

Princeton University Plasma Physics Laboratory
 PPPL COST PERFORMANCE REPORT WORKBREAKDOWN STRUCTURE

7/12/05

NCSX

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

JUNE FY05

	CUMULATIVE TO DATE (from 4/1/03) (k)								ECP30	EAC	FY05	Variance Explanation		EAC
	Budgeted Cost			VARIANCES					Budget	Thru FY05	UNDER	Schedule	Cost	Change from May Report
	BCWS	BCWP	ACWP	Sch Var	SPI	Cst Var	CPI	Thru FY05	Thru FY05	(OVER)				
1 - Stellarator Core Systems	25,069	23,851	25,208	-1,218	.95	-1,357	.95	29,403	30,784	(1,372)				
12 Vacuum Vessel Systems	5,710	5,135	5,175	-575	.90	-41	.99	7,302	7,445	(143)				
CLOSED 1201 - Vacuum Vessel Prelim Dsn	424	424	424	0	1.00	0	1.00	424	424					
CLOSED 1202 - Vacuum Vessel R&D	1,791	1,791	1,771	0	1.00	21	1.01	1,791	1,771	21				
1203 - Vacuum Vessel Final Dsn	937	855	910	-82	.91	-55	.94	944	1,005	(62)	Final design tasks; Heater tape dsn, mag diag interface dwgs, thermal insulation. Final FDR slipped to August 8th due to manpower.			
1204-VV Sys Procurements (non VVS/	3			-3				257	20	237				
CLOSED 1206 - VV Field Weld Joint R&D	16	16	16		1.00	0	1.00	19	16	3				
1250 - Vacuum Vessel Fabrication	2,540	2,048	2,054 (1)	-492	.81	-6	1.00	3,867	4,209	(342)	Behind in fabricating the production panels. However MTM is still forecasting 1st delivery by Nov 05			
13 Conventional Coils	1,116	994	1,140	-121	.89	-146	.87	1,677	1,700	(23)				
1301 - TF Design	837	791	908	-47	.94	-118	.87	837	969	(132)	Successful conductor FDR held in May. Wedge casting FDR planned for July. Comprehensive FDR slipped another month to August 12th.	Underestimated Rushinski by factor of 3 due to redesign of leads.		
1302 - PF and CS Design		20		20		20		-	41	(41)				
1350 - TF Coil Fabr Prep	147	184	232	37	1.25	-48	.79	381	427	(45)		Technician time for setting up fabr facility underestimated.		
1351 - TF Coil Fabrication	131			-131				459	263	196	TF procurements and fabrication startup slipped due to 3 month delay in the final design.	TF fabrication and procurements delayed due to Final design slip.		
14 Modular Coils	15,552	15,031	16,157	-521	.97	-1,126	.93	17,135	18,275	(1,132)				
CLOSED 1401 - Mod Coil Prel.Dsn	303	303	304	0	1.00	-1	1.00	303	304	(1)				
CLOSED 1402 - Mod.Coil Analyses	239	239	239	0	1.00		1.00	239	239	(0)				
1403 - Modular Coil Final Design	2,919	2,678	2,824	-241	.92	-146	.95	3,141	3,109	32	FDR held on June 30th for component details. Fabrication dwgs to updated and released for fab in July. Assy drawings and analyses will not be completed until August.	Manpower under estimated.		
CLOSED 1404-MCWF R&D & 1st Prod Casting	2,534	2,534	2,552	0	1.00	-18	.99	2,534	2,552	(18)				
CLOSED 1405-Mod Coil Winding R&D Prep	168	168	168		1.00	0	1.00	168	168	0				
CLOSED 1406 - Mod. Coil Winding	2,214	2,214	2,250	0	1.00	-36	.98	2,214	2,250	(36)				
CLOSED 1410 MC Twisted Racetrack Fabr	799	775	1,016	-24	.97	-240	.76	799	1,026	(226)	TRC fabrication and warm testing completed. To be cold tested and dissected by August.	Unplanned overtime and time expended on developing a new approach for installing the outer bag re enforcement. JOB CLOSED. COST TO BE RECONCILED IN NEXT ECP.		
CLOSED 1407 -Mod Coil Winding Facility	2,523	2,523	2,546	0	1.00	-23	.99	2,523	2,546	(23)				

