ATLAS V SBIRS GEO FLIGHT 3 MISSION

A United Launch Alliance (ULA) Atlas V 401 rocket will launch the third Space Based Infrared System (SBIRS) satellite to geosynchronous transfer orbit. Liftoff will occur from Space Launch Complex-41 at Cape Canaveral Air Force Station, FL.

The Space Based Infrared System is considered one of the nation's highest priority space programs and is designed to provide global, persistent, infrared surveillance capabilities to meet 21st century demands in four national security mission areas:

Missile Warning
Reliable, unambiguous, timely and accurate warning for theater and strategic missile launches.

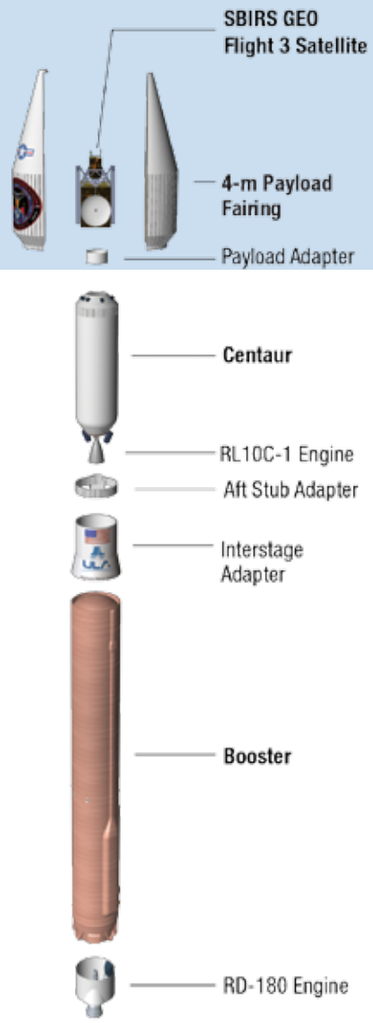

Image Courtesy of Lockheed Martin

Missile Defense
Delivery of critical information supporting the effective operation of missile defense systems.

Technical Intelligence
Ability to characterize infrared (IR) event signatures, phenomenology and threat performance data.

Battlespace Awareness
Delivery of comprehensive IR data to help characterize battlespace conditions.

The SBIRS team is led by the Remote Sensing Systems Directorate at the U.S. Air Force Space and Missile Systems Center. Lockheed Martin is the prime contractor, with Northrop Grumman as the payload integrator. Air Force Space Command operates the SBIRS system.



Payload Fairing (PLF)
The SBIRS satellite is encapsulated in the 4-m (14-ft) 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 194 ft.

Centaur
The Centaur second stage is 10 ft in diameter and 41.5 ft long. Its propellant tanks are constructed of pressure-stabilized, corrosion resistant stainless steel. Centaur is a liquid hydrogen/liquid oxygen- (cryogenic-) fueled vehicle. It uses a single RL10C-1 engine producing 22,900 lb of thrust. The cryogenic tanks are insulated with a combination of helium-purged insulation blankets, radiation shields, and spray-on foam insulation (SOFI). The Centaur forward adapter (CFA) provides the structural mountings for the fault-tolerant avionics system and the structural and electronic interfaces with the spacecraft.

Booster
The Atlas V booster is 12.5 ft in diameter and 106.5 ft long. The booster's tanks are structurally stable and constructed of isogrid aluminum barrels, spun-formed aluminum domes and intertank skirts. Atlas 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. The Atlas V booster is controlled by the Centaur avionics system which provides guidance, flight control and vehicle sequencing functions during the booster and Centaur phases of flight.

ATLAS V 401

The Atlas V 401 rocket has become the workhorse of the Atlas V fleet, delivering about half of all missions to date. In its more than 14 years of service, the 401 has delivered a diverse set of missions to orbit including national security, science and exploration and commercial as well as International Space Station resupply.

First Launch: Aug. 21, 2002
Launches to Date: 33

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

ATLAS®

ULA™

America's Ride to Space

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 110 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.

