Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Visible Spectroscopy Measurements of Plasmas and Fields in the Power Flow Regions on the Z-Machine MARK JOHNSTON, SONAL PATEL, ROSS FALCON, KEITH CARTWRIGHT, MARK KIEFER, MIKE CUNEO, Sandia National Laboratories, S. BISWAS, R. DORON, D. MIKITCHUK, E. STAMBULCHIK, YITZHAK MARON, Weizmann Institute of Science — In order to better understand the physics involved with efficient high current delivery to a load, there is an effort underway at Sandia National Laboratories to study plasma formation and propagation in the power flow regions on the Z-Machine. Experiments are being conducted using streaked, visible spectroscopy to obtain time histories of plasma formation and propagation throughout the final power flow regions on Z, where currents and fields are at their highest. Plasmas draw current away from the load, causing the machine to be less efficient; depending on the specific load, losses of up to 20% can occur. This paper describes the first comprehensive attempt to characterize these plasmas on Z. We outline the experimental techniques used to make these measurements, provide results obtained to date, and draw comparisons with hybrid fluid-PIC simulations.

Sandia National Laboratories is a multimission laboratory managed and operated by National Technology and Engineering Solutions of Sandia LLC, a wholly owned subsidiary of Honeywell International Inc. for the U.S. Department of Energys National Nuclear Security Administration under contract DE-NA0003525

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Date submitted: 10 Oct 2017 Electronic form version 1.4