

Abstract Submitted  
for the DPP09 Meeting of  
The American Physical Society

**Measurements of Low-Deuterium Surrogates for the Prediction of Ignition Implosion Performance** BRIAN SPEARS, S. BRANDON, D. CLARK, C. CERJAN, J. EDWARDS, O. LANDEN, J. LINDL, S. HAAN, S. HATCHETT, J. SALMONSON, P. SPRINGER, S. WEBER, LLNL, D. WILSON, LANL — The National Ignition Campaign (NIC) will use non-igniting “THD” capsules to study and optimize the hydrodynamic assembly of the fuel without burn. These capsules are designed to simultaneously reduce DT neutron yield and to maintain hydrodynamic similarity with the DT ignition capsule. We have developed an experimentally observable ignition threshold factor (ITFX) that uses measurements from THD experiments to predict DT ignition implosion performance. The ITFX metric was developed using a database of 2D radhydro simulations of twin DT and THD implosions with a variety of physical failure mechanisms – drive asymmetry, capsule roughness, continuum mixing, fabrication errors, among others. The ITFX encodes all of these failure mechanisms into a single observable metric. The ITFX metric has also allowed us to develop a capability to estimate the probability of DT capsule ignition based on THD experiments. Prepared by LLNL under Contract DE-AC52-07NA27344. LLNL-ABS-414651

Brian Spears  
LLNL

Date submitted: 21 Jul 2009

Electronic form version 1.4