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Optimization of Equation of State and Burn Model Parameters for Explosives MAGNUS BERGH, RASMUS WEDBERG, JONAS LUNDGREN, Swedish Defence Research Agency — A reactive burn model implemented in a multi-dimensional hydrocode can be a powerful tool for predicting non-ideal effects as well as initiation phenomena in explosives. Calibration against experiment is, however, critical and non-trivial. Here, a procedure is presented for calibrating the Ignition and Growth Model utilizing hydrocode simulation in conjunction with the optimization program LS-OPT. The model is applied to the explosive PBXN-109. First, a cylinder expansion test is presented together with a new automatic routine for product equation of state calibration. Secondly, rate stick tests and instrumented gap tests are presented. Data from these experiments are used to calibrate burn model parameters. Finally, we discuss the applicability and development of this optimization routine.

Magnus Bergh
Swedish Defence Research Agency

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