

The Aerospace Update

A wide-angle photograph taken from the International Space Station (ISS) looking out over the Earth. The image shows the station's complex structure, including large solar panel arrays and various equipment modules. The Earth's blue and white horizon is visible in the lower-left quadrant, set against the blackness of space. The station's components are illuminated by bright sunlight, creating high contrast.

ISS Arrivals & Departures

June 6, 2017

Image Credit: NASA

Expedition 51 Returns to Earth



The International Space Station is back down to three crew members as Expedition 51 ended with the landing of a Soyuz spacecraft in the middle of Kazakhstan today. While NASA astronaut Peggy Whitson, who recently became the woman with the most hours in space, has remained on board, two of her crew mates returned on the Soyuz MS-03 spacecraft, touching down at 10:10 a.m. after 196 days in space. Oleg Novitskiy of Roscosmos and Thomas Pesquet of ESA (European Space Agency) along with Whitson launched to the ISS on Nov. 17, 2016. Whitson will return to Earth in September.

Video Credit: NASA/ESA

Source: Richard Tribou @ orlandosentinel.com

Falcon 9 Launches Reused Dragon to the ISS

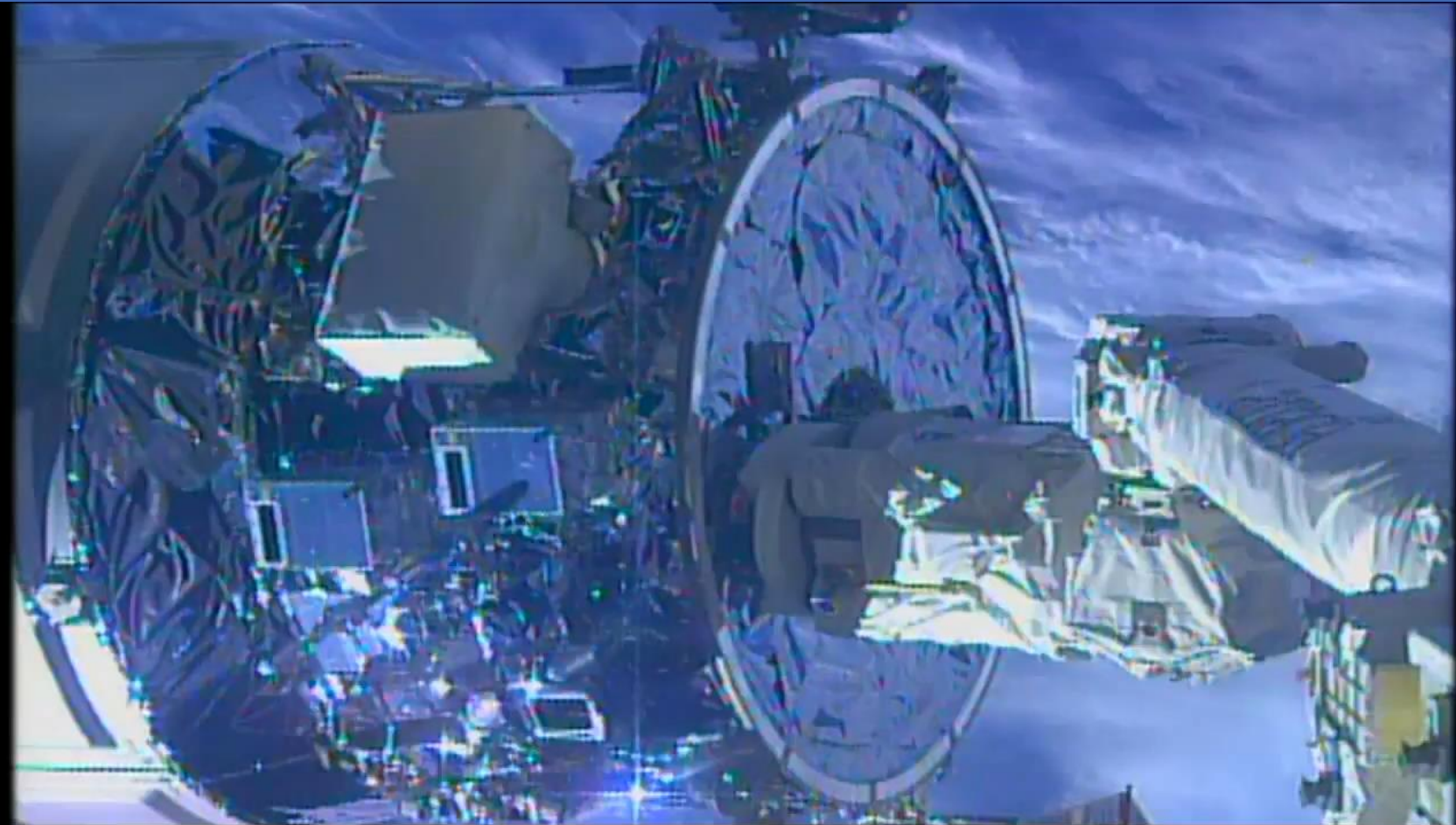


A SpaceX Falcon 9 successfully launched a Dragon spacecraft June 3rd making its second trip to the International Space Station. The Dragon, flying a mission designated SpX-11 by NASA, is carrying more than 2,700 kilograms of cargo for the ISS. More than 2,000 kilograms of that is scientific hardware, including experiments to be conducted inside the station as well as astrophysics, earth science and space technology experiments to be mounted on the station's exterior. Dragon arrived at the ISS on Monday, June 5th.

Video Credit: NASA

Source: Jeff Foust@ SpaceNews.com

S.S. John Glenn Freighter Departs ISS



Video Credit: NASA

The Cygnus commercial logistics vehicle departed the ISS Sunday June 4th for a week-long free-flight filled with autonomous science tasks before re-entry. Owing to a rejiggered schedule that optimizes astronauts' workload, the unberthing occurred six weeks ahead of the original plan. A brief window opened in the crew's timeline, and flight controllers decided to squeeze in the Cygnus release instead of waiting until July 16th. Cygnus will spend the next week as a free-flying spacecraft, conducting the SAFFIRE 3 fire experiment this afternoon, downlinking the voluminous data and video that will be recorded during that test, and deploying four small LEMUR-2 satellites on Thursday from an altitude about 50 miles higher than the station for meteorology and ship tracking. Re-entry into the South Pacific is planned for next Sunday, June 11.

Source: Justin Ray @ SpaceFlightNow.com

India's First GSLV Mark 3 Rocket Makes its Debut



