



Human Space Exploration Update (Nov 14 – Dec 9, 2016)

John Glenn – American Hero

- **Space Age Hero:** [John Glenn, American hero, aviation icon and former U.S. senator, dies at 95](#) "His legend is out worldly and now, at age 95, so is John Glenn," reports the newspaper where the pioneering NASA astronaut died Thursday. "He, along with fellow aviators Orville and Wilbur Wright and moon-walker Neil Armstrong, truly made Ohio first in flight." (See also: [World remembers John Glenn as hero, legend](#); [John Glenn, American hero of the space age, dies at 95](#))

President-elect Trump -- Transition

- **Pence to Chair National Space Council:** [Trump advisor sees Pence playing a major role in space policy](#) Vice President-elect Mike Pence is likely to help shape U.S. space policy under the next administration, according to Robert Walker, the former U.S. congressman and chair of the House Science, Space and Technology Committee. One role Pence seems eager to embrace is as chair of a revived National Space Council, a cabinet-level policy group, Walker said.
- **Trump Transition and Space:** [Trump's first 100 days: Space](#) NASA's current course will be determined, perhaps, by who the President-elect selects to succeed current Administrator, Charles Bolden -- either a newcomer or an aerospace industry veteran. As the first 100 days of the new administration unfold, the nation should learn more about its overall plans for tax cuts and programs to upgrade the nation's roads, bridges and airports. Those plans should reveal what kinds of resources might be available for exploration, though the report concludes that as a discretionary enterprise NASA could face a bleak future. If a National Space Council is restored, it will likely be led by Vice President-elect Mike Pence. (See also: [NASA gets first "landing party" member -- Chris Shank](#); [Commercial space in the next administration](#); [Recommendations to the next administration regarding commercial space](#); [With Trump, Gingrich and GOP calling the shots, NASA may go back to the moon](#); [The moon may once again play a significant role in the U.S. space program](#); [Trump space policy to aim for Mars and beyond](#))
- **Coalition for Deep Space Exploration:** [AIA, CSE call on Trump administration to support space exploration road map](#) With the broad support of the Aerospace Industries Association and the Citizens for Space Exploration, the Coalition for Deep Space Exploration is offering a bipartisan space road map with seven proposals for the new administration of President-elect Trump and Congress to advance human space exploration. Those include continued efforts to develop and flight test NASA's Space Launch System exploration rocket and Orion crew capsule; launch the James Webb Telescope in late 2018; make the most of the International Space Station to advance space technologies and foster more commercial activity in low Earth orbit; as well as streamline NASA's bureaucracy and procurement processes.

International Space Station

- **ESA Supports ISS 2024:** [Europe commits to the space station and ExoMars as part of \\$11 billion in commitments to ESA](#) The European Space Agency's 22 member ministerial council

ended a long range planning session in Switzerland late last week with an endorsement to extend operations of the International Space Station from 2020 to 2024. Other major partners Japan, Russia and Canada backed the U.S. extension proposal earlier.

- **Year-long Missions:** [After Scott Kelly's flight, NASA plans five more one-year missions](#) By spring 2017, NASA and Roscosmos, the Russian federal space agency, will mark the first anniversary of the 340-day mission to the International Space Station flown by now retired NASA astronaut Scott Kelly and cosmonaut Mikhail Koriенко. Currently, the two agencies are discussing five additional two-person long duration missions before the end of space station operations in 2024. The findings, say researchers, will help reveal the physical and mental challenges of long duration missions of human exploration, like those planned for cislunar space and Mars.
- **Inflatable House:** [Inflatable house attached to ISS is doing well, says NASA](#) Bigelow Aerospace's Bigelow Expandable Aerospace Module (BEAM) began a two year evaluation aboard the six-person International Space Station in May. So far, the module -- pressurized but not occupied by astronauts except for the occasional data gathering -- is doing well, according to a NASA status report. NASA is evaluating several proposals for space habitats suitable for future Earth orbit space stations, lunar orbiting habitats or habitats shepherding explorers to Mars.

