

Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

Review of Bias Field Operation on SSPX R.D. WOOD, D.N. HILL, E.B. HOOPER, H.S. MCLEAN, C.A. ROMERO-TALAMAS, Lawrence Livermore National Laboratory — We have carried out experiments to explore how different vacuum magnetic-field configurations affect plasma performance on SSPX. Six independently controllable magnetic field coils and power supplies can be programmed to obtain a wide range of field line configurations: those with vacuum magnetic field lines passing parallel to the side walls of the SSPX chamber and those with diverging fields passing through the side walls of the chamber. The new coils have greatly expanded the density range over which good spheromak plasmas are observed. This results from the ability to form, using the bias coils, a Penning discharge so that spheromak formation can be obtained at lower input gas pressure. In addition, spheromak theory suggests an increase in field amplification could be expected with magnetic field lines parallel to the chamber walls. We observed about a 20% increase in field amplification suggesting that current flow during formation and the resultant MHD stability play an important role in magnetic field build up. Energy confinement and magnetic field generation during operation with the bias coils will be presented. This work performed under the auspices of the USDOE and the University of California Lawrence Livermore National Laboratory under Contract No. W-7405-ENG-48

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Date submitted: 26 Jul 2005

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