NSTX-U Weekly Report (May 16, 2014)

NSTX-U is in the Upgrade Project outage in FY 2014

Three following papers have been recently published by Columbia U. Collaboration researchers on NSTX-U and are available online: "Measured improvement of global magnetohydrodynamic mode stability at high-beta, and in reduced collisionality spherical torus plasmas" by J.W. Berkery et al., Physics of Plasmas **21**, 056112 (2014), http://scitation.aip.org/content/aip/journal/pop/21/5/10.1063/1.4876610), showing the remarkable results of increased stability in NSTX at the highest BetaN values. "Benchmarking kinetic calculations of resistive wall mode stability" by Dr. J.W. Berkery, et al., Physics of Plasmas **21**, 052505 (2014), (http://scitation.aip.org/content/aip/journal/pop/21/5/10.1063/1.4873894), which documents a multi-year kinetic resistive RWM mode stability code benchmarking effort, which was requested by, and coordinated through ITPA MHD StabilityGroup MDC-2, and "Resistive wall mode active control physics design forKSTAR" by Young-Seok Park, et al., Physics of Plasmas **21**, 012513 (2014), (http://scitation.aip.org/content/aip/journal/pop/21/1/10.1063/1.4862140), covering high beta stability and RWM control physics design on KSTAR, setting the stage for our joint research between NSTX-U and KSTAR on plasmas exceeding ideal no-wall stability limits. (S.A. Sabbagh, Columbia University)

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

NSTX Upgrade activities continued with the installation of the coil chill plates and locking brazes to finalize the winding of the new OH coil. OH conductor electrical faces are being cleaned up in preparation for silver plating. Modifications to the OH coil vacuum impregnation with epoxy (VPI) mold have been completed in the shop. Electrical insulation testing (Megger) of the new PF1B upper coil and can assembly was successfully completed. The design of the centerstack casing lift fixture has been completed, and the shops have begun fabrication. In the NSTX-U Test Cell, the NB2 transmissions lines are being installed and connected.

Development of the new Digital Coil Protection System (DCPS) continued this week with ongoing testing of the completed software and the design of hardware and I/O layouts.

Preparations of non-upgrade equipment for plasma operations in the NSTX-U configuration also continued with the preparations of the Field Coil Power Conversion (FCPC) and Neutral Beam Power systems for upcoming power testing. The AC Power Group is finishing up their maintenance activities in the NB switchyard, and that area is being turned over to the NB Test/Operations Group. Systems and crews are now ready to start the D-Site MG#1 weld repairs on the week of June 2nd. Testing of the 1st prototype chassis for the new plasma current calculator has started along with system software development. The final design review for this system is being moved up to June.

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