

Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

The Effect of Helium on Burn in Directly Driven Glass Capsules

DOUGLAS C. WILSON, GEORGE A. KYRALA, JOHN F. BENAGE, FREDERICK J. WYSOCKI, Los Alamos National Laboratory, JOHAN A. FRENJE, Massachusetts Institute of Technology, VLADIMIR YU. GLEBOV, SAMUEL ROBERTS, Laboratory for Laser Energetics, U. of Rochester, WARREN J. GARBETT, Aldermaston Weapons Establishment — Experiments on the Omega laser confirm the previous observation (Rygg *et al.* (*Phys. Plasmas*, **13**, 052702 (2006))) of an abnormal degradation of D+D(n) and D+³He(p) yields in hydrodynamically equivalent capsules as the ³He fraction is increased. The degradation remained using ⁴He. These implosions used either 23 kJ of laser energy in a 1000ps square pulse, or 13 kJ in a 600ps pulse, onto 900 micron diameter, ~ 4.3 micron thick glass shells filled with 10 atm of deuterium or hydrodynamically equivalent mixtures with He. Measured ion temperatures would be the same for all mixtures in hydrodynamically equivalent capsules. For the 1000ps implosions they are. But for 600ps implosions the ion temperature increases with ³He concentration, showing a deviation from equivalency. Work supported by US DOE/NNSA, performed at LANL, operated by LANS LLC under Contract DE-AC52-06NA25396.

Douglas Wilson
Los Alamos National Laboratory

Date submitted: 16 Jul 2008

Electronic form version 1.4