

# Virgin Galactic Spacecraft Crashes, Killing One

Accident Raises Further Questions About Future of Space Tourism

*By Andy Pasztor and Jon Ostrower*

Updated Oct. 31, 2014 10:44 pm ET

A rocket-powered aircraft designed for space tourists broke apart and crashed during a test flight in California's Mojave Desert on Friday, killing one pilot and injuring the other. (Latest: Virgin Galactic will proceed with second SpaceShipTwo despite crash).

Virgin Galactic LLC's SpaceShipTwo was on its first powered flight using a new fuel mixture for a redesigned engine system. If the first few test flights went well, it was supposed to take its inaugural passenger, company founder Richard Branson, out of the atmosphere in the next few months. Ahead of Friday's test, company officials expected commercial service would begin as soon as early next year.

Regardless of what emerges as the cause of the disaster, which the company called a "serious anomaly," the event is a setback for the budding space-tourism industry. It could even prompt federal efforts to step up oversight of such ventures.

Stuart Witt, chief executive of Mojave Air and Spaceport, said the flight began at 9:20 a.m. local time, and SpaceShipTwo was released from the its carrier aircraft at 10:10 a.m. and first noted the anomaly two minutes later.

While the test flight wasn't public, Virgin Galactic tweeted that the craft's engine had achieved ignition, following shortly after in another tweet that the craft had suffered an "in-flight anomaly." Virgin Galactic said it would "work closely with relevant authorities to determine the cause."

The carrier plane that took the aircraft some 10 miles above the earth to commence the test flight landed safely, according to the company.

The test flight was conducted under a special permit granted by the Federal Aviation Administration. Before the accident, both the company and the agency indicated their confidence in the technology, setting the stage to allow the company to start carrying passengers—paying



Image from video by KABC-TV Los Angeles shows wreckage of what is believed to be SpaceShipTwo in Southern California's Mojave Desert. ASSOCIATED PRESS/KABC TV

more than \$200,000 to experience a brief period of weightlessness. When such commercial flights could commence now appears uncertain.



A 2010 file photo of the SpaceShipTwo MARK GREENBERG/VIRGIN GALACTIC/

Local television reports showed pieces of the spacecraft's body and tail scattered across the desert. Early eyewitness accounts reported by local broadcast media indicated the pilot who died was still strapped into his seat while the other aviator had managed to open his parachute, though neither the company nor local emergency officials immediately commented on specifics of the crash.

The names of the pilots weren't released.

Friday's accident marked the first U.S. space-mission fatality since February 2003, when the space shuttle Columbia disintegrated during re-entry over Texas and Louisiana, killing all seven crew members.

Closely held Virgin Galactic, which has struggled through years of delays, engine problems and other technical challenges, is the world's premier space-tourism project. Its design has undergone more extensive testing than any rival, and the company has invested the most money in hardware and ground facilities.

Tracing its roots and technical expertise to the pioneering work of renowned aerospace designer Burt Rutan, Virgin Galactic has sketched out an ambitious agenda beyond space tourism. It has talked about using its airborne vehicles as low-cost satellite launchers and platforms for conducting onboard scientific experiments.



Richard Branson is the founder of aerospace firm Virgin Galactic. REUTERS

Development of the craft over the years resulted in one serious explosion which killed workers during a ground test, but no injuries or deaths during test flights before Friday's.

Scenes of scattered debris shocked the close-knit community of scientists, engineers and entrepreneurs who have flocked to the sprawling airport and spaceport facility in Mojave, transforming it into the

Silicon Valley of commercial space endeavors. Mr. Witt urged fledgling space companies, their employees and space proponents globally to persevere.

"My message to them is stay the course," he told reporters. "The goal," he added, "is far greater than any of individuals."

Virgin Galactic officials provided scant details of the events leading up to the accident, aside from indicating the failure occurred roughly two minutes after the spacecraft separated from the carrier to fly under its own power.

"Space is hard, and today was a tough day," said George Whitesides, Virgin Galactic's chief executive, at the same news conference.

"We're going to get through it," and understand what happened, he added.

Engineers at Virgin Galactic and partner Scaled Composites, a unit of Northrop Grumman Corp., had stressed a cautious, go-slow approach that built gradually on results from increasingly longer airborne tests. Scaled Composites, whose pilots flew Friday's test flight, developed SpaceShipTwo and WhiteKnightTwo, the spaceship's carrier aircraft.

Virgin Galactic also has engaged in wide-ranging discussions with Google Inc. to team up with and launch payloads for the Internet-search firm, though industry officials said those efforts haven't led to any specific agreements.

Mr. Branson, who has been the public spokesman for the company's safety, previously said plans were set to make him, along with some family members, the first passengers.

"I'm not going to take my son into space until I'm absolutely sure we have everything right," he told CNN last month.

After hearing the news, Mr. Branson said he was flying to Mojave to be with the team and in a tweet said "thanks for all the messages of support."

Both the FAA and the National Transportation Safety Board were dispatching investigators to the scene, setting up the first test of how the agencies will cooperate in uncharted territory of fatal accidents involving commercial space vehicles.

So far, lawmakers have carved out special safety exemptions for space-tourism ventures. Congress, months ago, extended to the fall of 2015 major elements of a 2004 law calling for minimal FAA regulation of Virgin Galactic and a handful of other space-tourism companies.

Particularly in the beginning, lawmakers expect participants in such flights to sign waivers personally accepting risk.

The FAA isn't engaged in detailed technical supervision or formal approval of spacecraft designs. But the agency has been pushing for greater scrutiny over Virgin Galactic's carrier plane. And some industry officials expect the accident will revive a broader debate over how much federal safety supervision is appropriate in coming years.

The crash comes four days after the explosion, just after blastoff on Tuesday, of an Antares cargo rocket operated by Orbital Sciences Corp. for the National Aeronautics and Space Administration.

That accident, which destroyed an unmanned space cargo capsule intended for the international space station, is currently under investigation.

**Write to Jon Ostrower at [jon.ostrower@wsj.com](mailto:jon.ostrower@wsj.com) and Andy Pasztor at [andy.pasztor@wsj.com](mailto:andy.pasztor@wsj.com)**