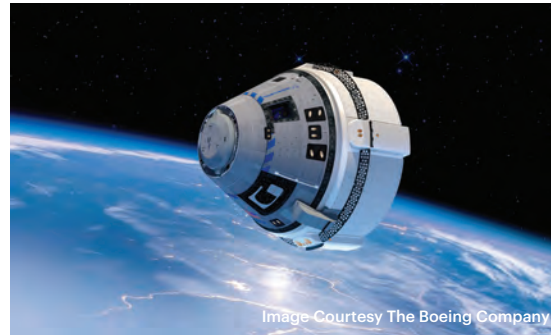


MISSION

A United Launch Alliance (ULA) Atlas V rocket will deliver Boeing's CST-100 Starliner spacecraft to a 98-nautical mile (nmi) sub-orbital trajectory on its second Orbital Flight Test (OFT-2). Following separation from Atlas V, Starliner engines will burn taking it the rest of the way to orbit and on to the International Space Station (ISS). Liftoff will occur from Space Launch Complex-41 at Cape Canaveral Space Force Station, Florida.

Part of NASA's Commercial Crew Program (CCP), the uncrewed OFT is the second launch of the CST-100 Starliner. The second uncrewed test flight will demonstrate end-to-end performance of the Atlas V rocket and Starliner spacecraft, including performance of the guidance, navigation and control systems, ground systems and operations teams, as well as on-orbit, docking, re-entry and landing operations. Starliner will land at one of five designated sites in the western United States.



All human launch systems, going back to the Mercury Atlas, traditionally conduct uncrewed test flights prior to crewed flights. The uncrewed flight will allow the team to thoroughly evaluate all flight data against pre-flight predictions and make any necessary adjustments prior to flying astronauts.

LAUNCH VEHICLE

Spacecraft

Modified specifically for the Boeing CST-100 Starliner spacecraft, the Atlas V Starliner configuration does not include a payload fairing. Instead, the Starliner's insulated surfaces take the place of the fairing to protect the uncrewed spacecraft during ascent. The vehicle's height with the Boeing CST-100 Starliner is approximately 172 ft (52.4 meters).

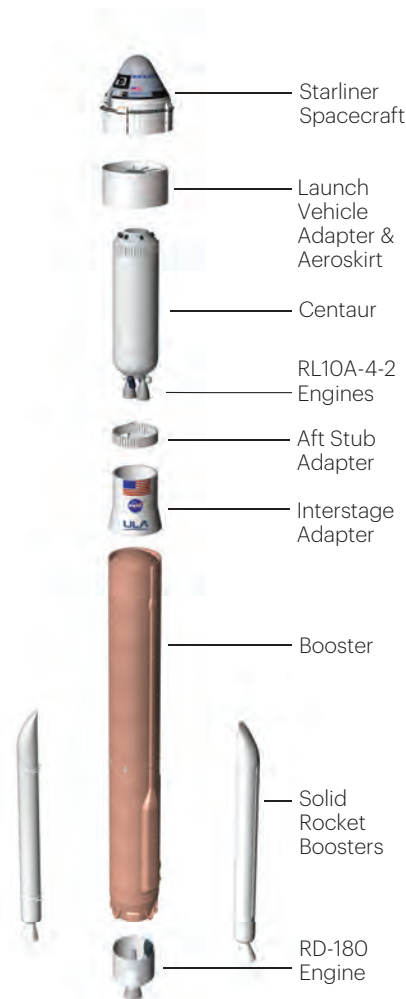
The CST-100 Starliner is attached to the Atlas V using a launch vehicle adapter (LVA), which also includes an aeroshield to reduce the aerodynamic loads on the vehicle. The aeroshield is jettisoned for improved performance following booster stage separation.

