

## NSTX-U Weekly Report (Oct. 12, 2012)

### **NSTX-U is in the Upgrade Project outage in FY 2013**

Some of the NSTX-U researchers participated in the 24th IAEA Fusion Energy Conference held in San Diego, CA from Oct. 8-13, 2012. These included PPPL scientists as well as collaborators from both on- and off-site. S. Sabbagh (Columbia University) gave the NSTX overview talk entitled “Overview of Physics Results from the National Spherical Torus Experiment”. There were, additionally, five oral talks: “The Dependence of H-mode Energy Confinement and Transport on Collisionality in NSTX” by S. Kaye (PPPL), “Progress in simulating turbulent electron thermal transport in NSTX” by W. Guttenfelder (PPPL), “Disruptions in the High- $\beta$  Spherical Torus NSTX” by S. Gerhardt (PPPL), “The nearly continuous improvement of discharge characteristics and edge stability with increasing lithium coatings in NSTX” by R. Maingi (ORNL) and “Progress on developing the spherical tokamak for fusion applications” by J. Menard (PPPL). NSTX had 23 poster presentations by M. Ono (PPPL), R. Raman (University of Washington), Y. Ren (PPPL), D. Smith (University of Wisconsin), S. Kubota (UCLA), N. Crocker (UCLA), E. Belova (PPPL), M. Podesta (PPPL), J. Berkery (Columbia University), E. Fredrickson (PPPL), A. Diallo (PPPL), J. Canik (ORNL), V. Soukhanovskii (LLNL), F. Scotti (PPPL), T. Gray (ORNL), M. Jaworski (PPPL), D. Battaglia (PPPL), J-W. Ahn (ORNL), R. Perkins (PPPL), J-K. Park (PPPL), E. Kolemen (PPPL), J. Myra (Lodestar), and R. Goldston (PPPL). The NSTX-U researchers contributed to two post deadline papers: “Results from initial snowflake divertor physics studies on DIII-D” by S.L. Allen (LLNL), V.A. Soukhanovskii (LLNL) et al., and “First observation of ELM triggering by injected Li granules in EAST” by D.K. Mansfield et al. (S. Kaye)

Purdue University graduate students Sean Gonderman and Felipe Bedoya visited PPPL on Monday, October 8. They took the Materials Analysis and Particle Probe (MAPP) chamber and electronics rack back to Purdue to calibrate the diagnostics for in-situ surface analysis. The goal is to return the MAPP to PPPL at the beginning of the next calendar year for the study of samples exposed to LTX plasmas. This will also serve as a test of MAPP on an operating tokamak prior to installation on NSTX-U. (R. Kaita, PPPL)

### **Engineering Operations (A. von Halle, C. Neumeyer)**

NSTX Upgrade construction activities continued this week with the installation of an outer TF coil in the #4 position, and the start of the installation of scaffolding on the NW side of the machine to support the vessel cutting at bays J, K, & L as needed for the second neutral beam (NB2) to vacuum vessel interface. NB2 has been lifted on to the legs to match the height of the NSTX vacuum vessel, and those legs have been welded in place. The wood mock-up of the new Bay J-K flange has been removed from the vessel to allow for NB2 to NSTX vessel metrology. The inner TF Quadrant Mold was cleaned, prepped, and leveled using the Laser tracker, and the loading of TF inner conductors into that mold is in progress.

Preparations of non-upgrade equipment for plasma operations in the NSTX-U configuration continued with the installation of the prototype new fault detector in a FCPC rectifier. Testing of that rectifier using both the prototype fault detector and the new firing generator is scheduled to start next week. Fabrication of the full set of new firing generators for the remaining rectifiers continues to make good progress.

Access to the NSTX test cell will be available only through previous arrangement with the Upgrade Work Control Center.