Team ABL Successfully Completes Testing of Updated Laser Module

Team ABL -- the U.S. Air Force, Boeing, TRW and Lockheed Martin -- has taken another significant step toward deploying the Air Force's Airborne Laser (ABL) missile defense system by successfully completing the testing of the TRW-developed laser module that will serve as the technical foundation for the ABL's flight laser modules.

During a four-month long test program at TRW's Capistrano Test Site in Southern California, the flight weighted laser module-3 (FLM-3) exceeded by a significant margin the laser power and beam quality requirements of the operational ABL system, according to Col. Mike Booen, director of the Air Force's ABL program. Output power and beam quality are a measure of the laser's ability to put "energy on target" to destroy a boosting theater ballistic missile. The test program was completed on Aug. 26.

"Team ABL's success in defining and bringing the next generation ABL laser module on line in less than a year is a testament to the robust test program and maturity of the laser technology underpinning the ABL weapon system development," Booen said. "The FLM-3 test results provide the latest evidence from our extensive ABL test program that the system design is solid and that we're on course to put this revolutionary weapon system in the air in 2003."

According to Steve Toner, TRW's ABL program manager, the success with the FLM-3 stems largely from improvements that TRW made in the design of the components that regulate the flow and recirculation of chemical reactants through the laser. These hardware changes incorporate "lessons learned" from the extensive FLM test program conducted throughout the summer of 1998.

"We tested the FLM-3 under its full operating range -- from conditions representing its first shot from a 'fresh' chemical magazine to conditions representing its last shot from a 'spent' magazine," Toner explained. "Under all test scenarios, " he said, "the laser produced sufficient power to exceed by a significant margin the range requirements of an operational ABL system. We now know with certainty that our module design contains sufficient laser reactants to meet the ABL mission requirements while staying within the weight budget for the first ABL system."

The other significant characteristic of the test program, Toner added, was that TRW made all the critical FLM-3 power and beam quality measurements under hot, high pressure cavity conditions representative of actual ABL laser operating conditions. "We made every effort to make these tests as realistic as possible," he said, "because we're using the test results to 'freeze' our design."

Completion of the FLM-3 testing paves the way for Team ABL to finalize the design of the flight laser modules and begin manufacturing the first of six modules required for the first 747-based ABL system. Manufacturing of that first module is slated to begin early next year. Testing of the first flight laser module is scheduled for late next year.

The ABL weapon system will use a megawatt-class chemical oxygen iodine laser (COIL) mounted on a modified 747-400F freighter aircraft to shoot down theater ballistic missiles in their boost phase. It is the Department of Defense's choice for the boost phase intercept element of its theater missile defense architecture. ABL will protect civilian and key military assets from attack by missiles such as the Scuds used by Iraq during the Persian Gulf War.

Team ABL is in the third year of a $1.4 billion program definition and risk reduction contract with the Air Force Space & Missile Systems Center to design, produce, integrate and flight test the first prototype ABL demonstration system. The contract is scheduled to culminate in 2003 with a boost-phase shoot-down of a theater ballistic missile. The ABL engineering and manufacturing development (EMD) program is scheduled to begin in 2004.

Team ABL is led by Boeing, which has overall program management and systems integration responsibilities. The company also is developing the ABL battle management system and modifying the 747-400 aircraft. TRW, Redondo Beach, Calif., is building the laser and the related ground-support subsystem, while Lockheed Martin, Palo Alto, Calif., is developing the ABL target acquisition and beam control systems.

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