

## NSTX Weekly Report (February 22, 2008)

### FY 2008 NSTX plasma operations

**Planned: 15 weeks**

**Completed: 0.62 weeks (through February 20, 2008)**

- The Sandia Liquid Lithium Divertor (LLD) team (R. Nygren, H. Harjes, P. Wakeland) visited NSTX to participate in the LLD Conceptual Design Review (CDR). J. P. Allain of (Assistant Professor, Purdue University) also visited NSTX and participated in the LLD CDR, and afterwards gave a talk and lead a discussion on "Analysis of Lithiated Graphite, Stainless Steel, and Molybdenum Surfaces". (H. Kugel)
- There will be an NSTX Physics Meeting on Monday, 2/25 at 1:30 PM in LSB318. We will have summaries of last week's run: B. LeBlanc: Update on MPTS, M. Podesta: FIDA XMP, S. Gerhardt: NTM experiments (LaHaye). The talks will be found in [http://nstx.pppl.gov/DragNDrop/NSTX\\_Meetings/Monday\\_Physics\\_Meetings/2008/2-25-08/](http://nstx.pppl.gov/DragNDrop/NSTX_Meetings/Monday_Physics_Meetings/2008/2-25-08/). (S. Kaye)

### Run Coordination (M. Bell, R. Raman)

Experiments resumed on Monday Feb 18 after the bakeout in the preceding week. Four experiments were conducted this week.

On Monday morning, we performed an assessment of the results of the bakeout under XMP-48 "Startup commissioning and evaluation" [D. Mueller] with NBI. Some 1MA pulses of reasonable duration (0.6s) were obtained and spectroscopy indicated a lower level of the oxygen to carbon ratio confirming that the bakeout had been effective.

On Monday afternoon, we conducted XMP-54 "FIDA checkout" [W. Heidbrink (UC-Davis)]. Quiescent discharges free of significant MHD activity in the Alfvén frequency range were obtained in helium and deuterium with NBI by lowering the NB acceleration voltage to 60kV. These discharges were intended to provide a condition in which the NB thermalization should be classical for calibrating the Fast-Ion Deuterium-Alpha (FIDA) diagnostic now installed on NSTX.

On Tuesday we performed XP-801 "2/1 NTM self-stabilization" [R. LaHaye (GA)]. There was initially some difficulty in obtaining the desired plasma condition in which the NTM was excited without mode locking occurring, but a workable condition was eventually found.

On Wednesday, we ran XP-810 "Error field sensitivity of 2/1 NTM thresholds at high and low rotation" [R. Buttery (UKAEA Culham Laboratory)]. The experiment used the SPAs to apply both a  $n = 1$  error field to destabilize the NTM and a  $n = 3$  error field to brake the NB-driven plasma rotation.

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

Plasma operations in support of NSTX experiments began this week utilizing neutral beam injection with plasma currents to 1MA for >.5 seconds. During the evening this week, a neon glow was performed to calibrate both the CHERS and FIDA diagnostics, and the HHFW antennas were

conditioned into a vacuum. Operation of the Switching Power Amplifiers (SPAs) via the new Plasma Control System (PCS) was confirmed, and the SPA driven error field coils were used in experimental operations.

The NSTX test Cell will be in restricted access this week during plasma operations to 5PM each evening.

### **Research Operations (M. Bell)**

#### **Boundary Physics (H. Kugel)**

- Liquid Lithium Divertor:
  - A Conceptual Design Review (CDR) for the Liquid Lithium Divertor was held on Feb. 20, 2008 at PPPL. The CDR was graded a success pending resolution of the CHITS.
  - After the CDR, the Sandia and NSTX LLD design teams held the following meetings:
    - Inspection of the L-245 Lithium Test Facility and discussion of the XP
    - Planning the LLD Tile and Edge Design
    - Discussion of the LLD Fabrication Sequence
    - Tour of NSTX and Inspection of Candidate Locations for LLD Controls
    - Discussion of LLD Controls and Interface Requirements