



Human Space Exploration Update (August 1-12, 2016)

2016 Election

- **Clinton Highlights SLS Rocket:** [NASA's Space Launch System referenced by Democratic presidential nominee Hillary Clinton](#) Democratic presidential nominee Hillary Clinton spoke on Thursday (August 11) during a campaign event held at Futuramic, a small business manufacturing facility that works with the military, automotive and space industries. Futuramic is a NASA Space Launch System (SLS) supplier. Clinton remarked, "I got to see what's happening here to help build the SLS rocket that is going to go from Macomb to Mars."
- **Trump on Space:** [Donald Trump disses America's space program; what would Hillary Clinton do?](#) Presidential contender Donald Trump bemoans the state of the U.S. space program during a Florida campaign stop. Rival Hillary Clinton might look to more innovation from the nation's space private sector, according to the report.
- **Candidates and Need for Space Exploration Vision:** [NASA vision](#) Presidential contenders Hillary Clinton and Donald Trump have so far missed opportunities to outline their strategies for NASA and human space exploration, according to a newspaper editorial. "JFK gave NASA a mission," the Chronicle states of the Apollo lunar exploration initiative. "Our next president needs to follow his example."

International Space Station

- **Long Duration Spaceflight:** [Williams to become NASA's longest-duration space flier](#) NASA's Jeff Williams, the current International Space Station commander, is in line on Aug. 24 to break the U.S. record of 520 days for time accumulated in space over a career that includes four spaceflights. The current record was established Mar. 1, 2016, as Scott Kelly returned to Earth after nearly a year in Earth orbit aboard the space station. Williams, however, will first join with fellow NASA astronaut Kate Rubins for an Aug. 19 spacewalk to install an International Docking Adapter on the station to accommodate future U.S. commercial crew launch vehicles developed by Boeing and SpaceX.

Orion and Space Launch System

- **Heat Shield Installation on Orion:** [Installation of heat-shielding tiles marks new phase for Orion spacecraft](#) The NASA/Lockheed Martin Orion crew capsule designated for a late 2018 test flight, Exploration Mission-1, is undergoing heat shield installation at the Kennedy Space Center in Florida. The uncrewed capsule is to launch atop the first Space Launch System exploration rocket for a voyage around the moon and back to Earth for an ocean splashdown and recovery.
- **Orion Testing:** http://www.space.com/33649-nasa-orion-capsule-docking-hatch-astronaut-video.html?utm_source=Today%27s+Deep+Space+Extra%2C+Friday%2C+August+5%2C+2016&utm_campaign=dailycsexta&utm_medium=email NASA astronauts suited up in bulky space suits to test how well they could transit the hatches of the Orion crew exploration vehicle. The test

activities demonstrated how well the astronauts could exit the capsule in a spaceflight emergency.

- **SLS Rocket Test:** [SLS engine fired up following previous aborted test](#) A first stage rocket engine from Aerojet Rocketdyne for NASA's Space Launch System exploration rocket ran for a full-duration 650 seconds during a successful ground test at NASA's Stennis Space Center in Mississippi on Friday. The firing was a "make up" for a mid-July test firing that was aborted in response to a test stand problem. The Exploration Mission-1 test launch of the SLS with an unpiloted Orion capsule is planned for late 2018.
- **KSC's VAB Prepares for SLS:** http://www.universetoday.com/130095/major-overhaul-of-vab-for-nasas-sls-mars-rocket-reaches-halfway-point-with-platform-installation/?utm_source=Today%27s+Deep+Space+Extra%2C+Friday%2C+August+5%2C+2016&utm_campaign=dailycsextra&utm_medium=email At NASA's Kennedy Space Center, the challenging installation of massive access platforms within the center's Vehicle Assembly Building has reached the mid-point. The platforms will provide access to the Space Launch System exploration rocket that is under development to start human explorers on Mars and other deep space exploration missions. (See also: [Inside NASA's towering rocket factory before deep space mission](#))

