

**Princeton University Plasma Physics Laboratory
PPPL COST PERFORMANCE REPORT WORK BREAKDOWN STRUCTURE**

NCSX

OCTOBER 2006

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

OCTOBER 2006

CUMULATIVE TO DATE (from 4/1/03) (k)

ECP 52

Variance Explanation

	Budgeted Cost			VARIANCES				Budget	Variance Explanation	
	BCWS	BCWP	ACWP	Sch Var	SPI	Cst Var	CPI	Thru FY07	Schedule	Cost
1 - Stellarator Core Systems	45,552	45,472	46,675	-80	1.00	-1,203	.97	56,654		
12 Vacuum Vessel Systems	9,557	9,511	9,556	-45	1.00	-45	1.00	9,677		
CLOSED 1201 - Vacuum Vessel Prelim Dsn	424	424	424		1.00	0	1.00	424		
CLOSED 1202 - Vacuum Vessel R&D	1,770	1,770	1,771		1.00	-1	1.00	1,770		
CLOSED 1203 - Vacuum Vessel Final Dsn	1,218	1,218	1,219		1.00	-1	1.00	1,218		
CLOSED 1206 - VV Field Weld Joint R&D	16	16	16		1.00	0	.98	16		
CLOSED 1250 - Vacuum Vessel Fabrication	5,809	5,809	5,821		1.00	-12	1.00	5,808		
1204-VV Sys Procurements (non VVSA)	321	275	305	-45	.86	-30	.90	441	Hoses not received as of the end of October. (However 80% of hoses just received. No impact to schedule since studs still need to be relocated and welded to VVSA)	Cost variance attributed to the purchase of the titanium rod ends for the VV supports purchased in FY06. CPI last month =.81
13 Conventional Coils	2,919	2,827	2,772	-92	.97	55	1.02	4,331		
CLOSED 1301 - TF Design	970	970	970		1.00	0	1.00	971		
1302 - PF Design			19			-19		132		
1303 - Central Solenoid Support Design	106	106	136		1.00	-30	.78	106		Final design completed. 90% of Cost variance carried over from FY06. Disposition of chits to be completed by November.
1350 - TF Coil Fabr Prep	547	547	536		1.00	11	1.02	547		
1351 - TF Coil Fabr Supplies	470	459	453	-11	.98	6	1.01	470		
1361 - TF Fabrication	825	744	657 (3)	-81	.90	87	1.13	1,797	Tooling and fixturing behind. Vendor still forecasts first 3 coil delivery by end of February but a potential slip of 1-2 month is possible. However, the first 3 coils are not required until late FY07 so there is no schedule impact.	Positive cost variance is due to an MHX overhead rate variance in FY06 and FY07.
1352 - PF Coil Procurement								276		
1353 - CS Structure Procurement								32		
14 Modular Coils	28,030	28,129	29,296	99	1.00	-1,167	.96	34,127		
CLOSED 1401 - Mod Coil Prel.Dsn	304	304	304		1.00	0	1.00	304		
CLOSED 1402 - Mod.Coil Analyses	239	239	239		1.00	0	1.00	239		
CLOSED 1404-MCWF R&D & 1st Prod Casting	2,543	2,543	2,554		1.00	-11	1.00	2,543		
CLOSED 1405-Mod Coil Winding R&D Prep	168	168	168		1.00		1.00	168		
CLOSED 1406 - Mod. Coil Winding Facility	2,263	2,263	2,263		1.00	0	1.00	2,263		
CLOSED 1407 -Mod Coil Winding Facility	2,571	2,571	2,570		1.00	2	1.00	2,571		
CLOSED 1410 MC Twisted Racetrack Fabr	1,050	1,050	1,050		1.00	0	1.00	1,050		
CLOSED 1412 - Complete Winding Facilities	541	541	541		1.00	0	1.00	541		
CLOSED 1413 - Mod Coil Fracture Analysis	28	28	28		1.00	0	1.01	28		
CLOSED 1409 - Mod. Coil Test Stand	826	826	833		1.00	-7	.99	826		
CLOSED 1414 - Coil Testing	675	675	639		1.00	36	1.06	675		
CLOSED 1415 - Dimensional Control Testing	24	24	24		1.00	0	1.00	24		
CLOSED 1419 - Winding Facility Modification	55	55	48		1.00	7	1.14	55		