India launched the first GSLV Mark 3 rocket Monday, June 5th. The rocket lifted off from the Satish Dhawan Space Centre on schedule with initial reports indicated that the rocket was performing as planned though satellite separation. The launch is the first for this new, and more powerful, variant of the Geosynchronous Satellite Launch Vehicle, roughly doubling its payload performance. The rocket's payload was the GSAT-19 communications satellite.

Source: Jeff Foust @ SpaceNews.com

Video Credit: ISRO

Arianespace All Caught Up on Protest-Delayed Missions



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European launch provider Arianespace's successful launch of ViaSat and Eutelsat telecommunications satellites June 1st on an Ariane 5 rocket marked the completion of all missions offset by protests in French Guiana during March and April. At 10,865-kilograms total, including satellites and rocket hardware, this launch marked the heaviest mission the Ariane 5 has completed to date, and 79th mission overall.

Source: Caleb Henry @ SpaceNews.com

Video Credit: ArianeSpace

Japanese Navigation Craft Successfully Delivered to Orbit



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Japan deployed the first of three navigation satellites it intends to launch in the next year Thursday, sending a 4.4-ton (4-metric ton) spacecraft on the way to a high-altitude orbital perch on top of an H-2A rocket to improve positioning data for drivers, hikers and government agencies in East Asia. Michibiki 2 is the second member of a four-satellite regional navigation network the Japanese government is deploying over the Asia-Pacific. Two more stations will join Japan's Quasi-Zenith Satellite System following launches on H-2A rockets over the next 10 months.

Video Source: SciNews

Source: Stephen Clark @ SpaceFlightNow.com

Japan's Quasi-Zenith Satellite System Augments GPS



The Quasi Zenith Satellite System (QZSS) takes a unique spot in the world's navigation satellite systems in that it augments a foreign satellite constellation in a twofold manner: a) by acting as a member of the GPS constellation and transmitting GPS-compliant navigation signals, and b) relaying augmentation signals generated on the ground to allow receivers to factor corrections into their position calculation to improve location accuracy. Traditional augmentation systems such as the U.S. Wide Area Augmentation System only provide augmentation signals, but in Japan's specific case the issue was not only to increase GPS accuracy but also enhance its availability, especially in the country's urban canyons where tall buildings can block GPS signals and cause outages when not enough satellites are sufficiently high to allow a user on the ground to compute its position which requires inputs from four satellites.

