

NSTX Weekly Report (Sept. 30, 2005)

FY2005 Joule milestone: 17 weeks

Completed: 17.97 weeks producing 2221 plasmas

FY 2005 Run completed on September 13, 2005

NSTX Department, Project, Program (M. Ono, M. Peng, E. Synakowski)

- One (1) invited and nine (9) contributed NSTX papers were presented at the 21st IEEE/NPSS Symposium on Fusion Engineering (SOFE) held 9/26-9/29 in Knoxville, TN. N. Nishino (Hiroshima University, Japan) gave an invited talk on "NSTX Boundary Plasma Measurement by Fast Camera and Interpretations.) The contributed papers were 1) "Spectral Measurement and Archival of NSTX Data Using a High-Speed Digitizer" (S. DePasquale) 2) "Mechanical Design of the NSTX High-k Scattering Diagnostic" (R. Feder), 3) "Adding Computer Control to RF Heating Systems Equipment" (N. Greenough), 4) "Design, Installation and Performance of the New Insulator for NSTX CHI Experiments" (D. Mueller), 5) "Power Supply for NSTX Resistive Wall Mode Coils" (S. Ramakrishnan), 6) "Development of a Universal Networked Timer at NSTX" (P. Sichta), 7) "Operational Experience with NSTX Demountable TF Joint" (C. Neumeyer), and 8) "Analysis of NSTX TF Joint Voltage Measurements" (R. Woolley), 9) "The design of NSTX supersonic gas injector and recent NSTX plasma fueling results (V.Soukhanovskii, LLNL).

- Ted Strait and Mike Schaffer of General Atomics visited NSTX to begin a collaboration on analysis and correction of error fields in NSTX. Topics discussed with NSTX staff included evidence for the possible importance of non-resonant error fields in DIII-D, experience with feedback-controlled error correction in DIII-D, and application of GA analysis codes to recent error field data from NSTX. J. Menard gave a brief presentation describing recent NSTX results on locked modes and error fields, and web, IDL, and MDS+ scope files were also provided for accessing the relevant NSTX data. (T. Strait/J. Menard)

- There will be an NSTX Physics Meeting on Monday, 9/26 at 1:30 pm in LSB318. K.C. Lee will present "Radial Electric Field Formation by Charge Exchange Reaction at Boundary of Fusion Device." (S. Kaye)

- I'm happy to announce the following "group" seminar in LSB318, on Friday, October 7th, as the first installment of this years Plasma Science and Technology seminar series:

1. "LITER-proto: A Lithium Evaporator Design for Extended Operation and Brief Periods", J. Timberlake
2. "LITER-proto Characteristics and Performance Off-line and on CDX-U", D. Mansfield
3. "NSTX Plans for LITER-1, Thick Lithium Film Evaporation", D. Mansfield, and H. Kugel

If you are interested in presenting as part of this series, please contact me. Since these presentations are relevant for the upcoming NSTX lithium evaporator, those interested are encouraged to participate. (R. Kaita)

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

The NSTX outage continued this past week with the first entry into the vacuum vessel for inspections and photographs, and to remove sample coupons for analysis. After the inspections, the vessel floor was installed, and white-plate calibrations of spectroscopic diagnostics are in progress. Several divertor tiles have been removed from the vessel for an off-line calibration of the IR camera. The FARO measuring arm will be installed in the vacuum vessel early this coming week. The bolt torques on the upper and lower TF joints have been checked and found to be within tolerance, and temperature stickers on the joints show no evidence of unexpected heating during this year's run. Two flexible bus links to the outer TF windings were found to be somewhat distorted, and an engineering review of this condition is underway. Removal of the OH bus from the top of the machine is in progress in preparation for the removal of the OH coil to troubleshoot and repair a water leak found at an outer connection pad.

Access to the NSTX test cell will be available via the card readers throughout this coming week. (A. von Halle)

Research Operations (M. Bell)

Diagnostic Operations (R. Kaita)

- Diagnostic calibrations have begun. They include a check of the fibers for the Johns Hopkins "optical" X-ray array, the CHERS ion temperature system, and the edge rotation diagnostic (ERD).

Boundary Physics Operations (H. Kugel)

- The in-vessel inspection and photographic documentation of plasma facing components was performed. It was found that in terms of erosion debris, the general condition of the machine interior surfaces was the cleanest observed to date. (C. Skinner, A.L.Roquemore, H. Kugel)
- The in-vessel Sample Coupons were removed and are being prepared for shipment to SNL (W. Wampler) for analysis. (C.H.Skinner)
- Interior and exterior vessel measurements at Bay-F upper divertor port for the LITER-1 Lithium Evaporator were performed. It was found that the divertor passive plates are sufficiently centered on the Bay-F axis to allow both the insertion of LITER-1 to the divertor front face, and the adoption of the Bay-K

MGP bellows support design for LITER-1 service at Bay-F. (A.L.Roquemore)

- A Requisition was submitted for a moveable bellows drive for LITER-1.
- Calibration of IR camera windows was performed in the NTC in preparation for measurements of NSTX graphite divertor tile IR emissivity using a vacuum oven. (R. Maingi, ORNL)
- Agreement was reached with R. Bastasz (SNL) to extend the loan of the SNL Hydrogen Sensor presently on NSTX until April of 2006. (C.H. Skinner)
- Spatial and photometric calibrations of filtered visible diagnostics (Filterscopes, EIES) used in boundary physics measurements have commenced. (V.Soukhanovskii, LLNL)
- A conference call was held with LLNL (Soukhanovskii, Umansky, Zweben) to discuss the present status and plans for edge turbulence simulations for NSTX using the BOUT code. (V.Soukhanovskii, LLNL)