

NSTX-U Weekly Report (Nov. 21, 2012)

NSTX-U is in the Upgrade Project outage in FY 2013

A highlight on the snowflake divertor research has just been published on the DOE Office of Science web site: <http://science.energy.gov/fes/highlights/2012/fes-2012-10-a/>. The highlight summarizes experimental results obtained in NSTX and more recently, with participation of NSTX research staff, at the DIII-D tokamak. As per the highlight, "One of the grand challenges of the magnetic fusion research is to "tame the plasma-material interface"—to develop an interface between the hot plasma in the nuclear fusion reactor and the low-temperature material wall. The novel snowflake configuration diverts and dissipates heat lost from the high-temperature core plasma, thus alleviating thermal loads on the material wall." The "snowflake divertor" was a 2012 R&D 100 Winner:

<http://www.rdmag.com/award-winners/2012/08/high-performance-tokamak-exhaust>

The NSTX highlight appears among other prominent research efforts managed by the DOE Office of Fusion Energy Sciences. (V. Soukhanovskii, LLNL)

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

NSTX Upgrade construction activities continued with the ongoing fit-up and welding of new umbrella legs and installation of vessel bake-out tubing. We now have 35 TF coil inner conductors on-site, with 30 having cooling tubes soldered in place. Nine of those TF inner conductors have been assembled and aligned in the first inner TF quadrant mold. The first production TF Flex joint is on site and being set up for testing in the Material Test Lab.

Preparations of non-upgrade equipment for plasma operations in the NSTX-U configuration also continued with the completion of testing of the prototype fault detector in conjunction with the new firing generator in a field coil power conversion rectifier. The Real Time Control System was used in a combined test of the fault detector, firing generator, and rectifier driving 5kA into a dummy load, while working through a comprehensive list of simulated faults. Also this week, the Final Design Review of the MPTS diagnostic ex-vessel Laser input configuration was held.

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