



ATLAS V  
—  
PROTOFLIGHT  
amazon | project kuiper



#AtlasV  
#ProjectKuiper  
#Protoflight

## LAUNCH VEHICLE

### Payload Fairing

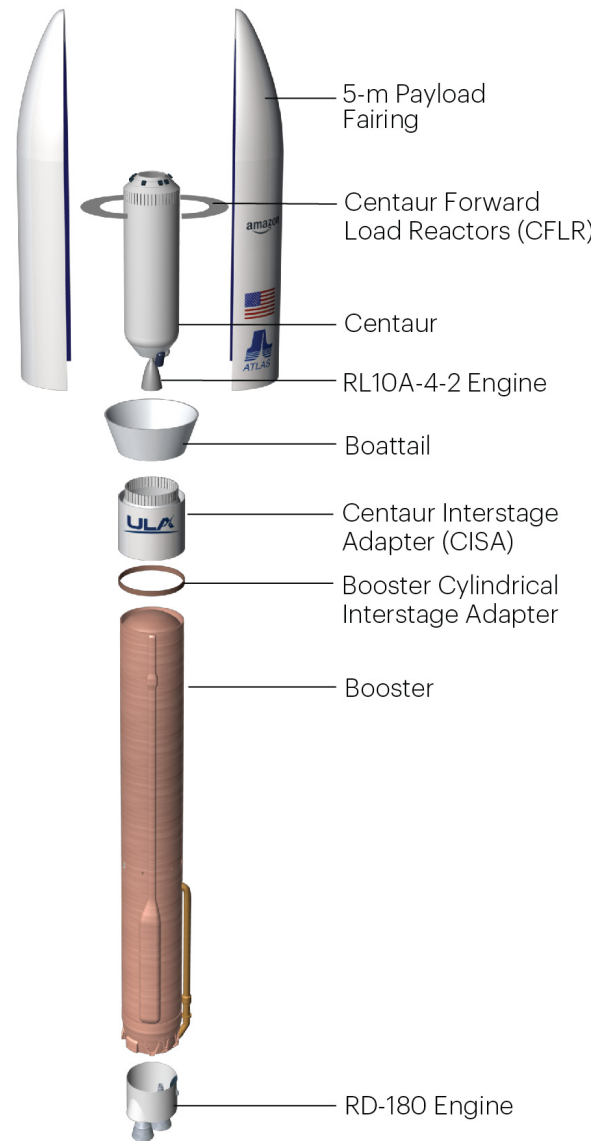
The satellites are encapsulated in a 17.7-ft (5.4-m) diameter short payload fairing produced in the advanced Out-of-Autoclave manufacturing process. The 5-m PLF is a sandwich composite structure made with a vented aluminum-honeycomb core and graphite-epoxy face sheets. The bisector (two-piece shell) PLF encapsulates both the Centaur and the spacecraft. The vehicle's height with the 5-meter short PLF is approximately 196 ft (59.7 m).

### Centaur

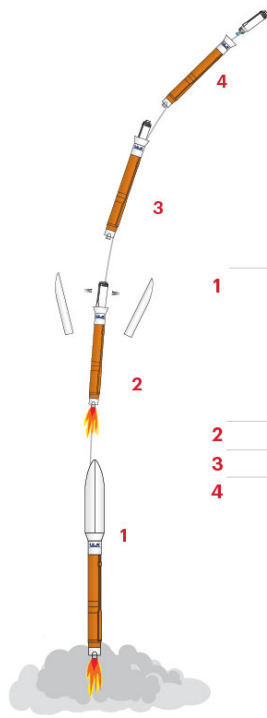
The Centaur second stage is 10 ft (3 m) in diameter and 41.5 ft (12.6 m) in length. Its propellant tanks are pressure-stabilized and constructed of corrosion-resistant stainless steel. Centaur is a cryogenic vehicle, fueled with liquid hydrogen and liquid oxygen, powered by an RL10A-4-2 engine producing 22,600 lbs (100.5 kilo-Newtons) of thrust. 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.



