

Boeing Demonstrates Aerospace Relay Mirror System-- Presentation (Postprint)

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Technical Paper

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ST. LOUIS, Aug. 07, 2006 -- Boeing [NYSE: BA] and the U.S. Air Force achieved major progress in their relay system development program by successfully redirecting a laser beam to a target using their Aerospace Relay Mirror System (ARMS).

The demonstration, conducted recently at U.S. Air Force Research Laboratory facilities at Kirtland Air Force Base, N.M., used a half-scale version of a strategic relay mirror payload that ultimately could be packaged and carried to high altitudes on airships, long-endurance aircraft or spacecraft. The payload could be used with airborne, ground-based or sea-based high-energy lasers to destroy ballistic missiles and other targets. Relay mirror systems will greatly enhance laser weapon system performance by reducing the atmosphere's effects on laser beams and extending their range beyond line of sight.

"This demonstration is a major step in the development of relay technology because it shows that a relay mirror system can receive laser energy and redirect it to a target, extending the laser's range," said Pat Shanahan, vice president and general manager of Boeing Missile Defense Systems.

During the demonstration, Boeing suspended the 15-foot-high ARMS hardware 100 feet above the ground using a mechanical crane. Testers fired a low-power, sub-kilowatt-class ground laser from several miles away at one of the ARMS payload's two 75-centimeter mirrors. The other mirror relayed the non-lethal beam to a ground-based target board about two miles away from the ARMS.

Boeing began its ARMS work four years ago under a \$20 million Air Force contract. Now that the work is completed, the Air Force plans to use the ARMS hardware to establish a permanent test bed for relay system technology development.

Boeing Missile Defense Systems conducts its relay system work through its Directed Energy Systems unit, formerly called Laser & Electro-Optical Systems.

A unit of The Boeing Company, Boeing Integrated Defense Systems is one of the world's largest space and defense businesses. Headquartered in St. Louis, Boeing Integrated Defense Systems is a \$30.8 billion business. It provides network-centric system solutions to its global military, government and commercial customers. It is a leading provider of intelligence, surveillance and reconnaissance systems; the world's largest military aircraft manufacturer; the world's largest satellite manufacturer; a foremost developer of

advanced concepts and technologies; a leading provider of space-based communications; the primary systems integrator for U.S. missile defense; NASA's largest contractor; and a global leader in sustainment solutions and launch services.

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