

# NATIONAL COMPACT STELLARATOR PROJECT

## Engineering Change Proposal (ECP)

### COVER PAGE

*(TO BE COMPLETED BY SYSTEMS ENGINEERING SUPPORT MANAGER)*

Originator: R.Strykowski

Date: July 21, 2008

ECP No: 60

ECP Title: NCSX MIE Project close

#### Required Reviewers

Required Reviewers for this ECP: D.Rej, H.Neilson, R.Simmons, P.Heitzenroeder, L.Dudek, J.Harris

#### ECP Approval Level

Expedited ECP?  Yes  No

Change Level: 0 - Deputy Secretary of Energy

Approving Official: Deputy Secretary of Energy

#### Actions

1. Accept proposed closeout plan as proposed (DOE)
2. Execute closeout plan (PPPL/ORNL)

### APPROVALS

*(TO BE COMPLETED BY APPROVING OFFICIALS)*

Change Level	Approving Official	Approval?	Signature
3	NCSX Project Manager	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
3a (Expedited ECP)	NCSX Engineering Manager	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2	NCSX Federal Project Director	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
1	Associate Director OFES	<input type="checkbox"/> Yes <input type="checkbox"/> No	
0	Deputy Secretary of Energy	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

**NATIONAL COMPACT STELLARATOR PROJECT  
Engineering Change Proposal (ECP)**

***PART I  
(TO BE COMPLETED BY ORIGINATOR)  
ECP-60***

**Originator:** R.Strykowski

**Date:** July 21,2008

**Overview of Change**

**Type of ECP:**       EXPEDITED       STANDARD

**Type of Change:**       TECHNICAL       COST       SCHEDULE       EDITORIAL

(Check all that Apply)

**Reason for Change:** Project Cancellation

**Impacted WBS Elements:** All

**Impacts of Change (Briefly Describe):**

NCSX MIE Project cancelled as directed by DOE. Remaining work (as defined in attached) required to bring work efforts to an orderly conclusion, which includes new scope of safeguarding acquired project assets and documentation closeout.

Project TEC reduced from \$92.4M to \$89.7M

**Does this Change Impact Material Already Procured or Parts/Assemblies Already Assembled/Manufactured using this Material:**  Yes  No

If "Yes", what is the recommended disposition of this material/part/assembly? Fabricated and procured parts and hardware will be inventoried, collected and stored in a protected defined area.

**Assessment of Other Options:** Parts and fabricated hardware to be stored for future disposition and not sold for scrap value at this time.

# NATIONAL COMPACT STELLARATOR PROJECT

## Engineering Change Proposal (ECP)

### *PART I* *(TO BE COMPLETED BY ORIGINATOR)*

Originator: R.Strykowski

Date: July 21,2008

#### Detailed Description of the Change:

(Use Continuation Sheets and/or Attach Information/Sketches, As Needed)

#### List Attachments, Impacted Documents, etc.

- 1) DOE letter directing project cancellation (Fonck to Faul May 29,2008)
- 2) Closeout plan scope
- 3) Closeout plan resource loaded schedule

#### Description of Change:

1. Scope:
  - Terminate \$72.8M of scope
  - Document work to date
  - Inventory and store all materiel and fabricated components
  - Complete modular & toroidal field coil fabrication
  - Complete coils structures final design review
  - Complete welding two half field period assemblies (HFPA) & one HFPA trial fit up over vacuum vessel subassembly
  - Prepare manuscripts for publication in archival journals
2. Costs & Budgets:
  - TEC Costs through 5/31/08 .....\$82.7M
  - Estimate to Complete..... \$7.0M
  - FY08 Available BA ..... \$7.4M
  - Estimate at Complete: .....\$89.7M
  - Current BA .....\$90.1M
  - **Current Baseline TEC: .....\$92.4M**
  - **Revised TEC.....\$89.7M**
3. Schedule (Early Finish Dates)
  - MC & TF coil fab, welding, fit up ..... 9/30/08
  - Equipment inventory & disposition .....12/23/08
  - Documentation ..... 3/31/09



# ATTACHMENT 1

## Department of Energy

Washington, DC 20585

May 29, 2008

Mr. Jerry Faul, Manager  
U.S. Department of Energy  
Princeton Site Office  
P.O. Box 102  
Princeton, NJ 08542

Dear Jerry,

In light of the recent decision to cancel the National Compact Stellarator Experiment (NCSX), it is necessary that you work with both the Princeton Plasma Physics Laboratory (PPPL) and the Oak Ridge National Laboratory (ORNL) to develop a closeout plan and to provide such a plan to us for our review and approval as soon as possible but no later than June 30, 2008. We believe that in order to maximize our investment such a plan should 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.

If you have any questions, please contact me or the NCSX Program Manager, Barry Sullivan at 301-903-8438.

