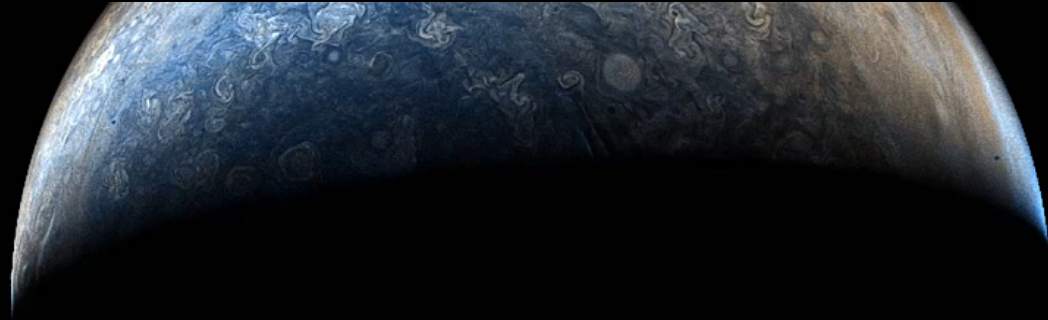
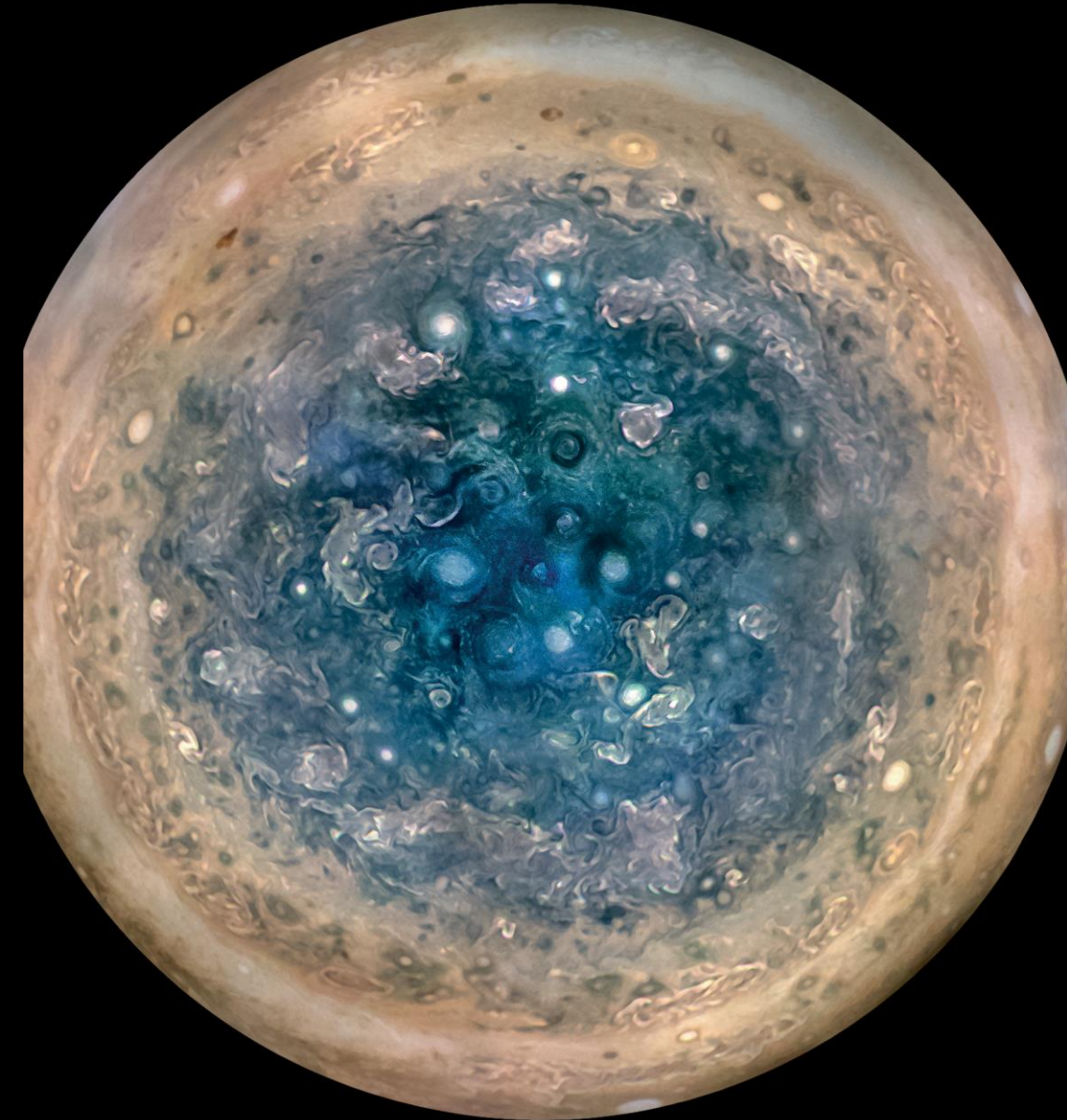


The Aerospace Update



Surprising Jupiter!

