

PrincetonUniversity Plasma Physics Laboratory										9/12/05			
PPPL COST PERFORMANCE REPORT WORKBREAKDOWN STRUCTURE													
NCSX													
**** Cumulative to date FY03, FY04 & FY05****													
AUGUST FY05										Variance Explanation			
CUMULATIVE TO DATE (from 4/1/03) (k)								ECP36					
Budgeted Cost			VARIANCES					Budget					
								Thru FY05	Schedule	Cost			
1 - Stellarator Core Systems			28,648	27,451	28,333		-1,197	.96	-882	.97	30,390		
12 Vacuum Vessel Systems			6,520	6,240	6,224		-280	.96	16	1.00	7,340		
CLOSED	1201 - Vacuum Vessel Prelim Dsn		424	424	424		0	1.00	0	1.00	424		
CLOSED	1202 - Vacuum Vessel R&D		1,791	1,791	1,771		0	1.00	21	1.01	1,791		
	1203 - Vacuum Vessel Final Dsn		944	897	935		-46	.95	-38	.96	944	Final FDR slipped from August 8th to mid-September 1 due to lack of designer manpower.	
	1204-VV Sys Procurements (non VVS/		18				-18				257		
CLOSED	1206 - VV Field Weld Joint R&D		18	18	16		0	1.00	1	1.08	18		
	1250 - Vacuum Vessel Fabrication		3,326	3,109	3,077 (1)		-217	.93	32	1.01	3,906	Completion of all panels and the second 120 deg assy behind. MTM still forecasting mid November delivery of the first segment but PPPL is forecast a month slip.	
13 Conventional Coils			1,489	1,044	1,305		-444	.70	-261	.80	1,677		
	1301 - TF Design		837	815	946		-22	.97	-131	.86	837	Final design complete except for a coil spec and final analysis check. Delivery of conductor delayed to the end of October due to a vendor furnace breakdown.	Underestimated Rushinski by factor of 3 due to redesign of leads.
	1302 - PF and CS Design			21			21		21		-		
	1350 - TF Coil Fabr Prep		294	208	332		-85	.71	-124	.63	381	Behind on taping machine, TF mold, and winding mandrel. Currently trouble shooting electrical controls for the winding table. Forecast facility availability slip from end September to early November.	Designer cost almost double and electrician time for setting up/troubleshooting the winding facility.
	1351 - TF Coil Fabrication		358		27		-358		-27		459	TF procurements and fabrication startup slipped due to 3 month delay in the final design.	
14 Modular Coils			17,529	17,169	17,754		-360	.98	-585	.97	18,098		
CLOSED	1401 - Mod Coil Prel.Dsn		303	303	304		0	1.00	-1	1.00	303		
CLOSED	1402 - Mod.Coil Analyses		239	239	239		0	1.00		1.00	239		
	1403 - Modular Coil Final Design		3,085	2,731	3,067		-354	.89	-336	.89	3,141	Completion of type C fabrication dwgs will not be completed until end of September. Type A design barely started but was originally planned to be completed by this FY. Revised plan developed with work around to not impact the critical path. FDR for type a forecast for Jan 2007.	Manpower under estimated. Preliminary estimates for Type A design 3x greater than planned. Type B 2x greater. ETC estimates being evaluated.
CLOSED	1404-MCWF R&D & 1st Prod Casting		2,534	2,534	2,552		0	1.00	-18	.99	2,534		
CLOSED	1405-Mod Coil Winding R&D Prep		168	168	168			1.00	0	1.00	168		
CLOSED	1406 - Mod. Coil Winding Facility		2,214	2,214	2,250		0	1.00	-36	.98	2,214		
CLOSED	1410 MC Twisted Racetrack Fabr		1,080	1,080	1,070		0	1.00	10	1.01	1,080		

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CLOSED	1407 -Mod Coil Winding Facility	2,523	2,523	2,546	0	1.00	-23	.99	2,523	
CLOSED	1412 - Complete Winding Facilities	540	540	543	0	1.00	-3	.99	540	
CLOSED	1419 - Winding Facility Modification			46			-46			Misc unplanned modifications to the winding facility. Job Closed
	1414 - Coil Testing	49	21	52	-28	.43	-30	.41	77	Testing of TRC behind due to cryogenic and electrical systems troubleshooting.
CLOSED	1415 - Dimensional Control Testing	15	15	25		1.00	-10	.59	15	Winding lacing trials completed. Job closed.
	1408-Mod Coil Winding Supplies	520	442	440	-78	.85	2	1.01	594	Winding hardware delayed due to late receipt of drawings.
CLOSED	1409 - Mod. Coil Test Stand	854	854	872	0	1.00	-19	.98	854	
	1411-MCWF Fabrication S005242	3,110	3,477	3,505 (2)	368	1.12	-28	.99	3,430	C-1 and A-1 machining behind, C2, C3, C-4, C-5 castings ahead of schedule. Workaround plan accommodating late delivery of C-1 in place (coil winding to be done on two shift basis.
CLOSED	1413 - Mod Coil Fracture Analysis	23	23	28	0	1.00	-5	.83	23	
	1451 - Mod Coil Winding	272	4	46	-268	.02	-42	.09	364	Prep for winding operations delayed due to late casting delivery.
15	Structures	35	67	70	32	1.94	-3	.96	35	
	1501 - Structures Design	35	67	70	32	1.94	-3	.96	35	
16	16 - Coil Services								-	
17	Cryostat and Base	229	194	350	-35	.85	-156	.55	241	
	1701-Cryost&Base Sprrt Strct Dsn	229	194	350	-35	.85	-156	.55	241	PDR for Base support structure slipped again to August 25. Gettelfinger being diverted to resolve coil test stand cryostat design.
	1751 - Cryostat Procurement								-	Designer support underestimated by factor of 2. 1 1/2 MM of analysis (Dahlgren) req'd but not estimated.
	1752 - Base Support Structure Procure								-	
18	Field Period Assembly	1,411	1,306	1,214	-105	.93	92	1.08	1,512	
CLOSED	1801-Field Period Assly	61	61	61	0	1.00	0	.99	61	
	1802 - FP Assy Oversight&Support	298	298	348	0	1.00	-50	.86	311	HP higher than planned charges and rates plus OT to support the TRC fabrication. (historical variance unchanged in recent months)
	1803- FP Assy Toolg/Constructability	679	587	411	-92	.86	176	1.43	758	Assy fixturing design running 2-3 months behind schedule.
	1804-FP Assy Measurement	373	360	394	-13	.97	-34	.91	382	Raftopolous charge rate 50% compared to 40% budgeted.
19	1901 - Stellarator Core Mngtt&Int	1,436	1,431	1,417	-5	1.00	14	1.01	1,488	
2	2 - Plasma Heating,Fueling & Vac	348	348	347	0	1.00	1	1.00	348	

