

The **Aerospace Update**



Home Again! Space Station Crew Lands

Expedition 56 Crew Back on Earth

РОСКОСМОС



After spending 197 days in space, Russian cosmonaut Oleg Artemyev and NASA astronauts Drew Feustel and Ricky Arnold returned to Earth on Thursday, Oct. 4th landing in Kazakhstan some 300 miles (500 kilometers) from where they launched in March. The Soyuz MS-08 crew left behind Russian cosmonaut Sergey Prokopyev, NASA astronaut Serena Aunon-Chancellor and European Space Agency Alexander Gerst to form the first part of Expedition 57. They are expected to be joined in about a week by the two-person Soyuz MS-10 spacecraft with Russian cosmonaut Aleksey Ovchinin and NASA astronaut Nick Hague.

*Source: Derek Richardson @
SpaceFlightInsider.com*

Video Credit: ROSCOSMOS/NASA

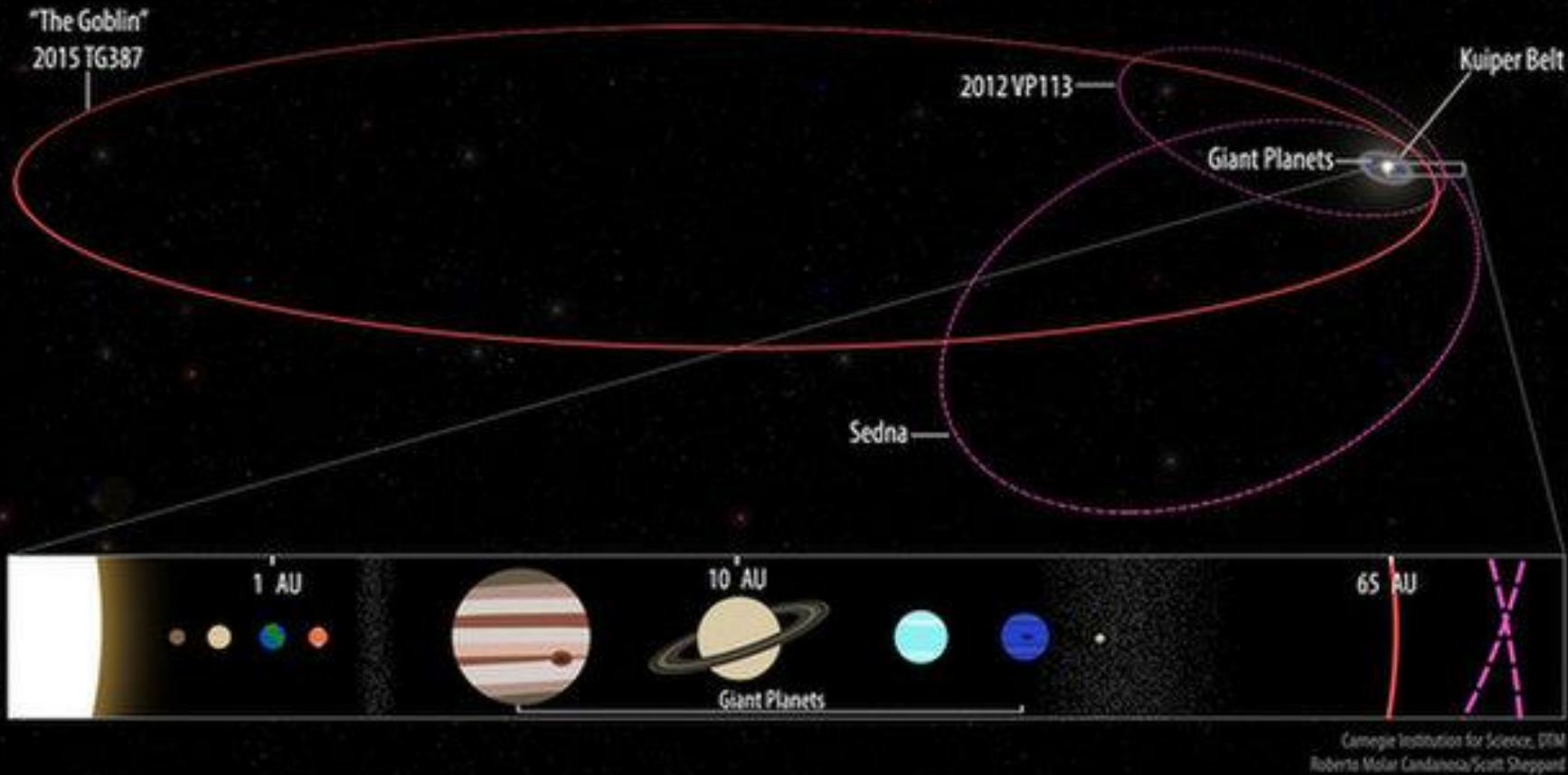
New Simulation Sheds Light on Spiraling Supermassive Black Holes



