## EIR Summary Assessment of NCSX Performance Baseline

| EIR Element | Sub-committee | SC Review Team Assessment | Comment |
|---|---|---|---|
| 1. Resource Loaded Schedule | **LEAD**: Meador<br><br>**SC:** Cost | Satisfactory<br><br>Satisfactory with Comment<br><br>Unsatisfactory | For selected Work Breakdown Structure elements (typically, those constituting significant cost and/ or risk), summarize the detailed basis for the cost estimate and schedule duration. Assess the method of estimation and the magnitude for each WBS element reviewed. Identify and assess key cost and schedule assumptions and evaluate the reasonableness of these assumptions as related to the quality of the cost and schedule estimates. Identify specific work activity that constitutes project completion and whether these completion activities are sufficiently well defined. Include an assessment of whether the project completion activities are consistent with DOE guidance for work to be included/ excluded from the project. Assess whether the project funding profile is consistent with the resource loaded schedule.<br><br>**Project Response**: The project's baseline change proposal is supported by a resource-loaded schedule which is:<br>• Organized by WBS (refer to WBS and WBS Dictionary)<br>• Resource estimate loading based on detail WAF packages signed by Job managers.<br>• Estimates based on prior experience, vendor quotes, fabrication estimates, design calculations.<br>• Task durations based on realistic manpower loadings and crew sizes. (see WAF packages for WBS 18 and 75). Balance of task durations based on reasonable loadings (see Primavera resource utilization units per day)<br>• Costing guidelines prepared for NCSX. GPP and infrastructure task not include in MIE project (See "classification of capital and operating expenditures for NCSX")<br>• Schedule detail commensurate with schedule criticality (e.g. WBS 18, Job 1810- minimum task duration 1 day).<br>• Proposed baseline BCWS and contingency profile consistent with anticipated funding levels.<br>• Shows estimate detail and priced cost estimate (see resource loaded schedule)<br>See presentation by Strykowsky.<br><br>**Committee Response**: |

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| 2. Key Project Cost and Schedule Assumptions | **LEAD**: Meador<br><br>**SC:** Cost | | Identify and assess key cost and schedule assumptions and evaluate the reasonableness of these assumptions as related to the quality of the cost and schedule estimates for each WBS. Assess cost and schedule contingency and other cost and schedule factors related to TPC and the project completion schedule. Ensure that the TPC and project completion date incorporates all activities necessary to successfully complete the project.<br><br>**Project Response**:<br>• Standard 8 hour/day 5 day/week work assumed except where 2 shift operations called out in resource loaded schedule.<br>• Institutional overhead and labor rates utilized.<br>• Contingency quantified based on estimate uncertainty and risk using Monte Carlo simulation plus a subjective increment based on project management experience.<br>• Contingency distributed annually consistent with needs. (see risk contingency model).<br>See presentation by Strykowsky.<br><br>**Committee Response**: |
| 3. Critical Path | **LEAD**: Meador<br><br>**SC:** Cost | | Review the Critical Path schedule and assess whether the Critical Path is reasonably defined and whether the schedule is integrated and reflects reasonable schedule durations.<br><br>**Project Response**:<br>• Critical path is well defined<br>  • The schedule is an integrated resource-loaded schedule, developed from the bottom-up based on cost account manager estimates.<br>See presentation by Strykowsky.<br><br>**Committee Response**: |

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| 4. Funding Profile | **LEAD**: Meador<br><br>**SC:** Cost | | Assess whether the project funding profile is consistent with the resource loaded schedule.<br><br>**Project Response**:<br>• The required BA profile was rigorously derived from the resource loaded schedule.<br>• The required BA profile is consistent with the funding profile.<br>See presentation by Strykowsky.<br><br>**Committee Response**: |
| 5. Work Breakdown Structure | **LEAD**: Meador<br><br>**SC:** Cost/Mgmt | | Assess whether the Work Breakdown Structure incorporates all project work, and whether it represents a reasonable breakdown of the project work scope. Assess whether the resource loaded schedule is consistent with Work Breakdown Structure for the project work scope.<br><br>**Project Response**:<br>• The Work Breakdown Structure provides a reasonable breakdown of all work in the NCSX MIE project.<br>• The estimates and resource-loaded schedule are developed and organized based on the WBS and are consistent.<br>•<br>See presentation by Strykowsky and project documentation.<br><br>**Committee Response**: |

