NCSX National Compact Stellarator Experiment

030905_PDR_AEP_Comparison_810_RTS

PRINCETON UNIVERSITY: PPPL, NCSX Project

To:	**G.H..Neilson**	**Date:**	**September 4, 2003**
From:	**R. Simmons** Robert Simmons 2003.09.05 14:29:56 -04'00'	**Subj:**	**Review of NCSX Acquisition Strategies vs. AEP Statements**

As per your request, I have reviewed the current status of the NCSX project for compliance with the approved NCSX Acquisition Execution Plan (NCSX-PLAN-AEP-00). My conclusion is that the project is indeed following the requirements and intent of the AEP. Although the milestone schedule has changed because of the delayed project start (due to the continuing resolution) and downstream schedule improvements, there are no material differences between the project's acquisition strategy and the AEP Specifically:

- AEP Section I.B.1 (Overall Cost Objective) – the AEP established a cost objective range of $69M-$83M. The current NCSX cost estimate is within this window and, if fact is striving to meet the $73.5M target goal.
- AEP Section I.B.2 (Life Cycle Cost) – the NCSX life cycle costs based on NSTX operating data, sharing of common facilities with NSTX, C-Site cost estimates, and the TFTR decommissioning and dismantlement data, has been refined to reflect a life cycle cost estimate that includes the TEC, annual operations costs, and decommissioning and dismantlement costs.
- AEP Section I.B.3 (Design to Cost) – the NCSX Project continues to balance technical scope, schedule, and cost to arrive at a target cost objective. As part of the PDR preparations, a very proactive trade-off assessment of technical scope, schedule, and cost is being performed on each and every estimate. In addition, a separate and independent value engineering assessment has identified areas of potential cost savings.
- AEP Section I.B.4 (Should Cost Methodologies) – the NCSX Project continues to utilize the most up-to-date and detailed cost estimate data available. To the maximum extent feasible, cost estimates are based on industrial inputs in the form of budgetary quotations or historical data from similar projects and procurements. In addition, each procurement, before being awarded, has undergone some form of price or cost analysis to compare TEC estimates for validation and/or revision of the TEC estimate.
- AEP Section I.D (Delivery Requirements) – due to the Continuing Resolution (CR) delay of 6-months (October 2003-March 2004), the interim delivery dates for the key milestones are at variance from those in the AEP. This has been

achieved both by re-sequencing activities and assembly logic and by re-assessing activity duration. The NCSX Project, despite the CR delay, is striving to meet the original Project completion milestone of June 2007.

- AEP Section I.E (Trade-Offs) – the NCSX Project continues to utilize trade-offs and other design solutions (e.g., conductor selection, wide use of prototyping early to ensure a robust and proven design results, etc.)
- AEP Section I.F (Risk) – the NCSX Project has followed the risk mitigation process outlined in the AEP exactly; the Project has taken a very proactive approach to risk mitigation. For the major components with the highest risk due to unique shapes and precise tolerances, two prototype R&D contracts each for the modular coil winding forms and the vacuum vessel have been awarded. In addition, in order to gain experience and develop the most robust winding methodologies, small scale winding prototypes using several racetrack and twisted race track forms have been developed and several conductor configurations have been wound to discover the keystoning parameters. The conductor configuration properties have also been characterized by CTD in a separate R&D contract.
- AEP Section I.G (Acquisition Streamlining) – the partnership with ORNL continues as strongly as before with the flexibility to transfer specific procurements and testing and/or design support between PPPL and ORNL easily. In general, however, PPPL has retained the vast majority of procurement lead responsibility with direct support from the ORNL technical staff.
- AEP Section II.A (Sources) – the NCSX Project continues to actively seek out and pursue a high degree of supplier input and participation in the development of major systems via its numerous small and large R&D contracts and informal discussions with a wide range of suppliers. However, the responsibility for assessing this information and for developing the final requirements has been retained by the Project.
- AEP Section II.B (Competition) – since the Project is still in the Preliminary Design stage, limited use of incentive contracts has been pursued. The major R&D contracts are all cost-plus contracts in recognition of their developmental nature. However, the Project fully intends to pursue fixed-price fabrication contracts once the final design is selected. It is anticipated, that the current major R&D prototype suppliers for both the modular coil winding forms and the vacuum vessel will compete for the final fabrication contract on a fixed-price basis and that one will be down-selected to proceed.
- AEP Sections II.C and II.E (Options for Source Selection Procedures and Contracting Considerations) – the NCSX Project continues to follow the requirements and plans outlined in the AEP.
- AEP Section II.E (Budgeting and Funding) – the Preliminary NCSX Funding Profiles presented in the AEP are now out-of-date due to the CR. The PDR will establish a revised funding profile for the Project.
- AEP Sections II.F though II.K (Business Considerations, Logistic Considerations, Test and Evaluation, Government Furnished Property, Government Furnished Information, and Environmental and Energy Conservation Considerations) – the

NCSX Project continues to follow the requirements and plans outlined in the AEP.

- AEP Section II.L (Milestones for the Acquisition Cycle) - due to the Continuing Resolution (CR) delay of 6 months (October 2003-March 2004), the interim delivery dates for the key milestones are at variance from those in the AEP. The delay has been partially offset both by re-sequencing activities and assembly logic and by re-assessing activity duration. The NCSX Project, despite the CR delay, is striving to meet the original Project completion milestone of June 2007.

If you have any questions, please contact me.