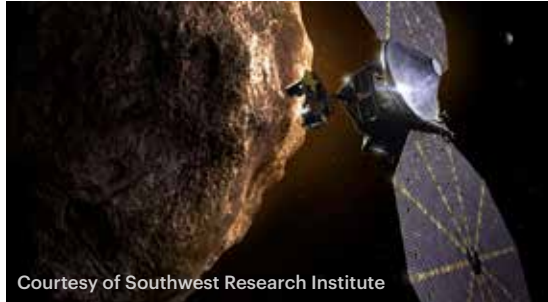


MISSION

A United Launch Alliance (ULA) Atlas V 401 rocket will deliver NASA's Lucy spacecraft to a hyperbolic orbit (or interplanetary trajectory). Lift off will occur from Space Launch Complex-41 at Cape Canaveral Space Force Station, Florida.

NASA's Lucy mission is the first space mission to explore a diverse population of small bodies known as the Jupiter Trojan asteroids. These small bodies are remnants of our early solar



Courtesy of Southwest Research Institute

system, now trapped in stable orbits associated with – but not close to – the giant planet Jupiter. The Trojan asteroids are in two “swarms” that lead and follow Jupiter in its orbit around the Sun. Over its 12-year primary mission, Lucy will explore a record breaking number of asteroids, flying by one main belt asteroid and seven Trojan asteroids.

The Lucy mission is named after the fossilized skeleton of an early hominin (pre-human ancestor) that was found in Ethiopia in 1974 and named “Lucy” by the team of paleontologists who discovered it. And just as the Lucy fossil provided unique insights into humanity’s evolution, the Lucy mission promises to revolutionize our knowledge of planetary origins and the formation of the Solar System.

The Lucy mission is a joint mission of NASA's Goddard Spaceflight Center, the Southwest Research Institute and NASA's Launch Services Program (LSP) based at Kennedy Space Center.

LAUNCH VEHICLE

Payload Fairing (PLF)

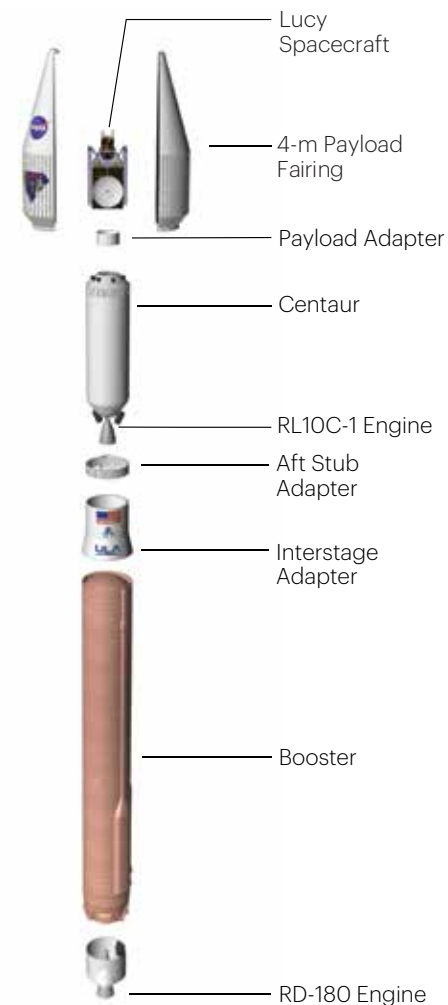
The spacecraft is encapsulated in the 14-ft (4-m) diameter large payload fairing (LPF). The LPF is a bisector (two-piece shell) fairing consisting of aluminum skin/stringer construction with vertical split-line longerons. The vehicle's height with the LPF is approximately 188 ft (57.3 m).

Centaur

The Centaur second stage is 10 ft (3 m) in diameter and 41.5 ft (12.6 m) 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, powered by an RL10C-1 engine producing 22,900 lbs (101.8 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 structural and electrical interfaces with the spacecraft.

Booster

The booster is 12.5 ft (3.8 m) in diameter and 106.5 ft (32.5 m) 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. 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 401 rocket is the workhorse of the Atlas V fleet. In its nearly 20 years of service, the 401 has launched a diverse set of missions including national security, science and exploration, commercial and International Space Station resupply.

