

# NCSX Project Closeout Update: June 4, 2008



- **Attention to Safety in Times of Change**

- Feedback from DOE

- Closeout Plan

- Updated Plan for Next 5-months

R. Strykowski

- New Scope

- Materiel Disposition

E. Perry

- Document & Data Management

P. Heitzenroeder

# Revised Guidance from DOE



- On May 29, DOE HQ asked our Site Office to develop a closeout plan with PPPL and ORNL for HQ review and approval asap but no later than June 30.
- This plan is to include the following:

- Complete fabrication of both the Modular and Toroidal Field Coils. These, and other existing components such as the vacuum vessel assembly, should be warehoused for possible future use.
- Bring all other activities to a reasonable and documented conclusion.
- Cease immediately any procurement activities unless approved by me.
- Identify the impacts including loss of personnel and the associated costs with these impacts.
- Develop a plan to document engineering lessons learned from the project so that future DOE projects may benefit from the work.
- Provide the cost, scope, and schedule to perform the above and any other activities you believe are appropriate.

Team Mtg June 4, 2008

# DOE Feedback on our Proposed Closeout Plan Options



- Complete fabrication of major stellarator components very close to completion
  - Modular coils **OK**
  - Toroidal field coils **OK**
  - Vacuum vessel sectors with installed services **OK**
- Complete design integration of the stellarator core
  - Cryostat & cryogen supply/distribution system design **Not in MIE; maybe future R&D**
  - Electrical leads/neutral beam transition duct design through PDR **Not in MIE; maybe future R&D**
  - Complete FDRs of conventional coil support structures **OK**
  - Complete & document magnet analyses: coil protection limits and strategy; operating scenarios and fault modes; coil cooling **Documentation OK but do not do any new design analyses as part of the MIE.**
  - Update the assembly sequence plan and assembly estimates **No. Do not do as part of MIE.**
- Prototype critical assembly operations
  - Assemble one complete field period through installation of two half-periods over a vacuum vessel sector (Station 3). **Will consider a 2nd Station-2 HPA, plus a trial fit of one HPA over a VVSA (trial fit & documentation only - no major rework) but Project must provide DOE a compelling justification of value, and show that it fits within remaining budget envelope**
- Document and publish contributions to fusion engineering knowledge made by the NCSX project. **OK**
- Secure equipment with supporting documentation **OK**

# Updated Plan for Remainder of FY08

(Ron is presenting a 5-month look ahead at this meeting)



- Design
  - FDRs of conventional coil support structures
  - Bring all remaining design activities to a suitable break point this month, terminating further new work, and documenting work to date
- Construction
  - Complete modular coil VPIs
- Assembly
  - Bring all remaining vacuum vessel services to a suitable break point this month, terminating further new work, and documenting work to date
  - Continue Station-2 through the 2<sup>nd</sup> half period assembly only
  - Continue Station-3 through the 1<sup>st</sup> field half period fit up test only
  - Bring all remaining Station-5 & 6 planning to a suitable break point this month, terminating further new work, and documenting updates of work to date
- Procurements
  - Complete TF contract & minimum orders that support 2ns Station-2 3-pack, and Station-3 HPA trial fit
  - All new procurements greater than \$50K require DOE HQ approval
  - Purchase card orders must be pre-approved by J. Chrzanowski, R. Strykowski, or M. Viola
- New Scope
  - Documentation completion & archival (Heitzenroeder)
  - Equipment disposition (Perry)

Team Mtg June 4, 2008



INCLUDED IN CLOSEOUT PLAN	Activity ID	Activity Description	Duration (work days)	Forecast Start	Forecast Finish	% Cmpl	ETC	FY08				FY09					
								MAY	JUN	JUL	AUG	SEP	OCT	NOV	D		
																ORNL	
	1355-106	TF/PF Local I&C - FDR	0		10SEP08		0.00										
	1355-105C	Resolve FDR Chits	10	11SEP08	24SEP08		6,040.00										
	1355-107	Prep req,bid,award T/C and wire	20	25SEP08	22OCT08		1,878.72										
	1355-109	Deliver of T/C and wire	40	23OCT08	19DEC08		13,060.00										
<b>Job: 1416 - Mod Coil Type AB Fnl Dsn-COLE</b>																	
<b>Analysis and closeout documentation</b>																	
X	1416-601	Prepare EM and structural analysis of leads	107*	31JAN08A	30JUN08	70	15,279.00										
X	1416-650	Prepare cooling analysis of lead area	18	02JUN08*	25JUN08		24,160.00										
X	1416-651	Prepare cooling analysis coefficient for cryosta	18	02JUN08*	25JUN08		12,080.00										
<b>ECN Modifications</b>																	
X	1416-801	ECN Mods-Resize vertical port boot	40*	01MAY08A	26JUN08	40	3,624.00										
X	1416-802	ECN Mods-Revise Type B cooling lines	40*	01MAY08A	26JUN08	40	1,812.00										
X	1416-803	ECN Mods-Issue DXF shim files for fab	40	02JUN08*	28JUL08		3,020.00										
X	1416-805	ECN Mods-Add TC's at bottom of 101,102,103 dwgs	40*	01MAY08A	26JUN08	80	2,416.00										
X	1416-806	ECN Mods-Revise dwg 123-151	40	02JUN08*	28JUL08		1,510.00										
<b>Job: 1421 - Mod Coil Interface Design-COLE</b>																	
<b>Inboard Interface-CC</b>																	
X	1421-3155	Resolve C-C shim FDR comments	21	02JUN08*	30JUN08		18,120.00										
X	INTRF-100	Misc travel, meetings,reporting,job 1416&1421	271*	01MAY07A		LOE	0.00										
<b>Job: 1901 - Stellarator Core Mngtt&amp;Integr-COLE</b>																	
<b>191 - Stellarator Core Management &amp; Oversight</b>																	
X	1901-08	WBS 191 FY08	249*	01OCT07A	29SEP08	LOE	61,023.96										
X	1901-09	WBS 191 FY09	121*	01OCT08*	31MAR09	LOE	46,385.40										
<b>192 - Stellarator Core Integr &amp; Global Analysis</b>																	
X	1902-08	WBS 192 FY08	249*	01OCT07A	29SEP08	LOE	50,185.84										
	1902-09	WBS 192 FY09	247*	01OCT08*	28SEP09	LOE	713,092.71										
<b>193 - Risk Mitigation Tasks</b>																	
	RISK-43	Bolt preload could relax with time.	61	03MAR08A	26AUG08	10	34,443.00										
	RISKMIT	Field Period Assy Risk Mitigation Tasks Complete	0		26AUG08		0.00										
	RISK-696	consider a bringing all 3 120 degree field perio	227	03MAR08A	29APR09	20	153,221.03										
	ADD-01	Nomex batt insulation	20	02JUN08	27JUN08		0.00										
<b>Job: 1806 - FP Assembly specs and drawings-COLE</b>																	
<b>1.00-VV Prep Station</b>																	
	1803-609	Detail dwgs-spool piece	50	22AUG08	31OCT08		20,218.60										
<b>Station 3-Modular Coil to VVSA Assembly</b>																	
X	1803-301	Station 3 Assembly Specification	239*	02JUL07A	16JUN08	90	3,624.00										
X	1803-305	Station 3 Assembly Drawings	239*	02JUL07A	16JUN08	90	1,584.00										
<b>Station 5-Final Field Period Assembly</b>																	
	1803-501	Station 5 Assembly Specification	0*	17JUN08*	16JUN08		0.00										
	1803-509	Field period Assy Dwgs prelim only	132*	01FEB08A	06AUG08	60	34,056.00										
<b>6.00-Final Machine Assembly</b>																	
	1803-601	Station 6 Assembly Specification	120	02JUN08*	18NOV08		67,331.92										
	1803-605	Station 6 Assembly Drawings prelim only	141*	01MAY08A	18NOV08	30	46,351.11										
	1803-613	Detail dwgs-man access port (deleted)	0	02JUN08	30MAY08		0.00										



