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Numerical Simulations of Near-Field Blast Effects using Kinetic Plates STEPHANIE NEUSCAMMAN, Lawrence Livermore National Laboratory, VIRGINIA MANNER, GEOFFREY BROWN, Los Alamos National Laboratory, LEE GLASCOE, Lawrence Livermore National Laboratory — Numerical simulations using two hydrocodes were compared to near-field measurements of blast impulse associated with ideal and non-ideal explosives to gain insight into testing results and predict untested configurations. The recently developed kinetic plate test was designed to measure blast impulse in the near-field by firing spherical charges in close range from steel plates and probing plate acceleration using laser velocimetry. Plate velocities for ideal, non-ideal and aluminized explosives tests were modeled using a three dimensional hydrocode. The effects of inert additives in the explosive formulation were modeled using a 1-D hydrocode with multiphase flow capability using Lagrangian particles. The relative effect of particle impact on the plate compared to the blast wave impulse is determined and modeling is compared to free field pressure results. This work is performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344. This is abstract LLNL-ABS-622152.

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