

NSTX Weekly Report (Jan. 08, 2009)

FY 2010 NSTX plasma operations

Planned: TBD run weeks

Completed: 0 run week and 0 plasma shot

- A paper entitled "On demand triggering of edge localized instabilities using external non-axisymmetric magnetic perturbations in toroidal plasmas" by J. M. Canik, R. Maingi, T. E. Evans, et al. was accepted for publication in Physical Review Letters. The abstract is: "The application of non-axisymmetric magnetic fields is shown to destabilize edge localized modes (ELMs) during otherwise ELM-free periods of discharges in the National Spherical Torus Experiment (NSTX). Profile analysis shows the applied fields increased the temperature and pressure gradients, decreasing edge stability. This robust effect was exploited for a new form of ELM control: the triggering of ELMs at will in high performance H-mode plasmas enabled by lithium conditioning, yielding high time-averaged energy confinement with reduced core impurity density and radiated power." (R. Maingi, ORNL)

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

The NSTX outage continued this week with the installation of additional layers of insulation on the Liquid Lithium Divertor (LLD) heater cable bundles, the completion of the pre-operational testing of the LLD heating system, and a 200 Amp test of the TF coil system to measure and document TF joint resistances. Final wipe-downs of the NSTX vessel interior are in progress, as well as the blackening of select in-vessel surfaces. The final inspection and photography of the vessel interior will be performed early next week, followed by the closing of the vessel with the re-installation of the neutral beam to torus transition duct.

Access to the NSTX test cell will be available 1st and 2nd shifts this coming week, with brief periods of restricted access during the neutral beam duct lifts.

Research Operations (M. Bell)

Boundary Physics Operations (H. Kugel)

- Liquid Lithium Divertor (LLD)
 - The preliminary testing in air of the heaters and thermocouples was completed.
- LLD Diagnostics
 - The spectrometer for the Divertor Spectroscopy system was received.
- Lithium Evaporator (LITER09)
 - Preparations started for the reassembly of the 2 LITER09 units