



US DEPARTMENT OF DEFENSE BLAST INJURY RESEARCH PROGRAM COORDINATING OFFICE

Vehicles

Affordable Protection from Objective Threats Army/Manufacturing Technology (ManTech) Program (Vehicle Underbody)

The Research, Development, and Engineering Command (RDECOM), Army Research Laboratory (ARL) in collaboration with Israel under the US-Israel Armored Vehicle Underbody Blast Project Agreement (PA-A-14-0001); Defense Advanced Research Projects Agency (DARPA); RDECOM, US Army Training and Doctrine Command (TRADOC) Maneuver Center of Excellence (MCoE), the Program Executive Office Ground Combat System (PEO GCS) Future Fighting Vehicles program; Alloy Technology Innovations; Corvid; Alcoa, BAE Systems; and TenCate; is executing an Affordable Protection from Objective Threats (Figure 1) Army Manufacturing Technology (ManTech) Program developing manufacturing processes required to produce aluminum hulls capable of withstanding very large Net Explosive Weight under-body blast (UBB) threats. The manufacturing processes investigated include forging, forming, and advanced welding technologies. Lower hulls have been successfully fabricated using each of these manufacturing paths, and live-fire blast tested on a massive test fixture. One forged hull and one formed hull have been integrated into ballistic hull and turret (BH&T) assemblies. The BH&T's have been outfitted with energy absorbing seats and floors. The forged BH&T was tested against a very large underbody charge, which resulted in several anthropomorphic test devices (ATDs) registering injury. The described BH&T was reset with the same seats and floor, and an active blast defense system (ABDS). The BH&T was re-tested at the same very large underbody charge level, and with the ABDS, no ATDs registered any injury. Vehicles equipped with demonstrated technologies can withstand greater blast impacts than current systems with significantly less blast effects to vehicle occupants. These findings demonstrate force protection against objective threats to provide Army leadership with the cost and weight needed while achieving and informing requirements.

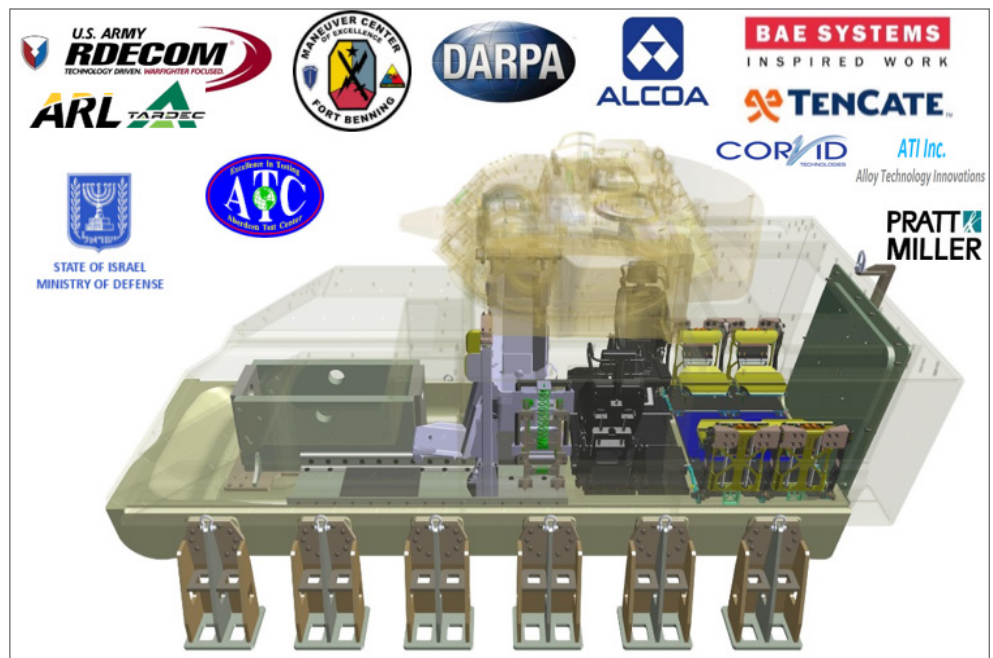


FIGURE 1: Affordable Protection from Objective Threats – Aluminum Underbody Efforts

