



FACT SHEET

U.S. Air Force Fact Sheet

ORBITAL TEST VEHICLE

Mission

The X-37B Orbital Test Vehicle will demonstrate a reliable, reusable, unmanned space test platform for the United States Air Force. Objectives of the OTV program include space experimentation, risk reduction and concept of operations development for reusable space vehicle technologies.



Features

The X-37B Orbital Test Vehicle (OTV) is the United States' newest and most advanced re-entry spacecraft. Based on NASA's X-37 design, the unmanned OTV is designed for vertical launch to Low Earth Orbit (LEO) altitudes where it can perform long duration space technology experimentation and testing. Upon command from the ground, the OTV autonomously re-enters the atmosphere, descends and lands horizontally on a runway. The OTV is the first vehicle since the Shuttle Orbiter with the ability to return experiments to Earth for further inspection and analysis.

Technologies to be tested include advanced guidance, navigation and control, thermal protection systems, avionics, high temperature structures and seals, conformal reusable insulation, and lightweight electromechanical flight systems. In addition, the X-37B Orbital Test Vehicle will demonstrate autonomous orbital flight, reentry and landing.

Background

By direction of the Under Secretary of Defense for Acquisition, Technology and Logistics and the Secretary of the Air Force, the Air Force Rapid Capabilities Office is leading the DoD's Orbital Test Vehicle initiative. The Air Force OTV effort leverages extensive contractor and government investments in the X-37 program by the Air Force, NASA and the Defense Advanced Research Projects Agency (DARPA) to continue full-scale development and on-orbit testing of a long-duration, reusable space vehicle.

NASA's original X-37 program began in 1999 and ran until September 2004 when NASA transferred the program to DARPA. NASA envisioned building two vehicles, an Approach and Landing Test Vehicle (ALTV) and an Orbital Vehicle. The ALTV was designed to validate flight dynamics and

extend the flight envelope beyond the low speed/low altitude tests conducted by NASA from 1998 through 2001 on the X-40A, a sub-scale version of the X-37 developed by the AF Research Labs. DARPA completed the ALTV portion of the X-37 program in September 2006 by successfully executing a series of captive carry and free flight tests from the Scaled Composites White Knight aircraft. NASA's X-37 Orbital Vehicle was never built; but its design was the starting point for the Air Force's X-37B Orbital Test Vehicle program.

The Air Force plans to conduct the first orbital test flight of the X-37B Orbital Test Vehicle in FY08 with a launch from Cape Canaveral AFS on an Atlas V expendable launch vehicle. Re-entry and recovery activities will be conducted at either Vandenberg AFB or Edwards AFB.

General Characteristics

Primary Mission: Space Technology Experimentation/Test

Prime Contractor: Boeing

Height: 9 ft 6 in

Length: 29 ft 3 in

Wingspan: 14 ft 11 in

Launch Weight: 11,000 lb

Power: Gallium Arsenide Solar Cells with Lithium-Ion Batteries

Launch Vehicle: Lockheed-Martin Atlas V (501)

Point of Contact

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