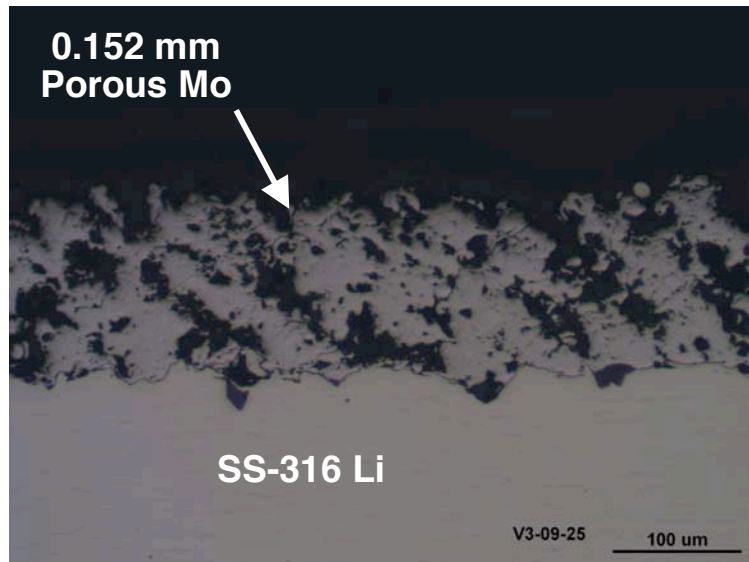


Research Operations Division Boundary Physics (*H. Kugel*)

- ◆ Installation of LLD plates and intergap diagnostic tiles completed
- ◆ Installed control system and cabling

Micrograph of porous Mo layer



November 25, 2009



- ◆ Development of control software and operational interface continues
- ◆ The LLD controls Preliminary Test Procedure started
 - ▶ Now resolving heater isolation issues identified during test

Research Operations Division

Boundary Physics [2]

- ◆ Lithium Evaporators
 - ▶ Performed autopsies on 2 LITERs from the 2007-2009 campaigns
 - Analysis of contents in progress at Purdue U.
 - ▶ Fabricating 2 additional LITERs (4 total) for rapid turnaround reloading
- ◆ Other LLD Diagnostics
 - ▶ 2 fast cameras installed on re-entrant ports for 360° view of LLD
 - ▶ Installing a 20-radial-channel divertor-viewing spectrometer
- ◆ Relocated Divertor Edge Sample Probe (Purdue U.) from Bay-J to Bay-K
- ◆ CDR for Materials Analysis Particle Probe to succeed edge probe in 2011
- ◆ Received results of Ion Beam Analysis on tiles exposed in 2009 (SNL)

Research Operations Division

Diagnostics (*R. Kaita, B. Stratton*)

- ◆ Beam Emission Spectroscopy (U. Wisc)
 - ▶ In-vessel installation complete; viewing optics aligned and calibrated
 - ▶ Expected to complete fiber input assemblies by end of year
 - ▶ Fiber bundles ready for installation in January
 - ▶ Data acquisition system installation underway
 - ▶ Expecting delivery of first detector box in early January
 - ▶ Plan to start commissioning with plasmas in March
- ◆ MSE-LIF (Nova)
 - ▶ FDR for mechanical design on Dec. 9
 - ▶ Complete design of electrical services this winter.
 - ▶ Good progress preparing to install DNB and laser on NSTX
 - ▶ Plan to install system during next shutdown

