

# Company is first to return spacecraft from orbit (Update 2)

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The SpaceX Falcon 9 rocket lifts off from pad 40 at the Cape Canaveral Air Force Station in Cape Canaveral, Fla., Wednesday, Dec. 8, 2010.(AP Photo/John Raoux)

(AP) -- NASA took a giant leap away from the spaceflight business Wednesday as a private company launched a spacecraft into orbit and for the first time guided it safely back to Earth, a feat previously achieved only by large national governments.

The capsule built by Space Exploration Technologies Inc. splashed down into the Pacific Ocean, right on target, following a three-hour mission that should pave the way for an actual flight to the International Space Station next summer.

NASA wants to enlist private companies to handle space station supply runs as well as astronaut rides after the shuttles stop flying next year. Until then, the space agency will have to continue paying tens of millions of dollars to the Russians for every American astronaut ferried back and forth.

Prior to Wednesday's test flight, recovering a spacecraft re-entering from orbit was something achieved by only five independent nations: the United States, Russia, China, Japan and India, plus the European Space Agency, a consortium of countries.

NASA immediately offered up congratulations, as did astronauts, lawmakers, and aerospace organizations and companies.

"I'm sort of in semi-shock," said the company's CEO, Elon Musk. "It's just mind-blowingly awesome. I apologize, and I wish I was more articulate, but it's hard to be articulate when your mind's blown - but in a very good way."

Speaking from the company's headquarters in Hawthorne, Calif., Musk said his Falcon 9 rocket and the capsule named Dragon operated better than expected.

If astronauts had been on board, "they would have had a very nice ride," Musk told reporters. "The vehicle that you saw today can easily transport people," with the addition of escape and life-support systems.

The Dragon flown Wednesday - nearly 17 feet tall and 12 feet in

diameter - was reminiscent of the NASA capsules of old, which ended their missions with ocean splashdowns.

Designers of most next-generation spacecraft have abandoned the shuttle system, which proved extremely complicated, expensive and vulnerable to damage. Many engineers believe Apollo-style capsules will be cheaper, safer and capable of a wider variety of missions.

Wednesday's flight was only the second for this type of rocket.

Musk envisions that later models of the capsule, for crews, will be equipped for precision landings on patches of ground as small as a helipad. These would be powered touchdowns using landing gears, similar to the lunar landings. The spacecraft could refuel and then be used again, he said.

This early version of the capsule circled the world twice, then parachuted into the Pacific. It splashed down roughly 500 miles off the Mexican coast, within a few miles of the targeted area. Recovery crews were quickly on the scene, putting floats on the spacecraft.

Musk raised his arms in victory when the three red-and-white-striped parachutes deployed. He knew then "it was a done deal."

"This was done with 1,200 people," Musk noted, versus the efforts of entire countries and their supporting industries.

The spacecraft carried thousands of patches for company employees; no official payload was required for this test. A humorous payload, though, was on board. Musk promised to divulge its identity Thursday so it would not overwhelm Wednesday's headlines. An Army nanosatellite hitched a ride on the upper stage of the 158-foot rocket in a technology demonstration.

The accolades quickly mounted as the afternoon wore on.

"These new explorers are to spaceflight what Lindbergh was to commercial aviation," said NASA Administrator Charles Bolden.

"SpaceX changes the game in spaceflight," noted the Space Frontier Foundation.

And from Sen. Bill Nelson, a Florida Democrat and former space shuttle flier: "We've arrived at the dawn of new era of U.S. space exploration that should ensure America remains a leader in space exploration."

In orbit, space station commander Scott Kelly nagged NASA's Mission Control for updates. He told a reporter earlier in the day he would gladly fly on a commercial rocket "if that's the path we're proceeding on."

If, after Wednesday's success, any detractors still doubt the prospects for private spaceflight, Musk said, "I pity them ... They would be fighting on the wrong side of yesterday's war."

This was the first flight under NASA's Commercial Orbital Transportation Services program, as well as the first flight of an operational Dragon spacecraft. SpaceX's first flight of a Falcon 9 rocket, in June, carried a capsule mock-up that deliberately burned up on re-entry.

Last month, the Federal Aviation Administration issued its first re-entry license to SpaceX, paving the way for Wednesday's flight.

SpaceX intends to fly to the space station on its very next Dragon flight, targeted for next summer. During Wednesday's mission, the capsule replicated some of the orbital maneuvers that would be needed for a station docking.

Musk said he could be launching station crews within three years of getting the go-ahead from NASA.

The Dragon spacecraft as well as the first stage of the Falcon 9 rockets are meant to be reusable, a long-term goal intended to save money. The company notes it will take many missions, however, to achieve that.

NASA already is relying on Russia to ferry U.S. astronauts to and from the space station. It's an expensive arrangement: \$26 million per person this year, rising to \$51 million next year, and to \$56 million in 2013.

Ideally, NASA wants multiple companies to take over the job of cargo and crew transport, which would allow the agency to focus on deep-space travel to asteroids and to Mars.

The effort has taken on increased significance since the working lifetime of the space station was extended to at least 2020.

NASA has just two shuttle missions remaining, in February and April. The space agency hopes to get funding for a third and final flight next summer, to restock the orbiting lab in case the commercial launch companies fall behind, before ending the 30-year shuttle program.

SpaceX currently has a \$1.6 billion contract with NASA for 12 supply runs. Orbital Sciences Corp. of Virginia has a \$1.9 billion contract for eight.

SpaceX President Gwynne Shotwell said the company has poured more than \$600 million into the test flight effort so far and received \$278 million from NASA. She took aim at critics, some of whom don't trust companies to provide the same level of crew safety as NASA.

"I bristle a little bit at the whole concept of 'cutting corners,' " she said

earlier this week. "Just because it's faster doesn't mean it's more risky."

To be clear, "there were no corners cut" in this week's rocket repairs, Shotwell noted. The Falcon should have blasted off Tuesday, but two small cracks were discovered Monday in the upper-stage rocket nozzle. A technician simply cut away the nozzle extension containing the cracks, enabling the company to launch Wednesday, a day earlier than anticipated when the damage was detected.

The quick repair work and grasp of the problem demonstrates the company's skill and agility, said Alan Lindenmoyer, NASA's commercial crew and cargo program manager at Houston's Johnson Space Center.

"Thank you for the early Christmas present," he told SpaceX officials with a smile.

**More information:**

NASA: <http://www.nasa.gov/offices/c3po/home/index.html>

SpaceX: <http://www.spacex.com/>

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