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								MAY	JUN	JUL	AUG	SEP	OCT	NOV	D		
	1803-010	meetings,reporting,/presentations assy models	194*	31JAN08A	31OCT08	LOE	114,603.75										ORNLEM dsn revie
<b>Dahlgren</b>																	
<b>Job: 1702 - Base Support Struct Design-DAHLGREN</b>																	
X	1702-530	FDR labor cost (accounting lag)	10	02JUN08	13JUN08		11,688.80										
<b>Job: 1501 - Coil Structures Design-DAHLGREN</b>																	
X	1501-533	Detail CAD Drawings,BOM	270*	01JUN07A	30JUN08	75	21,319.30										EA//EM =20hr ; EA//DM =710 ;
X	1501-533F	Integrated Stress Analysis	186*	01OCT07A	30JUN08	75	27,202.56										EA//EM =640hr ;
X	1501-536	Issue dwgs for review	0		30JUN08*		0.00										
X	1501-549	Update C.S.Support Attacment Design	27*	01MAY08A	09JUN08	75	2,036.70										ea//em=20;ea//dm=40
X	1501-562	Prepare Specs for Coil Structure & CSS h/w	5	24JUN08	30JUN08		3,542.00										EA//EM =20hr ;
X	1501-537	FDR Prep	5	24JUN08	30JUN08		12,370.68										EA//EM =38hr ; EA//DM =49 ;
X	1501-541	Coil Support Structures - FDR	0		30JUN08		0.00										
	1501-545	Resolve Chits	5	01JUL08	08JUL08		5,844.40										EA//EM =20hr ; EA//DM =20 ;
	1501-558	Prepare requisition for Coil Structure & CSS h/w	10	09JUL08	22JUL08		3,542.00										EA//EM =20hr ;
<b>Ellis</b>																	
<b>Job: 8205 - Dimensional Control Coordin-ELLIS</b>																	
<b>Station 3-Modular Coil to VVSA Assembly</b>																	
X	METFY08R	Support FPA Station 2	170*	01FEB08A	30SEP08	LOE	15,939.00										ellis =90hr ea//
X	METDCP-3	Dimensional control plans for station 3	92*	01FEB08A	10JUN08	67	4,675.44										EA//EM =80hr ;
X	STAT3 PREP	Station 3 preparations	20	02JUN08	27JUN08		14,168.00										ellis =80
	METFY08RX	Support FPA Station 3	341	30OCT08*	22MAR10	LOE	90,836.46										ellis =240 hr ea//em=240hr
	METDCP-5	Dimensional control plans for station 5	40	06AUG08	01OCT08		21,282.99										EA//EM =120hr ;
<b>Goranson</b>																	
<b>Job: 1601 - Coil Services Design-GORANSON</b>																	
<b>161 - LN2 Distribution</b>																	
	191-001	Title I design WBS 161 LN2 manifolds&piping	86*	01FEB08A	02JUN08		585.00										ORNLEM =391hr ;
X	191-002	Coil Serv-LN2 manifolds&piping-PDR prep etc	3*	03JUN08	05JUN08		14,496.00										
	162-011A	R&D pressure drop simulation	15	06JUN08	26JUN08		13,040.00										ORNLEM =40hr ;ornl41=7.0
X	162-217	PDR	0		05JUN08		0.00										
	161-003	Resolve PDR comments	5	06JUN08	12JUN08		6,040.00										ORNLEM =40hr ;
	161-004	Update cost estimate for Coil Services	0		30JUN08*		0.00										
	191-011	Title II design WBS 161 LN2 manifolds&piping	60	13JUN08	08SEP08		71,500.00										ORNLEM =522hr ;
	191-012	Coil Services-LN2 manifolds&piping - FDR	1	09SEP08	09SEP08		1,208.00										ORNLEM =08hr ;
	161-110	Fabrication specifications	65	09JUN08	09SEP08		48,320.00										ornlem=320
	191-037	Prep Req,Bid,Award-manifolds,hoses,valves etc	25	10SEP08*	14OCT08		0.00										
	191-038	Fab and deliver-manifold assy,hoses,valves etc	90	15OCT08*	02MAR09		134,774.55										4 =52.205\$sk ; EM/TB =564hr ; em//sm=141
	161-100	meetings/reporting/presentations	128*	01FEB08A	31JUL08	LOE	3,805.20										ornlem=75
	191-031	Title III engr WBS 161	118	10SEP08	05MAR09	LOE	34,424.59										
<b>162 - Electrical Leads</b>																	
	1416-503C	Complete drawings of MC power cable connections	95*	01FEB08A	13JUN08	50	0.00										
	161-209	Route MC leads	0		13JUN08*	50	0.00										
	132-001	Title I design WBS 162 Coil leads	143*	01FEB08A	21AUG08		28,725.00										ORNLEM =566hr ;
	161-205	Determine lead gauges	0		30MAY08*	90	0.00										
	161-207	Locate Thermal Transition Boxes (TTB)	0		09JUN08*		0.00										
	161-211	Route PF, TF leads	0		11JUL08*		0.00										
	161-213	Layout of TF, PF terminations	0		25JUL08*		0.00										
	161-215	Layout of TTB	0		12AUG08*	25	0.00										
	161-217	Develop SRD	0		15AUG08*		0.00										
	132-002	Coil Services-Electr Coil leads - PDR (incl SRD)	1	22AUG08	22AUG08		1,208.00										ORNLEM =08hr ;

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								MAY	JUN	JUL	AUG	SEP	OCT	NOV	D			
	161-219	PDR	0		22AUG08		0.00											
	162-003	Resolve PDR comments	5	25AUG08	29AUG08		6,040.00											
	132-011	Title II design WBS 162 Coil leads	139	02SEP08	26MAR09		108,061.24											
	162-013	Release final drawings for MC lead stubs	26	25AUG08	30SEP08		0.00											
	162-013.1	Procure MC lead stubs	65	01OCT08	12JAN09		18,806.40											
	161-011A	R&D build mounts & lead terminations	60	25AUG08	17NOV08		24,432.13											
	162-100	meetings/reporting/presentations	170*	01FEB08A	30SEP08	LOE	10,947.50											
<b>163 - Coil Protection System</b>																		
	163.001	interface design electric leads inside cryostat	64	01OCT08*	09JAN09		31,576.20											
<b>Heitzenroder</b>																		
<b>Job: 8202 - Engr Mgmt &amp; Sys Eng Sprt-HEITZENROED</b>																		
	X	8205DC	document control & admin support	291*	01FEB08A	31MAR09	LOE	23,630.52										
	X	8205FY08.2	Engr mgt & systems engr FY08	170*	01FEB08A	30SEP08	LOE	249,616.43										EA/EM =954h EA/EM =190h EE/EM =190h
	X	8205FY09	Engr mgt & systems engr FY09	121*	01OCT08*	31MAR09	LOE	205,071.82										
<b>Job: 8221 -Documentation Closeout-HEITZENROEDER</b>																		
<b>Safe and store NCSX hardware assets</b>																		
	X	8221-100	Documentation	20	02JUN08	27JUN08		0.00										
<b>Kalish</b>																		
<b>Job: 1361 - TF Fabrication-KALISH</b>																		
<b>TF Title III and Fabrication Oversight</b>																		
	X	131-033C	Title III engr,inspection, support	184*	02JAN08A	18SEP08	LOE	45,603.23										etc= Kalish
<b>TF Fabrication Contract</b>																		
	X	1361C-114	Fab, Test & Deliver Coil #14	21*	27MAY08A	24JUN08	61	18,550.00										48=47 ;
	X	1361C-115	Fab, Test & Deliver Coil #15	1	17JUL08*	17JUL08		47,220.00										48=47 ;
	X	1361C-116	Fab, Test & Deliver Coil #16	1	08AUG08*	08AUG08		47,220.00										48=47 ;
	X	1361C-117	Fab, Test & Deliver Coil #17	1	02SEP08*	02SEP08		47,220.00										48=47 ;
	X	1361C-118	Fab, Test & Deliver Coil #18	1	24SEP08*	24SEP08		47,220.00										48=47 ;
	X	1351-195X	ALL TF COILS DELIVERED	0		24SEP08		0.00										
<b>Job: 1354 - Trim Coil Design &amp;Procurement-KALISH</b>																		
<b>Trim Coil **Updated estimate**</b>																		
	X	TRIM-170	Complete Trim Coil Detailed Drawings	69*	25MAR08A	30JUN08	80	7,658.04										kalish =68hr ; RUSHINSKI =114hr CRUIKSHANK=114
	X	TRIM-200	Assy drawings & parts list	64*	01APR08A	30JUN08	90	2,019.00										kalish =36hr ; RUSHINSKI =60hr ; CRUIKSHANK=60
		TRIM-240	Trim Coil Procurement time	29	01JUL08*	11AUG08		12,007.44										kalish =60hr ;RUSHINSKI
		TRIM-250	AWARD TRIM COIL PROCUREMENT	0		11AUG08*		0.00										
		TRIM-260	Vendor Design and Fixture Fabrication	80	12AUG08	04DEC08		255,600.00										41=200\$ ;
		TRIM-274	Trim Coil Bracket Procurement time	25	02SEP08*	06OCT08		8,079.66										kalish=40;rushinski=8
		TRIM-274M	Award Trim Coil Brackets	0		06OCT08		0.00										
		TRIM-300	Fabricate Brackets for 1st FPA	40	07OCT08	03DEC08		158,496.16										41=121.36\$ ;
		TRIM-399	Title III support & oversight	231	12AUG08	16JUL09	LOE	136,305.28										
<b>Perry</b>																		
<b>Job: 1752 - Base Support Proc-PERRY</b>																		
<b>172 - Base Support Structure</b>																		
		161-036.8	Bid and award base support materials	30	19AUG08*	30SEP08		2,125.20										ea/em=12
		161-036.9	Deliver base support materials	130	01OCT08	13APR09		192,190.96										41=147.156\$ ;
		161-038	Title III	306	16JUN08*	03SEP09	LOE	7,064.26										
<b>Job: 1550 - Coil Struct. Procurement -PERRY</b>																		
		1501-245	Solicit Bids, and Evaluate Bids	35	23JUL08	10SEP08		0.00										
		162-036.9	Award Coil Support Structure	0		10SEP08*		0.00										
		162-037	Fabricate structure components	100	11SEP08	10FEB09		910,562.12										41=250; 48=574.93



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								MAY	JUN	JUL	AUG	SEP	OCT	NOV	D	
	162-050	Prep req, bid and award G11/Teflon parts	25	01OCT08*	04NOV08		0.00									
	162-052	Prep req, bid and award Inconel hardware	25	01OCT08*	04NOV08		0.00									
	162-055	Prep req, bid and award Belleville Washers	25	01OCT08*	04NOV08		0.00									
	162-031	Title III engr WBS 151	117	11SEP08*	05MAR09	LOE	12,125.75									EM/EM =75hr ;
<b>Job: 8215 Plant Design</b>																
<b>FY07 Rebaseline Exercise</b>																
	8210-08	Plant Design	746*	01FEB08A	31JAN11	LOE	114,963.38									
<b>Raftopolous</b>																
<b>Job: 1701 - Cryostat Design</b>																
	1701-090	Cryostat Configuration Peer Review	0		30MAY08*		0.00									
	1701-100	Cryostat- Conceptual Design	56	02JUN08*	19AUG08		91,314.08									EA/EM =344hr ; EA/S
	62122-306	Review of current baseline cryo system dsn	0		10JUN08*		0.00									
	62122-307	Review of alternate cryo system design	0		30JUN08*		0.00									
	1701-095	Decide on Cryostat Concept	0		02JUL08*		0.00									
	1701-091	Update cost estimate for Cryostat & cryo systems	0		02JUL08		0.00									
	1701-100M	INTEGRATED CRYO SYSTEMS CDR (wbs 16,17,62)	0		19AUG08		0.00									
	1701-101	Cryostat- Preliminary Design	91	20AUG08	07JAN09		142,229.40									
	1701-103	Cryostat-R&D/prototype	118	14JUL08	07JAN09		137,606.86									
	1751-169	Cryogenic consultant (Garzotto)	42*	01MAY08A	30JUN08	LOE	420.00									2 days/week 41=\$21
	1751-170	Cryostat & Cryogenic systems oversight&reporting	226*	01FEB08A	19DEC08	LOE	8,480.29									
<b>Job: 6201 - Cryogenic Syst</b>																
<b>621 - LN2 Supply &amp; LN2 coil cooling supply</b>																
	62122-300	Conceptual Design	71	02JUN08*	10SEP08		97,809.92									EA/EM =352hr ; EA/SB =136hr ;
	62122-308	Update cost estimate for Cryogenic systems	0		30JUN08*		0.00									
	62122-310	LN2 Supply & LN2 Coil Cooling CDR (wbs 16,17,62)	0		10SEP08		0.00									
	62122-320	Preliminary Design	91	11SEP08	28JAN09		126,785.31									
	6201-169	Cryogenic consultant (Vic Garzotto)	493	02JUN08*	25MAY10	LOE	0.00									
<b>623 - GN2 Cryostat Cooling System</b>																
	623-099	GN2 Cryostat Cooling Sys Conceptual design	71	02JUN08*	10SEP08		32,586.40									ea/em=184
	623-101	GN2 Cryostat Cooling Sys-Preliminary Design	91	11SEP08	28JAN09		158,850.41									
	623-102	GN2 Cryostat Cooling Sys-Fab & test prototype	91	11SEP08	28JAN09		102,879.71									
	623-121	GN2 Cryostat Cooling Sys-Cooldown& thermal anlys	91	11SEP08	28JAN09		44,601.78									EA/EM =240hr ;