Source: SpaceFlight101.com

Successful ICBM Intercept Test

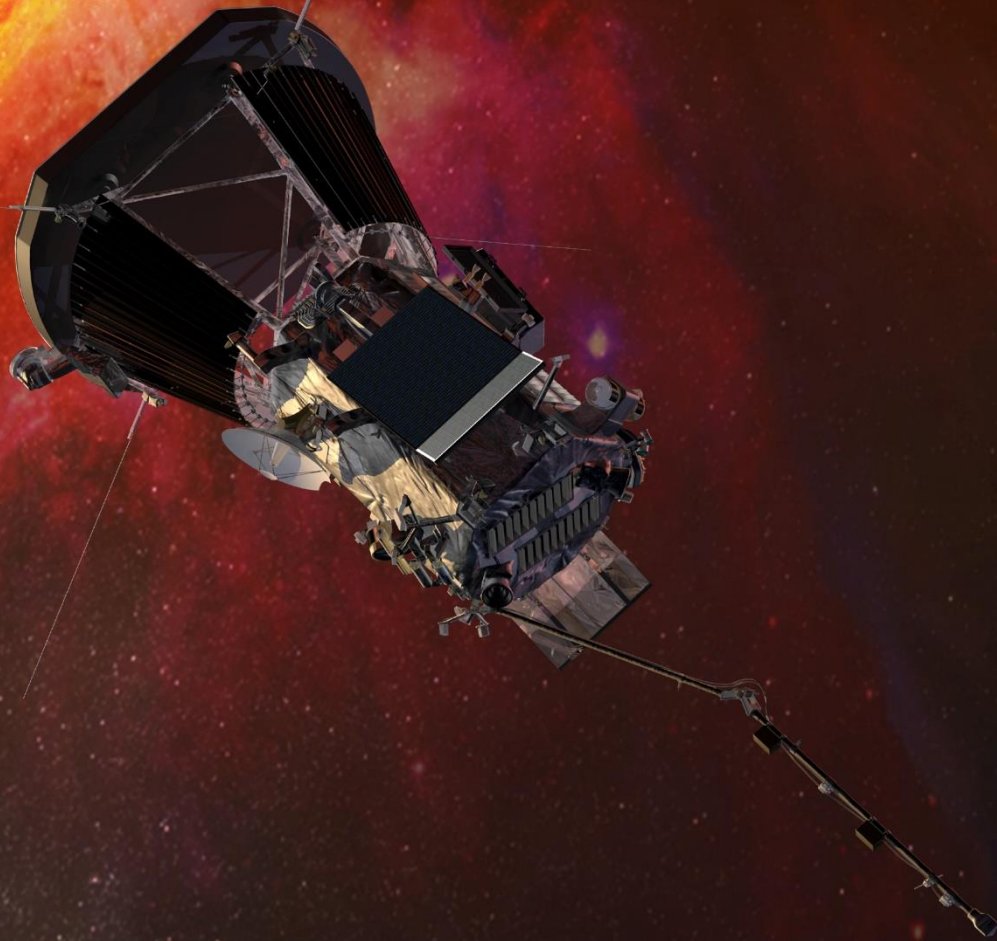
Intercontinental Ballistic Missile Target Launch from Reagan Test Site, Kwajalein Atoll

The Pentagon successfully shot down an intercontinental ballistic missile using its own upgraded long-range interceptor missile on Tuesday in what was widely seen as a test of US ability to counter a North Korean missile launch. The Missile Defense Agency launched a ground-based interceptor from Vandenberg Air Force Base in California to intercept a US-launched mock ICBM target over the Pacific Ocean, according to a US defense official. The test ICBM, which flew thousands of miles per hour, was destroyed "thousands of miles off the coast" of the US mainland, with the intercept taking place northeast of Hawaii, the director of the Missile Defense Agency, Vice Adm. Jim Syring, told reporters at the Pentagon via a Wednesday phone call.

Video Credit: Missile Defense Agency

Source: Barbara Starr and Ryan Browne @ CNN.com

NASA Probe to Fly into Sun's Atmosphere



A new NASA mission aims to brush by the sun, coming closer than any spacecraft in history to its scorching heat and radiation in order to reveal how stars are made, the US space agency said Wednesday. After liftoff from Kennedy Space Center in Florida in July 2018, the Parker Solar Probe will become the first to fly directly into the sun's atmosphere, known as the corona. The plan for the unmanned spacecraft is to orbit within 3.9 million miles (6.3 million kilometers) of the sun's surface. Temperatures in that region exceed 2,500 Fahrenheit (1,377 Celsius), for which the spacecraft is equipped with a 4.5-inch-thick (11.43 cm) carbon-composite shield. Roughly the size of a small car, the probe will make seven flybys of the sun over a seven-year period, in what NASA described as a "mission of extremes."

