

The Aerospace Update



Canada
Aurora Borealis

SpaceX Concludes 2017 With Fourth Iridium Next launch



SpaceX closed out its most successful year to date Dec. 22nd with the launch of 10 satellites for mobile satellite services operator Iridium, notching a personal best of 18 launches in a single year. The Falcon 9 mission, which took off from Vandenberg Air Force Base in California at 8:27 p.m. Eastern in an instantaneous launch window, was the fourth of eight missions for Iridium, carrying the McLean, Virginia-based operator's second generation satellites, called Iridium Next. In what now is considered a rarity, SpaceX opted not to recover the rocket's first stage, instead letting the booster fall into the Pacific Ocean.

Zenit Rocket Launches AngoSat-1 but Ground Control Loses Contact



A Russian-Ukrainian Zenit rocket was launched on Tuesday, December 26th, with the aim of delivering into orbit Angola's first satellite, known as AngoSat-1. However, it appears that contact with the spacecraft was lost after its deployment into orbit. The booster lifted off from Site 45/1 at the Baikonur Cosmodrome in Kazakhstan. Tuesday's launch marked the first Zenit flight in more than two years when it orbited the Elektro-L № 2 weather satellite for Roscosmos. The rocket returned to flight despite fears that the Russian-Ukrainian conflict, which started in 2014, would kill any joint efforts between these two countries.

Video courtesy of SciNews

*Source: Tomasz Nowakowski
@ SpaceFlightInsider.com*

Land Imaging Satellite Launched for Chinese Military



A land imaging satellite soared to a 300-mile-high perch above Earth Saturday, Dec 23rd after lifting off on top of a Long March 2D rocket from the Jiuquan space base in the Gobi Desert, joining a similar military reconnaissance craft launched earlier this month in the same type of orbit. The spacecraft, dubbed LKW-2, will be “mainly used for remote sensing exploration of land resources,” China’s state-run Xinhua news agency reported. Western analysts believe the satellites are likely high-resolution imaging platforms for the Chinese military.

Video Credit: CCTV+

Source: Stephen Clark @ SpaceFlightNow.com

Long March 2C Sends a Triplet of Yaogan-30 Satellites into Orbit

On Tuesday, Dec. 26th, China launched its Long March 2C rocket with a trio of Yaogan-30 satellites into space. Liftoff of the booster was from Launch Complex 3 at the Xichang Satellite Launch Center (XSLC) in China's Sichuan Province. "As the third batch of the Yaogan-30 project, the satellites will conduct electromagnetic environmental probes and other experiments," the Xinhua state-run press agency informed. However, Western analysts suppose that Yaogan-30 is a strictly military project.



