

NSTX-U Weekly Report (February 3, 2017)

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

NSTX-U Research (J. Menard)

Rajesh Maingi served on the Fusion Energy Sciences Advisory Committee in Gaithersburg, MD on Feb. 1-2, 2017. There was substantial discussion of a new charge given to FESAC, which relates to transformative technology, engineering and science that will advance our field toward fusion energy.

Robert Kaita visited Belmont University in Nashville, Tennessee on February 1. The university recently established a College of Sciences and Mathematics with new facilities for student research. Discussions were held with faculty in physics, chemistry, and mathematics on topics that included lithium research on NSTX-U, laser-based diagnostics, and fabrication of nanomaterials.

Nicola Bertelli, Masa Ono, and Gary Taylor traveled to QUEST (Kyushu University) to attend a workshop on QUEST and related ST RF Startup and Sustainment Plasma Research. N. Bertelli gave a presentation entitled "PPPL code capabilities for ECH and EBW". M. Ono gave a presentation entitled "An overview and motivation for the NSTX-U start-up research program". G. Taylor gave a presentation entitled "Non-Inductive Plasma Current Start-Up, Ramp-up and Sustainment in NSTX-U". During the visit they toured the QUEST Laboratory and discussed future collaborations on QUEST experiments and modeling.

Masa Ono visited Naka Fusion Institute in Naka, Japan on January 30, 2017. He toured the JT-60SA construction site and met with Naka Fusion Institute researchers including Drs. K. Shinohara and S. Ide. M. Ono also gave a seminar on NSTX-U initial operations and plans.

Clayton Myers traveled to the Culham Centre for Fusion Energy (CCFE) for the week of January 23 to collaborate with members of the JET Physics and Technology for ITER (PTI) Task Force on the topic of non-axisymmetric currents during disruptions. JET plasma current asymmetry data was collected from both carbon wall (JET-C) and ITER-like wall (JET-ILW) operations to support an ongoing ITPA activity to determine a scaling for the toroidal rotation of non-axisymmetric halo currents that can be extrapolated to ITER. The latest results from this work, which now include JET-C data, were presented at a JET Task Force meeting on January 26.

Stan Kaye 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.

NSTX-U Recovery Project (R. Hawryluk)

The third Design Validation and Verification Review (DVVR), reviewing the NSTX-U High Harmonic Fast Wave (HHFW) and Neutral Beam (NB) plasma heating systems, was held this week. The Review Committee for the Heating Systems DVVR was comprised of PPPL personnel and eight external personnel, Richard Callis (GA), Larry Grisham (PPPL-ret.), Elizabeth Surrey (UKAEA), and Randy Wilson (PPPL-ret.) attended the review at PPPL while

Richard Goulding (ORNL), Jim Irby (MIT), Ronald Parker (MIT-ret.), Tim Scoville (GA), Thomas Todd (UKAEA-ret), and Stephen Wukitch (MIT) attended the review remotely. Nevell Greenough, Bob Ellis, and Tim Stevenson presented the material for this review and Valeria Ricardo chaired the review. Many good comments and suggestions (chits) were recorded, and are now being categorized into action items.

Progress continues on the development of NSTX-U System Design Descriptions (SDDs), and drafts are being reviewed and updated. Regarding test cell work, the PF1B upper and lower coils have been removed from the machine and inspected. The upper and lower ceramic break/PF1C coil assemblies were previously removed from the machine, and engineering planning for removal of the coils is in progress.

Recommissioning of the coil winding facility continued with the assembly of the tensioning skid and the reconfiguration of the clean room and the coil oven as needed to support PF1A winding. Also this week, progress was made on installation of FIRETIP waveguides and SPRED diagnostic electrical systems.