Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Numerical Investigation of Proposed OMEGA Cryogenic Implosions Using Adiabat-Shaping Techniques P.W. MCKENTY, J.A. MAROZAS, V.N. GONCHAROV, K.S. ANDERSON, R. BETTI, D.D. MEYERHOFER, P.B. RADHA, T.C. SANGSTER, S. SKUPSKY, R.L. MCCRORY, Laboratory for Laser Energetics, U. of Rochester — The Laboratory for Laser Energetics continues to examine the performance of cryogenically fueled D_2 and DT direct-drive capsule implosions. Of particular concern is the experimental demonstration of the benefit of proposed adiabat-shaping techniques in implosion performance, especially in light of the current NIF baseline levels of laser smoothing. We present an overview of the predicted performance of the NIF 1.5-MJ, direct-drive point design under a series of laser-smoothing levels. This will serve to identify experimental scenarios that will be studied on the OMEGA Laser System. A series of laser-smoothing calculations employing current OMEGA cryogenic-system parameters, such as ice roughness and target positioning, will then be presented. These simulations will further determine the accessibility of implosions on OMEGA to the design space set by the NIF simulations and serve to outline the schedule for these critical cryogenic implosions on the OMEGA Laser System for the next few years. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-92SF19460.

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Date submitted: 20 Jul 2006 Electronic form version 1.4