Research Operations Division

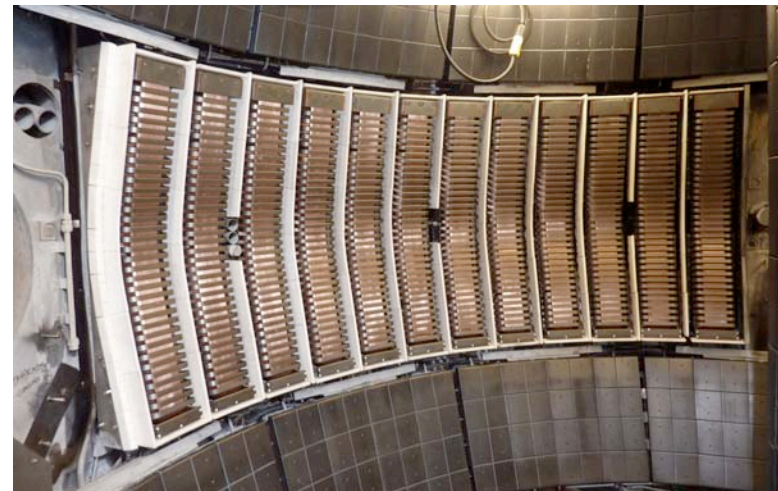
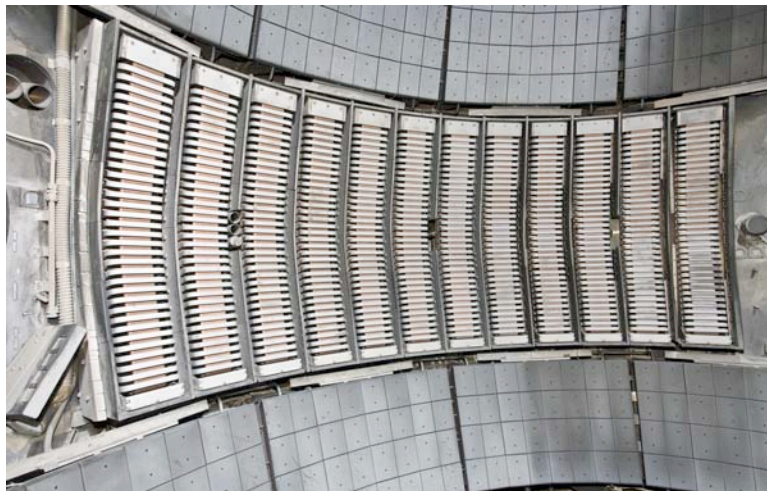
Diagnostics [2]

- ◆ MPTS Phase 4 Upgrade
 - ▶ 12 new channels, primarily covering pedestal and ITB regions
 - ▶ FDR on Dec. 18
 - ▶ Major procurements underway
 - ▶ Installation to occur during next shutdown
- ◆ Completed final in-vessel calibrations of diagnostics
 - ▶ Neutron counters, high-k scattering (mirror remote control) and MPTS
 - ▶ Spatial and “white plate” calibrations of CHERS, PCHERS, ERD, FIDA
- ◆ New or improved diagnostics for LLD experiments
 - ▶ Fast visible and IR cameras, high-density Langmuir probe array, and Lyman-alpha detector array
- ◆ Performance of diagnostics with LLD requires careful monitoring

Research Operations Division

RF systems (*J. Hosea*)

- ◆ Removed lithium coating on antenna from 2009 run
 - ▶ Keep antenna lithium free by routine conditioning, high power operation



- ◆ Aiming for coupled RF powers up to 5 MW
- ◆ Planned HHFW XPs aimed at
 - ▶ discharge startup and maintenance capability
 - ▶ optimizing heating of H-modes
 - ▶ understanding heat deposition on outer divertor during HHFW heating
 - ▶ fast-ion behavior with HHFW application

Research Operations Division Physics Operations (*D. Mueller*)

- ◆ Preparing control system for return to operation
 - ▶ Develop new fiducial shots taking LLD into account
 - ▶ Improve OSP control and incorporate this in regular operation
 - Aim for simultaneous X-point height and OSP control
 - ▶ Develop outer squareness control with PF4
 - Analyzing limitations on simultaneous PF4 & PF5 operation
 - ▶ Prepare for experiments with “snowflake” divertor
 - Desirable to have bipolar PF2 capability

Do you want experiments to go your way? Do you need a challenge?

- ◆ Planning a Physics Operator training course Jan 25 – 29
 - ▶ Lectures, hands-on training and initial supervised operation

Contact Dennis Mueller before Jan 20 to register