



Human Space Exploration Update (Aug 20-31, 2018)

White House and NASA

- **Mike Pence:** [U.S. astronauts could fly to Moon-orbiting station by 2024, Pence tells NASA](#) Vice President Mike Pence pointed to 2024 as the target date for human occupancy of NASA's proposed Gateway. The lunar orbiting outpost, now known as the "Gateway," is to be assembled with NASA's Space Launch System (SLS), starting in 2022. The outpost represents NASA's turn in human exploration focus from low Earth orbit to deep space. (See also: [We really are going back to the Moon and then on to Mars](#))
- **Jim Bridenstine:** [NASA chief: 'Without question,' U.S. rockets will launch astronauts from U.S. soil next year](#) In a Washington interview with USA Today, NASA Administrator Jim Bridenstine offered assurances that NASA will be launching astronauts from U.S. soil again by mid-2019. His pronouncement offers confidence that NASA's Commercial Crew Program and its partners, Boeing and SpaceX, will complete uncrewed and crewed test flights leading to certifications of Boeing's CST-100 Starliner and SpaceX's Dragon 2 to begin the regular transportation of astronauts to and from the International Space Station (ISS).

International Space Station

- **ISS:** [Global Cargo Missions Planned as Critical Research Proceeds](#) As International space ships come/depart, the BioServe Protein Crystallography-1 and Protein Crystal Growth-13 studies continue. These studies allow astronauts to test various elements as well as sextant in space for celestial navigation during an emergency. Scientists in ISS worked inside the Cupola today and tested stability, positioning and sighting with the device using a star map.

Orion and Space Launch System

- **Orion EM-1 Spacecraft:** [Orion elements coming together for EM-1](#) At NASA's Kennedy Space Center (KSC), the Orion related elements for Exploration Mission-1 (EM-1), the first joint test flight of Orion and the Space Launch System (SLS), are starting to come together, with a launch of the multi-week uncrewed test flight planned by 2020. The flight will take Orion, absent its abort and environmental control systems, around the Moon and back to Earth for an ocean splashdown and recovery. (See also: [NASA's Orion spacecraft gets heat shield for daring test flight to the Moon](#))
- **Orion EM-2 Capsule:** [The capsule astronauts will ride to return to the Moon has arrived at Kennedy Space Center](#) The Orion capsule structure for Exploration Mission-2 (EM-2), the first astronaut crewed mission of Orion with the Space Launch System (SLS) on a mission around the Moon, has arrived at NASA's Kennedy Space Center (KSC). Previous work on constructing the capsule led by Lockheed Martin had been underway at NASA's Michoud Assembly Facility in New Orleans. EM-2 is planned for a mid-2022 liftoff from KSC. EM-1, an uncrewed version of EM-2 is also coming together at Kennedy and could launch by mid-2020.
- **Exploration Space Suit:** [Vest designed to protect female astronauts from radiation being launched into space](#) As part of Exploration Mission-1 (EM-1), the first joint mission of NASA's Orion capsule and Space Launch System (SLS), the crew capsule will be vacant. But NASA will be testing systems and hardware intended to lower the risks to future astronauts. Among them is Stem-Rad, wearable shielding developed to protect sensitive parts of the body from radiation, like that generated by a solar flare. Some of the shielding is specific to women.
- **SLS Mobile Platform:** [SLS mobile launch platform to go on the move this week](#) NASA's towering Mobile Launch Platform (MLP) was able to make its way by crawler transporter to Launch Pad 39B at the Kennedy Space Center (KSC), launch site for future Space Launch System (SLS)/Orion missions with astronauts assigned to missions of deep space exploration. Next month, the MLP will be moved from the launch pad to Kennedy's Vehicle Assembly Building (VAB).

