NATIONAL SPHERICAL TORUS EXPERIMENT UPGRADE PROJECT
Engineering Change Proposal (ECP)
Part I To be Completed by Originator

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ECP-086

COVER PAGE

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Originator (CAM) Hatcher

Date Submitted 5/23/2013

ECP No. 086

ECP Title This ECP is a re-planning of the remaining tasks for Control Account 5200. The remaining tasks represent a reduction in cost to complete the DCPS work scope.

Required Reviewers (Change Control Board)
- ☒ Williams
- ☒ Strykowsky
- ☒ Dudek
- ☒ Stevenson
- ☒ Langish
- ☒ Other...

Change Level 2 Federal Project Director

Approvals

Change Level	Approving Official	Approval	Signature
3	NSTXU Project Manager	■ Yes ☐ No	Ron Strykowsky — Digitally signed by Ron Strykowsky DN: cn=Ron Strykowsky, o, ou=PPPL, email=rstrykow@pppl.gov, c=US Date: 2013.05.29 07:43:33 -04'00'
3a Expedited ECP	NSTXU Engineering Lead	☐ Yes ☐ No	
2	NSTXU Federal Project Dir.	■ Yes ☐ No	Anthony Indelicato — Digitally signed by Anthony Indelicato DN: cn=Anthony Indelicato, o=Princeton Site Office, ou=DOE-PSO, email=aindelicato@pppl.gov, c=US Date: 2013.05.30 09:45:32 -04'00'
1	Associated Director OFES	☐ Yes ☐ No	
0	Deputy Secretary of Energy	☐ Yes ☐ No	

Approval Date 5/30/2013

- **Primavera Updated** ☐
- **Cobra Updated** ☐
- **WAD Updated** ☐
- **RAM Updated** ☐

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PART I

Originator (CAM) Hatcher

Date Submitted 5/23/2013

Type of ECP ☒ Standard ☐ Expedited

Type of Change (Check all that apply) ☐ Technical ☒ Cost ☒ Schedule ☐ Editorial ☐ Other

Reason for Change This ECP is a re-planning of the remaining tasks for Control Account 5200. The remaining tasks represent a reduction in cost to complete the DCPS work scope.

Impacted WBS Elements

- ☐ 1.1
- ☐ 1.2
- ☐ 1.3
- ☐ 1.4
- ☒ 1.5
- ☐ 1.6
- ☐ 1.7
- ☐ 1.8
- ☐ PEP
- ☐ Milestone
- ☐ Other...

Control Accounts

☐ 1000	☐ 1306	☐ 2470	☐ 5000	☐ 8200
☐ 1001	☐ 1307	☐ 2475	☒ 5200	☐ 8210
☐ 1002	☐ 1310	☐ 2480	☐ 5501	☐ 8250
☐ 1200	☐ 2300	☐ 2485	☐ 6100	☐ Other...
☐ 1300	☐ 2420	☐ 2490	☐ 7200	
☐ 1301	☐ 2425	☐ 3200	☐ 7300	
☐ 1302	☐ 2430	☐ 3300	☐ 7400	
☐ 1303	☐ 2440	☐ 3400	☐ 7100	
☐ 1304	☐ 2450	☐ 4100	☐ 7710	
☐ 1305	☐ 2460	☐ 4500	☐ 7900	

Impacts of Change (Briefly Describe) **Replace all currently non-completed work with a new schedule with the exception of the Water PLC and PDP timer work.**

Impact on Materials Parts Already Manuf. ○ Yes ◉ No

If yes, what is recommended disposition No

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Detailed Description of Change

Description of Change

This ECP is a re-planning of the remaining tasks for Control Account 5200. The remaining tasks represent a reduction in cost to complete the DCPS work scope.

See the attached schedule for details.