First Science Results from NASA's Juno Mission



Early science results from NASA's Juno mission to Jupiter portray the largest planet in our solar system as a complex, gigantic, turbulent world, with Earth-sized polar cyclones, plunging storm systems that travel deep into the heart of the gas giant, and a mammoth, lumpy magnetic field that may indicate it was generated closer to the planet's surface than previously thought. Juno launched on Aug. 5, 2011, entering Jupiter's orbit on July 4, 2016. The findings from the first data-collection pass, which flew within about 2,600 miles (4,200 kilometers) of Jupiter's swirling cloud tops on Aug. 27, are being published this week in two papers in the journal *Science*, as well as 44 papers in *Geophysical Research Letters*.

This image shows Jupiter's south pole, as seen by NASA's Juno spacecraft from an altitude of 32,000 miles (52,000 kilometers). The oval features are cyclones, up to 600 miles (1,000 kilometers) in diameter. Multiple images taken with the JunoCam instrument on three separate orbits were combined to show all areas in daylight, enhanced color, and stereographic projection.

Source: NASA.gov

Photo Credit: NASA/JPL-Caltech/SwRI/MSSS/Betsy Asher Hall/Gervasio Robles

Rocket Lab's Electron Rocket Lifts Off for First Time

05-25-2017 16:19:51



Rocket Lab's Electron commercial satellite launcher lifted off from New Zealand on its debut test flight Thursday and soared into space on its maiden mission.

The 55-foot-tall (17-meter) launcher did not reach orbit as intended, but Rocket Lab said the Electron successfully flew through the booster's first stage burn, stage separation, second stage ignition and payload fairing separation. The Electron is designed to loft CubeSats and other small satellites into orbit, and Rocket Lab already has launch contracts with NASA and several commercial customers.

Source: Stephen Clark @ SpaceFlightNow.com

Video Credit: Rocket Lab

Russia Sends Military Satellite into Orbit for Missile Warnings



Russia lofted a military satellite Thursday, May 25th from the Plesetsk Cosmodrome, a military-run base about 500 miles (800 kilometers) north of Moscow, to join a network of orbiting early warning stations detecting and tracking missile launches around the world, providing the Russian government notice of potential attack. The target was inclined around 64 degrees to the equator, and the orbit's position is designed to allow a satellite to hover over Earth's high latitudes most of the time.

Video Credit: Photo: Russian Ministry of Defence

Source: Stephen Clark @ SpaceFlightNow.com

DARPA Selects Boeing for Spaceplane Project

Experimental Spaceplane (XS-1)



