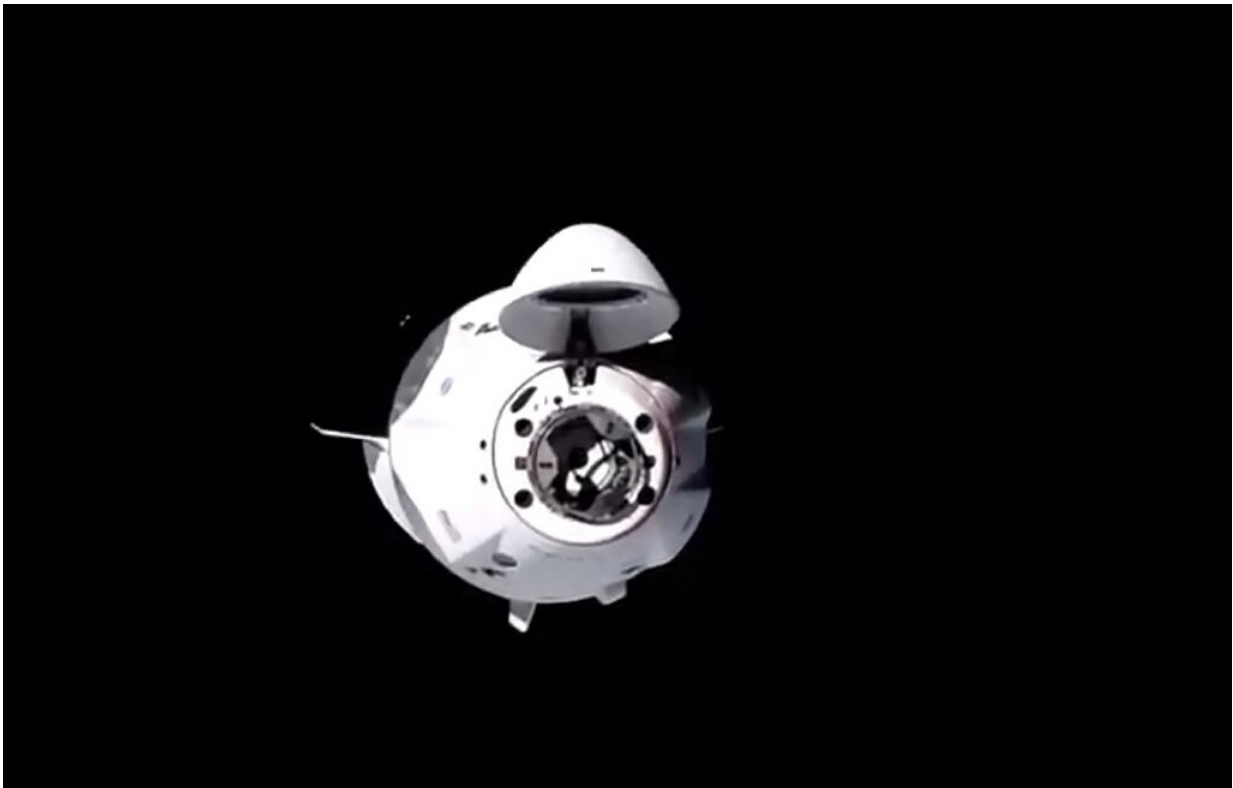


# Astronauts board ISS from SpaceX's 'Resilience'

November 17 2020, by Issam Ahmed and Ivan Couronne

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The spacecraft, named "Resilience," docked autonomously with the space station some 260 miles (400 kilometers) above the Midwestern US state of Ohio

Four astronauts carried into orbit by a SpaceX Crew Dragon boarded the International Space Station on Tuesday, the first of what NASA hopes will be many routine missions ending US reliance on Russian rockets.

The "Resilience" spacecraft docked autonomously with the [space station](#) some 260 miles (400 kilometers) above the Midwestern US state of Ohio at 11:01pm on Monday (0401 GMT Tuesday), completing a 27.5-hour journey.