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| 6. Risk Management | **LEAD**: Price<br><br>**SC:** Cost/Mgmt | | Determine if risks have been identified and properly classified as high, medium, and low. Assess whether appropriate risk mitigation actions have been incorporated into the baseline. Assess whether adequate contingency has been included in Total Project Costs and Schedule. Describe the approaches used to determine risk and assess adequacy.<br><br>**Project Response**:<br>The project has systematically identified risks associated with the work remaining and compiled them in a risk register. Brainstorming sessions as well as input from individual job managers were used to identify the risks. The likelihood and consequences of each risk have been assessed and risks classified as high, medium, low accordingly. Potential cost and schedule impacts were quantified and used as input to the contingency analysis. Mitigation plans have been developed where appropriate, and incorporated in the baseline. Risks and mitigation plans for each job are also documented in the Work Authorization Forms which were reviewed by the project and the PPPL Engineering Department and incorporated in the project baseline. Cost and schedule contingency requirements appropriate for these risks were determined probabilistically and included in the project baseline.<br>See presentation by Reiersen. Risk register is included in project documentation.<br><br>**Committee Response**: |

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| 7. Basis of Design | **LEAD**: Price<br><br>**SC:** Full Committee | | Evaluate adequacy of preliminary design including adequacy of drawings and specifications, and assess whether they are consistent with system functions and requirements. Assess whether all safety Structures, Systems, and Components (SSCs) are incorporated into the preliminary design.<br><br>**Project Response**:<br>Stellarator core system design is quite mature. Final design has been completed and component drawings have been released for fabrication for the vacuum vessel, modular coil, and TF coils. The coils structures are in final design. PF coils and the base support structure are in preliminary design with Preliminary Design Reviews (PDRs) scheduled for late in 2007. No technical risks have been identified for these stellarator core systems which are still in preliminary design. Drawings, specifications, and design review records are on file and can be made available for review. A detailed assembly sequence plan has been drafted which provided a sound, technical basis for the field period and final assembly activities in the project baseline.<br><br>Excessive leakage of nitrogen gas represents a possible mechanism for oxygen depletion in the vicinity of the cryostat. The air in the Test Cell should be constantly exchanged and oxygen levels monitored to ensure personnel safety. The cryostat will be carefully air purged, monitored, and certified safe before cryostat panels are removed and personnel are allowed to enter."<br>See presentations by Nelson and Brown.<br><br>At the current stage of NCSX design, no safety class or safety significant SSC's have been identified. The NCSX PHA noted that excessive leakage of nitrogen gas from the cryostat represents a possible mechanism for oxygen depletion in the vicinity of the cryostat, and identified relevant hazard controls. As the cryostat design continues to develop, this conclusion will be reviewed and altered if necessary.<br><br>**Committee Response**: |

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| 16. Integrated Project Team | **LEAD**: Price<br><br>**SC:** Mgmt | | Assess whether the project management staffing level is appropriate, and determine if appropriate disciplines are included in the Integrated Project Team. Identify any deficiencies in the Integrated Project Team that could hinder successful execution of the project.<br><br>**Project Response**:<br>• The Integrated Project Team (IPT) is staffed and functioning in accordance with DOE Order 413.3A. The IPT membership encompasses all appropriate disciplines: (DOE project and program management, Laboratory project and program management, ES&H, quality assurance, procurement). The IPT meets every three weeks, chaired by the FPD. Meeting minutes are posted on the project web site.<br>• New Laboratory project manager is on board. Previous project manager continues with the project, providing continuity on technical issues.<br>• Project control staff at PPPL and ORNL has been expanded to improve resource planning; tracking of costs, schedules, and risks; and reporting.<br>• A construction manager is budgeted.<br>• The Laboratory team organization has been modified to better support the construction phase of the project.<br>• New management processes have been implemented by the Laboratory team (weekly coordination meetings, internal reporting and reviews, risk management).<br>• PPPL and ORNL are able to meet the staffing requirements of the project.<br>See presentations by Anderson and Lyon.<br><br>**Committee Response**: |