

Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

Spectroscopic Analysis of Plasma Formation in Flash X-ray Radiographic Diodes at SNL* M.D. JOHNSTON, K. HAHN, D. ROVANG, S. PORTILLO, J.E. MAENCHEN, Sandia National Laboratories, D. DROEMER, Bechtel-Nevada, B.V. OLIVER, D.R. WELCH, Mission Research Corporation, E. SCHAMILOGLU, University of New Mexico, Y. MARON, Weizmann Institute of Science — Investigations are underway to study plasmas in flash x-ray radiographic diodes at Sandia National Laboratories. Studies were conducted on the RITS-3 accelerator (5.25MV and 120kA) and are being planned for the new RITS-6 accelerator (10MV and 120kA). Plasma spectroscopy is being employed as a primary method for obtaining information on the plasma conditions during electron beam propagation. Plasmas are believed to affect the impedance and beam focusing/transport behaviors of radiographic diodes. To date, studies have been conducted on four diode configurations: the plasma-filled paraxial, the standard paraxial, the self magnetic pinch, and the immersed Bz. Line and continuum emission has been observed for all diodes allowing determinations of electron and ion densities, temperatures, charge states, and expansion velocities to be made. Diagnostics include a gated, intensified multichannel plate camera with a multifiber input, and a multichannel plate intensified streak camera, each combined with a 1 meter Czerny-Turner monochromator. *Sandia is a multi-program laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy under Contract DE-AC04-94-AL85000

Mark Johnston
Sandia National Laboratories

Date submitted: 22 Jul 2005

Electronic form version 1.4