NSTX Weekly Report (Apr. 22, 2005)

FY2005 Planned Operations: 17 weeks
Completed: 0 weeks producing 0 plasmas

Department, Project, Program (M. Ono, M. Peng, E. Synakowski)

• The data gathering phase of the ELM imaging collaboration between NSTX and DIII-D using the Hiroshima Univ. fast camera was completed. Excellent data were obtained during various types of ELMs with various filters. In addition, the divertor view enabled imaging of pellets, impurity injection, and dust. The collaboration involves many scientists from 5 institutions: General Atomics, Hiroshima University, LLNL, ORNL, and PPPL. (R. Maingi, ORNL)

• Martin Peng (ORNL) visited Niigata University during April 14-16 to collaborate on two-fluid model for the NSTX plasma. He also attended discussion meetings on the US-Japan ST collaboration opportunities. (M. Peng)

• Marting Peng (ORNL) and Stan Kaye participated in the ITPA meetings during April 18-22 in Kyoto, Japan. NSTX participation at the ITPA meetings included presentations by S. Kaye in the Confinement Data Base and Modeling Topical Group meeting on "Update on NSTX Confinement Analysis", "Preliminary Analysis of DB4V1", "Recent NSTX Contributions to the L-H Threshold Database" and "Update on CD6" on behalf of Ed Synakowski". M. Peng participating in the Transport Physics Topical Group meeting and presented "TP-8.1: 2005 NSTX/MAST iITB identity experiments - 2006 comparison experiments discussion," and on "TP-9: Status of NSTX/DIII-D/MAST aspect ratio core confinement comparison studies," on behalf of E. Synakowski. A presentation by Rajesh Maingi (ORNL) in the Pedestal & SOL Topical Group meeting on "PEP-9: Dependence of the H-mode pedestal structure on aspect ratio: DIII-D/NSTX/MAST joint experiment" was made by Andrew Kirk of MAST, England. (M. Peng, S. Kaye)

• The NSTX Team Meeting was held on April 20. The meeting material is available on the NSTX web.

• NSTX Physics Meeting Schedule is as follows (S. Kaye):
- Monday, April 25, 1:30 pm in LSB318: “Multi-machine Comparison of H-mode Pedestals,” Rajesh Maingi, “Steady-state Scenarios in NSTX,” Chuck Kessel.
- Tuesday, April 26, 10 AM in LSB318: - Note special time – “New Fast Ion Diagnostic, Experiments on DIII-D and Possible Application to NSTX,” by Bill Heidbrink (UCI)

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

A high temperature bake of the NSTX vacuum vessel was completed this past

week, including a vessel boronization at bake-out temperatures using trimethylboron (TMB). NSTX vacuum conditions are ready for plasma operations this coming week, and fresh TMB bottles have been installed on the delivery manifold to allow for additional TMB injections as required by the experimental program. Both Raman and Rayleigh scattering calibrations of the 20 channel MPTS diagnostic were completed before the start of bake-out operations, and work continued to add the polychromators for an additional 10 channels on that diagnostic. The UCSD team visited PPPL this week, and worked through the weekend to install a new head and electronics on the fast reciprocating probe. A spare neutral beam ion source was installed in the "B" position and conditioning of the source plasma chamber is in progress, with beam conditioning expected to begin sometime next week. The ion sources in the "A" and "C" positions are currently ready to support injection operations. Inspections of weld repairs made to the rotor on the motor generator set indicate that the system has remained stable after a week of full field machine tests and plasma operations.

Plasma operations will resume on Monday morning following coils system insulation checks (hiPots) and resistance checks. There will be no access to the NSTX test cell during plasma operations on the 1st shift this coming week, with plans to extend the run day to 7PM on Tuesday and Thursday. The test cell will be in controlled access each evening from the end of run day until 10PM. A machine area scrub will be performed from 10-11PM each evening in preparation for the following day's run. (A. von Halle)

Research Operations (M. Bell)

Boundary Physics Operations (H. Kugel)

• The bellows motion translator for the Moveable GDC (MGDC) probe was received from the vendor and acceptance testing was started. (T. Provost)

• Parts shipped from UCSD for the Fast Probe were received. The UCSD Fast Probe team arrived and upgraded the probe shaft and associated signal electronics. The new probe shaft design eliminated 21 coaxial wires from the inside of the tube and it vacuum pumps much faster. The electronics box has been expanded to activate all the probe tips. (J. Boedo, UCSD)

• The LPI was installed on the vessel and loaded with Li, B, and C pellets.

• The upper divertor and center stack Infra-Red cameras were calibrated during the vessel bake. The lower divertor Infra-Red camera has a previous calibration from the Jan. 2005 vessel bake.(R. Maingi, ORNL)

• NSTX TMB Boronization-40 was performed.

Diagnostic Upgrades (D. Johnson)

• Field installation of the additional 10 MPTS channels continued, now that fabrication of all associated electronics and cables is complete

• During access at the end of the bakeout week, work began on removal of several mechanical interferences associated with the high - k scattering detection system.

Diagnostic Operations (R. Kaita)

• Magnetics calibration data obtained last week has been processed, and the latest calibration info distributed for usage by EFIT and rtEFIT in support of operations next week. Final calibration of the vessel current calculator will be performed early next week.

• The Rayleigh scattering calibration of the multipoint Thomson scattering diagnostic was completed.

• Fast visible cameras are being installed on Bays K and L in support of experiments that will be performed when plasma operations during the upcoming week.