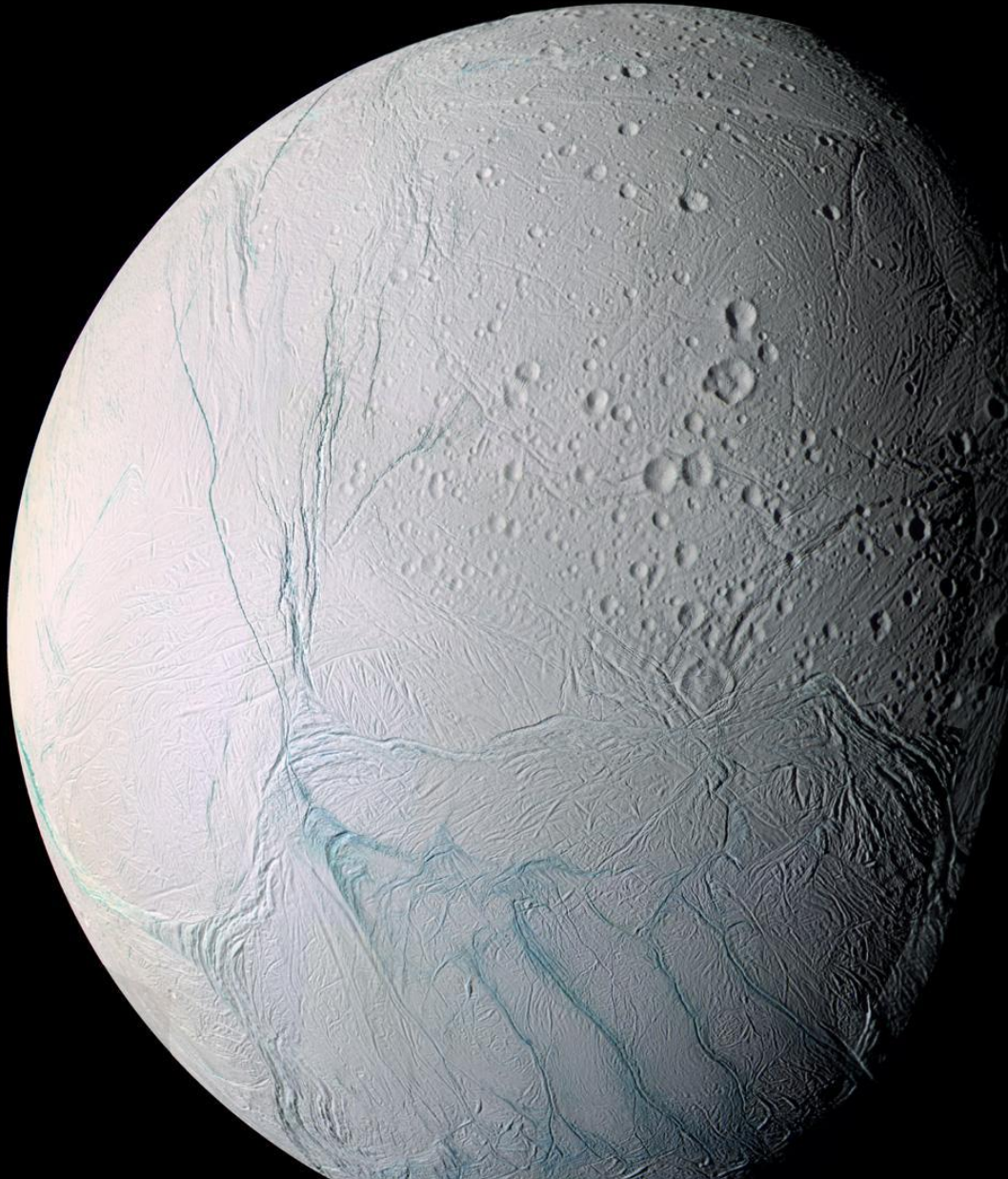
The Defense Advanced Research Projects Agency announced May 24 that it has picked Boeing to develop an experimental reusable first stage with the promise of lowering launch costs for medium-sized payloads. Boeing will develop its “Phantom Express” vehicle for phases 2 and 3 of DARPA’s Experimental Spaceplane 1 (XS-1) program, which has the goal of performing 10 flights in 10 days to demonstrate responsive and low-cost launch. Phase 2 will cover development of the vehicle and ground tests through 2019, with a series of 12 to 15 test flights planned for phase 3 in 2020.

Source: Jeff Foust @ SpaceNews.com

Video Credit: DARPA

Image Credit: Boeing

Cassini Finds Saturn Moon May Have Tipped Over



Saturn's icy, ocean-bearing moon Enceladus may have tipped over in the distant past, according to recent research from NASA's Cassini mission. Researchers with the mission found evidence that the moon's spin axis -- the line through the north and south poles -- has reoriented, possibly due to a collision with a smaller body, such as an asteroid. Examining the moon's features, the team showed that Enceladus appears to have tipped away from its original axis by about 55 degrees -- more than halfway toward rolling completely onto its side. "We found a chain of low areas, or basins, that trace a belt across the moon's surface that we believe are the fossil remnants of an earlier, previous equator and poles," said Radwan Tajeddine, a Cassini imaging team associate at Cornell University, Ithaca, New York, and lead author of the paper.

Source & Image Credit: Credit: NASA/JPL-Caltech/ Space Science Institute




Cassini Survives Closest Brush with Saturn's Inner Ring

Barreling through space near the inner edge of Saturn's wispy D ring, NASA's Cassini spacecraft shielded itself from bits of ice and dust Sunday as the probe made its most dangerous plunge close to the planet, collecting spectacular edge-on views of Saturn's rings with an on-board camera. The raw images returned during Sunday's encounter show new close-up angles of the structure of Saturn's rings, and Cassini also turned its radar instrument to scan the rings in a first-of-its-kind experiment. This unprocessed image from Cassini's camera taken Sunday shows Saturn (upper right) and a portion of the planet's rings refracted through Saturn's atmosphere.

