

NSTX Weekly Report (Feb. 2, 2007)

FY 2007 NSTX plasma operations

Planned: TBD

Completed: 0 weeks

- Dennis Mueller visited the EAST superconducting tokamak at ASIPP in Hefei, China from Jan. 12 to 24. The principal goal of the second operating campaign was the production of stably controlled diverted plasmas having elongations in excess of $kappa=1.8$. In particular, this demanded the use of the internal (copper) coils for fast vertical control. The EAST Plasma Control System (PCS), developed by GA and ASIPP, provided the control flexibility and capability necessary to produce elongated, diverted plasmas using the internal. The onsite operations support from PPPL, GA and ASIPP, along with remote support from GA, were key to the timely achievement of these plasmas. The present EAST experimental campaign is planned to run through the second week of February 2007. (D. Mueller)

- King-Lap Wong gave a seminar entitled "Magnetic fluctuations and electron transport in a spherical tokamak" at UC-Irvine on January 26, 2007. The seminar is based on a comparison of experimental observation of electron transport in NSTX with theoretical models including effects of stochastic magnetic field due to micro-tearing modes. The talk was well received. Related discussions were also held with Zhihong Lin and Liu Chen (Professors, UCI) who are developing a theoretical/numerical model of the magnetic fluctuations and associated plasma transport. (K-L Wong)

- Werner U. Boeglin (Professor, Florida International University) is spending his sabbatical leave with NSTX this year. He is currently working on the Edge Rotation Diagnostic with Ron Bell who is the NSTX research host. (J. Savino)

- NSTX Team Meeting will be held on Wed. Feb. 7 in LSB 318 at 3:00 – 4:30 (note the change of time from the previous announcement.) We will update you on the NSTX operations status and plan, and if available, the latest budget information.

- Mini-workshops for the next NSTX Five Year Plan: NSTX is starting to prepare its next Five Year Plan, covering the time period from FY2009-2013. As part of this exercise, during the month of February 2007, topical group meetings will be held to discuss physics issues and experiments, theory/code development and application, and facility and diagnostic additions /upgrades for this period. We would like to invite your participation and solicit your input for presentations at the brainstorming session for these meetings. These ideas could be new ones, or extensions of work from the present NSTX Five Year period.

Mini-workshop schedule:

- Boundary Physics: Feb. 12, 9:00 – 5:00, LSB 318, PPPL, RMaingi@pppl.gov.
- Waves and Energetic Particles: Feb. 13, 9:00 – noon, LSB 318, PPPL, GTaylor@pppl.gov.
- MHD: Feb. 14 (Time to be announced), LSB 318, PPPL, SSabbagh@pppl.gov.
- Transport and Turbulences, Feb. 15, 1:00 – 4:00, LSB 318, PPPL, SKaye@pppl.gov.
- Integrated Scenarios: Feb. 16, 1:00 – 5:00, LSB318, PPPL, JMenard@pppl.gov.
- Advanced Diagnostics: Feb. 27, 1:00 – 4:00, LSB 318, PPPL, BStratton@pppl.gov.

In addition, there will be a mini-workshop on "Fusion Energy Sciences Development using ST" during March-April with details to be announced, MPeng@pppl.gov.

Please send your ideas for a presentation or any questions to the respective meeting organizers. The remote connection will be available for the meetings. For more information, please visit our NSTX website:

[http://nstx.pppl.gov/DragNDrop/Five%20Year%20Plan%20\(FY09-13\)/](http://nstx.pppl.gov/DragNDrop/Five%20Year%20Plan%20(FY09-13)/)

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

NSTX start-up activities continued this week with the ongoing eleven day bake of the NSTX vacuum vessel. The neutral beam-line has been cooled to liquid helium temperatures and conditioning of the ion sources is in progress. A test run-up of the motor generator set was also performed this past week. A high temperature vacuum vessel boronization will be performed before the ramp down of the bake-out systems on Monday.

The NSTX test cell will be open on Wednesday through Friday this week for post bake-out diagnostic calibrations.

Research Operations (M. Bell)

Boundary Physics Operations (H. Kugel)

- The LITER-1d machining and fabrication was started and is in progress.
- The bottle rack modifications were completed for the SGI upgrade,. The high pressure regulator and burst disk has been installed and the system air valve is functional. The purge pump modifications were completed, and the purge pump valve and sensor array have been installed and tested. A gasline leak checking valve and port were added and have been so noted on the engineering P&ID. All components were labeled. The remaining tasks will be completed after vessel bakeout and cooldown. (T. Provost, V. Soukhanovskii, LLNL)

Diagnostic Operations (R. Kaita)

- A near-term focus for diagnostic operations is the assessment of impurities prior to the start of plasma experiments on NSTX. This is presently planned for Thursday, February 15. Computer problems are being investigated for the VIPS visible spectrometer and the SPRED vacuum ultraviolet survey spectrometer. The Lawrence Livermore National Laboratory XEUS soft X-ray and extreme ultraviolet spectrometer is operational.