

## **NSTX Weekly Report (October 12, 2007)**

### **FY 2008 NSTX plasma operations**

**Planned: TBD**

**Completed: 0 weeks**

Members of the NSTX Research Team attended the 13th International Workshop on Spherical Torus 2007, Oct. 10 – 12, 2007 in Fukuoka, Japan and made the following invited and contributed presentations: “NSTX Research Facility and Recent Experimental Highlights” by M. Ono, “Progress in MHD and Transport Science and the Development of Operational Scenarios on NSTX” by D. Gates, “Impact of a Tracer Encapsulated Solid Pellet Injection on NSTX Plasmas” by N. Tamura (NIFS, Japan), “Confinement Transport and Turbulence Properties of NSTX Plasmas” by D. Mikkelsen, and “Overview of Solenoid-free Plasma Start-up Research in NSTX and HIT-II using Transient CHI” by R. Raman (University of Washington).

Two NSTX team members attended the 10th IAEA TCM on Energetic Particles in Magnetic Confinement Systems, Kloster Seeon, Germany, October 8-10, 2007. E. Fredrickson reported recent results from NSTX from Alfvén Eigenmode avalanches in which eigenmodes with a series of  $n$  numbers are sequentially destabilized. D. Darrow presented an invited talk on fast time-resolved neutral-beam ion losses from energetic particle mode bursts showing loss of full-energy beam ions over a wide range of pitch angles during such bursts.

J. Menard attended the 10th ITPA MHD Topical Group Meeting at IPP-Garching 10th-12th October 2007 and gave 3 presentations entitled: "Status and issues for RMP & RWM coils in ITER" representing the work of ITER WG#1 and the USBPO, and "Improved RFA and RWM detection and control in NSTX" and "Detection, correction, and applications of  $n=3$  error fields in NSTX" representing NSTX.

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

The NSTX outage continued this past week with the ongoing replacement of plasma facing component tiles, and the remounting of refurbished diagnostic valves and windows. The PCHERS shutters are complete, and the flanges for that diagnostic have been installed at Bays A and B. Surface analysis of representative PFC tiles has been completed by Sandia National Lab, and these tiles have been shipped back to PPPL for re-installation in NSTX. The first of three refurbished neutral beam ion sources was installed on NSTX this week. In-situ tests and inspections of the neutral beam calorimeter were successfully completed. Also this week, upgrades to the diagnostic grounding system were completed and tested.

The NSTX test cell will be in unrestricted (card reader) access this coming week, except for 1st shift on Tuesday Oct 16 during the replacement of the neutral beam torus isolation valve.

### **Research Operations (M. Bell)**

#### **Boundary Physics Operations (H. Kugel)**

Graphite PFCs tiles exposed to plasma during the FY07 experimental campaign were received from SNL where Ion beam Analysis of the plasma-facing surfaces had been completed and data analysis is

still in progress (W.R. Wampler, SNL). The returned tiles were cleaned using the same technique applied to the in-vessel tiles, and preparations are being made to reinstall them.

The design of the port covers for two LITER systems with lithium shutters was completed, and work on the final drawings is in progress.

R. Nygren, SNL manager for the NSTX liquid lithium divertor project, will be visiting the ENEA laboratory in Frascati, Italy next week to discuss the lithium limiter experiments in FTU, and the associated technologies and procedures.

#### Diagnostic Operations (R. Kaita)

The new and modified window flanges for the PCHERS diagnostic were reinstalled on the vacuum vessel. Modifications had been made to the shutter mechanisms to prevent jamming.

A Peer Review was held for the polarizer for the MPTS collection optics and the drawings for the components have been forwarded to the machine shop for fabrication.

A Final Design Review was held for the Divertor Bolometer Upgrade. Components are now being fabricated.