First Launch: Aug. 21, 2002
Launches to Date: 39

Performance to GTO:
10,470 lb (4,750 kg)
Performance to LEO-Reference:
21,600 lb (9,800 kg)

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.



ulalaunch.com



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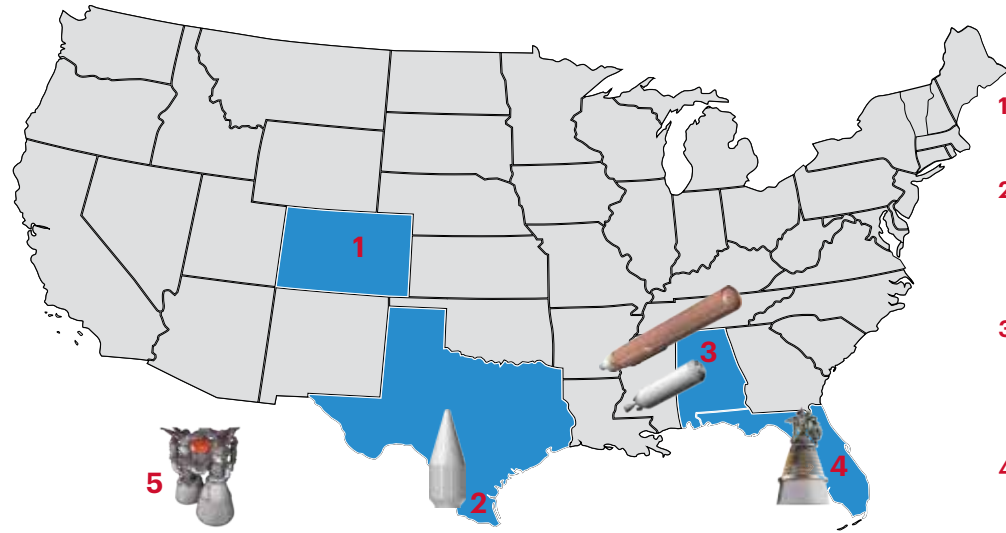
MISSION OVERVIEW

