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Calculations for Omega symmetry capsule implosion experiments in ∼0.2 NIF scale high temperature hohlraums N.D. DELAMATER, D.C. WILSON, G.A. KYRALA, E.S. DODD, A. SEIFTER, N.M. HOFFMAN, D.W. SCHMIDT, Los Alamos National Laboratory, V. GLEBOV, C. STOECKL, Laboratory for Laser Energetics, C.K. LI, J.A. FRENJE, M.I.T. — Symmetry capsules are planned to be used as a diagnostic of implosion symmetry at varying times during the NIF drive. A suitably designed symmetry capsule samples the drive symmetry up to the implosion "commit" time of the capsule, which varies for symmetry capsules of different shell thickness. Our capsules use Ge-doped plastic shells with shell thickness varying from 25 μm to 55 μm. We present calculations for Omega experiments using symmetry capsule implosions in gold hohlraums 1900 μm x 1200 μm, and 70 % laser entrance hole, which is approximately a 0.2 NIF scale ignition hohlraum and reaches temperatures of 265-275 eV similar to those during the NIF drive. These capsules may be used as a diagnostic of shell ρr, since the gas fill is d-He3 at 36 atm. The protons produced in the implosion escape through the shell and produce a proton spectrum, which is measured using wedge range filters. The neutron, proton yield and spectra change with capsule shell thickness as the un-ablated mass or remaining capsule ρr changes. This technique to measure capsule un-ablated mass will be applied to future NIF experiments with ignition scale capsules. Support by US DOE/NNSA, LANS LLC, Contract DE-AC52-06NA253.

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