SpaceX successfully completes its Dragon abort test [Updated]

Enlarge / The Falcon 9 during the launch of the abort test.

reader comments

196 with 85 posters participating

Share this story

Today, SpaceX attempted a critical test of its ability to launch humans to orbit: the ability to get them away from the rocket if things go wrong. Shortly after liftoff, the company shut down the main engines of its Falcon 9 rocket, and fired off the system that’s meant to return the crewed capsule safely to Earth.

Everything about the flight appeared to have worked just as planned. The Dragon capsule accelerated away from its Falcon 9 launch vehicle, oriented properly, deployed parachutes, and splashed down successfully.

Getting a capsule gently off a rocket in the midst of what might be a catastrophic failure is (as you might imagine) not a simple task. Engines on the capsule have to fire with sufficient power to cause the capsule to accelerate away from a rocket that may still be accelerating itself, all without subjecting the crew to excessive forces. Once free, the capsule has to jettison its service module, and then be oriented so its parachute systems can be deployed safely. Those parachutes then need to make sure the return to Earth’s

surface is equally gentle.

For the Dragon capsule, the engines that pull the capsule away from the rocket are a set of eight SuperDraco thrusters, arranged along the top of the craft. Parachutes are present in the craft’s nose. All of the systems have been tested individually, but this was the first time their coordinated action was tested under flight conditions. The test occurred shortly after a point in the flight called “Max Q,” where aerodynamic stresses on the Falcon 9/Dragon are at their peak, less than two minutes into the flight.

Enlarge / The view upwards from the Dragon capsule as its chutes deployed.

The loss of the capsule and its aerodynamic surface destabilized the Falcon 9, which tumbled and exploded shortly afterwards. But the capsule was well clear by this point. Shortly afterwards, video feeds showed the Dragon service module, which supports and powers the capsule during flight, being ejected. Roughly five minutes into the flight, the smaller drogue parachutes deployed to keep the capsule oriented as it started its descent. Once the capsule was about two kilometers above sea level, the four main parachutes deployed and gradually expanded. Just over nine minutes after

its launch, the Dragon capsule settled gently onto the surface of the Atlantic.

SpaceX had boats in place to handle the recovery of the capsule, but cut away from its coverage rather than showing this activity.

The test was an essential part of SpaceX's efforts to certify the Falcon/Dragon system for human use. The company is engaged in a race with Boeing for being the first to send a crewed mission to the International Space Station. Assuming there's nothing about the data obtained during the test that suggests caution, a crewed flight will be the next step.

A press conference is schedule for later this morning; we'll update this story if any significant information is revealed there.

Sunday, 1pm ET Update: There were a lot of happy faces in the NASA press conference, with Elon Musk saying that things "went as well as we can possibly expect." NASA Administrator Jim Bridenstine called the test "another amazing milestone." Bridenstine went on to say that the abort was smoother than expected in terms of the forces registered, which gives NASA even more confidence in the hardware.

Musk noted that the wind conditions at the landing site were rather high, which may allow them to expand the conditions where they consider landings. He also said that the company was considering using the nets it uses for recovering fairings to help cushion the landing further and help keep the hardware out of the salt water.

The outstanding question is when NASA will be ready to place crew on board the Dragon. Musk said that the hardware should be ready to go by late March, putting SpaceX on track for a launch for the second quarter of this year. But Bridenstine said that NASA has to consider crewing the International Space Station, and thus when to fit the Dragon launch into the

larger activity schedule in orbit. So, no word yet on when the launch might be.

https://arstechnica.com/?p=1645729