

Abstract Submitted  
for the DPP13 Meeting of  
The American Physical Society

**Comparison of Hot Spot Formation in DT ice layer and DT liquid layer ICF Capsules**<sup>1</sup> R.E. OLSON, SNL, R.J. LEEPER, LANL — Simulations of the implosion and hot spot formation in two DT liquid layer ICF capsule concepts – the DT wetted CH foam concept and the “fast formed liquid” (FFL) concept – will be described and compared to simulations of standard DT ice layer capsules. The wetted foam and FFL designs allow for flexibility in hot spot convergence ratio through the adjustment of the initial cryogenic capsule temperature and, hence, DT vapor density. 1D simulations are used to compare the drive requirements, the optimal shock timing, the radial dependence of hot spot specific energy gain, and the hot spot convergence ratio in low (DT ice) and high (DT liquid) vapor pressure capsules. 2D simulations are used to compare the relative sensitivities to low-mode x-ray flux asymmetries in the DT ice and DT liquid capsules. It is found that the overall thermonuclear yields predicted for DT liquid layer capsules will be less than yields predicted for DT ice layer capsules in simulations using comparable capsule size and absorbed energy. However, the relative simplicity of the hot spot formation technique might lead to a more robust ignition experiment, a reduction in sensitivity to low-mode x-ray flux asymmetry, and an improvement in the computational prediction of hot spot behavior.

<sup>1</sup>This work was performed under the auspices of the U. S. DOE by LANL under contract DE-AC52-06NA25396. Sandia is a multiprogram laboratory operated by the Sandia Corporation, a Lockheed-Martin Company, for the U.S. DOE under contract DE-AC04-94AL85000.

R. E. Olson  
SNL

Date submitted: 12 Jul 2013

Electronic form version 1.4