Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

L-H Threshold Studies in NSTX[1] S.M. KAYE, PPPL, R. MAINGI, D. BATTAGLIA, ORNL, R. BELL, PPPL, C.S. CHANG, NYU, B. LEBLANC, J. HOSEA, H. KUGEL, PPPL, H. MEYER, Culham Laboratory, UK, G.-Y. PARK, NYU, J.R. WILSON, PPPL — L-H transition experiments in NSTX have been run in support of the high priority ITER and ITPA issue of access to the H-mode. Experiments revealed that the L-H threshold power for helium was 20 to 40% greater than that for deuterium. There was a ∼35% reduction in the threshold power for discharges using lithium evaporation. Application of n=3 fields at the plasma edge, potentially critical for suppression of ELMs in ITER, resulted in a 65% increase in threshold power with no change in plasma rotation. Threshold powers were almost a factor of two greater at 1 MA than at 0.7 kA, consistent with calculations from XGC0 showing a deeper E_r well and stronger E_r shear near the edge at lower current. Low triangularity discharges required lower heating powers to transition into the H-mode, also consistent with XGC0. No systematic differences in T_e, n_e, p_e, T_i, v_ϕ or their derivatives between purely L-mode and pre-transition H-mode plasmas were found.

[1]This work was supported in part by U.S. DOE Contract DE-AC02-09CH11466.

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Date submitted: 14 Jul 2010 Electronic form version 1.4