

NSTX Weekly Report (Feb. 18, 2005)

FY2005 Planned Operations: 14 weeks
Completed: 0 weeks producing 0 plasmas

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

- Jon Menard, Steve Sabbagh (Columbia University), and Martin Peng (ORNL) attended the 59th Workshop of the International Energy Agency Large Tokamak Implementing Agreement on "Shape and Aspect Ratio Optimization for High Beta Steady State Tokamak during February 14-15. Two NSTX presentations were also made at the meeting: "Ideal MHD Stability Scaling with Aspect Ratio, Shaping, and q" by Menard, and "Aspect Ratio Considerations for Resistive Wall Mode Stabilization" by Sabbagh. They attended the DIII-D Advisory Committee Meeting, which continued through February 17, with Sabbagh also serving as a member of this committee. (M. Peng)
- We will hold our NSTX Physics Meeting on Monday, 2/21 at 1:30 pm in B252 (**NOTE CHANGE IN ROOM**). At the meeting, Dave Gates will summarize the IAEA Technical Committee Meeting on Steady State Operation that he attended. (S. Kaye)

Physics Analysis (S. Kaye, C. K. Phillips)

Sid Medley reported on results of a study of the variations in the NPA signal shortly after neutral beam turn on. The results of the study indicated that fast ion confinement at this time in the discharge is crucially dependent not only on the plasma current, but on the size of the plasma-wall gap and the particular source injected. The signal is often large after beam turn-on, followed within approximately 10 msec by a sharp drop-off, consistent with increased orbit loss as calculated by TRANSP. This feature occurs only with NBI early in the discharge, and occurs at all energies although it is delayed at lower energies, consistent with the beam slowing down time. There is a strong correlation of this signal with both plasma current and the outer gap; specifically, the outer gap fluctuates during the early part of the discharge (at ~100 msec) more than later (at ~200 msec). As the gap grows (plasma shrinks), the fast ion loss decreases, and the NPA signal drops. The data also suggests that less loss is associated with Source A, with 600 kW more heating power delivered to the plasma 20 msec after beam turn-on than with Source B.

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

The NSTX outage continued this past week with the ongoing assembly of the TF joint flag and box assemblies on the TF inner bundle. Leak checking of the flag and box assemblies has been completed, and alignments of the completed assemblies on the inner TF bundle is in progress with plans to start the epoxy

potting of the boxes this coming week. The new PF1A upper coil was installed on the OH coil, and insulation tests (hiPots) of the OH coil were successfully completed. The OH/PF1A assembly will be lifted into the NSTX center stack after the installation of the remaining magnetic sensors. Commissioning of the new Switching Power Amplifier (SPA) supply needed for Resistive Wall Mode experiments continued with the terminations and testing of the fiber optic control system interfaces. Preparations of the NSTX power systems for operations also continued this week with the replacement of one of the rim keys on the motor generator set.

There are no NSTX test cell access restrictions scheduled for this week. (A. von Halle)

Research Operations (M. Bell)

Boundary Physics Operations (H. Kugel)

- The Edge/Boundary Physics ET Group reviewed the following Experimental Proposal: XP: Fast 2-D tangential Imaging of Edge Turbulence: Neon Mantle, R.J. Maqueda (Nova Photonics), et al. (R. Kaita)
- Several LPI maintenance activities were in progress; flow testing of the propellant valves was initiated.

Diagsnotic Operations (R. Kaita)

The flux loops for the upper PF1A poloidal field coil have been installed. The locations have also been marked on the Ohmic heating coil cylinder for the insulating tape that defines the wire lead runs for the remaining center stack thermocouples and flux loops. These sensors will be attached next week