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								MAY	JUN	JUL	AUG	SEP	OCT	NOV	D
<b>Larry Dudek</b>															
<b>Blanchard</b>															
<b>Job: 2201 - Vacuum Pumping Systems-BLANCHARD</b>															
	220-101	Preliminary Design	83	01OCT08*	05FEB09		126,871.80								
<b>Brown</b>															
<b>Job: 1803/1805- FPA Tooling/Constr-BROWN</b>															
<b>Station 3-Modular Coil to VVSA Assembly</b>															
X	1803S3-4	Generate laser screen trace drawings (1/2 period)	15	23JUN08	14JUL08		13,235.20								
X	1803S3-6	Station 3 simulation detail model	21	02JUN08*	30JUN08		22,704.00								
X	1803S3-7	VV/MC clearance study (for VVSA1)	64*	01APR08A	30JUN08	75	1,537.80								
X	1803S3-7B	VV/MC clearance study (for VVSA 2 and 3)	11	01JUL08*	16JUL08		12,302.40								
X	1803S3-9	Oversite, cost and schedules, reviews	171*	31JAN08A	30SEP08	LOE	3,520.75								
	1803S3-2A	Updated Stat 3 seq plan after MCHP/VV trial assy	5	03SEP08*	09SEP08		0.00								
X	1805S3-2	Left side base grout plates	70*	24MAR08A	30JUN08	99*	2,620.62								
X	1805S3-3	MCHP lift fixture frame weldment	70*	24MAR08A	30JUN08	99*	9,091.44								
X	1805S3-4	Lift fixture mounting bracket weldments	70*	24MAR08A	30JUN08	99*	14,717.70								
X	1805S3-5	Reworked laser frame structure	70*	24MAR08A	30JUN08	99*	1,117.80								
X	1805S3-6	Right inboard laser frame structure	70*	24MAR08A	30JUN08	99*	1,055.70								
X	1805S3-7	Left inboard laser frame structure	70*	24MAR08A	30JUN08	99*	844.56								
X	1805S3-8	Laser screen lexan sheet (1/8 x 48" x 96")	70*	24MAR08A	30JUN08	99*	546.48								
X	1805S3-9	Estimate for Station 2 type alignment system	70*	24MAR08A	30JUN08	99*	4,024.08								
X	1805S3-100	Hardware & Misc items	70*	24MAR08A	30JUN08	99*	1,242.00								
X	1805S3-110	Misc assembly Cost	70*	24MAR08A	30JUN08	99*	10,060.20								
X	1805S3-201	MC base support system (left / rt side)	70*	24MAR08A	30JUN08	99*	15,512.58								
X	1805S3-202	Hilman roller - 8-OT plus R & U guides	70*	24MAR08A	30JUN08	99*	2,943.54								
X	1805S3-203	AirLoc Wedgmount Precision Levelers	70*	24MAR08A	30JUN08	99*	707.94								
X	1805S3-204	Lift fixture mounting bracket weldments	70*	24MAR08A	30JUN08	99*	4,409.10								
X	1805S3-205	Estimate for Station 2 type alignment system	70*	24MAR08A	30JUN08	99*	1,204.74								
X	1805S3-206	Hardware & Misc items	70*	24MAR08A	30JUN08	99*	372.60								
X	1805S3-207	Misc assembly Cost	171*	31JAN08A	30SEP08		5,005.26								
<b>Station 5-Final Field Period Assembly</b>															
	1803S5.2	Updated Station 5 seq. plan (afterCryo CDR)	10	11SEP08*	24SEP08		5,667.20								
	1803S5-4	Station 5 (and 3) lift fixture structures and li	10	01OCT08*	14OCT08		23,753.60								
	1803S5-7	VV work platforms	17	01OCT08*	23OCT08		14,404.80								
	1803S5-8	Station 5 support structural analysis	95*	01MAY08A	15SEP08	50	14,168.00								
	1803S5-10	Station 5 FDR - Base support	22	02SEP08*	01OCT08		7,102.78								
	1803-5.6	Station 5 Tooling/Assy FDR	0		01OCT08		0.00								
	1803S5-11	Base support release for fabrication	5	02OCT08	08OCT08		4,873.20								
	1803S5-12	Station 5 FDR - Lift fixtures, port tooling and	10	18SEP08*	01OCT08		7,125.32								
	1803S5-13	Complete dwgs package & release for fabrication	5	02OCT08	08OCT08		4,801.60								
	1803S5-14	Oversite, cost and schedules, reviews	170*	31JAN08A	29SEP08	LOE	6,998.99								
	1803S5-15	Complete station 5 design	0		23OCT08*		0.00								
	1805S5-1	FPA base support system	105	09OCT08	17MAR09		13,373.44								
	1805S5-2	Type-C side support structure	105	09OCT08	17MAR09		7,548.68								
	1805S5-3	NB side stabilizing support structure	105	09OCT08	17MAR09		4,884.44								
	1805S5-4	TF local temporary supports	105	09OCT08	17MAR09		1,436.60								
	1805S5-5	20 ton screw jacks	105	09OCT08	17MAR09		1,723.92								
	1805S5-6	AirLoc Wedgmount Precision Levelers	105	09OCT08	17MAR09		2,612.00								
	1805S5-7	Port 4 handling structure	105	09OCT08	17MAR09		5,746.40								
	1805S5-8	Small port handling structure	105	09OCT08	17MAR09		2,873.20								
	1805S5-9	Station 5 (and 3) lift fixture structures	105	09OCT08	17MAR09		9,808.06								
	1805S5-102	Hardware & Misc. items	105	09OCT08	17MAR09		2,612.00								
	1805S5-103	Misc. assembly Cost	105	09OCT08	17MAR09		10,578.60								

INCLUDED IN CLOSEOUT PLAN	Activity ID	Activity Description	Duration (work days)	Forecast Start	Forecast Finish	% Cmpl't	ETC	FY08							FY09													
								MAY	JUN	JUL	AUG	SEP	OCT	NOV	D													
<b>6.00-Final Machine Assembly</b>																												
	1803S6-1	Stage 6 FP support and roller system	187*	01APR08A	02JAN09	25	53,544.73																					
	1803S6-3	Update Station 6 seq. plan (after cryo CDR)	10	21OCT08*	03NOV08		7,497.20																					
	1803S6-6	Station 6 stress and deflection FEA study	24	09SEP08*	10OCT08		57,773.86																					
	1803S6-7	Station 6 simulation model and clearance study	24	23SEP08*	24OCT08		27,628.40																					
<b>Chrzanowski</b>																												
<b>Job: 1408 - MC Winding Supplies-CHYZANOWSKI</b>																												
	X	1408-3	Misc and safety supplies (\$7k/mo.)	276*	23MAY07A	30JUN08	LOE	7,923.96																				
	X	1408-6	VPI clean manifold contract	276*	23MAY07A	30JUN08	80	2,484.00																				
	X	1408-8	Cutting hardware for flange bolts	276*	23MAY07A	30JUN08	LOE	285.66																				
	X	1408-7	Misc tech shop support	276*	23MAY07A	30JUN08	80	10,108.16																				
<b>Job: 1451 - Mod Coil Winding-CHYZANOWSKI</b>																												
<b>Station 3-Casting Prep &amp; Winding</b>																												
	X	P1-170	Instl Chill Plates,Tubing,Bag A6	22*	02JUN08	01JUL08		57,490.16																				
<b>Station 5-VPI</b>																												
	X	P1-171V	VPI (Station 5) A6	19	02JUL08	29JUL08		47,514.31																				
	X	P3-171VM	COMPLETE VPI OF 18th MOD COIL	0		29JUL08		0.00																				
<b>Station 1 Post VPI</b>																												
	X	P2-171C	Final Clamps & Warm Test (Station1) B6	16	02JUN08	23JUN08		24,006.88																				
	X	P1-171C	Final Clamps & Warm Test (Station1) A6	16	30JUL08	20AUG08		24,006.88																				
<b>LOE Oversight &amp; Supervision</b>																												
	X	145XSPRV-2	Winding Engineering oversight and supervision	314*	01MAY07A	31JUL08	LOE	24,990.58																				
	X	145XSPRV-3	Winding Engineering oversight and supervision	356*	01MAY07A	30SEP08	LOE	42,266.43																				
	X	145XSPRV-A	Winding Engineering oversight and supervision	185*	01NOV07A	31JUL08	LOE	63,168.64																				
<b>Job: 1459 - Mod Coil Fabr.Punch List-CHYZANOWSKI</b>																												
<b>Punchlist Tech shop/RESA</b>																												
	X	PLTS-C5	Grinding & Drill Holes -C5	85*	01MAY08A	29AUG08	83	3,221.98																				
	X	PLTS-A5	Grinding -A5	85*	01MAY08A	29AUG08	0	6,949.36																				
	X	PLTS-B5	Grinding -B5	85*	01MAY08A	29AUG08	0	9,476.40																				
	X	PLTS-A6	Grinding -A6	85*	01MAY08A	29AUG08	20	3,095.62																				
	X	PLTS-B6	Grinding -B6	85*	01MAY08A	29AUG08	0	9,476.40																				
	X	PLTS-C6	Grinding & Drill Holes -C6	85*	01MAY08A	29AUG08	23	14,593.66																				
<b>Punchlist- Coil Technicians</b>																												
		PLCT-A1	Insul,measure,TC, other punch list-A1	228*	01AUG07A	30JUN08	90	2,013.74																				
		PLCT-A2	Insul,measure,TC, other punch list-A2	228*	01AUG07A	30JUN08	90	1,626.78																				
		PLCT-B1	Insul,measure,TC, other punch list-B1	228*	01AUG07A	30JUN08	90	1,626.78																				
		PLCT-C1	Insul,measure,TC, other punch list-C1	228*	01AUG07A	30JUN08	90	2,045.32																				
		PLCT-B2	Insul,measure,TC other punch list-B2	205*	04SEP07A	30JUN08	90	1,626.78																				
		PLCT-C2	Insul,measure,TC, other punch list-C2	248*	03JUL07A	30JUN08	90	2,013.74																				
		PLCT-A3	Insul,measure,TC, other punch list-A3	247*	05JUL07A	30JUN08	90	1,903.18																				
		PLCT-A4	Insul,measure,TC, other punch list-A4	246*	06JUL07A	30JUN08	90	1,903.18																				
		PLCT-B3	Insul,measure,TC, other punch list-B3	186*	01OCT07A	30JUN08	90	1,626.78																				
		PLCT-C3	Insul,measure,TC, other punch list-C3	186*	01OCT07A	30JUN08	90	2,045.32																				
		PLCT-B4	Insul,measure,TC, other punch list-B4	186*	01OCT07A	30JUN08	90	1,626.78																				
		PLCT-C4	Insul,measure,TC, other punch list-C4	233*	25JUL07A	30JUN08	90	2,179.57																				
		PLCT-A5	Insul,measure,TC, other punch list-A5	230*	30JUL07A	30JUN08	90	1,626.78																				
	X	PLCT-A6	Insul,measure,TC,SG other punch list-A6	229*	01OCT07A	29AUG08	36	10,411.40																				
		PLCT-B5	Insul,measure,TC, other punch list-B5	186*	01OCT07A	30JUN08	90	1,626.78																				
		PLCT-C5	Insul,measure,TC, other punch list-C5	186*	01OCT07A	30JUN08	90	2,013.74																				
	X	PLCT-B6	Insul,measure,TC,SG other punch list-B6	229*	01OCT07A	29AUG08	36	10,411.40																				
		PLCT-C6	Insul,measure,TC,SG other punch list-C6	186*	01OCT07A	30JUN08	90	1,618.89																				