Source: Stephen Clark @ SpaceFlightNow.com

Image Credit: NASA/JPL-Caltech/Space Science Institute

NASA Moves Up Launch of Psyche Mission to a Metal Asteroid

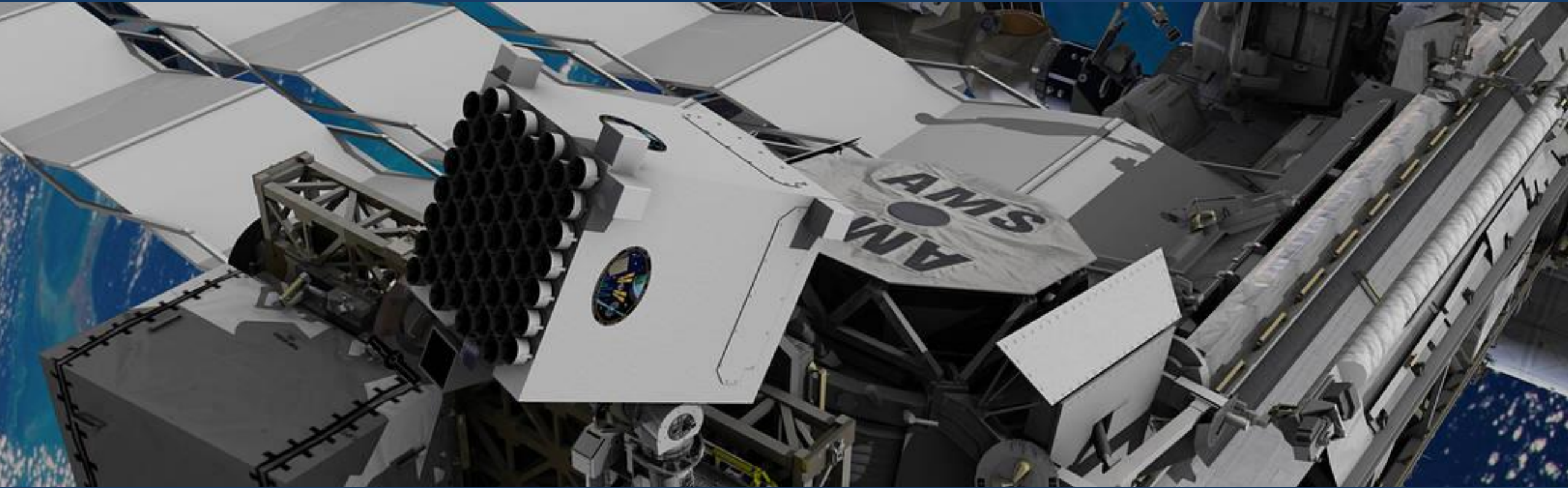


Psyche, NASA's Discovery Mission to a unique metal asteroid, has been moved up one year with launch in the summer of 2022, with a planned arrival at the main belt asteroid in 2026—four years earlier than the original timeline. Psyche, an asteroid orbiting between Mars and Jupiter is made almost entirely of nickel-iron metal. As such, it offers a unique look into the violent collisions that created Earth and the terrestrial planets. The faster and more cost effective revised trajectory is more efficient, as it eliminates the need for an Earth assist, which ultimately shortens the cruise time.

Source: www.phys.org

Credit: SSL/ASU/P. Rubin/NASA/JPL-Caltech (Artist's Concept)

New NASA Mission to Study Mysterious Neutron Stars, Aid in Deep Space Navigation



Launching June 1, the Neutron Star Interior Composition Explorer (NICER) will be installed aboard the International Space Station as the first mission to study neutron stars, a type of collapsed star that is so dense scientists are unsure how matter behaves inside it. A neutron star begins its life as a star between about 7 and 20 times the mass of the sun. When this type of star runs out of fuel, it collapses under its own weight, crushing its core and triggering a supernova explosion. What remains is an ultra-dense sphere only about 12 miles (20 kilometers) across, but with up to twice the mass of our sun squeezed inside. On Earth, one teaspoon of neutron star material would weight a billion tons.



