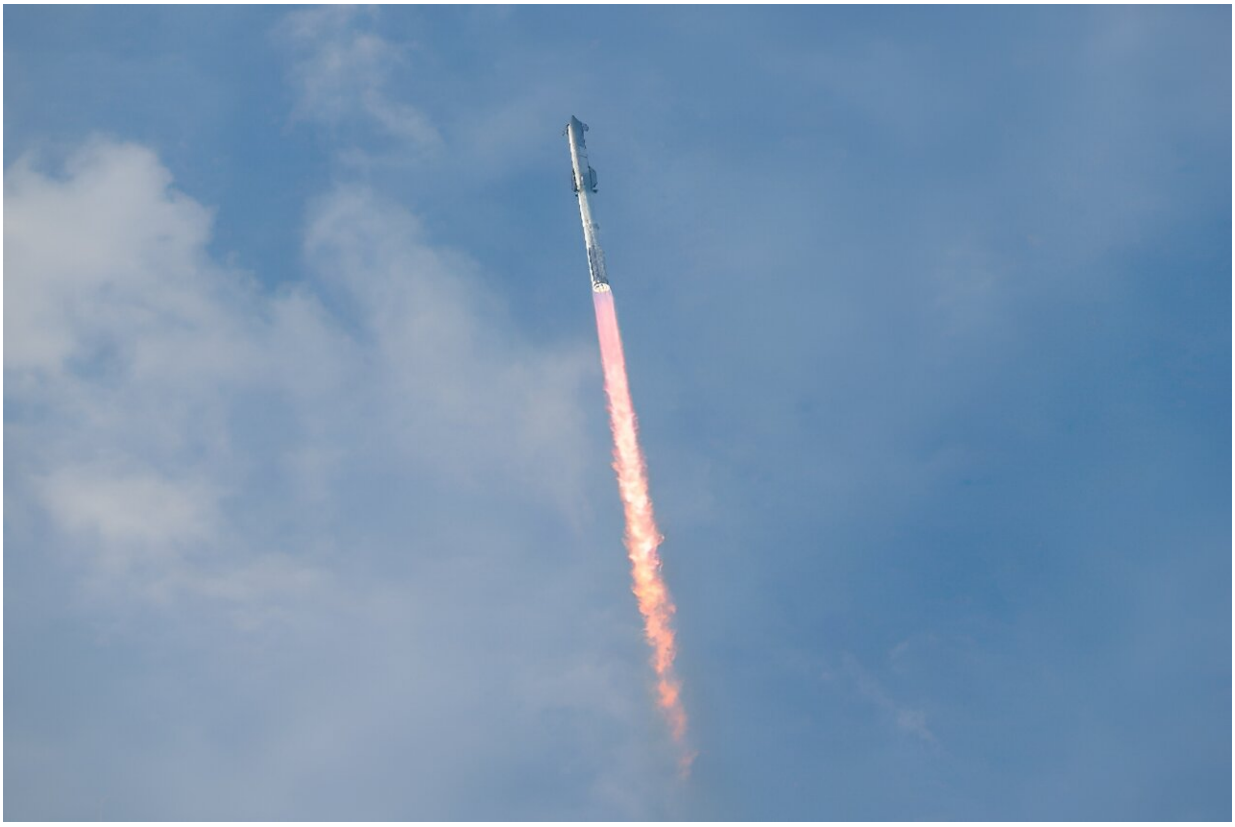
SpaceX mega rocket makes successful test flight but lost in descent

March 14 2024, by Chandan Khanna with Issam Ahmed in Washington



Lift-off from SpaceX's Starbase in southeast Texas came around 8:25 am local time (1325 GMT) and was carried on a webcast on social media platform X that was eventually watched by more than 3.5 million people.

Starship, the world's most powerful rocket, flew further and faster than ever before during its third test launch Thursday, although it was

eventually lost as it re-entered the atmosphere over the Indian Ocean, SpaceX said.

Lift-off from the company's Starbase in Boca Chica, Texas came at 8:25 am local time (1325 GMT) and was carried live on a webcast watched by millions on social media platform X.

The sleek mega rocket is vital to NASA's plans for landing astronauts on the moon later this decade—and SpaceX CEO Elon Musk's hopes of eventually colonizing Mars.