Join the conversation:

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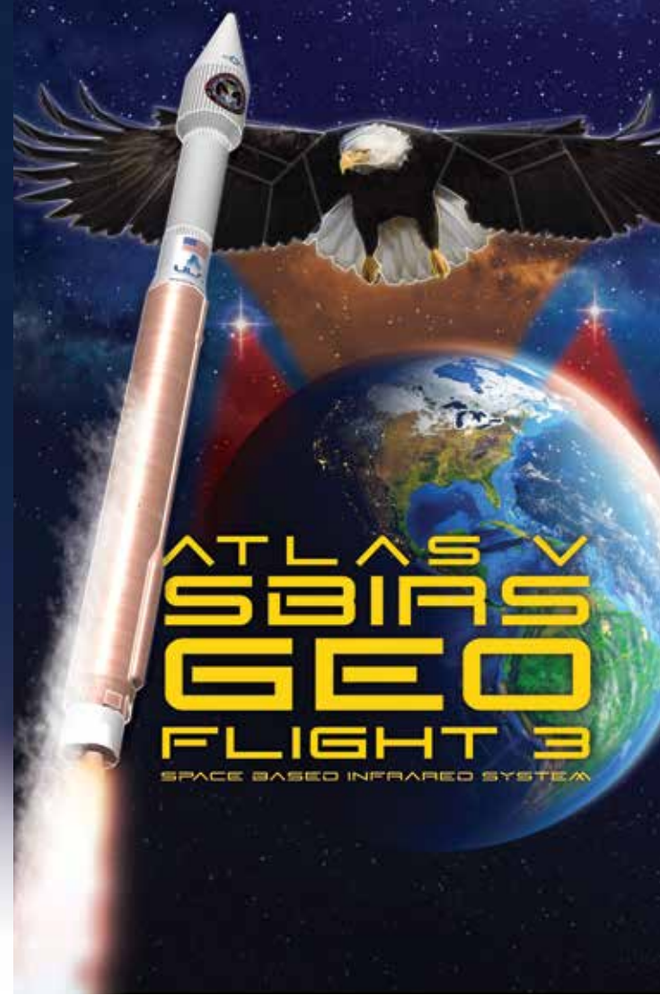

MISSION OVERVIEW

– 69th Atlas V Launch
– 116th ULA Launch

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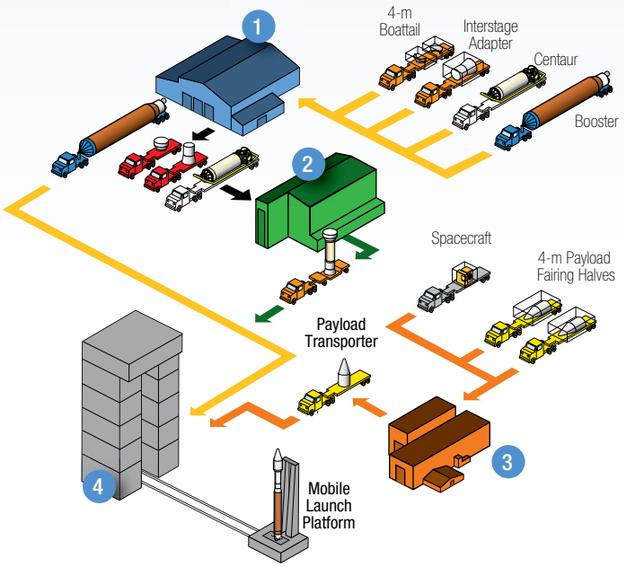
ATLAS V PRODUCTION AND LAUNCH

