

NSTX-U Weekly Report (February 5, 2016)

FY 2016 NSTX plasma operations

Operation Targets: Total - TBD

Completed: 2.33 run week and 241 plasma shots

The NSTX-U Team Meeting was held on February 5, 2016 at PPPL. The NSTX-U team was updated on the on-going plasma operations and the plan. The research program items including the recent NSTX-U PAC meeting were also discussed. The meeting material is available on the web at: http://nstx.pppl.gov/DragNDrop/NSTX_Meetings/Team_Meetings/2016/2016-02/. (M. Ono, J. Menard, PPPL)

Dr. Naoki Tamura of National Institute for Fusion Science, Japan visited PPPL/NSTX-U for two weeks under the US-Japan personnel exchange program. He collaborated on the physics of non-local transport including the analysis of the TFTR data with Eric Fredrickson (PPPL). (M. Ono, PPPL)

"Phil Ferguson (ORNL) and John Canik (ORNL) visited on 2/3-2/4, meeting with a number of NSTX-U and laboratory staff to discuss the ORNL/PPPL collaboration, as well as tour the NSTX-U facility" (M. Reineke, ORNL)

A Joint NSTX-U/DIII-D Highlight: Orso Meneghini (General Atomics) traveled to Princeton Plasma Physics Laboratory to present new developments of the OMFIT workflow manager framework and its modules, and provide support to PPPL scientists that are using the framework. As part of this collaboration, the physics modules in OMFIT were extended to enable time-dependent kinetic equilibrium reconstructions of the NSTX tokamak. In this workflow, in addition to the magnetic and MSE measurements, the EFIT equilibrium reconstruction is constrained with the plasma pressure (including the fast-ion contribution) and the plasma current which are inferred based on time-dependent TRANSP simulations. M.Podesta, H.Yuh, A.Diallo, F.Poli provided the support needed to fetch the experimental data that is used in OMFIT to automatically setup the TRANSP simulation. Discussion with S.Kaye, A.Diallo and G.Canal spurred the development of a new procedure to account for the iso-thermal flux-surfaces assumption within the OMFIT kinetic equilibrium reconstruction. OMFIT and the new capabilities were tested by A.Diallo, S.Sabbah, J.Berkley, W.Weohner, and G.Canal, which provided valuable user's feedback. Work was also done in support of O. Izacard development of a UEDGE module in OMFIT. The visit was concluded with a presentation and a live demo showcasing an NSTX kinetic equilibrium reconstruction within OMFIT. (O. Meneghini)

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

Felipe Bedoya has arrived from University of Illinois as part of the NSTX-U Materials Analysis Particle Probe (MAPP) collaboration to characterize the plasma-wall interaction. He replaced the Comstock electron analyzer and micro channel plate (part of the x-ray photoelectron spectroscopy system). The probe is being pumped down and will take measurements during the upcoming boronization and plasma campaign. (C. Skinner, PPPL)

Zhen Sun from the Institute of Plasma Physics of the Chinese Academy of Sciences (ASIPP) visited PPPL. He has responsibility for lithium systems on the EAST tokamak in Hefei, China.

They include a crucible-based lithium evaporator for coating plasma-facing components, and a dropper for introducing lithium particles into discharges. Dr. Sun is interested in collaborations with NSTX-U involving both technologies. (R. Kaita, PPPL)

The electrical installation tasks for the lithium evaporators (LITERs) were completed with the attachment of cables between the electronics rack and the LITER probe drives during the past maintenance period. The Lithium Experts Committee (LitEC) has reviewed the procedures for filling the LITERs and installing them on NSTX-U. This completes the requirements for allowing current lithium-related procedures for NSTX-U to be performed. (R. Kaita, PPPL)

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

The two week maintenance period draws to a close with additional diagnostics shutters operational for SAMI, SSNPA, and BES. Lowus/Zeus/MonaLisa diagnostics electrical and mechanical work made progress. Camera installation work at Bay J top took place; power was installed for the camera and SPRED. Argon dump system mechanical work took place also. An MGI meeting was held to organize and schedule planned work for the next few months to put this new system into service. The PF1CU coil case ventilation to dry trapped water was successful in reducing leakage current. Leakchecks and hydrostatic tests of the coil were successful. Water was restored to the coil. TF water fitting compliance modifications were started. The NBI 2A and 2B high voltage transmission lines were repaired and the systems returned to service. Gas Injection System testing and latency testing were performed. TMB is planned on the weekend to be followed by machine area scrubs.

NSTXU operations will resume on Monday with no access until after 5 p.m.