

Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

Development of Particle and Impurity Control Techniques for NSTX¹ M.G. BELL, H.W. KUGEL, D.A. GATES, R. KAITA, D. MUELLER, C.H. SKINNER, B.C. STRATTON, PPPL, R. MAINGI, ORNL, V.A. SOUKHANOVSKII, LLNL, R. RAMAN, UW, NSTX TEAM — The existing techniques for impurity control in NSTX of bakeout, boronization at about 2-week intervals, and helium glow-discharge between shots, have been expanded. Boronization during bakeout, using glow-discharge decomposition of ~ 10 g of deuterated trimethyl boron (DTMB), yields an initial improvement over boronization on cold surfaces. However, the effects of hot and cold boronization become comparable as plasma exposure accumulates. A brief (~ 15 min) boronization applied in the morning before an experiment using only about 1g of DTMB can then restore good conditions. Density control is also needed to achieve efficient current-drive for non-inductive sustainment. Repeated ohmic helium discharges reduce recycling from the plasma-facing surfaces. Injection of lithium pellets into these discharges has now been used to deposit lithium on either the center column or the lower divertor target. In subsequent deuterium plasmas with 4MW of NBI, the volume-average densities were reduced by factors 4 - 5 and the density profiles became peaked for both divertor and limiter configurations.

¹Supported by US DOE contract DE-AC02-76CH03073

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Date submitted: 22 Jul 2005

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