Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

**A New Laser Preheat Protocol For Maglif**[1] M.R. WEIS, A.J. HARVEY-THOMPSON, M. GEISSEL, C.A. JENNINGS, K.J. PETERSON, M.E. GLINSKY, T.J. AWE, D.E. BLISS, M.R. GOMEZ, E.C. HARDING, S.B. HANSEN, M.W. KIMMEL, P.F. KNAPP, S.M. LEWIS, J.L. PORTER, G.A. ROCHAU, M. SCHOLLMEIER, J. SCHWARZ, J.E. SHORES, S.A. SLUTZ, D.B. SINARS, I.C. SMITH, C.S. SPEAS, Sandia Natl Labs — Previous Magnetized Liner Inertial Fusion experiments at Sandia National Labs have preheated the fuel with the unsmoothed $2\omega$ Z-Beamlet Laser. A new low intensity laser configuration, using phase plate smoothing and a low-power pulse shape, improved laser propagation and reduced stimulated Brillouin scattering in offline laser experiments. This allows for more efficient use of laser energy and better spot reproducibility. The new laser protocol is estimated to couple at least 650 J to the fuel, sufficient to produce comparable neutron yields with the previous unsmoothed configuration. Mid-Z dopants were also fielded on the underside of the window. Observation of these dopants provided evidence of window material mixing into the fuel with both the unsmoothed and smoothed beam, consistent with MHD simulation predictions.

[1]Sandia National Laboratories is a multi-mission laboratory managed and operated by NTESS, LLC, a wholly owned subsidiary of Honeywell International, Inc., for the U.S. DOEs NNSA under contract DE-NA0003525.

Matthew Weis
Sandia Natl Labs

Date submitted: 16 Jul 2017 Electronic form version 1.4