

**PrincetonUniversity Plasma Physics Laboratory  
PPPL COST PERFORMANCE REPORT WORKBREAKDOWN STRUCTURE**

**NCSX**

**JANUARY 2006**

\*\*\*\* Cumulative to date FY03, FY04 , FY05 & FY06\*\*\*\*

CUMULATIVE TO DATE (from 4/1/03) (k)									<b>ECP 39</b>	<b>Variance Explanation</b>	
Budgeted Cost				VARIANCES				Budget	Schedule	Cost	
BCWS	BCWP	ACWP	Sch Var	SPI	Cst Var	CPI	Thru FY06				
<b>1 - Stellarator Core Systems</b>	<b>35,229</b>	<b>33,880</b>	<b>34,362</b>	<b>-1,349</b>	<b>.96</b>	<b>-482</b>	<b>.99</b>	<b>44,349</b>			
<b>12</b>	<b>8,145</b>	<b>7,465</b>	<b>7,565</b>	<b>-680</b>	<b>.92</b>	<b>-100</b>	<b>.99</b>	<b>9,159</b>			
1201 - Vacuum Vessel Prelim Dsn	424	424	424		1.00	0	1.00	424			
1202 - Vacuum Vessel R&D	1,770	1,770	1,771		1.00	-1	1.00	1,770			
1203 - Vacuum Vessel Final Dsn	1,097	1,033	1,051	<b>-64</b>	<b>.94</b>	<b>-18</b>	<b>.98</b>	1,098	Final assy requirements & assy drawings. Final design of heater tape system. Final closeout FDR planned for Dec 15th pushed out to March. Emphasis being placed on near term procurement packages.		
1204-VV Sys Procurements (non VVSA)	1	25	53	24	20.85	-28	.47	193			
1206 - VV Field Weld Joint R&D	16	16	16		1.00	0	1.00	16			
1250 - Vacuum Vessel Fabrication	4,837	4,197	4,250 (1)	<b>-640</b>	<b>.87</b>	<b>-53</b>	<b>.99</b>	5,658	VVSA Behind original plan. First sector delivery forecast mid April 06 (7 months off critical path), 2nd sector forecast May06 (9.5 months off critical path) and last sector forecast June 06 (12 months off critical path and 3 months ahead of Level II milestone.		
<b>13</b>	<b>2,039</b>	<b>1,753</b>	<b>1,840</b>	<b>-286</b>	<b>.86</b>	<b>-87</b>	<b>.95</b>	<b>2,765</b>			
1301 - TF Design	946	945	964	-1	1.00	-19	.98	946			
1302 - PF Design	11			-11				11			
1303 - Central Solenoid Support Design		11	8	11		3	1.40				
1350 - TF Coil Fabr Prep	683	501	537	<b>-182</b>	<b>.73</b>	<b>-37</b>	<b>.93</b>	743	All fabrication hardware placed on hold. Work to be outsourced and schedule to be revised.		
1351 - TF Coil Fabr Supplies	353	269	289	<b>-84</b>	<b>.76</b>	<b>-20</b>	<b>.93</b>	811	G-11 and lead block fabrication behind.		
1361 - TF Fabrication	47	27	41	<b>-20</b>	<b>.58</b>	<b>-14</b>	<b>.66</b>	254	Work to be outsourced and schedule to be revised.		
<b>14</b>	<b>21,322</b>	<b>21,015</b>	<b>21,287</b>	<b>-306</b>	<b>.99</b>	<b>-271</b>	<b>.99</b>	<b>27,311</b>			
1401 - Mod Coil Prel.Dsn	304	304	304		1.00	0	1.00	304			
1402 - Mod.Coil Analyses	239	239	239		1.00	0	1.00	239			
1403 - Modular Coil Final Design (includes job 1421 coil interface hw dsn)	3,261	3,194	3,387	-67	.98	<b>-194</b>	<b>.94</b>	3,339	Final assy dwgs continue to slip. Now forecast for end of February.	Comined CPI for the design jobs (1403 & 1416) is .98 with a CV of -72	

