MISSION

A United Launch Alliance (ULA) Atlas V 551 will launch two spacecraft to a geosynchronous transfer orbit. Liftoff will occur from Space Launch Complex-41 at Cape Canaveral Air Force Station, Florida.

Air Force Space Command (AFSPC)-11, is a multi-manifested mission. The forward spacecraft is referred to as CBAS (Continuous Broadcast Augmenting SATCOM) and the aft spacecraft is EAGLE (ESPA Augmented GEO Laboratory Experiment).

Managed by the Military Satellite Communications Directorate of the U.S. Air Force's Space and Missile Systems Center, the Continuous Broadcast Augmenting SATCOM (CBAS) satellite is a military satellite communications spacecraft destined for geosynchronous orbit to provide communications relay capabilities to support our senior leaders and combatant commanders. The mission of CBAS is to augment existing military satellite communications capabilities and broadcast military data continuously through space-based, satellite communications relay links.

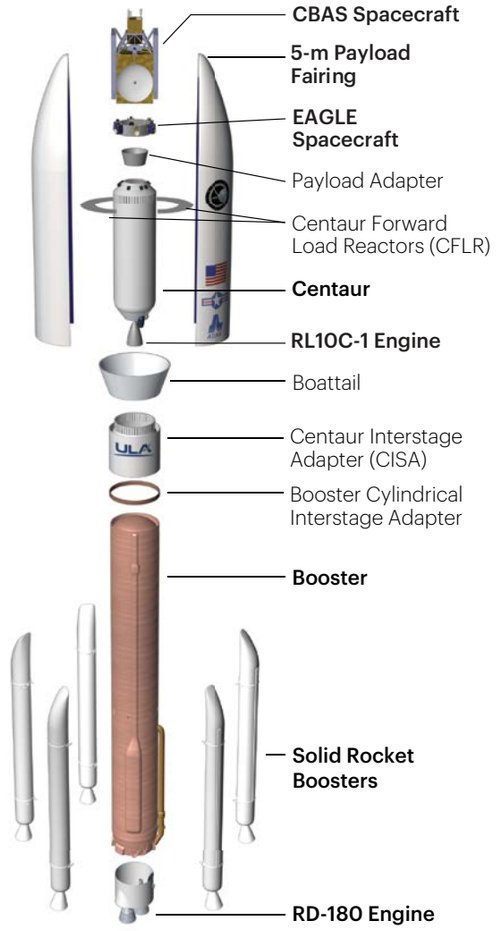
EAGLE is an Air Force Research Laboratory (AFRL) flight experiment program through the Integrated Experiments and Evaluation Division (RVE) of the AFRL Space Vehicles Directorate (AFRL/RV). The EAGLE spacecraft consists of an ESPA-based bus referred to as the EAGLE platform and a suite of payload experiments. Primary mission objective for the EAGLE platform is to demonstrate a maneuverable ESPA based space vehicle design which can accommodate up to six hosted or deployable payloads in GEO, and can be cost effectively replicated for multiple payload missions to either a GEO, LEO, or GTO orbit. EAGLE experiments will demonstrate enhanced capabilities in space system anomaly resolution and the capability to supplement ground based space situational awareness assets from a geosynchronous platform. EAGLE experiments will also provide new technologies to detect and identify system anomalies such as space weather events and characterize collision events due to micrometeorites.