Video courtesy of CCTV+

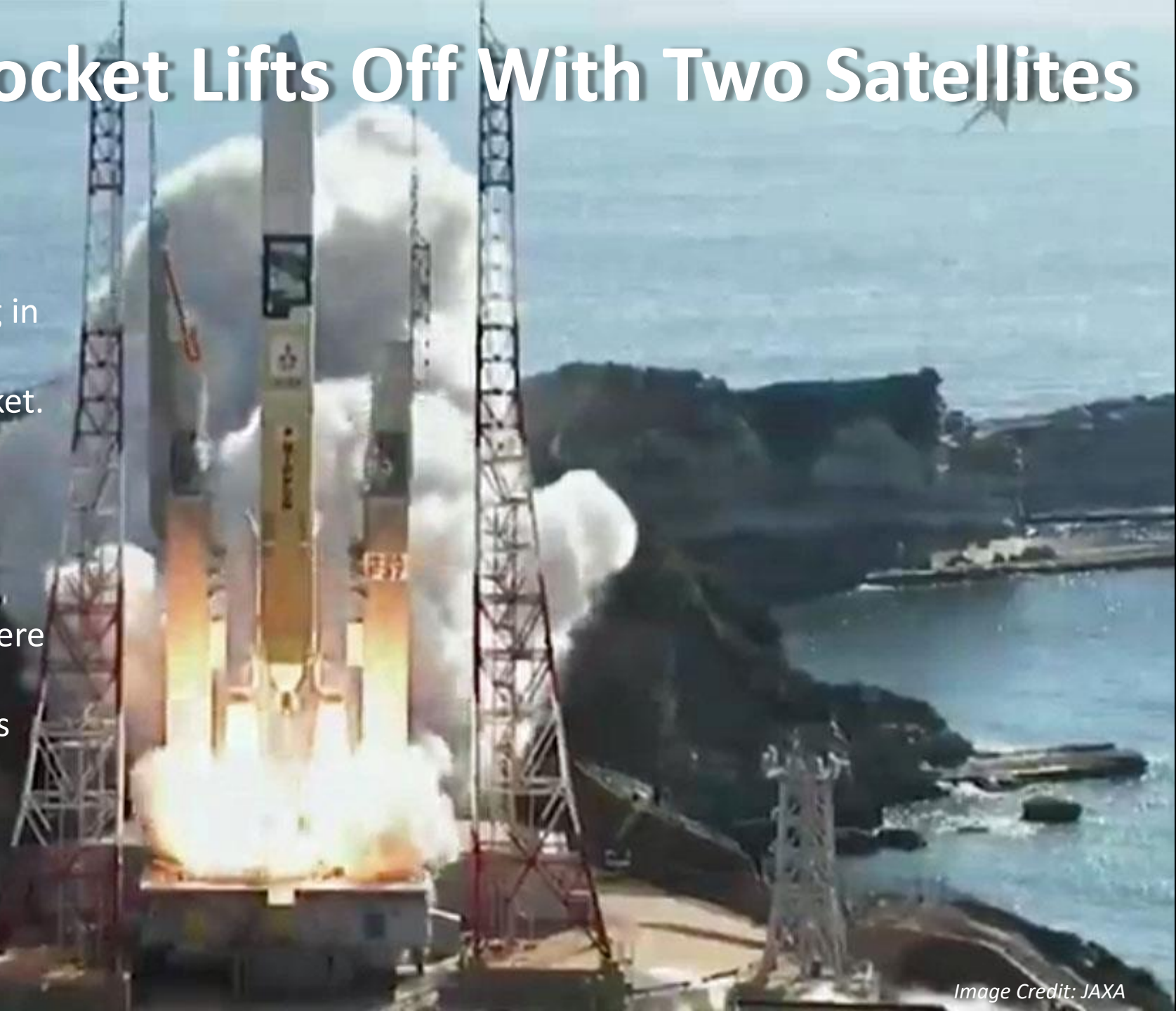
*Source: Tomasz Nowakowski @
SpaceFlightInsider.com*

