

Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Experimental study of fill-tube hydrodynamic effects on implosions using capsules with plastic stalks¹ N. IZUMI, P. AMENDT, T. DITTRICH, J. EDWARDS, S. HAAN, J. KLINGMANN, J.A. KOCH, O. LANDEN, S. LANGER, S. LETTS, R. SEUGLING, C. SORCE, B. SPEARS, R. TURNER, R. WALLACE, Lawrence Livermore National Laboratory — Cryogenic ignition experiments at the National Ignition Facility (NIF) are expected to use a fill tube to introduce liquid DT into the capsule prior to solid layer formation. This fill tube is expected to form a hydrodynamic jet during the deceleration phase of the implosion. Numerical simulations indicate that a $10\mu\text{m}$ tube with a $3\mu\text{m}$ hole has an acceptable impact on implosion performance, but experimental data validating these simulations are lacking. We therefore initiated experiments at the Omega laser facility to explore the hydrodynamic effects of stalks on implosion performance, and we recently obtained high-quality x-ray images of hydrodynamic jets created by 9-37 μm diameter stalks made of PAMS (polyalpha-methylstyrene). We discuss the experiments and compare the results to simulations

¹This work was performed under the auspices of the U.S. Department of Energy by the University of California, Lawrence Livermore National Laboratory under contract No. W-7405-Eng-48.

Nobuhiko Izumi
Lawrence Livermore Nat. Lab.

Date submitted: 21 Aug 2006

Electronic form version 1.4