Commercial Space Transportation

- **Boeing's Starliner:** [Boeing starts assembly of 1st flightworthy Starliner crew taxi vehicle at Kennedy spaceport](#) Coming together at the Kennedy Space Center in Florida under NASA's Commercial Crew Program, Boeing's CST-100 Starliner could begin transporting astronauts to and from the International Space Station in early 2018. The program is part of NASA's strategy to focus on human deep space exploration, while turning over low Earth orbit activities to the U.S. commercial sector. (See also: <http://www.floridatoday.com/story/tech/science/space/2016/07/26/boeing-shows-off-starliner-factory-ksc/87531694/> and [Boeing nears fix for CST-100 Starliner design hitch](#))
- **SpaceX Gets Second ISS Launch Order:** [NASA orders second Space Station ferry ship from SpaceX](#) NASA has ordered its second SpaceX post-certification commercial crew mission launch to the International Space Station. The agency had already ordered two launches from Boeing, NASA's second provider, using the company's CST-100 Starliner. The new order satisfies the NASA Commercial Crew Transportation Capability program minimum order pledge, though orders of four more missions each from Boeing and SpaceX are possible under the agreement.
- **Astronauts Look Forward to Commercial Crew Launches:** [Astronauts look forward to Florida launches](#) By the end of this year, NASA may be ready to name the first crew to fly on new Boeing and SpaceX launch vehicles launched from Florida aboard the CST-100 Starliner and crewed Dragon spacecraft developed under NASA's Commercial Crew Program. Those preparing for test flights include astronauts Bob Behnken, Doug Hurley, Eric Boe and Sunita Williams.

Space Budgets, Policy, Missions, Benefits, International ...

- **Habitats for Deep Space Exploration:** [NASA announces aerospace partners for its deep space habitats](#) NASA increases to six the number of U.S. companies the agency is partnering with to develop a habitat for astronauts assigned to months- to years-long missions to Mars. The habitat would fly in lunar orbit with astronauts during the 2020s to prepare for the Mars mission. It could become the basis for commercial space stations in Earth orbit as well. Already involved in the development, Bigelow Aerospace, Boeing, Lockheed Martin and Orbital ATK will be joined by newcomers Sierra Nevada Corporation's Space Systems and NanoRacks in the endeavor. (Also

see: [NASA exploration focuses on Deep Space Hab systems and crew health](#) and [NASA preps 1000-day habitats for astronauts](#))

- **Scott Kelly on Mars Exploration:** [We talked to astronaut Scott Kelly about the psychological challenges of going to Mars](#) Space marathoner Scott Kelly, of NASA, set a new record for U.S. spaceflight as he returned to Earth on Mar. 1. His 340 days in Earth orbit aboard the International Space Station are helping NASA plan for the difficult isolation that will accompany long missions to Mars.
- **Moon-Mars Exploration:** [Is the Moon a necessary step on the path to Mars?](#) NASA's plans to reach Mars with human explorers in the 2030s should proceed in the aftermath of U.S. presidential and Congressional elections this year, write Chris Carberry and Rick Zucker, Explore Mars, Inc., CEO and director for political outreach. A moon-first strategy, as proposed by the European Space Agency, is a worthy goal in and of itself but not necessary as a stepping stone to Mars, according to Carberry and Zucker, who add, "The goal of humans on Mars is a compelling one and has long-standing public and bipartisan support."
- **Asteroid Mining:** [Space race heats up: Deep Space Industries plans to visit asteroid by 2020](#) Deep Space Industries plans to take its space mining aspirations to a near-Earth asteroid by end of this decade. Relying on a novel water-based propulsion system, the company's Prospector 1 spacecraft would survey then settle to the asteroid's surface to complete a search for resources that could be mined. Prospector 1 would be a follow-on to Prospector X, an Earth-orbiting prototype satellite that will be launched next year as a technology demonstrator. The government of Luxembourg announced in May that it was partnering with California-based Deep Space Industries for the orbital demonstration. (Also see: [Asteroid Redirect Mission at critical juncture](#))
- **Lunar Exploration and Space Law:** [Moon Express regulatory approval prompts questions about space law](#) A surge in interest by commercial space companies to seek out and potentially mine resources from asteroids and the moon may raise legal issues over ownership rights. Moon Express recently won the approval of the U.S. FAA to launch the first commercial mission to the moon, a regulatory requirement spelled out in the 1967 Outer Space Treaty signed by more than 100 nations and the U.S. Commercial Space Launch Competitiveness Act, passed by Congress and signed into law by President Obama late last year. (See also: [U.S. government poised to approve first private mission to the Moon](#))
- **Students and Commercial Space:** [As commercial space race grows, student interest takes off](#) Central Florida's Embry-Riddle and Central Florida universities report increased student interest in aerospace engineering. Educators and those in the industry link the rise to an improving U.S. economy and increased commercial space activities in Florida and elsewhere.
- **Chinese Space Exploration:** [China prepares for new round of manned space missions](#) Preparations are underway at the Jiuquan Satellite Launch Center for the launch of China's second space station, Tiangong-2, in mid-September. Two Chinese astronauts are to follow with the launch of the Shenzhou-11 in mid-October.

Citizens for Space Exploration – a pro-space, taxpayer, grassroots advocacy group (www.citizensforspace.org) – has travelled to Washington, D.C. the past 24 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 on a weekly basis. The intent is to provide an easy, quick way to stay abreast of key human space exploration program and policy developments.