Previous baseline budget = $2,522,561.86

Revised Estimate to Complete = $1,230,453.42 (see attached Primavera Schedule)

New budget = $2,362,453.03

Contingency draw = -$160,108.83 (Note: The -CV of $395,709.95 will be maintained. This re-planning effort will reset the schedule variance in this Control Account to zero).

Submitted by:

Ronald E Hatcher

Digitally signed by Ronald E Hatcher
DN: cn=Ronald E Hatcher, o=Princeton Plasma Physics Laboratory, ou=Electrical Design Branch, email=rhatcher@pppl.gov, c=US
Date: 2013.05.28 13:19:44 -04'00'

Ron Hatcher

Reviewed by:

Lawrence E. Dudek

Digitally signed by Lawrence E. Dudek
DN: cn=Lawrence E. Dudek, o=PPPL, ou=Fabrication and Operations, email=ldudek@pppl.gov, c=US
Date: 2013.05.28 16:04:06 -04'00'

Larry Dudek

SUBMIT ECP

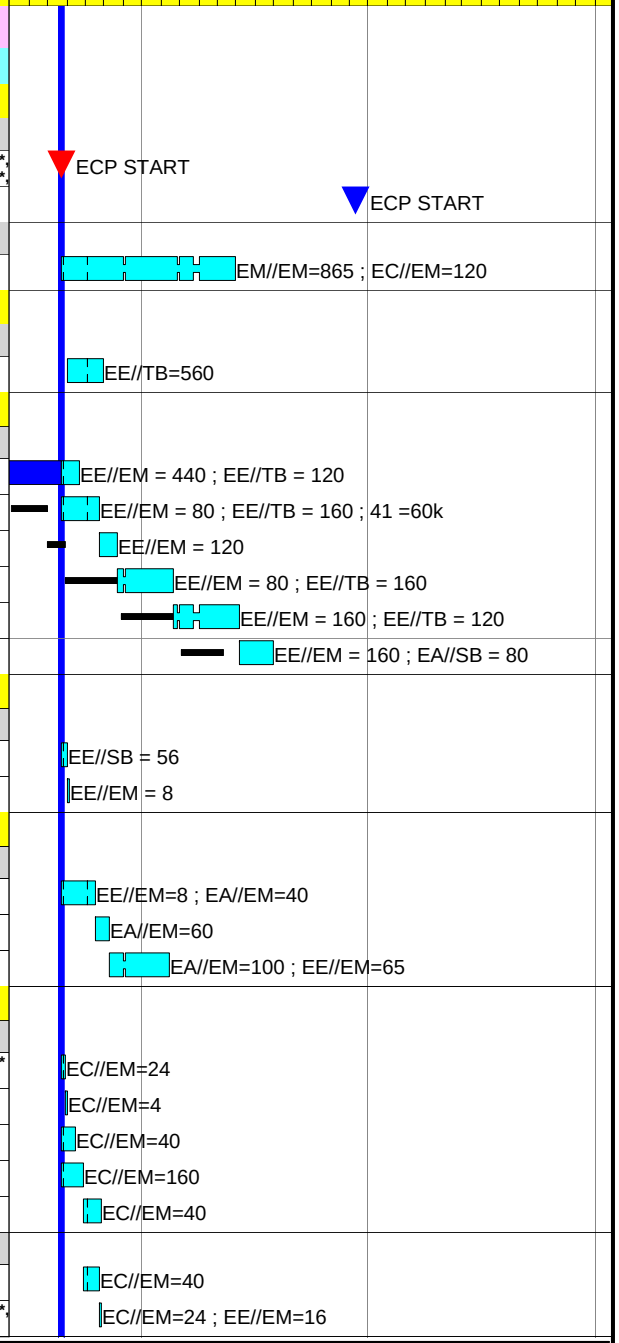
Do not fill in information below this point

List of Attachments ☐ **Primavera Schedule (Before/After)** ☐ **Cobra (Before/After)** ☐ **Other...**

