

NSTX Weekly Report (Aug. 28, 2009)

FY 2009 NSTX plasma operations completed on August 14, 2009

Planned: Total - 16 run weeks (Base - 11 run weeks, ARRA - 5 run weeks)

**Completed: Total - 16.84 run weeks with 2,748 plasma shots
(Base - 10.95 run weeks with 1,705 plasma shots
ARRA - 5.89 run weeks with 1,043 plasma shots)**

- The paper, "Local scrape-off layer control using biased electrodes in NSTX" by S.J. Zweben, et al, has been accepted for publication in Plasma Physics and Controlled Fusion. This paper described an experiment on the NSTX designed to test the theory that biased electrodes can affect the local scrape-off layer (SOL) by creating a strong radial ExB flow. These electrodes were located near the outer midplane and were biased at up to ± 90 Volts with respect to the local vacuum vessel ground. This biasing caused large changes in the local SOL profiles as measured by an array of Langmuir probes between the electrodes, and a theory was presented which at least partially describes the experimental results. A set of electrodes is planned for the diagnostic tiles of the liquid lithium divertor in order to test whether the same type of control can be obtained near a divertor strike point. (S. Zweben)

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

NSTX post run activities continued this past week with the evaporation of the remaining inventory of lithium from the LITER probes, and the use of the bay C lithium dropper to deposit a small amount of lithium on the lower divertor as a test of possible methods of loading the new liquid lithium divertor (LLD) trays. The NSTX vacuum vessel was vented this week after a final calibration of the supersonic gas injector.

The NSTX test cell will be in free (card reader) access this coming week.

Research Operations (M. Bell)

Boundary Physics Operations (H. Kugel)

- Liquid Lithium Divertor (LLD)
 - A trial fit-up of the Test Plate to the divertor passive plate mockup was completed.
 - The nickel coating of all vertical copper edges of the first divertor plate was completed and the coating of the 2nd plate was started.
 - Preparation of the extension cables for the heaters and thermocouples was started. (M. Viola)
- Lithium Evaporator (LITER2009)
 - The two LITER units were prepared for removal from the vessel and storage under vacuum on Test Cell support stands. (M. Anderson, J. Gething)
- Lithium Powder Dropper
 - A lithium powder dropper was used to test dropping lithium powder over the outer divertor region. (L. Roquemore)