

NCSX Project Overview

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NCSX Project Meeting

January 30, 2001

Project Update Since Dec. Project Meeting

Cost Target and Design Point

- Project cost target of \$55M (in FY-99 dollars) was adopted.
 - Judged to be consistent with community & DOE expectations set at the time of the 1999 FESAC review.
- Reduction in machine size (by 18%, to R=1.4 m) and deferral of some planned Day-1 equipment is necessary to stay within cost target.
 - Initial heating complement reduced to 3 MW.
- To maintain good rate of progress in reducing uncertainties, main configuration features have been retained in re-sizing machine:
 - LI383 reference plasma and 1017 modular coils (good physics properties)
 - Tangential access for PBX-M neutral beams (impacts being evaluated)
 - Magnet concept based on flexible conductor, structural winding form and support shell, pre-cooling to cryogenic temperature. (robust approach)
 - Same flattop time and temperature rise in high-field scenario (1.7 T; previously 2 T).

Changes are possible in the future.

Project Update (II)

Design Development

- Critical tasks
 - **Trim coil design and physics assessment**
 - Flexibility assessment and requirements
 - Machine configuration development
- Implications (e.g., plasma performance, access, cost) of new design point are being assessed; progress to be reviewed at this meeting.
- Design alternatives are being studied
 - Improved modular coils
 - Day-1 RF heating system
 - Various magnet power supply options

Which choices provide the best physics within cost constraints?

Planning for the Physics Validation Review

- Scheduled for March 26-28. (new dates)
- Main review issue: adequacy of the physics basis for NCSX conceptual design.
 - Emphasis on FESAC issue- robustness of the equilibrium configuration throughout the plasma evolution.
- Expect the entire FESAC PoP subpanel (August, 1999) to be called as reviewers for the PVR. (And possibly some others).
- Documentation (due to be issued to reviewers Mar. 14)
 - **Physics document (13 chapters, per MZ outline). 1st draft due Jan. 31.**
 - Engineering overview document.
- Review agenda will be developed after further discussion with DOE; dry runs will be week of Mar. 19.

This Meeting

- Most likely the last NCSX project meeting before the PVR.
- Review status of critical analysis and design tasks. Make sure we are on track to resolve the critical issues in time for the PVR.
- Review status of documentation. Make sure we have a plan for completing it in time to be issued on Mar. 14.

Calendar

Feb. 9-26. Visits to community and OFES (2/20) to explain NCSX.

Mar. 13-15. *DOE/OFES Annual Budget (FWP) Meeting.*

Mar. 14. PVR Documents Issued.

Mar. 19-23. PVR dry runs.

Mar. 26-28. NCSX Physics Validation Review.

Apr. 2-4. *Sherwood Meeting.*

Apr. 24-25. *QOS Physics Validation Review.*

May 16-19. *Transport Task Force Meeting, Fairbanks, AK.*

May 30-31. DOE Project Validation for FY-2003.

June 18-22. *EPS Conference. (Abstracts Feb. 16)*

Sept. 24-28. *Int'l Stell. Workshop, Canberra, Australia (Abstracts June 1)*