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Design of High-Neutron-Yield Polar-Drive Experiments for Diagnostic Activation on the NIF P.W. MCKENTY, R.S. CRAXTON, J.A. MAROZAS, A.M. COK, D.D. MEYERHOFER, R.L. MCCRORY, Laboratory for Laser Energetics, U. of Rochester, J.D. KILKENNY, A. NIKROO, M.L. HOPPE, M.J. EDWARDS, General Atomics, D.H. MUNRO, LLNL — Polar-drive (PD)[1] target implosions have been designed for neutron diagnostic development on the NIF. These experiments use thin, room-temperature glass shells filled with low pressures of DT. Initial target implosions on the NIF will produce DT yields in the range of a few 10^{14} neutrons. The predicted yields are consistent with earlier data (10^{14} neutrons at 30 kJ) and recent PD scoping experiments performed on OMEGA. The experiments will use existing x-ray-drive phase plates with judicious repointing and defocusing to drive the implosions as uniformly as possible. Current simulation results indicate that the required yields will be obtained using up to 200-kJ UV light. Large-diameter glass shells ($\sim$1500-μm OD) are under development and fabrication at General Atomics. As tritium and environmental conditions evolve, similar target designs are expected to produce thermonuclear yields approaching 10^{16} neutrons. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-08NA28302.

[1]A. M. Cok, R. S. Craxton, and P. W. McKenty, Phys. Plasmas **15**, 082705 (2008).

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