Models of Blast Injury: Warrior Injury Assessment Manikin Program

U.S. Army Accepts Delivery of Four Next Generation Test Manikins

The Warrior Injury Assessment Manikin (WIAMan) Program continued development of the first human surrogate test device purpose-built for underbody blast (UBB) test scenarios. Leveraging a contractual relationship with Diversified Technical Systems (DTS), Incorporated (Seal Beach, California), the WIAMan program successfully completed integration, fabrication, and delivery of four Generation 1 (Gen 1) Anthropomorphic Test Devices (ATD's) (Figure 1). The WIAMan Gen 1 ATD features an on-board data acquisition system (DAS), which improves reliability and significantly reduces cabling. In addition, modifications to high-priority body regions, including shoulder/rib structure, femur, femoral head, knee joint, and chest jacket/flesh, improve overall performance and durability. A comprehensive test and evaluation effort will commence immediately at multiple locations, to include the Army Research Laboratory (Adelphi, Maryland), U.S. Army Tank Automotive Research Development and Engineering Center (Warren, Michigan), Army Test and Evaluation Command (ATEC; Arlington, Virginia), the Johns Hopkins Applied Physics Lab (Laurel, Maryland), and DTS (Seal Beach, California).

WIAMan is the world's first ATD purpose-built for military use in UBB testing of ground vehicles in LFT&E. WIAMan is crucial to improving the protection of ground vehicle systems; evaluating the effects of UBBs on mission critical tasks; and quantifying risk to the Service member.

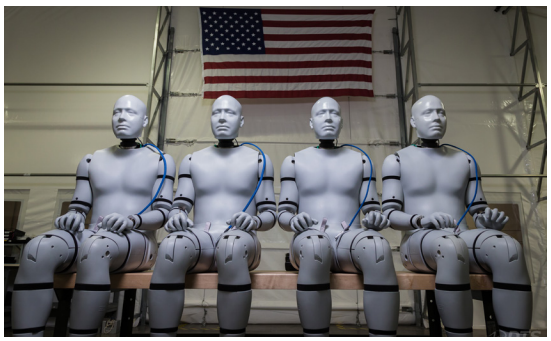

FIGURE 1: The four WIAMan's that have been delivered to the U.S. Army. (Figure used with permission from the authors)

The WIAMan Gen 1 ATD participated in its first ever developmental UBB test as a ride-along on an Mine-Resistant Ambush Protected Dash vehicle in August 2017. The WIAMan Gen 1 ATD sustained no damage, demonstrated human-like movement during the event, and successfully captured data using the on-board DAS. The WIAMan program will continue exploring ride-along opportunities in Live Fire Test and Evaluation (LFT&E) events. Additional test and evaluation data, at both a component and system level, will form the body of evidence for Technology Readiness Level 6 assessment in order to complete the transition from the science and technology community to Program Executive Office Simulation, Training, and Instrumentation in the third quarter of FY18.

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