

---

# Research Operations Division

## Boundary Physics (*H. Kugel*)

---

- ◆ Presented data from Quartz Deposition Monitor at meeting on “In-vessel Tritium Inventory”, EFDA-JET, UK (Skinner)
- ◆ Calibrated all gas injectors for analyzing fueling data (Maingi)
- ◆ Partial bakeout (150°C) in Feb. to calibrate IR cameras
  - ▶ Now analyzing data taken during run
- ◆ Prototype Lithium Pellet Injector under test in lab.
  - ▶ Developing a diagnostic for pellet velocity
  - ▶ Controls designed and reviewed
- ◆ Supersonic Gas Injector nozzle (Mach 8) in procurement
  - ▶ Test setup being exercised with Mach 2 nozzle on loan from M&AE department (Soukhanovskii)
- ◆ Installing additional pressure gauges during outage

# Research Operations Division

## Diagnostics (*D. Johnson, R. Kaita*)

- ◆ Commissioned during the all-too-brief run:
  - ▶ Astrophysics X-ray crystal spectrometer
  - ▶ Divertor bolometer,
  - ▶ Edge deposition monitor
  - ▶ Edge rotation diagnostic for  $T_i$  and  $v_\theta$ 
    - interesting phenomena during ICRF (Biewer)
  - ▶ New 51 ch. CHERS
    - data being analyzed for  $T_i$  and  $v_\phi$  profiles
  - ▶ New 1D-CCD camera
  - ▶ 1mm interferometer (UCLA)
  - ▶ Full NPA scan capability with new bellows
- ◆ Now planning for diagnostic maintenance and some upgrades during outage
  - ▶ Validate/calibrate data from FY'03 operation
  - ▶ Prepare for extended FY'04 run

# Research Operations Division

## Diagnostics [2]

### In-vessel activities

Description	Contact	Duration (days)	Start
In-vessel inspection & photography before floor installation	Kugel	0.25	4/17
Floor installation	Winston	0.5	4/18
In-vessel inspection & photography after floor installation	Kugel	0.25	4/21
Edge rotation calibration as is	Biewer	0.5	4/24
CHERS white-plate calibration	Bell	0.5	4/24
CHERS spatial calibration	Bell	0.5	4/25
USXR calibration of new array at Bay G bottom	Tritz	0.5	4/25
NPA sightline calibration	Roquemore	0.5	4/28
Calibrate position of new head for fast probe	Kugel	0.5	4/28
Measure positions of RWM coils	Menard	0.5	4/29
Investigate & repair 3 RWM Bp sensors	Menard	TBD	4/29
Bolometer calibration	Paul	0.5	4/30
Mirnov coil checkout	Fredrickson	0.25	4/30
Inspection of MPTS window	LeBlanc	0.15	4/30
Examine HHFW feedthrough modifications for arcing	Ellis	0.5	5/1
Replace the upper secondary passive plate flux loops	Menard	5	5/2
PIXCS calibration	Pacella	0.5	5/12
1D CCD calibration	Skinner	0.5	5/12
Filterscope calibration	Skinner	0.5	5/13
VB calibration	Skinner	0.15	5/13
Mirnov coil frequency response measurement	Fredrickson	0.25	5/13
MPTS white-plate calibration	LeBlanc	1 day	5/14
MPTS spatial calibration	LeBlanc	0.25 day	5/15
UCLA reflectometer spatial calibration	Kubota	2 days	5/15
Edge rotation calibration after mirror mount modification (&flux loop repair)	Biewer	0.5	5/19
USXR calibration of 4 arrays at Bay G	Tritz	0.5	5/20
Calibration of a single channel prototype neutron collimator using a Cf source	Roquemore		5/20

---

# Research Operations Division

## RF Systems (*R. Wilson*)

---

- ◆ Supported NSTX operations during the abbreviated run
  - ▶ Good progress on increasing power
  - ▶ Successfully repeated experiment to compare matched discharges with co- / ctr- CD
  - ▶ Commissioned remote operation from the Control Room
- ◆ Plans for outage
  - ▶ In-vessel inspection of antenna feedthroughs
    - modified during last outage
  - ▶ Position feedback to maintain the loading (*c.f.* TFTR)
  - ▶ Voltage feedback to hold antenna voltage below limit as loading fluctuates (*c.f.* JET)
  - ▶ Repair of RF Dummy Load
  - ▶ Design of the balanced antenna feed
    - Possible upgrade for FY'05

---

# Research Operations Division

## Physics Operations (*D. Mueller*)

---

- ◆ Good progress in rt-EFIT control before TF failure
- ◆ Some progress in CHI operation
  - ▶ New absorber does seem more resistant to arcing
  - ▶ Promising early results on “forced reconnection” scheme
- ◆ Plans for outage
  - ▶ Investigate with GA modelling of plasma response
    - Improve gain settings and include non-diagonal terms
    - Extend shape control
    - Develop better models for power supplies and structural currents
    - Single PF coil shots would be useful to calibrate new sensors and check power supply model.
  - ▶ Develop feedback on position of outer boundary to maintain RF loading
  - ▶ Continue collaboration with HIT on adding CHI to inductive discharge