

NSTX Weekly Report (Sept. 11, 2009)

FY 2009 NSTX plasma operations completed on August 14, 2009

Planned: Total - 16 run weeks (Base - 11 run weeks, ARRA - 5 run weeks)

**Completed: Total - 16.84 run weeks with 2,748 plasma shots
(Base - 10.95 run weeks with 1,705 plasma shots
ARRA - 5.89 run weeks with 1,043 plasma shots)**

- The NSTX overview paper entitled "Overview of results from the National Spherical Torus Experiment (NSTX)" by D. A. Gates, et al., from the 2008 IAEA Fusion Energy Conference in Geneva has been published online at the Nuclear Fusion website. It can be accessed online at <http://stacks.iop.org/0029-5515/49/104016>. The paper is a summary of NSTX research highlights for the 2007-2008 run years, and includes summaries of important results from each of the science focus groups as well as ITER specific research. The article will appear in the October special issue of Nuclear Fusion, which contains a collection of the overview papers from the conference. (D. Gates)
- Deyong Liu completed his Ph.D. degree in Physics from University of California, Irvine in July 2009. His dissertation is entitled "Fast-ion studies in the National Spherical Torus Experiment: Transport by instabilities and acceleration by high harmonic fast waves." An electronic copy of the thesis is available at: <http://www.physics.uci.edu/%7Ewwheidbr/students.html>. (W. Heidbrink, UC Irvine)
- The annual NSTX Results/Theory Review will be held on Sept. 15 and 16 in LSB 318 at PPPL. Remote participation will be available. The agenda and presentations can be found on the Web at http://nstx.pppl.gov/DragNDrop/NSTX_Meetings/Results_Reviews/2009/ (S. Kaye)
- The NSTX Project will conduct an assessment of the FY09 run on Thursday morning, September 17th, from 9AM to around noon in the Control Room Annex. This meeting will begin with a summary of this year's operations highlights, and then shift to an open forum on possible opportunities to improve NSTX operations. (A. von Halle)
- The NSTX Team Meeting was held on Sept 8. The meeting material is available on the NSTX Web page.

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

The NSTX outage continued this week with the first entry into the vacuum vessel for detailed inspections, photographs, the collection of wall coupons and the removal of selected tiles for analysis. Several wipe-downs of the vessel interior were then completed before the installation of the FARO arm for in-vessel measurements. The NSTX test cell will be in free (card reader) access this coming week.

Research Operations (M. Bell)

Boundary Physics Operations (H. Kugel)

- Liquid Lithium Divertor (LLD)
 - The fabrication and testing of the plate thermocouples was started.
 - A jig for installing the thermocouples was completed.
 - Documentation of the plate heater mechanical characteristics was started. This will allow selection of those best suited for installation.
 - Fabrication of the extension cables for the plate Rogowski coils started.
 - A walkdown was completed for starting the Test Cell power, cable, and rack installations.
 - The cooling gas manifold system design was completed and the documentation package is under review.
- Lithium Evaporator (LITER2010)
 - A Purchase Order was awarded for two spare LITER probe drives.
- In-vessel Inspection
 - The internal vessel inspection following the 2009 Experimental Campaign was completed. The plasma facing graphite surfaces were swabbed. The floor was installed for additional work.

Diagnostic Operations (R. Kaita)

- The post-run in-vessel calibrations for NSTX diagnostics have begun. The spatial locations have been measured of the divertor views through the visible spectrometer optical fibers.