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1416 - Mod Coil Type A&B Final Design	473	249	127	-225	.53	122	1.96	756	Type A hardware & MCWF mods.. Progress being made but continues to slip. Lead HW and cladding dwgs now forecast for March completion. WITH A1 SCHEDULED TO BE SHIPPED MAY 17 THIS HARDWARE IS CONSIDERED CRITICAL AND COULD IMPACT FABRICATION. STAFFING LEVELS APPEAR INSUFFICIENT TO SUPPORT PLAN.		
1404-MCWF R&D & 1st Prod Casting	2,544	2,544	2,544		1.00	0	1.00	2,544			
1405-Mod Coil Winding R&D Prep	168	168	168		1.00		1.00	168			
1406 - Mod. Coil Winding Facility	2,247	2,247	2,247		1.00	0	1.00	2,247			
1407 -Mod Coil Winding Facility	2,546	2,546	2,546		1.00	0	1.00	2,546			
1408-Mod Coil Winding Supplies	857	932	914	75	1.09	18	1.02	1,638	A1 cladding , C1 clamps, local I&C behind schedule.		
1409 - Mod. Coil Test Stand	916	916	916		1.00	0	1.00	916			
1410 MC Twisted Racetrack Fabr	1,050	1,050	1,049		1.00	1	1.00	1,050			
1411-MCWF Fabrication S005242	5,173	5,194	5,145 (2)	21	1.00	48	1.01	8,098	Machining behind on C3,C4,C5,C6,A1. Castings ahead on B1,A3,A4,A5,A6. Negative schedule variance for machining offset by casting production being ahead of plan. Contract renegotiated. Impact of late winding forms mitigated in new workaround schedule to be documented in future ECP.		
1412 - Complete Winding Facilities	537	537	536		1.00	1	1.00	537			
1413 - Mod Coil Fracture Analysis	28	28	28		1.00	0	1.01	28			
1414 - Coil Testing	221	198	206	-23	.90	-8	.96	276			
1415 - Dimensional Control Testing	24	24	24		1.00	0	1.00	24			
1419 - Winding Facility Modification	48	48	54		1.00	-6	.88	48			
1451 - Mod Coil Winding	685	598	810	-87	.87	-212	.74	2,553	C-1 Plan Completion 3/29/06 forecast 3/10/06 C-2 Started late due to late receipt of casting. Plan completion 4/17/06 forecast 4/18/06. C-3 Preparations awaiting delivery of C3.	Some cladding needed to be removed and re-set, setting clamps longer than expected, and prep of cladding/chill plates for C1 & C2.LAST MONTH CUM VARIANCE WAS -217 WITH COST VARIANCE OF .68	
1459 - MC Unplanned rework			43			-43				Unbudget rework to C-1casting as well as misc unplanned support to the winding operation.	
<b>15</b>	<b>78</b>	<b>80</b>	<b>82</b>	<b>2</b>	<b>1.03</b>	<b>-2</b>	<b>.97</b>	<b>208</b>			
1501 - Structures Design	78	80	82	2	1.03	-2	.97	208			

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		Budgeted Cost			VARIANCES				Budget	Schedule	Cost
		BCWS	BCWP	ACWP	Sch Var	SPI	Cst Var	CPI	Thru FY06		
16	16 - Coil Services								-		
17	1701-Cryost&Base Sprt Strct Dsn	377	368	396	-9	.98	-28	.93	377		
18	1801-Field Period Assly	61	61	61		1.00	0	1.00	61		
	1802 - FP Assy Oversight&Support	451	451	446	0	1.00	6	1.01	718		
	1803- FP Assy Toolg/Constructability	626	599	590	-26	.96	10	1.02	933		
	1804-FP Assy Measurement	442	438	458	-4	.99	-21	.96	452		
	1810 - Field Period Assembly	34		1	-34		-1		362		
19	1901 - Stellarator Core Mngtt&Inte	1,654	1,648	1,636	-6	1.00	12	1.01	2,003		
2	2 - Plasma Heating,Fueling & Va	349	349	347		1.00	2	1.01	349		
	2001-VPS Gas& Cond Sys Oversight	64	64	63		1.00	1	1.02	64		
	2501 - Neutral Beam Refurbishment	285	285	284		1.00	1	1.00	285		
3	3 - Diagnostics	576	489	585	-87	.85	-95	.84	770		
31	3101 Magnetic Diagnostics	279	192	291	-87	.69	-99	.66	425	VV saddle loop and termination boxes behind.	Engineering and technician time underestimated
39	3901 - Diagnostics sys Integratio	297	297	294	0	1.00	3	1.01	345		
4	4 - Electrical Power Systems	664	571	667	-93	.86	-96	.86	742		
41	4101 - AC Power	107	107	107		1.00	0	1.00	107		
43	4301 - DC Systems	279	271	346	-8	.97	-75	.78	314		
44	4401 - Control & Protection	55	59	74	4	1.07	-15	.80	55		
45	4501 - Power Sys Dsn & Integr	222	133	138	-89	.60	-5	.96	265	C-site cabling design behind. Design needs to be redone. Planning FDR in Feb with cable installation by March. (scope accelerated from FY07)	
46	4601 - FCPC Bldg Mods	1	1	1	0	1.30		1.00	1		
5	5 - Central I&C Systems	33	33	33		1.00	0	1.00	33		
58	5801 -Central I&C Integr	33	33	33		1.00	0	1.00	33		
6	6 - Facility Systems	24	24	24		1.00	0	.99	24		
	6163 - Facility Systems Support FY04	15	15	15		1.00	0	1.01	15		
	62 - Cryogenic Systems								-		
	63 - Utility Systems								-		
	6501 - Facility Systems Integratio	9	9	9		1.00	0	.96	9		
7	7 - Test Cell Prep & Machine As	897	905	933	8	1.01	-28	.97	915		
	7101 - Shield Wall Modif	32	32	32		1.00	0	1.00	32		
	7201 - Control Room Walls&Floors								-		
	7301 - Platform Design &	71	72	76	1	1.01	-4	.95	71		
	7401 - TC Prep & Mach Assy Plan	794	801	825	7	1.01	-24	.97	812		
8	8 - Project Oversight & Support	7,080	7,081	7,221	1	1.00	-140	.98	8,665		
81	8101 - Project Management & Control	3,348	3,348	3,405	0	1.00	-57	.98	4,126		
	8102 - NCSX MIE Management ORNL	2,154	2,154	2,172	0	1.00	-18	.99	2,588		
		310	310	313	0	1.00	-3	.99	429		