LUCY

ATLAS V

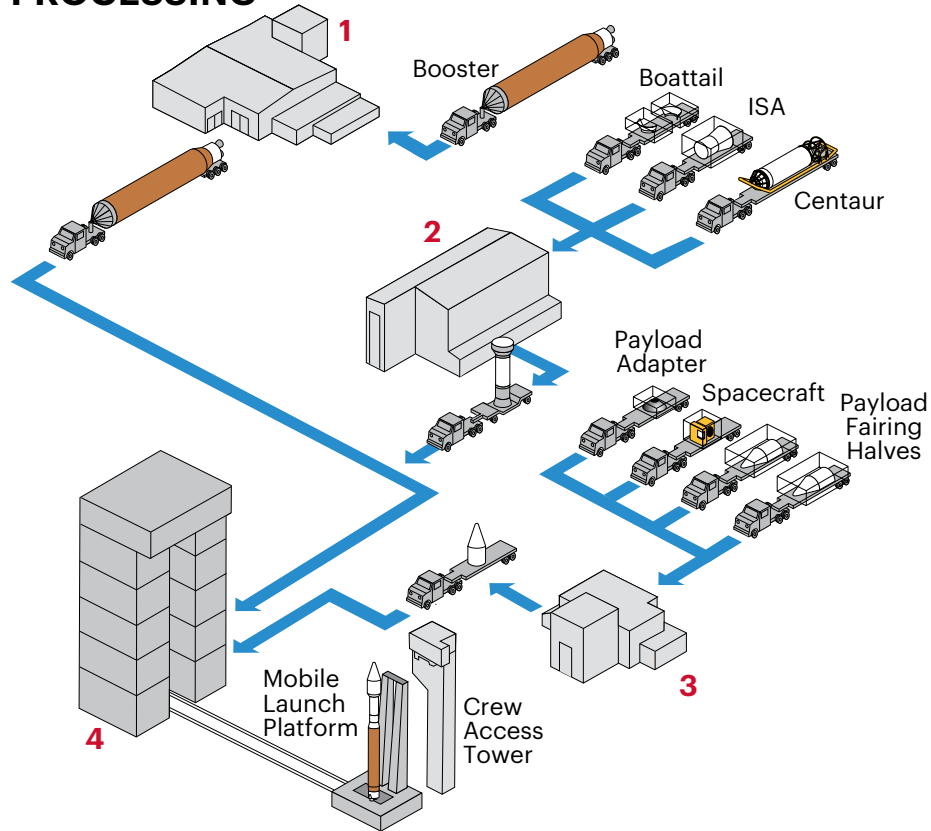


PRODUCTION



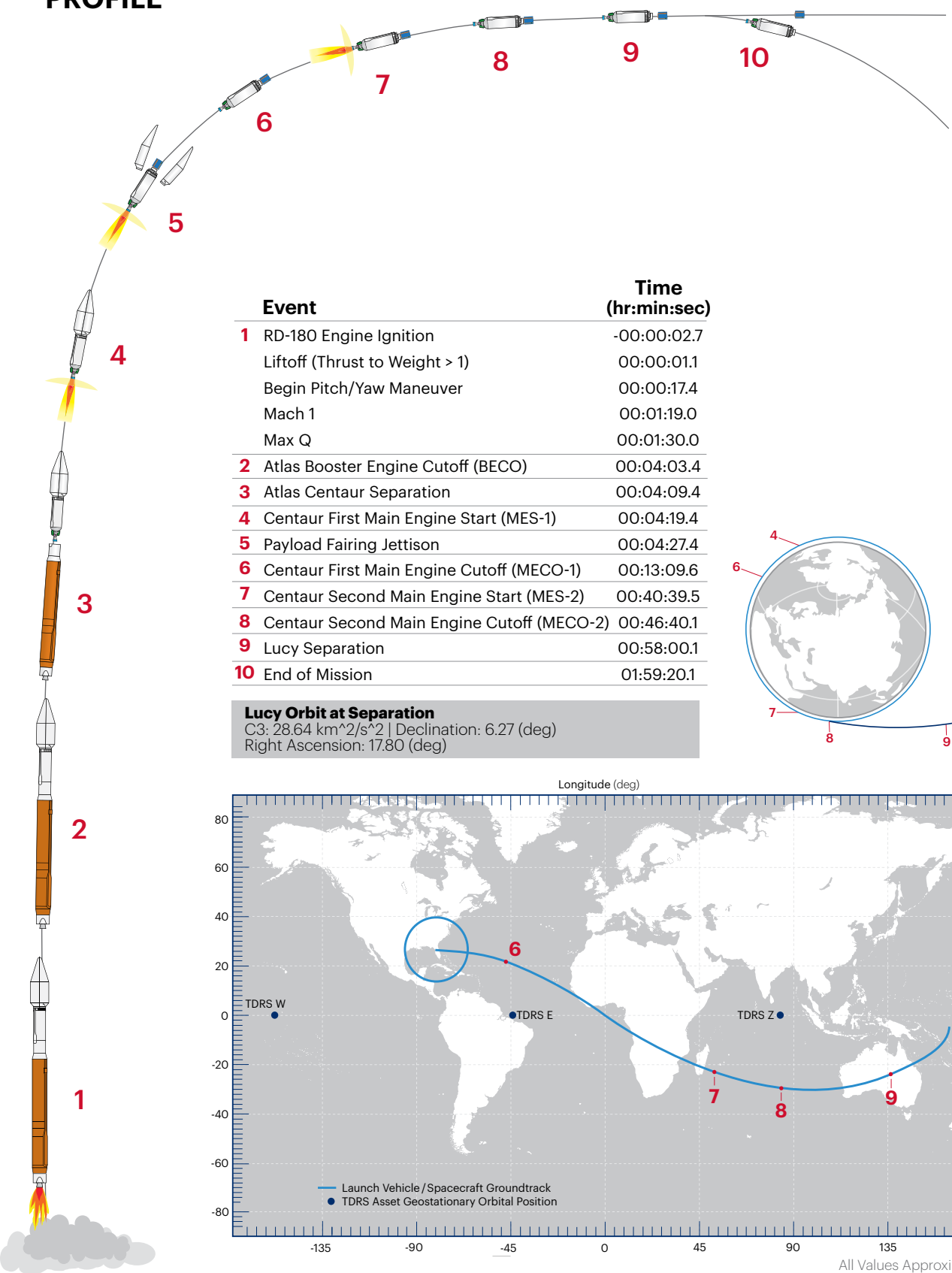
- 1 Denver, CO**
ULA Headquarters & Design Center Engineering
- 2 Harlingen, TX**
Payload Fairing, Payload Fairing Adapter, Booster Adapter & Centaur Adapter Fabrication
- 3 Decatur, AL**
Booster Fabrication & Final Assembly, Centaur Tank Fabrication & Centaur Final Assembly
- 4 West Palm Beach, FL**
RL10C-1 Engine Fabrication at Aerojet Rocketdyne
- 5 Khimki, Russia**
RD-180 Engine Fabrication at NPO Energomash

