

## NSTX Weekly Report (Oct. 31, 2008)

### FY 2009 NSTX plasma operations

**Planned: TBD**

**Completed: 0 run weeks**

- Several NSTX related talks were contributed at the ITPA meetings in Milan: Review of L-H transition experiments in NSTX (R. Maingi, ORNL) ELM pace making with magnetic perturbations in NSTX (J. Canik, ORNL) Comparison of small ELM regimes in Alcator C-Mod, MAST, and NSTX - PEP-16 (R. Maingi) PEP6 status: dependence of pedestal structure and ELMs on drsep (R. Maingi) PEP9 status: dependence of pedestal structure on aspect ratio (R. Maingi).
- Stanley Kaye, David Mikkelsen and T.S. Hahm attended the Transport and Confinement ITPA meeting held in Milan, Italy on 20-22 October 2008. Stanley Kaye gave a talk at Columbia University on October 31, 2008. The title of the talk was "Transport Physics in NSTX". (S. Kaye)
- David Gates attended the Integrated Operational Scenarios group meeting of the ITPA in Lausanne Switzerland, where he made a presentation entitled "NSTX contributions to ITPA-ISO" on Monday October 20th. In addition, opportunities for NSTX participation on joint experiments were discussed. Several opportunities where NSTX participation would help clarify important physics scalings were identified and a list of potential joint experiments was generated. This list will be presented to the governing bodies for approval. In addition, on Monday October 27th D. Gates presented a talk entitled "Overview of recent NSTX results" to the MAST team at Culham laboratory in England. (D. Gates)

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

The NSTX outage continued this week with the ongoing vacuum vessel machining of viewing ports for the new Beam Emission Spectroscopy (BES) diagnostic. The HHFW antenna upgrade work will start after the completion of the BES port installation. The reassembly and alignment of the reconditioned neutral beam helium refrigerator compressors is underway, and spare ion sources are being prepared for the upcoming run. The NSTX test cell will be in free (card reader) access this coming week.

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

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

- Liquid Lithium Divertor (LLD)
  - Tray Approach-1: C10100 copper, 316SS, and Ag-ABA braze compound received. Preparations in progress to vacuum braze plates prior to initial machining.
  - A teleconference was held between NSTX, SNL-NM, and SNL-CA team members to discuss progress on Approach-3
  - Tray Approach-3: Started 10/29 to forge 1.5" thick Cu plates into conical segments.

- A teleconference was held between NSTX and SNL-NM team members to discuss progress on the final design of the Control Rack.
- Controls design ~80% done. Close communications between SNL and PPPL engineers to complete design in next 3 weeks, and be reviewed prior to FDR (~Nov-Dec 08).
- Design of rack installation, cable trays, and cabling in progress.

- L245 LLD SAMPLE TESTING

-The first laboratory test for solid lithium loading of the LLD was completed. After about 9 days at room temperature, reheating of a previously wetted liquid lithium loaded, porous moly surface exhibited a clean, shiny surface. This behavior is attributed to the plasma sprayed porous molybdenum surface; this behavior not seen previously with free surface lithium on stainless steel.

- LITHIUM DROPPER

-A "Peer Review of FY09 Lithium Dropper Plans" by D. K. Mansfield was found to be successful, pending resolution of the CHITS. Gate valves for 2 units will be installed. A robust unit is being fabricated and a backup spare. The backup will be available for a 2-unit installation pending outcome of the characterization XP.

#### Diagnostic Operations (R. Kaita)

- The collection mirror and windows for the high-k turbulence diagnostic have been cleaned. The mirror has been reinstalled, and an optical check of its location relative to its settings will be performed. Connections to the remote position control hardware for all of the mirrors will then begin.