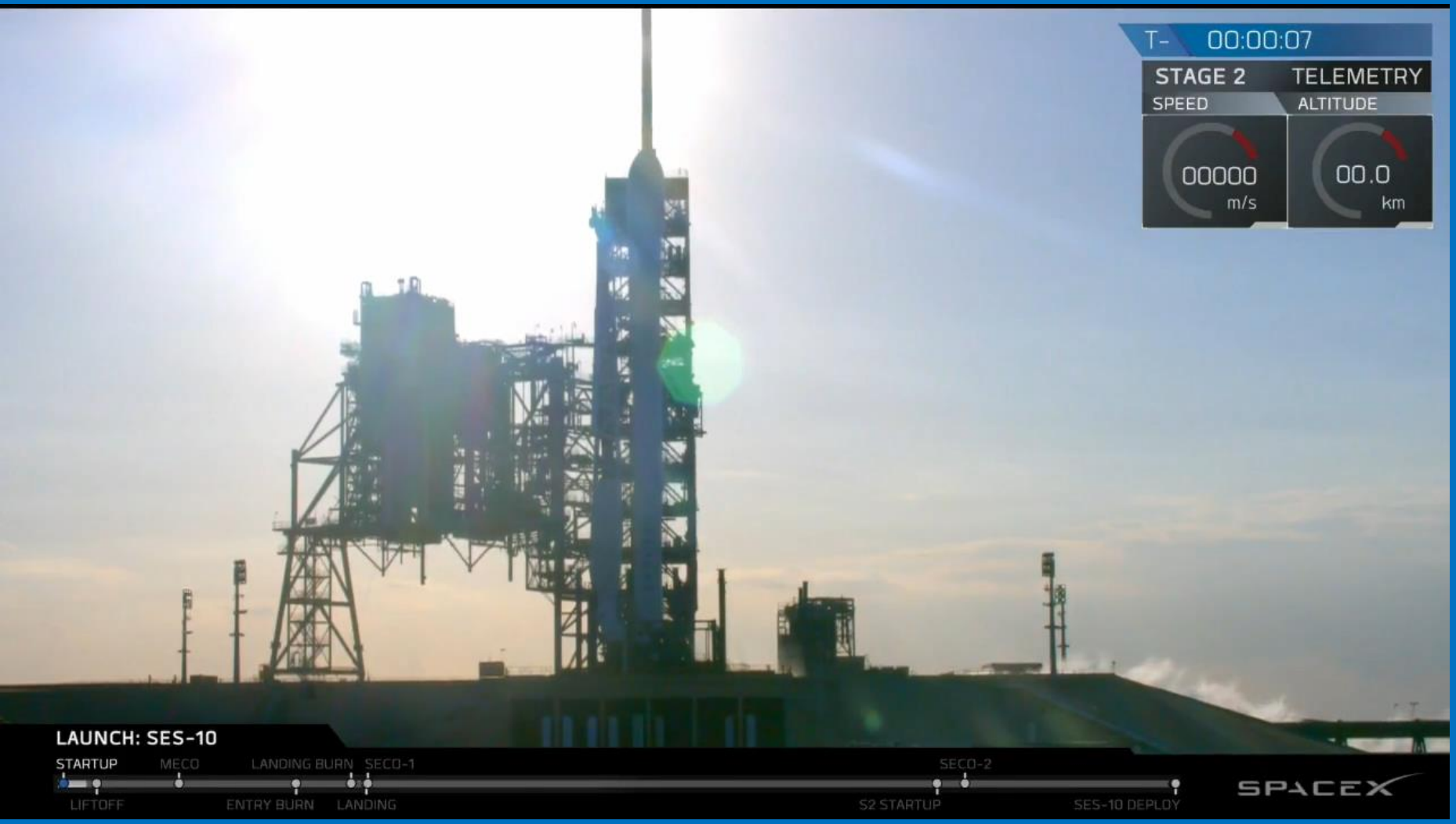
The Aerospace Update

The City of Light as Seen from the ISS

April 4, 2017

Image Credit: Shane Kimbrough/NASA

SpaceX Flies Rocket for Second Time

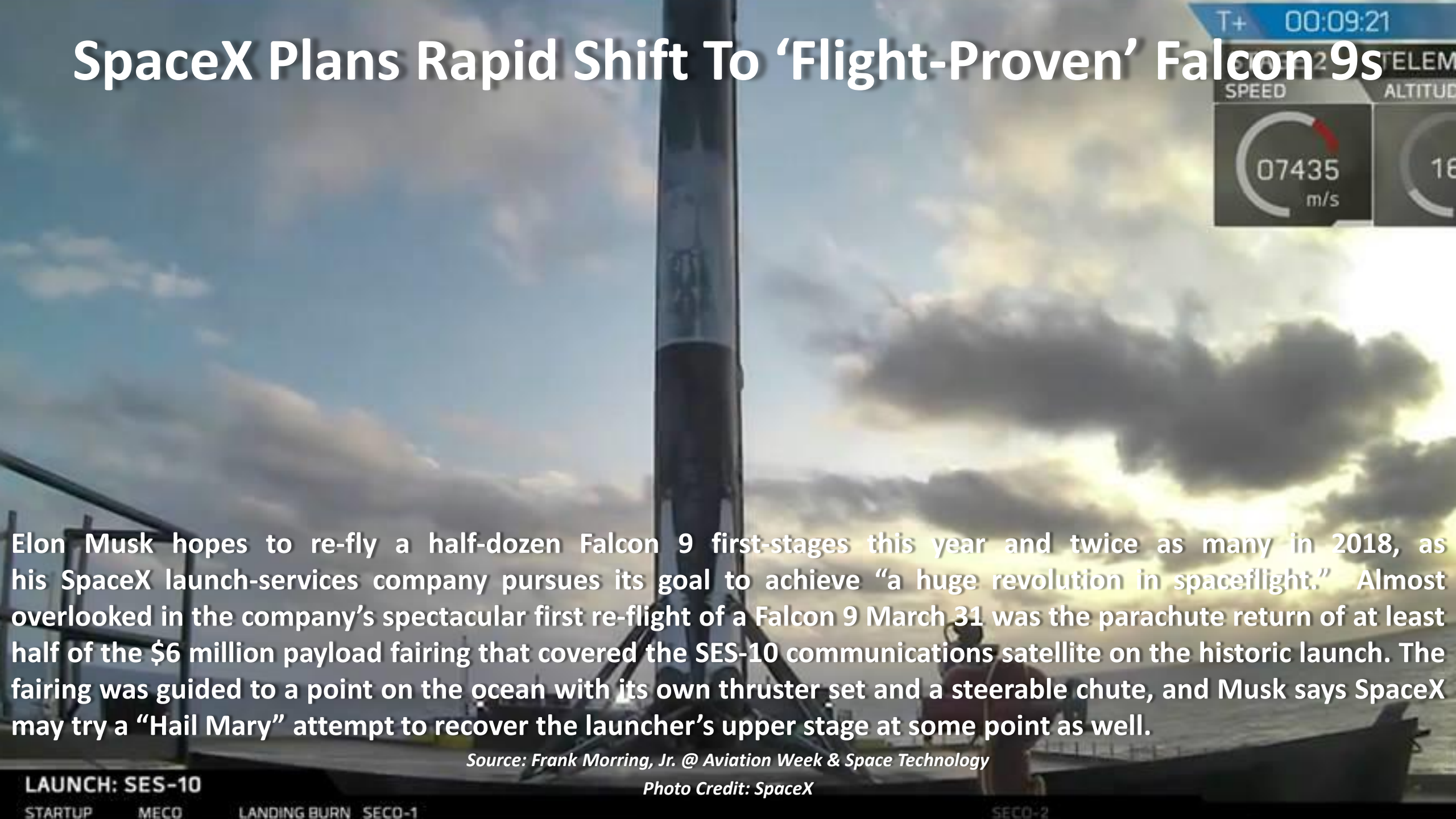


A previously flown SpaceX Falcon 9 rocket sporting a fresh cleaning and several refurbishments took off Thursday from a seaside launch pad in Florida to send an SES communications satellite into space, then landed on a platform in the Atlantic Ocean to repeat a feat the same booster achieved nearly one year ago. The success buoys SpaceX's ambition to eventually land and launch rockets routinely, and at a fraction of the cost of current launch vehicles, according to Elon Musk, the tech entrepreneur who founded the space company in 2002.

