Abstract Submitted
for the SHOCK07 Meeting of
The American Physical Society

Ramp Compression Experiments - Sensitivity of Inverted Isentropes to Experimental Uncertainties MARINA BASTEA, D. REISMAN, Lawrence Livermore National Laboratory — A wealth of experimental high pressure studies have been aimed in the last decades at understanding the fundamental behavior of matter under compression. Many of them employed well established techniques operating under either static - diamond anvil cell (DAC) or dynamic - shock Hugoniot, high-pressure conditions. More recent technical advancements however made also possible the study of new dynamic regimes by spreading the pressure loading from near-instantaneous, i.e. shock, to tens, hundreds and even thousands of nanoseconds, through the use of laser, electromagnetic and graded density impactor drivers respectively. We present the first sensitivity study of the material isentropes extracted from the ramp compression experiments. We perform hydrodynamic simulations of representative experimental geometries associated with ramp compression experiments and discuss the major factors defining the accuracy of the equation of state information extracted from such data. We discuss the impact of these uncertainties on all platforms. This work was performed under the auspices of the U.S. Department of Energy by University of California Lawrence Livermore National Laboratory under Contract No. W-7405-Eng-48.

Marina Bastea
Lawrence Livermore National laboratory

Date submitted: 28 Feb 2007 Electronic form version 1.4