

Abstract Submitted
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Modelling Violent Reaction Following Low Speed Impact on Confined Explosives¹ JOHN CURTIS, ANDREW JONES, CHRISTOPHER HUGHES, AWE Aldermaston, Reading, RG7 4PR, UK, JOHN REAUGH, LLNL, Livermore CA, USA — To ensure the safe storage and deployment of explosives it is important to understand the mechanisms that give rise to ignition and reaction growth in low speed impacts. The LLNL High Explosive Response to Mechanical Stimulus (HERMES) material model, integrated in LS-DYNA, has been developed to model the progress of the reaction after such an impact. The low speed impact characteristics of an HMX based formulation have been determined in the AWE Steven Test. Axisymmetric simulations have been performed to determine the characteristics of the model. The sensitivity study included looking at the influence of friction, material strength and confinement. By comparing the experimental and calculated results, the key parameters which determine the response in this configuration have been determined. The model qualitatively predicts the point of ignition within the vehicle. Future refinements are discussed.

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