

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

**NCSX**

**AUGUST 2006**

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

**AUGUST 2006**

	CURRENT MONTH			CUMULATIVE TO DATE (from 4/1/03) (k)							ECP 50	Variance Explanation		
	BCWS	BCWP	ACWP	Budgeted Cost			VARIANCES					Budget Thru FY06	Schedule	Cost
				BCWS	BCWP	ACWP	Sch Var	SPI	Cst Var	CPI				
<b>1 - Stellarator Core Systems</b>	1,679	1,085	1,139	43,906	42,937	44,209		-969	.98	-1,273	.97	45,007		
<b>12 Vacuum Vessel Systems</b>	541	236	262	9,404	9,279	9,412		-125	.99	-133	.99	9,413		
CLOSED 1201 - Vacuum Vessel Prelim Dsn				424	424	424		0	1.00	0	1.00	424		
CLOSED 1202 - Vacuum Vessel R&D				1,770	1,770	1,771		0	1.00	0	1.00	1,770		
1203 - Vacuum Vessel Final Dsn		-2	4	1,270	1,251	1,187		-19	.99	65	1.05	1,270	Drawing tree and BOM due in September.	
1204-VV Sys Procurements (non VVSA)	2	2	-2	248	187	239		-61	.75	-52	.78	249	Procurement of heating/cooling tubing and attachments deferred until October due to funding limitations. No impact on stage 1 field period assembly. (SPI .75 last month)	Vertical supports titanium rods. (delivered but PPPL fab on hold until fy07. NO CHANGE DURING JULY. (CPI .77 last month)
CLOSED 1206 - VV Field Weld Joint R&D		0		16	16	16			1.00	0	.98	16		
1250 - Vacuum Vessel Fabrication	540	236	261	5,675	5,630	5,775 (1)		-45	.99	-145	.97	5,683	VVSA #3 still planned for delivery in September consistent with level II milestone.	Title III and vendor oversight; analysis of NCR's (CPI .98 last month)
<b>13 Conventional Coils</b>	196	72	61	2,645	2,409	2,443		-235	.91	-34	.99	3,023		
1301 - TF Design			-1	966	965	972		-1	1.00	-7	.99	966		
1302 - PF Design			-1			20				-20		11		
1303 - Central Solenoid Support Design		11	16	111	110	124		0	1.00	-13	.89	117		
1350 - TF Coil Fabr Prep			-2	547	547	547			1.00	0	1.00	547		
1351 - TF Coil Fabr Supplies			3	470	461	462		-9	.98	0	1.00	470		
1361 - TF Fabrication	196	62	44	552	326	319 (3)		-225	.59	8	1.02	913	Wedges material procurement behind schedule. First coil delivery forecast 9 weeks late. 3rd coil delivery forecast <2 weeks late.	
<b>14 Modular Coils</b>	676	608	700	27,012	26,547	27,635		-465	.98	-1,088	.96	27,503		
CLOSED 1401 - Mod Coil Prel.Dsn				304	304	304		0	1.00	0	1.00	304		
CLOSED 1402 - Mod.Coil Analyses				239	239	239		0	1.00	0	1.00	239		
1403 - MoCoil Final Dsn (incl job 1421 coil interface hw dsn)	24	5	13	3,668	3,495	3,508		-173	.95			3,688	Finish top-level assy dwgs by end of Sept. Coil Interface design to start in October. (SPI .96 last month)	
1416 - Mod Coil Type A&B Final Design	53	11	10	427	321	360		-106	.75	-40	.89	446	Issue top-level assy dwgs and hardware details by end of FY. (SPI .83 last month)	
CLOSED 1404-MCWF R&D & 1st Prod Casting				2,544	2,544	2,544		0	1.00	0	1.00	2,544		
CLOSED 1405-Mod Coil Winding R&D Prep				168	168	168		0	1.00	0	1.00	168		
CLOSED 1406 - Mod. Coil Winding Facility			0	2,264	2,264	2,263			1.00	0	1.00	2,264		
CLOSED 1407 -Mod Coil Winding Facility			-1	2,571	2,571	2,571			1.00	1	1.00	2,571		
1408-Mod Coil Winding Supplies	64	77	139	1,766	1,540	1,683		-226	.87	-143	.92	1,767	Type A cladding, chill plates and lead hardware behind schedule but just in time to support fabrication. NO CHANGE DURING JULY. (SPI .86 last month)	Half of cost variance due to Type A cladding estimate. (vendor error in quote) CPI .95 last month
CLOSED 1410 MC Twisted Racetrack Fabr			0	1,050	1,050	1,051		0	1.00	-1	1.00	1,050		

