NSTX Weekly Report (November 16, 2007)

FY 2008 NSTX plasma operations

Planned: TBD

Completed: 0 weeks

• The 49th Annual Meeting of the Americal Physical Society Division of Plasma Physics was held in Orlando, FL Nov. 12-16, 2007. The NSTX research team presented 8 invited talks, 11 contributed talks, 47 contributed posters and 4 undergraduate research posters. The invited presentations were "Divertor heat flux reduction and detachment in the National Spherical Torus Experiment," by V. Soukhanovskii (LLNL), "Nonlinear hybrid simulation of multiple energetic particle driven Alfvén modes in toroidal plasmas," by G. Fu (PPPL), "Alfvén cascade modes at high beta-e in the National Spherical Torus Experiment – structure and suppression," by N. Crocker (UCLA), "HHFW heating efficiency and current drive enhancement at longer wavelengths in NSTX," by J. Hosea (PPPL), "A quantitative account of electron energy transport in an NSTX plasma," by K.-L. Wong (PPPL), "The relationship between Type I ELM severity and perturbed electron transport in NSTX," by K. Tritz (JHU), "Lithium surface coatings and improved plasma performance in NSTX," by H. Kugel (PPPL), and "Progress in understanding error-field physics in NSTX spherical torus plasmas," by J. Menard (PPPL).
(S. Kaye)

• The APS-DPP meeting in Orlando, Nov 12-16 included a mini conference "The First Microns of the First Wall: Lithium Coatings and Surfaces" at which several presentations were made on results from NSTX featuring the lithium evaporation experiments. These were "Lithium and deuterium on NSTX carbon tiles" by W. R. Wampler (SNL) et al., "Lithium deposition on NSTX plasma facing components by LITER-1 evaporator in 2006," by L. E. Zakharov (PPPL) et al., "Surface analysis of lithium coatings in NSTX" by J. Timberlake (PPPL), et al., "Mass changes in NSTX surface layers with Li conditioning as measured with quartz microbalances," by C. H. Skinner (PPPL) et al., "In-situ elemental and chemical state characterization of lithiated surfaces under energetic particle bombardment," by J-P. Allain (Purdue University) et al., and "Structural studies of carbon dust samples exposed to NSTX plasmas," by Y. Raitses (PPPL) et al. In another mini-conference on "Angular Momentum Transport in Laboratory and Nature," a presentation entitled "Momentum Transport Studies in NSTX" by S. Kaye and W. Solomon (PPPL) was made.
(C. Skinner and S. Kaye)

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

The NSTX outage continued this past week with the completion of the in-vessel diagnostic calibrations, and the start of preparations to close the vacuum vessel for pump-down. Upgrades to the Bake-out systems to provide the remote operation needed to allow neutral beam ion source conditioning to proceed in parallel with a vessel bake have been completed and fully tested. The third neutral beam ion source is in its final round of pre-operational testing, and will be installed on the NSTX beam-line early next week, thereby completing the complement of sources needed to start the run.

The NSTX test cell will be in unrestricted (card reader) access this coming week.

Research Operations (M. Bell)

Diagnostic Upgrades (B. Stratton)

• The Bay-I Lower bolometer was installed, and the front face normal and pinhole locations of the Bay-J and Bay-I bolometers were measured. Ex-vessel marks were also made for the open and closed positions of the Bay-I shutter, so that the hard stops and limit switches can be adjusted later.

Diagnostic Operations (R. Kaita)

• The illumination probe to enable spectrally-resolved window transmission measurements for multipoint Thomson scattering diagnostic has been aligned with a helium-neon laser. This completes the in-vessel tasks associated with its installation.

• Inductance and resistance measurements were made for the new and old "Category 2" ground conductors. The new conductor is a bussbar, and its inductance and resistance are less than the original ground cable.

Boundary Physics Operations (H. Kugel)

• The vacuum system on the LITER 2008 shutter test chamber was upgraded to achieve increased pumping speed, and pumpdown resumed.