



US DEPARTMENT OF DEFENSE

BLAST INJURY RESEARCH PROGRAM COORDINATING OFFICE

Blast Exposure Analysis

Blast Dosimeter

Researchers with L-3 Applied Technologies, Inc. received funding from the FY13 Army Rapid Innovation fund to develop a low-power soldier-worn blast dosimeter to estimate blast exposure dosages and correlate exposure to injury probability. This product was developed under the umbrella of the Environmental Sensors in Training Program (ESiT) and in concert with the Brain in Combat Technology Enabled Capability Demonstration/ Science and Technology Objective with the aim of enhancing combat medic capacities in far forward environments. A chest-mounted dosimeter was developed to measure blast overpressure (BOP), body orientation, linear acceleration, and angular velocity. Concussion and lung injury risk due to blast exposure are calculated using onboard algorithms based on previously validated blast dose response curves and lung injury severity models. The dosimeter provides immediate visual feedback of calculated injury risk and stores data from multiple exposures for downstream analysis. Probability of injury due to exposure can be used as decision aids by medics and unit leaders when determining if a Service Member needs to be removed from the battlefield for additional assessment and treatment. The prototype dosimeters were subjected to laboratory blast and environmental testing conditions required to produce a final deliverable prototype. Final prototypes were evaluated in open-field blast environments and compared to laboratory blast sensor technologies. At the completion of the project, L-3 Applied Technologies, Inc. delivered prototype blast dosimeters with supporting software for additional field testing by Department of Defense (DoD) researchers.

