

NSTX Weekly Report (August 5, 2011)

FY 2011 NSTX plasma operations started on October 4, 2010

FY 2011 NSTX Outage started on October 25, 2010

Planned Run Weeks: 14 run weeks

Run Weeks Completed: 4.21 run weeks and 839 plasma shots

Jon Menard (PPPL) and Vlad Soukhanovskii (LLNL) participated in the APS-DPP 2011 sorters meeting held at the American Center for Physics in College Park, MD on August 4-5, 2011.

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

Investigations continued this past week into a turn-to-turn fault that occurred in the TF magnet inner conductors. The inner TF bundle has been laid in its stand in the South High bay area, and a full set turn-to-turn insulation tests have been performed. As expected, the damage appears to be confined to an inner conductor (#30) and two outer conductors (#13 & 14), with additional insulation failure to an adjacent outer conductor (#15). Conductor #'s 13, 14 & 30 show damage to their internal cooling tubes, but the copper conductors themselves appear undamaged. An electrical current has been injected into each of the faulted conductors to measure the precise locations of the fault. The faults on conductors 13, 14, 15 & 30 all measure about 12% from the bottom of the bundle (about 24 inches), and the voltage drop to the top of the bundle is consistent with a single faulted area. Attempts to clear melted solder from the damaged cooling paths to allow for a borescope inspection are in progress. Methods to expose the faulted area (conductor removal vs excavation) are being considered. Spare individual TF conductors are available.

Also this week, the gas injection systems were successfully operated via the Plasma Control System (PCS), the new switching power amplifier (SPA) was used in conjunction with the original SPA to test individual control of the six RWM (Resistive Wall Mode) error field coils, HHFW antenna conditioning was performed, and the new MSE-LIF diagnostic neutral beam was tested into NSTX, verifying good beam optics and control.

Access to the NSTX test cell is expected to be available this coming week.

Research Operations (M. Bell)

Boundary Physics Operations (H. Kugel)

- Materials Analysis Particle Probe (MAPP)
 - Progress continued on the fabrication of the probe support, the probe head, and internal components.
- Lithium Centrifugal Granule Injector for ELM Pacing
 - Progress continued on the machining of parts.
- Boron Powder Dropper
 - A Powder Dropper was completed, tested and being shipped to the University of Washington (T. Jarboe), as part of the UW/PPPL collaboration to investigate the

deposition of boron powder in the HIT-SI experiment. (D. Mansfield)

Diagnostic Upgrades (B. Stratton)

The MSE-LIF (Motional Stark Effect – Laser Induced Fluorescence) Diagnostic Neutral Beam was successfully commissioned on NSTX. Remotely controlled operations into a gas-filled torus were achieved at full operating voltage, and wavelength calibration data was taken on five channels. (E. Foley, Nova Photonics)