
Research Operations Division

Boundary Physics (*H. Kugel*)

- ◆ Standard room temperature Boronization (17) on 1/07/03
- ◆ Successful cleanup after Ne glow for CHERS calibration
 - ▶ After 120 min HeGDC, plasmas did not show Ne
 - ▶ Followed by Boronization-18 (1/18/03).
- ◆ Received approval for TMB Boronization during bakeout
- ◆ Prototype Lithium Pellet Injector moved to lab for testing
- ◆ Engineering underway for Supersonic Gas Injector
 - ▶ Nozzle designed by A.J.Smits, M&AE
 - ▶ Assembling chamber and diagnostics for testing
- ◆ New Quartz Deposition Monitor being commissioned
- ◆ Started experiments with new CS Shoulder Gas Injector
- ◆ IR Cameras have been acquiring data during operations
- ◆ Boundary Physics Group has reviewed 7 XPs and 1 XMP
- ◆ XP-324 - Helium conditioning & divertor sweeping was initiated (C.Skinner)

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

- ◆ Availability of standard diagnostics improved greatly in first weeks of operation
 - ▶ Magnetic diagnostics in good order after calibration
 - ▶ MPTS operating well after Rayleigh/Raman calibration
- ◆ 51-ch CHERS producing high-resolution T_i and v_ϕ profiles
 - ▶ Initially using "beam notch" background subtraction
 - ▶ Software development underway to utilize data from the dedicated background array
- ◆ Edge rotation diagnostic measured edge T_i and v_ϕ using intrinsic carbon emission
 - ▶ Views outer midplane edge both toroidally and poloidally
 - ▶ Discovered that the poloidal view was misaligned
 - Explains very low signal levels in these channels
- ◆ FReTIP now has four tangential sightlines instrumented
 - ▶ Three now producing good interferometer signals
 - ▶ Modifying fourth to reduce vibrations of retroreflector
- ◆ New vertical x-ray crystal diagnostic fully installed
 - ▶ First data is expected next week

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Diagnostics [2]

- ◆ Many activities during present maintenance week
 - ▶ Bolometer (divertor array) - improve grounding
 - ▶ Edge pressure gauges - install cables for new set
 - ▶ EBW radiometer - work on limiter control and investigate damage during plasma operations
 - ▶ Fast lost ion probes - complete installation of electronics
 - ▶ Interferometer (1 mm) - install ex-vessel components
 - ▶ Neutral particle analyzer - recalibrate motion control
 - ▶ PIXCS (formerly GEM) - install detector
 - ▶ Reflectometer (Core) - install waveguide
 - ▶ X-ray crystal spectrometer (H) - complete installation
 - ▶ X-ray pinhole camera - install image intensifier

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RF Systems (*R. Wilson*)

- ◆ Operated HHFW up to 5 MW
 - ▶ Antenna voltage limit increased from 12 kV to >15 kV
- ◆ Remote control of RF sources being implemented
 - ▶ Still have a few bugs to work out
- ◆ Performed XMP on early heating and modulation
 - ▶ Reasonable heating observed
 - ▶ Modulation seen on SXR signals
- ◆ Installed filters on inputs to integrators for critical magnetic signals
 - ▶ Many magnetic signals initially had RF interference
 - ▶ Filters improved noise immunity
 - ▶ EFIT analysis now possible for HHFW plasmas

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Physics Operations (*D. Mueller*)

- ◆ rt-EFIT partially commissioned for plasma control
 - ▶ John Ferron from GA visited for experiments Jan 22–24
 - ▶ Almost completed development for DN configuration
 - Achieved vertical stability at highest product of $\kappa \times I_p$
 - ▶ About 1-1/2 run days required to complete algorithms for double-null and single-null configurations
- ◆ Some random errors occurred in real-time data transfer
 - ▶ Cause loss of discharge as control data becomes bad
 - ▶ No cause identified yet
- ◆ Tried first CHI experiments with new absorber insulator
 - ▶ Appears to offer greater resistance to absorber arcs
 - ▶ Some anomalies seen in current traces for one shot
 - ▶ One MOV snubber failed (noisily) – cause unknown
- ◆ Machine conditions seem to be good
 - ▶ Routine access to H-Mode using midplane CS gas puffer
 - Shoulder puffer does not yet produce reliable H-Mode
 - ▶ Reached β comparable to or slightly better than before