



US DEPARTMENT OF DEFENSE

# BLAST INJURY RESEARCH PROGRAM COORDINATING OFFICE

## Models of Blast Injury: Warrior Injury Assessment Manikin Program

### Health Hazard Assessment Using an Anthropomorphic Blast Testing Device

The objective of this project was to validate and transition the anthropomorphic blast testing device (ABTD) for performing Blast Overpressure-Health Hazard Assessment (BOP-HHA) testing and analysis to the Aberdeen Test Center (ATC; Aberdeen Proving Ground, Maryland). This research was performed by L-3 Applied Technologies, Inc. (San Diego, California). The project team worked in close collaboration with the testing community represented by the U.S. Army Public Health Center (USAPHC) and ATC (Aberdeen Proving Ground, Maryland), and Yuma Testing Center (Yuma, Arizona).

The ABTD was field tested by the Southwest Research Institute (San Antonio, Texas), in collaboration with L-3 Applied Technologies (San Diego, California) at relevant occupational exposure conditions with pressure sensors mounted at chest level to collect thorax loading data for blast lung injury assessment. Researchers at L-3 Applied Technologies completed a simulation study of potential differences in collected measurements between BTB and ABTD for the purpose of lung injury predictions and updated the normalized work algorithm incorporated in the BOP-HHA software. A new Testing Operational Procedure standardized for the ABTD was included in the L-3 Applied Technologies Test Operational Procedure Report for the ABTD for Army Test and Evaluation Command (Aberdeen Proving Ground, Maryland) for verification, validation and accreditation. Product deliverables included: two ABTDs, validation test data, updated BOP-HHA software, and the Testing Operational Plan (TOP). The TOP provides recommendations and best practices for using the ABTD for assessment of non-auditory (blast lung) injury from occupational weapons firings. These will be included in the complete TOP for the BOP-HHA. The complete validation data and TOP were provided for verification, validation and accreditation by the ATC. The updated BOP-HHA software has also been provided to USAPHC.

This BOP-HHA addresses an important area of research into the blast injuries and operational exposures experienced by Service members. The ABTD may assist in designing mitigation techniques for blast injury. Military Operational Medicine Research Program (MOMRP) plans to continue further development of the ABTD under different testing scenarios, in conjunction with the USAPHC and other end users.

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