

## **NSTX-U Weekly Report (March 13, 2015)**

### **NSTX-U is in the Upgrade Project outage in FY 2014**

Jon Menard (PPPL) presented the PPPL Science on Saturday talk on March 14, 2015 entitled "Scientific Opportunities and Challenges in the Upgraded National Spherical Torus Experiment". Several NSTX-U researchers participated in question and answer sessions during tours of the NSTX-U control room, test cell, and mock-up area. The presentation and NSTX-U fly-over movie are downloadable from:

[http://nstx.pppl.gov/DragNDrop/Publications\\_Presentations/Presentations/2015/Science\\_on\\_Saturday\\_March14/](http://nstx.pppl.gov/DragNDrop/Publications_Presentations/Presentations/2015/Science_on_Saturday_March14/) (J. Menard)

### **Experimental Research Operations (S. Gerhardt, R. Kaita)**

Installation of the laser beam exit flight tube and associated hardware for the Multi-Pulse Thomson Scattering (MPTS) diagnostic continued. The beam turning mirror vacuum cross and the vertical flight tube section were installed in the Test Cell. The second turning mirror cross has been leak checked and the interior has been blackened. Welding of the support posts for the remainder of the flight tube run has been completed and installation of them has started. The final flight tube segment is in the process of being welded. (B. Stratton, PPPL)

### **Engineering Operations (A. von Halle, P. Titus)**

NSTX Upgrade activities continued with the final installations of TF bus in both umbrellas. Installations of TF bus in the lower umbrella is now complete (see photo below). Connections and hydrostatic testing of cooling water lines continues.

The Digital Coil Protection System (DCPS) and the Power Supply Real Time Control (PSRTC) are complete and supporting Field Coil Power Conversion (FCPC) System dummy load testing. The expansion chassis to complete I/O connections needed to incorporate the redundant DCPS into the control system has been installed, and dedicated integrated testing of the combined redundant DCPS's is in progress.

Preparations for plasma operations in the NSTX-U configuration also continued with dummy load testing of the FCPC power supplies utilizing PSRTC, DCPS, and the new rectifier firing generators. Testing of the rectifiers has been performed (with some outstanding items) on the TF, OH, PF5, and PF3U systems, and bi-polar (anti-parallel) rectifier control has been successfully demonstrated. Outstanding items (repairs) and system reconfigurations will be made in parallel with the redundant DCPS testing, and rectifier dummy load testing will resume next week. Welding of the coaxial lines for the deuterated trimethylboron (dTMB) system continued this week, and control wiring is being installed. The installation of the gas delivery lines and gas injectors #1,2 and 3 is in progress, as well as the connection of signals to the new Plasma Current (Ip) Calculator. The Coaxial Helicity Injector (CHI) Cap Bank is being reactivated, and preparations are being made for dummy load testing.

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

# NSTX-U Bottom View (March 13, 2015) Lower TF Flex Bus Installation Complete

