Abstract Submitted for the DPP08 Meeting of The American Physical Society

Low-Adiabat Polar-Drive Implosion Experiments on OMEGA F.J. MARSHALL, R.S. CRAXTON, R. EPSTEIN, V.YU. GLEBOV, V.N. GON-CHAROV, J.P. KNAUER, P.W. MCKENTY, D.D. MEYERHOFER, P.B. RADHA, T.C. SANGSTER, W. SEKA, S. SKUPSKY, V.A. SMALYUK, Laboratory for Laser Energetics, U. of Rochester, J.A. FRENJE, C.K. LI, R.D. PETRASSO, F.H. SÉGUIN, PSFC, MIT — Low-adiabat, directly driven implosion experiments are being performed on OMEGA using 40 beams oriented nearer two poles of the target (polar drive), emulating the current configuration of the beams of the NIF. Targets are all non-cryogenic, D₂-gas-filled CH capsules. Shaped pulses keep the main fuel layer of the target (CH shells in these experiments) at a low adiabat (2 to 3) during the compression phase. In contrast to the design of a directly driven, polar-driveignition target for the NIF, these experiments are performed with the same beam profile and pulse shape for all beams and thus are not optimized. Nevertheless, the measurements of the target performance, when compared to 2-D hydrocode simulations, can be used to extrapolate to the optimized designs for the NIF. Framed x-ray imaging (both self emission and backlit) is used to diagnose implosion symmetry, while nuclear and particle measurements are used to diagnose compressed core conditions. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-08NA28302.

David Meyerhofer Laboratory for Laser Energetics, U. of Rochester

Date submitted: 17 Jul 2008 Electronic form version 1.4