Sincerely,

A handwritten signature in cursive script, reading "Raymond J. Fonck".

for

Raymond J. Fonck  
Associate Director  
for Fusion Energy Sciences  
Office of Science

# ATTACHMENT 2

## NCSX Closeout Scope and Budget Reconciliation

KEY:										
Complete as Planned	Complete Partially	Terminate & Document	Done	New Scope						
WBS	Job	Job Title	Job Manager	Actual Costs thru 5/31/08	Close-out Estimate to Complete from 6/1/08	Close-out Estimate at Complete	April 2008 BCP Estimate at Complete	Apr 2008 BCP Scope Eliminated	Comments	
12 - Vacuum Vessel Systems	1201,1202,1203,1206,1250	VVSA R&D,design and procurement	Goranson	8,966		8,966	8,966	-		
	1204	Vacuum Vessel Procurements (Non-VVSA)	Goranson	868		868	999	(131)		
	1260	Neutral Beam Transition Ducts	Cole	4		4	567	(563)		
	1270	Heater Control System	Goranson	-		-	642	(642)		
13 - Conventional Coils	1301,1350,1351	TF Design & Fabrication prep	Kalish	1,989		1,989	1,989	-		
	1303	Central Solenoid design		155		155	155	-		
	1302	PF Coil Design	Chrzanowski	128		128	187	(59)		
	1352	PF Coil Procurements	Chrzanowski	80	93	173	1,633	(1,460)	ETC includes PF Conductor cancellation costs & Credits from reobligating commitments	
	1353	Central Solenoid Structure Procurement	Dahlgren	-		-	357	(357)		
	1354	Trim Coil Design & Procurement	Kalish	201	24	225	1,482	(1,257)	ETC includes wrapping-up final design, assy & parts list (June 08)	
	1355	Conventional Coils I&C	Cole	1		1	110	(109)		
	1361	TF Coil Fabrication	Kalish/Meighan	1,865	245	2,110	2,173	(63)	Complete by Sep24	
14 - Modular Coils	1401,1402,1404,1405,1406,1407,1409,1410,1411,1412,1413,1414,1419,1460	Modular coil R&D, Design, Win ding Facility Design & Fab, MCWF Fabrication Contract	Williamson/Chrzanowski	21,186		21,186	21,186	-		
	1408	Modular Coil Winding Supplies	Chrzanowski	2,662	21	2,683	2,622	61	Complete by Aug 30	
	1451	Modular Coil Winding Operations	Chrzanowski	8,459	280	8,739	8,646	93	Complete by Aug 30	
	1459	Modular Coil Fabrication Punch List Items	Chrzanowski	541	68	609	650	(41)	Grinding ops to enable proper storage	
	1416	Modular Coil Type A&B Design	Cole	4,687	37	4,724	4,743	(19)	Complete Jun-Jul 08 work only	
	1421	Modular Coil Interface Design	Cole	1,451	50	1,501	1,090	411	Complete June 08 work only	
	1429	Modular Coil Interface R&D		268		268	250	18		
	1431	Modular Coil Interface Hardware	Dudek	626	97	723	1,545	(822)	Invoices for vendor work already performed	
15 - Coil Support Structures	1501	Coil Structures Design	Dahlgren	635	74	709	634	75	Complete by July 11th-no chit resolution	
	1550	Coil Structures Procurement	Dahlgren	21		21	1,444	(1,423)		
16 - Coil Services	1601-161	LN2 Distribution System	Goranson	69	30	99	1,088	(989)	Terminate & document work to date after completing PDR (6/5/08)	
	1601-162	Coil Electrical Leads	Goranson			-		-		
	1601-163	Coil Protection System Interfaces	Goranson			-		-		
17 - Cryostat & Base Support Structure	1701	Cryostat Design	Raftopoulos	504		504	1,014	(510)		
	1751	Cryostat Procurements	Raftopoulos	-		-	550	(550)		
	1702	Base Support Structure Design	Dahlgren	166	12	178	192	(14)	Accounting lag	
	1752	Base Support Structure Procurements	Dahlgren			-	230	(230)		
18 - Field Period Assembly	1801 & 1802	FPA Oversight & Support	Viola	1,873	355	2,228	5,376	(3,148)	Complete 2nd Station-2 HFPA welds only & one Station 3 fitup before storing equipment in FY08	
	1804	FP Assy Metrology	Raftopoulos	559		559	559	-		
	1810	FPA Operations - Stations 1, 2 & 3	Viola	3,129	812	3,941	9,310	(5,369)	Complete 2nd Station-2 HFPA welds only & one Station 3 fitup before storing equipment in FY08	
	1815	FPA Operations - Station 5	Viola	-		-	1,888	(1,888)		
	1803 & 1805	FPA Tooling Design & Constructability and Procurements	Brown	1,735	114	1,849	2,426	(577)	Reduce & prorate to support Job 1810. Tooling cost reflects invoice lag.	
	1806	FPA Specifications & Drawings	Cole	66	6	72	393	(321)	Reduce & prorate to workload, plus scope transfer to job 8221	
19 - Stellarator Core Mgmt & Integration	1901	Stellarator Core Management & Integration	Cole	2,509	127	2,636	4,572	(1,936)	Reduce & prorate to workload	
21 - Fueling Systems	2101	Gas Fueling Systems	Blanchard	63		63	401	(338)		
22 - Torus Vacuum Pumping Systems	2201	Vacuum Pumping Systems	Blanchard			-	679	(679)		
	2501	Neutral Beam Refurbishment	Stevenson	286		286	286	-		
3 - Diagnostic Systems	3101	Magnetic Diagnostic Systems	Stratton	851	28	879	1,166	(287)		

