

NSTX Weekly Report (Nov. 3, 2006)

FY 2007 NSTX plasma operations

Planned: TBD

Completed: 0 weeks

• Members of the NSTX Team attended the 48th Annual Meeting of the APS-DPP in Philadelphia, Pennsylvania. There were four invited talks on NSTX given by the NSTX research team members: “Active Resistive Wall Mode Stabilization in Low Rotation, High Beta NSTX Plasmas” by Steve Sabbagh (Columbia University), “Gyrocenter shift and H-mode transition” by Kwan Chul Lee (UC Davis), “Solenoid-free Plasma Start-up in NSTX using Transient CHI” by Roger Raman (University of Washington), and “Transport with Reversed Shear in NSTX” by Fred Levington (Nova Photonics). In addition, 15 contributed oral presentations and 40 poster presentations on NSTX were presented by the team members. Four NSTX press release articles are posted on the APS/DPP Annual Meeting virtual pressroom web site: “Generating plasma current in spherical tokamaks” (a highlighted article), “A nonlinear wrinkle in the investigation of heating of fusion plasmas by fast ions”, “Understanding how rotating plasmas can be slowed down”, and “Flying a fusion plasma straight and level when stabilizing plasma flow is reduced.”

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

The NSTX outage continued this past week with the in-situ machining at the side of the bay K port extension as needed to install the new Transmission Grating (TG) USXR Imaging Spectrometer diagnostic from Johns Hopkins University. This work is expected to be finished by the beginning of next week, with the nozzle for that diagnostic welded into place at bay K. The Vacuum Prep Lab is preparing the flanges for the new Poloidal CHERS diagnostic for installation, and the electricians should complete all test cell electrical installations for that diagnostic by the middle of next week. Pre-operational testing and vacuum leak checking of the refurbished neutral beam calorimeter was completed this past week.

The test cell will remain in free (card reader) access through most of the coming week.

Research Operations (M. Bell)

Taking the opportunity provided by the APS DPP 2006 meeting held at Philadelphia, the people working on the hypervelocity dust injector (HDI) from Los Alamos (Catalin Ticos, Jeff Wang, Glen Wurden, and Leonid Dorf) met with a group from NSTX, including Lane Roquemore, Brent Stratton, Joel Hosea, Randy Wilson, Benoit P. LeBlanc, and Philip Ryan (ORNL) on Monday, Oct. 30th. We reviewed the results from the HDI system that are being tested at LANL, and discussed the potential concerns (on the RF system in particular) if the LANL HDI system is installed at the Bay E of NSTX. On Tuesday, Catalin Ticos, Jeff Wang, and Glen Wurden visited the NSTX test cell with the help from Lane Roquemore and Brent Stratton. We discussed possible locations of the HDI system in the NSTX test cell area. We are working towards performing a FDR on HDI in the near future. (J. Wang/G. Wurden)

Diagnostic Operations (R. Kaita)

In-vessel modifications for diagnostics are continuing. The machining of the Bay K penetration for the Johns Hopkins University transmission grating spectrometer is in progress, and should be completed early next week. Graphite neutral beam armor tiles were trimmed to remove an obstruction for one of the sightlines for the FIRETIP density profile diagnostic. The adjustment of the armor position to clear the interference for a second FIREeTIP sightline is planned for next week.