The crew's three Americans—Michael Hopkins, Victor Glover and Shannon Walker—along with Japan's Soichi Noguchi, each floated in zero gravity through a hatch and onto the ISS, where they were cheered and embraced by the station's three [crew members](#).

"Thank you for letting me get to say hello to you all," said NASA chief of human spaceflight programs Kathy Leuders, in a video message beamed up to the astronauts. "I just want to tell you how proud we are of you."

Earlier, mission commander Hopkins gave pilot Glover his "gold pin," a NASA tradition when an astronaut first crosses the 100-kilometer Karman line marking the official boundary of space.

Glover is the first Black astronaut to make an extended stay at the ISS, while Noguchi is the first non-American to fly to orbit on a private spaceship.

The crew joins two Russians and one American aboard the station, and will stay for six months.



A SpaceX Falcon 9 rocket lifts off from launch complex 39A at the Kennedy Space Center in Florida on November 15, 2020

SpaceX briefly transmitted live images from inside the capsule showing the astronauts in their seats, something neither the Russians nor the Americans had done before.

US President-elect Joe Biden hailed the launch on Twitter as a "testament to the power of science and what we can accomplish by harnessing our innovation, ingenuity, and determination," while President Donald Trump called it "great."

The Crew Dragon capsule earlier this week became the first spacecraft to be certified by NASA since the Space Shuttle nearly 40 years ago. Its launch vehicle is a reusable SpaceX Falcon 9 rocket.

At the end of its missions, the Crew Dragon deploys parachutes and then splashes down in water, just as in the Apollo era.

SpaceX is scheduled to launch two more crewed flights for NASA in 2021, including one in the spring, and four cargo refueling missions over the next 15 months.

NASA turned to SpaceX and Boeing after shuttering the checkered Space Shuttle program in 2011, which failed in its main objectives of making space travel affordable and safe.



A SpaceX Falcon 9 rocket streaks toward space in this time exposure at liftoff from launch complex 39A at the Kennedy Space Center in Florida on November 15, 2020

The agency will have spent more than \$8 billion on the Commercial Crew program by 2024, with the hope that the private sector can take care of NASA's needs in "low Earth orbit" so it is freed up to focus on return missions to the Moon and then on to Mars.

SpaceX, founded by Elon Musk in 2002, leapfrogged its much older rival Boeing, whose program floundered after a failed test of its uncrewed Starliner last year.

## **Russians unimpressed**

But SpaceX's success won't mean the US will stop hitching rides with Russia altogether, said NASA administrator Jim Bridenstine. The goal is to have an "exchange of seats" between American astronauts and Russian cosmonauts.

Bridenstine also explained it was necessary in case either program was down for a period of time.

The reality, however, is that space ties between the US and Russia—one of the few bright spots in their bilateral relations—have frayed in recent years.



This SpaceX video grab shows Nasa's SpaceX Crew-1 members waiting for 2nd Stage separation, (from L) Shannon Walker, Victor Glover, Michael Hopkins and Soichi Noguchi, on November 15, 2020 after launching from NASA's Kennedy Space Center in Florida

Russia has said it will not be a partner in the Artemis program to return to the Moon in 2024, claiming the NASA-led mission is too US-centric.

Dmitry Rogozin, the head of Russia's space agency, has also repeatedly mocked SpaceX's technology, telling a state news agency he was unimpressed with the Crew Dragon's "rather rough" water landing and saying his agency was developing a methane rocket that can be reused 100 times.

But the fact that a national [space agency](#) feels moved to compare itself to a company arguably validates NASA's public-private strategy.

