Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

Demonstration Of DT Fuel Fill, Layer Formation And Thermal Shimming In A Cryogenic NIF Hohlraum Target.[1] J.J. SANCHEZ, B. KOZIOZIEMSKI, J.D. MOODY, J. SATER, Lawrence Livermore National Laboratory, D. BITTNER, General Atomics — Targets for the National Ignition Facility (NIF) require thick >80μm deuterium-tritium (DT) fuel layers that are spherically symmetric for ignition. We describe experiments using a NIF scale indirect drive hohlraum target which demonstrate capsule DT fill through a 5 micron ID fill tube, using a self-contained low pressure fuel reservoir. We also describe the subsequent formation of uniform solid DT layers on the inside of the target capsule. A slow-growth technique was used to insure smooth layers. Thermal shimming was used to control the lowest modes in the ice. The target consists of a capsule mounted in the center of a gold hohlraum fitted with side windows. A 5 μm ID fill tube at the capsule, attaches to a 1 cc reservoir filled with 50 psia of DT. In operation the capsule is filled with DT to a level that can be controlled by setting the temperature of the fill reservoir. Once the capsule fills to the desired level, the hohlraum temperature is lowered to freeze the DT within the fill tube and begin the process of layer formation. We will show results for fast frozen layers and layers slowly grown from single crystal seeds as well as the effects of thermal shimming to produce spherically symmetric layers. [1]Work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract W-7405-ENG-48.

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Date submitted: 24 Aug 2005 Electronic form version 1.4