SpaceX to make a second attempt to launch its massive Starship rocket

Enlarge / SpaceX’s Starship rocket is seen ahead of its integrated flight test.

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SOUTH PADRE ISLAND, Texas—For the second time, SpaceX engineers and technicians are working through the final hours of preparations for the launch of the Super Heavy booster and its Starship upper stage.

The company’s 62-minute launch window opens at 8:28 am local time in South Texas (12:00 UTC) on Thursday. This attempt follows a countdown that was called off about 10 minutes before liftoff on Monday morning. The delay was caused by a frozen pressurization valve that could not be actuated remotely. SpaceX used the opportunity to complete a wet-dress rehearsal, during which the launch vehicle was fully fueled and the countdown brought down near to liftoff, without igniting the vehicle’s 33 main engines.

Since then the company has addressed the valve issue and completed the laborious process of re-stocking the massive propellant tanks at its Starbase launch facility with liquid oxygen and methane.

Given the countdown and testing completed on Monday, confidence is higher on Thursday in SpaceX getting all the way to T-0, and liftoff of the Super Heavy rocket. This is by no means a certain thing, but if the weather is favorable and there are no range issues, there is probably a 50 percent or greater chance of a successful countdown.

SpaceX is calling this Starship launch an “integrated flight test.” It is the first time that the massive Super Heavy rocket will have taken off and the first time both vehicles will fly together. Under the nominal flight plan, the Super Heavy rocket will boost Starship toward space and, after separation, attempt to make a controlled splash down into the Gulf of Mexico about 30 to 35 km off the coast of Texas. SpaceX will not attempt to recover the booster on this flight.

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In the meantime, the Starship vehicle will attempt to ascend to an altitude of 235 km and become “nearly orbital.” Starship’s engines will shut down at 9 minutes and 20 seconds into the flight, after which the vehicle will coast for more than an hour before entering Earth’s atmosphere over the Pacific Ocean.

It will not complete a full orbit and is expected to make a high-velocity splash down about 225 km north of the Hawaiian island of Oahu. Unlike future flights, Starship will not attempt to make a powered descent. On the nominal timeline, this will occur 90 minutes after liftoff.

The most likely outcome is that something goes wrong during this flight. Super Heavy will be the largest and most powerful rocket to ever launch from Earth, and SpaceX founder Elon Musk has previously said that this Super Heavy rocket, known as Booster 7, is based on an older design. The company has more confidence in its next first stage, Booster 9, which is nearly ready for flight. The primary goal of this mission, therefore, is gathering as much data as possible about the performance by

Super Heavy and Starship in flight.

For as long as that flight lasts.

A webcast for this launch attempt will begin about 45 minutes before liftoff.

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Starship second launch attempt.
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