

NSTX Weekly Report (Mar. 12, 2010)

FY 2010 NSTX plasma operations

Planned: Total - 15 run weeks (Base - 14 run weeks, ARRA - 1 run week)

Completed: 0 run week and 0 plasma shot

The paper "Overview of L-H power threshold studies in NSTX" by R. Maingi (ORNL), S. Kaye, et. al. was accepted for publication in Nuclear Fusion. The paper reviews recent 2009 results on L-H transition dependences, and focuses on the role of shape (drsep, triangularity), as well as comparing the PLH with rf vs NBI power. (R. Maingi)

The paper "The impact of lithium wall coatings on NSTX discharges and the engineering of the Lithium Tokamak eXperiment (LTX)" by R. Majeski et al. has been accepted for publication by Fusion Engineering and Design. It is based on an invited talk on lithium wall research at PPPL by R. Majeski at the 9th International Symposium on Fusion Nuclear Technology on October 11-16, 2009 in Dalian, China. (R. Kaita)

The overview talk "NSTX MHD Research and 3D Effects" was given by S.A. Sabbagh at the joint US-Japan Workshop / ITPA MHD meeting held at NIFS, Toki, Japan, March 8th - 12th, 2010. NSTX input to ITPA MHD joint experiments was updated. Sabbagh also participated on behalf of NSTX in the newly-formed ITPA MHD working group discussions. (S. Sabbagh)

R. Maingi (ORNL) and J. Canik (ORNL) gave a talk at the NSTX physics meeting: "The Enhanced Pedestal H-mode: Characteristics and Long Pulse Prospects." The focus was on a class of discharges with enhanced pedestal Te, Ti and improved energy confinement (H98y2 of 1.7) for 2.5 energy confinement times, near zero loop voltage, and high non-inductive fraction at 0.9 MA. (R. Maingi)

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

The NSTX start-up activities continued this week with the successful completion of the vacuum vessel bake, and the ongoing preparations for field coil power testing. Emergency-stop, safety interlock, and coil protection system testing is in progress, and pre-operational checks of the NSTX magnetic diagnostics are nearing completion. Two LITER probes have been assembled and brought to the test cell high bay area to be prepared to be loaded with lithium and mounted on the NSTX vacuum vessel. Also this week, new fiber-optic cabling was installed in the test cell for network upgrades, and rooms were being modified on the second floor of the power supply building in preparation for the installation of a second SPA supply.

Access to the NSTX test cell will be restricted during first shift next week for machine area scrubs and subsequent field coil power testing.

Research Operations (M. Bell)

Boundary Physics Operations (H. Kugel)

- Liquid Lithium Divertor (LLD)
- Two sample bellows used in the LLD internal gas cooling system were pressure tested to study

their qualifications for possible use with plate heating methods using hot gases.

- LLD Diagnostics

- A calibration of the LLD downward viewing fast visible Phantom cameras was performed to characterize their filtered response in the near IR region. It was found that target temperatures above 300°C will be measurable.

- Lithium Evaporators (LITERs)

- Parking Stands for lithium loading LITERs were installed in the South High Bay
- LITER units F1 and K1 were delivered to the High Bay using special dedicated instrument carts, and mounted on the Parking Stands in the South High Bay.
- Preparations for loading LITER units F1 and K1 are in progress.
- Work continued on the assembly of LITER units F2 and K2.

Diagnostic Operations (R. Kaita)

- Diagnostics are being restored to operational configuration after the bakeout.
- UC San Diego personnel (R. Hernandez) is at PPPL this week to work on the fast reciprocating probe.