NSTX Upgrade Project

Job: 5200 - Digital Coil Protection-HATCHER

Activity ID	Activity Description	Work Days	Forecast Start	Forecast Finish	Budgeted Cost	% Comp	RESP	EVMS	Predecessors	Successors
Other										
Team										
5200-2000	ECP-086 START	0	23MAY13*		0.00	0	HATCHER			5200-2010*, 5200-2040*, 5200-2070*, 5200-2100*,
5200-2020	ECP-086 FINISH	0		09SEP14	0.00	0	HATCHER		5200-2010, 5200-2030, 5200-2060, 5200-2190*	
Hatcher										
5200-2010	Project Oversight	188*	23MAY13	28FEB14	188,741.17	0	HATCHER	A	5200-2000*	5200-2020
Installation										
5200-2390	Rack Installation/Power Termination (Junct Area)	41*	03JUN13*	31JUL13	52,634.40	0	SICHTA	E	5200-2000	5200-2030
Water PLC										
5200-0320	Design	296*	16APR12A	20JUN13	101,853.27	85	ZHAO	C		5200-0330*
5200-0330	Fabrication	42	23MAY13	24JUL13	117,012.00	0	ZHAO	C	5200-0320*	5200-0340*
5200-0340	Bench Testing	19	25JUL13	20AUG13	23,228.40	0	ZHAO	C	5200-0330*	5200-0350*
5200-0350	Installation	65	21AUG13*	20NOV13	38,541.52	0	ZHAO	C	5200-0340*	5200-0360*
5200-0360	System Testing	65	21NOV13	05MAR14	49,333.20	0	ZHAO	C	5200-0350*	5200-0370*
5200-0370	Documentation	40	06MAR14	30APR14	43,588.80	0	ZHAO	C	5200-0360*	
PDP Timer: Installation & Testing										
5200-1530	Installation Procedure	7*	23MAY13*	03JUN13	10,839.92	0	MOZULAY	C		5200-1540*
5200-1540	PTP	1*	04JUN13	04JUN13	1,548.56	0	MOZULAY	C	5200-1530*	
Analysis Div scope										
Titus										
5200-2040	Preliminary Alogrithm Development	38	23MAY13	18JUL13	10,177.76	0	TITUS	C	5200-2000*	5200-2050*
5200-2050	Advanced Algorithm Development	15	19JUL13	08AUG13	12,943.80	0	TITUS	C	5200-2040*	5200-2060*
5200-2060	Algorithm Verification	69	09AUG13	14NOV13	34,708.59	0	TITUS	C	5200-2050*	5200-2020
DCPS Software										
Preliminary Design										
5200-2230	PDR UI Work	5	23MAY13*	30MAY13	3,598.80	0	ERIKSON	C	5200-2000*	5200-2240*, 5200-2270*
5200-2240	UI Presentation	1	31MAY13	31MAY13	599.80	0	ERIKSON	C	5200-2230*	5200-2290
5200-2250	UI Documentation	15	23MAY13*	13JUN13	5,998.00	0	ERIKSON	C	5200-2000*	5200-2020
5200-2260	Software Design	26	23MAY13*	28JUN13	23,992.00	0	ERIKSON	C	5200-2000*	5200-2290
5200-2270	Incorporate PDR	18	28JUN13*	25JUL13	5,998.00	0	ERIKSON	C	5200-2230*	5200-2280*
Final Design										
5200-2280	Prepare FDR	17	28JUN13*	24JUL13	5,998.00	0	ERIKSON	C	5200-2270*	5200-2290*
5200-2290	Conduct FDR	1	25JUL13*	25JUL13	6,695.92	0	ERIKSON	C	5200-2240, 5200-2260, 5200-2280*	5200-2300*, 5200-2310*, 5200-2380