INCLUDED IN CLOSEOUT PLAN	Activity ID	Activity Description	Duration (work days)	Forecast Start	Forecast Finish	% Cmpl't	ETC	FY08				FY09					
								MAY	JUN	JUL	AUG	SEP	OCT	NOV	D		
	PLCT-C6M	COMPLETE MODULAR COIL FABRICATION	0		29AUG08		0.00										
	PLCT-CRANE	Crane support	143*	01DEC07A	30JUN08	LOE	3,830.83										
<b>Cole</b>																	
<b>Job: 1260 NB Transition Ducts- COLE</b>																	
	1260-191	Peer Review to Establish Requirements	20*	27MAY08A	23JUN08	10	10,872.00										
	1260-192	Review and Update Assbly Dwgs	20	24JUN08	22JUL08		12,080.00										
	1260-90	Prepare for PDR Neutral Beam Transition Duct	10	23JUL08	05AUG08		6,040.00										
	1260-95	NB Transition Ducts PDR	0		05AUG08		0.00										
	1260-195	Resolve PDR Chits	10	06AUG08	19AUG08		6,040.00										
	1260-196	Review and Update Port Mod Dwg	10	20AUG08	03SEP08		6,040.00										
	1260-197	Review and Update Large Rect Port Dwg	10	04SEP08	17SEP08		6,040.00										
	1260-198	Review and Small Large Rect Port Dwg	10	18SEP08	01OCT08		6,067.80										
	1260-199	Review and Update Weldment Dwgs	25	02OCT08	05NOV08		18,954.00										
<b>Dudek</b>																	
<b>Job: 1204 - VV Sys Procurements (nonVVSA)-DUDEK</b>																	
<b>Thermal Insulation</b>																	
	123-052	Fabricate&Deliver boot sheet metal parts r405209	65	01OCT08*	12JAN09		39,833.00										
<b>Job: 1431 - Mod. Coil Interface Hardware-DUDEK</b>																	
<b>Bushings</b>																	
	1421-3115	PPPL Machine bushings Bushings FPA 3	20	01AUG08*	28AUG08		9,871.25										
	1421-3109	All Bushings Fabricated	0		28AUG08		0.00										
<b>Pucks</b>																	
	1429-3110	PPPL cut and grind to thickness	169*	04FEB08A	30SEP08	11	1,620.46										
<b>Shims-Outboard</b>																	
X	1431-100	Complete PE007965 & 8090 with zenex	20	02JUN08	27JUN08		84,331.80										
	1429-3066	Outboard Shims	135	03MAR08A	02OCT08	27	371,326.70										
<b>Shims-Inboard</b>																	
X	1431-110	Complete PE007677 with white engr	20	02JUN08	27JUN08		12,705.66										
	1429-3062X	Inboard Shims	208*	03MAR08A	02JAN09	17	100,023.96										
<b>Studs,Washers,Nuts</b>																	
	1421-3070	Order studs & washers for c-c joint	15	02JUN08*	20JUN08		0.00										
	1421-3072	Deliver studs & washers for c-c joint	40	23JUN08	18AUG08		50,021.46										
	1421-3073	Deliver supernuts for c-c joint	40	03JUN08*	29JUL08		11,178.00										
<b>Misc Tech Shop Support</b>																	
	1421-4000	Misc Tech Shop support through sta 2 (1/2 mm/mo.	250*	01OCT07A	30SEP08	LOE	23,225.08										
<b>Goranson</b>																	
<b>Job: 6401 - Bakeout System GORANSON</b>																	
	6401-000	Bakeout Sys- Requirements Definition	40	01JUL08*	26AUG08		12,302.40										
	6401-001	Bakeout Sys-Preliminary Design	248	01OCT08*	29SEP09		42,752.40										
<b>Perry</b>																	
<b>Job: 7301 - Platform Design &amp; Fab-PERRY</b>																	
	711A.040	Platform nut plates	30	19AUG08*	30SEP08		2,967.12										
	712.020	Platform Parts	65	19AUG08*	18NOV08		102,285.94										
	712.030	Miscs Hardware/Material	40	05AUG08*	30SEP08		29,808.00										
<b>Job: 7401 - TC Prep &amp; Mach Assy Planning-PERRY</b>																	
<b>GPP Projects Required for NCSX (non-MIE cost)</b>																	
	GPP-01	CS Crane	0		30MAY08*		0.00										

INCLUDED IN CLOSEOUT PLAN	Activity ID	Activity Description	Duration (work days)	Forecast Start	Forecast Finish	% Cmpl	ETC	FY08				FY09		
								MAY	JUN	JUL	SEP	OCT	NOV	D
	GPP-02	CS Interior Wall Replacement	0		31JUL08*		0.00							
	714.020	LOE Prior to assy starting as req'd	583*	01OCT07A	25JAN10	LOE	278,458.74							
<b>Job: 8220 - Equip Save &amp; Facility Restora-PERRY</b>														
<b>Safe and store NCSX hardware assets</b>														
X	8220-201	Coordination and oversight	143	02JUN08	23DEC08		38,567.45							
X	8220-205	NCTC floor penetrations & PLT water htr removal	30	01JUL08*	12AUG08		56,248.54							
X	8220-209	Secure platform parts from CAS Bldg to NCTC	10	13AUG08	26AUG08		4,163.16							
X	8220-215	Secure TF Coils from Dsite MG to NCTC	10	11SEP08	24SEP08		3,000.86							
X	8220-219	Electr trays & hw from D-site yard to dsite pad	10	01JUL08*	15JUL08		6,194.13							
X	8220-223	Items f/TFTR bsmnt (incl spare MC cond) to NCTCB	10	01AUG08*	14AUG08		13,831.24							
X	8220-227	Portable AC units to Csite crib	5	27AUG08	03SEP08		631.76							
X	8220-231	Drawing closeouts and field follow-up	58	01OCT08*	23DEC08		27,614.00							
X	8220-235	Large and Small shield block to Dsite pad	10	02SEP08*	15SEP08		2,527.04							
X	8220-239	Machine mock-up to NCTC	5	13AUG08	19AUG08		631.76							
X	8220-243	Welding machines to RESA	5	01OCT08*	07OCT08		668.56							
X	8220-247	Tools to Csite crib	10	01OCT08*	14OCT08		2,674.24							
X	8220-251	Measuring Equipment to S-109	5	01OCT08*	07OCT08		1,337.12							
X	8220-255	Inventory parts,material, tools to new location	20	01OCT08*	28OCT08		6,685.60							
X	8220-409	Crates,cabinets,parts shelves f/TFTRTC to NCTCB	10	01OCT08*	14OCT08		10,362.68							
X	8220-415	Coil winding station to NCTC	10	13AUG08	26AUG08		5,054.08							
X	8220-419	MC bolts (incl crate) to NCTCB	5	09SEP08	15SEP08		2,076.20							
X	8220-423	VVSA's (incl port extension crates) to NCTC	10	13AUG08	26AUG08		7,808.00							
X	8220-427	Assemble 4 remaining MC 3 packs	25	04AUG08	08SEP08		15,162.24							
X	8220-431	Transport MC 3 packs (6) to NCTC	10	09SEP08	22SEP08		5,302.48							
X	8220-501	Autoclave- Safe all AC power	5	30JUL08	05AUG08		3,762.80							
?	8220-505	Autoclave-Removal and store Dsite pad & NCTCB	58	01OCT08*	23DEC08		154,843.44							
<b>Stratton</b>														
<b>Job: 3101 - Magnetic Diagnostics-STRATTON</b>														
<b>Vacuum Vessel Saddle Loops</b>														
	3101-230	Check elect characteristics of T/C	50*	01MAY08A	11JUL08	50	8,596.50							
<b>Rogowski Coils</b>														
	3101-370	Check elect characteristics of cables	20	13JUN08*	11JUL08		9,365.40							
	3101-355	Temp cable trays	65	01OCT08*	12JAN09		12,429.20							
	3101-356	Dsn,purchase,install rack	65	01OCT08*	12JAN09		24,813.24							
	3101-358	Prep chassis & timing module	65	01OCT08*	12JAN09		10,031.00							
X	3101-359	Install Rogowski coils support (in job 1815)	51*	02APR08A	12JUN08	30	45,456.03							
X	3101-360	Title III support	9*	02JUN08*	12JUN08	LOE	9,226.80							
<b>TF and PF Co-wound Loops</b>														
	3101-425	Design Protective boxes for PF	227*	01NOV07A	30SEP08	85	0.00							
	3101-426	Purchase SS Sheet	220*	12NOV07A	30SEP08	80	226.93							
	3101-452	Form Protective boxes	220*	12NOV07A		80	0.00							
	3101-454	Weld end plates of PF protective boxes	221*	09NOV07A		80	0.00							
	3101-427	Purchase Heat Shrink tubing	220*	12NOV07A	30SEP08	80	591.56							
	3101-428	Purchase add'l CoAxial cable	46	02JUN08*	05AUG08	50	2,873.47							
	3101-458	Fab PF & solenoid co-wound loops	186	02JUL07A	10NOV08	50	8,974.55							
	3101-456	Title III	90	01OCT08	16FEB09	LOE	5,859.00							
<b>T/C and Heater Tape Leads</b>														
	1204-141	Drawings Signed T/C and Heater Tape Leads	0		30MAY08*		0.00							
	1204-144	Check elect characteristics T/C & heater port 12	32*	01MAY08A	16JUN08	75	3,645.95							
	1204-147	Field/Fab support (title III) T/C&Heater Tape	65	02JUN08	02SEP08		3,844.50							
<b>Spacer Flux Loops &amp; Boxes</b>														
	3101-900	Peer review	2	02OCT08	03OCT08		2,604.00							







