

NSTX-U Weekly Report (July 27, 2012)

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

The paper "Diagnostic options for radiative divertor feedback control on NSTX-U" has been published by V. A. Soukhanovskii et al. in Review of Scientific Instruments 83, 10D716 (2012). The paper describes diagnostic options for a new real-time feedback control system for active radiative divertor control in NSTX-U. The system aims at real-time divertor heat flux mitigation using impurity gas seeding. Based on the past NSTX divertor detachment measurements and analysis, the control diagnostic signals available for NSTX-U include divertor radiated power, neutral pressure, spectroscopic deuterium recombination signatures, infrared thermography of PFC surfaces, and thermoelectric scrape-off layer current. The selected diagnostic signal would be implemented in a digital plasma control system to manage high divertor heat flux via a partial strike point detachment process using an actuator (impurity gas seeding rate). The article can be accessed at URL: <http://link.aip.org/link/?RSI/83/10D716> or <http://link.aip.org/link/doi/10.1063/1.4732176>. (V. Soukhanovskii)

The NSTX-U diagnostic planning meeting was held on Thursday July 26, 2012. This is a preparatory meeting for our next five year planning and the meeting was devoted to the 2012-2016 diagnostic plans for the non-laboratory NSTX-U diagnostic grant recipients. The meeting presentation files can be found at: http://nstx.pppl.gov/DragNDrop/Program_PAC/Collaborator_research_plans/FY2012_2015_diagnostics/ (M. Ono, PPPL)

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

NSTX Upgrade construction activities continued this week with the ongoing rework of welding on the new bay J-K cap and port extension needed to install the 2nd neutral beam on the NSTX vessel. Welding is expected to be finished next week, and will be followed by a rough fit-up of the cap and then the cutting of the vessel. Procedures for the cutting of the vessel to install the bay J-K cap have been approved and are in the NSTX Work Control Center. Welders are also working on the NSTX vessel, alternately installing new TF clevis pads, and plasma cutting upper umbrella legs and fitting up prototypes of the new vessel supports. The coil fabrication shop continued to make good progress on the cleaning, priming and taping of the new TF inner conductors. A lift has been moved into the NSTX test cell to install new neutral beam cryogenic lines along the East wall, and to cut new penetrations in the West wall for neutral beam services. Also on neutral beams, work continued on the calorimeter and ion dump for the 2nd beam-line.

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