

Abstract Submitted
for the SHOCK09 Meeting of
The American Physical Society

Non-Shock Initiation Model for Plastic Bonded Explosive PBXN-5 and Cast Explosive STEVEN TODD, TERRY CAIPEN, DENNIS GRADY, MARK ANDERSON — A damage initiated reaction (DMGIR) computational model is being developed for the CTH shock physics code to predict the response of an explosive to non-shock mechanical insults. The distinguishing feature of this model is the introduction of a damage variable, which relates the evolution of damage to the initiation of reaction in the explosive, and its growth to detonation. The DMGIR model is a complement to the History Variable Reactive Burn (HVRB) model embedded in the current CTH code. Specifically designed experiments are supporting the development, implementation, and validation of the DMGIR numerical approach. PBXN-5 was the initial explosive material used experimentally to develop the DMGIR model. This explosive represents a family of plastically bonded explosives with good mechanical strength and rigid body properties. The model has been extended to cast explosives represented by Composition B. Furthermore, the DMGIR model will be extended to predict results of non-shock mechanical insults for moldable plastic explosives such as C4 and PrimaSheet.

Steven Todd

Date submitted: 13 Feb 2009

Electronic form version 1.4