INCLUDED IN CLOSEOUT PLAN	Activity ID	Activity Description	Duration (work days)	Forecast Start	Forecast Finish	% Cmpl't	ETC	FY08					FY09		
								MAY	JUN	JUL	AUG	SEP	OCT	NOV	D
X	S21-4.02	Perform routine metrology set-up and checks (loe	170*	01FEB08A	30SEP08	LOE	61,094.25						ZMET	=1050	
<b>Station 1-VV Prep (hard surface components) FP#1</b>															
	R1810-1114	Install heater tape on all removable ports	25	02JUN08	07JUL08		41,969.00						EM/TB =500hr ;		
	R1810-1100	Design & Build heater& thermo termination box	41	02JUN08*	29JUL08		35,993.40						EM/TB =300hr ;em/em=80;4		
	R1810-1111	Final Scan	4	08JUL08	11JUL08		6,317.60						EM/TB =80hr ;		
	R1810-1113	Prepare & transfer completed VV to holding area	5	14JUL08	18JUL08		15,794.00						EM/TB =200hr ;		
<b>Station 1- VV Prep (hrd surf cmpntsFP#2</b>															
	R1810-1208	Perform final acceptance testing (H/C flow test)	32	02JUN08	16JUL08		23,691.00						EM/TB =300hr ; 41=02\$;k ;		
	R1810-1216	Install Final Internal&Ext monuments & meas	20	17JUL08	13AUG08		6,317.60						EM/TB =80hr ;		
	R1810-1214	Install heater tape on all removable ports	25	08JUL08	11AUG08		41,969.00						EM/TB =500hr ;		
	R1810-1217	Final Scan	4	14AUG08	19AUG08		6,317.60						EM/TB =80hr ;		
	R1810-1219	Prepare& transfer completed VV to holding area	5	20AUG08	26AUG08		15,794.00						EM/TB =200hr ;		
<b>Station 1- VV Prep (hrd surf cmpntsFP#3</b>															
	R1810-1308	Perform final acceptance testing (H/C flow test)	22	17JUL08*	15AUG08		23,691.00						EM/TB =300hr ;		
	R1810-1310	Heater and thermo termination & verification	22*	30APR08A		50	0.00						EM/TB =300hr ;		
	R1810-1328	Install Final Internal&Ext monuments & meas	4	25SEP08*	30SEP08		6,317.60						EM/TB =80hr ;		
	R1810-1329	Final Scan of VVSA #3 Station 1 complete	4	01OCT08	06OCT08		6,685.60						EM/TB =80hr ;		
	R1810-1314	Install heater tape on all removable ports	25	12AUG08*	16SEP08		41,969.00						EM/TB =500hr ;		
	R1810-1331	Prepare & transfer completed VV to holding area	5	07OCT08	13OCT08		16,714.00						EM/TB =200hr ;		
<b>Setup</b>															
X	R1810-2034	Misc Tool and Hardware	85*	02JUN08	30SEP08	LOE	18,630.00						41=15		
	R1810-2036	Fuji Paper	433*	02JUN08	02MAR10	LOE	6,502.62						41=5		
	R1810-2081	Removable photogrammetry targets	334*	02JUN08*	30SEP09	LOE	14,846.03								
	R1810-2082	Fixed photogrammetry targets	334*	02JUN08*	30SEP09	LOE	62,121.46								
	R1810-2083	Replacement photogrammetry targets	334*	02JUN08*	30SEP09	LOE	16,135.74								
	R1810-2084	Design and purchase 3 additional wedge supports	44*	01APR08A	02JUN08	60	29,634.12						41=105;em/em=80;em/tb=64		
	R1810-2024	Rework wedges f/combined assemblies& coil handli	85*	02JUN08	30SEP08		15,794.00						em/tb=200		
	R1810-2026	Setup up satellite shop in Mock-up area	64*	01APR08A	30JUN08	70	15,521.58						em/tb=420;41=10;em/em=40		
	R1810-2087	Coordinate measuring machine	21	02JUN08*	30JUN08		48,438.00						41=39		
	R1810-2088	HEPA machine tool exhaust system	21	01MAY08A	30JUN08	50	9,936.00						41=8		
	R1810-2089	Tools, cabinets & storage shelving	558*	02JUN08*	26AUG10	LOE	10,469.56						41=8		
	R1810-2002	Purchase grinding machine pe8106	21	02JUN08	30JUN08		33,447.06						41=26.927		
	R1810-2090	Consulting services nose welding (England)	5*	02JUN08*	06JUN08	LOE	1,242.00						41=1		
	S20-4.02	Perform metrology set-up;purchase 6 pillars	21	02JUN08*	30JUN08		9,936.00						41=8		
<b>Pre-Measuring and fitup checks</b>															
<b>Pre measurement of MCHP A2,B2,C2 flanges</b>															
X	2-2-2.99	Drill Stycast fill holes C2	3	01JUL08*	03JUL08		9,476.40						em/tb=120		
X	S22-3.02	Compress shims sort by thickness	71*	01MAY08A	11AUG08	50	3,158.80						EM/TB =80hr ;		
<b>Pre measurement of MCHP A3,B3,C3 flanges</b>															
	2-3-2.99	Drill Stycast fill holes	3	27JUN08	01JUL08		9,476.40						em/tb=120		
	S23-3.02	Compress shims sort by thickness	6	27JUN08	07JUL08		6,317.60						EM/TB =80hr ;		
	S23-4.01	Install MCHP fixtures & metrology equipt	6	24JUN08*	01JUL08		9,476.40						em/tb=120 ;		
	S23-4.03	Ready For Preassembly A3B3C3	0	02JUL08	01JUL08		0.00								
<b>Pre measurement of MCHP A4,B4,C4 flanges</b>															
	S24-2.08	Measure C4 "A" flange	8	01JUL08*	11JUL08		23,806.72						EM/TB =400hr ; ZMET =96		
<b>Pre measurement of MCHP A5,B5,C5 flanges</b>															
	S25-1.01	Verify mating MC's of MCHP will come together	4	25JUN08	30JUN08		12,635.20						EM/TB =160hr ;		
	S25-2.01	Set the B5 coil on fixture, & measure	1	01JUL08	01JUL08		12,468.40						EM/TB =40hr ;zmet=80		
	S25-2.02	Align to the conical seats locking into min of 8	2	02JUL08	03JUL08		4,654.80						ZMET =40 ;		
	S25-2.03	Measure monuments on fixture and walls.	7	07JUL08	15JUL08		16,291.80						ZMET =140 ;		
	S25-2.04	Measure tooling ball monuments	1	16JUL08	16JUL08		2,327.40						ZMET =20 ;		
	S25-2.05	Scan the B flange of B5	1	17JUL08	17JUL08		1,861.92						ZMET =16 ;		
	S25-2.07	Remove B5 move to holding area.	1	18JUL08	18JUL08		1,579.40						EM/TB =20hr ;		
<b>Pre measurement of MCHP A6,B6,C6 flanges</b>															
	S26-2.14	Measure Type A6"A" flange	8	02SEP08	11SEP08		12,468.40						EM/TB =40hr ; Z		