Pulsar Based Navigation System to Get Test on Space Station



An experiment that arrived at the ISS (June 5) will test a celestial navigational system that one day may guide future spaceships to Jupiter as efficiently as GPS satellites get you to Starbucks. The Station Explorer for X-ray Timing and Navigation Technology (SEXTANT) experiment is among the projects planned for the world's first telescope dedicated to observing neutron stars, the densest known objects in the universe. Of particular interest are pulsars, which are fast-spinning neutron stars with especially luminous magnetic fields. The idea of navigating via pulsar is not new, but the technology to autonomously detect and time the flashes is a recent development. Once it's attached to the station the software will run for an initial 18-month period.

Curiosity Peels Back Layers on Ancient Martian Lake



A long-lasting lake on ancient Mars provided stable environmental conditions that differed significantly from one part of the lake to another, according to a comprehensive look at findings from the first three-and-a-half years of NASA's Curiosity rover mission. Different conditions favorable for different types of microbes existed simultaneously in the same lake. This evenly layered rock imaged in 2014 by the Mastcam on NASA's Curiosity Mars rover shows a pattern typical of a lake-floor sedimentary deposit near where flowing water entered a lake. Shallow and deep parts of an ancient Martian lake left different clues in mudstone formed from lakebed deposits.

Source & Image Credits: Credits: NASA/JPL-Caltech/MSSS

Stratolaunch Rolls Out Giant Aircraft



Stratolaunch, the company backed by billionaire Paul Allen to develop air-launch systems, rolled out its giant carrier aircraft for the first time from its hangar at the Mojave Air and Space Port in California May 31st in advance of ground and flight tests. The Stratolaunch aircraft is the largest in the world by wingspan, measuring more than 117 meters from tip to tip. The plane weighs 226,800 kilograms empty, and 50 percent more when fully fueled. It can accommodate payloads weighing nearly 250,000 kilograms, attached to the wing segment between the twin fuselages.

Source: Jeff Foust @ SpaceNews.com

Photo Credit: Stratolaunch Systems

In The News



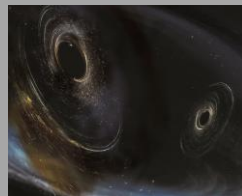
Airbus to Cut A380 Output Below One a Month if no New Orders. Airbus SE is planning a further cut in build rates for the beleaguered A380 superjumbo airliner amid a continuing dearth of new orders for the 525 seat behemoth. A decision will be made before the end of this year in the absence of further sales. (*www.Bloomberg.com*)



Japan rolls out first domestically built F-35. The first Lockheed Martin F-35 Lightning II Joint Strike Fighter (JSF) to be built in Japan was rolled out on 5 June. The conventional take-off and landing (CTOL) F-35A for the Japan Air Self-Defense force (JASDF) was unveiled at the site of the Mitsubishi Heavy Industries (MHI) F-35 Final Assembly and Check Out (FACO) facility in Nagoya in central Japan. Japan is one of only two F-35 customers outside of the United States to have a FACO production facility, with Italy being the other. (*Gareth Jennings @ IHS Jane's Defence Weekly*)



Virgin Galactic nears next phase of SpaceShipTwo test program. Virgin Galactic performed another glide flight of SpaceShipTwo June 1 as the company suggested it was nearing a new phase in the test program of the suborbital spaceplane. The company said they used this flight to test the handling characteristics of the vehicle in conditions closer to that of a typical flight. A ballast tank, loaded with about 450 kilograms of water, was placed in the rear of the fuselage to simulate a fuel tank. That water was jettisoned during the course of the glide flight, allowing pilots to study how the spaceplane flew as its center of gravity changed. (*Jeff Foust @ SpaceNews.com*)



LIGO Detects Gravitational Waves for Third Time. The Laser Interferometer Gravitational-wave Observatory (LIGO) has made a third detection of gravitational waves, ripples in space and time, demonstrating that a new window in astronomy has been firmly opened. As was the case with the first two detections, the waves were generated when two black holes collided to form a larger black hole. (*Phys.org*)