

## **NSTX-U Weekly Report (Sept. 21, 2012)**

### **NSTX-U is in the Upgrade Project outage in FY 2012**

The NSTX-U Year End Report (pdf and Word) is available for download from:

[http://nstx.pppl.gov/DragNDrop/Reports/Quarterly\\_Reports/2012/Q4/](http://nstx.pppl.gov/DragNDrop/Reports/Quarterly_Reports/2012/Q4/)

The report has also been made available to FES/DOE. (J. Menard)

The paper "Multi-energy soft-x-ray technique for impurity transport measurements in the fusion plasma edge" was published by D. J. Clayton (JHU) et al. in Plasma Phys. Control. Fusion 54, 105022 (2012) and can be found at <http://iopscience.iop.org/0741-3335/54/10/105022/>. The article describes a new technique for measuring impurity particle transport in the plasma edge. Perturbative transport measurements were performed with short neon gas puffs and the resulting emission was detected with a multi-energy SXR diagnostic. These emissivity measurements were modeled using the STRAHL impurity transport code and ADAS atomic database, and the free parameters  $D(r)$  and  $v(r)$  were found using chi square minimization. Results show neon transport to be neoclassical through most of the plasma volume. (D. J. Clayton)

R. Kaita (PPPL) gave a seminar entitled "Scientific and Engineering Challenges for First Wall Materials in Magnetic Confinement Fusion" in the Department of Physics and Astronomy at Vanderbilt University in Nashville, TN on September 19, 2012. Molecular and atomic studies at surfaces are among the active research subjects at Vanderbilt, including ultra-fast vibrational and electronic vibrational processes at surfaces and interfaces. With the growing emphasis on surface science at PPPL, these are areas of potential common interest. (R. Kaita)

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

An Operations Engineering update for the weekly report (I have included the expected NB2 lift into the NTC).

NSTX Upgrade construction activities continued this week with the ongoing assembly of the second neutral beam in the NSTX Test Cell. After the installation of the bending magnet stand in that beam-line, the beam-line lid and cryogenic panels were moved into the test cell and installed in NB2 (see below). Also this week, prepping and insulation taping of TF inner conductors continued in the coil fabrication shop, and prototyping of the Aquapour base intended to provide the temporary surface for winding the new OH solenoid was started.

Preparations of non-upgrade equipment for plasma operations in the NSTX-U configuration continued with the ongoing assembly of new firing generators for the field coil power conversion system rectifiers. Painting and general maintenance of outdoor equipment also continued.

Access to the NSTX test cell will be available only through previous arrangement with the Upgrade Work Control Center.

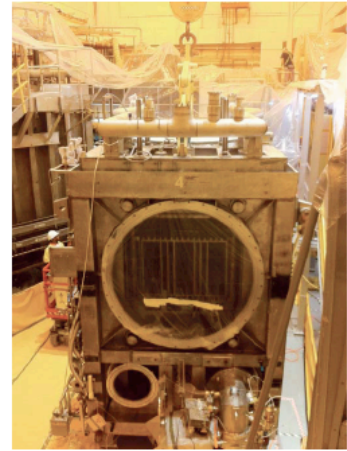
## NSTX-U 2<sup>nd</sup> NBI Lid with Cryo-panel Installed!



2<sup>nd</sup> NBI lid being prepared for lift in the NSTX-U Test Cell South High-Bay Area



2<sup>nd</sup> NBI lid with the cryo-panel being lowered into the beam box in the NSTX-U Test Cell.



The lift completed!  
(Sept. 20, 2012)