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Studies of Al and W wire array z-pinches, and the role of "magnetic bubbles" in energy deposition at 1 MA Cobra generator V. KANTSYREV, A. SAFRONOVA, D. FEDIN, A. ESAULOV, V. NALAJALA, N. OUART, F. YILMAZ, T. HOPPE, G. OSBORNE, K. WILLIAMSON, University of Nevada, Reno, J. GREENLY, J. DOUGLASS, R. MCBRIDE, L. MAXSON, D. HAMMER, Cornell University, A. VELIKOVICH, Naval Research Laboratory — Implosions of cylindrical arrays with eight 12.5 μm Al or 5.1 μm W wires were studied on the 1MA, 100-150 ns rise time COBRA generator. X-ray and EUV detectors, time-gated cameras, spectrometers, backlighters and electrical diagnostics were used. Total radiation yieldsof 2.8 and 3.7 kJ, and total radiated powers of 15 GW and 25 GW were measured for Al and W, respectively. The keV yield for W arrays was lower than for Al. The Al spectra have shown T_e from 200 eV to 300 eV. X-ray spectra from W arrays included very weak spectral features that were compared with results from W/Mo X-pinch experiments. Relatively uniform plasma columns (life-time 5-10 ns) were observed on time-gated images during the initial implosion stage for both Al and W. Studies of the possible role of "magnetic bubbles" on energy deposition were initiated based on the plasma resistance compared with the nonlinear resistance predicted by theory, total radiation yield, and the time-gated and backlighting images. This work was sponsored by NNSA through DOE Coop. Agreement DE-F03-02NA00057 and in part by the DOE/ NNSA under UNR grant DE-FC52-01NV14050.

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