

NSTX Weekly Report (November 5, 2010)

FY 2011 NSTX plasma operations started on October 4, 2010

Planned Run Weeks: TBD

Run Weeks Completed: 4.21 run weeks and 839 plasma shots

Dennis Mansfield of PPPL visited the EAST device at ASIPP, Hefei, China from October 2 to 14, 2010. Mansfield installed an NSTX lithium dropper on EAST. An initial test of lithium dropper on EAST has gone smoothly. (D. Mansfield)

Run Coordination (E. Fredrickson, S. Sabbagh - Columbia University)

On October 28-29, we evaluated the new Liquid Lithium Divertor (LLD) hot air heater performance. All of the LLD plates were successfully heated by the hot air heater well above the lithium melting temperature of 180°C with less than half of the available heating power. The LLD physics performance was investigated with Henry Kugel's XP-1000 and Vlad Soukhanovskii's XP1001. Langmuir Probe, 1D-CCD, and CHERS data indicated a significant difference in relative recycling between cold (solid) lithium surfaces on graphite tiles and molten lithium on the LLD. The graphite and the LLD started from pristine, freshly deposited, lithium conditions with about the same recycling, however, with increasing cumulated fluence, the graphite recycling started to increase toward saturation, whereas that over the LLD plate surfaces at liquid lithium temperature, the low recycling condition was maintained at about the initial pristine lithium recycling level.

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

The NSTX outage began this week with partial vents of the vessel in argon and nitrogen to complete Laser scattering calibrations of the MPTS diagnostic. The neutral beam cryo-panels have been warmed to room temperature, and pumps/purges of the beam-line are in progress in preparation for removal of the NB to torus transition duct scheduled for next week. Calibrations of the gas injectors and pressure sensors were completed before the moist air vent of the NSTX vacuum vessel on Friday. Also this week, installation of electrical cabling for the Switching Power Amplifier (SPA) upgrade began, as well as annual maintenance of the motor generator set.

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 methods for upgrading the air heating line ceramic electrical break units using available vendor components versus fabricating units for high pressure, high temperature service are under investigation.
- Lithium Evaporators (LITER)

- The LITER-K2 was installed and supported the last week of plasma operations. This included two 6 hour long evaporations at 20 mg/min from midnight to 6am preceding each of 2 days of LLD experiments
- Molybdenum Inner Divertor Tiles
 - The LITER-F1 was operated on the Fill Stand to evaporate its remaining lithium load and the evaporative-emptying was completed. The evaporative-emptying has started on unit K1.