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Budgeted Cost			VARIANCES				Budget	Schedule	Cost		
BCWS	BCWP	ACWP	Sch Var	SPI	Cst Var	CPI	Thru FY06				
8998 - Allocations	884	884	920	0	1.00	-36	.96	1,109			
<b>82</b>	<b>3,263</b>	<b>3,263</b>	<b>3,347</b>	<b>1</b>	<b>1.00</b>	<b>-83</b>	<b>.98</b>	<b>4,069</b>			
8202 - Engr Mgmt & Sys Eng Support	1,813	1,813	1,852	0	1.00	-39	.98	2,241			
8203 - Design Integration	731	731	714	0	1.00	16	1.02	826			
8204 - Systems Analysis	570	570	640	0	1.00	-70	.89	724			
8205 - Dimensional Control Coord.	149	149	140	0	1.00	9	1.07	278			
<b>84</b>	<b>470</b>	<b>470</b>	<b>470</b>		<b>1.00</b>	<b>0</b>	<b>1.00</b>	<b>470</b>			
8401 - Project Physcis	324	324	324		1.00	0	1.00	324			
8402 - Project Physics MIE ORNL	146	146	146		1.00	0	1.00	146			
<b>Subtotal</b>	<b>44,852</b>	<b>43,332</b>	<b>44,171</b>	<b>-1,520</b>	<b>.97</b>	<b>-840</b>	<b>.98</b>	<b>55,848</b>			
<b>Contingency/Management Reserve</b>								<b>1,295</b>			
<b>Incremental Funding</b>								<b>1,291</b>			
<b>1% hold back on FY06 BA</b>								<b>(172)</b>			
<b>DCMA QA Inspection services</b>								<b>75</b>			
<b>TOTAL PROJECT</b>								<b>58,337</b>			
(1) Reflects accrual increase of \$59k based on MTM's earned value report											
(2) Reflects accrual increase of \$ 73 k based on EIO's earned value report											
Thru FY2004	20,640	19,652	19,744	-988	0.95	-92	1.00				
Thru Oct	20,637	20,832	20,917	195	1.01	-85	1.00				
Thru NOVEMBER	21,812	21,906	22,158	94	1.00	-252	0.99				
Thru DECEMBER	23,813	23,042	23,434	-771	0.97	-392	0.98				
Thru JANUARY (ecp-21)	25,866	24,310	24,639	-1556	0.94	-329	0.99				
Thru Feb (ecp-24)	26,637	25,856	26,285	-781	0.97	-429	0.98				
Thru Mar (ecp-29)	28,440	27,282	28,004	-1158	0.96	-722	0.97				
Thru Apr (ecp-30)	29,588	28,736	29,416	-852	0.97	-680	0.98				
Thru May (ecp-30)	31,301	29,903	30,889	-1398	0.96	-986	0.97				
Thru June (ecp-30)	32,740	31,362	32,719	-1378	0.96	-1357	0.96				
Thru July (ecp-36)	35,206	33,682	34,276	-1524	0.96	-594	0.98				
Thru Aug (ecp-36)	36,914	35,480	36,416	-1434	0.96	-936	0.97				
Thru Sep (ecp-36)	38,562	36,721	38,314	-1841	0.95	-1593	0.96	BCWR	contingency remaining		
<i>PARS for OCT</i>	<i>1,710</i>	<i>3,061</i>	<i>1,485</i>	<i>-90</i>	<i>0.94</i>	<i>-17</i>	<i>0.98</i>	<i>for October only</i>			
Thru Oct (ecp-39)	40,272	39,782	39,799	-490	0.99	-17	1.00	43,018	9600	22.3%	
<i>PARS for NOV</i>	<i>1,673</i>	<i>1,060</i>	<i>1,394</i>	<i>-613</i>	<i>0.63</i>	<i>-334</i>	<i>0.76</i>			22.3%	
Thru NOV (ecp-39)	41,945	40,842	41,193	-1103	0.97	-351	0.99	41,958	9600	22.9%	
<i>PARS for DEC</i>	<i>1,274</i>	<i>896</i>	<i>1,331</i>	<i>-378</i>	<i>0.70</i>	<i>-435</i>	<i>0.67</i>			22.0%	
Thru DEC (ecp-39)	43,219	41,738	42,524	-1481	0.97	-786	0.98	41,062	9600	23.4%	
<i>PARS for JAN</i>	<i>1,633</i>	<i>1,594</i>	<i>1,647</i>	<i>-39</i>	<i>0.98</i>	<i>-54</i>	<i>0.97</i>			21.5%	
Thru JAN (ecp-39)	44,852	43,332	44,171	-1520	0.97	-840	0.98	39,468	9600	24.3%	
										22.2%	