Centaur

The Centaur second stage is 10 ft (3 meters) in diameter and 41.5 ft (12.6 meters) in length. Its propellant tanks are pressure-stabilized and constructed of corrosion-resistant stainless steel. Centaur is a cryogenic vehicle, fueled with liquid hydrogen and liquid oxygen. The Atlas V configuration for this mission is powered by dual RL10A-4-2 engines, each producing 22,600 lbs (100.5 kilo-Newtons) of thrust. The cryogenic tanks are insulated with a combination of helium-purged blankets, radiation shields and spray-on foam insulation (SOFI). The Centaur forward adapter (CFA) provides structural mountings for the fault-tolerant avionics system and electrical interfaces with the spacecraft. The Centaur also includes an Emergency Detection System (EDS) that monitors for critical hazards to detect an imminent or occurring failure. The EDS also provides critical in-flight data which supports jettison of the ascent cover and initiates CST-100 Starliner spacecraft separation.

Booster

The booster is 12.5 ft (3.81 meters) in diameter and 106.5 ft (32.4 meters) in length. The booster's tanks are structurally rigid and constructed of isogrid aluminum barrels, spun-formed aluminum domes and intertank skirts. Booster propulsion is provided by the RD-180 engine system (a single engine with two thrust chambers). The RD-180 burns RP-1 (Rocket Propellant-1 or highly purified kerosene) and liquid oxygen and delivers 860,200 lbs (3.83 mega-Newtons) of thrust at sea level. Two solid rocket boosters (SRBs) generate the additional power required at liftoff, with each SRB providing 348,500 lbs (1.55 mega-Newtons) of thrust. The Centaur avionics system provides guidance, flight control and vehicle sequencing functions during the booster and Centaur phases of flight.



ATLAS V



The Atlas V Starliner configuration will launch The Boeing Company's CST-100 Starliner spacecraft as part of NASA's Commercial Crew Program. This is the second flight of this configuration.

First flown in 2002, the Atlas V launch vehicle has a record of 100 percent mission success over more than 85 launches.

MISSION SUCCESS

With more than a century of combined heritage, ULA is the nation's most experienced and reliable launch service provider. ULA has successfully delivered more than 140 missions to orbit that aid meteorologists in tracking severe weather, unlock the mysteries of our solar system, provide critical capabilities for troops in the field, deliver cutting-edge commercial services and enable GPS navigation.



