

NSTX Weekly Report (Apr. 6, 2007)

FY 2007 NSTX plasma operations started on Feb. 19, 2007.

Planned: 10 weeks

Completed: 3.40 weeks (through Apr. 4, 2007)

IMPORTANT NOTICE: NSTX TEST CELL ACCESS REQUIREMENTS HAVE CHANGED-
Effective immediately, radiation dosimeters are required for entrance into the NSTX Test cell. **Anyone who does not have a radiation badge and needs access to the NSTX test cell on a regular basis should see Cathy Saville (csaville@pppl.gov) for a regular radiation badge assignment. Any person being escorted into the NSTX test cell without a radiation badge must first have the required escort paperwork with an escort radiation badge issued by HP.**

- There will be an NSTX Physics meeting on Monday, April 9 at 1:30 pm in LSB318. We will have brief summaries of the following XPs run the week before: E. Fredrickson – Cascade modes (XP706), S. Kaye – Momentum transport and effect of rotation on confinement (XP723), D. Smith – High-k scattering (XP714), and S. Diem – EBW in H-mode (XP720)(possibly.) The presentations will be placed in the usual Monday Physics Meeting folder in the Drag and Drop area. (S. Kaye)

Run Coordination (D. Gates, M. Bell)

Seven experimental proposals were conducted this week:

On Thursday March 29, XP-710 - entitled “High bootstrap fraction plasmas at high elongation” - was run by D. Gates. The plasma was diverted at the time of the first EFIT reconstruction $t \sim 50$ msec with an elongation of 2.2. The steady state elongation reached 2.6. High bootstrap fraction will be attempted when all the NBI power is available.

On Friday March 30th, XP-716 - entitled “Scaling of impurity transport” - was run by L. Delgado-Aparicio (JHU). Data was obtained with neon and argon puffing during a field scan.

On Monday April 2nd, XP-714 - entitled “High-k scattering measurements in H-mode” - was run by D. Smith. In the morning data was obtained using the high-k scattering diagnostic during a toroidal field scan in H-mode.

On Monday afternoon, and on the morning of Tuesday April 3, XP-706 - entitled “Alfvén cascades” - was run by E. Fredrickson. MSE data was obtained during the evolution of these cascade modes.

On Tuesday afternoon, and on the morning of Wednesday April 4th, XP-720 - entitled “EBW emission from H-mode plasmas” - was run by S. Diem. Data was obtained on EBW emissions during plasma position scans.

On Wednesday afternoon, XP-718 – entitled “The effect of Lithium pellet injection on H-mode plasmas” - was run by H. Kugel. Data was obtained on the rate of rise of the density after lithium pellet injection.

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

NSTX Operations continued this week with a broad range of experiments. The High K Scattering diagnostic was used to take data during H-modes, and the EBW system analyzed the conversion to H-

modes. The RWM coil system was used to provide braking of plasma rotation during one experiment on Alfvén cascades, and then another on the effect of plasma rotation on confinement. The LPI was brought back on line this week after being loaded with lithium pellets, and operated reliably in an experiment on the effects of LPI coating of H-mode plasmas. Both the MPTS and FITeTIP diagnostics operated this week, and provided good agreement on integral line density measurements. The neutral beam systems supported operations through the week, but the ion source in the "B" position failed and was taken out of service. The maintenance week originally scheduled for the week of April 16th has been advanced to the week of April 9th to allow for a timely replacement of that ion source. Also this week, The LITER 1d lithium evaporator was installed on NSTX, and then aligned and tested. Additional testing of LITER 1d leading to the evaluation of lithium evaporation profiles in the NSTX vacuum vessel is scheduled for this coming week.

The NSTX test cell will be in unrestricted (card reader) access during the upcoming maintenance week. Plasma operations will resume on Monday, April 16th.

Research Operations (M. Bell)

Physics Operations (D. Mueller)

The complete control software suite has been run in parallel with actual NSTX plasma shots on the new control computers. Results from these tests are being analyzed. (D. Gates)

Boundary Physics Operations (H. Kugel)

- The LPI was loaded with 20 lithium pellets and used to perform XP-718. (T. Czeizinger)
- LITER-1d was installed on NSTX and the Preliminary Test Procedure (PTP) was completed. In addition, the Final Design Review for LITER1d was held and declared successful.
- R. Maingi (ORNL) presented a talk at a NSTX liquid lithium divertor design meeting titled: "Liquid Lithium Divertor 0-D Pumping Projections and Sensitivities".

Diagnostic Operations (R. Kaita)

- Additional hardware and software for the Lawrence Livermore National Laboratory XEUS X-ray diagnostic was implemented to permit time-resolved measurements during NSTX discharges.
- The Far Infrared Tangential Interferometer/Polarimeter (FIRETIP) plasma density diagnostic was restored to full operation after replacement of the vacuum pump for the laser cavity.