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CLOSED 2001-VPS Gas& Cond Sys Oversight64646301.0011.0164																																						
CLOSED 2501 - Neutral Beam Refurbishment28428428401.0001.00284																																						
3 - Diagnostics445376375-69.8511.00493																																						
31	3101 Magnetic Diagnostics		164	95	106	-69	.58	-11	.90	206	Procurement and fabrication of VV saddle loops behind. Forecast to be available for installation when VVSA arrives.																											
36	36 - Edge and Divertor Diagnosti									-																												
38	38 - Electron Beam (EB) Mapping									-																												
39	3901 - Diagnostics sys Integratio		281	281	269	0	1.00	12	1.05	287																												
4 - Electrical Power Systems599445456-154.74-11.98614																																						
41	4101 - AC Power		81	107	81	25	1.31	26	1.33	81	Note: Status not received for the month of August for WBS 4. Analysis reflects last months report. Power loop simulation and design documentation. Fabrication of bus components not yet started. Mainly a FY04 variance for overload protection design. Power systems design 2 months behind. FDR for c-site cabling planned for September 05. RAKI ONLY CHARGED 26% IN JULY COMPARED TO 70% REQUESTED.																											
43	4301 - DC Systems		219	152	192	-68	.69	-41	.79	233																												
44	4401 - Control & Protection		1	4	44	3	3.85	-40	.09	1																												
45	4501 - Power Sys Dsn & Integr		296	181	138	-115	.61	43	1.31	298																												
46	4601 - FCPC Bldg Mods		1	1	1		1.00	0	.98	1																												
5 - Central I&C Systems38383301.0051.1540																																						
58	5801 -Central I&C Integr		38	38	33	0	1.00	5	1.15	40																												
6 - Facility Systems2424241.0001.0124																																						
61 - Water Systems																																						
	6163 - Facility Systems Support FY04		15	15	15		1.00	0	1.01	15																												
62 - Cryogenic Systems																																						
63 - Utility Systems																																						
CLOSED 6501 - Facility Systems Integratic9991.0001.009																																						
7 - Test Cell Prep & Machine Assy666652723-14.98-71.90685																																						
CLOSED 7101 - Shield Wall Modif32323201.001.0032																																						
	7201 - Control Room Walls&Floo		8			-8				8	On hold awaiting FED to install walls (under a GPP project)																											
	7301 - Platform Design &		60	86	44	26	1.43	42	1.97	70	Work on platform fabrication started ahead of plan.																											
	7401 - TC Prep & Mach Assy Plar		566	535	647	-31	.94	-113	.83	575																												
75	Machine Assembly									-																												
76	7601 - Tooling Design & Fabricat									-																												
8 - Project Oversight & Support6,1456,1446,12301.00211.006,348																																						

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81	Project Management and Control	2,834	2,834	2,841	0	1.00	-7	1.00	2,934	
	8101 - Project Management & Control	1,908	1,908	1,909		1.00	-1	1.00	1,969	
	8102 - NCSX MIE Management ORNL	234	234	241		1.00	-8	.97	242	
	8998 - Allocations	693	693	692	0	1.00	1	1.00	724	
82	Project Engineering	2,841	2,840	2,812	0	1.00	28	1.01	2,943	
	8202 - Engr Mgmt & Sys Eng Support	1,580	1,580	1,575	0	1.00	4	1.00	1,634	
	8203 - Design Integration	709	709	677	0	1.00	31	1.05	722	
	8204 - Systems Analysis	468	467	476	0	1.00	-8	.98	490	
	8205 - Dimensional Control Coord.	84	84	84	0	1.00	1	1.01	97	
84	Project Physics	470	470	470		1.00	0	1.00	470	
CLOSED	8401 - Project Physcis	324	324	324		1.00	1	1.00	324	
CLOSED	8402 - Project Physics MIE ORNL	146	146	146		1.00	-1	1.00	146	
	85 - Integrated Systems Testing								-	
Subtotal		36,914	35,480	36,416	-1,434	.96	-935	.97	38,944	
Contingency/Management Reserve									2,299	
DCMA QA Inspection services									75	
TOTAL PROJECT									41,318	
(1) Reflects accrual reduction of \$610k based on MTM's June earned value report										
(2) Reflects accrual increase of \$611.295k 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		
	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		

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Variance Explanation

Schedule

Cost

Note: PPPL overhead rates changed in June to reflect severance cost and current estimate forecast. Net impact shows an increase of \$210k to the NCSX MIE project.