NSTX Weekly Report (Mar. 11, 2005)

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

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

• First data were obtained during the NSTX/DIII-D fast ELM imaging collaboration. The inner and outer strike point regions are clearly distinguished. In addition, the suppression of the ELMS during activation of the RWM coil used for ELM suppression on DIII-D was recorded. The ELM imaging is a multi-institution collaboration between ORNL, PPPL, Hiroshima Univ., LLNL, and GA (R. Maingi, ORNL)

• Toshitaka Idehara (Director, Research Center for Development of Far-Infrared Region, Fukui University Fukui, Japan) arrived this week. His group is developing a gyrotron source which can be used to upgrade the present high-k scattering system on NSTX. Idehara will give a talk entitled “Development and Applications of Submillimeter Wave Gyrotron FU Serie” on Monday, 3/14 at 1:30 pm in LSB318in the NSTX Weekly Physics Meeting. (S. Kaye)

Physics Analysis (S. Kaye, C. K. Phillips)

D. Darrow gave a talk entitled "Initial Results from the Scintillator Fast Lost Ion Probe" at the Physics Meeting on February 28. This diagnostic became operational during the 2004 campaign. The data show loss of neutral beam ions at the injection energy and with a dependence upon plasma current and beam tangency radius (Rtan) that matches the dependence of prompt orbit loss. A simple phase space mapping method appears to explain the presence or absence of a loss signal in the detector from beam lines with differing Rtan in example discharges. The model also gives reasonable agreement with the range of pitch angles of the lost beam ions, confirming that these losses are prompt orbit loss. MHD-induced loss of beam ions is also observed in some conditions, and produces loss of marginally trapped beam ions. (S. Kaye)

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

The NSTX outage continued this past week with the completion of the mechanical testing of the epoxy potting of all TF flag boxes. The upper boxes are now being re-assembled on to the TF bundle, with plans to install the bundle into the NSTX center column this coming week. The installation of buswork to the OH and PF1A coils continued and should be complete by the beginning of the week. The commissioning of the Switching Power Amplifier (SPA) supply for the new Error Field / Resistive Wall Mode (EF/RWM) coils continued in the power supply building, and the installation of the input waveguides in the test

cell to the new high-k scattering system has started. A test to verify the polarity of RWM sensor connections by powering the PF5 coil was completed on an off-shift, and the real-time data acquisition system was successfully run in its 352 channel configuration. The clean-up of the neutral beam helium refrigeration gas was completed this week, and cool-down of the refrigerator will begin this coming week.

The installation of the TF flexible bus links and the machine area scrubs needed to start power testing will begin this coming week and will restrict access to the NSTX test cell. Integrated system testing of the NSTX field coils will begin during the last week in March and will be followed directly by plasma operations. (A. von Halle)

Research Operations (M. Bell)

Boundary Physics Operations (H. Kugel)

• The Supersonic Gas Injector (SGI) vacuum bakeout was completed and the Torus Interface Valve was opened for calibrations. (J.Winston)

• Using measurements of the SGI modified front spool piece, the software radial position calibration was revised, and the probe motion was tested successfully. (P. Sichta)

• Omega IR camera was remounted at Bay-K Lower to give an upper divertor field-of-view, and controls testing was initiated.

• A Final Review was held for Boundary/Edge Physics XP520 "Divertor regimes in NBI-heated Plasmas" by V.Soukhanovskii (LLNL). (R. Kaita)

Diagnostic Operations (R. Kaita)

• Continuity tests after the Ohmic heating solenoid column was reinstalled indicated that the flux loops, thermocouples, and Rogowski coils mounted on it were intact. ßThe flux loops were terminated, and the Rogowski coils were unwound and secured to the brackets mounted on the vacuum vessel.

• The tests to verify the polarity of RWM sensor connections using the Crown amplifier to excite PF5 were completed yesterday. Several polarities were corrected.