

Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

Wire-Array Precursor Plasma Interactions With On-Axis Foam

Targets J.B.A. PALMER, AWE Plc, UK, S.N. BLAND, S.V. LEBEDEV, S.C. BOTT, J.P. CHITTENDEN, D.J. AMPLEFORD, G. HALL, M. SHERLOCK, J. RAPLEY, Imperial College, London, UK — The Dynamic Hohlraum (DH) Z-pinch on Z at Sandia National Laboratory (SNL) has been used to drive Inertial Confinement Fusion (ICF) and High Energy Density Physics (HEDP) relevant experiments. The power pulse from the DH cannot yet be reproduced using codes that can reproduce the performance of a Vacuum Hohlraum (VH) configuration on Z. Unlike the VH the DH has a low-density CH foam cylinder placed on the array axis. Production of precursor plasma, prior to the main implosion, is not included in the codes. This plasma is accelerated towards the array axis by the global $J \times B$ force and impacts onto the on-axis target. This bombardment alters the foam in various ways. Experiments have been performed on the 1 MA MAGPIE generator at Imperial College, London, to investigate the effect of this precursor bombardment. Diagnostics used were point-projection radiography with x-pinches, x-ray emission framing cameras, shadowgraphy and photoconduction diodes. Results show ablation of low-density plasma from the foam surface and compression of the foam by precursor pressure. Research sponsored by AWE, SNL, the SSAA program of NNSA under DOE Cooperative Agreement DE-FC03-02NA00057.

J.B.A. Palmer
AWE Plc, UK

Date submitted: 01 Aug 2005

Electronic form version 1.4