Video Credit: SpaceX

Source: Stephen Clark @ SpaceFlightNow.com

SpaceX Plans Rapid Shift To ‘Flight-Proven’ Falcon 9s

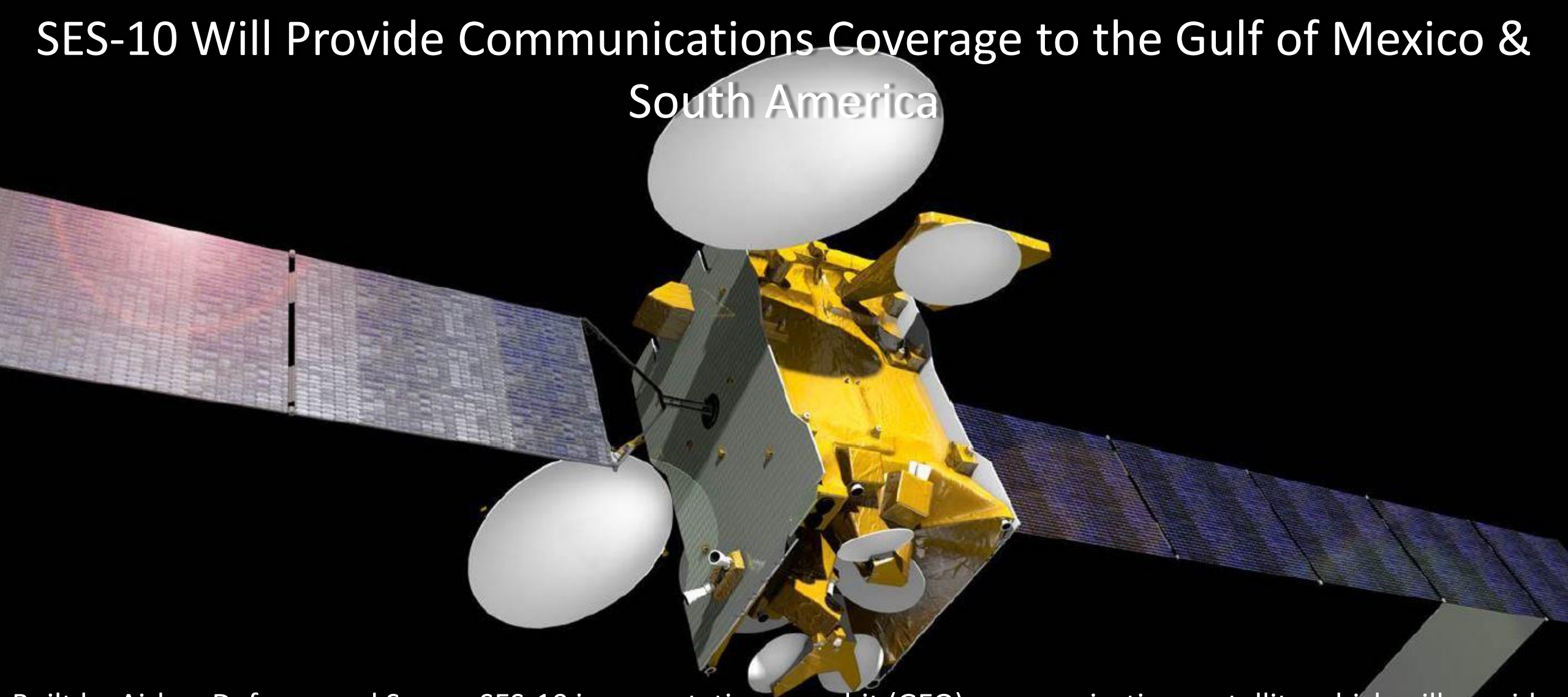


Elon Musk hopes to re-fly a half-dozen Falcon 9 first-stages this year and twice as many in 2018, as his SpaceX launch-services company pursues its goal to achieve “a huge revolution in spaceflight.” Almost overlooked in the company’s spectacular first re-flight of a Falcon 9 March 31 was the parachute return of at least half of the $6 million payload fairing that covered the SES-10 communications satellite on the historic launch. The fairing was guided to a point on the ocean with its own thruster set and a steerable chute, and Musk says SpaceX may try a “Hail Mary” attempt to recover the launcher’s upper stage at some point as well.

