

RESPONSE OF A LIGHTWEIGHT COMPOSITE HMMWV SHELTER TO BLAST AND THERMAL PULSE LOADINGS

GODFREY, T.A.

A prototype tactical shelter for the HMMWV has been developed that provides protection against blast, intense thermal pulses, and ballistic fragments, yet weighs less than similar unprotected shelters. The prototype exploits advanced composite material for minimum weight and contains cost by the design's potential for automated fabrication. Extensive modeling, analysis, and experimental studies made possible the design's optimized performance. This paper describes elements of the analysis used in development of the design to predict response of the system to blast and thermal loadings. Predictions are presented for the response of the shelter to the blast overpressure/thermal loadings and the rigid body kinematics of the shelter/vehicle/outrigger system. A prototype of the shelter is exposed to combined thermal and blast effects in an experiment fielded in the MISERS GOLD HE event. The experiment and results are presented. Comparisons are drawn between predicted performance and actual response.