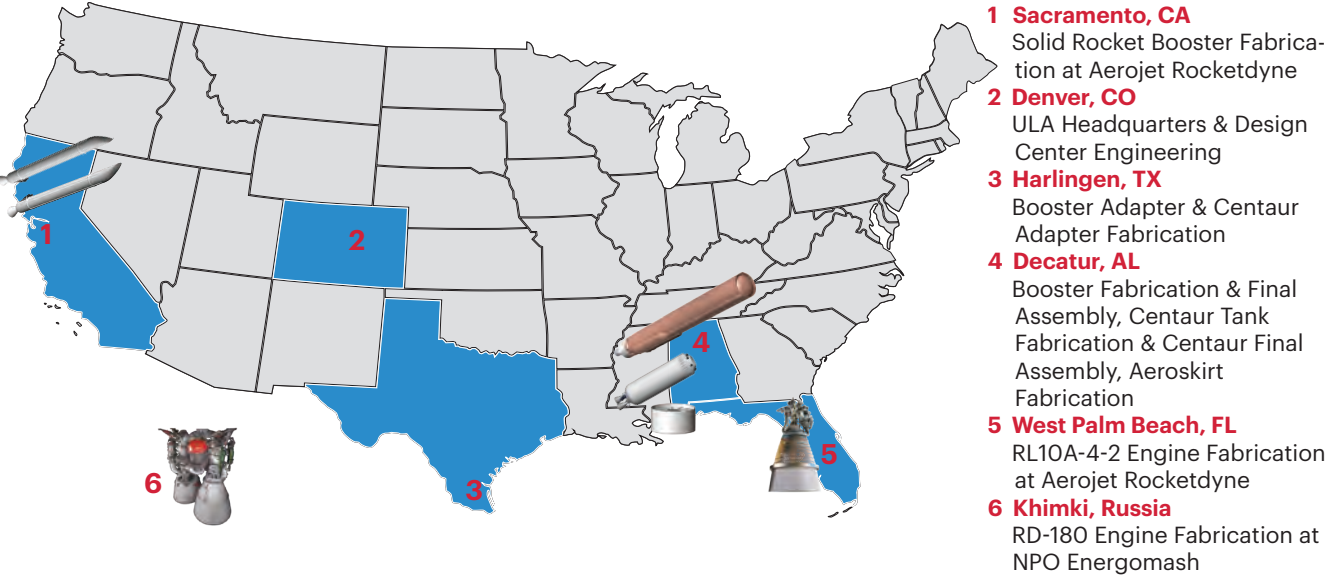
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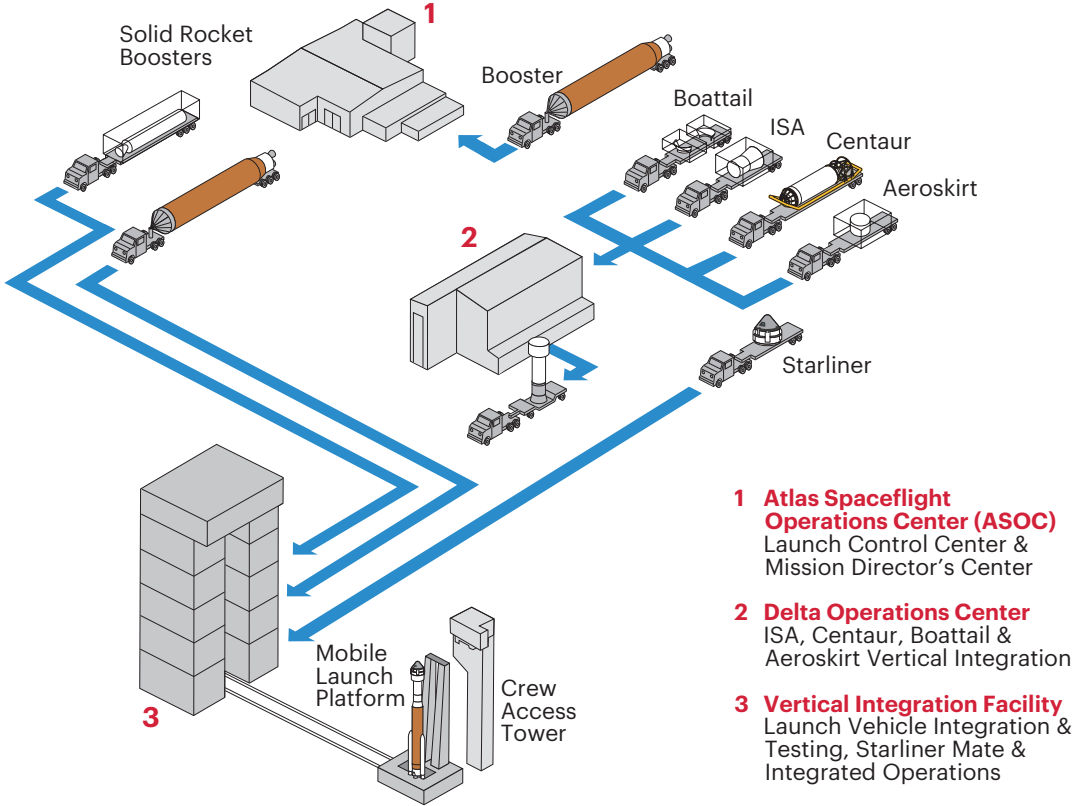
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PRODUCTION



SPACE LAUNCH COMPLEX-41 PROCESSING



FLIGHT PROFILE