Japanese H-2A Rocket Lifts Off With Two Satellites

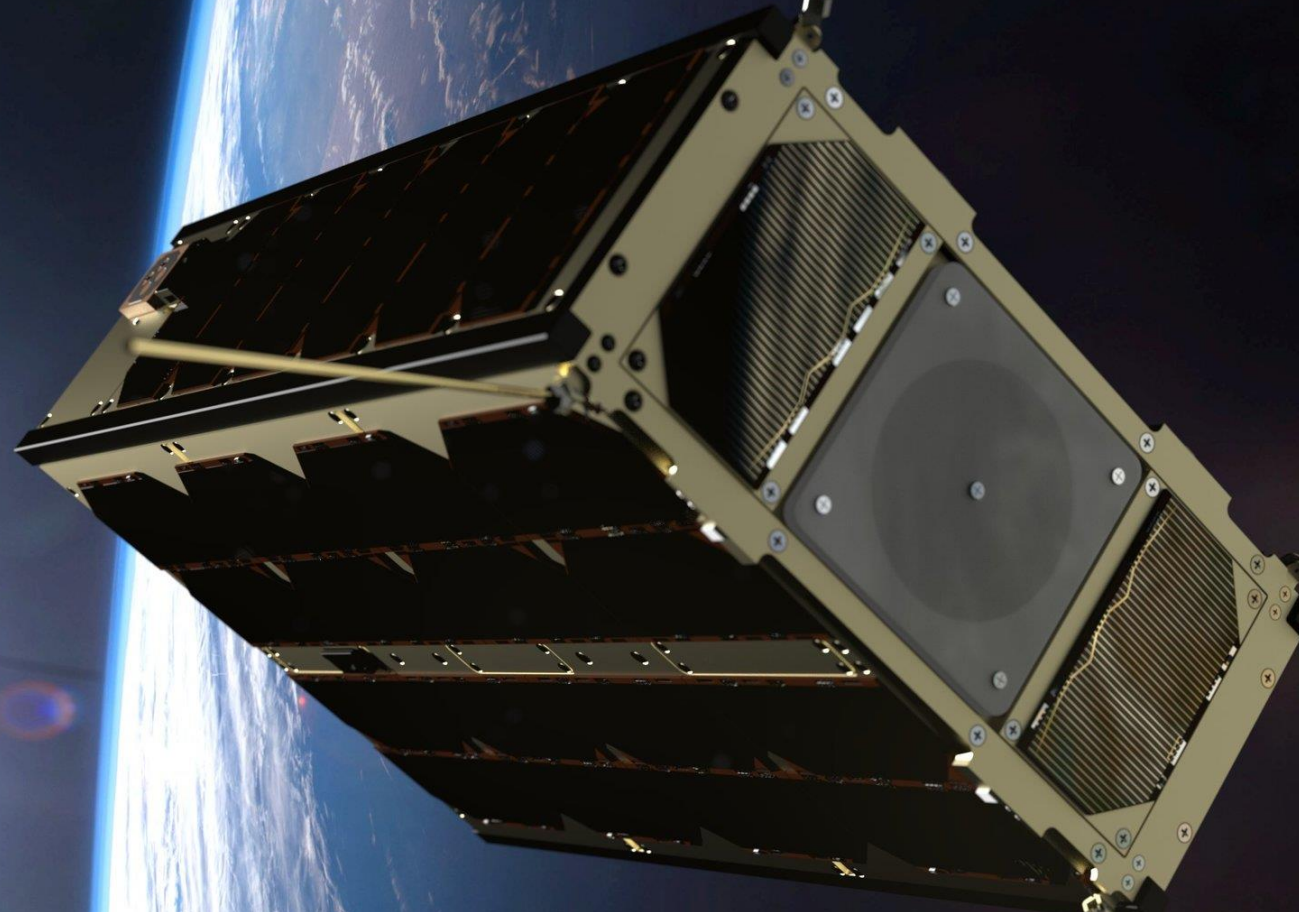
Two research satellites to probe Earth's climate patterns and test ion engine technology to counter atmospheric drag in an unusual low-altitude orbit launched Saturday on top of a Japanese H-2A rocket. The two Japanese-built spacecraft rocketed away from the Tanegashima Space Center in southern Japan on Saturday, Dec. 23rd. Mounted on a dual-payload adapter fixture, the satellites were released into two distinct orbits a few hundred miles above Earth by the H-2A's upper stage.

Source: Stephen Clark @ SpaceFlightNow.com

Image Credit: JAXA



ESA's Next Satellite Propelled by Butane



ESA's next miniature satellite will be its first able to change orbit. Thanks to a compact thruster resembling a butane cigarette lighter, the cereal box-sized satellite will fly around its near-twin to test their radio communications. Ready to be launched with its counterpart from China on 2 February, GomX-4B is built from six standard 10 cm CubeSat units. The main goal is to test the radio link at varying distances, routing data from one satellite to the other, then down to the ground. GomX-4A, from the Danish Ministry of Defence, will remain in position while ESA's GomX-4B manoeuvres up to 4500 km away.

