



US DEPARTMENT OF DEFENSE

BLAST INJURY RESEARCH PROGRAM COORDINATING OFFICE

Blast Exposure Analysis

Analysis of Fragment Related Injuries

Soldier Systems Branch (SSB), Capabilities Development Integration Directorate submitted a request for information (RFI) to the Joint Trauma Analysis and Prevention of Injury in Combat (JTAPIC) Program for an analysis of fragment related injuries to the thorax, abdomen, neck, and upper extremities received by Army personnel wounded in action (WIA) by explosive threats while operating outside the confines of a defended installation. The purpose of the request was to obtain a baseline of injuries for future assessments of the effectiveness of the Army Ballistic Combat Shirt (BCS), a subsystem of the Soldier Protection System (SPS). The BCS is designed to provide soft armor protection at a lighter weight than previous soft armor solutions. JTAPIC developed a product¹ depicting color-coded wound mapping that identified specific injuries inflicted to areas for which the BCS provides soft armor protection. Additionally, the product included photographs and damage analysis of recovered items of personal protective equipment (PPE) associated to the casualties in the study population. The analysis also included characterization of fragments along with a modeling and simulation component to predict the probability of serious or greater severity of injuries inflicted to the thorax by the most common fragment mass, comparing predicted injury severity based on BCS protection to that without BCS protection. In the future, SSB plans to request updates of injuries to Service Members wearing the BCS protection to compare to this baseline product. This report provides a baseline of fragment related injuries that will enable analysts to compare to injuries received to Service Members wearing the BCS.

¹ JTAPIC Product 15-072S "Analysis of Fragment Related Injuries"
<https://jtapic.arl.army.mil/jacs/pl/product.php?id=431&order=datedesc&filter=published>