Source: Frank Morring, Jr. @ Aviation Week & Space Technology

Photo Credit: SpaceX

SES-10 Will Provide Communications Coverage to the Gulf of Mexico & South America



Built by Airbus Defence and Space, SES-10 is a geostationary orbit (GEO) communications satellite which will provide Ku band coverage to the Gulf of Mexico and South America, replacing the capacity currently being provided by AMC-3 and AMC-4. To get to GEO, the spacecraft will use bi-propellant thrusters. Once in its designated orbital slot, it will use electric propulsion for station keeping. SES-10 is expected to have a 15-year orbital lifespan.

Source: Derek Richardson @ SpaceFlightInsider.com

Image Credit: SES

Spacewalkers Improvise After Fabric Shield Floats Away

Shane Kimbrough and Peggy Whitson, setting a new record as the world's most experienced female spacewalker, floated outside the International Space Station Thursday and continued work to set up a second docking port for U.S. crew ferry ships. They also installed an upgraded computer relay box and protective shielding before calling it a day. One of the shield segments being installed on a vacant port managed to escape its tether, floating away before the astronauts noticed. After conferring on the ground, engineers suggested the astronauts make up for the lost panel by installing a thermal shield they had just removed from a docking port extension.

Source: William Harwood @ CBS Neews & SpaceFlightNow.com

Photo Credit: NASA

Cygnus Spacecraft Readied for Launch to ISS

Cygnus, carrying 7,626 pounds of crew logitics and new science for the International Space Station, is now scheduled for launch on April 18th after several delays. This is the seventh such freighter launched by Orbital ATK under NASA's Commercial Resupply Services contract and the third to fly on the Atlas 5 from Cape Canaveral. The craft is christened the S.S. John Glenn in honor of America's first human to orbit Earth.

Source: Justin Ray @ SpaceNews.com

Photo Credit: Walter Scriptunas II / Scriptunas Images

“Every Seat’s a Window Seat.”

Blue Origin founder Jeff Bezos on Wednesday released a set of images depicting the capsule his company is developing to launch passengers on its New Shepard suborbital spacecraft. “Our New Shepard flight test program is focused on demonstrating the performance and robustness of the system,” Bezos wrote in an email sent to followers Wednesday morning. “In parallel, we’ve been designing the capsule interior with an eye toward precision engineering, safety, and comfort.”