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					Budgeted Cost	VARIANCES				Budget	Thru FY05	UNDER	Schedule	Cost	Change from
						BCWS	BCWP	ACWP	Sch Var						
CLOSED 1412 - Complete Winding Facilities	310	310	526	0	1.00	-216	.59	310	526	(216)		Continued cost variance due to modifications and punch list tasks in response to experienced gained in TRC fab. (+89). JOB CLOSED. COST TO BE RECONCILED IN NEXT ECP.			
1415 - Dimensional Control Testing		7	6			1	1.11		8						
1408-Mod Coil Winding Supplies	339	329	353	-9	.97	-23	.93	596	553	43		Tom Meighan support (CC orders ?) not estimated.	Winding component procurements delayed due to lack of signed off dwgs.		
1409 - Mod. Coil Test Stand	483	437	769	-46	.91	-332	.57	488	872	(384)	Ready for TRC testing by mid July.	Gettelfinger engr oversight underestimated by factor of 5. 2 mm of design support not estimated. JOB TO CLOSED. COST TO BE RECONCILED IN NEXT ECP.			
1411-MCWF Fabrication S005242	2,593	2,489	2,575 (2)	-104	.96	-86	.97	3,420	4,013	(593)	Pattern B fabrication and C-1 machining. C-1 delivery forecast by early August.				
CLOSED 1413 - Mod Coil Fracture Analysis	23	23	28	0	1.00	-5	.83	23	28	(5)					
1451 - Mod Coil Winding	104		1	-104		-1		377	81	296	Prep for winding operations delayed due to late casting delivery.		Winding of C-1 coil slipped due to casting delivery		
15 Structures	35	35	36	0	1.00	-1	.97	35	36	(1)					
1501 - Structures Design	35	35	36	0	1.00	-1	.97	35	36	(1)					
16 16 - Coil Services															
17 Cryostat and Base	206	189	312	-17	.92	-123	.60	241	343	(103)					
1701-Cryost&Base Sprt Strct Dsn	206	189	312	-17	.92	-123	.60	241	343	(103)	PDR for Base support structure slipped to July 27.	Designer support underestimated by factor of 2. 1 1/2 MM of analysis (Dahlgren) req'd but not estimated.			
1751 - Cryostat Procurement															
1752 - Base Support Structure Procure															
18 Field Period Assembly	1,125	1,119	1,065	-7	.99	53	1.05	1,512	1,527	(15)					
CLOSED 1801-Field Period Assly	61	61	61	0	1.00	0	.99	61	61	(0)					
1802 - FP Assy Oversight&Support	273	273	319	0	1.00	-46	.86	311	375	(64)		HP higher than planned charges and rates plus OT to support the TRC fabrication.			
1803- FP Assy Toolg/Constructability	450	444	332	-7	.99	111	1.34	758	717	41					
1804-FP Assy Measurement	341	341	353		1.00	-12	.97	382	374	8					
19 1901 - Stellarator Core Mngtt&Int	1,326	1,349	1,322	23	1.02	27	1.02	1,502	1,457	44					
2 - Plasma Heating,Fueling & Vac	348	348	347	0	1.00	1	1.00	348	347	1					
CLOSED 2001-VPS Gas& Cond Sys Oversight	64	64	63	0	1.00	1	1.01	64	63	1					
CLOSED 2501 - Neutral Beam Refurbishment	284	284	284	0	1.00	0	1.00	284	284	0					
3 - Diagnostics	347	322	335	-25	.93	-13	.96	493	466	27					

