



ATLAS V
OTV-3
X-37B

MISSION OVERVIEW | SLC-41
CCAFS, FL



United Launch (ULA) Alliance is proud to support the Air Force Rapid Capabilities Office (RCO) with the third launch of the Orbital Test Vehicle (OTV).

The OTV, also known as the X-37B, supports space experimentation, risk reduction and concept of operations (CONOPS) development for long duration and reusable space vehicle technologies.

The ULA team is focused on attaining Perfect Product Delivery for the OTV-3 mission, which includes a relentless focus on mission success (the perfect product) and also excellence and continuous improvement in meeting all of the needs of our customers (the perfect delivery).

My thanks to the entire ULA team and our mission partners for their hard work and commitment to mission success, and to the RCO for selecting ULA to launch this groundbreaking program.

Go Atlas, Go Centaur, Go OTV!

A handwritten signature in black ink that reads "J. Spornick".

Jim Spornick

Vice President, Mission Operations



ATLAS V 501 LAUNCH VEHICLE | Overview

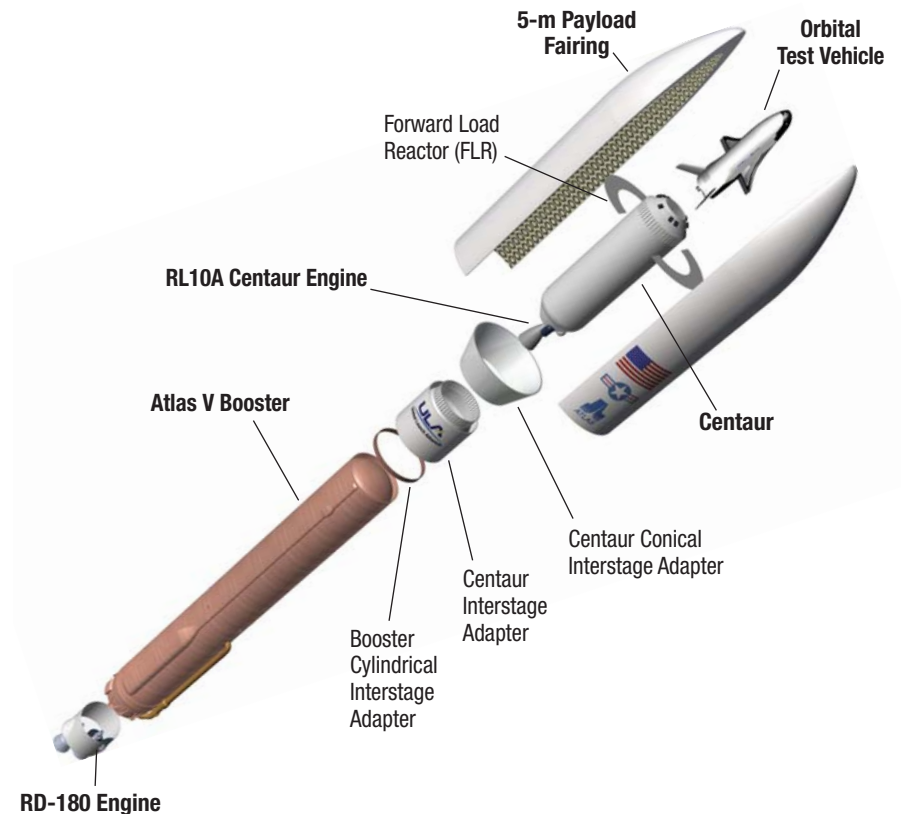
The Atlas V 501 configuration consists of a single Atlas V booster stage, the Centaur upper stage, and a 5-m diameter payload fairing (PLF).

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 inter-tank 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 that provides guidance, flight control, and vehicle sequencing functions during the booster and Centaur phases of flight.

The Centaur upper 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 liquid hydrogen/liquid oxygen- (cryogenic-) fueled vehicle. It uses a single RL10A-4-2 engine producing 22,300 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 electrical interfaces with the spacecraft.

