

Abstract Submitted  
for the DPP08 Meeting of  
The American Physical Society

**Temperature, Density, and Opacity Gradients of K-Shell X-Ray Sources at the Z Accelerator** C.A. COVERDALE, Sandia National Labs, C. DEENEY, NNSA, DOE Headquarters, J.P. APRUZESE, Naval Research Laboratory, B. JONES, Sandia National Labs, P.D. LEPELL, Ktech Corporation, A.S. SAFRONOVA, N. OUART, University of Nevada, Reno — X-ray spectroscopy is a valuable tool for inferring properties of imploding and stagnated z-pinch plasmas. In experiments at the Z accelerator, time-integrated and time-gated spatially resolved spectra have been collected for Al (1.7 keV), SS (6.7 keV), and Cu (8.4 keV) z pinches. These spectra have been analyzed to study temperature and density gradients, using K-shell spectra for Al, SS, and Cu, and L-shell spectra from Cu. The quantitative features of the gradients will be presented, and the results compared with time-gated pinhole images that show different physical characteristics for 277 eV radiation relative to  $> 1$  keV radiation. The gradients observed in the K-shell and L-shell spectra will be compared as well. The effects of opacity have been directly observed for Al K-shell, and gradients in the opacity detailed. Opacity effects are not observed for SS or Cu. Sandia is a multi-program laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy under Contract DE-AC04-94AL85000.

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Date submitted: 19 Jul 2008

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