

## **Boeing Laser Communications Demonstration Validates a Critical Element of TSAT Network**

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Boeing [NYSE: BA] has demonstrated the ability of the Transformational Satellite Communications System (TSAT) to link from one satellite to another using a laser beam in a simulated space environment. The demonstration, performed in cooperation with the Massachusetts Institute of Technology Lincoln Laboratories (MIT/LL), marked the third of four planned laser communication milestone demonstrations.

TSAT is designed to provide the secure, long-haul, high capacity backbone and full Internet-like functionality for U.S. forces to ensure that they have information superiority in any situation throughout the world.

MIT/LL tested the Boeing hardware for performance and compatibility with the U.S. government's new Lasercom Interoperability Standard, as well as the performance readiness of Boeing's TSAT optical modems. MIT/LL rated the free-space optical link operation at speeds of up to 40 gigabits per second, which enables the broadcast of 3,000 simultaneous high-definition TV channels, or about 15,000 regular TV channels, in each direction.

"We are laying the groundwork for our customer's vision of providing secure, high capacity network connectivity between U.S. forces worldwide, whether fixed, deployed or mobile, and their command, intelligence and support functions back home," said John Peterson, Boeing TSAT Space Segment program director. "In these milestone demonstrations, we showed the Military Satellite Communications (MILSATCOM) user community that it can have a 10 to 40 gigabit per second TSAT backbone. In the decades ahead, laser communications will be a key technology and an enabler for missions of vital importance to U.S. security and a major element of the U.S. Department of Defense's vision for TSAT."

Equally critical to the success of Lasercom on TSAT is the Pointing, Acquisition and Tracking (PAT) subsystem, which enables the effective use of Lasercom's beam, providing significant advantages in transmitted power requirements. The PAT subsystem uses Ball Aerospace Technology Corp.'s proven, robust algorithms and beam control technology. The demonstration verified Ball's design approach and technology to be consistent with the Lasercom Interoperability Standard, which fulfills another risk reduction objective for TSAT.

"The demonstration's success was the result of excellent teamwork by the entire MILSATCOM Joint Program Office-led government and industry team," said Peterson. "Establishing this level of performance and maturity in this phase of the program represents a significant risk reduction for the follow-on acquisition and operations phase. It is a testament to the U.S. Air Force's new satellite acquisition strategy and the engineering we have incorporated in the Lasercom terminal."

The Boeing team continues to meet the program's development and risk reduction milestones, while working to the government's acquisition strategy.

The MILSATCOM Joint Program Office and the National Reconnaissance Office co-sponsored the Lasercom demonstration. The Boeing team is working under a \$514 million U.S. Air Force contract for the risk reduction and system definition phase of the TSAT Space Segment program. The Air Force plans to select a TSAT Space Segment contractor in December 2007.

The results contained in this submission were generated in whole, or in part, through work supporting the MILSATCOM Joint Program Office.

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