Research Operations Division
Boundary Physics *(H. Kugel)*

- Vessel interior in good condition - no cracked tiles
  - White dust/fibers on horizontal surfaces at 3 – 4 cm^{-2}
  - At lower CHI gap some discoloration on BN shields
  - At upper CHI gap, darkened areas on skirt of insulator
    - originated at gap between BN tiles covering shelf
    - tiles also covered with graphite chips
- Lithium Pellet Injector
  - Evaluated propellant valve
  - Fabricating pneumatic and computer controls
- Supersonic Gas Injector (Mach 8)
  - Delivery of graphite nozzles expected in about 3 weeks
  - Took Schlieren photographs of shock from Mach 2 nozzle on loan from M&AE department
- Wall coupons from FY03 run sent to Sandia for accelerator-based analysis
  - already analyzed using AES, XPS, SIMS
- New data and status of NSTX edge transport modeling effort placed in the NSTX UEDGE directories

Research Operations Division
Diagnostics *(D. Johnson, R. Kaita)*

- Taking advantage of time before the TF construction "crunch" to complete several diagnostic tasks
  - Spatial calibrations of
    - Edge rotation diagnostic
    - Neutral particle analyzer
    - Fast reciprocating probe
    - Toroidal CHERS (+ "white-plate" calibration)
    - VB sightlines
  - Checked connections for high frequency Mirnov coils
  - Investigated failure of 3 B_p sensors
    - Making better shields
  - Replace damaged detectors in USXR arrays
  - Repaired flux loops behind secondary passive plates
  - Move internal heating/cooling pipes obstructing diagnostic access
- Calibration work was interrupted by failure of the Faro measuring arm
  - Not expected back from repair until next week

Research Operations Division Diagnostics *[2]*

- Tangential bolometer array performance degraded during the last run
  - Found coating deposited on sensor array which manufacturer etched away
  - Was detector exposed to GDC or boronization?
    - Archive shutter status for *post mortem* analysis
- Successful CDR for high-k tangential microwave scattering diagnostic
  - Launch 1mm microwave beam through NB armor at Bay H and collect scattered radiation along an array of sightlines through Bay K
- Developing proposal to slot upper and lower outer divertor plates to permit views of NB for poloidal rotation measurement

Research Operations Division
RF Systems *(R. Wilson)*

- No sign of arcing in the antenna feedthroughs since modifications
- Developing system to use feedback on plasma radial position to control antenna loading
  - Modified the RF monitoring circuits in NTC to improve frequency response
  - Blocked out method for data acquisition to real-time control computer
- Completed the remote timer for RF sources
  - Can now set up RF pulse from NSTX Control Room
- Repaired the dummy load coolant tank
- Starting design of symmetrical end-feed for antennas
- Much effort is being shifted to C-Mod, DIII-D and ITER

Research Operations Division
Physics Operations *(D. Mueller)*

- Model plasma response for extending RT-EFIT control (with GA collaborators)
  - Improve vertical stability and increase κ.
  - Optimize gains and include non-diagonal terms for shape control
  - Power supply model developed (Hatcher)
  - Updated information about NSTX structural elements (Menard)
  - Measure feedback system delays (Marsala, Gibney)
- Continue collaboration with HIT group (UW) on adding CHI to inductive discharge (Mueller)
  - Scheduled experiments this July/August
- GIS upgrade
  - Separate control system for CS and shoulder gas puffers