Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

Development of a novel dual view, four frame imaging system and other diagnostics to study electrothermal instabilities on Mykonos*[1] M.W. HATCH, University of New Mexico, T.J. AWE, E.P. YU, Sandia National Laboratories, T.M. HUTCHINSON, University of Nevada Reno, D. YAGER-ELORRIAGA, Sandia National Laboratories, B.S. BAUER, University of Nevada Reno, K. TOMLINSON, General Atomics, M. GILMORE, University of New Mexico — The electrothermal instability (ETI) is a Joule heating-driven instability that can initiate in solid liner-driven fusion targets, generating azimuthally correlated (striated) temperature and density perturbations. These perturbations may seed the magneto Rayleigh-Taylor (MRT) instability and can limit stagnation pressure and implosion uniformity. These experiments will observe ETI growth from diamond-turned, 99.999% pure aluminum rods in a z-pinch configuration by monitoring characterized "engineered" defects machined into the rod surface. Experiments will be conducted on the ˜1 MA Mykonos driver at Sandia National Laboratories. A novel multi-camera splitter system will be used to simultaneously image these scaled defect patterns on opposing sides of the target, in order to examine visible-light emission from the surface. Laser shadowgraphy and interferometry diagnostics are also being developed and will be compared to 3D-MHD simulations.

[1]Work supported by NNSA Stewardship Sciences Academic Programs award no. DE-NA0003872 *Funded in part by Sandias Laboratory Directed Research and Development Program (Projects No. 178661, No. 200269).

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Date submitted: 03 Jul 2019 Electronic form version 1.4