# ATTACHMENT 2

## NCSX Closeout Scope and Budget Reconciliation

1	A	B	D	E	F	G	H	I	J	K
3	<b>KEY:</b>									
5	WBS	Job	Job Title	Job Manager	Actual Costs thru 5/31/08	Close-out Estimate to Complete from 6/1/08	Close-out Estimate at Complete	April 2008 BCP Estimate at Complete	Apr 2008 BCP Scope Eliminated	Comments
46		3601	Edge & Divertor Diagnostic Systems	Stratton			-	30	(30)	
47		3801	Electron Beam Mapping Systems	Stratton			-	258	(258)	
48		3901	Diagnostic Integration	Stratton	411		411	488	(77)	
49	4 - Electrical Power Systems	4101	AC Power Systems	Ramakrishnan	3		3	158	(155)	
50		4301	DC Power Systems	Ramakrishnan	393		393	949	(556)	
51		4401	Control & Protection Systems	Ramakrishnan	88		88	1,162	(1,074)	
52		4501	Power Systems Design & Integration	Ramakrishnan	162		162	1,065	(903)	
53	5 - Central Controls and Computing	5101	Network & Fiber Optic Infrastructure Systems	Sichta			-	221	(221)	
54		5201	Central Instrumentation & Control Systems	Sichta			-	413	(413)	
55		5301	Data Acquisition & Facility Computing Systems	Sichta			-	166	(166)	
56		5401	Facility Timing & Synchronization Systems	Sichta			-	358	(358)	
57		5501	Real Time Plasma Control Systems	Sichta			-	502	(502)	
58		5601	Central Safety Interlock Systems	Sichta			-	372	(372)	
59		5801	Central I&C Management & Integration	Sichta	48		48	100	(52)	
60	6 - Facility Systems	6101	Cooling Water Systems	Dudek	24		24	136	(112)	
61		6201	Cryogenic Systems	Raftopoulos			-	1,568	(1,568)	
62		6301	Utility Systems	Dudek			-	109	(109)	
63		6401	Bakeout Systems	Kalish			-	634	(634)	
64	7 - Test Cell Prep & Machine Assembly	7101	Shield Wall Modification		33		33	33	-	
65		7301	Platform Design & Fabrication	Perry	86		86	289	(203)	
66		7401/7451	Machine Assembly Planning & Oversight	Perry	655		655	2,922	(2,267)	
67		7501	Construction Support	Perry			-	1,325	(1,325)	
68		7503	Machine Assembly Operations	Perry			-	4,317	(4,317)	
69		7601	Machine Assy Tooling Design & Fab	Perry			-	399	(399)	
70	81 - Project Management & Integration	8101	Project Management @ PPPL	Rej	3,687	633	4,320	7,464	(3,144)	Reduce & prorate to workload, plus scope transfer to job 8221
71		8102	Project Management @ ORNL	Harris	800	137	937	1,375	(439)	Reduce & prorate to workload, plus scope transfer to job 8222
72		8998	PPPL Direct Allocations	Strykowski	1,939	202	2,141	3,720	(1,579)	Reduce & prorate to workload
73	82 - Project Engineering	8202	Engineering Management & Systems Engineering	Heitzenroeder	3,459	363	3,822	6,429	(2,607)	Reduce & prorate to workload, plus scope transfer to job 8221
74		8203	Design Integration	Brown	1,194	14	1,208	3,683	(2,475)	Reduce & prorate to workload
75		8204	Systems Analysis & Technical Assurance	Brooks	1,966	42	2,008	2,725	(717)	Reduce & prorate to workload
76		8205	Dimensional Control Coordination	Ellis	475	34	509	977	(468)	Reduce & prorate to workload
77		8210	FY07 Project rebaselining exercise		106		106	93	13	
78		8215	Plant Design	Perry	6		6	200	(194)	
79	NEW	8221	Documentation for Closeout	Heitzenroeder		1,134	1,134	-	n/a	
80	NEW	8220	Equipment Disposition & Facility Restorations	Perry		530	530	-	n/a	Include \$154k for autoclave removal
81	NEW	8222	Prepare manuscripts for peer-reviewed archival journals	Neilson		300	300	-	n/a	
82		8401	Project Physics-PPPL	Zarnstorff	324		324	324	-	
83		8402	Project Physics-ORNL	Lyon	146		146	146	-	
84	85 - Integrated Systems Testing	8501	Integrated Systems Testing	Gentile	3		3	795	(792)	
85	DCMA	DCMA	DCMA		75		75	75	-	
86			Subtotal =		82,686	5,861	88,547	138,179	(51,595)	
87			Contingency =			1,172	1,172	22,410	(21,238)	
88			Total =		82,686	7,033	89,719	160,589	(72,833)	