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				BCWS	BCWP	ACWP	Sch Var	SPI	Cst Var	CPI				
1411-MCWF Fabrication S005242	230	237	243	7,600	7,774	7,876 (2)	175	1.02	-102	.99	7,796		Vendor oversight and NCR reconciliation as well as \$39k of additional unplanned incentives.	
CLOSED 1412 - Complete Winding Facilities			0	541	541	542		1.00	-1	1.00	541			
CLOSED 1413 - Mod Coil Fracture Analysis				28	28	28	0	1.01	0	1.01	28			
CLOSED 1409 - Mod. Coil Test Stand			2	826	826	828	0	1.00	-2	1.00	826			
CLOSED 1414 - Coil Testing			-13	675	675	664	0	1.00	11	1.02	675			
CLOSED 1415 - Dimensional Control Testing				24	24	24	0	.99	0	.99	24			
CLOSED 1419 - Winding Facility Modification				55	55	48		1.00	7	1.14	55			
1451 - Mod Coil Winding (incl 1459 unplanned work)	306	278	305	2,263	2,128	2,933	-134	.94	-805	.73	2,517	Winding tasks approx 2 weeks behind schedule. Critical path float reduced from 6 to 5.6 months for winding ops. Limited manpower due to vacations has focused work on critical path tasks. 3rd winding fixture to be installed to maximize efficiency. (Ref weekly winding status) (SPI .95 last month)	Last month cumulative CPI .70. Average monthly CPI over last 4 months = .91. Learning curve is flattening out. Tech shop support higher than budgeted.	
<b>15 Structures</b>	<b>31</b>	<b>1</b>	<b>-1</b>	<b>113</b>	<b>99</b>	<b>120</b>	<b>-14</b>	<b>.88</b>	<b>-20</b>	<b>.83</b>	<b>139</b>			
1501 - Structures Design	31	1	-1	113	99	116	-14	.88	-16	.86	139	Structures design deferred to FY07 due to FY06 cost constraints.		
1550 - Structures Procurement			0			4			-4		-			
<b>16 16 - Coil Services</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>		<b>1.00</b>	<b>0</b>	<b>1.03</b>	<b>3</b>			
<b>17 Cryostat and Base</b>	<b>33</b>	<b>-1</b>	<b>484</b>	<b>421</b>	<b>419</b>	<b>-64</b>	<b>.87</b>	<b>1</b>	<b>1.00</b>	<b>487</b>				
1701-Cryostat&Base Sprt Strct Dsn	33	-1	484	421	419	-64	.87	1	1.00	487	Base support structure prelim design on hold until FY07. (last month SPI .93)			
<b>18 Field Period Assembly</b>	<b>155</b>	<b>119</b>	<b>102</b>	<b>2,280</b>	<b>2,213</b>	<b>2,280</b>	<b>-67</b>	<b>.97</b>	<b>-67</b>	<b>.97</b>	<b>2,433</b>			
CLOSED 1801-Field Period Assly			0	65	65	65		1.00	0	1.00	65			
1802 - FP Assy Oversight&Support	36	36	36	633	634	655	0	1.00	-22	.97	664			
1803- FP Assy Tooling/Constructability	75	35	34	873	836	901	-37	.96	-65	.93	954	Station 2 FDR scheduled for Sept 20	Seismic and structural analysis for station 2 half period assembly. (CPI .92 last month)	
1804-FP Assy Measurement	2	2	16	548	547	549	-1	1.00	-2	1.00	549			
1810 - Field Period Assembly	42	46	16	161	132	111	-29	.82	21	1.19	200	Metrology issues impacting schedule. Layout of diagnostic loops slipped by 1 1/2 months. (SPI .72 last month)	CV should be ~ 0. John Edwards time sheet not entered for August.	
<b>19 1901 - Stellarator Core Mngtt&amp;Integr</b>	<b>47</b>	<b>47</b>	<b>16</b>	<b>1,966</b>	<b>1,966</b>	<b>1,897</b>	<b>0</b>	<b>1.00</b>	<b>69</b>	<b>1.04</b>	<b>2,007</b>			
<b>2 - Plasma Heating, Fueling &amp; Vac Sys</b>		<b>-1</b>	<b>0</b>	<b>348</b>	<b>348</b>	<b>348</b>	<b>0</b>	<b>1.00</b>		<b>1.00</b>	<b>348</b>			
CLOSED 2001-VPS Gas& Cond Sys Oversight		-1	0	64	63	63	-1	.99		1.00	63			
CLOSED 2501 - Neutral Beam Refurbishment		0	0	285	285	285	0	1.00		1.00	285			
<b>3 - Diagnostics</b>	<b>7</b>	<b>9</b>	<b>8</b>	<b>749</b>	<b>726</b>	<b>784</b>	<b>-22</b>	<b>.97</b>	<b>-58</b>	<b>.93</b>	<b>757</b>			
31 3101 Magnetic Diagnostics	7	9	6	409	386	467	-22	.95	-80	.83	411	MC C-wound loops impacted by oven repairs necessary for heat shrinking of MI tubing. Termination box fab deferred to FY07 due to funding. (SPI .94 last month)	Design and fabrication of Vacuum vessel saddle loops and oven repair. (CPI .83 last month)	