Camera on NASA's Lunar Orbiter Survived 2014 Meteoroid Hit

On Oct.13, 2014 something very strange happened to the camera aboard NASA's Lunar Reconnaissance Orbiter (LRO). The Lunar Reconnaissance Orbiter Camera (LROC), which normally produces beautifully clear images of the lunar surface, produced an image that was wild and jittery. From the sudden and jagged pattern apparent in the image, the LROC team determined that the camera must have been hit by a tiny meteoroid, a small natural object in space. The first wild back-and-forth line on this image records the moment when the left Narrow Angle Camera's radiator was struck by a meteoroid.

Source Credit: Nancy Neal Jones @ Nasa Goddard Space Center

Photo Credit: NASA's Goddard Space Flight Center/Arizona State University

Construction Begins on the World's First Super Telescope



This is an artist's impression of the European Extremely Large Telescope (ELT) in its enclosure on Cerro Armazones, a 3060-metre mountaintop in Chile's Atacama Desert. The 39-metre ELT will be the largest optical/infrared telescope in the world. Operations are planned to start early in the next decade and the ELT will tackle some of the biggest scientific challenges of our time. Unlike any other before it, ELT is also designed to be an adaptive telescope and has the ability to correct atmospheric turbulence, taking telescope engineering to another level. ELT is set for completion in 2024.

Russia's Challenger to 737 and A320 Makes First Brief Flight



The first flight of Russia's new MC-21-300 passenger airliner was completed May 28, in Irkutsk, about 3,200 miles east of Moscow. The medium-range passenger plane completed a 30-minute test flight, reaching an altitude of 3,300 feet and a speed of 186 miles per hour. The MS-21, which is also often referred to using the Cyrillic alphabet as MC-21, is Russia's first post-Soviet airliner and represents a determined effort to regain the country's standing as a center of aerospace engineering prowess.

29 May 1940 - F4U Corsair First Flight



Vought-Sikorsky Aircraft Division test pilot Lyman A. Bullard, Jr., took the U.S. Navy's new prototype fighter, the XF4U-1, for the first test flight at the Bridgeport Municipal Airport, Bridgeport, Connecticut. Designed by Rex Beisel, this would be developed into the famous F4U Corsair. The size of the propeller was responsible for the Corsair's most distinctive feature: the inverted gull wing. The width of the wing (chord) limited the length of the main landing gear struts. By placing the gear at the bend the necessary propeller clearance was gained. The angle at which the wing met the fuselage was also aerodynamically clearer. A total of 12, 571 Corsairs were manufactured and the Corsair served the U.S. Navy and Marine Corps in World War II and the Korean War.

Source: www.thisdayinaviation.com

Photo Credit: (Vought-Sikorsky)

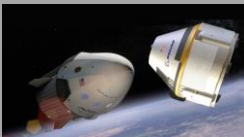
In The News



Sierra Nevada Corporation Passes Key Milestone in NASA Commercial Cargo Contract. Sierra Nevada Corporation said Thursday it passed a key milestone in its commercial cargo contract with NASA. The company said it completed a third integration review on its Commercial Resupply Services 2 (CRS-2) contract with NASA, confirming that the company's Dream Chaser vehicle can meet NASA requirements for transporting cargo to and from the space station. *(Jeff Foust @ SpaceNews.com)*



Crash report: Confused by spin, Mars probe failed to brake. An independent report has concluded that Europe's Schiaparelli probe crash-landed on Mars last year because its systems couldn't cope with a brief, wild rotation during its descent. The report commissioned by the European Space Agency says the sudden spin—lasting only one second—overloaded the probe's sensors, making it think it had already reached the ground. This made the probe release its parachute early and only briefly fire its thrusters. Schiaparelli hit the ground at 540 kph (336 mph), leaving a visible crater. *(Phys.org)*



Commercial Crew Vehicles May Fall Short of Safety Threshold. While both SpaceX and Boeing are making progress with their Dragon v2 (left) and CST-100 Starliner spacecraft in terms of improving their safety, both are facing challenges to meet a specific safety threshold in their contracts. That requirement is known as loss of crew (LOC), a measure of the probability of death or permanent disability of one or more people on a spacecraft during a mission. The CCtCap contracts included a requirement that the spacecraft have a LOC of 1 in 270 or better. The shuttle program, by comparison, had a LOC of 1 in 90 at the time of the program's retirement in 2011. *(Jeff Foust @ SpaceNews.com)*



First Year of BEAM Demo Offers Valuable Data on Expandable Habitats. Halfway into its planned two-year demonstration attached to the International Space Station, the Bigelow Expandable Activity Module, or BEAM, is showing that soft materials can perform as well as rigid materials for habitation volumes in space. Over the next several months, NASA and Bigelow will focus on measuring radiation dosage inside the BEAM. *(SpaceDaily.com)*