

## **NSTX Weekly Report (Jan. 21, 2005)**

FY2005 Planned Operations: 14 weeks  
Completed: 0 weeks producing 0 plasmas

### **Department, Project, Program (M. Ono, M. Peng, E. Synakowski)**

- 17 th NSTX Program Advisory Committee Meeting was at PPPL on January 20 - 21, 2005. The presentation material is available on the NSTX web, [http://nstx.pppl.gov/DragNDrop/PAC\\_17/](http://nstx.pppl.gov/DragNDrop/PAC_17/).
- The DIII-D part of an NSTX/MAST/DIII-D expt. was nearly completed. The target edge beta, rhostar, and nustare values (3%, 0.008, and 0.5-1) were achieved at 0.6 MA, 0.5 T, for two slightly different shapes characteristic of NSTX and MAST respectively. The experiment was co-lead by R. Maingi (ORNL-NSTX), T. Osborne (GA-DIII-D), and A. Kirk (UKAEA-MAST). (R. Maingi)
- A conceptual design review was held on the ELM imaging collaboration between NSTX and DIII-D. L. Roquemore successfully presented a plan for obtaining ELM images with the Hiroshima U. fast camera before DIII-D's vent starting in April 2005. The multi-institutional collaboration involves R. Maingi (ORNL), L. Roquemore, Alex Nagy (PPPL), T. Evans (GA), N. Nishino (Hiroshima U.), and C. Lasnier and M. Fenstermacher (LLNL). (R. Maingi)
- No NSTX physics meeting this week. (S. Kaye)

### **Physics Analysis (S. Kaye)**

- David Mikkelsen visited GA to work with Ron Waltz and Jeff Candy on gyrokinetic turbulence calculations of NSTX plasmas. Further grid convergence tests indicate that lower resolution should be adequate, this will speed up future simulations. The latest version of GYRO has been installed and tested on the PPPL Linux cluster, and nonlinear 'full radius' electromagnetic simulations (with kinetic electrons and background ExB shear) have begun.

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

- The NSTX outage continued this past week with the completion of the vacuum vessel bake-out, including several hours of helium glow discharge cleaning and a calibration of an IR camera at several locations around the machine. The molding of the new PF1A upper coil has been completed, and the coil has successfully passed electrical insulation tests. AC Power has been installed to the new Switching Power Amplifier (SPA) supply needed for Resistive Wall Mode experiments, and controls/interlock testing of the SPA system is in progress. Maintenance of the neutral beam liquid helium refrigerator has been completed, and that system is now ready for pre-operational testing.

There are no NSTX test cell access restrictions scheduled for this week.  
(A. von Halle)

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

#### Diagnostic Operations (R. Kaita)

- The calibration of the new plasma current Rogowski coils has been completed. The additional electrostatic shielding that was not present on the original coils reduced the noise as expected, and did not have any deleterious effect on the gain or the frequency response. The latter was satisfactory up to 5 kHz, which is about the practical limit imposed by the vacuum vessel between the plasma and the coils. (J. Menard)

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

- Vessel bakeout was performed, and 4 hours of HeGDC was applied during bakeout. (M. Kalish, W. Blanchard)
- Data acquisition for 3 IR camera and 4 IR window calibrations was performed. (D. Mastrovito)
- A highly sensitive piezoelectric sensor was tested for detecting LPI pellet and cartridge arrivals. (R. Gernhardt)