Data Date 23MAY13
Run Date 28MAY13 08:44

EC86
EVMS Rule
A = LOE K = Planning Pkg
B = Milestone
C = % Complete

NSTX UPGRADES
ECP-086

BASELINE
FORECAST
Progress Bar
Critical Activity

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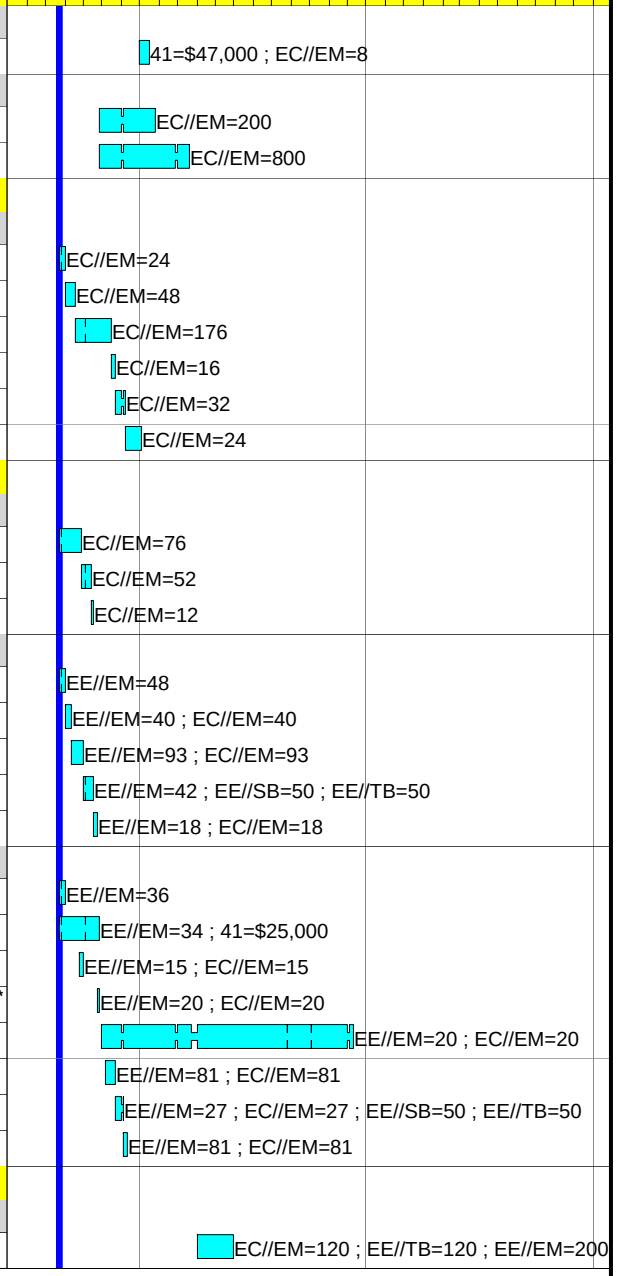
Activity ID	Activity Description	Work Days	Forecast Start	Forecast Finish	Budgeted Cost	% Comp	RESP	EVMS	Predecessors	Successors
Procurement										
5200-2380	Purchase Computer & Assoc HW	10	01OCT13*	14OCT13	64,690.24	0	ERIKSON	C	5200-2290	5200-2030
Implementation										
5200-2300	User Interface Des. & Implementation	65	26JUL13*	25OCT13	30,286.98	0	ERIKSON	C	5200-2290*	5200-2020
5200-2310	DCPS SW Implementation	103	26JUL13*	20DEC13	122,209.01	0	ERIKSON	C	5200-2290*	5200-2020
Auto-Tester Software										
Implementation										
5200-2320	NI Hardware Interface	7	23MAY13*	03JUN13	3,598.80	0	ZIMMER	C	5200-2000*	5200-2330*
5200-2330	UI Layout	10	04JUN13*	17JUN13	7,197.60	0	ZIMMER	C	5200-2320*	5200-2340*
5200-2340	Waveform Handler	40	18JUN13*	14AUG13	26,391.20	0	ZIMMER	C	5200-2330*	5200-2350*
5200-2350	DCPS Hardware Interface	5	15AUG13*	21AUG13	2,399.20	0	ZIMMER	C	5200-2340*	5200-2360*
5200-2360	Data Handling	10	22AUG13*	05SEP13	4,798.40	0	ZIMMER	C	5200-2350*	5200-2370*
5200-2370	MDSPlus Definitions	20	06SEP13*	03OCT13	3,617.09	0	ZIMMER	C	5200-2360*	5200-2030
Interface & Auto Tester Hardware										
Auto Tester Hardware Procurement										
5200-2070	Auto tester HW Procurement	25	23MAY13	27JUN13	11,396.20	0	DONG	C	5200-2000*	5200-2080*
5200-2080	Hardware Integration	9	28JUN13	12JUL13	7,797.40	0	DONG	C	5200-2070*	5200-2090*
5200-2090	Hardware Delivery to Software Engineer	2	15JUL13	16JUL13	1,799.40	0	DONG	C	5200-2080*	5200-2030
Computer/Auto-Tester Interface										