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		Budgeted Cost			VARIANCES					Budget	Thru FY05	UNDER		Change from
		BCWS	BCWP	ACWP	Sch Var	SPI	Cst Var	CPI	Thru FY05	Thru FY05	(OVER)	Schedule	Cost	
31	3101 Magnetic Diagnostics	77	52	73	-25	.68	-21	.72	206	179	27	Fabrication of MC co-wound loops not yet started.	Engr ytd (Labik) double what was estimated for work scope completed.	
36	36 - Edge and Divertor Diagnosti								-	-				
38	38 - Electron Beam (EB) Mapping								-	-				
39	3901 - Diagnostics sys Integratic	270	270	262		1.00	7	1.03	287	287	(1)			
4	- Electrical Power Systems	513	402	399			-111	.78	3	1.01	614	509	106	
41	4101 - AC Power	81	81	81	0	1.00	1	1.01	81	81	1			
43	4301 - DC Systems	167	145	154	-22	.87	-9	.94	233	234	(1)	Power loop simulation and design documentation		
44	4401 - Control & Protection	1	1	24	0	1.00	-23	.04	1	24	(23)			
45	4501 - Power Sys Dsn & Integr	262	173	138	-89	.66	35	1.25	298	168	130	Power systems design 2 months behind. CDR held on July 7th. RAKI ONLY CHARGED 15% IN JUNE COMPARED TO 70% REQUESTED.		
46	4601 - FCPC Bldg Mods	1	1	1		1.00	0	.98	1	1	(0)			
									-	-				
5	- Central I&C Systems	37	37	33			0	1.00	4	1.12	40	36	4	
58	5801 -Central I&C Integr	37	37	33	0	1.00	4	1.12	40	36	4			
6	- Facility Systems	24	24	24			1.00	0	1.01	24	24	0		
	61 - Water Systems													
	6163 - Facility Systems Support FY04	15	15	15		1.00	0	1.01	15	15	0			
	62 - Cryogenic Systems								-	-				
	63 - Utility Systems								-	-				
CLOSED	6501 - Facility Systems Integratic	9	9	9		1.00	0	1.00	9	9				
									-	-				
7	- Test Cell Prep & Machine Assy	652	628	597			-24	.96	31	1.05	725	731	(6)	
CLOSED	7101 - Shield Wall Modif	32	32	32	0	1.00		1.00	32	32	(0)			
	7201 - Control Room Walls&Floo	48			-48				48	-	48	On hold awaiting FED. The control room walls have been determined to be a GPP project. The budgeted amount of \$39.6k will be redistributed TBD. No schedule impact.		
	7301 - Platform Design &	25	86	4	60	3.40	81	19.84	70	73	(3)	Work on nut plates started ahead of plan.		
	7401 - TC Prep & Mach Assy Pla	547	510	560	-37	.93	-50	.91	575	625	(50)			
75	Machine Assembly								-	-				
76	7601 - Tooling Design & Fabricat								-	-				
8	- Project Oversight & Support	5,749	5,749	5,776			0	1.00	-27	1.00	6,348	6,348		
81	Project Management and Control	2,639	2,639	2,667	0	1.00	-27	.99	2,934	2,934				
	8101 - Project Management & Control	1,789	1,789	1,809		1.00	-19	.99	1,969	1,969				
	8102 - NCSX MIE Management ORNL	217	217	216	0	1.00	1	1.00	242	242				
	8998 - Allocations	633	633	642	0	1.00	-9	.99	724	724				
82	Project Engineering	2,640	2,640	2,639	0	1.00	0	1.00	2,943	2,943				

