

# Next-Generation Space Vehicle Tested in Pacific Ocean Drop

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A new space vehicle to carry crews to the International Space Station moved closer to realization August 3 when Transformational Space Corporation tested its parachute landing system by dropping a replica into the Pacific Ocean.

NASA chose Transformational Space ("t/Space") in September 2004, along with seven other aerospace companies, to develop concepts for the next generation of NASA vehicles. t/Space won a \$6 million contract with a promise to go beyond paper design studies to actual hardware prototyping.

Today's test focused on a proposed Crew Transfer Vehicle (CXV) to ferry astronauts to the Space Station at lower cost and risk than the Space Shuttle.

The Drop Test Article (DTA) representing the CXV was full size (14.75 feet long by 14 feet diameter) and full weight at 8,100 lbs. A Sikorsky S-61 helicopter carried the DTA three miles offshore from Crescent City and released it from 9,600 feet.

The triple-parachute descent system splashed down six minutes later. After hitting the Pacific Ocean at 14 miles per hour, divers deployed from the recovery ship Two Sisters attached a line for the helicopter to return the DTA to shore.

Former astronaut Jim Voss, t/Space vice president for space exploration systems said, "We are pleased with the overall success of this engineering test and that we understand why one of the three parachutes opened only partially. Early testing will allow us to identify problems quickly and fix them before changes become expensive."

NASA plans a competition this fall to select a new vehicle to carry crew to the Space Station. t/Space will offer its four-person CXV. NASA also is moving forward with a separate effort to create a new Crew Exploration Vehicle for Moon and Mars

Exploration.

In May and June, t/Space completed three successful drops of a 23% scale test article representing both the CXV capsule and its two-stage booster. Burt Rutan's Scaled Composites, which made history last year by rocketing the first commercial pilot into suborbital space aboard SpaceShipOne, used its Proteus aircraft to drop the test article over the Mojave desert.

The demonstrations validated a t/Space innovation – a release mechanism that caused the rocket to rotate towards vertical without requiring wings.

Another key player in the t/Space effort is AirLaunch LLC, which is under contract with the Defense Dept. to develop a low-cost responsive booster.

The second-stage engine for its QuickReach I was successfully ground-fired this summer with funding from the Falcon program, which is operated jointly by the U.S. Air Force and the Defense Advanced Research Projects Agency.

The same engine technology is planned to boost the t/Space spacecraft to the International Space Station.

"We have now used study-level money in the six-month option phase of our contract to do both analytical work and build real hardware," said David Gump, t/Space president.

"This demonstrates that our rapid-prototyping approach to creating space vehicles is both very fast and very cost-effective."

t/Space, with administrative offices in Reston, Va., employed Holder Consulting Group of Renton, WA, to organize the Pacific Ocean test. Also participating were parachute provider Irvin Aerospace, Carson Helicopters and M&M Divers.

The U.S. Coast Guard provided maritime security and the Federal Aviation Administration provided airspace clearance.

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