SPACE LAUNCH COMPLEX-41 PROCESSING

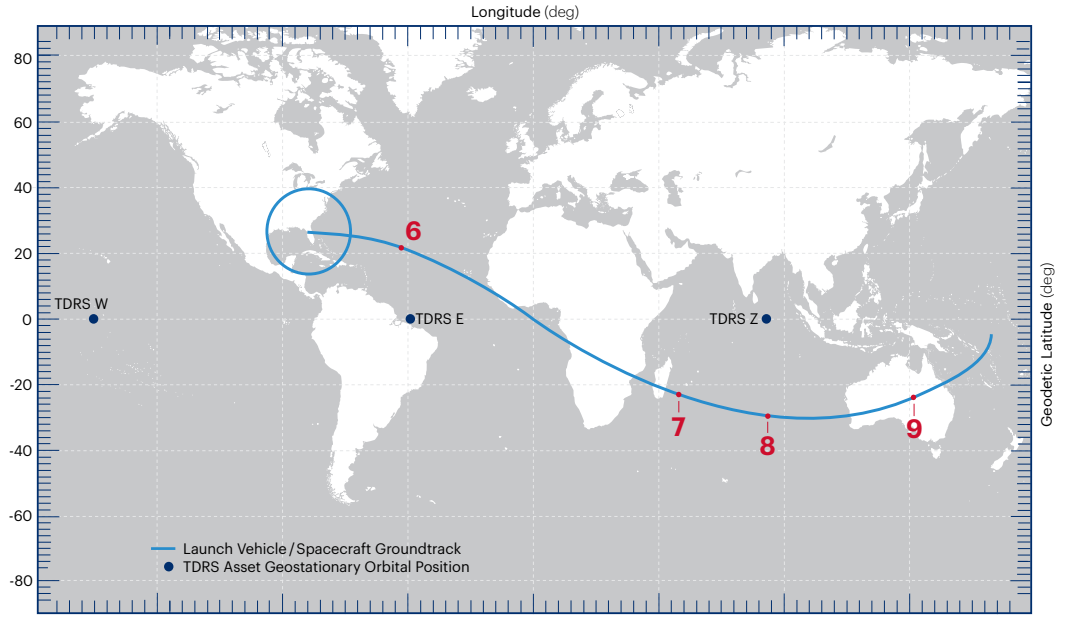
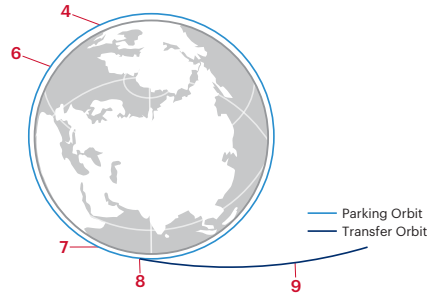


- 1 Atlas Spaceflight Operations Center (ASOC)**
Launch Control Center & Mission Director's Center
- 2 Delta Operations Center**
ISA, Centaur, Boattail & Vertical Integration
- 3 Spacecraft Processing Facility**
Spacecraft Processing, Testing & Encapsulation
- 4 Vertical Integration Facility**
Launch Vehicle Integration & Testing, Spacecraft Mate & Integrated Operations

FLIGHT PROFILE



Lucy Orbit at Separation
 C3: 28.64 km²/s² | Declination: 6.27 (deg)
 Right Ascension: 17.80 (deg)



All Values Approximate