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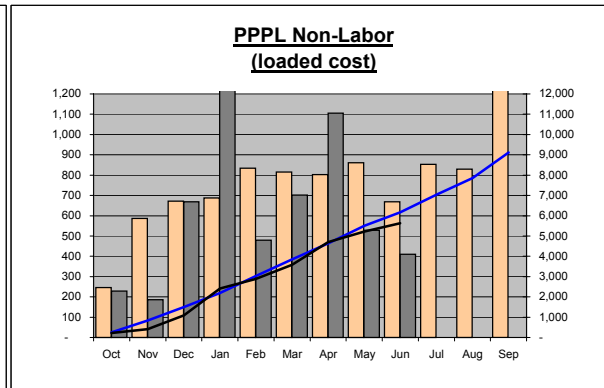
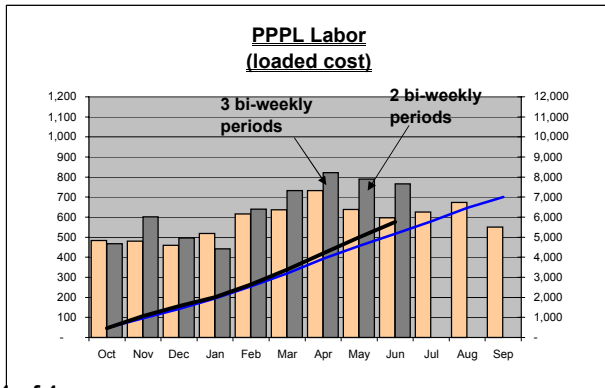
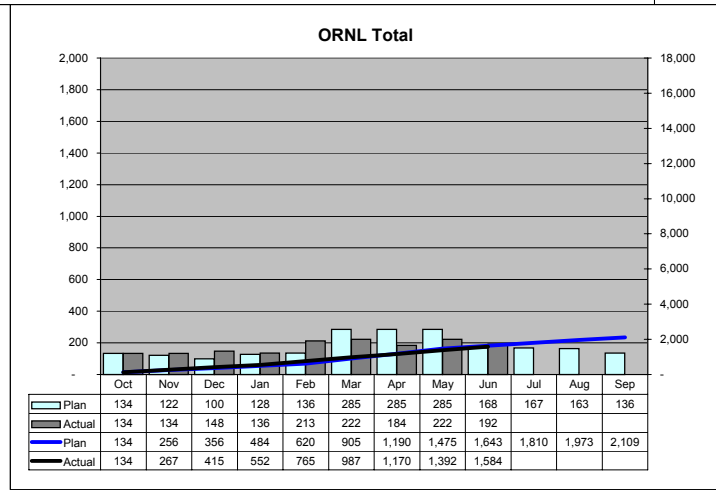
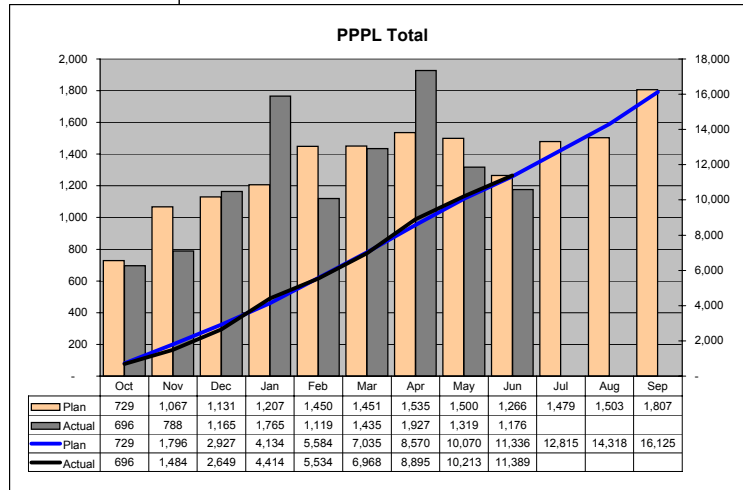
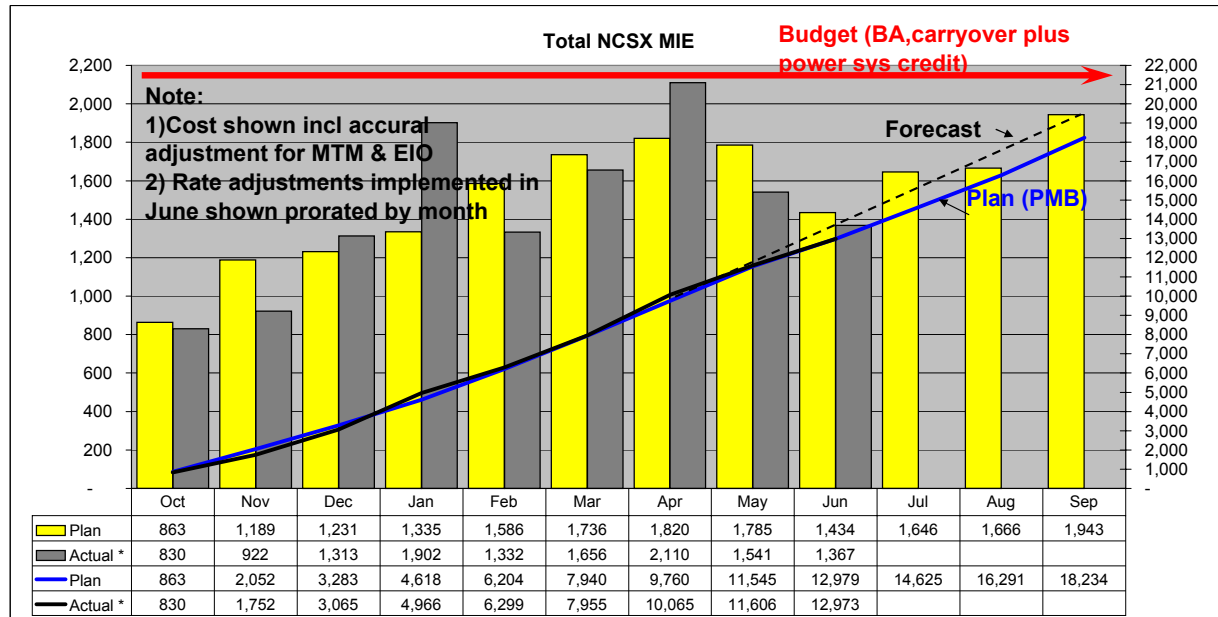
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	Budgeted Cost			VARIANCES					Budget	Thru FY05	UNDER		Change from
	BCWS	BCWP	ACWP	Sch Var	SPI	Cst Var	CPI	Thru FY05	Thru FY05	(OVER)	Schedule	Cost	
8202 - Engr Mgmt & Sys Eng Support	1,473	1,473	1,472	0	1.00	2	1.00	1,634	1,634				
8203 - Design Integration	683	683	666	0	1.00	17	1.03	722	722				
8204 - Systems Analysis	424	424	440	0	1.00	-16	.96	490	490				
8205 - Dimensional Control Coord.	60	60	62	0	1.00	-2	.97	97	97				
84 Project Physics	470	470	470		1.00	0	1.00	470	470				
<i>CLOSED</i> 8401 - Project Physcis	324	324	324		1.00	1	1.00	324	324				
<i>CLOSED</i> 8402 - Project Physics MIE ORNL	146	146	146		1.00	-1	1.00	146	146				
85 - Integrated Systems Testing													
Subtotal	32,740	31,362	32,719	-1,378	.96	-1,357	.96	37,996	39,244	(1,240)			
Contingency/Management Reserve								3,247					
DCMA QA Inspection services								75					
TOTAL PROJECT								41,318	39,244	2,073			
<div style="border: 1px solid black; padding: 5px; width: fit-content;"> Note: PPPL overhead rates changed in June to reflect severance cost and current estimate forecast. Net impact shows an increase of \$162k to the NCSX MIE project. </div>													
(1) Reflects add'l accrual of \$656k based on MTM's June earned value report													
(2) Reflects accrual reduction of \$282k based on EIO's June 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						
TEC=		92,401											
Contingency Balance (after ECP-34)		12,767	26%										
BCWR =		48,272											
Pending ECP's													
Job closure 1412 Winding Faacilities	July	0.252											
Job Closure 1410 TRC fab	July	0.261											
Job closure 1409 Coil Test Stand	July	0.415											
		0.928											
Remaining contingency=		11,839	25%										

