

NASA, Sierra Space deliver Dream Chaser spaceplane to Florida for launch preparation

May 20 2024, by Jamie Groh



Dream Chaser Tenacity, Sierra Space's uncrewed cargo spaceplane, is processed inside the Space Systems Processing Facility (SSPF) at NASA's Kennedy Space Center in Florida on Monday, May 20, 2024. The spaceplane arrived inside a climate-controlled transportation container from the agency's Neil Armstrong Test Facility in Ohio. Final testing and prelaunch processing will be completed inside the high bay of the SSPF ahead of Dream Chaser's inaugural launch atop a ULA (United Launch Alliance) Vulcan rocket from nearby Cape Canaveral Space Force Station. Credit: NASA / Kim Shiflett

As part of NASA's efforts to expand commercial resupply in low Earth orbit, Sierra Space's uncrewed spaceplane arrived at NASA's Kennedy Space Center in Florida ahead of its first flight to the International Space Station.

The Dream Chaser spaceplane, named Tenacity, arrived at Kennedy on May 18 inside a climate-controlled transportation container from NASA's Neil Armstrong Test Facility in Sandusky, Ohio, and joined its companion Shooting Star cargo module, which arrived on May 11.

Before arriving at Kennedy, the spaceplane and its cargo module underwent vibration testing atop the world's highest capacity and most powerful spacecraft shaker system inside the agency's Space Environments Complex, exposing the stack to vibrations like those it will experience during launch and re-entry to the Earth's atmosphere. Following vibration testing, the duo moved to NASA's In-Space Propulsion Facility and was exposed to low ambient pressures and temperatures ranging from -150 to 300 degrees Fahrenheit.

Upon arrival at Kennedy, teams moved Dream Chaser Tenacity to the high bay inside the Space Systems Processing Facility, where it will undergo final testing and prelaunch processing ahead of its launch scheduled for later this year.

The spaceplane will lift off aboard a ULA (United Launch Alliance) Vulcan rocket from Space Launch Complex-41 at Cape Canaveral Space Force Station and is set to deliver 7,800 pounds of cargo to the orbiting laboratory.

The remaining pre-flight activities at Kennedy include acoustic and [electromagnetic interference](#) and compatibility testing, completion of

work on the spaceplane's thermal protection system, and final payload integration.

Dream Chaser is a lifting body design spaceplane that measures 30 feet long by 15 feet wide. The unique winged design allows it to transport cargo to and from low Earth orbit and maintain the ability to land on a runway in the style of NASA's [space shuttle](#). The 15-foot Shooting Star module can carry up to 7,000 pounds of cargo internally and features three unpressurized external payload mounts.

The partially reusable transportation system will perform at least seven cargo missions to the [space station](#) as part of the agency's efforts to expand commercial resupply services in low Earth orbit. Future missions may last as long as 75 days and deliver as much as 11,500 pounds of cargo.

While the Dream Chaser spacecraft is reusable and can return up to 3,500 pounds of cargo to Earth, the Shooting Star module is designed to be jettisoned and burn up during reentry, creating the opportunity to dispose of up to 8,500 pounds of trash with each mission.

Dream Chaser Tenacity is the first in a planned fleet of Sierra Space spaceplanes to help carry out these missions.

As part of the process to certify the vehicle system for future agency resupply missions, NASA and Sierra Space will put the spaceplane through its paces once it is in orbit. As Dream Chaser Tenacity approaches the space station, it will conduct a series of demonstrations to prove [attitude control](#), translational maneuvers, and abort capabilities. After completing the maneuverability demonstration, space station astronauts will use the Canadarm2 [robotic arm](#) to grapple the spacecraft and dock it to an Earth-facing port.

After remaining at the orbiting laboratory for about 45 days, the [spaceplane](#) will be released from the station and return for a landing at Kennedy's Launch and Landing Facility. After landing, Dream Chaser is powered down, and the Sierra Space team will transfer it back to the processing facility to perform necessary inspections, offload remaining NASA [cargo](#), and begin the process of preparing it for its next mission.

Provided by NASA

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