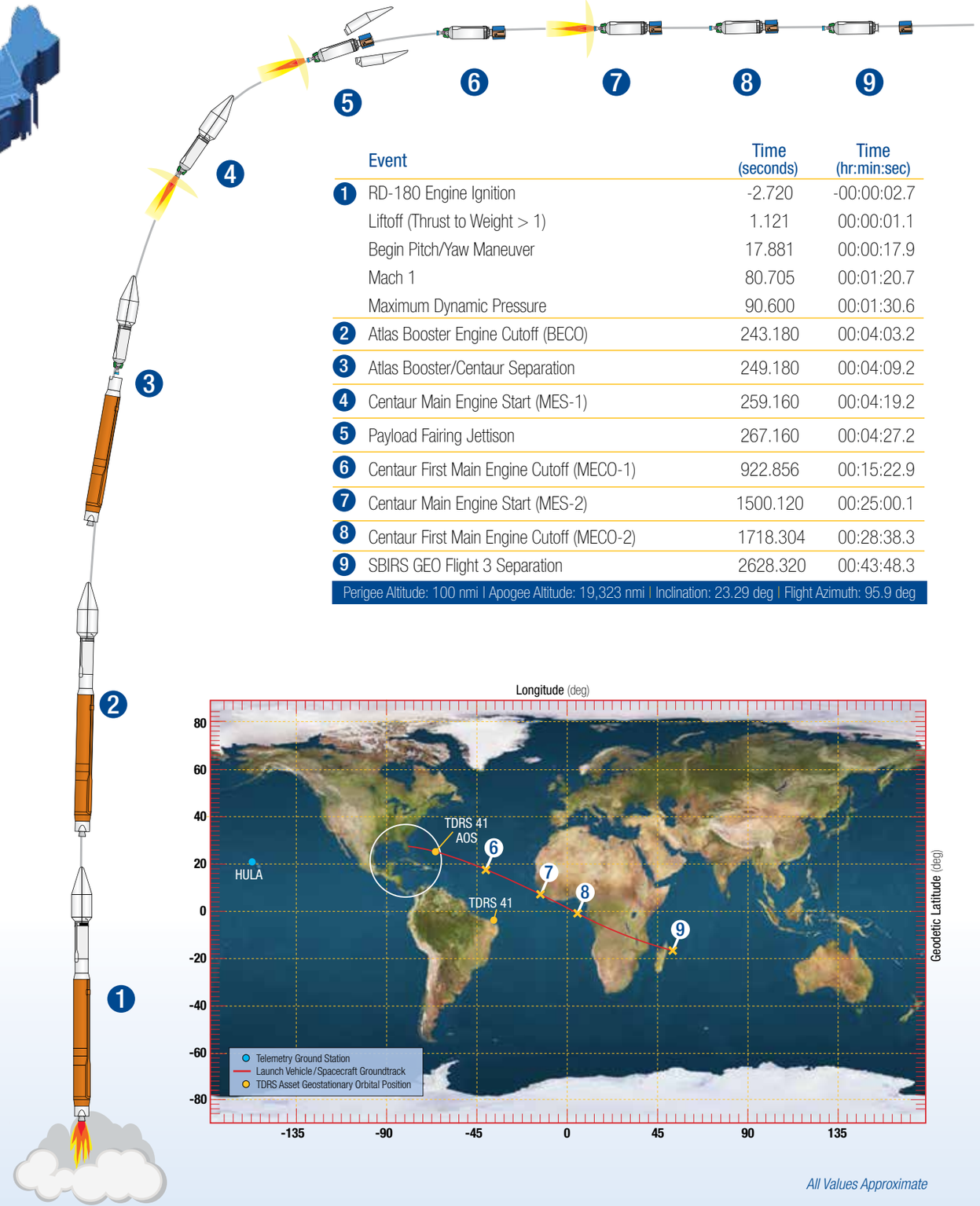
1. **Denver, CO**
   - ULA Headquarters & Design Center Engineering
2. **Harlingen, TX**
   - Payload Fairing, Boattail, Centaur Forward Adapter, Aft Stub Adapter & Launch Vehicle Adapter Fabrication
3. **Decatur, AL**
   - Booster Fabrication & Final Assembly, Centaur Tank Fabrication & Centaur Final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

1. **Atlas Spaceflight Operations Center (ASOC)** | Launch Control Center and Mission Director's Center
2. **Delta Operations Center** | ISA, Centaur, Boattail Vertical Integration
3. **Spacecraft Processing Facility** | Spacecraft processing, testing and encapsulation
4. **Vertical Integration Facility** | Launch vehicle integration and testing, spacecraft mate and integrated operations



1. **Vertical Integration Facility** (VIF) (See inset)
2. **Bridge Crane Hammerhead**
3. **Bridge Crane**
4. **Launch Vehicle**
5. **Mobile Launch Platform** (MLP)
6. **Centaur LO_2 Storage**
7. **High Pressure Gas Storage**
8. **Booster LO_2 Storage**
9. **Pad Equipment Building** (PEB)
10. **Pad ECS Shelter**

MISSION PROFILE AND GROUND TRACE



	Event	Time (seconds)	Time (hr:min:sec)
1	RD-180 Engine Ignition	-2.720	-00:00:02.7
	Liftoff (Thrust to Weight > 1)	1.121	00:00:01.1
	Begin Pitch/Yaw Maneuver	17.881	00:00:17.9
	Mach 1	80.705	00:01:20.7
	Maximum Dynamic Pressure	90.600	00:01:30.6
2	Atlas Booster Engine Cutoff (BECO)	243.180	00:04:03.2
3	Atlas Booster/Centaur Separation	249.180	00:04:09.2
4	Centaur Main Engine Start (MES-1)	259.160	00:04:19.2
5	Payload Fairing Jettison	267.160	00:04:27.2
6	Centaur First Main Engine Cutoff (MECO-1)	922.856	00:15:22.9
7	Centaur Main Engine Start (MES-2)	1500.120	00:25:00.1
8	Centaur First Main Engine Cutoff (MECO-2)	1718.304	00:28:38.3
9	SBIRS GEO Flight 3 Separation	2628.320	00:43:48.3

Perigee Altitude: 100 nmi | Apogee Altitude: 19,323 nmi | Inclination: 23.29 deg | Flight Azimuth: 95.9 deg

All Values Approximate