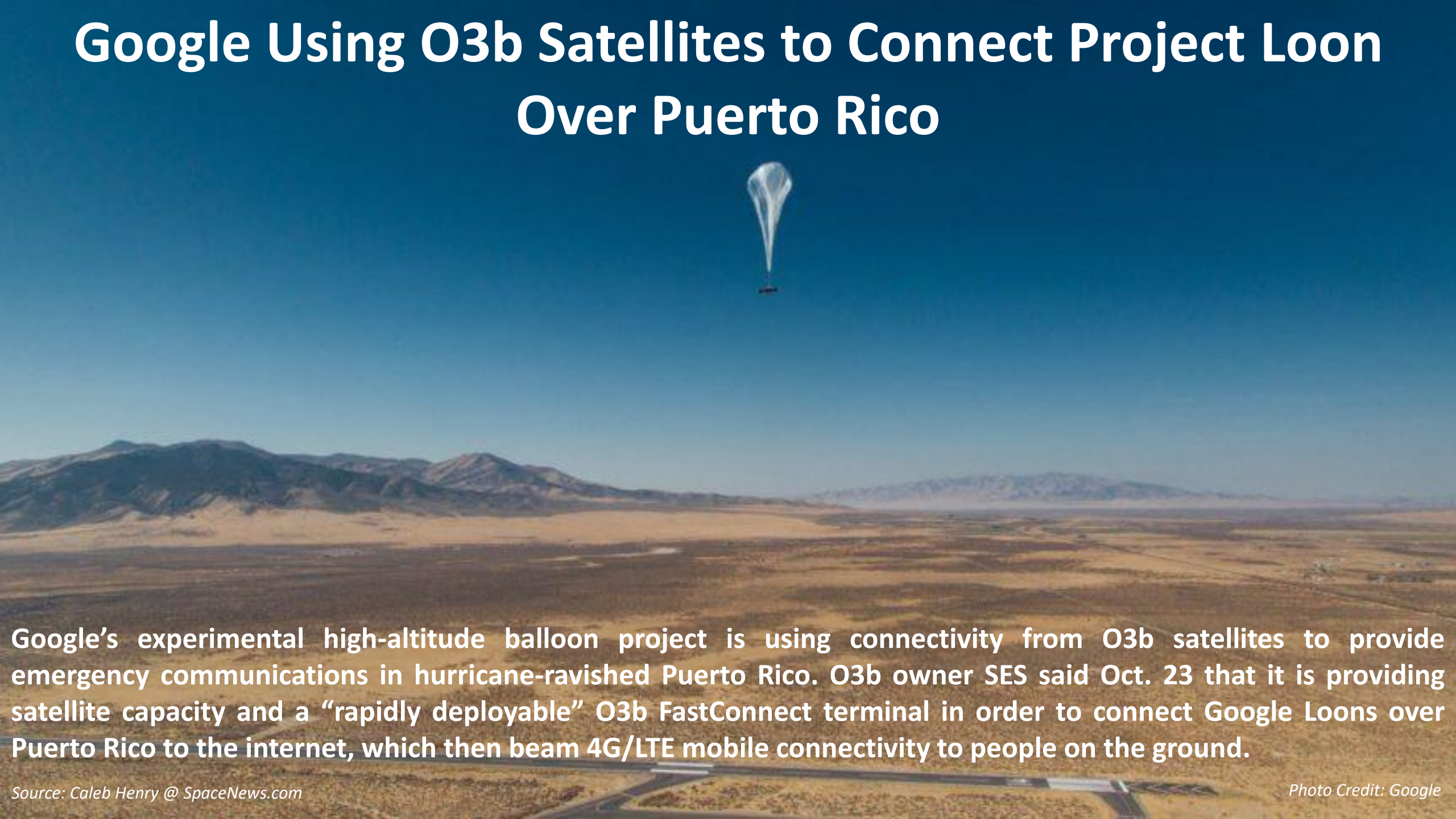
Bigelow and ULA Announce Plans for Lunar Orbiting Facility

Bigelow Aerospace and United Launch Alliance said Oct. 17 that they are cooperating on the development of a habitat orbiting the moon that they hope to build in a public-private partnership with NASA. The companies said they are working together on a concept for a "lunar depot" using an expandable module provided by Bigelow and launched by a next-generation ULA rocket that could support both NASA and commercial uses as soon as 2022.

