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NCSX Preliminary Design Review
October 7-9, 2003

Panel Report

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5. For the other subsystems, have all issues (e.g., testing of legacy equipment) been adequately addressed for purposes of establishing the performance baseline? (1 sentence each)..... .....Chairpersons of SC-2, 4-12
6. Are the risk management and value engineering approaches adequately addressed?..... (2 sentences) .....T. Nicol (SC-12)
7. Are the CDR recommendations adequately addressed? (1 sentence)..... D. Anderson
8. Are the management plans and costs adequate? (1 sentence) ..... J. Anderson (SC-12)
9. Is the project ready to proceed to Critical Decision–2, Establish Performance Baseline? Yes or No, plus 1 sentence. ..... C. Strawbridge (SC-1)
10. Please provide recommendations for improving the project's designs, plans, and estimates. ..... Document in Section I

Appendices (to be provided by project)

1. Charge
2. Review Panel Members
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Appendix 1. NCSX Preliminary Design Review DRAFT Charge

Background and Context

The NCSX Project passed a DOE conceptual design review (CDR) in May, 2002. Following the CDR, the Department of Energy approved an acquisition plan for NCSX based on a preliminary cost estimate of $73.5M and an execution period of October, 2002 through June, 2007. In November, 2002, the Department approved Critical Decision 1 (CD-1), authorizing the start of preliminary design. Because of the delay in the Congressional budget appropriation in early FY-03, the NCSX advanced conceptual design phase was extended through March, 2003, during which time the project continued to resolve design issues and initiated R&D activities. The NCSX project execution phase, beginning with preliminary design, started on April 1, 2003.

In the DOE project management system, the performance baseline is not established until the design reaches a level of maturity well beyond conceptual design. The performance baseline defines the performance, scope, cost, and schedule commitment to which the Department will execute the project and marks the beginning of performance tracking by the Department. This Preliminary Design Review is the key technical review in a series of reviews leading up to Critical Decision 2 (CD-2), DOE approval of the performance baseline. It will be followed in November by a DOE Performance Baseline Review conducted jointly by the Office of Science (D. Lehman's organization) and the DOE's Office of Engineering and Construction Management (OECM). The OECM will use a team of outside consultants with expertise in engineering and project management but not specifically in fusion. The OECM review will satisfy the DOE requirement for an External Independent Review (EIR) for a project of this size. The conclusions of this PDR will be made available as input to the November DOE review.

PPPL's Objectives for the Preliminary Design Review

At the preliminary design review, the project is presenting its proposed performance baseline, that is, the self-consistent performance, scope, cost, and schedule baselines for the project. The primary objectives of the review are to establish the technical soundness of the performance baseline and to obtain feedback and recommendations from experts on how the design, plans, and cost and schedule estimates could be improved. The modular coils and the vacuum vessel are the critical NCSX subsystems, i.e., the ones that are the most technically challenging and contain the greatest risk. All other subsystems have much lower risk– they are either adaptations of existing equipment or new equipment based on proven designs. Therefore, this review covers all NCSX subsystems but places special emphasis on the modular coils and vacuum vessel. An additional objective is to review the adequacy of the management plans and budget for completing the project.

Charge to Committee

The committee is asked to review the performance baseline for the NCSX fabrication project, and respond to the following:

1. Does the performance baseline have a sound technical basis? Does it clearly establish the capability being acquired?
2. Are the estimated cost and schedule adequate to acquire that capability?
3. Does the performance baseline account for risks and mitigation strategies in the cost and schedule and provide a realistic, achievable plan that includes adequate contingency?
4. Does the (a) modular coil and (b) vacuum vessel design work address all requirements including interfaces with other systems? Are there sound plans to complete their design and implementation? Are issues of manufacturability and constructability adequately addressed?
5. For the other subsystems, have all issues (e.g., testing of legacy equipment) been adequately addressed for purposes of establishing the performance baseline?
6. Are the risk management and value engineering approaches adequately addressed?
7. Are the CDR recommendations adequately addressed?
8. Are the management plans and costs adequate?
9. Is the project ready to proceed to Critical Decision–2, Establish Performance Baseline?
10. Please provide recommendations for improving the project's designs, plans, and estimates.

Schedule

Sept. 23	Project documentation to be issued. Project will post it on their web site and notify committee that it is available for review.
Oct. 1	Committee questions due to project.
Oct. 7-9	Preliminary Design Review at PPPL. The committee is asked to present its conclusions at the closeout briefing on October 9.
Oct. 24	Final Report due. The committee is requested to submit a final report addressing their findings, comments, recommendations, and responses to the charge.

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Appendix 2.
NCSX Preliminary Design Review Panel

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