Abstract Submitted
for the SHOCK05 Meeting of
The American Physical Society

Dynamic Compaction Modeling Comparison for Porous Silica Powder JOHN BORG, Marquette University, LARRY SCHWALBE, JOHN COGAR, CORVID Technologies, D.J. CHAPMAN, PCS, Cavendish Laboratory, UK, ANDREW LLOYD, Marquette University, AARON WARD, CORVID Technologies, MARQUETTE UNIVERSITY COLLABORATION[1], CORVID TECHNOLOGIES COLLABORATION[2] — A computational analysis of the dynamic compaction of porous silica is presented and compared with experimental measurements. The experiments were conducted at Cambridge University's one-dimensional flyer plate facility. The experiments shock loaded samples of silica dust of various initial porous densities up to a pressure of 2.25 GPa. The computational simulations utilized porous material models, P-lambda and P-alpha, in conjunction with a linear Us-up Hugoniot. Two hydrocodes were used to simulate the compaction event: CTH and KO. CTH is a three-dimensional Eulerian hydrocode developed at Sandia National Laboratory and KO is a one-dimensional Lagrangian hydrocode developed at Lawrence Livermore National Laboratory. A comparison of the advantages and disadvantages, along with a discussion of the salient features, of the two models are presented.

[1]1515 W. Wisconsin, Milwaukee, WI. 53233, USA
[2]149 Plantation Ridge Dr., Suite 170, Mooresville, NC 28117, USA

John Borg
Marquette University

Date submitted: 11 Apr 2005 Electronic form version 1.4