Source: SpaceNews.com

Image Credit: Blue Origin

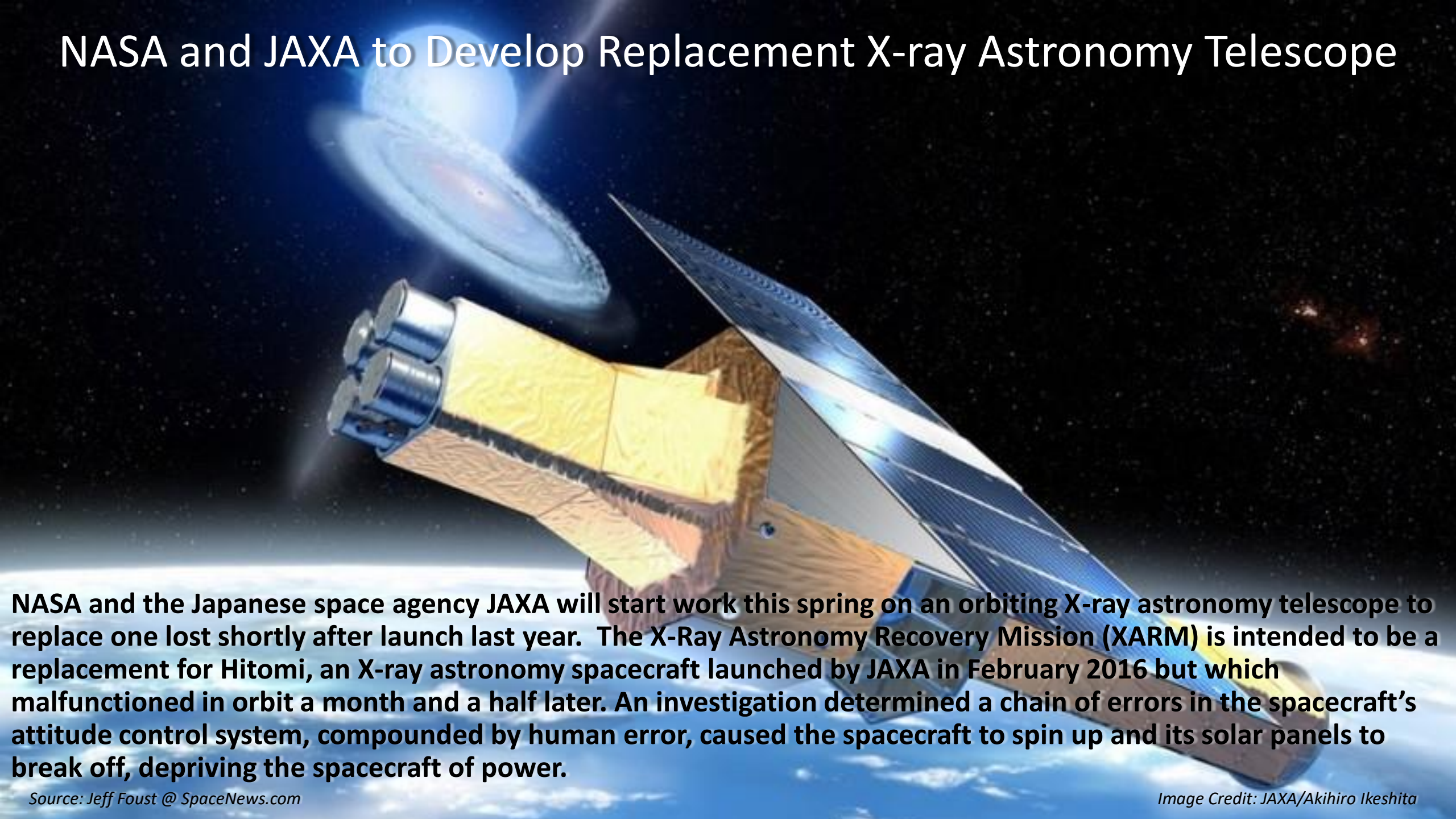
Eutelsat Satellite Returned to Factory as French Guiana Unrest Continues

Protests roiling the South American home of Europe's primary spaceport prompted Airbus Defence and Space to send Europe's first high-power, all-electric satellite back to France until Arianespace resumes launching. Arianespace has suspended launches from the Guiana Space Centre as labor strikes and civil protests have spread throughout the French overseas department, blocking roads and disrupting normal commerce.

Source: Caleb Henry @ SpaceNews.com

Photo Credit: Airbus Defence and Space

NASA and JAXA to Develop Replacement X-ray Astronomy Telescope



NASA and the Japanese space agency JAXA will start work this spring on an orbiting X-ray astronomy telescope to replace one lost shortly after launch last year. The X-Ray Astronomy Recovery Mission (XARM) is intended to be a replacement for Hitomi, an X-ray astronomy spacecraft launched by JAXA in February 2016 but which malfunctioned in orbit a month and a half later. An investigation determined a chain of errors in the spacecraft's attitude control system, compounded by human error, caused the spacecraft to spin up and its solar panels to break off, depriving the spacecraft of power.

