



Fact Sheet

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Washington, DC 20301-7100

The Airborne Laser Test Bed

The Airborne Laser Test Bed (ALTB) is being developed as an advanced platform for the Department of Defense's directed energy research program. Using two solid state lasers and a megawatt-class Chemical Oxygen Iodine Laser housed aboard a modified Boeing 747-400 Freighter, the ALTB uses directed energy to demonstrate the potential of using directed energy as a viable technology against ballistic missiles.



Firing Sequence

- 1) The Airborne Laser Test Bed uses six infrared sensors to detect the exhaust plume of a boosting missile.
- 2) Once a target is detected, a kilowatt-class solid state laser, the Track Illuminator, tracks the missile and determines a precise aim point.
- 3) The Beacon Illuminator, a second kilowatt-class solid state laser, then measures disturbances in the atmosphere, which are corrected by the adaptive optics system to accurately point and focus the high energy laser at its intended target.
- 4) Using a very large telescope located in the nose turret, the beam control/fire control system focuses the megawatt-class COIL beam onto a pressurized area of the boosting missile, holding it there until the concentrated energy compromises the structural integrity of the threat missile causing it to fail.

Development

- The High Energy Laser is now integrated on the aircraft with laser subsystem activation. The program achieved return to flight in April 2009 when it kicked-off its High Power System Integration (HPSI) flight test program. This flight test series verified correct operation of target tracking and atmospheric compensation of the upgraded Beam Control system using the low power energy lasers.
- The Beam Control system has been demonstrated against the first two live target tracking tests on June 6 and 13, 2009. These tests mark the first time ALTB demonstrated a complete low-power engagement sequence against a boosting target in flight.
- Using the low power energy lasers, the aircraft successfully acquired, tracked, provided atmospheric compensation and simulated the directed energy kill sequence against an instrumented boosting missile target August 10, 2009. This test was the first time laser performance data was collected at the target missile.
- The ALTB's COIL successfully fired in flight August 18, 2009, validating the High Energy Laser's (HEL) ability to fire in an airborne environment. The laser fired into an onboard calorimeter - a test instrument used to capture the laser energy and measure performance characteristics of the beam.
- On January 10, 2010, the ALTB HEL successfully acquired, tracked, provided atmospheric compensation and engaged an instrumented rocket. This phase of COIL testing represents a major step towards ALTB's planned lethal demonstration against a boosting missile later this year.
- There are no plans to build additional ALTB aircraft. Research and development of directed energy technology and its potential application for ballistic missile defense will continue within the Department of Defense.