

Abstract Submitted  
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**Effects of Evaporated Lithium Coatings on Plasma-Facing Surfaces in NSTX**<sup>1</sup> M.G. BELL, R.E. BELL, R. KAITA, H.W. KUGEL, B.P. LEBLANC, R. MAJESKI, D.K. MANSFIELD, J.E. MENARD, S.F. PAUL, J.A. ROBINSON, H. SCHNEIDER, C.H. SKINNER, J.R. TIMBERLAKE, PPPL, AND THE NSTX TEAM — An evaporator has been used to apply lithium to the carbon tiles on the lower divertor in NSTX at rates up to 70mg/min. Numerous lithium depositions were performed in the 2007 operating period, ranging from about 10mg to 2g but typically 200 - 300mg of lithium prior to a discharge. The lithium evaporation continued through the 5 - 10 min. of helium glow discharge cleaning usually applied before each shot and during the tokamak discharge as well, which distributed the lithium more widely than line of sight. Examination of the divertor tiles after the experiments showed migration of the lithium away from the strike-points. The effects of lithium were studied over a range of plasma conditions. In 1MA, 0.45T, H-mode plasmas with 4MW NBI, there was an increase of about 20% in the electron and 10% in the total stored energy and ELM activity was reduced or suppressed after lithium. This was accompanied by increasing impurity radiation from the core which sometimes limited performance. Contrary to previous experience, the effects of the lithium coating could persist for several discharges after application.

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