Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

Characterization of Low-density Foams for Use in Strength Experiments at NIF[1] L.R. BENEDETTI, A. ARSENLIS, C.M. HUNTINGTON, B.R. MADDOX, H.-S. PARK, S. PRISBREY, B.A. REMINGTON, C. WEHRENBERG, LLNL, Y.P. OPACHICH, M. HAUGH, E. HUFFMAN, J. KOCH, E. ROMANO, F. WEBER, M. WILSON, National Security Technologies, P. GRAHAM, AWE — To infer strength in compressed solids by observation of Rayleigh-Taylor growth, we are engaged in an experimental campaign at NIF. To produce a drive that is sufficiently cool to prevent melting and also long enough to observe growth over tens of ns, we are developing a target that mediates the high-intensity NIF laser drive by shocking a multi-component reservoir and driving the target sample by the stagnation of the reservoir's release after crossing a large gap (1mm vacuum). This design depends on the shock and release of an ultra-low density foam layer (10-30 mg/cc), which in turn requires that these layers be well-characterized for uniformity and reproducibility. We describe efforts to characterize C and SiO2 based foam targets to quantify variations in rho-R. Our fabrication and measurement goal is taken from simulations that indicate that targets must be uniform at the 10% level over spatial scales from 20 microns to 2 mm. We present data from differential radiography of witness samples by soft x-rays (E<1.5keV) and compare our results to other techniques.

[1]This work performed under the auspices of the U.S. Department of Energy by LLNL under Contract DE-AC52-07NA27344, LLNL-ABS-656898

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Date submitted: 11 Jul 2014 Electronic form version 1.4