Stellarator Projects Cost Status FY05



NCSX MIE FINANCIAL SUMMARY

BA	FY03	FY04	FY03/04 carryover	FY05					FY05	PROGRAM TO DATE	FY06	FY07	FY08	FY09	TOTAL TEC
				Initial Fin Plan	DOE incremen	Jan Fin Plan	May Fin Plan	July Fin Plan	Budget						
ORNL	\$1,320,000	\$2,809,000	\$135,304	\$1,500,000		\$300,000	\$300,000	\$200,000	\$2,435,304	\$6,429,000	\$1,000,000	\$1,000,000	\$650,000	\$250,000	\$9,329,000
PPPL	\$6,577,000	\$13,037,000	\$3,426,421	\$14,300,000	\$1,700,000	-\$300,000	-\$300,000	-\$200,000	\$18,626,421	\$34,814,000	\$14,900,000	\$14,900,000	\$15,250,000	\$3,133,000	\$82,997,000
DCMA		\$75,000	\$75,000	\$0	<i>DCMA contract between DOE-PSO and Chicago. Managed by DOE-PSO.</i>					\$75,000	\$75,000				\$75,000
TOTAL	\$7,897,000	\$15,921,000	\$3,636,725	\$15,800,000					\$21,136,725	\$41,318,000	\$15,900,000	\$15,900,000	\$15,900,000	\$3,383,000	\$92,401,000

Cost	FY03	FY04						FY05 thru June					
ORNL	\$1,146,273	\$2,847,423						\$1,583,544	\$5,577,240				
PPPL	\$4,795,653	\$11,028,219						\$11,016,859					
<i>d-site power sys dsn/fab</i>		\$438,707	<i>D-site pwr systems reclassified as non MIE & transferred to non MIE account. DOE provided add'l BA in recognition of this being an upgrade.</i>					-\$438,707					
<i>dcma credit</i>		-\$75,000	<i>PPPL cost accounting credit applied. Reciprical cost applied to QA organization recovered as indirect cost for DCMA services.</i>										
sub total PPPL	\$4,795,653	\$11,391,926						\$10,578,152	\$26,765,731				
DCMA		\$0						\$15,000	\$15,000				
TOTAL	\$5,941,926	\$14,239,349						\$12,176,696	\$32,357,971				

Reconciliation to June CPR

BA	Cum BA	Budget (BAC) Reported	delta												
		\$41,255,000													
		\$75,000		DCMA Managed by DOE-PSO											
	\$41,318,000	\$41,330,000	-\$12,000	?. Correct in next CPR											
COST	Cum Cost (official accounting records)	ACWP Cum to date Reported													
	\$32,342,971	\$32,342,971													
		\$374,000		progress based accrual adjustment for EIO & MTM contract											
		\$2,029		rounding error corrected in next cpr report											
		\$32,719,000													