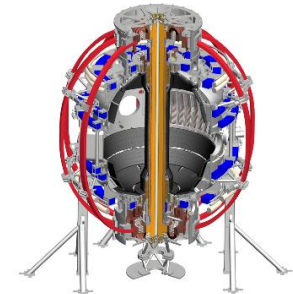


Update on Activities and Action Items for PFCR Working Group

M.L. Reinke

PFCR-WG
B-252
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Goals of this Meeting

- get update from PFC Design/Engineering in preparation for CDR (August 1st-3rd) [Mardenfeld]
- discuss approach for initial contributions to Charge 3 on PFC Monitoring
- review in-progress MEMOs and open ACTION ITEMS
 - Reinke: W_PFC overview (maybe demo?)
 - Gerhardt/Reinke: PFC Region MEMOs

PFC Requirements Working Group Charges

1. ~~define which (additional) parameters need to be specified in an updated requirements document for the NSTX-U PFCs~~
2. facilitate generation of updated requirements utilizing:
 - a) available reduced models, empirical scalings, boundary simulations
 - b) ultimately, a validated model for specifying heat loads to all plasma facing components for arbitrary NSTX-U scenarios
3. in preparation for operations, develop:
 - a) instrumentation plan for intra and inter-shot PFC monitoring
 - b) a reduced model for heat loading for pre-shot planning
 - c) guidance on how to best integrate monitoring with operations
 - d) control, diagnostic requirements for real-time heat-flux control
4. work closely with engineers and analysts to develop and implement requirements

<http://nstx-u.pppl.gov/program/working-groups/pfc-requirements-working-group>

Initial Effort to Scope Monitoring

- as part of the pre-CDR WAF process an initial scope and budget was requested from Recovery Project
 - Reinke, Scotti, Gray, Jaworski, Boyer, Erickson & Mueller collectively discussed [rough requirements for monitoring](#) and we “agreed-to-disagree” in some areas
- allowed some estimate of cost and schedule that was surprisingly independent of what type of tiles would be installed
 - OPTION-A (stress-limited tiles): ~1.9 M\$, 17 months
 - approximately 1.2 FTE (total) from physicist
 - out year operations support costs, little overlap with physics research
 - OPTION-B (temperature limited): ~1.5 M\$, 13 months
 - approximately 1.1 FTE (total) from physicist
 - large overlap with physics research

Recovery Lacks Clear Monitoring Requirements

- EoC Response to [R12] (similar to [PFCR-MEMO-001-01](#))
 - *IR cameras will be deployed to monitor the tile temperature and as a minimum provide guidance for the execution of the subsequent shot. A design philosophy is developing to ensure that the performance of the tiles will be limited by the surface temperature, which may result in occasional carbon blooms rather than stresses in the tiles. It is anticipated a PFC inter-shot monitoring system will be required for full-performance operations and the need for real-time PFC protection will depend on the design of the PFCs and on future operational experience.*
- requested Recovery Project include monitoring in the general requirements, but they lack the guidance on what to specify
 - suggest this should be informed by a variety of opinions brought by the PFCR-WG; multiple visions on how to accomplish monitoring

Initial Approach to Charge 3

- people/sub-groups interested in contributing should develop 'science and operational goals' as a first step, combined with a 'monitoring strategy'
 - bring in diagnostic and operation experience
 - examples of existing demonstrations on other devices
- draft MEMO's or presentations to be presented to NSTX-U Recovery and Operations (Sept/Oct)
 - monitoring will likely to be supported, but unclear who does it
- this will inform the drafting of General and/or System Requirements for NSTX-U

Review On-Going Work

- for people present, please summarize what's being worked on and progress being made
 - MEMOs
 - ACTION ITEMS