

Department of the Navy SBIR/STTR Transition Program

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NAVAIR 2020-839

Topic # N172-118

Laser Target and Analysis Board Development
Technology Service Corporation

WHO

SYSCOM: NAVAIR

Sponsoring Program: PMA-272
Tactical Aircraft Protection Systems

Transition Target: Distributed
Aperture Infrared Countermeasures
(DAIRCM) Airborne Laser Testing

TPOC:
(812)854-3615

Other transition opportunities:

Notes: The Laser Target Board (LTB) system will use an array of detector boxes mounted behind a reflective target array viewed by an infrared camera to measure the laser beam characteristics.

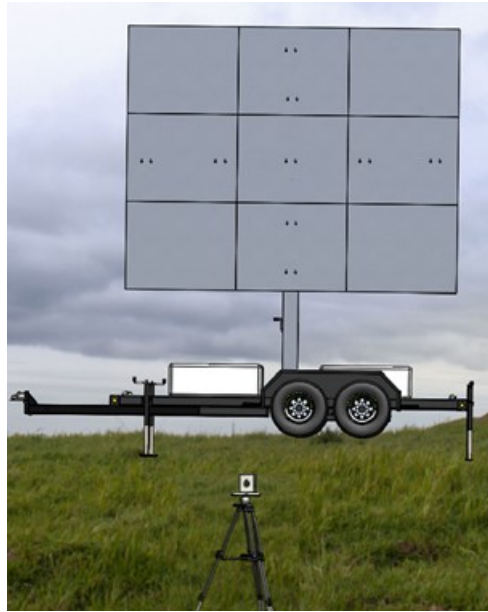


Image Courtesy of Technology Service Corporation

WHAT

Operational Need and Improvement: Many airborne laser systems are now being produced and fielded, such as the Air Force's Large Aircraft Infrared Countermeasures (LAIRCM) and Department of Navy (DoN) LAIRCM. There is a pressing need for a low-cost, near real-time evaluation system to verify proper performance of these systems in their operational environment. The LTB system fills the gap of self-sustained and rapidly deployable laser receiver target boards that can measure laser beam width, power, and pointing accuracy.

Specifications Required: The system shall be transportable for use in remote field test environments, and operate on 120 VAC power. The laser data shall be recorded and be immediately available for visual replay for quick-look test evaluation. The system shall measure laser characteristics including energy on target, beam diameter, beam pointing accuracy, pulse repetition interval (PRI) and pulse duty cycle.

Technology Developed: Technology Service Corporation (TSC) has developed a versatile Laser Target Board (LTB) system that is transportable for deployment at military test ranges across the country. The LTB system has high sample rate detectors and a camera to provide fine spatial detail of the laser beam. Detectors can be positioned to accommodate various beam sizes, and processing algorithms have been developed to extract the desired measurements from the data.

Warfighter Value: The LTB system tests airborne lasers at the real-mission operating ranges and environment to assure the warfighter that the laser countermeasures can effectively accomplish their self-protection mission. Laser pointing accuracy on the moving platform, including aircraft vibrational effects, are measured to verify adequate energy on target. Atmospheric effects on laser propagation can also be studied to improve beam-on-target accuracy.

WHEN

Contract Number: N68335-19-C-0203 **Ending on:** March 26, 2021

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Initial Lab Test	Low	Verify that detectors and camera have adequate sensitivity and dynamic range	4	August 2020
Initial System Integration	Low	Verify that integrated system works	5	November 2020
Prototype System Demonstration	Med	Show that prototype system meets specifications	6	March 2021

HOW

Projected Business Model: Our business model is to sell the LTB system, or similar systems based on the LTB technology directly to the Government. TSC has the in-house engineering capability needed to develop, manufacture, and test all components of the LTB system. TSC will pursue commercialization opportunities with other DoD long-range High Energy Laser (HEL) programs, and defense prime contractors that develop these lasers.

Company Objectives: We expect the Navy SBIR/STTR Transition Program (STP) Forum will allow TSC to meet Government Open-Air Test Facilities personnel who have a need to test ground-based or airborne lasers. In addition, we anticipate connections can be made with Government Program Offices who need to test their lasers at an Open-Air Range. TSC has leveraged the technology developed under this SBIR program to obtain funding for a Large Sensor Laser Array (LSLA) system to test long range surface-based lasers for the Navy.

Potential Commercial Applications: Lasers are becoming more prevalent within the Department of Defense (DoD), and these lasers will need to be tested when deployed on their airborne or shipborne platforms while operating in their expected environments. The technology from the LTB program has been designed for the infrared band, but the technology can be easily modified to accommodate lasers operating in the ultraviolet or visible bands. The system is transportable so it can be moved to different outdoor test facilities across the country.

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