

## NSTX Weekly Report (Nov. 10, 2006)

### FY 2007 NSTX plasma operations

**Planned: TBD**

**Completed: 0 weeks**

- Members of the NSTX Team attended the Workshop on Active Control of MHD Stability: Active MHD Control in ITER on November 6 – 8, 2006 in Princeton, NJ. S. Sabbagh (Columbia University) gave an invited talk entitled “RWM control in NSTX” and Aaron Sontag (Columbia University) gave a contributed talk entitled “RWM passive stabilization in NSTX”.
- The following papers presented at the 17th International Conference on Plasma Surface Interactions in Controlled Fusion Devices in Hefei, China in May 2006 have been accepted for publication in the Journal of Nuclear Materials: 1) "Three-dimensional structure of MARFES and ELMs in the National Spherical Torus Experiment", R. J. Maqueda (Nova Photonics), et al. 2) "Effect of Lithium PFC Coatings on NSTX Density Control", H. W. Kugel, et al. 3) "Divertor Heat Flux Scaling with Heating Power and Plasma Current in H-mode Discharges in the National Spherical Torus Experiment", R. Maingi (ORNL), et al. 4) "3D measurements of mobile dust particle trajectories in NSTX", A.L. Roquemore, et al. 5) "Pulse-by-pulse measurements of deposition in NSTX", C.H. Skinner, et al. 6) "Divertor heat flux reduction and detachment at low aspect ratio: experimental results from NSTX", V. A. Soukhanovskii (LLNL), et al. and 7) "Details of Neutral Transport in Gas Puff Imaging Experiments", D. Stotler, et al. (H. Kugel)
- There will be an NSTX Physics Meeting on Monday, Nov. 13 at 1:30 pm in LSB 318. King-Lap Wong will give a talk entitled: “Microtearing mode effects on electron transport in NSTX”. (S. Kaye)

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

The NSTX outage continued this past week with the completion of in-situ machining at the side of the bay K port extension and the mounting of the nozzle for the new Transmission Grating (TG) USXR Imaging Spectrometer diagnostic from Johns Hopkins University. The upper and lower machine flanges for the new Poloidal CHERS diagnostic have been installed at Bay A and are being aligned. The final two flanges for this diagnostic are scheduled to be installed at Bay B next week. Additional thermocouples and a new cooling manifold have been installed in the area around the upper ceramic break to allow for additional bakeout capability of the inner divertor tiles. The neutral beam calorimeter was reinstalled in the beam-line this week, and assembly of the new molybdenum shields in the neutral beam to torus transition duct is in progress. A modification of the in-vessel neutral beam armor to accommodate FIRE TIP diagnostic sight-lines has been completed, and the collection mirror for the high-K scattering diagnostic has been reinstalled in preparation for a calibration of that system over the weekend. The MPTS diagnostic window has been installed and an alignment of that diagnostic is scheduled for next week.

The test cell will remain in free (card reader) access through most of the coming week.

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

### Boundary Physics Operations (H. Kugel)

- SNL has completed nuclear reaction measurements for lithium and deuterium concentrations on 21 NSTX tiles. Data analysis of the measured nuclear reaction spectra is in progress. The tiles are boxed and being prepared for shipment, and are expected to arrive at NSTX by 11/15/06. (W.R. Wampler, SNL)

### Diagnostic Operations (R. Kaita)

- A peer review was held on Tuesday, November 7, for the thermocouples to be placed in the vicinity of the steering mirror for the high-k turbulence diagnostic. They will indicate if the temperature range would be appropriate for a proposed mirror drive motor, and it was decided that two thermocouples should be installed for this purpose.
- The support brackets for the new high-frequency Mirnov magnetic sensor coils have been completed. The fabrication of shields for them is in progress, and the coils will be installed once they are finished.
- The new segmented Rogowski coil has been constructed, and covered with an electrostatic shield. It will be installed in place of one of the existing center stack Rogowski coils for halo current measurements.
- The machining of the Bay K penetration for the Johns Hopkins University transmission grating X-ray spectrometer was completed. The tube and flange for mounting the diagnostic were also welded in place.
- The modifications to the neutral beam armor on the outer vacuum vessel wall were completed. The changes should remove obstructions to two sightlines for the FIRETIP plasma density profile diagnostic.
- Pre-run calibrations for various systems have begun. The supersonic gas injector calibration was completed, and the spatial alignment and focusing of the 32-channel optical fiber array for divertor imaging were performed.