

## **NSTX-U Weekly Report (July 3, 2014)**

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

The paper 'Design and operation of a fast electromagnetic inductive massive gas injection valve for NSTX-U' by R. Raman et al. (Univ. of Washington) was published on-line <http://scitation.aip.org/content/aip/journal/rsi/85/11/10.1063/1.4885545>, in the Review of Scientific Instruments **85**, 11E801 (2014). It describes the development and testing of the valve to be used on NSTX-U for Massive Gas Injection Experiments, and is similar in concept to the valve that is planned to be used on ITER. The NSTX-U valve uses a novel U-Cup Lip Seal, instead of conventional O-ring seals, for the sliding piston mechanism. (R. Raman)

Nicola Bertelli (PPPL) visited IPP-Garching during the week of June 30, 2014, working in collaboration with Drs. R. Bilato and M. Brambilla. A benchmark of different ICRH codes (AORSA, TORIC v.5, TORIC v.6, and GENRAY) were performed in the mid and high harmonic regimes in view of NSTX-U operation (N. Bertelli).

Jon Menard (PPPL) visited IPP-Greifswald following the EPS meeting in Berlin and toured the W7-X stellarator facility. J. Menard also gave a plenary presentation entitled "Rotation and kinetic effects on kink-tearing instabilities in NSTX plasmas" at the meeting of the Max-Planck-Princeton Center held June 28 – July 1, 2014 at the Technical University of Berlin. (J. Menard)

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

NSTX Upgrade activities continued with the post VPI (vacuum impregnation with epoxy) clean-up and sanding of the completed TF/OH coil assembly. The TF/OH coil has been removed from the mold, and initial inspections indicate good epoxy impregnation, and that internal cooling water paths are clear. Electrical insulation tests (Megger) and hydrostatic testing of cooling paths is in progress, and silver-plating of lead block electrical contact surfaces has started. Work on the new centerstack casing continues in the South High Bay with the machining of PF coil pockets.

Development of the new Digital Coil Protection System (DCPS) continued with the ongoing testing of system software and user interfaces, and the design/fabrication of hardware and I/O layouts. A DCPS Code Peer Review has been scheduled for next week.

Preparations of non-upgrade equipment for plasma operations in the NSTX-U configuration also continued with the generation and exercise of the pre-operational test procedures for the Neutral Beam and Field Coil power conversion systems. Weld repairs of the D-MG#1 rotor continues to make good progress with approximately 50% of the planned weld areas now addressed. The final design of the new plasma current ( $I_p$ ) calculator system was successfully reviewed this week.

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



Enhanced HHFW antennas installed on NSTX-U