Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

A Jetting Instability Due to Surface Defects in Indirectly Driven ICF Targets[1] P.J. CHRISTENSON, R.A. VESEY, M.E. CUNEO, Sandia National Laboratories, D.A. STEINMAN, General Atomics — The effects of small, dome-like structures on the outer surface of indirectly driven ICF targets is examined. This work was motivated by the experimental observation that dense material appeared to be at the center of a deuterium gas filled capsule early in the capsule compression. A possible explanation for the observation is that micro-dome defects of the order of a half micron in amplitude and five microns in radius, thousands of which are seen on capsule surfaces, cause jetting of ablator material into the capsule allowing dense material to converge at the center prior to peak compression, but leaving the ablator layer mostly intact. 2-D Lasnex simulations of various ICF targets have been performed to examine the dependence of jetting and target performance on defect amplitude. The minimum defect amplitude that allows a measurable thermonuclear neutron count was computed to determine a desirable surface smoothness.

[1]Sandia is a multiprogram laboratory operated by the Sandia Corporation, a Lockheed Martin Company, for the U.S. Department of Energy under Contract No. DE-AC04-94AL85000.

Peggy Jo Christenson
Sandia National Laboratories

Date submitted: 22 Jul 2005 Electronic form version 1.4