NATIONAL COMPACT STELLARATOR PROJECT
Engineering Change Proposal (ECP)

COVER PAGE
(TO BE COMPLETED BY SYSTEMS ENGINEERING SUPPORT MANAGER)

Originator: Ron Strykowsky	**Date: June 3, 2005**
ECP No: 031	**ECP Title: FY2005 DOE Directed Baseline Change Proposal**

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	☒ Yes ☐ No	
3a (Expedited ECP)	NCSX Engineering Manager	☐ Yes ☐ No	
2	NCSX Federal Project Director	☒ Yes ☐ No	
1	Associate Director OFES	☒ Yes ☐ No	
0	Under Secretary of Energy	☐ Yes ☐ No	

NATIONAL COMPACT STELLARATOR PROJECT
Engineering Change Proposal (ECP)

PART I
(TO BE COMPLETED BY ORIGINATOR)

Originator: Ron Strykowsky | **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 $6.1M increase, to $92.4M, 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)**
- **Defense Contract Management Agency (DCMA) QC service ($0.075M)**

Summary of Level I baseline parameters:
TEC = $92.4M (Increase of ~$6.1M)
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	**15.9**	**17.5**	**15.9**	**15.9**	**15.9**	**3.4**	**92.4**

Assessment of Other Options: None. Directed Change.

NATIONAL COMPACT STELLARATOR PROJECT
Engineering Change Proposal (ECP)

PART I

(TO BE COMPLETED BY ORIGINATOR)

Originator: Ron Strykowsky | **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 ($)
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
Subtotal WBS 1 – Stellarator Core	*$52,096K*	*$54,508K*	*$2,412K*
WBS 2 – Auxilliary Systems	*$778K*	*$783K*	*$5K*
WBS 3 – Diagnostic Systems	*$1,117K*	*$1,143K*	*$26K*
WBS 4 – Electrical Power Systems	*$3,214K*	*$3,301K*	*$87K*
WBS 5 – I&C Systems	*$1,915K*	*$2,050K*	*$134K*
WBS 6 – Facility Systems	*$674K*	*$691K*	*$17K*
WBS 7 Test Cell Prep & Machine Assy	*$4,208K*	*$4,413K*	*$205K*
Subtotal WBS 8 – Project Oversight & Suppt	*$9,605K*	*$11,052K*	*$1,447K*
Subtotal	*$73,607K*	*$77,941K*	*$4,334K*
PPPL Allocations	*$1,129K*	*$1,577K*	*$448K*
Contingency	*$11,610K*	*$12,804K*	*$1,194K*
DCMA		*75k*	*75k*
TOTALS	*$86,345K*	*$92,401K*	*$6,056K*

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

NATIONAL COMPACT STELLARATOR PROJECT
Engineering Change Proposal (ECP)

PART I

(TO BE COMPLETED BY ORIGINATOR)

Originator: Ron Strykowsky | **Date: April 21, 2005**

Continuation Sheet:

The Table Below Summarizes the Schedule Impact of this ECP:

		CD-3 Baseline	New Baseline	*Actual*
Level I	CD-1	May-2003		***May-2003***
	CD-2	Feb-2004		***Feb-2004***
	CD-3	Sep-2004		***Oct-2004***
Level II	Vacuum Vessel & Modular Coil Prel Dsn Rvw	Oct-2003		***Oct-2003***
	Performance Baseline Review	Nov-2003		***Nov-2003***
	Conduct VVSA FDR	Jul-2004		***May-2004***
	Mod Coil Winding Form Final Design Review	Jul-2004		***May-2004***
	Award MC Conductor Contract	Dec-2004		***Oct-2004***
	Award VV Production Vendor	Oct-2004		***Sep-2004***
	Award MCWF Mfg Contract	Oct-2004		***Sep-2004***
	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**	
Joule	FY04 JOULE #1-Authorize Prototype Fab	Dec-2003		***Oct-2003***
	FY04 JOULE #2-Begin winding on 3D surface	Mar-2004		***Jan-2004***
	FY04 JOULE #3-Prototype Casting Ready for Machining	Jun-2004		***May-2004***
	FY04 JOULE #4 - CD-3 Readiness	Sep-2004		***Sep-2004***
	FY05 JOULE #1- VVSA, MCWF and MC Copper Conductor Awarded	Dec-2004		***Oct-2004***
	FY05 JOULE #2- Cmplt Assy of twisted racetrack	Mar-2005		***Mar-2005***
	FY05 JOULE #3- Mod Coil Winding Type C FDR	Jun-2005	**Jun-2005**	
	FY05 JOULE #4- Complete Winding First MC	Sep-2005	**Sep-2005**	