Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Spectroscopy and implosion dynamics of nested wire arrays produced on the 1 MA z-pinch generator at Cornell University
A.S. SAFRONOVA, V.L. KANTSYREV, N.D. OUART, M.F. YILMAZ, K. WILLIAMSON, I. SHRESTHA, G. OSBORNE, University of Nevada, Reno, J.B. GREENLY, K.M. CHANDLER, R.D. MCBRIDE, D.A. CHALENSKI, D.A. HAMMER, B.R. KUSSE, Cornell University, P.D. LEPELL, Ktech Corp. — Experiments with low wire number nested wire arrays from Al, Stainless steel, and combinations of these two materials have been performed on the 1 MA Cobra generator at Cornell University. The diagnostic complex included fast x-ray and EUV detectors, both time-gated and integrated x-ray pinhole cameras, x-ray and EUV spectrometers, and laser probing imaging. Modeling of time-gated spectra indicates that the electron temperature gradually increases with time in the nested wire array experiments that were analyzed, even after the current maximum, whereas the electron density shows more non-monotonic behavior. In addition, for spatially resolved, time integrated spectra from combination arrays, the results of modeling of radiation from outer and inner wires were compared. Modeling of K-shell Fe indicates the highest electron temperature, Te ∼800eV, which was reached with the pure SS304 nested array. This work was supported by NNSA/SSAA under DOE Cooperative Agreement DE-F03-02NA00057, by the NNSA under UNR grant DE-FC52 01NV14050, and by Sandia National Laboratories under DOE contract DE-AC04-94AL85000.

Alla Safronova
University of Nevada, Reno

Date submitted: 23 Jul 2006 Electronic form version 1.4