## FLIGHT PROFILE



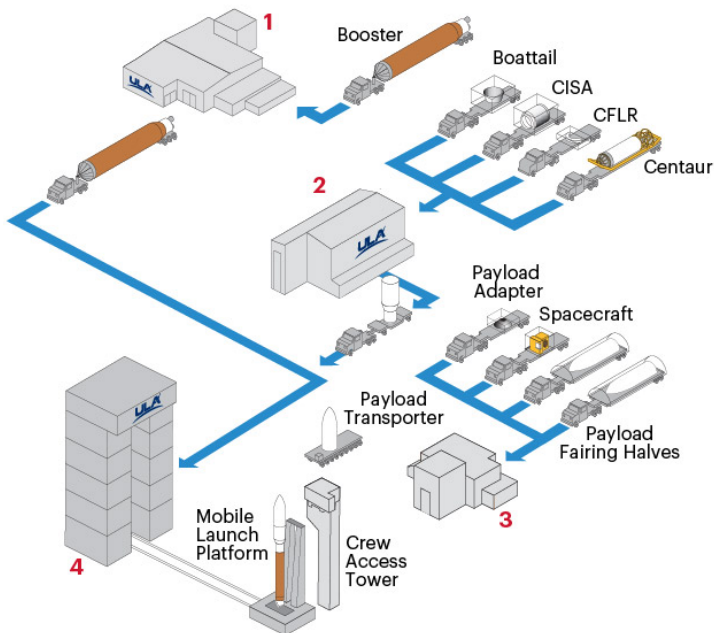
Event	Time (hr:min:sec)
1 RD-180 Engine Ignition	-0:00:02.7
Liftoff (Thrust to Weight > 1)	0:00:01.1
Begin Pitch/Yaw Maneuver	0:00:17.8
Mach 1	0:01:21.0
Maximum Dynamic Pressure	0:01:27.7
2 Payload Fairing Jettison	0:03:33.7
3 Booster Engine Cutoff (BECO)	0:04:34.9
4 Atlas/Centaur Separation	0:04:40.9

**Cape Canaveral Space Force Station, FL**



**SPACE LAUNCH COMPLEX // PROCESSING**

Space Launch Complex-41, the East Coast home of the Atlas V rocket at Cape Canaveral Space Force Station in Florida, employs a “clean pad” concept of operations to ready launch vehicles and payloads for ascent into space. The rocket elements are assembled atop a Mobile Launch Platform inside the Vertical Integration Facility (VIF) located adjacent to the launch pad. The platform and fully stacked Atlas V then travel by rail approximately 1,800 feet northward from the VIF to the pad for the final countdown, fueling and liftoff. Complex 41 was constructed by the U.S. Force in the 1960s for the Titan rocket program. The site was rejuvenated in support of the Atlas V starting in the late 1990s.



**1. Advanced Spaceflight Operations Center (ASOC)**

- Launch Control Center
- Mission Director’s Center,
- Mission Support Teams,
- Launch Vehicle Horizontal Processing & Ordnance Installation

**2. Delta Operations Center (DOC)**

- Offline Vertical Integration (OVI):
- Interstage Adapters, Centaur,
- Boattail, Base Module & Centaur
- Forward Load Reactor Deck

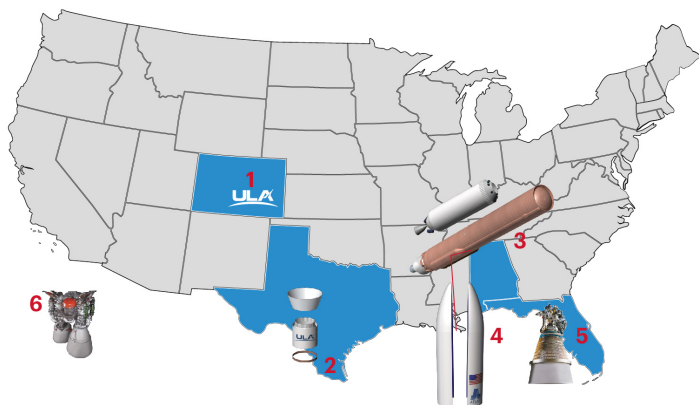
**3. Spaceflight Processing Facility**

- Spacecraft Processing,
- Testing & Encapsulation

**4. Vertical Integration Facility**

- Launch Vehicle Integration & Testing,
- Spacecraft Mate & Integrated Operations

**PRODUCTION**



- 1. Denver, CO**  
ULA Headquarters &  
Design Center Engineering
- 2. Harlingen, TX**  
Payload Adapter,  
Booster Adapter &  
Centaur Adapter Fabrication
- 3. Decatur, AL**  
Booster Fabrication & Final Assembly,  
Centaur Tank Fabrication & Final Assembly
- 4. Decatur, AL**  
5-m Payload Fairing  
Fabrication at Beyond Gravity
- 5. West Palm Beach, FL**  
RL10A-4-2 Engine Fabrication at  
Aerojet Rocketdyne
- 6. Khimki, Russia**  
RD-180 Engine Fabrication at NPO Energomash

## MEDIA // DOWNLOADS



## FLICKR ALBUM

([HTTPS://WWW.FLICKR.COM/PHOTOS/ULALAUNCH/ALBUMS/72177720311130008](https://www.flickr.com/photos/ulalaunch/albums/72177720311130008))



**GO PROTOFLIGHT!**

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LOWER ASINS WATER  
PUMP  
2000 GALLONS