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

- ◆ Plan to perform hot boronization during bakeout in April
 - ▶ Have 8 cylinders of TMB on hand
- ◆ Expect delivery of probe drive in April for movable-anode GDC
- ◆ SGI ready for start of run
 - ▶ Removed interference preventing full stroke of neighboring fast probe
 - ▶ Calibrated gas flow rate in first part of XMP-36 (*V. Soukhanovskii*)
- ◆ Upgraded LPI now reassembled and undergoing testing offline
 - ▶ Expect to reinstall and be ready for experiments early in run
 - ▶ Developed new tools for fabricating pellets from lithium sheet
- ◆ IR cameras mounted, tested, and calibrated to view upper and lower divertors and midplane region on CS (*R. Maingi*)
- ◆ Developing many XPs, several with collaborators

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

- ◆ MPTS should be ready with 20 spatial channels at start of run
 - ▶ Tested detection system
 - ▶ Laser alignment started but needs more “prime time” to complete
 - ▶ Need to perform Rayleigh & Raman scattering calibrations (>50 Torr N₂)
 - ▶ Electronics for additional 10 channels still being fabricated
- ◆ Fabricating & installing external components for high-k scattering
 - ▶ Input waveguide run almost complete
 - ▶ Have design to resolve interferences with RWM leads under Bay K
 - ▶ Discussed possibilities for using gyrotron source from Fukui University
- ◆ New rogowski coils, flux loops, thermocouples installed with OH, PF1Au
 - ▶ Testing I_p measurement later today
- ◆ Expect Photron fast camera in April after DIII-D experiments (*N. Nishino*)

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Diagnostics [2]

Diagnostic	Changed capability	Availability (Start of plasma operation unless indicated)
Bolometer – tangential array		
Bolometer array - divertor		
CHERS		Needs Ne glow calibration
Divertor fast camera		At DIII-D until mid-April
Dust detector	Finer grid spacing	Commission early in run
EBW radiometers	Improved oblique view	In test. Remote limiter control not operational; needs gas feed
Edge deposition monitor	3 detectors	
Edge pressure gauges		
Edge rotation spectroscopy		Operation by request only (R. Bell)
Fast camera for RF antenna		
Fast lost ion probes - iFLIP		
Fast lost ion probes - sFLIP		
Filtered 1D cameras (4)		
Filterscopes		
FIReTIP		Needs testing
Gas puff imaging	100kHz Phantom-7 camera	Operational with reduced frame rate
High-k μ -wave scattering	New	Now fabricating, installing external systems; available late in run
Infrared cameras	3 rd camera	
Interferometer - 1 mm		Unavailable; plan to reinstall later in run
Langmuir probe array		
Magnetics - B coils		Need field-only calibration shots
Magnetics - Diamagnetism	New loop installed with Ip coil	Needs calibration at start of run
Magnetics - Flux loops		
Magnetics - Locked modes		Need field-only calibration shots
Magnetics - Rogowski coils	New fully shielded coils	Need field-only calibration shots

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Diagnostics [3]

Diagnostic	Changed capability	Availability (Start of plasma operation unless indicated)
Magnetics - RWM sensors	Repaired	Need field-only calibration shots
Mirnov coils – high freq.		
Mirnov coils – poloidal array		Developing calibration from data taken in last run
Mirnov coils – toroidal array		
MSE	8 channels	
Neutral particle analyzer	Added new mini analyzer	
Neutron measurements		
Neutron collimator	New	Single channel prototype under test
PIXGS camera	Removed	Unavailable
Plasma TV	New filter wheel	
Reciprocating probe	New electronics	Ready but resolving interference with SGI
Reflectometer - SOL		Under repair; expect to be ready for plasma operation
Reflectometers - Core		Homodyne system under test, others operational
RF antenna Langmuir probe	New high-speed digitizers	
SPRED VUV spectrometer	New microchannel plate	
Thomson scattering	10 additional channels	20 channels at start of operation (after Rayleigh/Raman scattering calibration); additional channels later
Ultrasoft X-ray arrays		
Ultrasoft X-ray optical array	Temporarily removed	Reinstall later in run
Visible bremsstrahlung det.		
Visible spectrom (VIPS-1,2)		
X-ray crystal spectrom - H		Reason for low signal unknown; install crystal for Fe line in May
X-ray crystal spectrom - V		Testing
X-ray pinhole camera		
X-ray TG spectrometer	Removed	Unavailable

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RF Systems (*R. Wilson*)

- ◆ Reminder: the RF antenna protective tiles are moved inwards by 5mm compared to last run
- ◆ All HHFW and ECPI sources are ready
 - ▶ Cooling water restored after replacement of heat exchanger for C-Site
 - ▶ Power obtained from all ICRF sources
- ◆ Plan to work with COEs during ISTP to complete necessary checks
- ◆ Plan to operate with one 18GHz klystron (#1) for midplane ECPI
 - ▶ Essentially the same capability as last run
 - ▶ Refurbished klystron #2 now connected to inject into lower divertor chamber for CHI

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Physics Operations (*D. Mueller, D. Gates, R. Raman*)

- ◆ Conducted successful initial tests of upgraded control system with new PPPL-designed high-speed digital modules (SADs, SPAIM, FIMMs)
 - Real-time data acquisition for internal B_r , B_θ coils, SPA measurements
 - Control of SPA for RWM experiments
 - Improved real-time protection for NSTX coil system
- ▶ Expect to be ready for ISTP and initial SPA control tests
- ▶ Need to update PF1A, magnetic sensors and vessel model for rtEFIT
- ◆ Preparing for CHI experiments with possibility of 2kV operation
 - ▶ Completed most upgrades to capacitor bank
 - Including ignitron crowbar switch to reduce CHI voltage rapidly
 - ▶ New snubber capacitor and rearranged MOVs at machine end
 - ▶ Tested new gas injector into lower divertor chamber (Branch 5)
 - ▶ Installed waveguide run from ECPI klystron #2 to lower divertor port