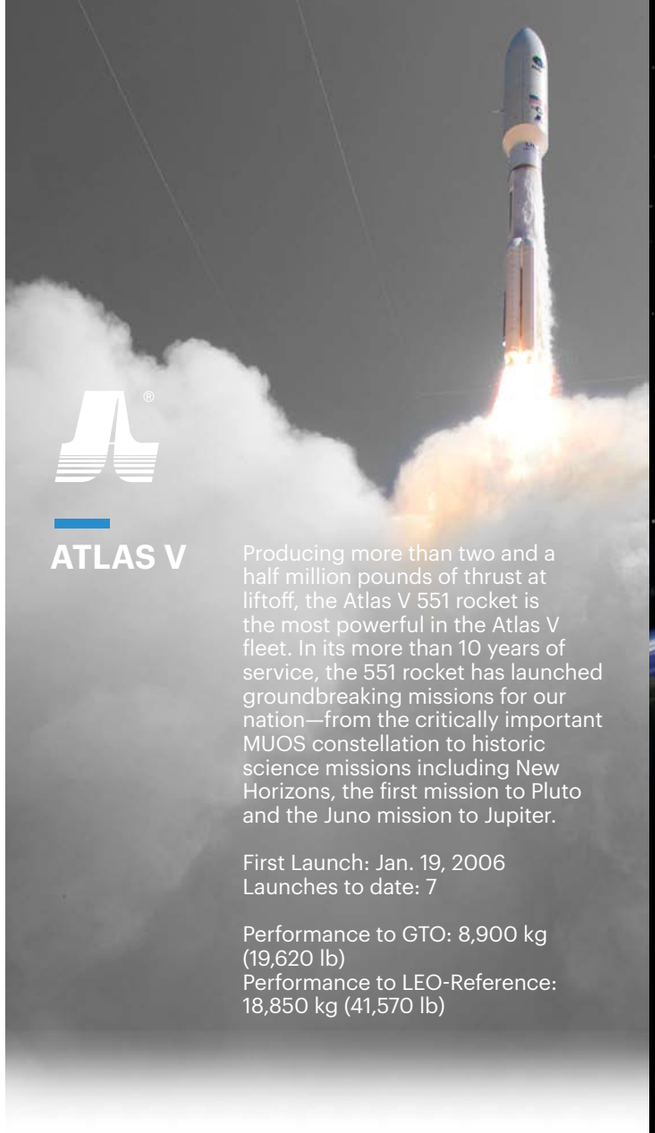
LAUNCH VEHICLE

Payload Fairing (PLF)
The spacecraft is encapsulated in a 5-m (17-ft) diameter short payload fairing. 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 satellite. The vehicle's height with the 5-m short PLF is approximately 197 ft.

Centaur
The Centaur second stage is 10 ft in diameter and 41.5 ft in length. Its propellant tanks are constructed of pressure-stabilized, 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 lb 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 in diameter and 106.5 ft 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 lb of thrust at sea level. Five solid rocket boosters (SRBs) generate the additional power required at liftoff, providing 348,500 lb of thrust. The Centaur avionics system, provides guidance, flight control and vehicle sequencing functions during the booster and Centaur phases of flight.





ATLAS V

Producing more than two and a half million pounds of thrust at liftoff, the Atlas V 551 rocket is the most powerful in the Atlas V fleet. In its more than 10 years of service, the 551 rocket has launched groundbreaking missions for our nation—from the critically important MUOS constellation to historic science missions including New Horizons, the first mission to Pluto and the Juno mission to Jupiter.

First Launch: Jan. 19, 2006
Launches to date: 7

Performance to GTO: 8,900 kg (19,620 lb)
Performance to LEO-Reference: 18,850 kg (41,570 lb)

MISSION SUCCESS

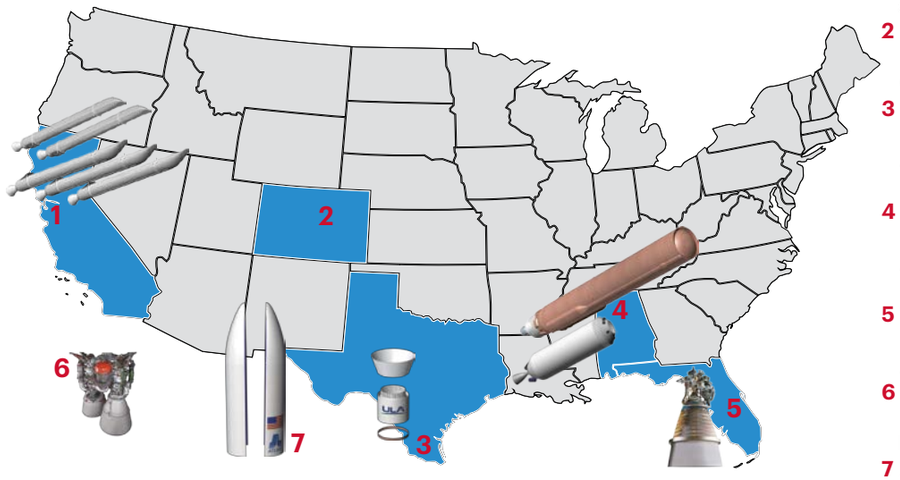
With more than a century of combined heritage, United Launch Alliance is the nation's most experienced and reliable launch service provider. ULA has successfully delivered more than 125 satellites to orbit that provide critical capabilities for troops in the field, aid meteorologists in tracking severe weather, enable personal device-based GPS navigation and unlock the mysteries of our solar system.

