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Experimental Post-Hole Convolute Plasma Studies on a 1-MA Linear Transformer Driver (LTD)* M.R. GOMEZ, R.M. GILGENBACH, D.M. FRENCH, J.C. ZIER, Y.Y. LAU, U. of Michigan, M.E. CUNEO, M.R. LOPEZ, M.G. MAZARAKIS, Sandia National Labs — Post-hole convolutes are used to combine current from several parallel transmission lines, such that there is a low-inductance path to a single anode-cathode gap at the load. Experimental observations of the post-hole convolute are difficult to make on large systems, such as the Z-Machine at Sandia National Laboratories. A single post-hole convolute has been designed as the load for the 1 MA LTD at U. of Michigan. The geometry of the design allows diagnostic access to the post-hole region. The goal of these experiments is to monitor plasma formation in the convolute and to measure the current losses as a result of that plasma. Diagnostics under development for this experiment include B-dots for current measurement, optical spectroscopy for plasma composition, temperature and density measurements, and pinhole and laser diagnostics for imaging plasma dynamics. Experimental results will be compared to Particle-In-Cell simulations of this system using MAGIC PIC.* Research supported by Sandia National Labs subcontacts to UM. MRG sponsored by SSGF through NNSA and JZ sponsored by NPSC through DOE. Sandia is a multi-program laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the US DOE's NNSA under contract DE-AC04-94AL85000.

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