

Orion launch to test human flight risks in deep space

November 6 2014, by Kerry Sheridan



This NASA image released on November 6, 2014 shows Orion as it prepares to move to launch pad

With memories still fresh of two commercial space flight accidents in the past 10 days, NASA is readying its first test flight of the Orion spacecraft that could one day carry humans to Mars.

No one will be on board when Orion launches next month from Cape

Canaveral in Florida, but the test will involve more than \$370 million in rocket equipment and hardware.

That price tag does not include the cost of building the gumdrop-shaped Orion multi-purpose crew vehicle, built by Lockheed Martin to carry people into deep space.

The test mission, known as EFT-1, is scheduled to blast off December 4 at 7:05 am (1205 GMT) from a NASA launchpad at Kennedy Space Center. It aims to end with an ocean splashdown about four and a half hours later.

"EFT-1 is absolutely the biggest thing that this agency is going to do this year," said William Hill, NASA deputy associate administrator for exploration systems development.

"This is really our first step on our journey to Mars."

The [test flight](#) begins with the liftoff of the United Launch Alliance Delta IV heavy rocket, marking the eighth launch of that particular rocket system.

The rocket will be strapped with two boosters offering 663,000 pounds (301,000 kilograms) of thrust each, said Ron Fortson, ULA director of mission management.

The boosters are more powerful than those developed for the space shuttle, the 30-year NASA program that ended in 2011.

Hill said the rocket does not share any of the same components that were involved in the October 28 failure of an Orbital Sciences Antares rocket that exploded shortly after launch on what was to be a supply mission to the International Space Station.



This undated artist's rendering provided by NASA and the European Space Agency shows the Orion capsule and the service module in Earth's orbit

That blast cost Orbital more than \$200 million, but took no lives.

It was followed on Friday by a fatal crash of Virgin's pioneering tourist-carrying spacecraft SpaceShipTwo, killing one of its two pilots.

"In the space business we are one big family and when someone has a failure we all feel it," said Hill.

Mark Geyer, Orion Program manager, said the accidents do not raise particular concern among his team for the upcoming launch, however.

"It just reminds of the risks we already understood," Geyer told reporters.

Two orbits and splashdown

Geyer described the mission as "basically a compilation of what I would say are the riskiest events that we are going to see when we fly people."

After launch comes a complex process including 17 different separation events, as the vehicle jettisons rocket fairings, the abort system and the space capsule itself.

Orion will then fly two orbits around the Earth, first a low lap followed by a second reaching a height of 3,600 miles (5,800 kilometers), or 15 times higher than the orbit of the International Space Station.

When Orion makes its plunge back to Earth, engineers will be closely watching the deployment of parachutes that slow the capsule from a speed of 300 miles (483 kilometers) per hour to 20 miles per hour.

Finally, about four hours after launch comes the splashdown in the Pacific Ocean, about 600 miles southwest of San Diego, California, where Navy divers will brave what are expected to be high seas in order to retrieve the spacecraft.

"We get very close to what it is going to be like coming back from the moon," said Geyer, describing the elevated radiation and scorching heat of 4,000 degrees Fahrenheit (2,200 Celsius) that the spacecraft's 1.6-inch (four centimeters) thick heat shield will endure during the test.

Systems on board will measure the internal heat of the spacecraft to see if humans would have been able to endure the conditions.

"This is real hardware that we intend to fly people on," said Geyer, adding that the test flight involves "a lot of things that have to work right the first time."

The first crewed flight of Orion is set for 2021. After that, Orion may carry people to the moon, asteroids and Mars in the years to come.

© 2014 AFP

Citation: Orion launch to test human flight risks in deep space (2014, November 6) retrieved 27 April 2024 from <https://phys.org/news/2014-11-orion-human-flight-deep-space.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.