Source: Jeff Foust @ SpaceNews.com

Image Credit: Bigelow Aerospace

Google Using O3b Satellites to Connect Project Loon Over Puerto Rico

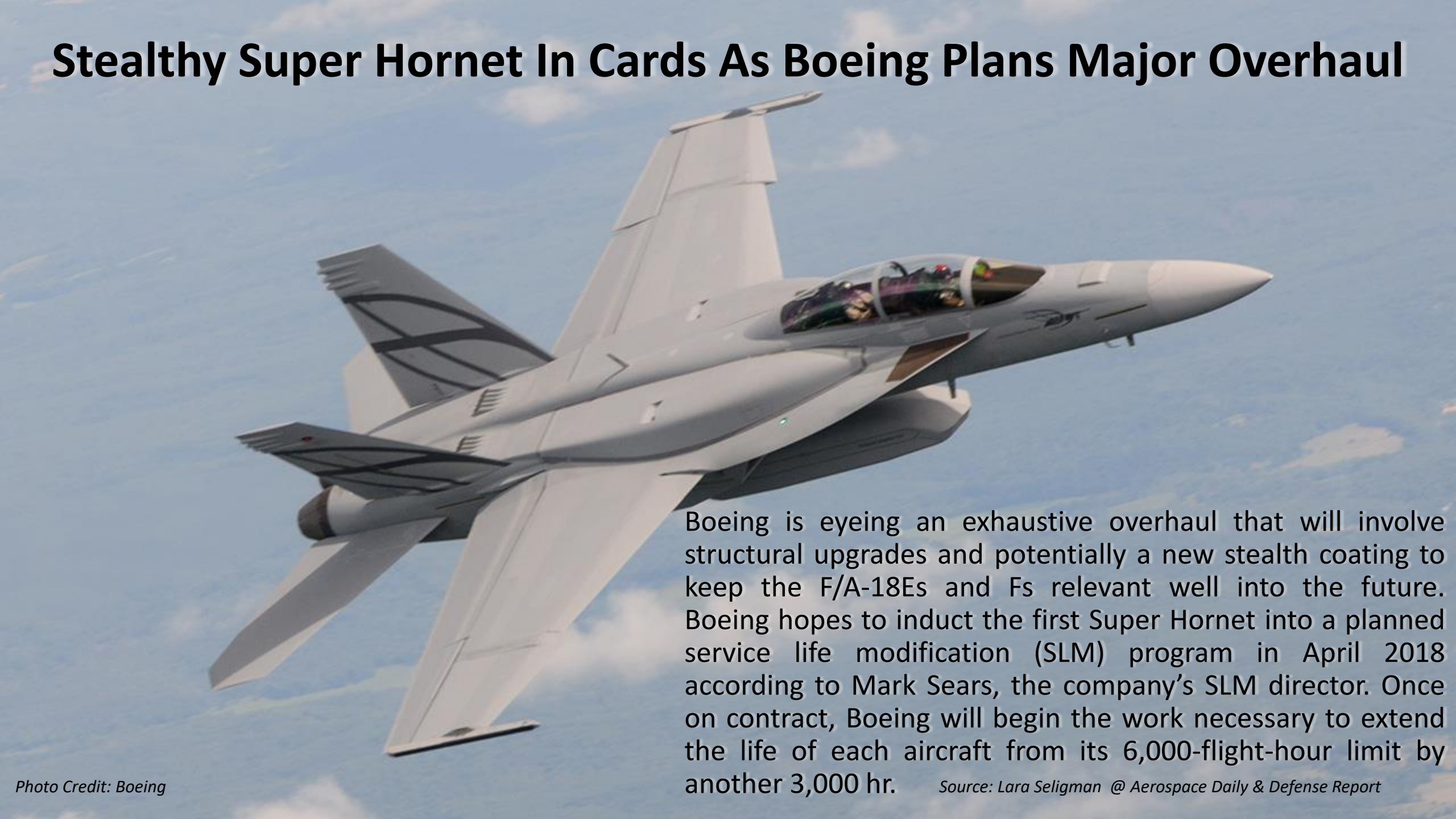


Google's experimental high-altitude balloon project is using connectivity from O3b satellites to provide emergency communications in hurricane-ravished Puerto Rico. O3b owner SES said Oct. 23 that it is providing satellite capacity and a "rapidly deployable" O3b FastConnect terminal in order to connect Google Loons over Puerto Rico to the internet, which then beam 4G/LTE mobile connectivity to people on the ground.

