

SpaceX Starship clobbered Texas launch pad; future Space Coast launches prompt contingency plans

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The most powerful rocket to ever launch from Earth left a crater at the SpaceX launch site last week, but Elon Musk said teams could be ready

to try another Starship launch in as little as one to two months.

Meanwhile, SpaceX continues to build out a backup site for human launches on the Space Coast to assuage NASA fears of potential Starship damage for when it starts flying from Kennedy Space Center.

Those launches won't come until SpaceX completes testing from SpaceX's Starbase launch site in Boca Chica, Texas where the first integrated launch of the Starship and its Super Heavy booster took place last Thursday.

While it didn't make it to [space](#), the booster's 33 Raptor engines that can produce more than 17 million pounds of thrust was able to clear the launch tower. About four minutes after flying only to about 24 miles and tumbling back to Earth, SpaceX sent the self-destruct command resulting in the rocket exploding over the Gulf of Mexico.

"The vehicle experienced multiple engines out during the flight test, lost altitude, and began to tumble," reads an update on the SpaceX website. "The flight termination system was commanded on both the booster and ship."

While Musk had tempered expectations for the Starship mission to complete its goal of making it to space and flying 2/3 the way around the Earth on a suborbital flight path, teams said clearing the launch pad was their No. 1 goal, and part of a testing approach by the company that expects hardware to fail through more frequent test launches.

While the failing engines and lack of a planned stage separation are two big problems for the next launch attempt, repairing the major damage from the launch site will be needed first.

"All that's left of the concrete lateral support beam is the rebar!"

Hopefully, this didn't gronk the launch mount," Musk posted on Twitter to images comparing the launch site's construction to post-launch damage.

Musk said the company had prepared for a "massive water-cooled, steel plate to go under the launch mount," but that it was not ready in time for the test launch.

He said "we wrongly thought" the launch pad concrete would survive the launch based on data from a static fire performed in February that saw 31 of the 33 engines manage a successful test burn.

"Still early in analysis, but the force of the engines when they throttled up may have shattered the concrete, rather than simply eroding it," he wrote on Twitter. "The engines were only at half thrust for the static fire test."

Video from around the launch site showed chunks of concrete flying all over the place including several pieces into the surf just over a quarter mile away. One piece slammed into an unoccupied minivan for website NASASpaceflight.com that was parked close to the pad to shoot video prompting tweets of "RIP NSF Van."

"The two cameras we placed on the roof of the van got hit and were taken out. Obviously, this was all at our own risk which was well understood," posted Michael Baylor, part of the live stream team for the website.

Images of the rocket lifting into the sky showed only 27 of the 33 engines lit up a minute into flight, and more have failed before the mission concluded. It's unclear if any were damaged by debris on liftoff.

"With a test like this, success comes from what we learn, and we learned

a tremendous amount about the vehicle and ground systems today that will help us improve on future flights of Starship," the company posted on its site.

Starship's power was nearly twice that of NASA's Space Launch System that still holds the record at 8.8 million pounds of thrust for a rocket that actually made it to space during its launch from Kennedy Space Center last November on the Artemis I moon mission. The damage SLS did to the Mobile Launcher at Kennedy Space Center's Launch Pad 39-B has led to what continues to be months of repair work as teams get it ready for Artemis II in 2024.

The sheer power of Starship for what's planned to be future launches from KSC at SpaceX's Launch Pad 39-A raised NASA concerns last year with the uncertainty of what sort of damage it might do to the pad. SpaceX is continuing to build out a Starship launch tower at 39-A for when the spacecraft is ready for operational flights.

The problem, though, without Boeing's Starliner as a backup yet, NASA relies on SpaceX with its Crew Dragon spacecraft as its sole U.S.-based transport of astronauts to the International Space Station. Those launches for now can only take place from 39-A, and the potential threat of Starship [launch pad](#) damage has driven SpaceX to work on upgrading its nearby launch site at Cape Canaveral Space Force Station's Space Launch Complex 40 so it could fly the Dragon spacecraft as well.

"SpaceX and the NASA team has done an incredible job laying out the crew and cargo capability from pad 40," said NASA's Commercial Crew Program manager Steve Stich in February. "SpaceX has started groundbreaking on that pad, and actually the initial work to clear the site and then pour the pilings for the crew tower."

SpaceX's Dragon mission management director Sarah Walker said she

expects the site to be ready this fall for initial launches with just cargo.

"We've think it enables even greater flexibility to our Dragon customers," she said. "Our primary focus first will allow cargo missions to launch and just allow them to be interchangeable between the two pads, 39 and 40. And then we'll add the final certification elements for human spaceflight capability soon after, but we're seeing good progress."

NASA has a vested interest in Starship progress as well, though, as it will rely on a version of it to act as the Human Landing System for the Artemis III mission as soon as 2025, which aims to return humans including the first woman to the surface of the moon for the first time since Apollo 17 in 1972.

NASA Administrator Bill Nelson congratulated the SpaceX team last Thursday posting on Twitter despite the mission ending in a fireball.

"Every great achievement throughout history has demanded some level of calculated risk, because with great risk comes great reward," he posted. "Looking forward to all that SpaceX learns, to the next [flight test](#)—and beyond."

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