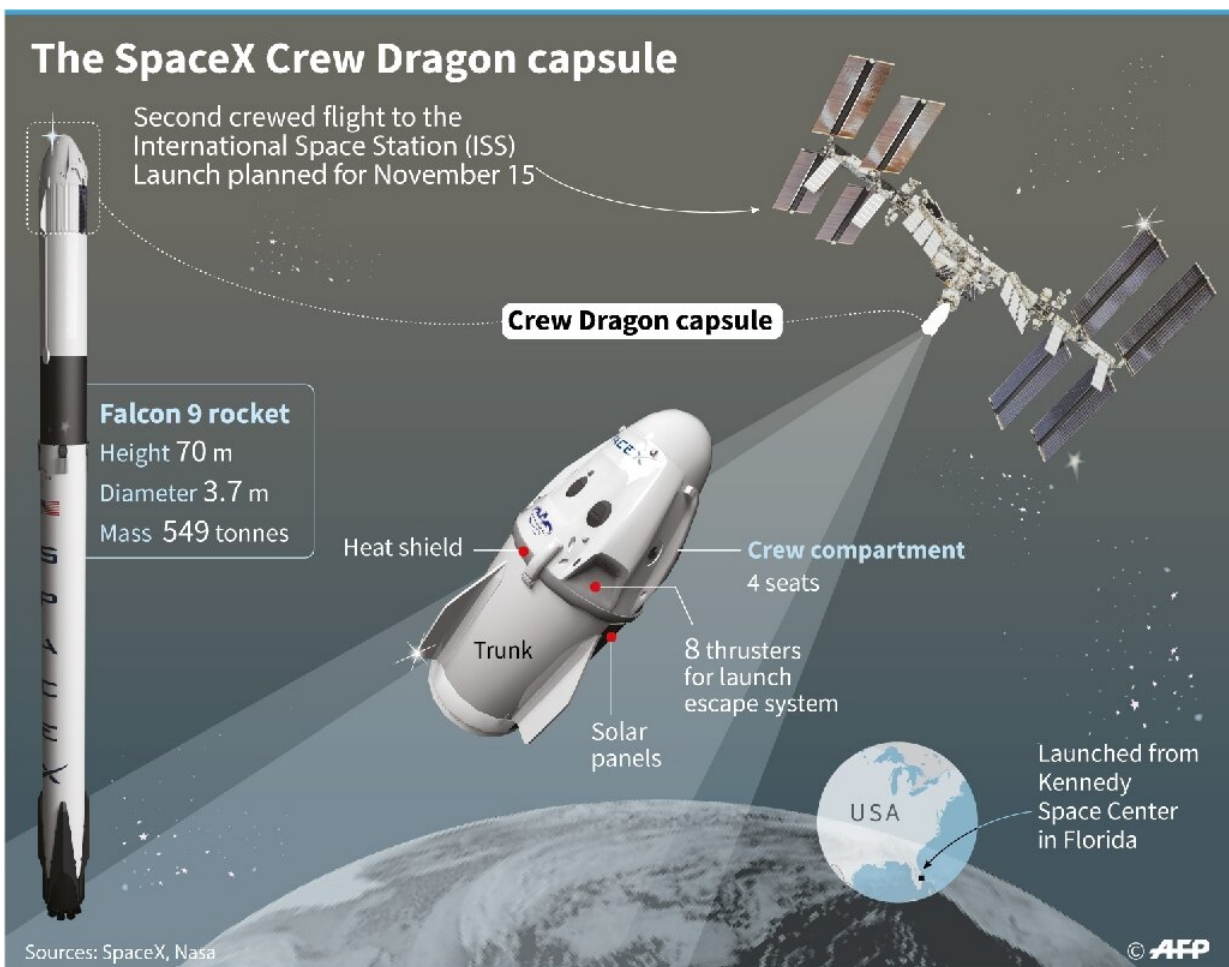


SpaceX's emergence has also deprived Roscosmos of a valuable income stream.

The cost of round-trips on Russian rockets had been rising and stood at around \$85 million per astronaut, according to estimates last year.

## Biden incoming

Presidential transitions are always a difficult time for NASA, and the ascension of Joe Biden in January is expected to be no different.





## SpaceX Crew Dragon capsule dimensions and features

The agency has yet to receive from Congress the tens of billions of dollars needed to finalize the Artemis program.

Bridenstine has announced that he will step down to let the new president set his own goals for [space](#) exploration.

So far, Biden has not commented on the 2024 timeline.

Democratic party documents say it supports NASA's Moon and Mars aspirations, but also emphasize elevating the agency's Earth sciences division to better understand how climate change is affecting our planet.

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