Source: Caleb Henry @ SpaceNews.com

Photo Credit: Google

Stealthy Super Hornet In Cards As Boeing Plans Major Overhaul



Boeing is eyeing an exhaustive overhaul that will involve structural upgrades and potentially a new stealth coating to keep the F/A-18Es and Fs relevant well into the future. Boeing hopes to induct the first Super Hornet into a planned service life modification (SLM) program in April 2018 according to Mark Sears, the company's SLM director. Once on contract, Boeing will begin the work necessary to extend the life of each aircraft from its 6,000-flight-hour limit by another 3,000 hr. *Source: Lara Seligman @ Aerospace Daily & Defense Report*

Photo Credit: Boeing

VTOL Flexrotor Flies 32 Hr. As Small UAVs Push Endurance Limits

In early October, Aerovel's Flexrotor long-endurance vertical-takeoff-and-landing (VTOL) unmanned aircraft completed a 32-hr. 8-min. flight, landing with more than 3 hr. worth of fuel remaining. The 22-kg (48-lb.) Flexrotor is a tailsitter that takes off vertically like a helicopter then transitions to fuel-efficient wingborne flight, its two-blade proprotor providing both lift in vertical flight and thrust in forward flight.

Source: Graham Warwick @ Aviation Week & Space Technology

Photo Credit: Aerovel

Astronaut Paul Weitz Dies At 85; Veteran Of Skylab And Shuttle Missions

Photo Credit: NASA

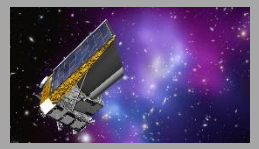
Former NASA astronaut Paul Weitz, who spent nearly a month in orbit on the first manned Skylab mission in 1973 and flew a decade later as mission commander on the maiden voyage of the Space Shuttle Challenger, has died at 85. On his first space flight, he served as pilot on Skylab-2 (SL-2) in May & June 1973, along with Apollo 12 veteran Charles "Pete" Conrad, Jr., and Joseph Kerwin, also a rookie on SL-2. The mission to fix Skylab, which had suffered significant damage during the space station's launch, is still considered one of the most difficult and dangerous in the annals of spaceflight. Years later, Weitz returned to space when he commanded the critical first mission of Challenger, NASA's second flight-worthy Space Shuttle orbiter, lifting off on April 4, 1983.

Source: Scott Neuman @ NPR.com

In The News

Singapore Finalizes Order for 777-9s and 787-10s. Singapore Airlines signed a firm order for 20 Boeing 777-9s and 19 787-10s in a White House ceremony on 23 October attended by US president Donald Trump. The deal bolsters Boeing's sales total, pushing the company beyond the 500-mark so far in 2017. The first customer-bound 787-10 assembled in North Charleston rolled out of the factory last month. Boeing is scheduled to deliver the aircraft to Singapore in the second quarter next year. *(Stephen Trimble @ FlightGlobal.com)*

Iridium Swaps Two New Falcon 9 Rockets for "Flight-Proven" Boosters. Citing schedule concerns over price benefits, Iridium announced Thursday it will launch its next 20 satellites on a pair of previously-flown Falcon 9 boosters from Vandenberg Air Force Base in California, beginning with a Dec. 22 mission. Iridium previously planned to launch all its satellites on newly-manufactured rockets under a $492 million contract with SpaceX signed in 2010, but the company kept open the option to switch to previously-flown boosters if the change met certain schedule, risk and cost metrics. *(Stephen Clark @ SpaceFlightNow.com)*



Detector Trouble Expected to Delay ESA's Euclid Dark Energy Mission. Technical problems discovered during ground testing of U.S.-built detectors for the European Space Agency's Euclid astronomy mission will delay the completion of the telescope's scientific payload, jeopardizing the observatory's 2020 launch target, the head of NASA's astrophysics division said last week. Officials expect the problem, traced to an electronics package, will delay assembly of the detectors with Euclid's Near-Infrared Spectrometer and Photometer, or NISP, instrument at least 12 months. *(Stephen Clark @ SpaceFlightNow.com)*

Airbus' New A330neo Completes First Ever Flight. Airbus' latest jet, the A330-900neo, took to the skies for the first time on Thursday in Toulouse, France. So far, Airbus has booked 212 firm orders for the A330neo family, though some of those face uncertainty. *(msn.com)*

SpaceX, ULA Win NASA Contracts to Launch Earth Observation Satellites. NASA has selected a SpaceX Falcon 9 rocket (left) and a United Launch Alliance Atlas 5 rocket (right) to launch the Sentinel 6A/Jason-CS and Landsat 9 satellites in 2020 and 2021.
(Stephen Clark @ SpaceFlightNow.com)