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High Explosive Verification and Validation: Systematic and Methodical Approach CHRISTINA SCOVEL, RALPH MENIKOFF, Los Alamos National Lab — Verification and validation of high explosive (HE) models does not fit the standard mold for several reasons. First, there are no non-trivial test problems with analytic solutions. Second, an HE model depends on a burn rate and the equation of states (EOS) of both the reactants and products. Third, there is a wide range of detonation phenomena from initiation under various stimuli to propagation of curved detonation fronts with non-rigid confining materials. Fourth, in contrast to a shock wave in a non-reactive material, the reaction-zone width is physically significant and affects the behavior of a detonation wave. Because of theses issues, a systematic and methodical approach to HE V&V is needed. Our plan is to build a test suite from the ground up. We have started with the cylinder test and have run simulations with several EOS models and burn models. We have compared with data and cross-compared the different runs to check on the sensitivity to model parameters. A related issue for V&V is what experimental data are available for calibrating and testing models. For this purpose we have started a WEB based high explosive database (HED). The current status of HED will be discussed.

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