

Virgin Galactic Aims to Fly SpaceShipTwo to Space This Year

The spaceflight company is almost ready to fire up the rocket engine on the VSS Unity and fly above the atmosphere.



Virgin Galactic

By Jay Bennett Oct 13, 2017 **236**

Virgin Galactic has been making steady progress flight testing its new SpaceShipTwo, the VSS Unity. The Unity has now conducted [six air-launched glide tests](#) after being dropped from the larger mothership, WhiteKnightTwo, from about 50,000 feet.

This week, Virgin Galactic President Mike Moses said at the International Symposium for Personal and Commercial Spaceflight that he hopes "to be in space by the end of this year," as [reported by Aviation Week](#). Powered flight tests in the atmosphere will come first, which involve firing up the VSS Unity's rocket engine for the first time. A last round of flight testing beyond the atmosphere is expected to proceed the launch of commercial tourism and research flights to suborbital space.

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The VSS Unity is the second SpaceShipTwo craft in a planned fleet of suborbital spaceplanes. The first spaceship, the VSS Enterprise built by Scaled Composites, was [destroyed in a fatal crash on October 31, 2014](#) before ever making it to outer space. The VSS Unity was under construction at the time of the incident, and in response to the crash, the second ship was reinforced with a more robust structure and outfitted with more instrumentation, making the VSS Unity heavier than the Enterprise. As a result, the Unity will not fly above the internationally recognized border of space—the 100 km (62 mi) Karaman line—but rather will fly above 80 km (50 mi), which the U.S. Air Force recognizes as the border of outer space.

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"We didn't finish the test program [with Enterprise], so now Unity is our test vehicle," Moses said at the symposium. "We've added a lot more structure, a lot more instrumentation because you don't know the margins. You don't know the actual environment you're going to fly in. We had to be on the conservative side. We'll be able to pull that weight back out after we've done it, but initially we won't be going all the way to the Karman line. We're going to aim for the 80-km U.S. definition of space."

Moses described the glide test program for Unity thus far as "amazingly successful," including tests of the "feather" system that rotates the tail of the plane up over the craft so it tips over like a badminton birdy for reentry into the atmosphere. The crash of the VSS Enterprise was caused by a premature release of the feather locking system during the craft's fourth powered flight, an error that was ultimately attributed to design flaw. Moses says the feather system is operating more smoothly on the Unity thanks to adjustments made to two redundant actuators on the system that "kind of fight with each other" when they are not properly balanced.

Two more SpaceShipTwo craft are also under construction by The Spaceship Company, a joint venture between Virgin Group and Scaled Composites. "Next up is to start assembling the wings and the fuselages and then bring those parts together," said Moses.

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Before the VSS Unity can fly above the atmosphere, Virgin Galactic will conduct powered flight tests to collect data on acceleration through supersonic speeds and external heating on the craft, as well as simulated atmospheric reentry, which will be fully tested on the first flight to space. A date for the first powered flight test of the VSS Unity has not been set, but Moses said there would be "a couple" more glide tests before Virgin fires up the rocket engine.

Virgin Galactic has taken its time returning to flight after the mishap in 2014, but hopefully the aerospace company's reusable spaceplane will make its first trip above the atmosphere before the end of the year—and then [you can finally join the waiting list](#) for a ride in a rocket-powered spaceplane.

Source: [Aviation Week](#)