A new model is bringing scientists a step closer to understanding the kinds of light signals produced when two supermassive black holes, which are millions to billions of times the mass of the Sun, spiral toward a collision. For the first time, a new computer simulation that fully incorporates the physical effects of Einstein's general theory of relativity shows that gas in such systems will glow predominantly in ultraviolet and X-ray light. Just about every galaxy the size of our own Milky Way or larger contains a monster black hole at its center. Observations show galaxy mergers occur frequently in the universe, but so far no one has seen a merger of these giant black holes.

Dwarf Planet 'The Goblin' Discovery Redefining Solar System

New Extreme Dwarf Planet: 2015 TG387



With their telescopes aimed beyond Pluto to the outer fringes of our solar system, a trio of astronomers has discovered a tiny dwarf planet whose extraordinary path around the sun adds to evidence that a larger, as-yet-undiscovered object is lurking even farther out. The discovery came as part of ongoing efforts to find Planet X, aka Planet 9. That's the hypothetical "super-Earth" or an even larger planet whose existence astronomers have been trying to confirm for several years now. Unlike Earth and the other planets whose orbits around the sun are almost circular, the Goblin moves around the sun in an exaggerated ellipse. At its nearest point, the dwarf planet comes about 65 times the distance from Earth to the sun (a distance astronomers call one astronomical unit, or AU). At the farthest point in its orbit, The Goblin is about 2,300 AU from the sun — about 214,000,000,000 miles. The Goblin takes an astonishing 40,000 years to complete a single orbit.

Chinese Solid-Fueled Launcher Puts Smallsat in Orbit



A Chinese Kuaizhou 1A rocket took off Saturday, Sept 29th under the auspices of the commercial launch provider Exspace and successfully deployed a tech demo satellite into orbit, state media reported. U.S. military tracking data indicated the rocket released its single payload in a polar orbit roughly 435 miles (700 kilometers) above Earth, on a path inclined 98.2 degrees to the equator. Xinhua reported the satellite launched by the Kuaizhou 1A rocket Saturday was named Centispace-1-S1 developed by Innovation Academy for Microsatellites of the Chinese Academy of Sciences. The spacecraft was described by Xinhua as a technology demonstrator for a space-based network in development by Beijing Future Navigation Technology Co. Ltd. to augment satellite navigation services. The Centispace-1-S1 satellite reportedly had a launch weight of a little more than 200 pounds (about 100 kilograms)

Source: Stephen Clark @ SpaceFlightNow.com

Photo Credit: Xinhua

NASA's OSIRIS-REx Executes First Asteroid Approach Maneuver



NASA's OSIRIS-REx spacecraft executed its first Asteroid Approach Maneuver (AAM-1) today putting it on course for its scheduled arrival at the asteroid Bennu in December. The spacecraft's main engine thrusters fired in a braking maneuver designed to slow the spacecraft's speed relative to Bennu from approximately 1,100 mph (491 m/sec) to 313 mph (140 m/sec). The mission team will continue to examine telemetry and tracking data as they become available and will have more information on the results of the maneuver over the next week. During the next six weeks, the OSIRIS-REx spacecraft will continue executing the series of asteroid approach maneuvers designed to fly the spacecraft through a precise corridor during its final slow approach to Bennu. The last of these, AAM-4, scheduled for Nov. 12, will adjust the spacecraft's trajectory to arrive at a position 12 miles (20 km) from Bennu on Dec. 3. After arrival, the spacecraft will initiate asteroid proximity operations by performing a series of fly-bys over Bennu's poles and equator.