Source: Jeff Foust @ SpaceNews.com

Image Credit: JAXA/Akihiro Ikeshita

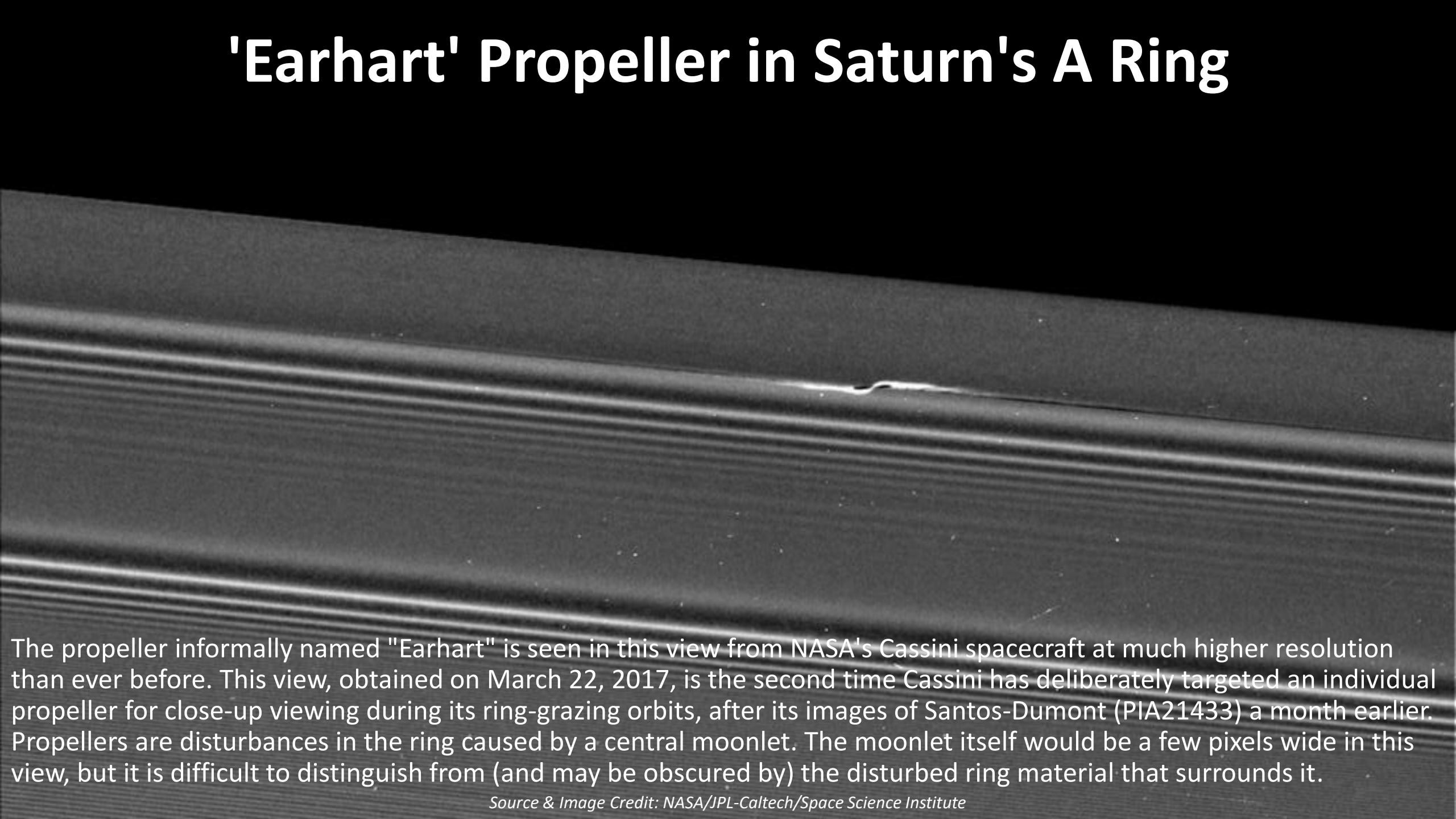
Commercial Zipline Gear Aids Boeing CST-100 Human Rating

The same system used by thrill-seeking tourists could also one day save the lives of astronauts flying on a commercial crew vehicle. Boeing and United Launch Alliance announced April 2 that they had completed testing of the Emergency Egress System (EES) for the new crew access tower at Cape Canaveral's Space Launch Complex 41, which will host Atlas 5 launches of Boeing's CST-100 Starliner commercial crew vehicle starting next year. The EES uses a version of a commercially available zipline, similar to those used in mountain resorts and parks.

