

# Americans will head to space again, but without a Russian taxi

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Since the Space Shuttle's retirement six years ago, NASA has been buying spots aboard Russian Soyuz craft to ferry astronauts to the International Space Station. It's a politically awkward arrangement, to say the least, given more than a decade of strained relations, Russian meddling in the 2016 U.S. presidential election and the dented American pride in having to ask in the first place. The situation has understandably increased pressure on NASA, which hired Boeing Co. and Elon Musk's SpaceX to build a new generation of vessels to shuttle U.S. astronauts to the station. Both companies are scheduled to fly two test flights next year for NASA's commercial crew program, including one each that will carry two crew members—an ambitious schedule that could slip into 2019. On Thursday, NASA and both

companies detailed their progress—and a lengthy list of tests that remain—on the new vessels and their launch rockets. “I think we have a shot at 2018” for the flights with crew, Kathryn Lueders, NASA’s program manager for the commercial crew program, said in an interview at the International Symposium for Personal and Commercial Spaceflight in Las Cruces, New Mexico. “There’s a lot of things that have to go exactly right,” she said. “I think the big challenge is to make sure that we give them the time that, if everything doesn’t go exactly right, to be able to fix any problems that we have.”

When Americans think of flying into space, “they think of human spaceflight,” said Caleb Weiss, a mission manager with United Launch Alliance, which will boost Boeing’s CST-100 Starliner capsule into orbit aboard an Atlas V rocket. “And so, when America doesn’t have a human spaceflight program, a lot of people feel like we don’t have a space program.” The program’s first flight is set for April and will see SpaceX’s Crew Dragon capsule launch without humans, followed by a manned mission in August, according to a recent NASA update. (The first Boeing and Crew Dragon flights had originally been planned for this year, but slipped into 2018.) Boeing’s Starliner is set for August and November. SpaceX, officially Space Exploration Technologies Corp., is assembling multiple Crew Dragon vessels in parallel to help boost production efficiency, said Benjamin “Benji” Reed, who directs the company’s program for NASA. He said SpaceX also plans a third flight for the capsule, between the two for NASA, to test the in-flight abort system that would eject the crew during an emergency. “The No. 1 priority for the company is safe, reliable crew transportation for NASA,” Reed said during a panel discussion at the symposium.

Beyond NASA’s immediate transport needs, the commercial crew program is among the agency’s earliest and largest efforts to integrate private-sector companies into its operations. In theory, NASA personnel could someday fly with a private citizen that has paid for a ride into space. Both SpaceX and Boeing have discussed future flights to the ISS with customers from other nations, executives said at the conference. “What you don’t want to do is have an ISS program end—and mirror what happened with the Space Shuttle program,” said John Mulholland, Boeing’s commercial crew manager. The Starliner’s flight schedule will be determined by Boeing and NASA’s reviews of the program. Data gathered from the initial flight will also weigh heavily on how quickly its first passengers will be able to fly the vehicle, Weiss said. “The biggest question mark ... is what your data review’s going to end up being? How

much time do you need to go crunch the data?” Weiss said. “If it’s a really clean flight, we can go fly right away.”

The Starliner project has been assisted by the track record of the Atlas V rocket, which has marked 73 successful flights, Weiss said. ULA is a joint venture between Boeing and Lockheed Martin Corp. Earlier this year, the Government Accountability Office said that safety hazards involving Boeing’s parachute testing plans and SpaceX’s engines would probably slow required certifications and could delay the manned flights to 2019. NASA awarded Boeing and SpaceX the commercial crew contracts in 2014; each company will perform six manned flights to the ISS. Four NASA astronauts are currently training for the test flights. By year’s end, those personnel will be assigned to one of the capsules.

In February, NASA acquired five additional seats on the Soyuz craft for potential use in 2018, via Boeing, which had obtained them through a business deal with a Russian company. The arrangement will allow some cushion in terms of astronaut access to the space station, but it hasn’t affected the pace of work on the commercial crew program, agency officials have said. “Obviously, we’re buying insurance seats right now to make sure that we’re not hurrying these guys up to fly before they’re ready,” Lueders said. “We don’t want to do that.”