

## **NSTX-U Weekly Report (Aug. 31, 2012)**

### **NSTX-U is in the Upgrade Project outage in FY 2012**

Jon Menard attended the ANS 20th Topical Meeting on the Technology of Fusion Energy (TOFE-2012) in Nashville, TN held August 27-31, 2012 and gave a plenary presentation entitled "National Spherical Torus Experiment Upgrade – Status and Plans". He also participated in a tour of two ORNL facilities: the High Flux Isotope Reactor (HFIR) and the Spallation Neutron Source (SNS). The presentation can be viewed at

[http://nstx.pppl.gov/DragNDrop/Scientific\\_Conferences/TOFE/2012/Menard\\_NSTX-U\\_TOFE2012\\_v2.pdf](http://nstx.pppl.gov/DragNDrop/Scientific_Conferences/TOFE/2012/Menard_NSTX-U_TOFE2012_v2.pdf). (J. Menard)

M. Ono attended the Joint Conference of the International Conference on Open Magnetic Systems for Plasma Confinement (OS) and the International Workshop on Plasma Material Interaction Facilities for Fusion (PMIF) held August 27-31, 2012 in Tsukuba, Japan. He gave an invited plenary presentation entitled "Overview of innovative PMI research on NSTX-U and related PMI facilities at PPPL". The presentation can be viewed at

[http://nstx.pppl.gov/DragNDrop/Scientific\\_Conferences/PMIF/2012/](http://nstx.pppl.gov/DragNDrop/Scientific_Conferences/PMIF/2012/). (M. Ono)

PPPL graduate student Tyler Abrams recently returned from a summer practicum at the University of Illinois at Urbana-Champaign. He worked in the Department of Nuclear, Plasma, and Radiological Engineering in the laboratory of NSTX-U collaborator Professor David Ruzic. Abrams used a deuterium beam for surface sputtering measurements of a molybdenum alloy (TZM) with and without lithium coatings. They are important to NSTX-U since TZM is under consideration as a future plasma-facing component. (R. Kaita)

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

NSTX Upgrade construction activities continued this week with the completion of the welding of the new upper TF clevis pads to the vacuum vessel. All metrology needed for the bay L vessel cut has been completed, and that cut will be performed when new MPTS windows are ready. New hardware for the lower PF2 supports has been installed, and installation of the PF3 support hardware is in progress. The rework of the new bay J-K cap and port extension is nearing completion with the replacement of the Bay J nozzle tube, and that assembly will be shipped off-site next week for a vacuum bake. In the coil fabrication shop, the 9th and 10th TF inner conductors are being insulation wrapped. On neutral beams, the last sections of LN2 piping needed before the NB2 move into the test cell have been installed, and the external decontamination of NB2 equipment is on track to be ready for that move. Space allocations in the D-Site Electronics Junction Area have been established for new PCS, DCPS and NSTX-U power supply control equipment.

Preparations of non-upgrade equipment for plasma operations in the NSTX-U configuration also continued. A peer review of the proposed configuration of the NSTX Gas System was held, and progress was made on establishing locations for required penetrations. Engineering actions for analysis, penetrations, plumbing, valves and gauges will now be scoped-out, costed, and prioritized. This includes a new gas delivery system for boronization. The IT group is developing Plasma Control System Algorithms for the proposed power, gas, and magnetic

diagnostic system configurations. We are in the process of testing interfaces for the prototype fault detector and firing generator. The fault detector system test procedure will be ready to go out for review by early next week. Painting and general maintenance of outdoor equipment continued.

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