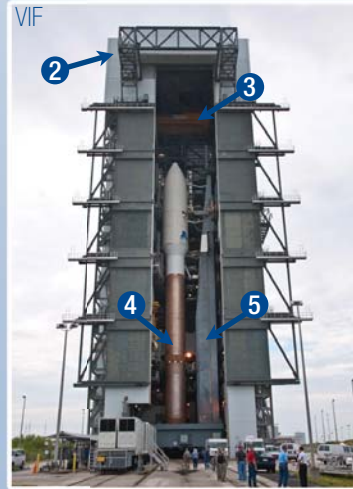
The OTV-3 payload is encapsulated in the Atlas V 5-m diameter medium PLF. The PLF is a sandwich composite structure made with a vented aluminum-honeycomb core and graphite-epoxy face sheets. The bisector (two-piece shell) PLF encapsulates both the Centaur and the spacecraft, which separates using a debris-free pyrotechnic actuating system. Payload clearance and vehicle structural stability are enhanced by the all-aluminum Centaur forward load reactor (CFLR), which centers the PLF around the Centaur upper stage and shares payload shear loading. The vehicle's height with the 5-m short PLF is approximately 196 ft.

ATLAS V 501 LAUNCH VEHICLE | Expanded View



SPACE LAUNCH COMPLEX 41 (SLC-41) | Overview

- 1 Vertical Integration Facility (VIF)
(See inset)
- 2 Bridge Crane Hammerhead
- 3 Bridge Crane
- 4 Launch Vehicle
- 5 Mobile Launch Platform (MLP)
- 6 Launch Vehicle
- 7 Centaur LO₂ Storage
- 8 High Pressure Gas Storage
- 9 Booster LO₂ Storage
- 10 Pad Equipment Building (PEB)
- 11 Pad ECS Shelter



