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Application of the CREST Reactive Burn Model to Two-Dimensional Explosive Experiments NICHOLAS WHITWORTH, AWE Aldermaston — CREST is a new reactive burn model that uses entropy-dependent reaction rates to model shock initiation and detonation behaviour in plastic bonded explosives. To date the model has been applied to a wide range of shock initiation data obtained from explosive gas-gun experiments where one-dimensional, planar, flat-topped shocks are delivered to the explosive samples. In this paper, to provide a more rigorous test of CREST's predictive capability, the model is applied to two-dimensional explosive experiments where the shock wave entering the explosive departs from the ideal gas-gun case. The calculated results show that the model can simulate the explosive response in shock regimes that are markedly different from truly one- dimensional conditions. This gives confidence in the ability of CREST to simulate a wide range of shock initiation and detonation phenomena.

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