



The Airborne Laser

The Airborne Laser is being developed as an integral part of the Ballistic Missile Defense System designed to protect the United States, its allies, and its deployed troops from a ballistic missile attack. Using two solid state lasers and a megawatt-class Chemical Oxygen Iodine Laser (COIL) housed aboard a modified Boeing 747-400 Freighter, the Airborne Laser's mission is to detect, track, target, and destroy ballistic missiles shortly after launch during the boost-phase. Its revolutionary use of directed energy makes it unique among the United States' airborne weapon systems, with a potential to attack multiple targets at the speed of light with a range of hundreds of kilometers.



Operational Sequence

- 1) The Airborne Laser uses six strategically placed 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 causes the missile to break apart.

Development

- Low Power System Integration-active (LPSI-a) flight test series successfully completed on Aug. 23, 2007. All three of the aircraft's laser systems used to detect, track, and engage a target mounted on a test aircraft with a low-power laser serving as a surrogate for the high-power laser. Key firsts for the program during LPSI-a flight test series:
 - First in-flight atmospheric compensation between two airborne platforms
 - First active tracking of a non-cooperative airborne target
 - First successful tracking of a vertically dynamic target
- The High Energy Laser is now integrated on the aircraft with laser subsystem activation initiated in May 2008. The program will conduct High Power System Integration (HPSI) ground testing through the fall of 2008. Once ground testing is completed, the aircraft will undergo flight testing prior to the lethal demonstration against a boosting missile planned for 2009.