Source: Jeff Foust @ SpaceNews.com

Photo Credit: NASA/Leif Heimbold

'Earhart' Propeller in Saturn's A Ring



The propeller informally named "Earhart" is seen in this view from NASA's Cassini spacecraft at much higher resolution than ever before. This view, obtained on March 22, 2017, is the second time Cassini has deliberately targeted an individual propeller for close-up viewing during its ring-grazing orbits, after its images of Santos-Dumont (PIA21433) a month earlier. Propellers are disturbances in the ring caused by a central moonlet. The moonlet itself would be a few pixels wide in this view, but it is difficult to distinguish from (and may be obscured by) the disturbed ring material that surrounds it.

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

Potential Mars Airplane Resumes Flight

Flight tests have resumed on subscale aircraft that could one day observe the Martian atmosphere and a variant that will improve collection of Earth's weather data. The March flights included two slightly different Prandtl-M aerodynamic models that were air launched from a remotely piloted Carbon Cub. The research validated the airframe that will be the basis for a potential Mars aircraft and the Weather Hazard Alert and Awareness Technology Radiation Radiosonde (WHAATRR) Glider on Earth.

Source: NASA.gov

Image Credit: NASA Photo / Lauren Hughes

Boeing Achieves First Flight of Charleston-Built 787-10

The Boeing 787-10 took-off about 09:38 on 31 March in North Charleston, South Carolina in front of an audience of 6,000 employees, becoming the first Boeing-designed commercial aircraft to achieve first flight outside of the Seattle area. The 787-10 will now enter a months-long flight test campaign to achieve certification and enter service with Singapore Airlines in 2018. Boeing stretched the 787-10 by 5.49m (18ft) compared to the 787-9, requiring the addition of a semi-levered landing gear to avoid tail-strikes on takeoff.

Video Credit: The Boeing Company

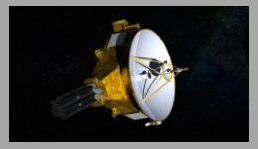
Source: Stephen Trimble@ FlightGlobal.com

In The News

Cygnus mission delayed to mid-April. A Cygnus cargo mission to the International Space Station delayed because of booster problems will not fly until at least the middle of April, a NASA official said March 28. The delay will also push back a spacewalk planned to take place on the station next week. *(Jeff Foust @ SpaceNews.com)*

Nearly every engine stockpiled for use on upper stages of Proton rockets has defects, investigation concludes. Igor Arbuzov, head of state rocket engine manufacturer Energomash, told Russian media this week that 71 engines built by Voronezh Mechanical Plant for use on the Proton's second and third stages require "complete overhauls" to correct defects found in the engines. *(Jeff Foust @ SpaceNews.com)*

Boeing receives $2.2bn order for 17 P-8As. Boeing has secured a $2.2 billion contract covering 17 P-8A Poseidon maritime patrol aircraft destined for the US Navy, plus export customers Australia and the UK. Of the 17 aircraft, 11 will go to the US Navy, four to the Royal Australian Air Force, and two to the UK Royal Air Force. This pair will be the first examples from a nine-jet order, and will be delivered in 2019. *(Greg Waldron @ FlightGlobal.com)*



New Horizons Halfway from Pluto to Next Flyby Target. Continuing on its path through the outer regions of the solar system, NASA's New Horizons spacecraft has now traveled half the distance from Pluto – its storied first target – to 2014 MU69, the Kuiper Belt object (KBO) it will fly past on Jan. 1, 2019. The spacecraft reached that milestone at midnight (UTC) on April 3 – or 8 p.m. ET on April 2 – when it was 486.19 million miles (782.45 million kilometers) beyond Pluto *and* the same distance from MU69. *(NASA.gov)*

ISS Adjusts Orbit to Line Up for Upcoming Soyuz Rotation. The International Space Station adjusted its orbit on Monday to set up the precise orbital geometry for the homecoming of three resident crew members on April 10 and the launch of a two-man Soyuz crew on the 20th for a fast-track rendezvous with the orbiting outpost. *(SpaceFlight101.com)*