Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Direct-Drive DT Cryogenic Implosion Performance with a Fill Tube S.P. REGAN, D. CAO, V.N. GONCHAROV, K.S. ANDERSON, R. BETTI, M.J. BONINO, E.M. CAMPBELL, T.J.B. COLLINS, R. EPSTEIN, C.J. FORREST, V.YU. GLEBOV, D. HARDING, S.X. HU, I.V. IGUMENSHCHEV, J.A. MAROZAS, F.J. MARSHALL, P.W. MCKENTY, P.B. RADHA, T.C. SANGSTER, C. STOECKL, Laboratory for Laser Energetics, U. of Rochester, R.W. LUO, A. TAMBAZIDIS, M.E. SCHOFF, M. FARRELL, General Atomics — The effects of a fill tube on the performance of direct-drive DT cryogenic implosions on the 60-beam, 30-kJ, 351-nm OMEGA laser are presented. The calculated adiabat, convergence ratio, and in-flight-aspect ratio quantities were ∼4, ∼17, and ∼23, respectively. Changes to the measured neutron yield, areal density, and ion temperature caused by the fill tube were found to be within experimental uncertainties. Gated x-ray images recorded during the acceleration phase at photon energies down to ∼1 keV show evidence of the fill tube perturbing the imploding shell and causing a region of enhanced emission from the hot spot, while gated x-ray images of the hot spot in the 4- to 8-keV photon energy range show no effect from the fill tube. This material is based upon work supported by the Department Of Energy National Nuclear Security Administration under Award Number DENA0001944.

S.P. Regan
Laboratory for Laser Energetics, U. of Rochester

Date submitted: 18 Jul 2017 Electronic form version 1.4