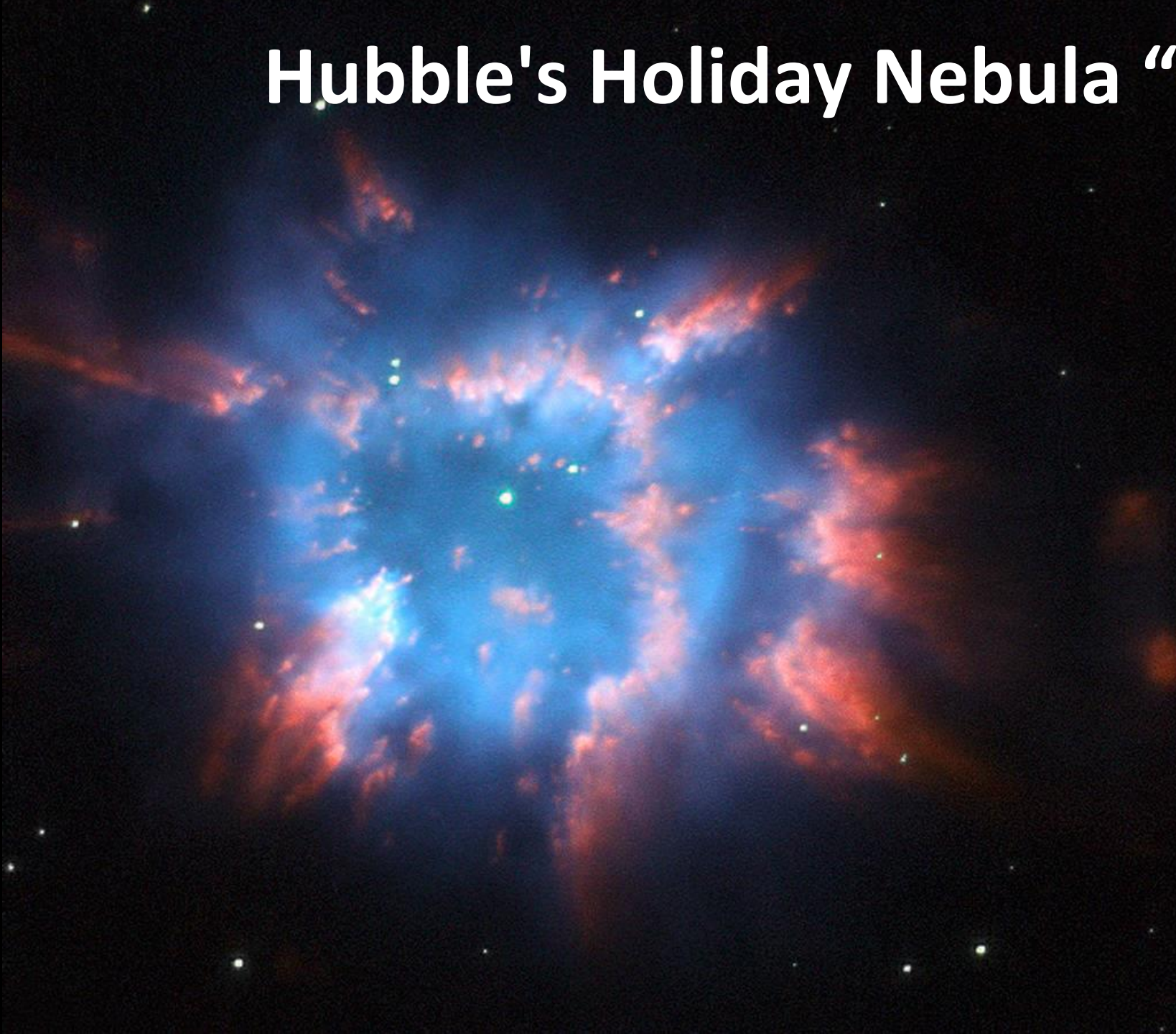
Source: European Space Agency

Image Credit: GomSpace

Arecibo Radar Returns with Asteroid Phaethon Images

After several months of downtime since Hurricane Maria struck the island of Puerto Rico, the Arecibo Observatory Planetary Radar has returned to normal operation, providing the highest-resolution images to date of near-Earth asteroid 3200 Phaethon during its December 2017 close approach to Earth. The radar images, which are subtle at the available resolution, reveal the asteroid is spheroidal (roughly ball-shaped) and has a large concavity, or depression, at least several hundred meters in extent near its equator, and a conspicuous dark, circular feature near one of the poles. Arecibo's radar images of Phaethon have resolutions as fine as about 250 feet (75 meters) per pixel.

