Abstract Submitted
for the DFD11 Meeting of
The American Physical Society

Simulations of the Formation and Hydrodynamic Penetration of Micro-Shaped Charge Jets[1] D. SCOTT STEWART, Mechanical Science and Engineering, University of Illinois, Urbana, IL 61801, FADY M. NAJJAR, Weapons & Complex Integration Directorate, Lawrence Livermore National Laboratory, MATTHEW SZUCK, NICK GLUMAC, Mechanical Science and Engineering, University of Illinois, Urbana, IL 61801 — An explosively formed shape charge jet can be generated by the action of a detonation in explosive charge that surrounds a hollow cone of metal, embedded in the explosive, that collapses the cone on the central axis in order to form a forward-going jet of metal. We discuss the results of a series of multi-material simulations for very small charges and cones, for which the thickness of the metal (copper) cone is less than 1/100th of an inch. We look at the ability of these micro-shaped charge jets ability to penetrate aluminum target blocks and compare against experiment. We examine the effects of shape defects in the cone liner and how they affect the penetration depth. The LLNL multi-physics hydrodynamic code ALE3D is used to carry out the simulations.

[1]DSS, MS and NG were supported by AFRL/RW AF FA8651-10-1-0004. FMN's work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344. LLNL-ABS-491793.

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Date submitted: 10 Aug 2011 Electronic form version 1.4