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ECP 52

Variance Explanation

		CUMULATIVE TO DATE (from 4/1/03) (k)								Budget Thru FY07	Variance Explanation	
		Budgeted Cost			VARIANCES						Schedule	Cost
		BCWS	BCWP	ACWP	Sch Var	SPI	Cst Var	CPI				
	Mod Coil Design (incl job 1421 coil interface hw dsn and 1416)	3,890	3,890	4,000	1	1.00	-110	.97	4,376		Cost variance carried over from FY06. Last month variance was -124k.	
	1408-Mod Coil Winding Supplies	1,745	1,681	1,819	-64	.96	-138	.92	1,948	Type B lead hardware and chill plates not completely delivered as of the end of October. Balance of hardware forecast for November. No impact on the B1 and B2 winding schedule.	Lead hardware and chill plate cost higher than budgeted.	
	1431 - Mod Coil Interface hardware								699			
	1411-MCWF Fabrication S005242	8,405	8,515	8,508 (2)	110	1.01	7	1.00	9,844			
	1451 - Mod Coil Winding (incl 1459 punch list and unplanned work)	2,691	2,721	3,690	29	1.01	-969	.74	5,910		Improvement in costing trend continues. Last month's cost variance was =-1,040k with CPI of .69. See trend chart at bottom of report.	
	1460 - 3rd Winding Fixture	12	34	18	23	2.95	16	1.92	63			
15	Structures	109	109	117		1.00	-8	.93	708			
	1501 - Structures Design	109	109	113		1.00	-4	.96	218			
	1550 - Structures Procurement			4			-4		490			
16	1601 - Coil Services	3	3	3		1.00	0	1.07	174			
17	Cryostat and Base	425	425	417		1.00	8	1.02	485			
	1701-Cryost&Base Sprt Strct Dsn	425	425	417		1.00	8	1.02	482			
	1751 - Cryostat Procurement								-			
	1752 - Base Support Structure Procurement								3			
18	Field Period Assembly	2,485	2,444	2,538	-41	.98	-94	.96	4,937			
	CLOSED 1801-Field Period Assy	65	65	64		1.00	0	1.00	65			
	1802 - FP Assy Oversight Support	734	734	709		1.00	25	1.04	1,338			
	1803- FP Assy Tooling/Constructability	885	856	976	-29	.97	-121	.88	1,170		FP assy peer review preparations, disposition of chits and follow-up tasks	
	1804-FP Assy Measurement	551	551	554		1.00	-3	1.00	564			
	1805 - FP Assy Hardware & Fxt Procurement	1	1		0	1.02	1		305			
	1806 - FP Assy Specs and Drawings	27	38		11	1.42	38		210			
	1810 - Field Period Assembly	222	199	234	-23	.90	-35	.85	1,285	Installation of heater tapes and saddle loops on VVSA#1 not started. No impact to critical path.	Unplanned fit up of C1/B1 and C1 /C2 and well as metrology driven impacts to the diag layouts.	
19	1901 - Stellarator Core Mngr & Integr	2,025	2,025	1,977		1.00	47	1.02	2,215			
2	Plasma Heating, Fueling & Vac Sys	348	348	348		1.00	0	1.00	348			
	CLOSED 2001-VPS Gas& Cond Sys Oversight	64	64	63		1.00	1	1.01	63			
	CLOSED 2501 - Neutral Beam Refurbishment	285	285	285		1.00	0	1.00	285			
3	Diagnostics	776	736	797	-41	.95	-61	.92	875			
31	3101 Magnetic Diagnostics	428	388	475	-41	.91	-87	.82	500	Saddle loop termination box fabrication not started. Mod coil co-wound loops not yet completed.	Principle driver of the cost variance was time spent trying to fix the oven used to heat shrink tubing on the co-wound loops.	

