

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

- ◆ Investigating upgrades to capability of lithium evaporator for
  - ▶ Evaporation between/during shots in normal cycle (*higher temperature*)
  - ▶ Improve coverage, particularly on lower divertor (*re-aim, flare “nostrils”*)
  - ▶ Provide passive shielding for MPTS window
- ◆ Examining alternative methods for more rapid lithium coating
  - ▶ Improving LPI reliability and capability for injecting dusts
- ◆ Removed 21 PFC tiles for non-destructive surface analysis at ANL, SNL
  - ▶ Appears that lithium did not penetrate into tile beyond  $2\mu\text{m}$ 
    - *c.f. deposition equivalent to  $>1\mu\text{m}$  lithium thickness (at QMB)*
  - ▶ Subset of 5 tiles will now undergo destructive testing
- ◆ Preparing to upgrade SGI for higher pressure  $\Rightarrow$  higher Mach number

## Research Operations Division Diagnostics (*R. Kaita, B. Stratton*)

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- ◆ Poloidal-CHERS – *diagnostic milestone for FY'07*
  - ▶ Installation of machine-end hardware complete
  - ▶ Installation of hardware in spectrometer room in progress
  - ▶ Alignment of sightlines in-vessel this week
- ◆ Port for tangential view across NBI installed on Bay K for JHU transmission grating spectrometer
  - ▶ Provide quantitative impurity profiles
- ◆ Installing edge bias electrodes and probes at Bay B
  - ▶ Aim to affect propagation of structures on SOL
- ◆ Held FDR for LANL dust injector: carbon dust
  - ▶ New port cover for Bay E to be installed this opening
  - ▶ External hardware to be installed in January

# Research Operations Division

## Diagnostics [2]

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- ◆ Removed obstructions to some FReTIP chords inside vessel
- ◆ MPTS
  - ▶ Completed realignment of MPTS optics
  - ▶ Calibration and reanalysis of data from 2006 run is in progress
- ◆ High-k scattering
  - ▶ Calibration with acoustic cell completed with original collection mirror
  - ▶ Installed new collection mirror; recalibrate before closing VV
  - ▶ Modifying launch mirror mount to avoid jamming; add thermocouples
- ◆ New HF Mirnovs, segmented Rogowski; repaired problematic sensors
- ◆ New antennas for reflectometer array
- ◆ Pre-run spatial calibrations for many diagnostics

# Research Operations Division

## RF Operations (*J. Hosea*)

- ◆ Developing HHFW priorities for next run, including:
  - ▶ Power balance at high field and different phasings
    - Analysis suggests effective current drive may be possible at 0.6T
  - ▶ CD and heating with NBI
    - HHFW electron heating during NBI may be sustained at higher field
- ◆ 3 RF probes being prepared to measure edge fields vs. antenna phase
- ◆ EBW:
  - ▶ Resolve conversion discrepancy in H-mode at 1st and 2nd harmonics
  - ▶ Spiral antenna to detect radiation outside view of directional antennas
  - ▶ Inject gas in front of the antenna to adjust density gradient
  - ▶ Designing 200 – 300 kW ECH/EBW system to test EBW heating, assist startup
    - Aim to install for FY'08 run

# Research Operations Division

## Physics Operations (*D. Mueller*)

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- ◆ Replacing obsolete Skybolt system with fast multi-processor servers
  - ▶ Most commercial hardware procured
  - ▶ Locally developed modules now in fabrication
  - ▶ Encountered vendor support issue with FPDP interface in DMA mode
    - Work around with slower polling mode - adequate initially
  - ▶ Aim to be ready to operate system in parallel by end of FY'07 run
    - Considerable software conversion effort now required
  - ▶ No new control algorithms or additional capabilities expected this run
- ◆ CHI:
  - ▶ Considering higher voltage MOVs to allow operating up to full 2kV
    - Need to balance benefit and risk
    - Upgrade charging power supply

# Research Forum for FY'07

## *Tue Dec 5 – Noon Thu Dec 7, 2006 at PPPL*

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- ◆ Consider and prioritize proposals for experiments in forthcoming run
- ◆ Run Coordinator: *Dave Gates*; deputy: *Michael Bell*
- ◆ ET Groups and leadership for FY'07
  - ▶ Integrated Scenario Development (*Rajesh Maingi; Jon Menard*)
  - ▶ MHD (*Steve Sabbagh; Nikolai Gorelenkov*)
  - ▶ Transport and Turbulence (*Kevin Tritz; Stan Kaye*)
  - ▶ Waves (*Gary Taylor; Joel Hosea*)
  - ▶ Solenoid-less Startup (*Roger Raman; Dennis Mueller*)
  - ▶ Edge Physics (*Vlad Soukhanovskii; Henry Kugel*)
- ◆ Slight change to structure of Experimental Task Groups this year
  - ▶ *Energetic particle MHD, including Alfvénic modes, now included in MHD ET Group, rather than Wave-Particle ET Group*

## Research Forum for FY'07 (*cont.*)

- ◆ Agenda
  - ▶ Tuesday morning Dec. 5: Plenary session (B-318)
    - Program guidance
    - Facility update
    - Reports from other devices
    - Plans for ET group discussions
  - ▶ Tuesday afternoon Dec. 5: Breakout sessions 1, 2 (B-318, B-252)
  - ▶ Wednesday morning Dec. 6: Breakout sessions 3, 4 (B-318, B-252)
  - ▶ Wednesday afternoon Dec. 6: Breakout sessions 5, 6 (B-318, B-252)
  - ▶ Thursday morning Dec. 7: Plenary sessions (B-318)
    - Reports from ET Group leaders
    - Run Coordinator's initial plan
- ◆ See: [http://nstx.pppl.gov/DragNDrop/Research\\_Forum\\_2006/](http://nstx.pppl.gov/DragNDrop/Research_Forum_2006/)
- ◆ Send outlines of proposed experiments to relevant ET Group leader