INCLUDED IN CLOSEOUT PLAN	Activity ID	Activity Description	Duration (work days)	Forecast Start	Forecast Finish	% Cmpl	ETC	FY08							FY09		
								MAY	JUN	JUL	AUG	SEP	OCT	NOV	D		
<b>Station 2 MC subassy A1B1C1</b>																	
<b>AB-C MC Assembly</b>																	
X	2-1-7.16	"Lightly" tack weld nose flex shims	1	02JUN08*	02JUN08		947.64								EM/TB =12hr ;		
X	2-1-7.17	remove "C" coil & place it on a separate fixtur	1	03JUN08	03JUN08		3,790.56								EM/TB =48hr ;		
X	2-1-7.18	Recheck part alignment & weld all Type-B flex s	3	04JUN08	06JUN08		6,702.91								EM/TB =00hr ; ZMET =58 ;		
X	2-1-7.19	After welding "B" coil nose shims recheck align	1	09JUN08	09JUN08		2,234.30								EM/TB =00hr ; ZMET =19 ;		
X	2-1-7.20	Back office assessment of part after weld	2	10JUN08	11JUN08		4,468.61								EM/TB =00hr ; ZMET =38 ;		
X	2-1-7.21	Measure "C" fiducials	1	10JUN08	10JUN08		2,234.30								EM/TB =00hr ; ZMET =19 ;		
X	2-1-7.22	Weld all Type-C (A-flange) flex shims plasma sid	2	12JUN08	13JUN08		3,790.56								EM/TB =48hr ;		
X	2-1-7.23	After welding determine metrology acceptance	1	16JUN08	16JUN08		2,234.30								EM/TB =00hr ; ZMET =19 ;		
X	2-1-7.24	Back office assessment	2	17JUN08	18JUN08		4,468.61								EM/TB =00hr ; ZMET =38 ;		
X	2-1-7.25	Remove shims for alignment mating coil	0	17JUN08	16JUN08		0.00								EM/TB =00hr ;		
X	2-1-7.07	Place unfilled shim bags in wing areas	1	17JUN08	17JUN08		1,895.28								EM/TB =24hr ;		
X	2-1-7.26	Lower mating "C" coil into position.	1	19JUN08	19JUN08		3,790.56								EM/TB =48hr ;		
X	2-1-7.261	alignment "C" coil tooling balls	1	20JUN08	20JUN08		2,234.30								EM/TB =00hr ; ZMET =19 ;		
X	2-1-7.27	position coil accurately in x, y, & z directio	1	23JUN08	23JUN08		1,895.28								EM/TB =24hr ;		
X	2-1-7.28	Install shims;studs,, & "wiggle"	1	24JUN08	24JUN08		2,842.92								EM/TB =36hr ;		
X	2-1-7.29	Torque50%of final value.	1	25JUN08	25JUN08		947.64								EM/TB =12hr ;		
X	2-1-7.30	Measure position of all monuments	1	26JUN08	26JUN08		3,351.46								EM/TB =00hr ; ZMET =29 ;		
X	2-1-7.301	Fuji paper, & examine load sharing. back office	2	27JUN08	30JUN08		8,259.17								EM/TB =48hr ; ZMET =38 ;		
X	2-1-7.302	Install new shims & Fuji paper. Lower & reposit	3	01JUL08	03JUL08		5,685.84								EM/TB =72hr ;		
X	2-1-7.303	Install shims without Fuji paper, studs & torqu	2	07JUL08	08JUL08		3,790.56								EM/TB =48hr ;		
X	2-1-7.31	Adjust shims locally. Re-torque all studs50%	2	09JUL08	10JUL08		3,790.56								EM/TB =48hr ;		
X	2-1-7.32	Install bushing. Replace nut & tighten back50%	3	11JUL08	15JUL08		5,685.84								EM/TB =72hr ;		
X	2-1-7.33	After super bolt tightening, measure position	2	16JUL08	17JUL08		3,351.46								ZMET =29 ; EM/TB =00hr ;		
X	2-1-7.34	Tighten all boltsir final torque.	1	17JUL08	17JUL08		1,895.28								EM/TB =24hr ;		
X	2-1-7.35	After tightening hardware, meas position of monu	1	18JUL08	18JUL08		3,351.46								ZMET =29 ; EM/TB =00hr ;		
X	2-1-7.36	Weld B / C nose region solenoid side	3	21JUL08	23JUL08		5,685.84								EM/TB =72hr ;		
X	2-1-7.37	Measure positions of all monuments	1	24JUL08	24JUL08		2,234.30								EM/TB =00hr ; ZMET =1 ;		
X	2-1-7.38	Back office of above results & INSTALL wing supp	2	25JUL08	28JUL08		4,468.61								EM/TB =00hr ; ZMET =3 ;		
X	2-1-7.39	Fill all lose bushings with Stycast 2850FT	2	29JUL08	30JUL08		3,790.56								EM/TB =48hr ;		
<b>Stycast shim bags &amp; final measurements</b>																	
X	2-1-8.01	Fill all wing bladders & cure	2	31JUL08	01AUG08		3,790.56								EM/TB =48hr ;		
X	2-1-11.01	Measure tooling balls on all coils.	2	04AUG08	05AUG08		4,468.61								EM/TB =00hr ; ZMET		
X	2-1-11.02	Install or identify three primary fiducials	2	06AUG08	07AUG08		4,468.61								EM/TB =00hr ; ZMET		
X	2-1-11.03	Scan "B" flange Type-C coil & interfacing base	3	08AUG08	12AUG08		6,702.91								EM/TB =00hr ; ZMET		
X	2-1-11.04	Measure bolt length on all tension fasteners	1	13AUG08	13AUG08		1,895.28								EM/TB =24hr ;		
X	2-1-11.05	Perform Electrical Megger test on each coil	2	14AUG08	15AUG08		3,790.56								EM/TB =48hr ;		
X	2-1-11.06	Mark part for identification	0	18AUG08	15AUG08		0.00								EM/TB =00hr ;		
X	2-1-11.07	Install lift support beams	2	18AUG08	19AUG08		7,581.12								EM/TB =96hr ;		
X	2-1-11.08	Remove from stand & measure weight of completed	1	20AUG08	20AUG08		3,790.56								EM/TB =48hr ;		
X	2-1-11.09	Move to holding area.	2	21AUG08	22AUG08		7,581.12								EM/TB =96hr ;		
X	S21-11.07M	Complete 1st MCHP Assy (Sta 2)	0		22AUG08		0.00								***** LEVEL II MILESTONE SEPTEMBER 2008 *****		
X	2-1-11.10	Lift upper wedge & reinstall & grout at Assembly	10	25AUG08	08SEP08		18,952.80								EM/TB =240hr ;		
<b>Station 2 MC subassy A2B2C2</b>																	
<b>A-B MC Assembly</b>																	
X	2-2-6.26	Torque50%of final value.	1	02JUN08	02JUN08		789.70								EM/TB =10hr ;		
X	2-2-6.27	Measure position of all monuments	1	03JUN08	03JUN08		2,792.88								ZMET =24 ; EM/TB =00hr ;		
X	2-2-6.28	Adjust shims locally. Re-torque all studs50%	1	04JUN08	04JUN08		10,323.96								EM/TB =60hr ; ZMET =48 ;		
X	2-2-6.29	Install bushing. Replace nut & tighten back 50%	1	05JUN08	05JUN08		4,738.20								EM/TB =60hr ;		
X	2-2-6.30	After super bolt tightening, measure position	1	06JUN08	06JUN08		2,792.88								ZMET =24 ; EM/TB =00hr ;		
X	2-2-6.31	Tighten all boltsir final torque.	1	09JUN08	09JUN08		1,579.40								EM/TB =20hr ;		
X	2-2-6.32	After tightening hardware, measure position	1	10JUN08	10JUN08		2,792.88								ZMET =24 ; EM/TB =00hr ;		
X	2-2-6.33	Weld A / B nose region solenoid side	1	11JUN08	11JUN08		10,323.96								EM/TB =60hr ; ZMET =48 ;		
X	2-2-6.34	Measure positions of all monuments	1	12JUN08	12JUN08		1,861.92								EM/TB =00hr ; ZMET =16 ;		
X	2-2-6.35	Review with Back Office. INSTALL wing supports	1	13JUN08	13JUN08		6,882.64								EM/TB =40hr ; ZMET =32 ;		

INCLUDED IN CLOSEOUT PLAN	Activity ID	Activity Description	Duration (work days)	Forecast Start	Forecast Finish	% Cmpl	ETC	FY08							FY09				
								MAY	JUN	JUL	AUG	SEP	OCT	NOV	D				
X	2-2-6.36	Identify, a set of monuments moved	0	16JUN08	13JUN08		0.00												
X	2-2-6.37	Fill all loose bushings with Stycast 2850FT	1	16JUN08	16JUN08		3,158.80												
X	2-2-6.38	Scan "B" flange (datum "E") of "B" coil,	1	17JUN08	17JUN08		1,861.92												
X	2-2-6.39	define all B/C flange shim thickness.	1	18JUN08	18JUN08		2,369.10												
<b>AB-C MC Assembly</b>																			
X	2-2-7.01	lift (A-B) coil, along with fixture, onto anot	1	19JUN08	19JUN08		9,476.40												
X	2-2-7.02	Select a subset of monuments for initial alignm	1	20JUN08	20JUN08		1,861.92												
X	2-2-7.03	Align set of monuments selected in 7.02.	1	23JUN08	23JUN08		1,861.92												
X	2-2-7.04	Establish a set of global monuments	1	24JUN08	24JUN08		1,861.92												
X	2-2-7.05	Mark nose shim locations & puck locations.	1	25JUN08	25JUN08		1,579.40												
X	2-2-7.06	Place initial set shims (4-8) on Type-B	0	26JUN08	25JUN08		0.00												
X	2-2-7.08	Lower mating "C" coil into position.	1	01JUL08	01JUL08		3,158.80												
X	2-2-7.081	Perform alignment "C" coil tooling balls	1	02JUL08	02JUL08		1,861.92												
X	2-2-7.09	Install jack screws & dial indicators	1	03JUL08	03JUL08		1,579.40												
X	2-2-7.10	Position coil within ±.002"	1	07JUL08	07JUL08		1,579.40												
X	2-2-7.11	Install shims studs, & "wiggle"	1	08JUL08	08JUL08		2,369.10												
X	2-2-7.12	Torque50%of final value.	1	09JUL08	09JUL08		789.70												
X	2-2-7.13	Measure position of all monuments	1	10JUL08	10JUL08		2,792.88												
X	2-2-7.14	Measure shim puck height	1	11JUL08	11JUL08		1,579.40												
X	2-2-7.15	remove puck locating rings & install all nose s	1	14JUL08	14JUL08		4,738.20												
X	2-2-7.16	"Lightly" tack weld nose flex shims	1	15JUL08	15JUL08		789.70												
X	2-2-7.17	remove "C" coil & place it on a separate fixtur	1	16JUL08	16JUL08		3,158.80												
X	2-2-7.18	Recheck part alignment & weld all Type-B flex s	1	17JUL08	17JUL08		5,585.76												
X	2-2-7.19	After welding "B" coil nose shims recheck align	1	18JUL08	18JUL08		1,861.92												
X	2-2-7.20	Back office assessment of part after weld	1	21JUL08	21JUL08		3,723.84												
X	2-2-7.21	Measure "C" fiducials	1	21JUL08	21JUL08		1,861.92												
X	2-2-7.22	Weld all Type-C (A-flange) flex shims plasma sid	1	22JUL08	22JUL08		3,158.80												
X	2-2-7.23	After welding determine metrology acceptance	1	23JUL08	23JUL08		1,861.92												
X	2-2-7.24	Back office assessment	1	24JUL08	24JUL08		3,723.84												
X	2-2-7.25	Remove shims for alignment mating coil	0	25JUL08	24JUL08		0.00												
X	2-2-7.07	Place unfilled shim bags in wing areas	1	25JUL08	25JUL08		1,579.40												
X	2-2-7.26	Lower mating "C" coil into position.	1	28JUL08	28JUL08		3,158.80												
X	2-2-7.261	alignment "C" coil tooling balls	1	29JUL08	29JUL08		1,861.92												
X	2-2-7.27	position coil accurately in x, y, & z directio	1	30JUL08	30JUL08		1,579.40												
X	2-2-7.28	Install shims;studs,, & "wiggle"	1	31JUL08	31JUL08		2,369.10												
X	2-2-7.29	Torque50%of final value.	1	01AUG08	01AUG08		789.70												
X	2-2-7.30	Measure position of all monuments	1	04AUG08	04AUG08		2,792.88												
X	2-2-7.31	Adjust shims locally. Re-torque all studs50%	1	05AUG08	05AUG08		3,158.80												
X	2-2-7.32	Install bushing. Replace nut & tighten back50%	1	06AUG08	06AUG08		4,738.20												
X	2-2-7.33	After super bolt tightening, measure position	1	07AUG08	07AUG08		2,792.88												
X	2-2-7.34	Tighten all bolts to final torque.	1	08AUG08	08AUG08		1,579.40												
X	2-2-7.35	After tightening hardware, meas position of monu	1	11AUG08	11AUG08		2,792.88												
X	2-2-7.36	Weld B / C nose region solenoid side	1	12AUG08	12AUG08		4,738.20												
X	2-2-7.37	Measure positions of all monuments	1	13AUG08	13AUG08		1,861.92												
X	2-2-7.38	Back office of above results & INSTALL wing supp	1	14AUG08	14AUG08		3,723.84												
X	2-2-7.39	Fill all lose bushings with Stycast 2850FT	1	15AUG08	15AUG08		3,158.80												
<b>Stycast shim bags &amp; final measurements</b>																			
X	2-2-8.01	Fill all wing bladders & cure	2	18AUG08	19AUG08		3,158.80												
X	2-2-8.02	Inject stycast in all shim spaces	2	20AUG08	21AUG08		3,158.80												
X	2-2-10.0	Complete local service & interface details	0	22AUG08	21AUG08		0.00												
X	2-2-11.01	Measure tooling balls on all coils.	2	22AUG08	25AUG08		3,723.84												
X	2-2-11.02	Install or identify three primary fiducials	2	26AUG08	27AUG08		3,723.84												
X	2-2-11.03	Scan "B" flange Type-C coil & interfacing base	3	28AUG08	02SEP08		5,585.76												
X	2-2-11.04	Measure bolt length on all tension fasteners	1	03SEP08	03SEP08		1,579.40												
X	2-2-11.05	Perform Electrical Megger test on each coil	2	04SEP08	05SEP08		3,158.80												
X	2-2-11.06	Mark part for identification	0	08SEP08	05SEP08		0.00												
X	2-2-11.07	Install lift support beams	2	08SEP08	09SEP08		6,317.60												







