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

- Many discussions and presentations over summer
  - Results from the Edge Characterization Experiment
  - PSI conference, Snowmass, Results Review, Research Forum, ET group meeting
- Failed IR camera repaired by vendor
  - Locally tested and found to work with digital interface
- Collected dust from VV after opening *[INEL]*
  - Initial characterization shows similar to other tokamaks
- Performed maintenance and calibration on fast reciprocating probe *[UCSD]*
  - Installed remotely operated ground switch for easier access to NTC
- Preparing Quartz Crystal Deposition Monitor
  - Successfully measured test deposition on bench
  - Assessing candidate port locations for installation
- Proposed Lithium Pellet Injector reviewed
  - Work initiated to test a prototype off-line and on CDX-U

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

- Completed installation and preliminary alignment of CHERS/MSE collection optics
  - MSE fiber bundles routed to detector room in mezzanine
  - Need new input slits for CHERS spectrometer to resolve mismatch caused by problem in fiber output clamp
- Vertical view optics for edge rotation installed
- Modified midplane nozzle between Bays I and J for new EBW antenna with local limiter
- Enlarging port at end of pump duct for horizontal XCS
  - Increase throughput & take advantage of large crystal
- Vertical XCS being installed and aligned this week
  - Spectrometer calibrated by MIT, LLNL, and PPPL
- Developed design for new resistive wall mode sensors (12 each B_r, B_z coils) on primary passive plates
  - Machined grooves in edges of 96 tiles for B_r loops
    - Trial installation of first loop underway
  - Signal processing will be a big job

Research Operations Division Diagnostics *[2]*

- Final installation of the scintillator-based fast lost ion probe (sFLIP) nearly completed
  - Requires accurate location near edge of plasma.
- Dr. Wonho Choe from KAIST began year-long visit
  - Fast visible divertor imaging with Hiroshima University.
  - NSST plasma modeling
- Drawings completed for dome flanges to accommodate new re-entrant ultrasoft X-ray arrays *[JHU]*
- Fast X-ray camera from Princeton Scientific Instruments undergoing laboratory tests prior to installation on NSTX.
- X-ray pinhole camera relocated to Bay B
  - New phosphor coating should improve sensitivity
- Center stack tile measured and modified for new interferometer target
- Langmuir probe maintenance and modification
  - Increase gap between sensor and surrounding tile to improve voltage standoff

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

- Diagnosis and repair of the HHFW antenna
  - Disassembled straps (11,12) with worst voltage standoff
    - Area of arcing found in feedthrough
  - All straps then found to have some signs of arcing
  - Designed modifications to improve voltage standoff
    - Reduce diameter of “bowling pins” and add rings to reduce voltage stress concentration at corners
    - Hone surface of outer conductors to remove pitting
  - Installing better measurement of pressure in antenna box to assess role of gas in voltage limit
    - Indications of large pressure rise during previous run
- Design and construct new rf controller and remote interface
  - Replace many of the existing rf controls
  - Permit computer control from NSTX Control Room
    - Remote setting for timing. power levels, etc.
- Expect to complete both tasks in next 2 months

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

- Changes to machine expected to improve CHI capability for next run
  - New absorber insulator
    - Better geometry
    - Longer path between electrodes
  - Relocating voltage limiting MOVs to suppress transients
  - New field nulling coils for absorber
    - Installation and commissioning of power supplies remains to be done during run
- Investigating modifications to the inner-wall gas injector to achieve better control of flow waveform
  - Avoid the “blast-then-dribble” gas flow from the present injector
- FIMM installed to multiplex high-speed data streams from digitizers in different potential classes
  - Avoid reliance on analog fiber-optic links
  - Should allow additional diagnostic data to be included in real-time control calculations