

SpaceX successfully launches first crew to orbit, ushering in new era of spaceflight

After nearly two decades of effort, Elon Musk's aerospace company, SpaceX, successfully launched its first two people into orbit, ushering in a new age of human spaceflight in the United States. The flight marked the first time astronauts have launched into orbit from American soil in nearly a decade, and SpaceX is now the first company to send passengers to orbit on a privately made vehicle.

The two astronauts – veteran NASA fliers Bob Behnken and Doug Hurley – rode into space inside SpaceX's new automated spacecraft called the Crew Dragon, a capsule designed to take people to and from the International Space Station. Strapped inside the sleek, gumball-shaped capsule, the duo lifted off on top of SpaceX's Falcon 9 rocket from NASA's Kennedy Space Center in Florida at 3:22PM ET on Saturday. The rocket dropped the Crew Dragon off in orbit about 12 minutes later. Now, the pair will spend roughly the next day in orbit before attempting to dock with the International Space Station on Sunday morning.

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"Bob and Doug, on behalf of the entire launch team, thanks for flying with Falcon 9 today," Crew Dragon's chief engineer said to the two astronauts after they reached orbit. "We hope you enjoyed the ride and wish you a great mission." SpaceX's Falcon 9 rocket also successfully landed on one of the company's drone ships following takeoff, making for a smooth launch throughout.

This launch is a critical moment for SpaceX, a company formed by Musk with the express purpose of sending humans into space

and building settlements on Mars. It's also the final major test for SpaceX as part of NASA's Commercial Crew Program. Through that initiative, NASA enlisted two companies, SpaceX and Boeing, to develop new spacecraft that could regularly ferry the agency's astronauts to and from the space station. After six years of development and testing on the Crew Dragon, SpaceX pulled ahead in the race to launch humans first. Today's mission is SpaceX's last big test flight for that program, meant to determine if the Crew Dragon is ready to start regularly carrying NASA astronauts to the ISS in the years ahead.

Though this mission is considered a test, it still carried enormous weight for the United States. The last time people launched to orbit from the US was during the final flight of NASA's Space Shuttle on July 8th, 2011. Since then, Russia's Soyuz rocket has been the only vehicle available to do crewed flights to the ISS, and just one seat on the Soyuz runs NASA about \$80 million.

The Commercial Crew Program was created to end NASA's reliance on Russia but also to jump-start a new way of doing business at NASA. For all of spaceflight history, the government has been in charge of overseeing the design, production, and operation of spacecraft that take humans into orbit. With Commercial Crew, NASA wanted the private sector to get involved. When NASA first awarded SpaceX and Boeing their contracts in 2014, NASA hoped that they would be flying their vehicles by 2017. Technical delays and testing failures set the program back, but eventually, SpaceX made it to today's milestone.

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spaceflight," NASA administrator Jim Bridenstine said before launch. "It's an era in human spaceflight where more space is going to be available to more people than ever before."

It's not a total victory yet. Behnken and Hurley will spend the next 19 hours in orbit and try to get some sleep before tomorrow's next big event: docking with the space station. And they need their sleep, too. SpaceX and NASA had originally hoped to launch on Wednesday, May 27th, prompting the astronauts to go through the entire pre-launch process. But bad weather forced a delay to today. "Bob and Doug, who have now gone through this exercise twice, they need to get some rest," Bridenstine said after the launch. "But I can guarantee you there will be no rest for a good amount of time while they're up there in orbit."

The Crew Dragon is designed to automatically dock with the ISS without the need for any input from the crew, though the two astronauts will try their hand at manually flying the capsule with its touchscreen monitor controls when they approach the station. After testing out that interface, the astronauts will relinquish control to the Crew Dragon, which will attempt to automatically approach the station and latch itself to an available docking port. Docking is scheduled to take place around 10:29AM ET on Sunday.

The two astronauts also have to come home eventually – and test the Crew Dragon's ability to return humans safely to Earth. NASA hasn't decided when the pair will head home; it'll be sometime between the next six and 16 weeks. When that decision is made, Behnken and Hurley will climb back into their Crew Dragon capsule and begin the intense journey back through our planet's atmosphere. The Crew Dragon is equipped with a heat shield to protect the astronauts from the fiery descent, and the capsule has a suite of four parachutes

designed to open and gently lower the vehicle into the Atlantic Ocean. After splashdown, a SpaceX recovery boat will greet the crew and take them and their capsule back to shore.

At that point is when the mission will be deemed a success. "I am not going to celebrate until Bob and Doug are home safely," Bridenstine said.

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A lot is riding on this mission, but if all goes well, the flight could serve as merely the beginning of SpaceX's journey into human spaceflight. NASA plans to use data collected from this mission to certify the Crew Dragon to perform regular trips to and from the International Space Station with astronauts on board. SpaceX and NASA are already targeting August 30th for the company's next Crew Dragon flight, which will transport four astronauts: NASA's Victor Glover, Mike Hopkins, and Shannon Walker, as well as Japan's Soichi Noguchi. That means we could be soon entering a new era where private companies are the ones routinely taking people to low Earth orbit.

SpaceX's ambitions don't stop there. The company is currently working on a new monster rocket called Starship, which may one day take humans to deep space destinations like the Moon and Mars. There are plenty of hurdles between that bold vision and reality, but today's success is a step in the right direction for a company aiming to take people deeper into the cosmos.

"Everything in our trajectory is towards that particular moment to launch people on a spaceship," Hans Koenigsmann, vice president of build and flight reliability at SpaceX, said during a press conference. "And it's a huge step."

<https://www.theverge.com/2020/5/30/21269703/spacex-launch-crew>

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