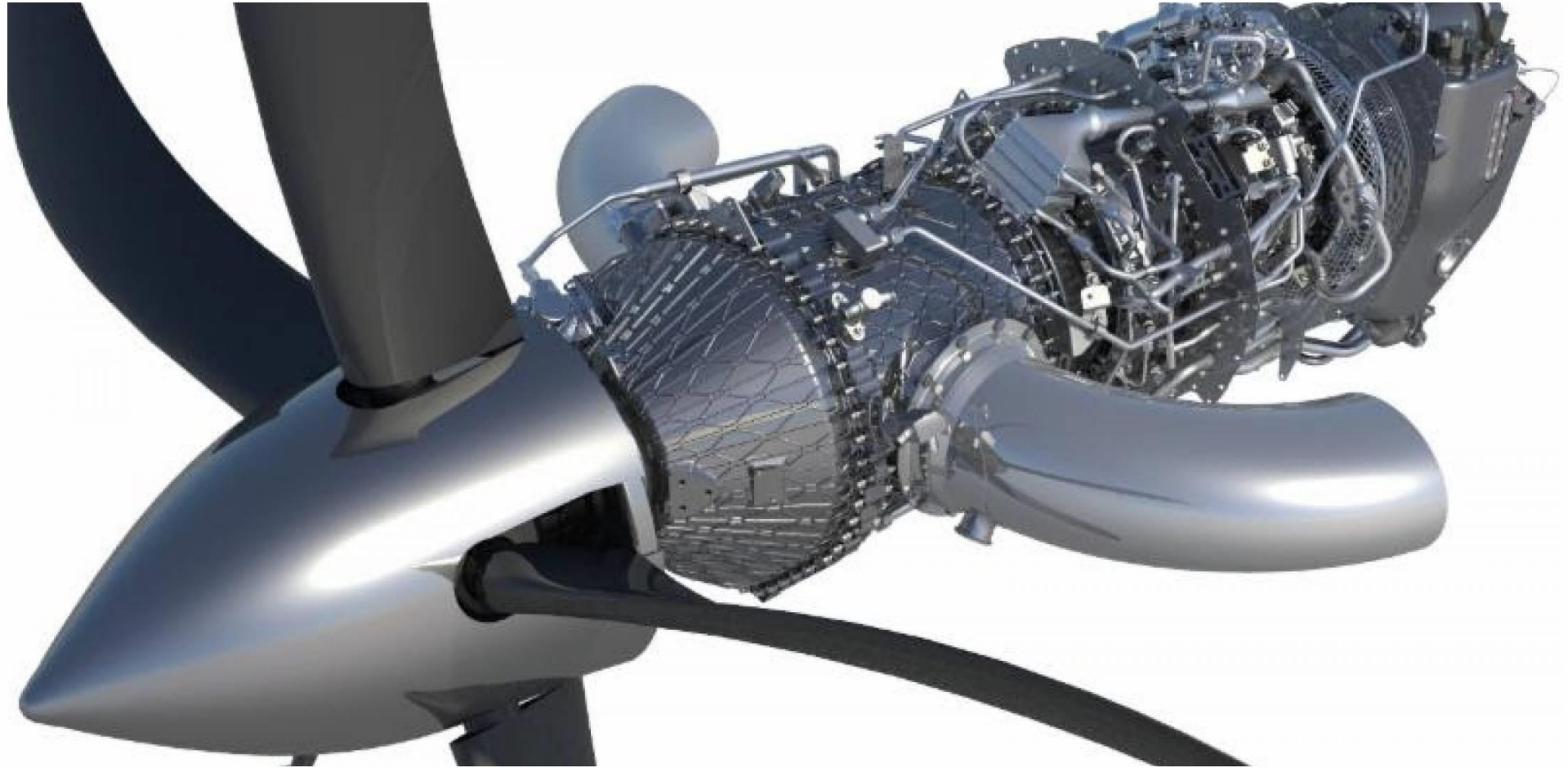
Hubble's Holiday Nebula “Ornament”



The Hubble Space Telescope captured what looks like a colorful holiday ornament in space. It's actually an image of NGC 6326, a planetary nebula with glowing wisps of outpouring gas that are lit up by a central star nearing the end of its life. When a star ages and the red giant phase of its life comes to an end, it starts to eject layers of gas from its surface leaving behind a hot and compact white dwarf. Sometimes this ejection results in elegantly symmetric patterns of glowing gas, but NGC 6326 is much less structured. This object is located in the constellation of Ara, the Altar, about 11,000 light-years from Earth.

Source & Image Credit: NASA

GE Achieves First ATP Engine Run



On Dec. 22nd, GE Aviation completed the first run of its new Advanced Turboprop (ATP) engine at GE's Prague engine manufacturing facility in the Czech Republic. The first application for the 1,240-shp ATP is the Cessna Denali single-engine turboprop, which is scheduled to fly in late 2018. Engine certification testing begins in 2018. With a 16:1 overall pressure ratio, the engine is expected to offer 20 percent lower fuel burn and 10 percent higher cruise power compared with competing engines. Time between overhaul is set at 4,000 hours. The ATP is part of a family that will include engines in the 1,000- to 1,600-shp range.

