

## **NSTX-U Weekly Report (February 10, 2017)**

**FY 2017 status: NSTX-U is in a maintenance and repair outage.**

### **NSTX-U Recovery Project (R. Hawryluk)**

The fourth Design Verification and Validation Review (DVVR), reviewing the NSTX-U magnets including the TF, OH, and PF inner/outer coils, TF-OH interactions, the OH coil Pre-Heater, the DC Bus systems, and the Resistive Wall Mode (RWM) coils, was held this week. This was a very intensive four day meeting and continued during the lab closure on February 9th by means of a Zoom conference call. The external members of the review team included Bill Beck, of MIT's Plasma Science and Fusion Center, Nicolai Martovetsky, the U.S. ITER Magnet Systems R&D manager; consultant Dick Reed, Iain Dixon, of the National High Magnetic Field Laboratory; John Smith, central solenoid project manager at General Atomics; as well as Tom Todd, the chair of the External Condition Review Committee. Among those attending remotely were: Frank Casella, of US ITER, Martin Cox of the Culham Centre for Fusion Energy, James Irby, Brian LaBombard, and Rui Viera, of MIT's Plasma Science and Fusion Center; Michel Huguet, former head of ITER EDA site; and Rem Haange, former ITER Deputy Director General, all of whom attended via video conference, and numerous PPPL staff members. Also attending were Josh King, program manager for Spherical Tokamaks at the DOE's FES and Matthew Lanctot, program manager for Long-pulse Tokamaks at the DOE's FES. Comments and suggestions on coil system design and as-built documentation are being recorded during this extended review and will be incorporated into the Corrective Action Plan.

Regarding test cell work, the installation of the OH Coil Pre-Heater system continued, and progress was made on diagnostic installations such as FIRETIP wave guides and equipment for the new Pulse Burst Laser System (PBLs). Recommissioning of the coil winding facility continued with the completion of the clean room reconfiguration and the ongoing assembly of the tensioning skid. The PF1A coil mandrel has been mounted on the coil winder turning fixture. The commissioning of a PF inner coil test stand in the Field Coil Power Conversion Building is in progress.

### **NSTX-U Research (J. Menard)**

Jon Menard, Rich Hawryluk, and Mike Zarnstorff visited FES in Germantown on February 6 to present the [NSTX-U FY2017 Q1 quarterly report](#). The agenda included discussions of the Recovery Project, QUEST collaboration results, NSTX-U outgoing collaborations, and FY2017 research milestones.

On February 7, Walter Guttenfelder presented "NSTX-U first results, and progress in transport research" at the University of Washington as part of the NSTX-U Outreach Seminar series. The talk summarized initial results from the first NSTX-U run campaign, provided a brief tutorial on tokamak micro-instabilities, illustrated the benefits of low aspect ratio on micro-instabilities, summarized measurements and predictions of various micro-instabilities that can contribute to thermal transport in NSTX-U, and outlined future research plans.

Steve Sabbagh (Columbia University) gave the presentation "Kinetic Resistive Wall Mode Stabilization in Tokamaks and Initial Results from NSTX-U" at the KTH Royal Institute of Technology in Stockholm, Sweden on Feb 8th. He also served as the opponent for a doctoral thesis defense on Feb 9th.

Olivier Izacard (LLNL) was named by IOP as one of their Outstanding Reviewer Award winners for 2016, in recognition of the high quality and timeliness of his publication peer reviews for Plasma Physics and Controlled Fusion.