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ECP 52

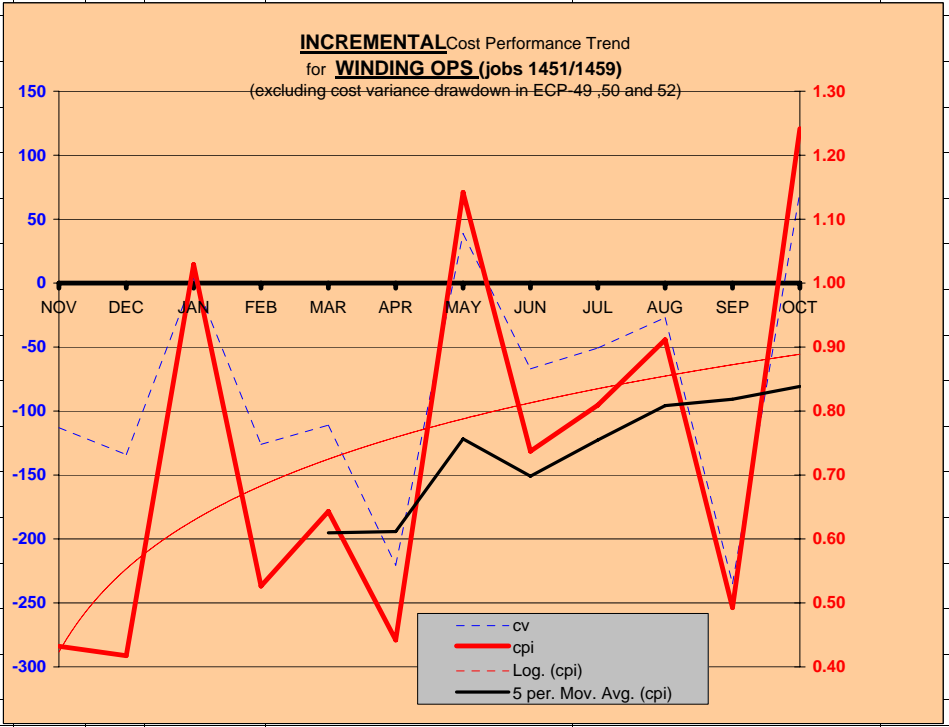
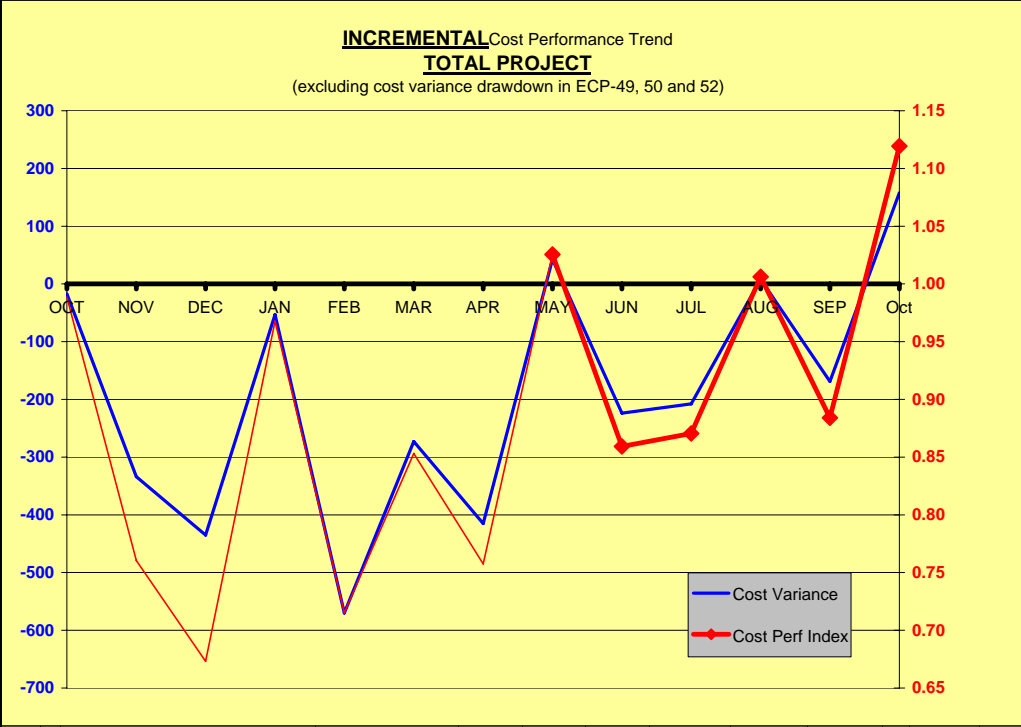
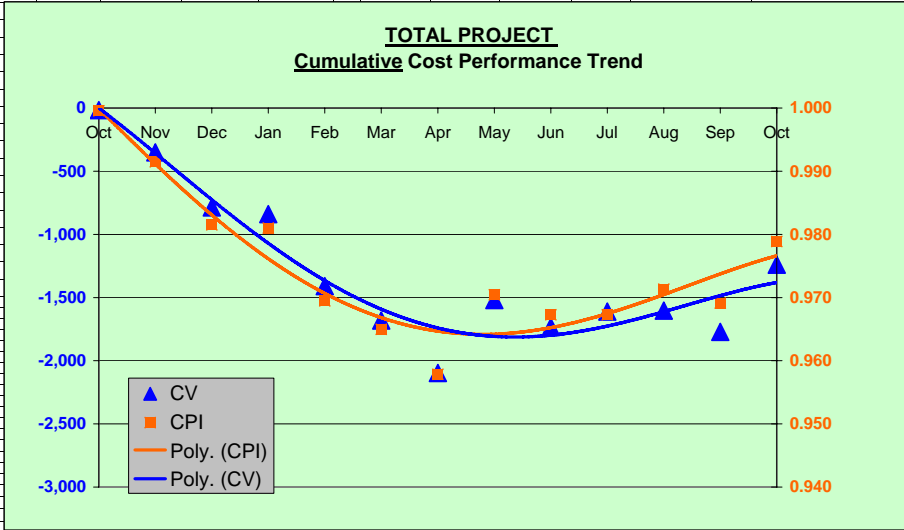
Variance Explanation