# ATTACHMENT 3

Activity ID	Activity Description	Forecast Start	Forecast Finish	% cmplt	ETC	FY08												FY09												FY10																																																			
						J				J				A				S				O				N				D				J				F				M				A				M				J				J				A				S				O				N				E			
<b>Included Closeout Scope</b>																																																																																	
<b>Brown</b>																																																																																	
<b>Job: 1803/1805- FPA Tooling/Constr-BROWN</b>																																																																																	
<b>Station 3-Modular Coil to VVSA Assembly</b>																																																																																	
1803S3-4	Generate laser screen trace drawings (1/2 period)	15AUG08	05SEP08		10,688.40													SMITH etc =40hr ; MORRIS etc =40h																																																															
1803S3-6	Station 3 simulation detail model	02JUN08*	30JUN08		22,704.00	BROWN												etc =24hr ; SMITH etc =120																																																															
1803S3-7	VV/MC clearance study (for VVSA1)	01APR08A	30JUN08	75	1,537.80	SMITH												etc =10hr ;																																																															
1803S3-9	Oversite, cost and schedules, reviews	31JAN08A	30SEP08	LOE	3,520.75	BROWN												etc =20hr ;																																																															
1805S3-2	Left side base grout plates	24MAR08A	30JUN08	99*	2,620.62	41etc =02\$												k ;																																																															
1805S3-3	MCHP lift fixture frame weldment	24MAR08A	30JUN08	99*	9,091.44	41etc =07\$												k ;																																																															
1805S3-4	Lift fixture mounting bracket weldments	24MAR08A	30JUN08	99*	14,717.70	41etc =12\$												k ;																																																															
1805S3-5	Reworked laser frame structure	24MAR08A	30JUN08	99*	1,117.80	41etc =01\$												k ;																																																															
1805S3-6	Right inboard laser frame structure	24MAR08A	30JUN08	99*	1,055.70	41etc =01\$												k ;																																																															
1805S3-7	Left inboard laser frame structure	24MAR08A	30JUN08	99*	844.56	41etc =01\$												k ;																																																															
1805S3-8	Laser screen lexan sheet (1/8 x 48" x 96")	24MAR08A	30JUN08	99*	546.48	41etc =00\$												k ;																																																															
1805S3-9	Estimate for Station 2 type alignment system	24MAR08A	30JUN08	99*	4,024.08	41etc =03\$												k ;																																																															
1805S3-100	Hardware & Misc items	24MAR08A	30JUN08	99*	1,242.00	41etc =01\$												k ;																																																															
1805S3-110	Misc assembly Cost	24MAR08A	30JUN08	99*	10,060.20	41etc =08\$												k ;																																																															
1805S3-201	MC base support system (left / rt side)	24MAR08A	30JUN08	99*	15,512.58	41etc =12\$												k ;																																																															
1805S3-202	Hilman roller - 8-OT plus R & U guides	24MAR08A	30JUN08	99*	2,943.54	41etc =02\$												k ;																																																															
1805S3-203	AirLoc Wedgmount Precision Levelers	24MAR08A	30JUN08	99*	707.94	41etc =01\$												k ;																																																															
1805S3-204	Lift fixture mounting bracket weldments	24MAR08A	30JUN08	99*	4,409.10	41etc =04\$												k ;																																																															
1805S3-205	Estimate for Station 2 type alignment system	24MAR08A	30JUN08	99*	1,204.74	41etc =01\$												k ;																																																															
1805S3-206	Hardware & Misc items	24MAR08A	30JUN08	99*	372.60	41etc =00\$												k ;																																																															
1805S3-207	Misc assembly Cost	31JAN08A	30SEP08		5,005.26	41etc =04\$												k ;																																																															
<b>Job: 8203 - Design Integration-BROWN</b>																																																																																	
8203FY08-4	General integration activities	01FEB08A	30SEP08	LOE	13,991.20	BROWN												etc =40hr ; EA/DM												etc =60h																																																			
<b>Brooks</b>																																																																																	
<b>Job: 8204 - Systems Analysis-BROOKS</b>																																																																																	
8204-FY08Z	Syst Analysis, studies & tech assurance FY08 etc	02JUN08*	30SEP08	LOE	41,999.27	BROOKS ZHANG												etc =107hr ; FAN etc =79hr ;												etc =51																																																			
<b>Chrzanowski</b>																																																																																	
<b>Job: 1302 - PF Design -CHRZANOWSKI</b>																																																																																	
1302-275	Resolve FDR Chits	22FEB08A		90	0.00	CHRZANOWSKI												etc =00hr ;																																																															
<b>Job: 1352 - PF Coil Procurement-CHRZANOWSKI</b>																																																																																	
<b>PF Coil Fabrication</b>																																																																																	
141-038.1	PF Conductor cancellation cost	21FEB08A	18JUL08	C	93,150.00	41etc =75\$												k ; CHRZANOWSKI												etc =00hr ;																																																			
<b>Job: 1408 - MC Winding Supplies-CHRZANOWSKI</b>																																																																																	
1408-3	Misc and safety supplies (\$7k/mo.)	23MAY07A	31JUL08	LOE	7,452.00	41etc =06\$												k ;																																																															
1408-6	VPI clean manifold contract	23MAY07A	31JUL08	80	2,484.00	41etc =02\$												k ;																																																															
1408-8	Cutting hardware for flange bolts	23MAY07A	31JUL08	LOE	534.06	41etc =5\$												k ;																																																															
1408-7	Misc tech shop support	23MAY07A	31JUL08	80	10,108.16	EMT/TB												etc =128hr ;																																																															

