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Simulations of the Modified Gap Experiment GERRIT SUTHERLAND, U.S. Army Research Laboratory — Modified Gap (Test) Experiment hydrocode simulations are presented. The modified gap experiment is a variation of the large scale gap test (LSGT) experiment. A 50.8-mm diameter x 12.7-mm long disk of sample explosive replaces the confined sample and witness plate in the LSGT. Either a framing camera or a photonic Doppler velocimeter measures the free surface velocity. The free surface velocity is measured for varying levels of input pressure. The Plexiglas gap thickness controls the input pressure. Features of the free surface velocity versus input pressure curve show the pressure at which detonation and ignition thresholds occur. The amount of reaction in various regions of the sample is predicted by the simulations. Additionally, the simulations will predict how the release waves traveling backward into the sample affect the amount of reaction in the sample. Further, simulations of a non-ideal explosive will predict the response of an explosive whose reaction zone length is on the order of the 12.7-mm sample length.

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