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Studies of PDD Shock-Driven D2 and D3He Implosions at the NIF M. ROSENBERG, A. ZYLSTRA, F. SEGUIN, H. RINDERKNECHT, J. FRENJE, H. SIO, M. GATU JOHNSON, N. SINENIAN, C.K. LI, R. PETRASSO, MIT, S. LE PAPE, A. MACKINNON, M. HOHENBERGER, J. MCNANEY, P. AMENDT, R. BIONTA, C. BELLEI, D. CASEY, S. GLENZER, O. LANDEN, T. MA, J. MOODY, M. MORAN, J. PINO, S. WILKS, LLNL — P. MCKENTY, J. DELETTREZ, V. GLEBOV, R. BETTI, J. KNAUER, D. MEYERHOFER, T. SANGSTER LLE, J. KILKENNY, A. NIKROO GA – Measurements of yield, ion temperature, areal density and bang time in shock-driven polar-direct-drive implosions with D2- and D3He-filled glass capsules at the NIF are presented. These measurements probe the dynamics of shock convergence, a critical process in hot-spot ignition experiments, and the results are compared to 1-D LILAC and 2-D DRACO hydrodynamics simulations. Ion temperature data generally agree with simulations, but measured yields are a factor of $\sim$ 5-10 ($\sim$ 2-4) lower than predicted by LILAC (DRACO). Both models over-predict the fuel areal density, which suggests that these simulations overestimate the fuel density after shock convergence. Kinetic effects may also partly explain this yield discrepancy. This work was supported in part by the U.S. DOE, LLNL and LLE.

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