

NSTX Weekly Report (March 12, 2004)

FY 2004 weeks of operation planned: - 18 weeks, Completed: - 6.6 weeks

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

- Presentations prepared by Rajesh Maingi and Stan Kaye were presented by David Mikkelsen at the workshop of the ITPA Topical group on Confinement Databases and Modeling in Naka, Japan. Maingi described the recent NSTX/MAST joint experiment on H-modes in centered double-null-diverted (CDND) discharges, and Kaye described plans for several joint experiments which are coordinated by the ITPA. Mikkelsen also proposed an international effort to develop a new set of benchmarks for turbulence simulations codes, and discussed the matter with several Japanese and European researchers at the ITPA meeting. (D. Mikkelsen)
- Nobuhiro Nishino (Prof. Hiroshima University, Japan) arrived on March 11, 2004 for a six week visit. He works on plasma edge behavior and control on NSTX with Bob Kaita and the NSTX team. He has brought a fast visible camera to view the divertor region. Danilo Pacella (Diagnostic Head, FTU, Frascati, Italy) and his technical associate Giuseppe Pizzicaroli arrived on March 9, 2004. They will install an upgraded version of the fast tangential x-ray imaging system on NSTX in collaboration with R. Kaita, Johns Hopkins, and the NSTX Team. (J. Savino)

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

- NSTX entered an expanded maintenance period this past week during which the vacuum vessel was vented for the installation of a viewing dump to eliminate wall reflections for the CHERS diagnostic. In-vessel work is complete including the completion of other vessel tasks such as the replacement of the MPTS window and the SPRED TIV. The vacuum vessel was closed and the pump down has started on Friday, March 12, 2004. Leak checking and preparations for vessel bake-out are scheduled for this coming week. The neutral beam calorimeter has been removed and the replacement of the failed guide bearing is in progress. All work is on track for resumption of plasma operations in early April.

The NSTX test cell will remain in free (card reader) access until the start of the vacuum vessel bake-out. (A. von Halle)

Research Operations (M. Bell)

Boundary Physics Operations (H. Kugel)

- A visual and photographic inspection of the Vacuum Vessel interior surfaces was performed. The general findings were that after 2 months of operation, the vessel interior macroscopic surfaces appeared to be relatively clean and undamaged (A.L. Roquemore, H. W.Kugel)
- The lower Bay B viewport was temporarily removed and fine deposits examined with low and high power optical microscopes. About 3,000 particles per square millimeter were found, most were one or two microns in size. Image analysis software was used to quantitatively parameterize the dust. The Count Median Diameter (CMD) was 2.06 microns, Geometric Standard Deviation (GSD) was 2.08 microns, and the diameter of average mass (assuming a log normal distribution) was 4.61 microns (C.H. Skinner).
- The vessel wall coupons were removed for analysis, and replaced with fresh unexposed coupons.
- The Bay C Lower Divertor Internal Neutral Pressure gauge filament was replaced and an electrostatic shield was installed. (T.Provost)
- A Zinc Selenide IR Camera window was installed on Bay F Lower Divertor port for viewing the Upper Divertor region.
- The GDC and In-Vessel Illumination Source filaments were replaced.

Diagnostic Operation (R. Kaita)

1) D. Pacella and G. Pizzicaroli from the ENEA - Frascati Laboratory in Italy have been visiting PPPL during the past week. They have reinstalled the hardware for the PIXCS tangential soft X-ray diagnostic in the NSTX Test Cell. They are ready to perform calibrations in preparation for plasma operations.

2) N. Nishino from Hiroshima University has arrived at PPPL. His Photron fast visible camera has been installed in the new re-entrant port in the lower dome of NSTX. Tangential images of the divertor region have been successfully recorded during plasma operations.

3) A new detector array has been installed in the tangential midplane bolometer system.

Diagnostic Upgrades (D. Johnson)

- A two piece razor blade viewing dump was installed on the vacuum vessel wall to reduce reflections which were polluting edge measurements of the ion temperature and toroidal rotation velocity by the NSTX CHERS system.
- The MPTS viewing window was replaced along with several other viewing windows on NSTX. A remotely controlled power supply was installed to enable remote calibration of the MPTS viewing window using an in-vessel filament.
- Several diagnostic alignments were verified, including the SPRED system, the GPI system, the NPA system, the divertor tangential camera system, and the ultra-fast tangential X-ray camera system.