ulalaunch.com

MISSION OVERVIEW

ULA™

PRODUCTION



1 Sacramento, CA
Solid Rocket Booster Fabrication at Aerojet Rocketdyne

2 Denver, CO
ULA Headquarters & Design Center Engineering

3 Harlingen, TX
Payload Adapter, Booster Adapter & Centaur Adapter Fabrication

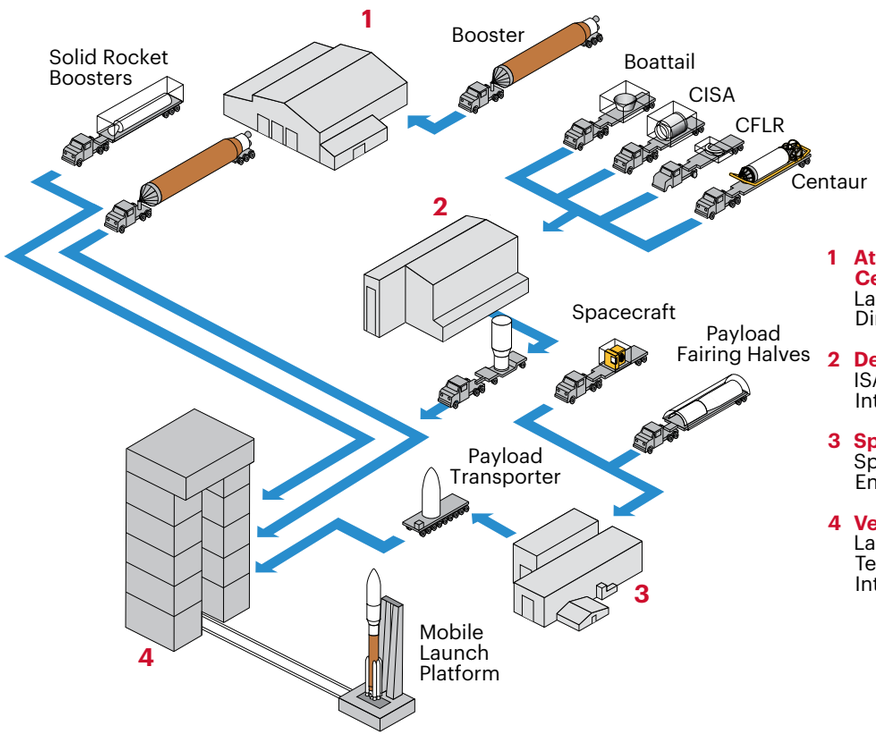
4 Decatur, AL
Booster Fabrication & Final Assembly, Centaur Tank Fabrication & Final Assembly

