

NSTX Weekly Report (Nov. 07, 2008)

FY 2009 NSTX plasma operations

Planned: TBD

Completed: 0 run weeks

- Three NSTX talks were given by S. Sabbagh (Columbia University) for the NSTX Research Team at the 12th ITPA MHD Stability Topical Group Meeting in Lausanne, Switzerland: 1) Halo Current and Current Quench Rate Characteristics During Disruptions in NSTX; 2) Studies of 2/1 NTM onset threshold vs. rotation and rotation shear in NSTX; 3) Recent RWM control, stabilization physics, and non-resonant magnetic braking results in NSTX. Subsequent discussions included potential NSTX contributions to the ITPA halo current database, and NSTX contributions to several ITPA joint experiments (both from present data, and potential plans for the 2009 run). (S. Sabbagh)

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

The NSTX outage continued this week with the ongoing vacuum vessel machining of viewing ports for the new Beam Emission Spectroscopy (BES) diagnostic. Boring of the 1.4m BES view has been completed, and the boring for the 1.3m view is in progress. The aluminum prototype Liquid Lithium Divertor (LLD) segment is on-site, and being fitted with support brackets. Trial fit-ups of the LLD in the NSTX vacuum vessel are scheduled to begin next week. Re-assembly of the upgraded RF antenna in the NSTX vacuum vessel will also begin next week. 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):
 - SNL: the first of 6, copper segments was bent into a conical shape, and final machining prior to brazing was started.
 - NSTX: an aluminum prototype of an LLD conical segment was received, and preparations were started for performing a trial fitup in NSTX next week.
 - A draft of the Category-4 grounding design for the LLD controls was completed as part of the layout of the rack and cable tray design. (F. Jones)
- L245 LLD Sample Testing - Off-line laboratory tests of shiny liquid lithium on a porous molybdenum sample found that even a thin transparent impurity layer due to reactions with the residual vacuum partial pressures could render the surface inactive, and that applied HeGDC could reactivate the surface as evidenced by the resumption of hydrogen production due impurity reactions. (J. Kallman, J. Timberlake, R. Kaita)
- Lithium Evaporator (LITER) FY09 Preparation -A meeting was held to be review simplifying machining procedures on the heater ceramics, and also adding spare control thermocouples.
- Dust Characterization - Alejandro Campos, a SULI undergraduate student of Charles

Skinner, has written a report on his 2008 summer research "Advances in Dust Detection and Removal for Tokamaks" that has been selected for publication in the *Journal of Undergraduate Research, Vol. 9* and will present the research at the annual meeting of the American Association for the Advancement of Science (AAAS) on February 12-16, 2009 in Chicago. (C. H. Skinner)