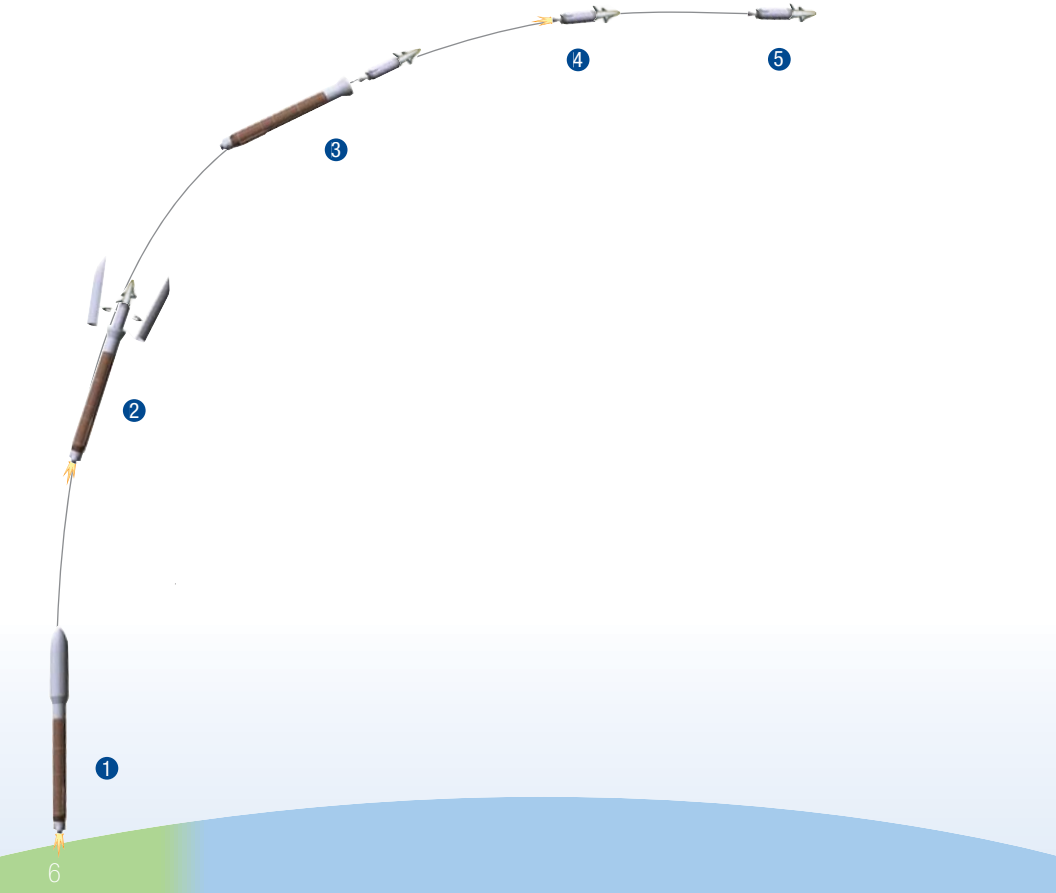
Atlas V OTV-3

ATLAS V OTV-3 | Mission Overview

Developed by the United States Air Force, the X-37B OTV is the United States' newest and most advanced re-entry spacecraft. Objectives of the autonomous, unmanned space test platform include space experimentation, risk reduction and CONOPS development for long duration and reusable space vehicle technologies. The Boeing Company is the prime contractor for the OTV program and the Air Force Rapid Capabilities Office is leading the initiative with continued participation by NASA.

Key objectives of the OTV program include demonstration and validation of fault tolerant, autonomous re-entry and landing, lightweight high temperature structures and landing gear, thermal protection system, and lightweight electromechanical flight systems. OTV-3 will build upon the first two on-orbit demonstrations, expand the test envelope of the program and enhance the understanding of OTV capabilities and performance characteristics. Vandenberg Air Force Base (VAFB) will be the landing site.

FLIGHT PROFILE | Liftoff to Main Engine Cutoff



Atlas V OTV-3

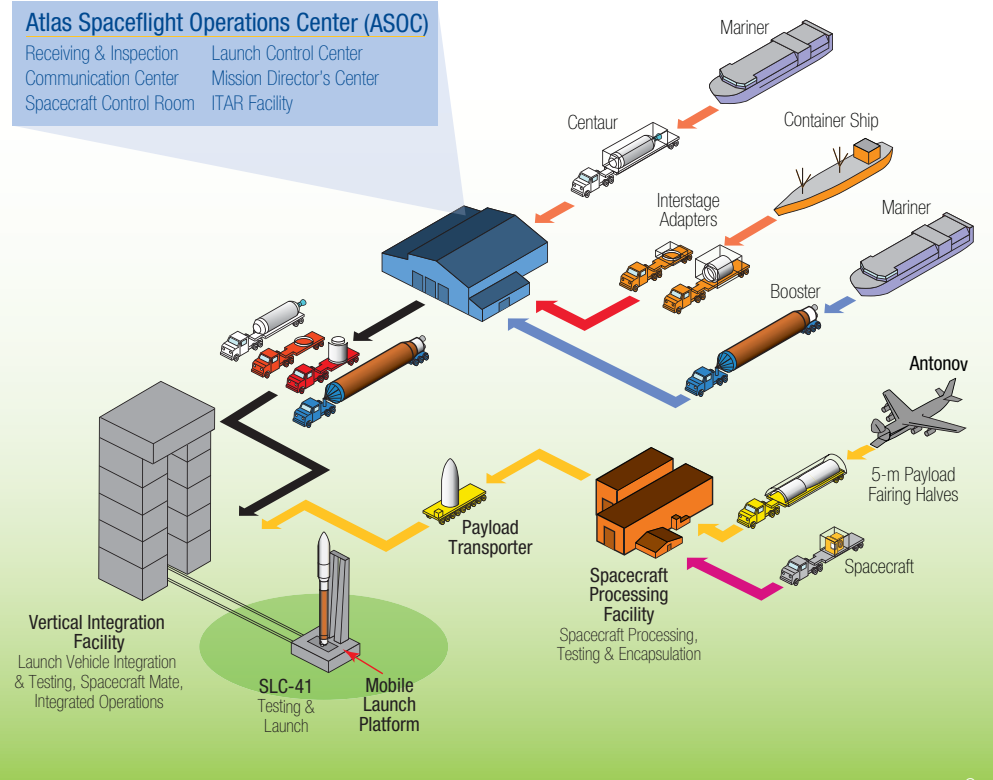
SEQUENCE OF EVENTS | Liftoff to Main Engine Cutoff

