

NSTX Weekly Report (Jan. 20, 2006)

FY2006 weeks of research operations

Planned: 11 weeks

Completed: 0 weeks

NSTX Department (M. Ono, M. Peng)

- C. H. Skinner attended the 7th ITPA meeting on SOL/divertor physics on January 9-12th, 2006 at Donghua University, Shanghai, China, and gave presentations on "Time resolved measurements of deposition in NSTX", "NSTX Wall Conditioning Experience - Implications for ITER", "Deuterium and tritium deposition on gaps between TFTR tiles", and "Liquid metal (Li) mobilization experience in CDX-U" on behalf of the NSTX and CDX teams. (C. Skinner)
- There will be an NSTX Physics Meeting on Monday, Jan. 23 at 1:30 pm in LSB318. The agenda is: 1) Heating of Thermal Ions by Alfvén Waves and Reconnection in the National Spherical Torus Experiment – E. Fredrickson. 2) Disruptions in NSTX – J. Menard. The presentations will be posted on the Web in the Monday_Physics_Meetings folder. (S. Kaye)

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

The NSTX outage continued this past week with the completion of a week long vacuum vessel bake in preparation for the upcoming run. A vessel boronization using trimethylboron (TMB) was performed during the bake, both preceded and followed by periods of helium glow discharge cleaning. In parallel, the neutral beam helium refrigerator is in full operation, and the cool-down of the beamline is in progress. Machine area "scrubs" are scheduled for this coming week, with plans to proceed to integrated system power testing the following week.

Daytime access to the NSTX test cell is expected to be available from Monday through Wednesday this week. (A. von Halle)

Research Operations (M. Bell)

Diagnostic Operations (R. Kaita)

- Calibration data were taken with the NSTX infrared cameras during the heating and cooling phases of the bakeout. Their analysis is in progress.
- The air and water lines that were installed for cooling diagnostics during bakeout were removed. Shields and other diagnostic components that had to be removed for bakeout are being remounted.

Boundary Physics Operations (H. Kugel)

- This week, the principal LITER fabrication drawings were completed and received final approval for archiving. Cartridge-A received QA approval, and was moved to the assembly lab. Installation of the probe power, thermocouple, air and helium feed throughs and the associated connections has been in progress. The fabrication of 2 spools central to the probe assembly and the installation was completed, and received QA approval. A design for supporting the probe assembly during the offline testing was achieved. The Offline Test Lab NEPA Form, Job Hazards Analysis (JHA), and Operating Procedure (OP) revisions were completed, and submitted for review. The NSTX Failure Modes and Effects Analysis (FMEA), Safety Assessment Document (SAD), and JHA revisions were completed, and submitted for review. A presentation was made to a Meeting of the Activity Certification Committee (ACC) titled "NSTX LITER-1". A response to suggestions from the ACC for additional analysis is in progress.

- During vessel bakeout at about 350°C, 12 hours of Helium Glow Discharge Conditioning (HeGDC) was performed. This was followed by Boronization-49 during which 10 gms of deuterated trimethylboron (TMB) was applied, which in turn, was followed by 4 hours of HeGDC to remove the co-deposited deuterium. The HeGDC and Boronization operations were performed routinely using the Bay G fixed anode and the Bay K MGP. The MGP operated with an air cooled base anode temperature of 120°C.(W. Blanchard)

- Results from Ion Beam Nuclear Reaction Analysis on NSTX Viewports performed by W.R. Wampler (SNL) were received and are being reviewed. (C. H. Skinner)

Physics Analysis (S. Kaye)

David Mikkelsen and Robert Budny spent the week at General Atomics learning more about the GYRO turbulence code and preparing GS2 input to benchmark the different treatments of electromagnetic effects in GYRO and GS2 using flux-tube simulations of an H-mode NSTX plasma.