		Budgeted Cost		VARIANCES				Budget			
		BCWS	BCWP	ACWP	Sch Var	SPI	Cst Var	CPI	Thru FY07	Schedule	Cost
39	3901 - Diagnostics sys Integration	348	348	321		1.00	26	1.08	375		
4	Electrical Power Systems	721	721	711		1.00	10	1.01	722		
41	4101 - AC Power	108	108	107		1.00	1	1.01	108		
43	4301 - DC Systems	382	382	370		1.00	12	1.03	382		
44	4401 - Control & Protection	82	82	81		1.00	2	1.02	82		
45	4501 - Power Sys Dsn & Integr	148	148	152		1.00	-4	.97	148		
46	4601 - FCPC Bldg Mods	1	1	1		1.00		1.00	1		
5	Central I&C Systems	46	46	33		1.00	13	1.38	46		
58	5801 - Central I&C Integr	46	46	33		1.00	13	1.38	46		
6	Facility Systems	24	24	24	0	1.02	0	1.01	24		
	6163 - Facility Systems Support FY04	15	15	15		1.00	0	1.01	15		
CLOSED	6501 - Facility Systems Integration	9	9	9	0	1.04	0	1.00	9		
7	Test Cell Prep & Machine Assy	938	942	947	5	1.00	-5	.99	974		
CLOSED	7101 - Shield Wall Modif	32	33	33	1	1.02	0	1.00	33		
	7301 - Platform Design &	75	76	76	1	1.02	0	1.00	75		
	7401 - TC Prep & Mach Assy Planning	831	834	839	3	1.00	-5	.99	866		
8	Project Oversight & Support	9,181	9,181	9,175		1.00	6	1.00	11,002		
81	Project Management and Control	4,284	4,284	4,270		1.00	14	1.00	5,228		
	8101 - Project Management & Control	2,612	2,612	2,598		1.00	13	1.01	3,196		
	8102 - NCSX MIE Management ORNL	438	438	443		1.00	-5	.99	496		
	8998 - Allocations	1,234	1,234	1,228		1.00	5	1.00	1,536		
82	Project Engineering	4,427	4,427	4,435		1.00	-8	1.00	5,303		
	8202 - Engr Mgmt & Sys Eng Support	2,326	2,326	2,326		1.00	-1	1.00	2,781		
	8203 - Design Integration	868	868	862		1.00	6	1.01	1,036		
	8204 - Systems Analysis	992	992	1,004		1.00	-12	.99	1,216		
	8205 - Dimensional Control Coord.	241	241	242		1.00	-1	1.00	270		
84	Project Physics	470	470	470		1.00	0	1.00	471		
CLOSED	8401 - Project Physics	324	324	324		1.00	0	1.00	325		
CLOSED	8402 - Project Physics MIE ORNL	146	146	146		1.00	-1	1.00	146		
	Subtotal	57,586	57,470	58,710	-115	1.00	-1,240	.98	70,643		
	Contingency set-aside for cumulative cost variance								1,240		
	FY07 Contingency free balance								2,273		
	DCMA QA Inspection services								75		
	TOTAL PROJECT								74,232		

(2) Reflects an additional \$137k cost accrual based on the vendor's October earned value report