Run Date: 25 JUN 08 08:21

■ FORECAST SCHEDULE  
■ Progress Bar  
■ Critical Activity

0805

**NCSX**  
**MIE CLOSEOUT PLAN**  
**June 25, 2008**

Sheet 1 of 9

# ATTACHMENT 3

Activity ID	Activity Description	Forecast Start	Forecast Finish	% cmplt	ETC	FY08												FY09												FY10																																																			
						J				J				A				S				O				N				D				J				F				M				A				M				J				J				A				S				O				N				E			
<b>Job: 1451 - Mod Coil Winding-CHRZANOWSKI</b>																																																																																	
<b>Station 3-Casting Prep &amp; Winding</b>																																																																																	
P1-170	Instl Chill Plates,Tubing,Bag A6	02JUN08	01JUL08		57,490.16	EM/TB												etc =728hr ;																																																															
<b>Station 5-VPI</b>																																																																																	
P1-171V	VPI (Station 5) A6	02JUL08	29JUL08		47,514.31	EM/TB												etc =281hr ; EM2/TB												etc =27																																																			
P3-171VM	COMPLETE VPI OF 18th MOD COIL		29JUL08		0.00	EMT/TB												etc =16hr ;																																																															
<b>Station 1 Post VPI</b>																																																																																	
P2-171C	Final Clamps & Warm Test (Station1) B6	01JUL08*	23JUL08		24,006.88	EM/TB												etc =272hr ; EMT/TB												etc =32																																																			
P1-171C	Final Clamps & Warm Test (Station1) A6	30JUL08	20AUG08		24,006.88	EM/TB												etc =272hr ; EMT/TB												etc =32																																																			
<b>LOE Oversight &amp; Supervision</b>																																																																																	
145XSPRV-3	Winding Engineering oversight and supervision	01MAY07A	30SEP08	LOE	42,266.43	LANGISH												etc =275hr ;																																																															
145XSPRV-A	Winding Engineering oversight and supervision	01NOV07A	29AUG08	LOE	84,677.10	CHRZANOWSKI												etc =241hr ; MEIGHAN												etc =321																																																			
<b>Job: 1459 - Mod Coil Fabr.Punch List-CHRZANOWSKI</b>																																																																																	
<b>Punchlist Tech shop/RESA</b>																																																																																	
PLTS-C5	Grinding & Drill Holes -C5	01MAY08A	29AUG08	83	3,221.98	EM/TB												etc =41hr ;																																																															
PLTS-A5	Grinding -A5	01MAY08A	29AUG08	0	6,949.36	EM/TB												etc =88hr ;																																																															
PLTS-B5	Grinding -B5	01MAY08A	29AUG08	0	9,476.40	EM/TB												etc =120hr ;																																																															
PLTS-A6	Grinding -A6	01MAY08A	29AUG08	20	3,095.62	EM/TB												etc =39hr ;																																																															
PLTS-B6	Grinding -B6	01MAY08A	29AUG08	0	9,476.40	EM/TB												etc =120hr ;																																																															
PLTS-C6	Grinding & Drill Holes -C6	01MAY08A	29AUG08	23	14,593.66	EM/TB												etc =185hr ;																																																															
<b>Punchlist- Coil Technicians</b>																																																																																	
PLCT-A6	Insul,measure,TC,SG other punch list-A6	01OCT07A	29AUG08	36	10,411.40	EM/TB												etc =132hr ;																																																															
PLCT-B6	Insul,measure,TC,SG other punch list-B6	01OCT07A	29AUG08	36	10,411.40	EM/TB												etc =132hr ;																																																															
<b>Cole</b>																																																																																	
<b>Job: 1416 - Mod Coil Type AB Fnl Dsn-COLE</b>																																																																																	
<b>Analysis and closeout documentation</b>																																																																																	
1416-601	Prepare EM and structural analysis of leads	31JAN08A	30JUN08	70	9,966.00	williamson												etc =66hr																																																															
1416-650	Prepare cooling analysis of lead area	02JUN08*	30JUN08		3,020.00	freudenberg												etc =160hr ;																																																															
1416-651	2D cooling analysis for mod colis	02JUN08*	30JUN08		12,080.00	freudenberg												etc =80hr ;																																																															
<b>ECN Modifications</b>																																																																																	
1416-801	ECN Mods-Resize vertical port boot	02JUN08	30JUN08	80	3,624.00	lovet												etc =24hr ;																																																															
1416-802	ECN Mods-Revise Type B cooling lines	01MAY08A	30JUN08	80	1,812.00	lovet												etc =12hr ;																																																															
1416-803	ECN Mods-Issue DXF shim files for fab	02JUN08*	30JUN08	80	3,020.00	lovet												etc =20hr ;																																																															
1416-805	ECN Mods-Add TC's at bottom of 101,102,103 dwgs	01MAY08A	30JUN08	80	2,416.00	lovet												etc =16hr ;																																																															
1416-806	ECN Mods-Revise dwg 123-151	02JUN08*	30JUN08	80	1,510.00	lovet												etc =10hr ;																																																															
<b>Job: 1421 - Mod Coil Interface Design-COLE</b>																																																																																	
<b>Inboard Interface-CC</b>																																																																																	
1421-3155	Resolve C-C shim FDR comments	02JUN08*	30JUN08		18,120.00	COLE												etc =120hr ;																																																															
1421-9000	Perform shear test	02JUN08*	18JUL08	60	31,710.00	moon												etc =120hr ; freudenberg=40 ornlem=50																																																															
<b>Job: 1901 - Stellarator Core Mngt&amp;Integr-COLE</b>																																																																																	
<b>191 - Stellarator Core Management &amp; Oversight</b>																																																																																	
1901-08	WBS 191 FY08	01OCT07A	29SEP08	LOE	28,889.32	COLE												etc =121hr ; NELSON												etc =70																																																			
1901-9000	Update drawing tree	01OCT07A	29SEP08	LOE	24,160.00	lovet												= 160																																																															
<b>192 - Stellarator Core Integr &amp; Global Analysis</b>																																																																																	
1902-08	WBS 192 FY08	01OCT07A	29SEP08	LOE	66,445.34	COLE												etc =121 m&s =20 travel= 10												etc =182																																																			
<b>193 - Risk Mitigation Tasks</b>																																																																																	
RISK-43	Bolt preload could relax with time.	03MAR08A	26AUG08		7,852.00	FOGARTY												etc =52hr ;																																																															



