

NSTX-U Weekly Report (November 28, 2014)

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

On November 13 and 14, R. Raman (University of Washington) visited GA to participate in the 2014 DIII-D National Campaign XP "Disruption mitigation in the presence of MHD instability", which was lead by D. Shiraki (ORNL). The massive gas injection (MGI) valve was triggered based on real time MHD signals for the first time on DIII-D. The low torque ITER baseline scenario was used as the target plasma, with rotating $m/n=3/2$ tearing modes and 2/1 locked modes used to trigger neon massive gas injection. A systematic scan of the MGI timing relative to MHD locking was carried out, and the resulting data should enable a better understanding of the effectiveness of disruption mitigation strategies in the presence of growing or fully developed MHD instabilities. In addition, robust operation of the target scenario with repeated MGI was demonstrated, with no negative impacts on neutral beam operation or subsequent plasma breakdown observed. (R. Raman)

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

NSTX Upgrade activities continued with the completion of the installation of the Neutral Beam #1 Transition Duct (see photo below). This has closed the personnel entry port into the vacuum vessel, and the remainder of the primary vessel seals are being made up in preparation for an initial pumpdown. Multiple teams are working on bus-work installations, and TF bus connections have been completed up to the centerstack. Items related to in-vessel work and the NB duct installation are being removed from the test cell.

The Digital Coil Protection System (DCPS) and the Power Supply Real Time Control (PSRTC) development efforts are working towards the start of Field Coil Power Conversion System dummy load testing. Pre-operational testing of the DCPS continues, and signal interfaces to Plasma Control System (PCS) are being installed and commissioned. PSRTC testing also continued with functional tests of firing angle and convert signal verifications to multiple FCPC rectifier firing generators.

Preparations for plasma operations in the NSTX-U configuration also continued. The exit side flight tube of the Multi-Pulse Thompson Scattering (MPTS) diagnostic has been fit up and aligned up to the vessel TIV. Tack welding has been completed, and full welding is scheduled for next week. Clean up of the process gas for the neutral beam helium refrigerator is making good progress on round-the clock refrigerator compressor operation. Motor Generator #1 maintenance is nearing completion with the cleaning of the lower guide bearing cooling paths scheduled for next week. Plasma Current (IP) Calculator system checkout is in progress.

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

NSTX-U Vacuum Vessel Entry Duct (NBI #1) Installed (Nov. 24, 2014)