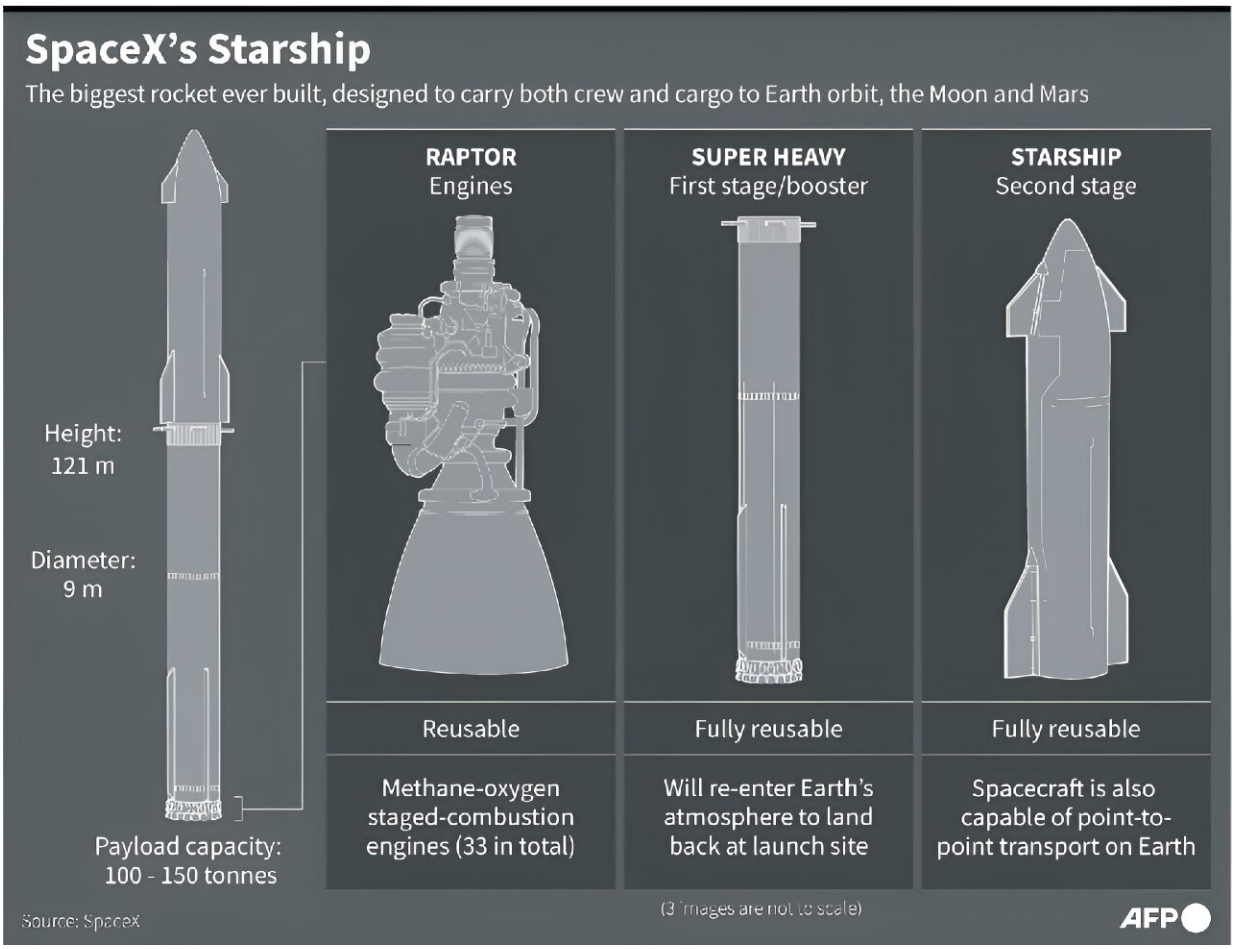
"Congrats to @SpaceX on a successful test flight!" tweeted NASA administrator Bill Nelson following the mission.

Scrutiny was high for Thursday's test flight after two prior attempts ended in spectacular explosions—all part of what the company says is an acceptable cost in its rapid trial-and-error approach to accelerate development.

Likely destroyed

Designed to eventually be fully reusable, Starship stands 397 feet (121 meters) tall with both stages combined—90 feet taller than the Statue of Liberty.

Its Super Heavy booster produces 16.7 million pounds (74.3 Meganewtons) of thrust, almost double that of the world's second most powerful rocket, NASA's Space Launch System—though the latter is now certified, while Starship is still a prototype.



Graphic on SpaceX's Starship launch vehicle, the biggest rocket ever built.

Starship's third launch test in its fully stacked configuration was its most ambitious yet and the company said it was able to meet many of its objectives.

These included opening and closing Starship's payload door to test its ability to deliver satellites into orbit, and its first atmospheric re-entry.

High-definition footage from an onboard camera showed Starship coasting in space, with the curve of the Earth visible in the background.

It hit a top speed of more than 26,000 kilometers per hour (16,000 mph) and achieved an altitude of more than 200 kilometers above sea level.

Starship flew halfway around the globe, then began its descent over the Indian Ocean, with engineers cheering as its heat shield glowed red hot.

But ground control stopped receiving signals 49 minutes into the flight, and declared the vessel "lost"—probably destroyed—before it could achieve a planned hard splashdown.

The lower-stage booster also failed to make a successful water landing, and as a result, the Federal Aviation Administration said it was opening a "mishap" investigation.

"Starship will make life multiplanetary," Musk, the company's billionaire founder, posted on X afterward, emphasizing the progress made.

Starship flew halfway around the globe, then began its descent over the Indian Ocean, with engineers cheering as its heat shield composed of 18,000 hexagonal tiles glowed red hot.

The SpaceX Way

The first so-called "integrated" test came in April 2023. SpaceX was forced to blow up Starship within a few minutes of launch, because the two stages failed to separate.

The rocket disintegrated into a ball of fire and crashed into the Gulf of Mexico, sending a dust cloud over a town several miles (kilometers) away.

The second test in November 2023 fared slightly better: The booster separated from the spaceship, but both then exploded over the ocean, in what the company euphemistically called a "rapid unscheduled disassembly."

It currently costs SpaceX around $90 million to build each Starship, according to a report by the research company Payload published in January.

SpaceX's strategy of carrying out tests in the real world rather than in labs has paid off in the past.

Its Falcon 9 rockets have come to be workhorses for NASA and the commercial sector, its Dragon capsule sends astronauts and cargo to the International Space Station, and its Starlink internet satellite constellation now covers dozens of countries.

But the clock is ticking for SpaceX to be ready for NASA's planned return of astronauts to the moon in 2026, using a modified Starship as the lander vehicle.

China is approaching in the rear-view mirror, targeting 2030 to land its first crew on Earth's nearest neighbor.

Not only does SpaceX need to prove it can launch, fly and land Starship safely—it must eventually also show it can send multiple "Starship tankers" into orbit to refuel, at supercooled temperatures, a main Starship for its onward journey to the moon.