

NATIONAL COMPACT STELLARATOR PROJECT

Engineering Change Proposal (ECP)

COVER PAGE

(TO BE COMPLETED BY SYSTEMS ENGINEERING SUPPORT MANAGER)

Originator: Ron Strykowski

Date: April 21, 2005

ECP No: 031

ECP Title: DOE Directed FY2005 Rebaseline

Required Reviewers

Required Reviewers for this ECP:

WBS Managers, Project Engineers, NCSX QA, ES&H, NCSX Engineering Manager

ECP Approval Level

Expedited ECP? Yes No

Change Level: 1 Office of Science

Approving Official: Assoc. Director for Fusion Energy Sciences, Office of Science

Actions

(1) Adopt new baseline.

APPROVALS

(TO BE COMPLETED BY APPROVING OFFICIALS)

Change Level	Approving Official	Approval?	Signature
3	NCSX Project Manager	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
3a (Expedited ECP)	NCSX Engineering Manager	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2	NCSX Federal Project Director	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
1	Associate Director OFES	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
0	Under Secretary of Energy	<input type="checkbox"/> Yes <input type="checkbox"/> No	

NATIONAL COMPACT STELLARATOR PROJECT

Engineering Change Proposal (ECP)

PART I (TO BE COMPLETED BY ORIGINATOR)

Originator: Ron Strykowski

Date: April 19, 2005

Overview of Change

Type of of ECP: EXPEDITED STANDARD

Type of Change: TECHNICAL COST SCHEDULE EDITORIAL

(Check all that Apply)

Reason for Change: DOE directed rebaseline to reflect revised annual funding guidance.

Impacted WBS Elements: WBS Elements: 12, 13, 14, 15, 16, 17, 18, 19, 2, 3, 4, 5, 6, 7, & 8. In addition, contingency adjusted to reflect added stretch-out costs.

Impacts of Change (Briefly Describe): At DOE direction, NCSX Project rebaselined to support a flat funding profile of \$15.9 peak (FY2006-FY2008). As a result of this direction, the project work is re-scheduled, resulting in a 14-month delay in the project end date (CD-4 milestone), to July, 2009. The impact on the total estimated cost (TEC) is a \$6.0M increase, to \$92.3M, attributed as follows:

- Management stretchout (\$1.2M);
- Job oversight and support stretchout (\$1.2M);
- PPPL allocations stretchout (\$0.4M);
- Escalation \$0.4M
- Rate increases driven by reduced overall funding at PPPL (\$1.6M);
- Contingency associated with the above increases (\$1.2M)

Summary of Level I baseline parameters:

TEC = \$92.3M (Increase of ~\$6.0M)

Project completion date: July, 2009

Budget contingency on work remaining from April 1, 2005: \$12.8M (25%)

Schedule contingency: 5 months

Funding profile (BA in \$M) for the project:

	FY-03	FY-04	FY-05	FY-06	FY-07	FY-08	FY-09	TEC
CD-3 Baseline	7.9	15.9	15.9	22.1	19.4	5.1		86.3
New Baseline (This ECP)	7.9	15.8	17.5	15.9	15.9	15.9	3.4	92.3

Assessment of Other Options: None. Directed Change.

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Date: April 21, 2005

Detailed Description of the Change:

(Use Continuation Sheets and/or Attach Information/Sketches, As Needed)

List Attachments, Impacted Documents, etc.

- (1) Revised Resource Loaded Baseline
- (2) Update PEP to reflect this data

Description of Change:

The Table Below Summarizes the Cost Impact of this ECP:

WBS Element	Previous Baseline (ECP-030) (\$)	Current Baseline (\$)	Change Due to Stretchout (\$)
12 – Vacuum Vessel	\$9,204K	\$9,531K	\$327K
13 – Conventional Coils	\$4,552K	\$4,790K	\$238K
14 – Modular Coils	\$27,062K	\$28,091K	\$1,029K
15 - Structures	\$1,381K	\$1,413K	\$32K
16 – Coil Services	\$1,036K	\$1,140K	\$104K
17 – Cryostat & Base Suppt Structure	\$1,321K	\$1,361K	\$40K
18 – Field Period Assembly	\$5,118K	\$5,430K	\$312K
19 – Stellarator Core Mgmt & Integr	\$2,421K	\$2,752K	\$331K
<i>Subtotal WBS 1 – Stellarator Core</i>	<i>\$52,096K</i>	<i>\$54,508K</i>	<i>\$2,412K</i>
<i>WBS 2 – Auxilliary Systems</i>	<i>\$778K</i>	<i>\$783K</i>	<i>\$5K</i>
<i>WBS 3 – Diagnostic Systems</i>	<i>\$1,117K</i>	<i>\$1,143K</i>	<i>\$26K</i>
<i>WBS 4 – Electrical Power Systems</i>	<i>\$3,214K</i>	<i>\$3,301K</i>	<i>\$87K</i>
<i>WBS 5 – I&C Systems</i>	<i>\$1,915K</i>	<i>\$2,050K</i>	<i>\$134K</i>
<i>WBS 6 – Facility Systems</i>	<i>\$674K</i>	<i>\$691K</i>	<i>\$17K</i>
<i>WBS 7 Test Cell Prep & Machine Assy</i>	<i>\$4,208K</i>	<i>\$4,413K</i>	<i>\$205K</i>
<i>Subtotal WBS 8 – Project Oversight & Suppt</i>	<i>\$9,605K</i>	<i>\$11,052K</i>	<i>\$1,447K</i>
<i>Subtotal</i>	<i>\$73,607K</i>	<i>\$77,941K</i>	<i>\$4,334K</i>
<i>PPPL Allocations</i>	<i>\$1,129K</i>	<i>\$1,577K</i>	<i>\$448K</i>
<i>Contingency</i>	<i>\$11,610K</i>	<i>\$12,804K</i>	<i>\$1,194K</i>
TOTALS	\$86,345K	\$92,322K	\$5,977K

Overall contingency \$12,804K 25% on the work remaining.

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Date: April 21, 2005

Continuation Sheet:

The Table Below Summarizes the Schedule Impact of this ECP:

		<u>CD-3 Baseline</u>	<u>New Baseline</u>	<u>Actual</u>	
<u>Level I</u>	CD-1	May-2003		<i>May-2003</i>	
	CD-2	Feb-2004		<i>Feb-2004</i>	
	CD-3	Sep-2004		<i>Oct-2004</i>	
<u>Level II</u>	Vacuum Vessel & Modular Coil Prel Dsn Rvw	Oct-2003		<i>Oct-2003</i>	
	Performance Baseline Review	Nov-2003		<i>Nov-2003</i>	
	Conduct VVSA FDR	Jul-2004		<i>May-2004</i>	
	Mod Coil Winding Form Final Design Review	Jul-2004		<i>May-2004</i>	
	Award MC Conductor Contract	Dec-2004		<i>Oct-2004</i>	
	Award VV Production Vendor	Oct-2004		<i>Sep-2004</i>	
	Award MCWF Mfg Contract	Oct-2004		<i>Sep-2004</i>	
	First MCWF Delivered	Jul-2005	Jul-2005		
	Begin TF Coil fabrication activities	Jul-2005	Sep-2005		
	Complete First Mod Coil Fabrication	Feb-2006	Mar-2006		
	Vacuum Vessel Sectors Delivered	Feb-2006	May-2006		
	Last MCWF Delivered	Dec-2006	Jun-2007		
	PF Coils Awarded	Jan-2007	Mar-2008		
	Begin Assembly of First Field Period	Mar-2007	Jul-2007		
	All TF Coils Delivered	May-2007	Aug-2008		
	Last Field Period Assembled	Sep-2007	Nov-2008		
	Begin Vac Vsl Pumpdown	Nov-2007	Feb-2009		
	Begin Cryostat Installation	Jan-2008	Apr-2009		
	Operational Readiness	Mar-2008	Jun-2009		
	Begin Start-up Testing	Mar-2008	Jun-2009		
	CD-4	May-2008	Jul-2009		
	<u>Joule</u>	FY04 JOULE #1-Authorize Prototype Fab	Dec-2003		<i>Oct-2003</i>
		FY04 JOULE #2-Begin winding on 3D surface	Mar-2004		<i>Jan-2004</i>
		FY04 JOULE #3-Prototype Casting Ready for Machining	Jun-2004		<i>May-2004</i>
		FY04 JOULE #4 - CD-3 Readiness	Sep-2004		<i>Sep-2004</i>
		FY05 JOULE #1- VVSA, MCWF and MC Copper Conductor Awarded	Dec-2004		<i>Oct-2004</i>
		FY05 JOULE #2- Cmplt Assy of twisted racetrack	Mar-2005		<i>Mar-2005</i>
FY05 JOULE #3- Mod Coil Winding Type C FDR		Jun-2005	Jun-2005		
FY05 JOULE #4- Complete Winding First MC		Sep-2005	Sep-2005		