Orion and Space Launch System

- **Funding for Orion/SLS:** [New CR funds government through April 28, protects SLS/Orion and JPSS](#) A proposed budget Continuing Resolution, written by House appropriators and approved by the House, would keep government agencies operating through April 28 at 2016 spending levels. However, a special provision would enable NASA's Space Launch System, Orion and new ground support programs to spend at rates needed to support the planned November 2018 launch of Exploration Mission-1. EM-1 is to be the first unmanned test flight of the SLS and Orion, key elements of NASA's plans to launch humans on future missions to lunar orbit and Mars. EM-1 would send Orion around the moon and back to Earth over a three week voyage. The full House, Senate and President Obama must sign off on the proposed Continuing Resolution. The current CR expires Friday, December 9 at midnight. The 2017 federal fiscal year began October 1 without a budget.
- **EM-2 Mission:** [NASA considers shorter first crewed SLS/Orion mission](#) Exploration Mission-2, planned by NASA as the first crewed mission of a Space Launch System boosted Orion capsule, would orbit the Earth for a day before embarking on a free return loop around the moon and back, according to a presentation from Bill Gerstenmaier, NASA's associate administrator for human exploration and operations, before the NASA Advisory Council. The council gathered in California last week. One previous EM-2 proposal involved a nine to 13 day mission. The latest proposal would relax propulsion requirements and life support demands on the new Orion spacecraft. The proposed eight-day version of EM-2 would follow EM-1, a three week unmanned test of an SLS launched Orion spacecraft around the moon and back to Earth planned for late 2018.
- **SLS Testing:** [NASA shows how close its SLS rocket is to getting a 'fatal' squeeze](#) Experts at NASA's Marshall Space Flight Center are bringing first-stage components of the giant Space Launch System (SLS) exploration rocket together for a series of ground tests that will simulate launch like conditions. More than 50 different tests of the hardware will begin in January. SLS is a cornerstone of NASA's plans to resume human deep space exploration with journeys to lunar orbit and Mars by the mid-2030s. The first launch of the SLS, Exploration Mission-1, is planned for late 2018.

Commercial Space Transportation

- **Orbital ATK / Cygnus Resupply Mission:** [Destructive re-entry marks end to successful Cygnus OA-5 mission](#) Orbital ATK's latest and most innovative NASA contracted re-supply mission carried out a planned destructive re-entry into the Earth's atmosphere over the Pacific Ocean. Orbital's Cygnus re-supply capsule departed the six-person International Space Station early November 21 for an extended, six-day solo mission to deploy Spire Global CubeSats to monitor maritime traffic and weather, as well as carry out SAFFIRE II, a fire safety experiment for NASA. Launched in mid-October, Cygnus delivered more than 5,100 pounds of supplies and research equipment to the station.

Space Policy, Missions, Benefits, International ...

- **Lunar Space Station:** [This is NASA's plan for humanity's return to the moon, and beyond](#) A lunar-orbiting space station, positioned in the 2020s, figures prominently in NASA's strategy to reach the Martian environs with human explorers in the 2030s.
- **Asteroid Mission:** [Smith, Babin question NASA assertion that scientists now support ARM](#) Chairs of the U.S. House Science, Space and Technology Committee and its Space Subcommittee have asked NASA for documentation to back-up recent claims of new science community support for the agency's proposed two-phase Asteroid Redirect Mission. Previously unpopular among some quarters of the space community and House appropriators, the nearly \$2 billion initial phase would robotically gather a boulder from an asteroid and move the boulder into lunar orbit, where it could be visited by NASA astronauts launched aboard a Space Launch System rocket and Orion capsule.
- **Space Mining:** [Extraterrestrial gold rush: What's next for the space mining industry?](#) Space resources, water and perhaps precious metals locked in the soil of the moon and near Earth asteroids could provide the financial lure that draws the Earth's commercial sector into space. Experts in terrestrial mining believe there may be important analogs to mining oil and gas, and other energy and metal resources from the Earth, among them establishing vital supply chains.
- **Chinese Astronauts:** [China to select new astronauts in 2017](#) China is ready to begin a third round of astronaut selection, an announcement that comes on the heels of the country's first mission to the recently launched Tiangong-2 space lab. China will select its candidates from the military and aerospace communities.
- **Blue Origin Rocket Factory in FL:** [Jeff Bezos shows how Blue Origin's orbital rocket factory is taking shape in Florida](#) Blue Origin founder Jeff Bezos reports early progress in the construction of the company's new rocket factory near NASA's Kennedy Space Center in Florida. The facility is set to open at the end of next year for production of Blue's New Glenn orbital rocket.
- **RD-180 Engines:** [Russia to supply RD-180 rocket engines to US in 2017](#) Russia's Energomash expects to export 19 RD-180 and RD-181 rocket engines to the U.S. next year for use by United Launch Alliance's Atlas V and Orbital ATK's Antares launch vehicles. The U.S. Congress lifted a ban on imports of the rocket engines after 2019, once it became clear efforts to develop domestic replacements would take longer.

Citizens for Space Exploration – a pro-space, taxpayer, grassroots advocacy group (www.citizensforspace.org) – has travelled to Washington, D.C. the past 25 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.