5 West Palm Beach, FL
RL10C-1 Engine Fabrication at Aerojet Rocketdyne

6 Khimki, Russia
RD-180 Engine Fabrication at NPO Energomash

7 Zurich, Switzerland
5-m Payload Fairing Fabrication at RUAG Space

SPACE LAUNCH COMPLEX-41 PROCESSING



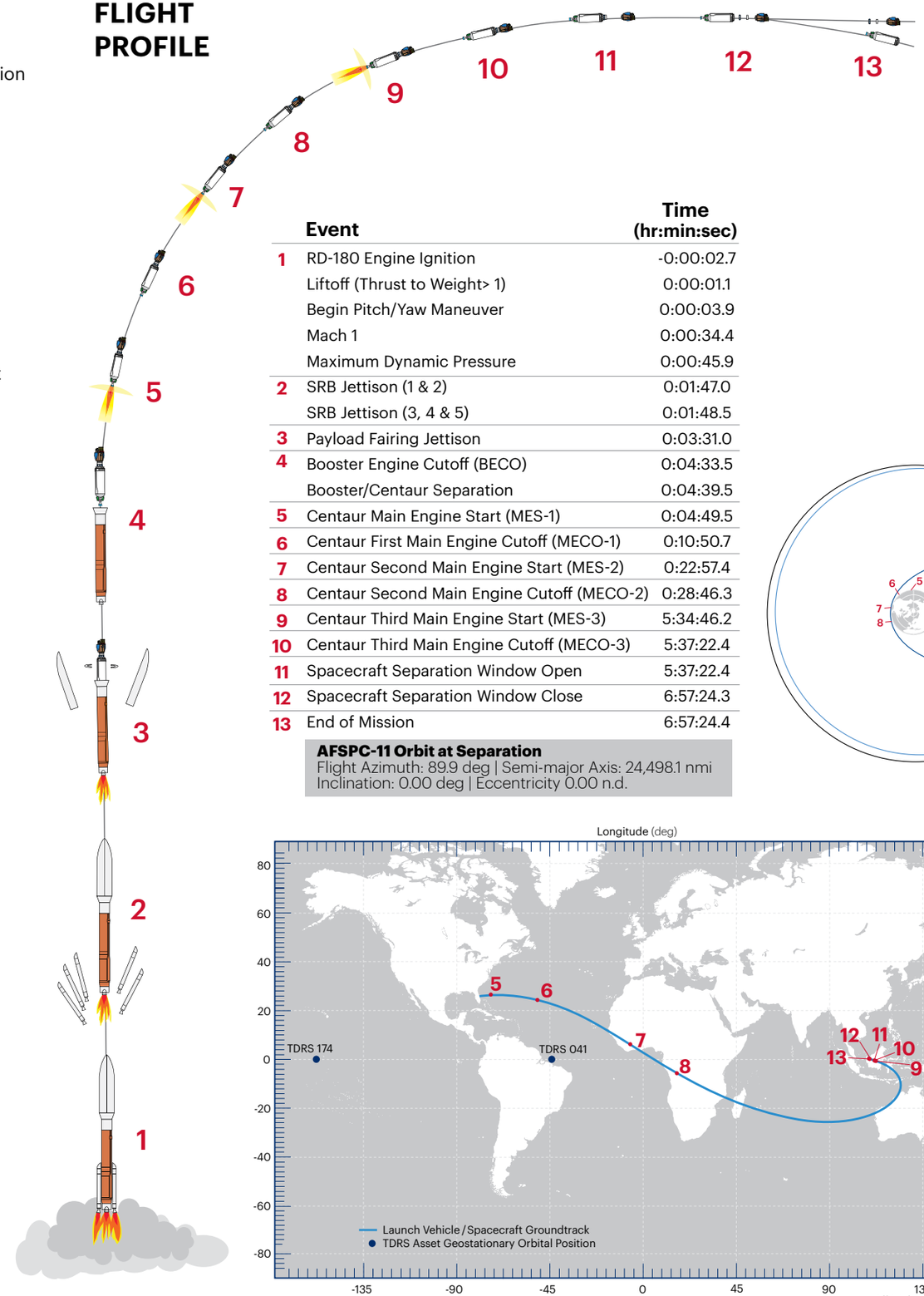
1 Atlas Spaceflight Operations Center (ASOC)
Launch Control Center & Mission Director's Center

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



	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	0:00:03.9
	Mach 1	0:00:34.4
	Maximum Dynamic Pressure	0:00:45.9
2	SRB Jettison (1 & 2)	0:01:47.0
	SRB Jettison (3, 4 & 5)	0:01:48.5
3	Payload Fairing Jettison	0:03:31.0
4	Booster Engine Cutoff (BECO)	0:04:33.5
	Booster/Centaur Separation	0:04:39.5
5	Centaur Main Engine Start (MES-1)	0:04:49.5
6	Centaur First Main Engine Cutoff (MECO-1)	0:10:50.7
7	Centaur Second Main Engine Start (MES-2)	0:22:57.4
8	Centaur Second Main Engine Cutoff (MECO-2)	0:28:46.3
9	Centaur Third Main Engine Start (MES-3)	5:34:46.2
10	Centaur Third Main Engine Cutoff (MECO-3)	5:37:22.4
11	Spacecraft Separation Window Open	5:37:22.4
12	Spacecraft Separation Window Close	6:57:24.3
13	End of Mission	6:57:24.4

AFSPC-11 Orbit at Separation
Flight Azimuth: 89.9 deg | Semi-major Axis: 24,498.1 nmi
Inclination: 0.00 deg | Eccentricity 0.00 n.d.

All Values Approximate