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Activity ID	Activity Description	Forecast Start	Forecast Finish	% cmplt	ETC	FY08												FY09												FY10																																																			
						J				J				A				S				O				N				D				J				F				M				A				M				J				J				A				S				O				N				E			
<b>Job: 1806 - FP Assembly specs and drawings-COLE</b>																																																																																	
<b>Station 3-Modular Coil to VVSA Assembly</b>																																																																																	
1803-301	Station 3 Assembly Specification	02JUL07A	30JUN08	80	3,624.00	COLE												etc =24hr ;																																																															
1803-305	Station 3 Assembly Drawings	02JUL07A	30JUN08	80	2,416.00	COLE												etc =16hr ;																																																															
<b>Dahlgren</b>																																																																																	
<b>Job: 1702 - Base Support Struct Design-DAHLGREN</b>																																																																																	
<b>1702-525M Base Support Structure FDR</b>																																																																																	
1702-530	FDR labor cost (accounting lag)	02JUN08	13JUN08		11,688.80	DAHLGREN												etc =40hr ; CRUIKSHANK etc =40h																																																															
<b>Job: 1501 - Coil Structures Design-DAHLGREN</b>																																																																																	
<b>1501-533 Detail CAD Drawings,BOM</b>																																																																																	
1501-533	Detail CAD Drawings,BOM	01JUN07A	30JUN08	75	21,319.30	DAHLGREN												etc =05hr ; RUSHINSKI etc =89h												CRUIKSHANK etc =89hr ;																																																			
1501-533F	Integrated Stress Analysis	01OCT07A	30JUN08	75	34,286.56	DAHLGREN												etc =154hr ; FAN=etc=40																																																															
1501-536	Issue dwgs for review		30JUN08*		0.00																																																																												
1501-549	Update C.S.Support Attacgmt Design	01MAY08A	09JUN08	75	2,036.70	DAHLGREN												etc =05hr ; RUSHINSKI etc =10h																																																															
1501-562	Prepare Specs for Coil Structure & CSS h/w	24JUN08	30JUN08		3,542.00	DAHLGREN												etc =20hr ;																																																															
1501-537	FDR Prep	24JUN08	30JUN08		12,370.68	DAHLGREN												etc =38hr ; RUSHINSKI etc =49h																																																															
1501-541	Coil Support Structures - FDR		30JUN08		0.00																																																																												
<b>Dudek</b>																																																																																	
<b>Job: 1431 - Mod. Coil Interface Hardware-DUDEK</b>																																																																																	
<b>Shims-Outboard</b>																																																																																	
1431-100	Complete PE007965 & 8090 with zenex	02JUN08	27JUN08		84,331.80	41etc =68\$ ;																																																																											
<b>Shims-Inboard</b>																																																																																	
1431-110	Complete PE007677 with white engr	02JUN08	27JUN08		12,705.66	41etc =10\$ ;																																																																											
<b>Ellis</b>																																																																																	
<b>Job: 8205 - Dimensional Control Coordin-ELLIS</b>																																																																																	
<b>Station 3-Modular Coil to VVSA Assembly</b>																																																																																	
METFY08R	Support FPA Station 2	01FEB08A	30SEP08	LOE	14,889.60													ELLIS etc =45hr ; SMITH etc =45h																																																															
METDCP-3	Dimensional control plans for station 3	01FEB08A	10JUN08	67	4,675.44	ELLIS												etc =26hr ;																																																															
STAT3 PREP	Station 3 preparations	01JUL08*	02SEP08		14,168.00													ELLIS etc =80hr ;																																																															
<b>Goranson</b>																																																																																	
<b>Job: 1601 - Coil Services Design-GORANSON</b>																																																																																	
<b>161 - LN2 Distribution</b>																																																																																	
191-002	Coil Serv-LN2 manifolds&piping-PDR prep etc	03JUN08	05JUN08		6,040.00	GORANSON												etc =40hr ;																																																															
162-217	PDR		05JUN08		0.00																																																																												
162-900	Update LN2 models & input to INTRALINK	02JUN08	30JUN08		18,120.00	homescu												etc =40hr mcginnis=80																																																															
162-901	Update Electrical Leads Models & input to INTRAL	02JUN08	30JUN08		6,040.00	mcginnis												etc =40hr ;																																																															
<b>Harris</b>																																																																																	
<b>Job: 8102 - NCSX MIE Management ORNL-HARRIS</b>																																																																																	
<b>810.105XX Project Management Office ORNL FY08 (LOE)</b>																																																																																	
810.105XX	Project Management Office ORNL FY08 (LOE)	01FEB08A	29SEP08	LOE	100,619.47													ORNL35 etc =07\$ ;												HILLIS etc =70 ; HARRIS etc =282																																																			
810.105Z	Project Management Office ORNL FY09 (LOE)	01OCT08*	31MAR09	LOE	35,930.73													MMORRIS etc =176 ;												HILLIS etc =45 ; HARRIS etc =110																																																			
<b>Heitzenroeder</b>																																																																																	
<b>Job: 8202 - Engr Mgmt &amp; Sys Eng Sprt-HEITZENROED</b>																																																																																	
<b>8205DC document control &amp; admin support</b>																																																																																	
8205DC	document control & admin support	01FEB08A	31MAR09	LOE	23,630.52													SUCH etc =142hr ;												TYRELL etc =21																																																			
8205FY08.2	Engr mgt & systems engr FY08	01FEB08A	30SEP08	LOE	181,477.20													HEITZENROED etc =445hr ; SIMMONS etc =00												REIERSEN etc =89hr ; DUDEK etc =474																																																			
																																										VONHALLE etc =89hr ;																																							