New Horizons Team Completes Final Trial Run of Ultima Thule flyby



NASA's New Horizons team successfully completed a simulation of the spacecraft's upcoming flyby of Kuiper Belt Object (KBO) Ultima Thule that included "data" based on actual observations and projections regarding the target object. Conducted over the course of three days from September 6-8, the trial run was the last of more than 20 such simulations. Known as operational readiness tests or ORTs, these are conducted to test out the most critical parts of the flyby, such as its navigation, operation of the spacecraft and checking out New Horizon's seven science instruments. The latter of these checkouts is critical when it comes to the search for rings, moons, and other potential hazards to the probe.



MASCOT Lander Begins Exploring Asteroid Ryugu

A Japanese probe landed a third observation robot on an asteroid on Wednesday, Oct. 3rd as it pursues a mission to shed light on the origins of the solar system. The French-German Mobile Asteroid Surface Scout, or MASCOT, launched from the Hayabusa2 probe, landed safely on Ryugu and was in contact with its team, the lander's official Twitter account said. MASCOT is expected to collect a wide range of data on the asteroid, some 190 million miles from Earth. MASCOT's launch comes 10 days after the Hayabusa2 dropped a pair of MINERVA-II micro-rovers on the Ryugu asteroid. This image was taken during MASCOT's descent. Its shadow can be seen in the upper right corner of the image.

