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An Arrhenius Shock-Temperature State Sensitive WSD (AWSD) model for PBX 9502 TARIQ ASLAM, Los Alamos National Laboratory — A modification to the Wescott-Stewart-Davis reactive flow model is presented that addresses several short-comings of previous formulations. Specifically, issues arising during isentropic and multi-shock compression are addressed. Furthermore, unwarranted stiffness in the ZND structure is removed, allowing for less taxing numerical computations. The calibration procedure, including many shock initiation and rate stick experiments, is presented. A relatively simple rate form, based roughly on the shock temperature, seems to adequately model a wide range of experimental configurations from shock-to-detonation transition and detonation propagation. Several validation tests, confirming the efficacy of the new model, are also given.

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