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				BCWS	BCWP	ACWP	Sch Var	SPI	Cst Var	CPI				
39 3901 - Diagnostics sys Integration	7	7	2	340	340	317		1.00	22	1.07	345			
<b>4 - Electrical Power Systems</b>			-3	<b>757</b>	<b>722</b>	<b>720</b>		<b>-34</b>	<b>.95</b>	<b>2</b>	<b>1.00</b>	<b>757</b>		
41 4101 - AC Power				107	108	107		1	1.01	0	1.00	107	All electrical power systems work on hold until FY07. Balance of FY06 to be spent finalizing subsystem requirements.	
43 4301 - DC Systems			-4	382	382	379		0	1.00	4	1.01	382		
44 4401 - Control & Protection			-1	82	83	82		0	1.00	1	1.01	82		
45 4501 - Power Sys Dsn & Integr			2	184	148	151		-36	.80	-3	.98	184		
46 4601 - FCPC Bldg Mods				1	1	1			1.00		1.00	1		
<b>5 - Central I&amp;C Systems</b>		3		<b>41</b>	<b>43</b>	<b>33</b>		<b>2</b>	<b>1.06</b>	<b>10</b>	<b>1.31</b>	<b>46</b>		
58 5801 -Central I&C Integr		3		41	43	33		2	1.06	10	1.31	46		
<b>6 - Facility Systems</b>		0		<b>24</b>	<b>24</b>	<b>24</b>		<b>0</b>	<b>1.02</b>	<b>0</b>	<b>1.01</b>	<b>24</b>		
6163 - Facility Systems Support FY04				15	15	15			1.00	0	1.01	15		
62 - Cryogenic Systems												-		
63 - Utility Systems												-		
CLOSED 6501 - Facility Systems Integration		0		9	9	9		0	1.04	0	1.00	9		
<b>7 - Test Cell Prep &amp; Machine Assy</b>		1	-1	<b>938</b>	<b>942</b>	<b>949</b>		<b>4</b>	<b>1.00</b>	<b>-7</b>	<b>.99</b>	<b>938</b>		
CLOSED 7101 - Shield Wall Modif		1	0	32	33	33		1	1.02	0	1.00	32		
7201 - Control Room Walls&Floors												-		
7301 - Platform Design &			0	75	76	76		1	1.02	0	1.00	75		
7401 - TC Prep & Mach Assy Planning			-1	831	833	840		2	1.00	-7	.99	831		
<b>8 - Project Oversight &amp; Support</b>	220	222	172	<b>8,577</b>	<b>8,578</b>	<b>8,862</b>		<b>2</b>	<b>1.00</b>	<b>-284</b>	<b>.97</b>	<b>8,766</b>		
<b>81 Project Management and Control</b>	105	106	77	<b>4,035</b>	<b>4,035</b>	<b>4,060</b>		<b>1</b>	<b>1.00</b>	<b>-24</b>	<b>.99</b>	<b>4,126</b>		
8101 - Project Management & Control	59	59	25	2,537	2,538	2,544		0	1.00	-7	1.00	2,588		
8102 - NCSX MIE Management ORNL	16	16	5	415	415	407		0	1.00	7	1.02	429		
8998 - Allocations	31	31	47	1,083	1,083	1,108		0	1.00	-25	.98	1,109		
<b>82 Project Engineering</b>	115	115	95	<b>4,072</b>	<b>4,072</b>	<b>4,333</b>		<b>0</b>	<b>1.00</b>	<b>-261</b>	<b>.94</b>	<b>4,171</b>		CPI.93 last month
8202 - Engr Mgmt & Sys Eng Support	58	58	52	2,191	2,191	2,256		0	1.00	-66	.97	2,241		C1 testing report. CV -71 last month.
8203 - Design Integration	13	13	17	815	815	847			1.00	-32	.96	826		
8204 - Systems Analysis	27	27	24	803	803	985			1.00	-182	.81	826		Unplanned integrated modeling analysis.
8205 - Dimensional Control Coord.	18	18	2	264	264	244			1.00	19	1.08	278		
<b>84 Project Physics</b>		1		<b>470</b>	<b>471</b>	<b>470</b>		<b>1</b>	<b>1.00</b>	<b>1</b>	<b>1.00</b>	<b>470</b>		
CLOSED 8401 - Project Physics		0		324	324	324		0	1.00	1	1.00	324		
CLOSED 8402 - Project Physics MIE ORNL		0		146	146	146		1	1.00	0	1.00	146		
<b>Subtotal</b>	<b>1,906</b>	<b>1,317</b>	<b>1,316</b>	<b>55,339</b>	<b>54,321</b>	<b>55,930</b>		<b>-1,018</b>	<b>.98</b>	<b>-1,609</b>	<b>.97</b>	<b>56,643</b>		
<b>Contingency/Management Reserve</b>												<b>500</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 \$107 k based on MTM's earned value report														
(2) Reflects accrual INCREASE of \$ 32 k based on EIO's earned value report														
(3) Reflects accrual DECREASE of \$271 k on Everson/Tesla estimated progress														