Source: Stephen Clark @ SpaceFlightNow.com

Image Credit: MASCOT2018

Astronomers Find First Compelling Evidence for a Moon Outside our Solar System

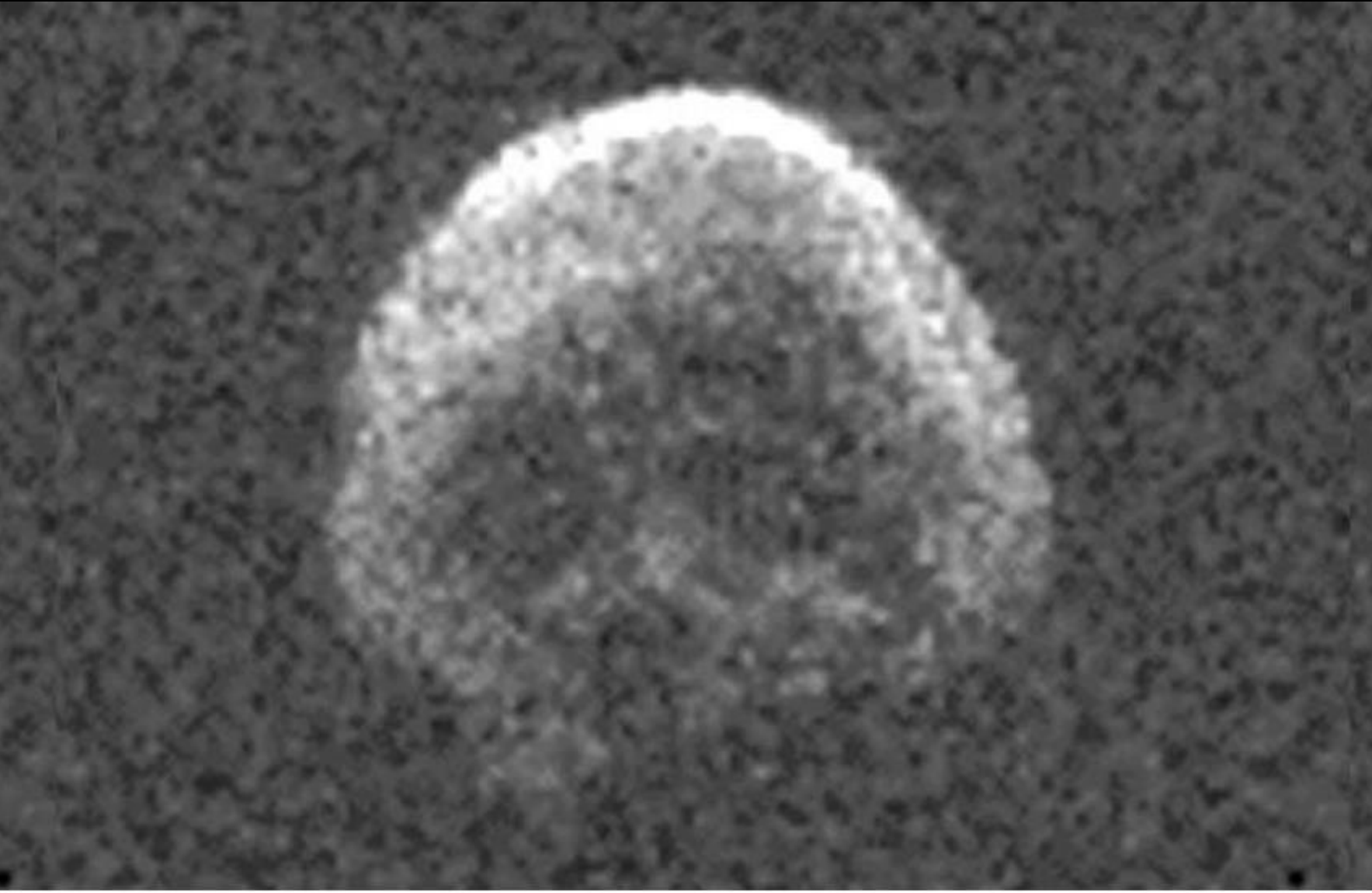
The background image shows a large, detailed view of a gas-giant planet, likely Jupiter, with its characteristic bands of orange, brown, and white. To the right, a smaller, blue planet is visible against the blackness of space, which is dotted with distant stars.

A pair of Columbia University astronomers using NASA's Hubble Space Telescope and Kepler Space Telescope have assembled compelling evidence for the existence of a moon orbiting a gas-giant planet 8,000 light-years away. In a paper published Oct. 3 in the journal *Science Advances*, Alex Teachey and David Kipping report that the detection of a candidate exomoon—that is, moons orbiting planets in other star systems—is unusual because of its large size, comparable to the diameter of Neptune. Such gargantuan moons do not exist in our own solar system, where nearly 200 natural satellites have been cataloged. "This would be the first case of detecting a moon outside our solar system," said Kipping, an assistant professor of astronomy at Columbia. "If confirmed by follow-up Hubble observations, the finding could provide vital clues about the development of planetary systems and may cause experts to revisit theories of how moons form around planets."

Source: Columbia University & Phys.org

Image Credit: Dan Durda

This Skull-Shaped Space Rock is Going To Fly By Earth Right After Halloween



An asteroid, called 2015 TB145, looks from some angles like a human skull, with deep, dark eye sockets. It will swing back around to Earth just days after Halloween, on November 11. The last time the object was seen from Earth was in October 2015. It gained a lot of fans from its Halloween flyby, and NASA nicknamed it "The Great Pumpkin." The comet also has a bunch of other monikers, like "Spooky," and The Halloween Asteroid, but the coolest alias has to be "Skull Asteroid." And while some outlets questioned if the asteroid was a "doomsday threat" in 2015, it flew at a close but safe distance of about 300,000 miles past Earth. This year it'll also be at a safe distance at about 105 times the distance between the Earth and the moon, which adds up to about 25 million miles away

Source: Temi Adebawale @ PopularMechanics.com

Image: NAIC-ARECIBO/NSF

Boeing Wins \$9.2b T-X Trainer Contract with USAF



The US Air Force awarded Boeing Defense a \$9.2 billion contract for production of 351 T-X trainer jets, 46 simulators and associated ground equipment. The T-X trainers will replace the USAF's 57-year-old fleet of Northrop T-38C Talons, the service announced 27 September. The contract is an indefinite-delivery and indefinite-quantity award, allowing the USAF to purchase up to 475 aircraft and 120 simulators.

