NSTX-U Weekly Report (June 10, 2016)

FY 2016 NSTX plasma operations
Operation Targets: Total – 18 run weeks
Completed: 8.95 run weeks and 940 plasma shots

The NSTX-U Team Meeting was held on June 10, 2016 at PPPL. The NSTX-U team was updated on the on-going PF 1A flex bus recovery activity and the restart of plasma operations and the run plan for FY 2016 and beyond. The meeting material is available on the web at: http://nstx.pppl.gov/DragNDrop/NSTX_Meetings/Team_Meetings/2016/2016-06/. (M. Ono, J. Menard, PPPL)

NSTX-U was well-represented at the 21st Topical Conference on High Temperature Plasma Diagnostics, held June 5-9 in Madison, Wisconsin. Three invited talks and twelve posters on work performed on NSTX and NSTX-U were presented. The invited talks were: "Investigation of ELM evolution patterns with beam emission spectroscopy measurements on NSTX-U" by D. Smith (University of Wisconsin-Madison); "Synthetic aperture microwave imaging of the plasma edge in MAST and NSTX-U" by R. Vann (University of York); Multi-energy SXR cameras for magnetically confined fusion plasmas" by L. Delgado-Aparicio (PPPL). (B. Stratton, PPPL)

Experimental Plasma Operations (S. Gerhardt, R. Kaita)

The testing of the remote control for the insertion of two (F2 & K2) of the four the Lithium Evaporators (LITERs) has been successfully completed. This restores the capability to evaporate lithium into the NSTX-U vacuum vessel between shots. When the remote control insertion testing for the two remaining LITERs (F1 & K1) is completed, the ability to replace empty units with prefilled ones will also be restored.

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

An NSTX-U maintenance period has been completed, and preparations are underway to resume plasma operations. The final design review of additional bracing for the PF1A upper and lower water cooled flex bus and coil lead flags was held. Installations will continue over the weekend, and analysis of the as-built configuration will be performed on Monday. Area scrubs and a vacuum vessel boronization will be performed in parallel as activities allow. An early start of power testing would be on Tuesday, with plasma ops planned for Wednesday. Time has been taken each day to condition the neutral beam ion sources, and all six of the HHFW RF sources, now equipped with new protective relaying, were operated into a dummy load. The F1 & K1 LITER probes have been lifted into place onto the fill stand for pre-operational testing in preparation for initial lithium fills. In parallel we continue the integrated system testing of the F2 & K2 LITERs currently installed on NSTX-U. Initial Laser alignments of the MSE-LIF diagnostic were performed and data is being reviewed. The Diagnostic Neutral Beam was operated into a background deuterium gas fill in the NSTX-U vessel, and data has now been taken on all 10 sight lines. Four new video cameras with archiving capability have been installed at the top and bottom of the vessel, and one additional camera is being installed at mid-plane. Mounting of the strain gauges on the outer TF coils as needed to confirm design criteria for increasing our TF Field strength is making good progress, and is expected to be completed

before operations resume this coming week. Also this week electrical installations packages were completed for the new Massive Gas Injector, the FIReTIP diagnostic, and the IR Video Bolometer (IRVB).

The NSTX-U Test cell will be in restricted access this coming week during power testing and plasma operations. Limited access is expected to be available for approved work on second shift.

Thermal testing of replacements for Grafoil at the Inboard Divertor Horizontal Tiles (IBDhs) is underway. The goal is to provide thermal isolation of the tile during bakeout to raise the IBDhs bakeout temperature. Initial results show interface conductance reduced from 2000 w/m2-C with .062" Grafoil to 70 w/m2-C with 3 layers of SS shims and 2 layers of wire mesh. Testing will continue with additional samples expected to lower conductance even further. (A. Brooks, PPPL)