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

- Aiming for operation of Lithium Pellet Injector with plasmas next week
  - Installed, pumped down, opened TIV yesterday
  - Performing pre-operational tests; load with pellets today
- Assessed hot boronization and developed “daily mini-boronization”
  - Observed ohmic H-modes, but
  - Need additional He cleanup shots to remove co-deposited D
  - Between-shots boronization was not more effective
- Preparing bellows drive for supersonic gas injector and diagnostics
- Upper shoulder gas injector now has independent control
- Successful experiment [437] with the UCSD fast reciprocating probe
- In-situ dust detector is producing data – correlating with sample data
- 6 NSTX contributions presented at 16th PSI in May

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

- CHERS analysis now performed between shots, in some conditions
  - Profile data written to the MDSPlus tree
- MSE has 2 channels instrumented
  - Pitch-angle data agrees reasonably well with EFIT on a few shots
  - Good agreement with vacuum field
  - Performed preliminary 'gas-filled torus' calibration
    - Identified problem with heating of NB duct bellows
  - Plan to add 4 more channels before end of operation
- SPRED has been operating since its sojourn to CDX-U
- New tangential bolometer detector array is working well
- PIXCS 2D X-ray imaging [ENEA] is working
- Fast tangential x-ray camera is taking first data

Research Operations Division
Diagnostics *[2]*

- Taking data with fast camera [Hiroshima U] on tangential divertor port
- Measured core fluctuations with reflectometer systems [UCLA, XP439]
  - Also assessing 1mm interferometer for turbulence measurements
- First results with tile-mounted Langmuir probes [LLNL, ORNL, UCSD]
- Successful FDR for vessel modifications for tangential microwave scattering to measure high-k turbulence
  - Several fabrication-related procurements underway
- Final Design Review for machine modifications for Poloidal CHERS scheduled for next week
- Four invited, 15 contributed NSTX-related presentations at 15th Topical Conference on High Temperature Plasma Diagnostics

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

- Routine operation with full control of RF parameters from control room
- Operated on more than 200 shots since April
  - Coupled power up to 4MW
  - Coupled energy to 0.7MJ
- Established HHFW operation with rtEFIT
  - Installation of RF filters reduced pick-up in real-time magnetic data
    - Still some issues depending on RF phasing, power
  - Measured dependence of loading on plasma-antenna gap
    - Data needed to use feedback control of RF loading
- Successfully used 2 RF sources for plasma initiation [MP-30, XPs-431, 3]
  - Measured and adjusted source phase offsets
    - Should allow more sources for startup & in vacuum conditioning

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

- Established rtEFIT control for elongation up to 2.6
  - System latency reduction and analog voltage loop difference for dZ/dt
- Implemented “smooth” handoff from ramp-up phase to rtEFIT control
- Need to update vessel model in rtEFIT for new CHI absorber structure
  - Affects determination of upper X-points
  - New Green's function table completed and being tested for EFIT
- Performed first part of XP-423 to measure frequency response of system
  - Now ready to measure vertical instability growth rates
- Preparing for first use of PF4 coil and RWM coil using an additional rectifier power supply
  - Expect to use preprogrammed waveforms in this run