

QUARTERLY REPORT FORM

Report Date: **July, 2003**
 Project Number: **MIE-02**
 Report Period: **3rd Quarter FY2003**

U. S. DOE Project Manager's Progress Report
 Title: **National Compact Stellarator Experiment**
 Location: **Princeton Plasma Physics Laboratory**

Office of Science
 Program: **FE**
 Project Office: **CH**

SUMMARY ASSESSMENT

	<u>Current Quarter</u>	<u>Previous Quarter</u>
Cost:	Satisfactory	
Schedule:	Satisfactory	
Technical:	Satisfactory	
Overall:	Satisfactory	

PROJECT MANAGEMENT

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Contractor Manager:	G. H. Neilson
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COST/FUNDING (\$K)

	<u>Baseline</u>	<u>Current Estimate</u>	<u>Funding Received</u>
DOE TEC:	73,500	73,500	
DOE TPC:	N/A	N/A	N/A
NON DOE:	0	0	0

CRITICAL DECISIONS

	<u>Number</u>	<u>Baseline</u>	<u>Actual/Forecast</u>
	1	Aug, 2002	Nov, 2002
	2	Jan, 2004	Jan, 2004
	3	Jul, 2004	
	4	Jun, 2007	

FUNDING PROFILE (KS)

Per Latest Approved Budget in \$M (FY 2003)

	<u>FY03</u>	<u>FY04</u>	<u>FY05</u>	<u>FY06</u>	<u>FY07</u>	<u>Total</u>
TEC:	7.9	16.0	20.5	17.8	11.3	73.5
OPC:	N/A					

Cumulative Costing through end of **June, 2003**

	<u>TEC (\$K)</u>	<u>TPC (\$K)</u>
Costs Accrued:	\$2,484	N/A
Uncosted Commitments:	\$2,090	N/A

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TPC: N/A

Remaining Uncommitted \$68,926

N/A

SCHEDULE SUMMARY

	Start Date		Completion Date		Percent Complete	
	<u>Baseline</u>	<u>Forecast/Actual</u>	<u>Baseline</u>	<u>Forecast/Actual</u>	<u>Baseline</u>	<u>Actual</u>
Title I & II Design:	10/02	04/03 (A)	04/06			
Procurement:	05/04		09/06			
Fab & Assembly	09/04		05/07			
Start-up & Operation	04/07		06/07			

Key Milestones Completed Since Last Report

(Level I II III)

	<u>Baseline Date (PPEP)</u>	<u>Actual Date</u>	<u>Forecast Date</u>
Complete Physics Validation Review		March 2001	
Complete CD-0 Milestone		May 2001	
Select Conceptual Design Configuration		December 2001	
Submit NEPA Preliminary Hazards Analyses		April 2002	
Complete Conceptual Design Review		May 2002	
Complete CD-1 Milestone	August 2002	November 2002	
Start Preliminary Design (Title I)	October 2002	April 2003	
Award Prototype Contract(s) for Modular Coils Winding Forms	December 2002	March 2003	
Award Prototype Contract(s) for Vacuum Vessel	February 2003	April 2003	

Key Milestones Upcoming (Next Three Months)

	<u>Baseline Date(PPEP)</u>	<u>Forecast Date</u>
Conduct Preliminary Design review	April 2003	October 2003
External Independent Review	April 2003	November 2003
Complete CD-2 Milestone	June 2003	January 2004
Complete Final Design Review for Modular Coils Winding Forms	August 2003	April 2004

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NARRATIVE HIGHLIGHTS

- Schedule
 - Continuing Resolution extended into March 2003, delaying the beginning of Title I design from October, 2002 until April, 2003.
- Technical
 - The project continues to make progress on key design issues. The critical outstanding issues include;
 - Modular coil winding, electromagnetic, and thermal stresses
 - Modular coil winding scheme (1 in hand vs 3 in hand) and conductor design (cabling details).
 - Modular coil shell geometry (to resolve wing interferences)
 - Vacuum vessel shell geometry (to resolve assembly issues, end flange details)
 - Clearances during final assembly
 - A finite build modular coil CAD model (E04) was developed based on an improved version of the M50 design. It has the same physics properties but improved engineering – smoother curves and larger bend radii.
 - A demonstration coil incorporating the basic features of the actual modular coil design (number of turns, clamping, cooling, etc) is being fabricated and will be tested to actual operating conditions.
 - The neutral beamlines systems have been tested and evaluated. Results have been factored into the new cost & schedule estimates.
 - The FCPC Bldg mechanical clearing is underway to support eventual occupation by NCSX electrical power systems. Actual facility modifications are planned for next fiscal year.
 - The PBX control room has been cleared (funded by excess facilities disposition funds). In addition, the PBX machine is currently being removed by a salvage vendor. (forecast removal end of July)
 - Four major R&D subcontracts have been awarded, two for vacuum vessel prototypes and two for modular coil winding form prototypes (total \$1.9M). All 4 suppliers have produced initial deliverables including preliminary manufacturing, inspection, and test plans and budgetary production cost estimates.
- Administrative
 - The project is currently rebaselining the total project cost and schedule estimates in support of the October Preliminary Design Review (PDR) and subsequent CD-2 decision. Meetings are being conducted for each WBS element to iterate working estimates and scope. As part of this exercise PPPL is developing a draft white paper "Performance Baseline Parameters and Trade Space" that defines objective project deliverables and minimum threshold scope (per DOE 413.3-1). A near term subset of this rebaselining was to update the FY03 WAF's to reflect current cost and schedule plans in support of the October PDR. This new FY03 baseline has been put into place and will be used for Earned Value cost and schedule performance reporting, following approval of CD2.

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- The project has determined to perform the modular coil winding in the D-site Radwaste bldg. This will save approx \$400k in health physics coverage and eliminate potential risk of low level contamination of the coils by performing the work in the TFTR Test Cell. However, utilization of the radwaste building will require HVAC, electrical and other upgrades which will be GPP funded.
- The schedule for CD3 (July 2004) follows CD2 (January 2004) very closely. Timely approval of CD3 is critical in order to proceed with long lead procurement tasks related to Coil Winding forms and Vacuum Vessel. The project will develop a schedule which reflects this situation while meeting all requirements of DOE 413.3.

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WBS Cost Summary (\$K)

Scope Item	<u>FY03</u> <u>Actual</u>	<u>FY04</u> <u>Plan</u>	<u>FY05</u> <u>Plan</u>	<u>FY06</u> <u>Plan</u>	<u>FY07</u> <u>Plan</u>	<u>Total</u>
WBS-1 Core Systems						
WBS-2 Heating, Fueling						
WBS-3 Diagnostics	Currently being rebaselined as part of CD-2					
WBS-4 Power Systems						
WBS-5 Central I&C						
WBS-6 Facilities						
WBS-7 Assembly						
WBS-8 Project Mgmt						
Contingency						
Total						