INCLUDED IN CLOSEOUT PLAN	Activity ID	Activity Description	Duration (work days)	Forecast Start	Forecast Finish	% Cmplt	ETC	FY08							FY09		
								MAY	JUN	JUL	AUG	SEP	OCT	NOV	D		
<b>Al vonHalle</b>																	
<b>Gentile</b>																	
<b>Job: 8501 - Integrated Systems Testing-GENTILE</b>																	
<b>Startup Documentation</b>																	
	Y																
	8501-000	Health/Safety Directive HSD 5008 Classification	0		30JUN08		0.00										
	8501-101	SAD NCSX Safety Assessment Document (SAD) DRAFT	64	01JUL08*	30SEP08		22,739.20								EM//EM =80hr ;		
	8501-101M	Issue Draft Safety Assessment doc. (SAD)	0		30SEP08		0.00										
	8501-101X	SAD NCSX Safety Assessment Document (SAD) FINAL	247	01OCT08*	25SEP09		24,065.60								EM//EM =80hr ; EM//SM =80hr ;		
	8501-201	ISTP-NCSX-01 Coil EnergizationTests DRAFT	64	01JUL08*	30SEP08		11,369.60								EM//EM =40hr ;		
	8501-202	Issue Draft ISTP-NCSX-01 Coil EnergizationTests	0		30SEP08		0.00										
	8501-203	ISTP-NCSX-01 Coil EnergizationTests FINAL	249	01OCT08	30SEP09		12,032.80								EM//EM =40hr ; EM//SM =40hr ;		
<b>Ramakrishnan</b>																	
<b>Job: 4301 - DC Systems-RAMAKRISHNAN</b>																	
<b>431 - C-Site DC Systems</b>																	
	431-225	Reactivate DF & PEI units	15	01JUL08*	22JUL08		20,332.24								EE//EM =40hr ; EE//SM =08hr ; EE//TB =40hr ; 41=08\$K ;		
	431-230	Duumy Load test of DF & PEI units	105	23JUL08	19DEC08		10,683.15										
	431-261	Redo power loop design	355	02JUN08*	29OCT09		49,788.91										
	431-275A	Power cabling & Installation FY08	85*	02JUN08*	30SEP08		4,407.34								EE//EM =2hr ; EE//SM =12hr ; EA//SB =12hr ;		
	431-276	Maint of C-site rectifiers	997*	01OCT07A	30SEP11	LOE	18,475.22										
<b>Job: 4401 - Control &amp; Protection-RAMAKRISHNAN</b>																	
<b>441 - Electrical Interlocks</b>																	
	441-095	Design Interlock sys	310	03OCT08*	11JAN10		29,853.12								EA//SB =40hr ; EE//EM =80hr ; EE//SM =80hr ;		
	441-100	PLC Specification	160	02JUN08*	26JAN09		11,671.66										
<b>445 - Coil Protection Systems</b>																	
	445-1-2	Ground Fault Protection-Dsn	87	01JUL08*	31OCT08		32,648.51								EA//SB = EE//SM =		
<b>Job: 4501 - Power Sys Dsn &amp; Integr-RAMAKRISHNAN</b>																	
<b>451 - System Design &amp; Interfaces</b>																	
	451-0-2	Develop Power Systems SRD	15	07JUL08*	25JUL08		15,276.48								EE//EM =96hr ;		
	451-2-2	PDR Prep Power system -Dsn	40	28JUL08	22SEP08		29,795.52								EA//SB =128hr ;		
	451-2-3	Power system - PDR	0		22SEP08		0.00										
	451-6-2	Final design C-Site -Cabling	149	01OCT08*	08MAY09		27,877.60										
	451-2-2.1	Final Design C-Site	268	01OCT08*	27OCT09		27,935.36										
	451-1-2	Calculations-Dsn	149	28JUL08*	05MAR09		16,836.31										
<b>Sichta</b>																	
<b>Job: 5101 - Network and Fiber Infrastruct-SICHTA</b>																	
	R51-10	Preliminary Design	30	01OCT08*	11NOV08		8,722.10								EC//EM		
<b>Job: 5601 - Central Safety &amp;Interlock Sys-SICHTA</b>																	
	R56-10	Requirements, Codes&Standards	30	04AUG08*	15SEP08		5,283.20								EC//EM =40hr ;		
	R56-20	Preliminary Design	45	03OCT08*	08DEC08		18,779.60								EC//EM =100hr ; ea//sb=40		
<b>Job: 5801 - Central I&amp;C Integr&amp; Oversight-SICHTA</b>																	
	R58-20	WBS58 -FY08 Management & Integration LOE	250*	01OCT07A	30SEP08	LOE	7,185.15								ec//em=160		
	R58-30	WBS58 -FY09 Management & Integration LOE	249	01OCT08*	30SEP09	LOE	16,773.60								ec//em=120		





<b>Mothball NCSX Hardware</b>										
Item	Qty	Size	Storage Location	Perry MH	Viola MH (Lift Mgr)	Langella MH	TB MH	HP MH	M&S \$K	
<i>Items from TFTR Test Cell</i>										
Modular Coils	18									
3 pack on wedge	4	8.5' x 9.5'	NCTC		8		32	4		
3 pack on pallet	2	8' x 9.5'	NCTC		4		16	2		
fab pallet for 3 pack	2						16		0.2	
Vacuum vessel segments	3	11' x 15'	NCTC		12		72	3	1.2	
Port extension crates	6	4' x 10'	NCTC				8	6		
MC Bolts	2	4' x 4'	NCTCB				4	2		
Fab crate for MC bolts	2						16		0.4	
Coil winding Station	1	10' x 16'	NCTC				64	8		
Parts shelves with parts	12	3' x 7'	NCTCB				48	12		
Cabinets	24		NCTCB				48	24		
Crates	10	2' x 4'	NCTCB				20	10		
Crates	4	3' x 4'	NCTCB				8	4		
Remove Autoclave										
Safe all AC Power to autoclave						24	8			
Electrical removals						400	616	77		
Remove handrails and walkways			NCTCB				96	2		
Blower heater duct			NCTCB				48	2		
Ladder and stairways			NCTCB				16	2		
Remove tanks on platform	3		NCTCB				8	1		
Remove air lines			NCTCB				8	1		
Remove insulation			NCTCB				96	4		
Remove vent systems			NCTCB				80	2		
Remove autoclave pumps			NCTCB				16	2		
Remove pump line to pumps			NCTCB				16	2		
Remove injection platforms	3		NCTCB				96	2		
Remove N2 tanks / stands			NCTCB				16	2		
Move Autoclave to D-site Pad			D-site pad		16		80	16		load on low boy; re-survey; unload with mobile crane
Portable AC units	3		C-site crib				8	3		

<b>Mothball NCSX Hardware</b>										
Item	Qty	Size	Storage Location	Perry MH	Viola MH (Lift Mgr)	Langella MH	TB MH	HP MH	M&S \$K	
Drawing closeouts and field follow-up						200				
Small shield block	4		D-site pad				16	4		
Large shield block	4		D-site pad				16	4		
Machine mock-up			NCTC				8	1		
Welding machines	4		RESA				8	4		
Tools			C-site crib				32	16		
Measuring Equipment			S-109				16	4		
Inventory parts, material and tools as to their new location							80			
<b>Items from TFTR Basement</b>										
Shelves	1		NCTCB				4			
Cabinets	8		NCTCB				32			
Pallets	25		NCTCB				100			
Fab two 10' pallets	2	4' x 10'	NCTCB				16		0.2	
Spare coil conductor pallet	5	4' x 4'	NCTCB				20			
<b>Items from D-site yard</b>										
Cable tray stack	10	4' x 15'	D-site pad				10			
Pallet of tray covers	6	4' x 15'	D-site pad				6			
Fab pallets for tray covers	6						48		0.6	
Pallet of brackets	3	4' x 4'	D-site pad				3			
Pallet of gnd jumpers/hardware	2	4' x 4'	D-site pad				2			
<b>Items from NCTC/D-site MG</b>										



