

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

- ◆ Met both milestones on lithium coating:
  - F(06-2): Conduct first experimental test of partially coated plasma facing components using lithium evaporator (6/06)*
  - R(06-4): Characterize effects of lithium wall coating on recycling (9/06)*
- ◆ 14 lithium evaporations with LITER-1(B,C) totaling 9g of lithium
  - ▶ Largest evaporation (E-12) was 4.8g
- ◆ Analyzing data from XP-601 for L-Mode, H-Mode, Reversed Shear
  - ▶ Effect on density only on first shot after evaporation
  - ▶ Effects on temperature profiles, impurities persisted longer
  - ▶ Effects not dependent on quantity of lithium deposited beyond ~0.4g
- ◆ Now discussing upgrades of capability for
  - ▶ Evaporation between/during shots in normal shot cycle
  - ▶ Different coverage pattern

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

- ◆ Performed many diagnostic calibrations since end of operation
- ◆ MPTS
  - ▶ Full calibration with Rayleigh/Raman scattering
  - ▶ Still dealing with problems analyzing data on 10 newest channels
    - Problem appears to be in “QT” calibration, not electronics
- ◆ Major diagnostic upgrades now underway
  - ▶ PCHERS (milestone in FY'07)
    - In-vessel modifications of divertor and passive stabilizer plates
    - Procuring lenses, optical fibers, spectrometers, cameras, d/a
  - ▶ High-k scattering
    - Installing remote control of input beam, new collection mirror
    - Planning *in-situ* calibration of fluctuation level in September using acoustic cell to scatter beam from standing waves

## Research Operations Division RF Operations (*J. Hosea*)

- ◆ Good results obtained: now analyzing data for meetings, papers
  - ▶ Good heating observed at  $k = 14, -7 \text{ m}^{-1}$ ;
    - Central  $T_e$  near 4 keV was achieved with  $-7\text{m}^{-1}$
  - ▶ Some heating at  $-5, -3 \text{ m}^{-1}$  *for first time*
  - ▶ Data from RF pickup probes in vessel
- ◆ Plans:
  - ▶ Add capacitance to all RF DC breaks to reduce RF noise
  - ▶ Investigate putting capacitors across vessel gaps to reduce leakage
  - ▶ Complete voltage feedback controls
  - ▶ Complete RF probe set for poloidal and toroidal coverage
  - ▶ Provide pure  $14\text{m}^{-1}$  (heating) and  $-11\text{m}^{-1}$  (CD)
    - Investigate expected  $k_{\parallel}^2$  improvement
  - ▶ Design antenna for two symmetric power feeds (for 2007 opening)

# Research Operations Division

## Physics Operations (*D. Mueller*)

- ◆ Plasma Control
  - ▶ Success with EFC coils & SPAs in programmed and feedback control
    - Real-time mode identification & feedback suppressed RWM growth
  - ▶ Data acquisition and other faults in Skybolt computer impacted run
  - ▶ Power supply problems also affected some corners of operation space
- ◆ Successfully operated CHI capacitor bank to 1.85kV
  - ▶ New MOVs and snubber capacitors suppressed transients
  - ▶ World-record 160kA of toroidal current on closed flux surfaces
- ◆ Plan to replace Skybolt with system based on multi-processor servers
  - ▶ First tests of real-time data acquisition encouraging
  - ▶ Design reviews held, requisitions for new hardware in procurement
  - ▶ Aim to be ready to operate system in parallel at start of FY'07 run
    - Considerable hardware and software effort will be required Sep - Jan