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Activity ID	Activity Description	Forecast Start	Forecast Finish	% cmlpt	ETC	FY08												FY09												FY10																																																			
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8205FY09	Engr mgt & systems engr FY09	01OCT08*	31MAR09	LOE	157,899.44																									HEITZENROED etc =315hr REIERSEN etc =126hr ; VONHALLE etc =126hr ;																																																			
<b>Job: 8221 -Documentation Closeout-HEITZENROEDER</b>																																																																																	
<b>Closeout Documentation</b>																																																																																	
8221-100	Technical data collection	01JUL08*	31OCT08		626,239.87																									SIMMONS =160hr BLANCHARD =40 BROOKS =100hr BROWN =375 CHRZANOWSKI =168hr COLE =80 DAHLGREN =40hr DODSON =40hr DUDEK =32hr ELLIS =40 GORANSON =80hr Fogarty= 80 Phil =160; Kalish =56; labik =40; Langish =24 freudenberg =120 Perry =16; Raptopoulos =220; Raki =16 rushinski =335 mike morris=20 sichta =80; smith = 14; strykowsky =160; upcavage =215 viola = 158 williamson =80 Moon=10 Nelson=10; Harris= 20; Jun=100; Gentile=20; Low Morris=335																																																			
8221-251	Tech presentation/paper collection	02JUN08	29SEP08		9,902.00													HAMPTON etc =100hr ; TYRELL etc =10																																																															
8221-301	Guidance to collect data	02JUN08	29SEP08		53,130.00													SIMMONS etc =300hr ;																																																															
8221-305	Organizing and posting data	30SEP08	27MAR09		56,203.18													SIMMONS etc =300hr ;																																																															
8221-401	Finalizing and archiving key analyses/reports	02JUN08	29SEP08		137,504.00													FREUDENBERG etc =160hr ; DAHLGREN etc =16 FAN etc =160hr ; AVASARALA etc =16 ZHANG etc =160hr ;																																																															
8221-501	dell server, software, setup (non project cost)	02JUN08	29SEP08		0.00													CARROL etc =200hr ; 41etc =18\$K ;																																																															
8221-555	Comp. div support of web (non project cost)	02JUN08	29SEP08		0.00													CARROL etc =160hr ;																																																															
8221-575	Archiving doc & files in ops center	02JUN08	26MAR09		18,009.74													SUCH etc =200hr ;																																																															
8221-700	As-built Drawing Updates	01JUL08*	23DEC08		232,562.06													EA/SB Designers etc =1995hr ;																																																															
<b>Prepare Closeout report</b>																																																																																	
8221-601	Lessons learned report		31MAR09		0.00																																																																												
8221-605	Closeout report-Adjustments to obligations/costs		31MAR09		0.00																																																																												
8221-609	Closeout report-Baseline change control log		31MAR09		0.00																																																																												
8221-613	Closeout report-Closeout approvals		31MAR09		0.00																																																																												
8221-617	Closeout report-Contract closeout status		31MAR09		0.00																																																																												
8221-621	Closeout report-D&D planning		31MAR09		0.00																																																																												
8221-625	Closeout report-Final cost report, incl claims		31MAR09		0.00																																																																												
8221-629	Closeout report-Photographic documentation		31MAR09		0.00																																																																												
8221-633	Closeout report-Tech, cope,cost,schedule accompl		31MAR09		0.00																																																																												
8221-900	CLOSEOUT BCP		31MAR09*		0.00																																																																												
<b>Kalish</b>																																																																																	
<b>Job: 1361 - TF Fabrication-KALISH</b>																																																																																	
<b>TF Title III and Fabrication Oversight</b>																																																																																	
131-033C	Title III engr,inspection, support	02JAN08A	18SEP08	LOE	37,543.84													KALISH etc =71hr ; 35etc =02\$K ; 41etc =00\$K ; EM/TB etc =00hr ; MEIGHAN etc =173hr ;																																																															
<b>TF Fabrication Contract</b>																																																																																	
1361C-114	Fab, Test & Deliver Coil #14	27MAY08A	24JUN08	61	18,550.00													49etc =19 ;																																																															
1361C-115	Fab, Test & Deliver Coil #15	17JUL08*	17JUL08		47,220.00													49etc =47 ;																																																															
1361C-116	Fab, Test & Deliver Coil #16	08AUG08*	08AUG08		47,220.00													49etc =47 ;																																																															
1361C-117	Fab, Test & Deliver Coil #17	02SEP08*	02SEP08		47,220.00													49etc =47 ;																																																															
1361C-118	Fab, Test & Deliver Coil #18	24SEP08*	24SEP08		47,220.00													49etc =47 ;																																																															
1351-195X	ALL TF COILS DELIVERED		24SEP08		0.00																																																																												
<b>Job: 1354 - Trim Coil Design &amp;Procurement-KALISH</b>																																																																																	
<b>Trim Coil **Updated estimate**</b>																																																																																	
TRIM-170	Complete Trim Coil Detailed Drawings	25MAR08A	30JUN08	80	12,769.36													KALISH etc =14hr ; RUSHINSKI etc =10h CRUIKSHANK etc =80hr ;																																																															
TRIM-200	Assy drawings & parts list	01APR08A	30JUN08	90	10,998.36													KALISH etc =04hr ; RUSHINSKI etc =10h CRUIKSHANK etc =80hr ;																																																															

