NSTX Weekly Report (Dec. 10, 2004)

FY2005 Planned Operations: 14 weeks
Completed: 0 weeks producing 0 plasmas

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

• Martin Peng attended the International Energy Agency (IEA) Large Tokamak (LT) Workshop 58 - Implementation of the ITPA coordinated Research Recommendations during December 8 - 10, 2004 near Oxford, U.K. Also attending the meeting were the International Tokamak Physics Activities (ITPA) Coordinating Committee, representatives from most of the ITPA topical groups, and the tokamak and ST program leaders from U.S., E.U, Japan, and Russia. The results of the meeting will be available in about one-week's time. (M. Peng)

• H. Kugel made a presentation entitled "Status and Plans for Boundary and Edge Physics Experiments on NSTX" and R. Kaita gave a talk entitled "NSTX Perspective on FY06 Particle Control and ALIST Module" at the Plasma Facing Components (PFC) Meeting in Livermore, CA on December 6-8, 2004. The PFC Meeting occurs twice a year, and provides a venue for presenting the latest results on plasma materials interaction (PMI) experiments and modeling. Presentations from large US magnetic fusion facilities included summaries of plasma edge and PMI activities on Alcator C-Mod, DIII-D, and NSTX. A major PFC focus is the so-called ALIST module, which is a national collaborative effort that will provide a liquid lithium surface in the NSTX divertor region. (R. Kaita)

• Last week, Ed Synakowski visited the Physics and Astronomy Department at the Johns Hopkins University. He gave a department colloquium titled, "Fusion energy, plasma turbulence, and the shifting scientific landscape." The visit included discussions with students regarding fusion and transport research. In addition to meeting with NSTX Team members Michael Finkenthal and Luis Delgado-Aparacio, he met with JHU faculty regarding plasma turbulence research in the laboratory and its connections to astrophysical systems. (E. Synakowski)

• The December NSTX Team Meeting will be held on Wednesday, December 15, 2004, at 1:30 P.M., in LSB318. Remote participation will be available for our off site team members. (J. Savino)

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

The NSTX outage continued this past week with the completion of the new PF1A lower coil and the reinstallation of the remaining NB armor disturbed during the installation of the high K scattering diagnostic. The vessel was darkened with light-tight covers in place of the center stack, and calibrations of the CHERS/ERD and the MPTS diagnostics were completed. Reinstallation of

the center stack casing is scheduled for this coming week, followed by two days of diagnostic calibrations, and the installation of the neutral beam drift duct. Leak checking of the drift duct with the new bellows is in progress, and will be ready to be installed for vessel pump-down scheduled for the following week. Procedures for the assembly of the TF Flag boxes have been reviewed and approved, and the results of the last TF flag box prototype tests are under review. Electrical insulation tests of the cable system to power the new error field coils have been successfully completed, and maintenance of the neutral beam helium refrigerator is in progress. There are no NSTX test cell access restrictions expected this week, although there will be restrictions to vacuum vessel access during activities associated with the PF1A coil and center stack installations. (A. von Halle)

Status Report of the RWM Coil Switching Power Amplifier Installation Work (C. Neumeyer):

• All three RWM power cables from FCPC to NSTX Test Cell were hipotted successfully. One of the cables has been terminated in the NTC RWM Junction box. The other two are expected to be terminated this week. The cabling within the test cell for four coils has been installed. These are expected to be terminated by next week. Configuration of the P13 Transrex circuit within FCPC has been completed; only the load cables to the SPA are required to be installed. The RWM Disconnect switches are expected to be shipped before the end of the year and installed in early January. A meeting was held to discuss the progress of the RWM installation tasks. The projected date of completion of the installation activities is now by end of February, provided the necessary resources are made available. A peer review was successfully held on the controls for the RWM Safety Disconnect switches.

• RWM/SPA control and monitoring tasks previously reported are still underway. However, electronic technician support is a major concern, and could impact timely completion. It was decided to interface the HCS permissive to the SPA via a FO link. This will require an additional control cable run between the HCS cabinet and the junction area.

• In the RWM/SPA software area, it was decided to include provision for PSRTC setting the Transrex P13 DC source voltage, rather than fixing it at 1kV. This will allow more flexibility for overall feedback control loop gain optimization. Work is underway to include the RWM coils in the PSRTC simulation mode.

• Plans for RWM/SPA commissioning are being developed. It would be advantageous to get control power connected to the SPA ASAP so that low level checks can begin.