	Event	Time (seconds)	Time (hr:min:sec)
1	RD-180 Engine Ignition	-2.7	-00:00:02.7
	T=0 (Engine Ready)	0.0	00:00:00.0
	Liftoff (Thrust to Weight > 1)	1.1	00:00:01.1
	Full Thrust	2.1	00:00:02.1
	Begin Pitch/Yaw/Roll Maneuver	18.3	00:00:18.3
	Mach 1	83.1	00:01:23.1
	Maximum Dynamic Pressure	89.1	00:01:29.1
2	Payload Fairing Jettison	216.6	00:03:36.1
	Forward Load Reactor Jettison	221.6	00:03:41.6
3	Atlas Booster Engine Cutoff (BECO)	263.2	00:04:23.2
	Atlas Booster/Centaur Separation	269.2	00:04:29.2
4	Centaur First Main Engine Start (MES1)	279.2	00:04:39.2
5	Centaur First Main Engine Cutoff (MECO1)	1,054.5	00:17:34.5

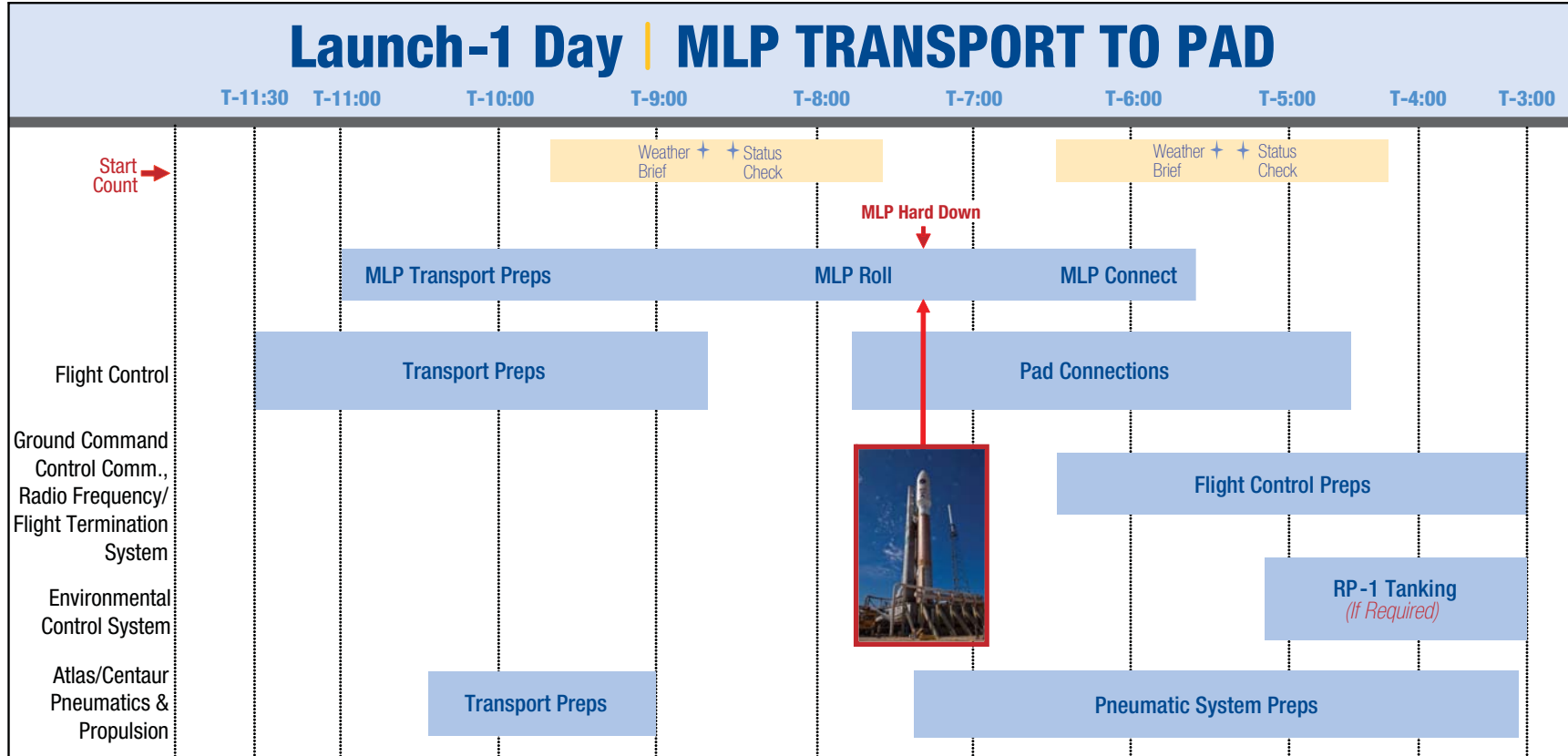
ATLAS V PRODUCTION & LAUNCH | Overview



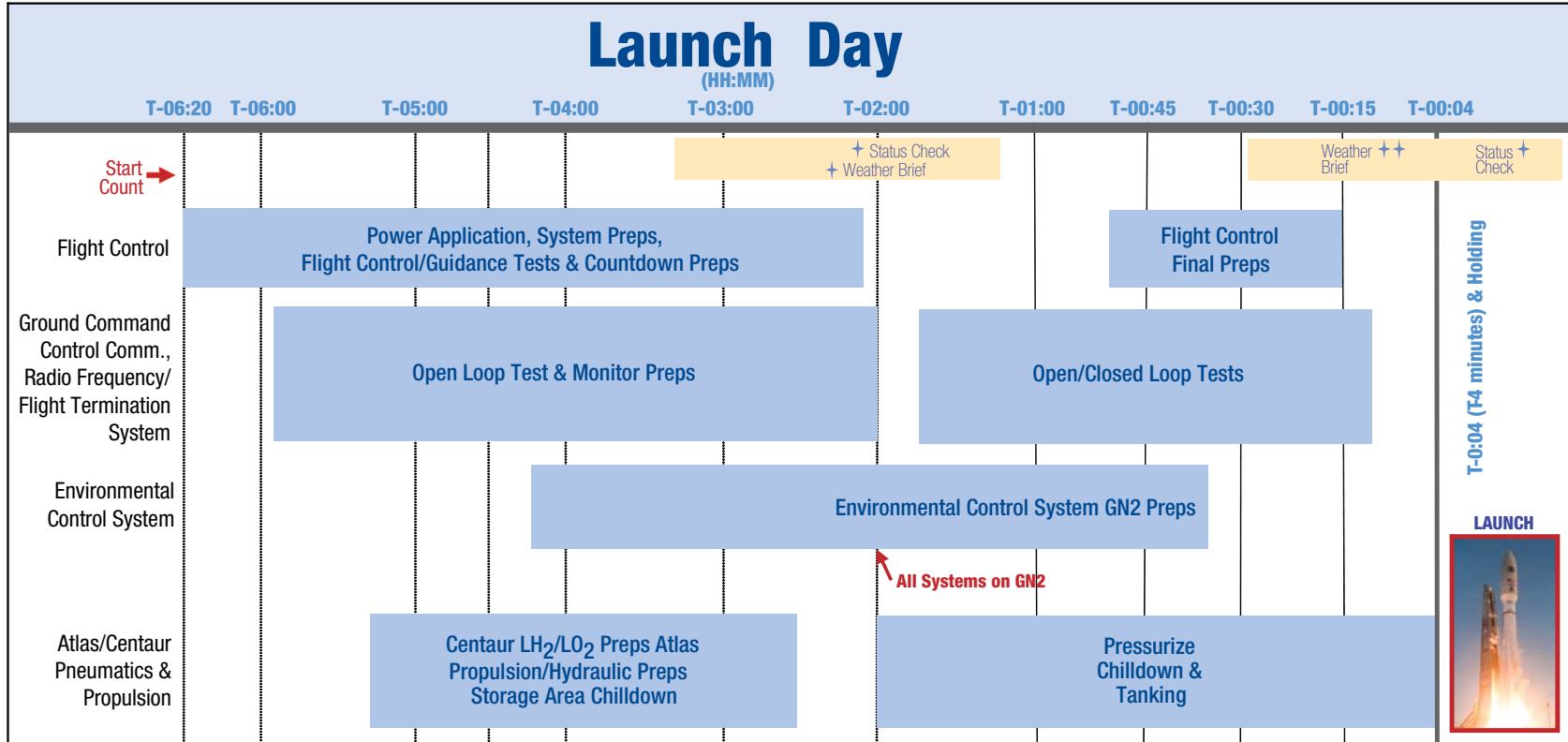
ATLAS V PROCESSING | Cape Canaveral

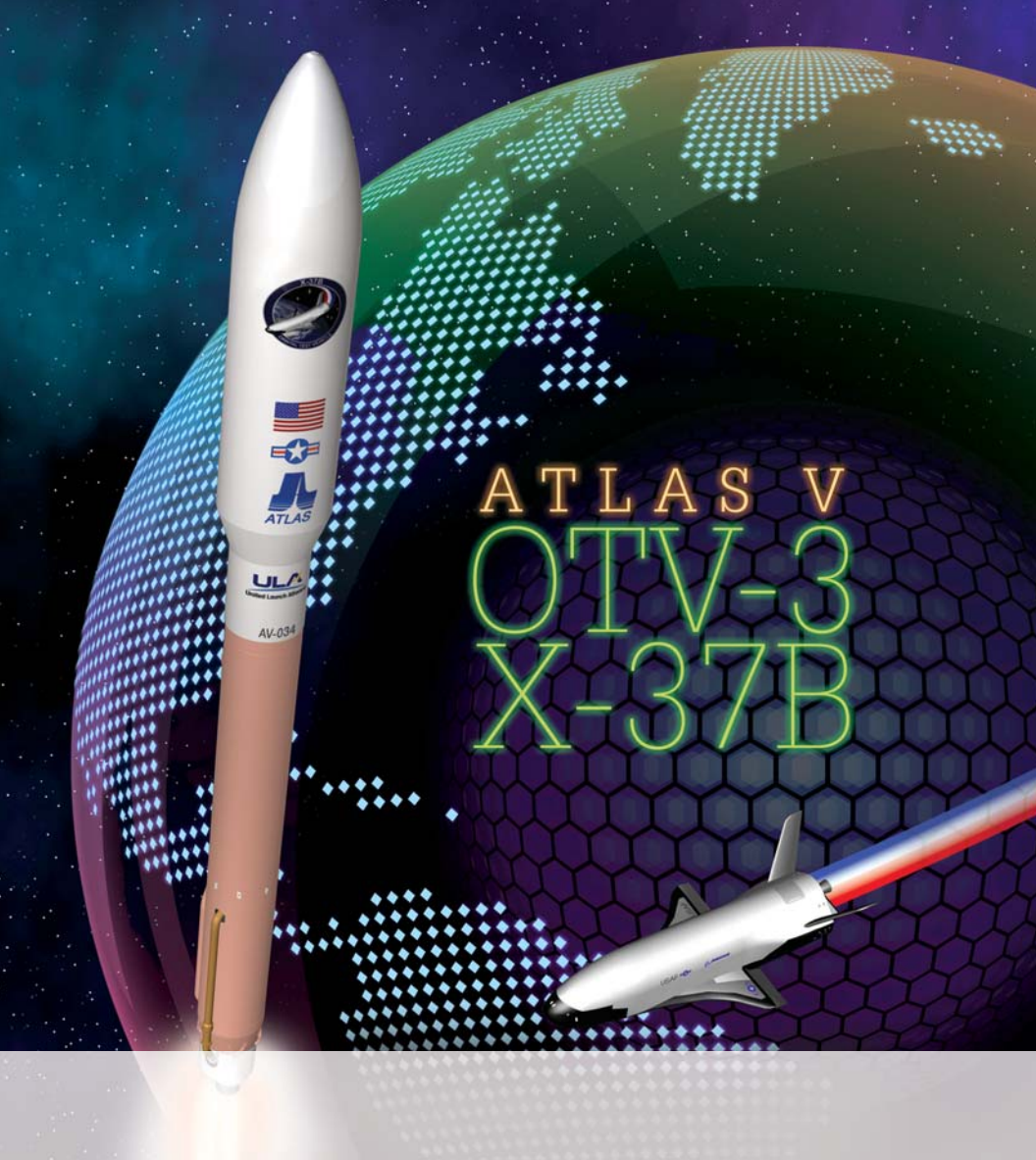


Atlas V 01V-3



COUNTDOWN TIMELINE | Launch Day





ATLAS V
OTV-3
X-37B

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