50 years of the 747



When the first 747 rolled out of its Everett assembly building on Sept. 30, 1968, in front of a crowd from more than two dozen airlines, it changed air travel forever. It was built by a team of Boeing workers and engineers who became known as "The Incredibles" because they built the first 747 in just 16 months.

Source: Andrew McIntosh @ Puget Sound Business Journal

Photo: Boeing

2 October 1952: Boeing XB-52 First Flight

The Boeing XB-52 Stratofortress prototype, 49-230, made its first flight at Boeing Field, Seattle, Washington, with test pilot Alvin M. "Tex" Johnston in command. Lieutenant Colonel Guy M. Townsend, U.S. Air Force, acted as co-pilot.

XB-52 49-230 was used in flight testing for its entire service life. The airplane was scrapped in the mid-1960s.

744 B-52 bombers were built by Boeing at Seattle, Washington and Wichita, Kansas, with the final one, B-52H-175-BW61-0040, rolled out 22 June 1962. 75 B-52H Stratofortress's are still in service with the United States Air Force.


A 1959 B-52G Stratofortress is currently on display at The Museum of Flight.

Source: Bryan R. Swopes @ thisdayinaviation.com


Photo Credit: LIFE Magazine via Jet Pilot Overseas




In The News




Airbus, Boeing Each Claim Major Orders. Airbus and Boeing each added substantial volumes of units to their commercial aircraft order books on Monday, as the rivals announced sales worth a total of \$5.57 billion at list prices. Airbus's deal involved a conversion of options on 27 A320neo-family narrowbodies to firm orders for 23 A320neos and four A321neos by Lufthansa Group, while Boeing collected a firm order for nine 787-9s from United Airlines. *(Gregory Polek @ AINonline.com)*




Southwest Air Ends an Era With Delivery of Last 737 Next Gen. Southwest Airlines Co.'s dedication to an all-737 fleet entered a new phase Sunday as the carrier closed out deliveries of one generation of the jet and turned attention to the next. From now on, the airline will receive only 737 Max planes, the latest iteration of the narrow-body aircraft that is Boeing Co.'s largest source of profit. Southwest operates the biggest 737 fleet. *(Mary Schlangenstein @ Bloomberg)*



ICESat-2 Laser Fires for First Time, Measures Antarctic Height. The laser instrument that launched into orbit last month aboard NASA's Ice, Cloud and land Elevation Satellite-2 (ICESat-2) fired for the first time Sept. 30. With each of its 10,000 pulses per second, the instrument is sending 300 trillion green photons of light to the ground and measuring the travel time of the few that return: the method behind ICESat-2's mission to monitor Earth's changing ice. *(Kate Ramsayer, NASA's Goddard Space Flight Center)*



Britain Starts Talks On Possible E-7 Purchase. The British government has finally confirmed that it has begun negotiations with Boeing over the potential purchase of the E-7 airborne early warning aircraft to replace the E-3 Sentry fleet. "The Wedgetail is the standout performer in our pursuit of a new battlespace surveillance aircraft and has already proved itself in Iraq and Syria," British Defense Minister Gavin Williamson said. "It could be an excellent asset for the RAF and give us a real edge in this increasingly complex world." *(Tony Osborne @ Aerospace Daily & Defense Report)*



First SpaceX Commercial Crew Test Flight Could Slip to 2019. SpaceX executive said Oct. 3 that the company's first commercial crew test flight could be delayed until early 2019 because of paperwork issues. Hans Koenigsmann, vice president of build and flight reliability for SpaceX, said launching an uncrewed test flight before the end of the year will be a "close call" even though the hardware itself should be ready. *(Jeff Foust @ SpaceNews.com)*