Commercial Space Transportation

- **Atlas V – Starliner Update:** [United Launch Alliance \(ULA\) preps for the return of manned space missions from Cape Canaveral](#) At Cape Canaveral Air Force Station, Florida, United Launch Alliance (ULA) is assembling the ground infrastructure required for the nation to resume the launch of astronauts from U.S. soil. ULA is to provide the Atlas V launch vehicle for Boeing's CST-100 Starliner. Boeing is one of NASA's two Commercial Crew Program partners preparing to enter the test flight phase. (See also: [Photo Tour: Inside Boeing's CST-100 Starliner Spaceship Hangar Please](#))
- **Dragon Crew Recovery Mission:** GO Searcher will recover the Dragon capsule from the ocean, a key role in SpaceX's plan that could help it pass NASA's seal of approval tests. The company announced a slew of upgrades for its ship. It's building a helipad in the central area, added a big white dome to facilitate communications, and added a hydraulic lift for the actual lifting up aspect. SpaceX is working hard to meet its goal of a mission as early as April 2019, with uncrewed testing set to start in November 2018. (See also: [SpaceX Announces Upgrades for Ship that will Recover Crew Dragon Astronauts](#))
- **Commercial Crew:** [NASA keeps open option of extended commercial crew demo flights](#) NASA is considering using test flights of Boeing's CST-100 Starliner or SpaceX's Crewed Dragon to do the transporting. NASA will not have to make a final decision on the commercial test flight approach until next summer, agency officials told a NASA Advisory Council meeting. Crewed test flights of the Starliner and Crewed Dragon are currently planned for April 2019 and mid 2019 respectively for NASA's two Commercial Crew Program partners. The test flights are to lead to certifications supporting regularly scheduled astronaut launches.

Space Policy, Missions, Benefits, International ...

- **Space Commerce Regulation:** [New Office of Space Commerce director to focus on advocacy and regulatory issues](#) Kevin O'Connell is the new director of the U.S. Office of Space Commerce. "Our initial strategy for the Office of Space Commerce involves four basic elements: advocacy, moving regulatory barriers, industry engagement and improving our understanding" of the space industry's benefits, he said in recent remarks at Arizona State University.
- **Females in Deep Space:** [Forget "manned" missions, females may be more mentally resilient in deep space](#) Space radiation, cosmic as well as solar, poses health and performance threats to human explorers. The effects range from disruption in cognitive behavior to tissue damage and cancer. Results from a NASA funded study of female and male rodents suggests that females are better suited to deal with the challenges. The study was conducted by scientists at the University of California, San Francisco, and the Brookhaven National Laboratory.
- **Lunar Gateway Solar Electric Module:** [Aerojet Rocketdyne demonstrates electric propulsion capabilities for future deep space missions](#) Aerojet Rocketdyne reports a successful integration test of the solar electric, propellant efficient propulsion technology it is preparing for NASA's human tended lunar Gateway, which is to be assembled in orbit around the Moon beginning in 2022. The company is under contract to NASA to develop a 13 kilowatt Hall thruster propulsion source, which would be part of the Gateway's first element, the power and propulsion module. (See also: [Gateway gets good reviews from NAC Committee](#))
- **India's Exploration Program:** [India aims to send its first crewed mission to space by 2022](#) India's Prime Minister Narendra Modi unveiled the goal of launching the nation's first astronaut by 2020 during the nation's 72nd Independence Day celebration in New Delhi.
- **China's Exploration Program:** [Chinese strategists regard the ability to use space-based systems and to deny them to adversaries as "central to modern warfare."](#) The Pentagon's latest assessment of Chinese space capabilities concludes that Beijing is stepping up space militarization efforts. Some specific conclusions include concerns for counter space weapons, kinetic-kill missiles, ground-based lasers and orbiting space robots. China has also stepped up its space as well as global surveillance capabilities.

Citizens for Space Exploration – a pro-space, taxpayer, grassroots advocacy group (www.citizensforspace.org) – has travelled to Washington, D.C. the past 27 years to meet face-to-face

with Members/staff of Congress to discuss the value of America's investment in space exploration. In order to sustain that dialogue on a regular basis, Citizens distributes "Space Exploration Update" to Congressional offices to provide an easy, quick way to stay abreast of key human space exploration program and policy developments.