NSTX Weekly Report (Nov. 11, 2005)

FY2006 weeks of research operations
Planned: TBD
Completed: 0 weeks

NSTX Department, Project, Program (M. Ono, M. Peng)

• The NSTX Team members participated in a workshop on "Active Control of MHD Stability: Progress in Kink and Tearing Mode Control" on Oct. 31 – Nov. 2, 2005 at University of Wisconsin- Madison. Talks were presented on recent RWM analysis of NSTX plasmas from 2005 with plasma rotation modified by applied fields from the new NSTX non-axisymmetric field coils. Steve Sabbagh (Columbia University) presented results on mode dynamics, resonant field amplification, and plasma rotation damping physics in the talk "Resistive Wall Mode stability and plasma rotation damping in NSTX", and Aaron Sontag (Columbia University) concentrated on the critical rotation frequency profile in the talk "Rotational stabilization of the Resistive Wall Mode in NSTX". Jon Menard (PPPL) gave a talk entitled "MARS analysis of n>1 RWM stability". Jim Bialek (Columbica University) presented results from the upgraded VALEN-3D code that now includes the effect of plasma and mode rotation in the single mode Boozer model. Both eigen-value and time domain calculations were shown. Brief discussions were held on the topics of RWM target plasmas with low plasma rotation, the stabilization of such targets, and the RWM dissipation mechanism. (S. Sabbagh)

• The November NSTX Team Meeting will be held on Monday, November 14, 2005, 2:00 P.M., in LSB318. The main topics of the meeting are the budget update and the preparation toward the FY 06 plasma operation. Remote participation will be available for our off site team members. Refreshment will be served. There will be no NSTX Physics Meeting this week.

Physics Analysis (S. Kaye)

Fast TRANSP job preparation scripts allowed for data from approximately 170 discharges to be processed and submitted as TRANSP runs over the course of two days. Approximately 160 finished successfully. Reruns of about half the cases, with fast ion diffusion invoked, are needed to bring the measured and calculated neutron rates into agreement. For this subset of runs, the difference between the calculated and measured values is typically 10-15%, with the calculated flux being greater than the measured flux. The results of these runs, along with results from previously run TRANSP cases from last run period (about 27), will be used to study the confinement trends in the 2005 dataset and prepare data for submittal to the ITPA database, where aspect ratio and beta scaling studies have high priority.

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

The NSTX outage continued this past week with the photometric calibration of several in-vessel diagnostics, and the installation of the bay G port cover after modifications to provide a second viewing point for the EBW diagnostic. A preliminary engineering review of repair options for the OH Coil water leak has been held, and mockups of these options are currently being tested. Testing of in-vessel magnetic sensors is also in progress.

Access to the NSTX test cell will be available via the card readers throughout this coming week. (A. von Halle)

Research Operations (M. Bell)

Diagnostic Operations (R. Kaita)

• The in-vessel white-plate and "LabSphere" photometric calibrations of several diagnostics were completed during the past week. These systems included the CHERS ion temperature and plasma rotation profile diagnostic, the ERD edge rotation diagnostic the EIES edge impurity emission spectroscopy filterscope array, the 1-D filtered CCD cameras, and the VIPS2 visible spectrometer. This work was a collaborative effort on NSTX that involved the Lawrence Livermore National Laboratory and PPPL.

Boundary Physics Operations (H. Kugel)

• A meeting of the LITER-1 team finalized the designs for the thermal transition region outside the output exit aperture, and reviewed the status of procurements, the rack installation plan, the umbrella support alignment plan, and offline testing plans. Long cables for the Bellows Motion Drive were received from the vendor, and an acceptable delivery date for the main unit was received. A procurement was awarded for rack mountable power supplies. A possible interference with existing bakeout buswork at Bay F upper was investigated using an alignment jig, and the existing configuration was found to be acceptable and will not require modification.

• A raceway for the MGP air cooling line and thermocouple was installed. An air flow switch and thermocouple signal conditioner were installed. Final drawings Approved for Fabrication were completed. (T. Provost)

• An inspection of the LPI exit duct was performed from inside the vessel to gather data for performance modeling in progress.

• The Quartz Microbalances have been reloaded in preparation for the next campaign and are now operational. (C.H. Skinner)