# NCSX Close-Out Documentation Plan Proposal

June 3, 2008

# Background

- DOE has directed that the NCSX Project be cancelled.
- As part of the orderly closeout of the Project, a major task will be compile and store all design and manufacturing documentation, including specifications, procedures, shop travelers, etc
- This effort includes both ORNL and PPPL.
- ***Time scale: complete by the end of this FY.***



# The NCSX Web is the proposed focal point for this documentation

- The NCSX Engineering Web already contains the majority of information that has been “approved”.
- What is not included on the NCSX Engineering Web are:
  - Information only stored in “hard” copy in the Ops Center
  - Information that may or may not be complete that is stored on individual engineers’ computers (e.g., FEA, design requirements documentation not yet approved such as draft SRDs, draft calculations, etc.)
  - Completed and in-process models and drawings contained in Inralink
  - Pertinent design memos, photographs, and other records that could provide in valuable information on the NCSX design process.
  - Other records called out in the NCSX Document Records Plan ([NCSX-PLAN-DOC-04](#))  
=>[http://ncsx.pppl.gov/SystemsEngineering/Plans\\_Procedures/NCSX\\_Mgmt\\_Plans/DOC/NCSX-PLAN-DOC-04-Signed.pdf](http://ncsx.pppl.gov/SystemsEngineering/Plans_Procedures/NCSX_Mgmt_Plans/DOC/NCSX-PLAN-DOC-04-Signed.pdf)

# Documents we must archive

Records defined in the NCSX Document Records Plan include :

<b>Record Type</b>	<b>Definition</b>
Document	Recorded information that describes, specifies, reports, certifies, requires, or provides information, data or results. A document is not a record until it meets the definition of record.
Calculations	Results obtained from mathematical processes used in design, operation, etc.
Guides	A document that provides additional information to NCSX project staff. Examples might be users' guides or documents that describe possible techniques for analysis.
Criteria	A document that defines the design criteria to be used on NCSX.
Procedure	A document that provides an orderly, detailed method of accomplishing tasks within the applicable Laboratory and NCSX guidelines and with established responsibilities and actions.
Record	A completed document or other media that provides objective evidence of an item, service, or process.
Standard	A document that defines the minimum quality and performance outcome of a process.

# Also to be archived

- Conference publications & posters (in electronic format)
- CAD drawings & models
- FEA analyses and models (most stored on FTF site or p-drive; need to archive the URLs and model descriptions).
- “Back office” support data & metrology data (already archived on the p-drive– need pointer on web).
- Inventory lists for hardware; roadmap between hardware and documentation.
- PRIMavera models (pdf models already exist on the web)
- WBS notes, presentations, and any files that now reside on personal PCs relevant to the WBS activities.
- Field travelers
- QC documentation
- Photos
- Deliverables from subcontracts such as EWI, prototyping activities, etc.
- Presentations that would be useful to re-start (examples: interference studies; metrology presentations, etc.)

# Approach


- Utilize the NCSX Engineering Web to provide electronic links and/or instructions on where to access to all documentation (e.g., for hard copy stored in Ops Center, the page would contain an inventory list organized by WBS and type of document; for completed drawings provide a link to the PPPL CADD web; for models and in-process drawings provide instructions on how to access Intralink, etc.).
- The Engineering Web page will be modified to include a new category entitled: “NCSX Closeout Documentation”
- Add Google Search function to the Web.

Microsoft FrontPage - C:\Documents and Settings\bsimmons\My Documents\My Webs\NCSX\_Engineering\index.htm

Normal (default font) B I U [Text Formatting Icons] A [Font Size] [Color] [Background Color]

File Edit View Insert Format Tools Table Data Frames Window Help Type a question for help

Web Site index.htm\*



**NCSX** National Compact Stellarator Experiment Engineering Web

**Web Pages** | NCSX Home | Project Office | Physics | Procurement | Construction

**FTP Servers** | Design Data | Data for Suppliers

**Project Files** | Memos | Meetings | Photos | Files by WBS

**Project Control** | Cost Performance Reports | WPs | WP:Job Map

**Plans & Procedures** | NCSX Procedures | NCSX Plans | PPPL Procedures | PPPL Policies | NCSX:PPPL Procedure Matrix

**Specifications & SOWs** | Specifications | Design Criteria | SOWs | Project Guidance

**Reviews, Analyses & R&D** | Design Reviews | Open Chits | Analysis Reports | R&D Reports

**Design Data** | Technical Data | Design Descriptions | Bills of Material | Metrology

**Fabrication, Assembly, Installation & Test Plans** | Modular Coil Fab | TF Coil Fab | Coil Test Results | Facility Layout

**Engineering Mgmt & Systems Engineering** | Risk Register | Org Chart | WBS | Electronic Signatures | Training

**ES&H, QA & Procurement** | ES&H | ACC | NEPA | Audits | NCRs

**Other** | Generator Info | Useful Links

**NCSX Closeout Documentation** | Models | In-Process Drawings | FEA | TBD1 | TBD2 | TBD3 | Ops Center Materials | TBD4 | Supporting Design Memos

Search NCSX [Input Field] [Go] [Clear]

Getting Started | Site Index | PCS Primer | Estimating Guide | Style Instructions | Sample Documents | Spec Guidelines | SOW Guidelines | Design Rvw Guide | Design Completion | Analysis Guidelines | Intralink Guide | FroTools Guide | Procurement Guide

Design | Split | Code | Preview

Draw | AutoShapes

1:47@56kbps 1555 x 885 Default Custom

# Proposed storage requirements

- All electronic documentation to be stored, backed up, and accessible for a minimum of 10 years.
  - Software needed to access the information is to be kept available for at least 10 years.
    - Need to provide a Dell server with software installed and “frozen” in place.
      - Cost: \$3K, plus licenses for software.
      - Issue: maintenance costs for the 10 year period.
    - We need to define issues or limitations associated with FEA, PRIMAVERA, and CAD. These may be limited to 3 years without extraordinary efforts to preserve the “old” versions.
      - NOTE: All CAD released drawings are already stored in PDF.
- As the final step, an audit of the Web to assure that the data is all there, and in a usable form, with the data organized based on an appropriate “graded approach” considering cost vs. potential usage and benefit.



# Next Steps

- Bob, Phil & Ron – develop resources loaded schedule based on these discussions by tomorrow.
  - Propose to include time for people to “data mine” their computers & write summary notes. (~200-300 hrs/person for ~30 people)
    - Resources for organizing and posting and final audit (6 p-m + computer support)
      - Bob, Frank & Judy would sit down with each person to discuss their files and how their efforts should be spent.
    - For the server, software and setup ~\$40K.
    - Create data files for each modular coil, TF coils, & VV to store in Ops Center for each coil (Marianne & Cheryl) (~4p-m + 5K for fireproof cabinets). (run copies, vendor info,
      - Data sheet pasted with each coil indicating its ID and where info is available.
      - Need original and back-up stored in a separate location.
    - Need cabinets for X-ray films from MCs (\$5K)
  - Include time (4 p-m) for analysts to close-out key analyses. Goal: to preserve the ability to pick these up and re-run them for several years into the future. (Ron Strykowski – please include in your budget).
- Transmit requirements to ALL NCSX staff members at both PPPL and ORNL.

**NCSX Closeout Report  
(Technical Sections)**

**1. Stellarator Core**

- 12. Vacuum Vessel (Goranson)
- 13. Conventional Coils (Kalish)
- 14. Modular Coils (Williamson)
- 15. Conventional Coil Structures (Dahlgren)
- 16. Coil Services (Goranson)
- 17. Cryostat (Raftopoulos)
- 17. Base Structure (Dahlgren)
- 18. Field Period Assembly Design, Constructability, & Tooling (Brown)
- 18. Field Period Assembly Operations (Viola)
- 19. Stellarator Core Mgt. & Int. (Cole)

**2. Auxiliary Systems (Blanchard)**

**3. Diagnostics (Stratton)**

**4. Electrical Power Systems (Ramakrishnan)**

**5. Central I&C/Data Acq. (Sichta)**

**6. Facility Systems (Dudek)**

**7. Test Cell Prep & Machine Assy. (Perry)**

**8 Project Mgt. & Integration**

- 81. Project management (Rej)
- 82. Project Engineering (Heitzenroeder)
- 82. System Engineering (Simmons)
- 82. Design Integration (Brown)
- 82. System analysis / Technical Assurance (Brooks)
- 82. Dimensional Control Coordination (Ellis)
- 82. Plant Design (Perry)
- 85. Integrated System Testing (Gentile)

**Resource loaded schedule for remaining work (Use May 1 plan)**

**Cost estimate for remaining work (May 1 plan, less work accomplished thereafter)**

**Risk Register at Project Close**

### **Contents of Each WBS Section**

- Scope, deliverables (what was to be produced? Refer to WBS dictionary) ~1/2 page
- Status (what was completed?) ~1/2 page
- Graphics (photo or CAD drawing) up to 2
- Remaining scope (scheduled tasks not completed) ~1/2 page
- Open issues or other information of value if project were restarted. ~1/2 page
- List of documentation (SRD, SDD, analysis reports, R&D/test reports, drawing tree, specs, procedures, review documentation, etc.)

Don,

There appears to be three distinct activities required for normal project impletion/closeout. The SNS Closeout Report is a good template but has more content than needed for NCSX cancellation. Here are the basics...

**Prepare a lesson learned report:**

- \* Inventions or patents created during the project
- \* New business process other projects should leverage
- \* Problems other projects can avoid

**Prepare a closeout report:**

- \* Technical, scope, cost and schedule baseline accomplishments
- \* Final cost report, including claims and claims settlement strategy
- \* Deactivation, decontamination and decommissioning planning
- \* Closeout approvals
- \* Permits, licenses and/or environmental documentation
- \* Contract closeout status
- \* Adjustments to obligations and costs
- \* Photographic documentation
- \* Baseline change control log

**Contract Closeout:**

- \* Contracting Officer certifies closeout

Jeffrey Makiel