Vehicle Improvement Studies

Improved Under Vehicle Threat Protection

During FY17, researchers within the Product Manager (PdM) Combat Engineer/Material Handling Equipment (CE/MHE; Warren, Michigan) began developing an improved under vehicle threat protection for the family of all terrain cranes Type II Heavy Crane (T2HC). The T2HC's unique features, including its lift capacity and deployability within convoys, make it a natural target by opposing forces. To improve crew survivability from under vehicle threats PdM CE/MHE partnered with the Tank Automotive Research, Development, and Engineering Center for System Integration (Warren, Michigan) team to explore cost-effective blast mitigation options, while being mindful of the weight restrictions on the axles of the T2HC. The first phase of the program, Modeling and Simulation, leverages the T2HC cab height to improve survivability with a structure that minimizes the blast loads to the cab and crew. The Modeling and Simulation designs focused on materials, shapes, and attachment points to deflect loads away from the cab and into the frame of the vehicle, as well as, prevent or limit a condition where the blast energy would load up and release into the cab, as depicted in Figure 1. The Modeling and Simulation phase will end the first quarter of FY18 and the team will begin the prototype build process and conduct testing to prove the design, which is estimated to last a year. The crew survivability along with potential savings shows promise for future development.

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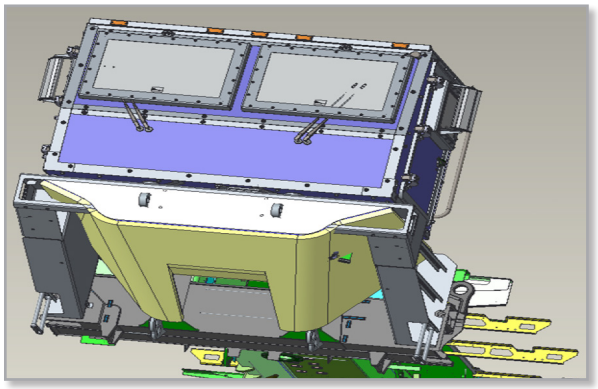

FIGURE 1: Computer-Aided Design (CAD) design to improve under vehicle threat protection for the T2HC. (Figure used with permission from the authors)