Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Initial Physics Operation of the National Spherical Torus Experiment- Upgrade[1] DENNIS MUELLER, Princeton Plasma Physics Laboratory, NSTX-U TEAM — The National Spherical Torus Experiment Upgrade (NSTX-U) is an experiment designed to study the physics of Spherical Torus (ST) at about twice the toroidal field and neutral beam injection (NBI) power as NSTX for 5 s. at full parameters. In its initial operational period NSTX-U will limit operation to $B_T \leq .75$ T but the full complement of 6 neutral beam (NB) sources will be available. Three NB sources added during the upgrade inject more tangentially and will be essential to investigate the physics of neutral beam current drive. In NSTX-U, use of a digital real-time plasma control system and the application of wall conditioning techniques will be used to achieve routine operation with good confinement. The wall conditioning techniques include bakeout to over 300°C, helium glow discharge cleaning, boronization of the plasma facing surfaces using deuterated trimethylboron gas in a helium glow discharge and lithium evaporation onto the walls. Auxiliary heating by up to 6 MW of High Harmonic Fast Waves will be available. The operational experience during the plasma commissioning phase will be discussed.

[1]Work Supported by U.S.D.O.E. Contract No. DE-AC02-09CH11466

Dennis Mueller
Princeton Plasma Physics Laboratory

Date submitted: 24 Jul 2015 Electronic form version 1.4