Source: Matt Thurber @ AINOnline.com

Photo Credit: GE

Biofuels Could Reduce Contrail Formation



Biofuels offer more than an alternative to hydrocarbons; they also reduce jet-engine particle emissions by as much as 70 percent, research by a NASA-led group suggests. Working with the German Aerospace Center (DLR) and the National Research Council of Canada (NRCC), NASA analyzed data on the effects alternative fuels have on several phenomena, including contrail formation. Contrails, and the cirrus clouds they help create, are believed to be a factor in influencing the environment. One of the principal drivers of contrail formation is soot emissions. Trials were conducted by flying three aircraft behind NASA's DC-8 testbed burning a 50/50 blend of aviation fuel and an alternative made from camelina plant oil. Among the findings: biofuels emit less soot, which leads to a 50- to 70-percent reduction in particle emissions.

Single Engine Failure Damages Five E-8C JSTARS



An engine failure caused damage on 21 December to five E-8C JSTARS aircraft, or nearly one-third of the fleet of aerial ground surveillance aircraft, the US Air Force says. Each E-8C -- a modified Boeing 707-300 -- is powered by four Pratt & Whitney TF33-102C engines, a 1950s design derived from the once ubiquitous P&W JT-3. The engine failed during a maintenance test run on a crowded ramp by the runway, spewing debris from the engine around the ramp and parking areas.

Source: Stephen Trimble @ FlightGlobal.com


Photo Credit: USAF

Astronaut Bruce McCandless II




Former NASA astronaut Bruce McCandless II, mission specialist on the STS-41B and STS-31 missions, passed away on Dec. 21, 2017, at the age of 80. McCandless is perhaps best remembered flying alongside the space shuttle in the Manned Maneuvering Unit (MMU) -- the first astronaut to fly untethered from his spacecraft. His time as an astronaut encompassed much more than that mission, including serving as the Mission Control communicator for Neil Armstrong and Buzz Aldrin's moonwalk on the Apollo 11 mission.

In The News



Boeing, Embraer Mull Combination That Could Reset OEM Industry. The No. 1 and No. 3 makers of large commercial aircraft, Boeing and Embraer, are in talks to formally align, although the Brazilian government appears to be the main hurdle, the companies and financial analysts said Dec. 21. The basis of any combination remains “under discussion,” the companies said in a joint statement, and it would have to be approved by the Brazilian government and regulators, the two companies’ boards and Embraer’s shareholders.

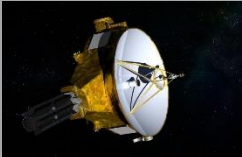
(Michael Bruno and Guy Norris @ Aviation Daily)



Lockheed, Northrop To Develop ‘Gray Wolf’ Cruise Missile. The U.S. Air Force Research Laboratory (AFRL) has tapped Lockheed Martin and Northrop Grumman to produce swarms of autonomous cruise missiles capable of wreaking havoc on enemy air defenses. Over the course of their programs, Lockheed’s and Northrop’s cruise missile platforms will be paired with a variety of payloads for kinetic strikes, electronic attack and intelligence, surveillance and reconnaissance. To succeed, the long-range, networked missiles must be capable of disabling various components of an integrated air defense system in a highly contested environment, including surface-to-air missile, radar and communications sites. *(James Drew @ Aerospace Daily & Defense Report)*



Progress MS-06 Cargo Craft Closes Out 196-Day Mission with ISS Departure & Re-Entry. Russia’s Progress MS-06 cargo spacecraft closed out a mission of over six months on Thursday, Dec 28th departing the International Space Station after a 194-day stay and firing its main engine to drop out of orbit for a fiery re-entry over a remote stretch of the Pacific Ocean. Roscosmos said re-entry was marked at 4:43 UTC when the spacecraft dipped into the dense atmosphere, burning up to a large extent with surviving debris falling into a stretch of the Pacific also known as Spacecraft Cemetery. *(SpaceFlight101.com)*



New Horizons Put in Final Hibernation Before 2019 KBO Flyby. A little over a year before its New Year’s day 2019 flyby of Kuiper Belt Object (KBO) 2014 MU69, NASA’s New Horizons spacecraft was put into its final hibernation prior to the visit. At 9:31 a.m. EST (14:31 GMT) on December 21, 2017, the probe, following commands uploaded to it just one week earlier, entered hibernation mode, a state in which it will remain until June 4, 2018. *(Laurel Kornfeld @ SpaceFlightInsider.com)*