Design Studies of Magneto-Rayleigh-Taylor Instabilities on Thin Foils\textsuperscript{1} JACOB ZIER, MATTHEW GOMEZ, YUE YING LAU, RONALD GILGENBACH, WILKIN TANG, DAVID FRENCH, University of Michigan, MICHAEL CU-NEO, Sandia National Laboratories, JOHN LUGINSLAND, NumerEx — Thin foils are not widely used as z-pinch loads currently. However, they might be necessary to achieve the required mass for higher current x-ray sources, and they also offer useful options for x-ray pulse shaping [1]. This paper reports a preliminary design study on the dominant instability, the magneto-Rayleigh-Taylor instability (MRTI). Planar Al foils 400 nm thick will be used, driven by the 1-MA linear transformer driver (LTD), MAIZE, at U of Michigan. Inductance considerations and a planar foil load design are presented along with MRTI theory. Laser diagnostic images of 400 nm Al foil shots on the (U of M) MZP4 accelerator are also presented. [1] T.J. Nash, C. Deeney, G.A. Chandler et al., Phys. Plasmas 11, L65 (2004).

\textsuperscript{1}This research was supported by US DoE through Sandia National Labs award numbers 240985, 768225, 790791, and 805234 to the UM. JCZ was supported by the NPSC Fellowship sponsored by Sandia National Labs. MRG was supported by the NNSA SSGF Fellowship.

Jacob Zier
University of Michigan

Date submitted: 18 Jul 2008