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						Budgeted Cost			VARIANCES			Budget			
						BCWS	BCWP	ACWP	Sch Var	SPI	Cst Var	CPI	Thru FY06	Schedule	Cost
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			Cont
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)	Thru Sep (ecp-36)					38,562	36,721	38,314	-1841	0.95	-1593	0.96	BCWR	contingency remaining	
PARS for OCT						1,710	3,061	1,485	-90	0.94	-17	0.98	for October only		
Thru Oct (ecp-39)						40,272	39,782	39,799	-490	0.99	-17	1.00	42,943	9600	22.4%
PARS for NOV						1,673	1,060	1,394	-613	0.63	-334	0.76			22.3%
Thru NOV (ecp-39)						41,945	40,842	41,193	-1103	0.97	-351	0.99	41,883	9600	22.9%
PARS for DEC						1,274	896	1,331	-378	0.70	-435	0.67			22.1%
Thru DEC (ecp-39)						43,219	41,738	42,524	-1481	0.97	-786	0.98	40,987	9600	23.4%
PARS for JAN						1,633	1,594	1,647	-39	0.98	-53	0.97			21.5%
Thru JAN (ecp-39)						44,852	43,332	44,171	-1520	0.97	-839	0.98	39,393	9600	24.4%
PARS for FEB						1,471	1,431	2,001	-40	0.97	-570	0.72			22.2%
Thru FEB (ecp-39)						46,323	44,763	46,172	-1560	0.97	-1409	0.97	37,962	9600	25.3%
PARS for MAR						1,900	1,587	1,860	-313	0.84	-273	0.85			21.6%
Thru MAR (ecp-043)						48,223	46,350	48,032	-1873	0.96	-1682	0.96	37,255	8720	23.4%
PARS for APR						1,247	1,297	1,712	50	1.04	-415	0.76			18.9%
Thru APR (ecp-043)						49,470	47,647	49,744	-1823	0.96	-2097	0.96	35,958	8720	24.3%
PARS for MAY						1,025	2,238	1,661	1213	2.18	577	1.35			18.4%
Thru MAY (ECP-45)						50,495	49,885	51,405	-610	0.99	-1520	0.97	34,269	8171	23.8%
PARS for JUNE						1,375	1,367	1,581	-8	0.99	-214	0.86			19.4%
Thru June (ECP-45)						51,870	51,252	52,986	-618	0.99	-1734	0.97	32,902	8171	24.8%
PARS for JULY						1,563	1,751	1,629	188	1.12	123	1.08		297	19.6%
Thru July (ECP-49 & 50)						53,433	53,003	54,615	-430	0.99	-1611	0.97	31,448	7874	25.0%
PARS for AUG						1,906	1,317.4	1,315.7	-588	0.69	2	1.00		297	19.9%
Thru August (ECP 49&50)						55,339	54,321	55,930	-1018	0.98	-1609	0.97	30,130	7874	26.1%
FY06 subtotal=						16,777	16,007	17,616	-770	0.95	-1609	0.91			20.8%

