

NSTX Weekly Report (April 8, 2011)

FY 2011 NSTX plasma operations started on October 4, 2010

FY 2011 NSTX Outage started on October 25, 2010

Planned Run Weeks: TBD

Run Weeks Completed: 4.21 run weeks and 839 plasma shots

S. Kaye (PPPP) attended and chaired the Transport and Confinement ITPA meeting, held at General Atomics on April 4-5, 2011. Also attending from NSTX were Yang Ren (PPPL), Walter Guttenfelder (PPPL) and David Smith (U. Wisconsin). (S. Kaye)

The Joint US-EU Transport Task Force meeting was held in San Diego on April 6-9, 2011. S. Kaye (PPPL) is the TTF Chair for 2011-2012. The following NSTX-related Plenary presentations were given in Plenary 1) Dynamics of Transitions to Enhanced Confinement Modes: "Interactions between turbulence and flows in the NSTX edge" by Y. Sechrest (U. Colorado), "Reversed shear internal transport barriers in the National Spherical Torus Experiment" by H. Yuh (Nova Photonics); "Nonlinear gyrokinetic simulations of electron internal transport barriers in the National Spherical Torus Experiment" by J. Peterson (Princeton University), "Electromagnetic transport from microtearing mode turbulence in NSTX" by W. Guttenfelder (PPPL), and "Effects of global Alfvén eigenmodes on electron thermal transport in NSTX" by K. Tritz (JHU). NSTX related posters and oral talks were also given by Devon Battaglia (ORNL), Alessandro Bortolon (UC Irvine), Dan Clayton (JHU), Neal Crocker (UCLA), Doug Darrow (PPPL), Ahmed Diallo (PPPL), Eric Fredrickson (PPPL), Guo Yong Fu (PPPL), Travis Gray (ORNL), Shige Kubota (UCLA), Ben LeBlanc, (PPPL) Rajesh Maingi (ORNL), Mario Podesta (PPPL), Yang Ren (PPPL), David Smith (U. Wisconsin) and Jie Zhang (UCLA). (S. Kaye, R. Maingi)

Yeong-Kook Oh, a visiting researcher on NSTX from NFRI Korea, has attended DOE review meeting on the U.S. contribution to the ITER project as a member of reviewers on magnet system from April. 5 to 7 at the US ITER Project Office in ORNL. In the review meeting, he reviewed the schedule and cost of the magnet system and reviewed in depth on the influence of the recent CS conductor performance test results to the CS magnet system construction. (Y-K. Oh)

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

The NSTX outage continued this past week with the installation of the new molybdenum lower divertor tiles, and the dressing in of in-vessel diagnostic cabling associated with the new moly tiles as well the the four Liquid Lithium Divertor (LLD) plates and gap tiles. This completes in-vessel construction activities, and diagnostic calibrations are now in progress. Periodic vacuum vessel electrical insulation tests (HiPots) have been successful, and will continue to be performed in preparation for upcoming machine operations. Also this week, the newly designed neutral beam calorimeter bellows have been installed and leak checked, and pre-operational testing of the entire calorimeter assembly is in progress.

Access to the NSTX test cell will be available this coming week.

Research Operations (M. Bell)

Boundary Physics Operations (H. Kugel)

- Liquid Lithium Divertor (LLD)
 - The wiring of plate thermocouples to the vacuum feed-through and connection to the external cabling was completed.
 - The repair of the High Density Langmuir probe array and probe resistance checks were completed.
- Molybdenum Tiles
 - The assembly of the molybdenum thermocouple, Mirnov coil, and Langmuir probe molybdenum sensor tiles was completed.
 - The installation of the molybdenum sensor tiles and their connection to the existing in-vessel cabling was completed.
 - The alignment of the molybdenum tiles was completed.
- Material Analysis Particle probe (MAPP)
 - The drafting for the bellows motion drive section of the MAPP probe was completed.
 - The magnetic shielding design tasks were completed.
 - Preparations started for the Mechanical Final Design Review on or about 4/26/2011.
- Lithium Particle Centrifuge Injector
 - Preparations are in progress for the installation Preliminary Design Review scheduled for 4/12/2011.
- Lithium Materials R&D
 - Planning discussions for measuring cored samples from an NSTX 2010 lithiated ATJ tile were held between NSTX, Purdue (JP Allain), and SNL (W. Wampler).
- Fast Thermocouples
 - Testing of the special fast thermocouple cable was completed.
 - The feedthrough for the fast thermocouple cable was purchased.
 - Preparations started for the Preliminary Design Review on 4/26/2011

Diagnostic Operations (R. Kaita)

Calibrations in preparation for the upcoming NSTX run have begun. Photometric measurements for a visible spectrometer (“VIPS2”) have been completed. Diagnostics in the plasma-facing components that have been checked include the “shunt” tiles for “halo” current measurements, and the magnetic pickup (“Mirnov”) coil under one of the new molybdenum tiles in the “inboard” divertor region.