(3) No accrual adjustments for October

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		Budgeted Cost			VARIANCES				Budget			
		BCWS	BCWP	ACWP	Sch Var	SPI	Cst Var	CPI	Thru FY07	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			Contingency less c	
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	Conting.		
	<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>	for October only			
Thru Oct (ecp-39)		40,272	39,782	39,799	-490	0.99	-17	1.00	42,943	9,600	22.4%	
	<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	41,883	9,600	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>			22.1%	
Thru DEC (ecp-39)		43,219	41,738	42,524	-1481	0.97	-786	0.98	40,987	9,600	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>-53</i>	<i>0.97</i>			21.5%	
Thru JAN (ecp-39)		44,852	43,332	44,171	-1520	0.97	-839	0.98	39,393	9,600	24.4%	
	<i>PARS for FEB</i>	<i>1,471</i>	<i>1,431</i>	<i>2,001</i>	<i>-40</i>	<i>0.97</i>	<i>-570</i>	<i>0.72</i>			22.2%	
Thru FEB (ecp-39)		46,323	44,763	46,172	-1560	0.97	-1409	0.97	37,962	9,600	25.3%	
	<i>PARS for MAR</i>	<i>1,900</i>	<i>1,587</i>	<i>1,860</i>	<i>-313</i>	<i>0.84</i>	<i>-273</i>	<i>0.85</i>			21.6%	
Thru MAR (ecp-043)		48,223	46,350	48,032	-1873	0.96	-1682	0.96	37,255	8,720	23.4%	
	<i>PARS for APR</i>	<i>1,247</i>	<i>1,297</i>	<i>1,712</i>	<i>50</i>	<i>1.04</i>	<i>-415</i>	<i>0.76</i>			18.9%	
Thru APR (ecp-043)		49,470	47,647	49,744	-1823	0.96	-2097	0.96	35,958	8,720	24.3%	
	<i>PARS for MAY</i>	<i>1,025</i>	<i>2,238</i>	<i>1,661</i>	<i>1213</i>	<i>2.18</i>	<i>577</i>	<i>1.35</i>			18.4%	
Thru MAY (ECP-45)		50,495	49,885	51,405	-610	0.99	-1520	0.97	34,269	8,171	23.8%	
	<i>PARS for JUNE</i>	<i>1,375</i>	<i>1,367</i>	<i>1,581</i>	<i>-8</i>	<i>0.99</i>	<i>-214</i>	<i>0.86</i>			19.4%	
Thru June (ECP-45)		51,870	51,252	52,986	-618	0.99	-1734	0.97	32,902	8,171	24.8%	
	<i>PARS for JULY</i>	<i>1,563</i>	<i>1,751</i>	<i>1,629</i>	<i>188</i>	<i>1.12</i>	<i>123</i>	<i>1.08</i>			19.6%	
Thru July (ECP-49 & 50)		53,433	53,003	54,615	-430	0.99	-1611	0.97	31,448	7,874	25.0%	
	<i>PARS for AUG</i>	<i>1,912</i>	<i>1,323.6</i>	<i>1,315.5</i>	<i>-588</i>	<i>0.69</i>	<i>8</i>	<i>1.01</i>			19.9%	
Thru August (ECP 49 & 50)		55,345	54,327	55,930	-1018	0.98	-1603	0.97	30,124	7,874	26.1%	
	<i>PARS for SEP</i>	<i>1,290</i>	<i>1,288</i>	<i>1,457</i>	<i>-2</i>	<i>1.00</i>	<i>-169</i>	<i>0.88</i>			20.8%	
Thru September (ECP49 & 50)		56,635	55,615	57,387	-1020	0.98	-1772	0.97	28,836	7,874	27.3%	
	FY06 subtotal=	18,073	17,301	19,073	-772	0.96	-1772	0.91			21.2%	
	<i>PARS for OCT</i>	<i>951</i>	<i>1,855</i>	<i>1,323</i>	<i>905</i>	<i>1.95</i>	<i>532</i>	<i>1.40</i>				
Thru October (ECP 52)		57,586	57,470	58,710	-115	1.00	-1240	0.98	28,304	6,627	23.4%	
											19.0%	



Cost Performance Improvement Metrics

Monthly incremental cost variance average >-\$150k

	May	June	July	Aug	Sept	Oct
<i>Target</i>	-150	-150	-150	-150	-150	-150
Actual Monthly Cost Variance	43	-224	-208	8	-169	158
Average Monthly Cost Variance	43	-91	-130	-95	-110	-65

Monthly incremental CPI average >0.90

	May	June	July	Aug	Sept	Oct
<i>Target</i>	0.90	0.90	0.90	0.90	0.90	0.90
Actual Monthly CPI	1.03	0.86	0.87	1.01	0.88	1.12
Average Monthly CPI	1.03	0.94	0.92	0.94	0.93	0.96

Year end contingency free balance (after inclusion of cost variances >20%)

	May	June	July	Aug	Sept	Oct
<i>Target</i>	19.4%	19.6%	19.7%	19.8%	20.0%	
Current balance	19.4%	19.6%	19.9%	20.8%	21.2%	19.0%

Contingency Balance