5200-2100	Hardware Procurement	6	23MAY13	31MAY13	9,291.36	0	SCHNEIDER	C	5200-2000*	5200-2110*
5200-2110	I/O Design	7	03JUN13	11JUN13	13,740.80	0	SCHNEIDER	C	5200-2100*	5200-2120*
5200-2120	PCB Design & Procurement	15	12JUN13	02JUL13	31,947.36	0	SCHNEIDER	C	5200-2110*	5200-2130*, 5200-2140
5200-2130	PCB & Chasis Assembly	8	03JUL13	16JUL13	19,806.44	0	SCHNEIDER	C	5200-2120*	5200-2140*
5200-2140	PCB Test	4	17JUL13	22JUL13	6,183.36	0	SCHNEIDER	C	5200-2120, 5200-2130*	5200-2180*, 5200-2210
Dashboard										
5200-2150	Layout and Design	6	23MAY13	31MAY13	6,968.52	0	SCHNEIDER	C	5200-2000*	5200-2210
5200-2160	Procure Parts	44	23MAY13	26JUL13	39,581.38	0	SCHNEIDER	C	5200-2000*	5200-2210
5200-2170	I/O Design	5	25JUN13*	01JUL13	5,152.80	0	SCHNEIDER	C	5200-2000	5200-2180, 5200-2210
5200-2180	Version Control & Configuration Management	4	23JUL13	26JUL13	6,870.40	0	SCHNEIDER	C	5200-2140*, 5200-2170	5200-2190*, 5200-2200*
5200-2190	Drawings	278	29JUL13	09SEP14	7,065.51	0	SCHNEIDER	C	5200-2180*	5200-2020*
5200-2200	PCB Design & Procurement	12	05AUG13	20AUG13	27,825.12	0	SCHNEIDER	C	5200-2180*	5200-2210*
5200-2210	PCB & Chassis Assly.	9	21AUG13	03SEP13	20,951.54	0	SCHNEIDER	C	5200-2140, 5200-2150, 5200-2160, 5200-2170,	5200-2220*
5200-2220	PCB Test	6	04SEP13	11SEP13	27,825.12	0	SCHNEIDER	C	5200-2210*	5200-2030
Testing										
Testing										
5200-2030	Testing	42	02JAN14*	28FEB14	70,290.00	0	HATCHER	C	5200-2090, 5200-2220, 5200-2370, 5200-2380,	5200-2020



Change Control Board/
Work Approval Form (WAF) Review
(ECP-086)

Date: May 23, 2013

A endees:

	Print	Signature
1.	Sue Langlish	
2.	Stryklowsky	
3.	Williams	
4.	Al von Halle	
5.	Jim Stevenson	
6.	Ronald Hatcher	
7.	John Dong	
8.	Hans	
9.	P. Sichta	
10.	K Ericksen	
11.	S Gerhardt	
12.	G Zimmer	
13.		
14.		