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Activity ID	Activity Description	Forecast Start	Forecast Finish	% cmplt	ETC	FY08												FY09												FY10																																																			
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<b>Neilson</b>																																																																																	
<b>Job: 8222 - Manuscripts and Papers - NEILSON</b>																																																																																	
<b>Prepare Closeout report</b>																																																																																	
8222-900	Manuscripts, journal & papers (40 papers @40hrs)	02SEP08*	31MAR09		299,600.15																																																																												
<b>Perry</b>																																																																																	
<b>Job: 8220 - Equipt Save &amp; Facility Restora-PERRY</b>																																																																																	
<b>Safe and store NCSX hardware assets</b>																																																																																	
8220-201	Coordination and oversight	02JUN08	23DEC08		60,133.75													PERRY												etc =382hr ;																																																			
8220-205	NCTC floor penetrations & PLT water htr removal	01JUL08*	12AUG08		56,248.54													41etc =21\$ ; EM//TB												etc =382hr ;																																																			
8220-209	Secure platform parts from CAS Bldg to NCTC	13AUG08	26AUG08		4,163.16													41etc =00\$ ; EM//TB												etc =48hr ;																																																			
8220-215	Secure TF Coils from Dsite MG to NCTC	11SEP08	24SEP08		3,000.86													EM//TB												etc =38hr ;																																																			
8220-219	Electr trays & hw from D-site yard to dsite pad	01JUL08*	15JUL08		6,194.13													41etc =01\$ ; EM//TB												etc =69hr ;																																																			
8220-223	Items f/TFTR bsmnt (incl spare MC cond) to NCTCB	01AUG08*	14AUG08		13,831.24													41etc =00\$ ; EM//TB												etc =172hr ;																																																			
8220-227	Portable AC units to Csite crib	27AUG08	03SEP08		631.76													EM//TB												etc =08hr ;																																																			
8220-231	Drawing closeouts and field follow-up	01OCT08*	23DEC08		27,614.00													LANGELLA												etc =200hr ;																																																			
8220-235	Large and Small shield block to Dsite pad	02SEP08*	15SEP08		2,527.04													EM//TB												etc =32hr ;																																																			
8220-239	Machine mock-up to NCTC	13AUG08	19AUG08		631.76													EM//TB												etc =08hr ;																																																			
8220-243	Welding machines to RESA	01OCT08*	07OCT08		668.56													EM//TB												etc =08hr ;																																																			
8220-247	Tools to Csite crib	01OCT08*	14OCT08		2,674.24													EM//TB												etc =32hr ;																																																			
8220-251	Measuring Equipment to MU Shop	01OCT08*	07OCT08		1,337.12													EM//TB												etc =16hr ;																																																			
8220-255	Inventory parts,material, tools to new location	01OCT08*	28OCT08		6,685.60													EM//TB												etc =80hr ;																																																			
8220-409	Crates,cabinets,parts shelves f/TFTRTC to NCTCB	01OCT08*	14OCT08		10,362.68													EM//TB												etc =124hr ;																																																			
8220-415	Coil winding station to NCTC	13AUG08	26AUG08		5,054.08													EM//TB												etc =64hr ;																																																			
8220-419	MC bolts (incl crate) to NCTCB	09SEP08	15SEP08		2,076.20													41etc =00\$ ; EM//TB												etc =20hr ;																																																			
8220-427	Assemble 4 remaining MC 3 packs	04AUG08	08SEP08		25,270.40													EM//TB												etc =320hr ;																																																			
8220-431	Transport MC 3 packs (6) to NCTC	09SEP08	22SEP08		5,302.48													EM//TB												etc =64hr ; 41etc =00\$ ;																																																			
8220-501	Autoclave- Safe all AC power	30JUL08	05AUG08		3,762.80													LANGELLA												etc =24hr ; EM//TB etc =08h																																																			
8220-505	Autoclave-Removal and store Dsite pad & NCTCB	01OCT08*	23DEC08		154,843.44													LANGELLA												etc =400hr ; EM//TB etc =11																																																			
8220-901	VV Diagnostic parts incl fab crates to NCTCB	09SEP08*	15SEP08		1,669.86													41etc =0.2\$ ; EM//TB												etc =18hr ;																																																			
8220-903	Move tool crib from C-site back to D-Site	09SEP08*	15SEP08		9,476.40													EM//TB												etc =120hr ;																																																			
8220-605	VV Spool piece crates to NCTCB	01JUL08*	02JUL08		473.82													EM//TB												etc = 6																																																			
8220-423	VVSA's (incl port extension crates) to NCTC	13AUG08	26AUG08		7,176.24													41etc =01\$ ; EM//TB												etc =72hr ;																																																			
8220-609	Yellow wedge stands to NCTC	01OCT08*	02OCT08		334.28													EM//TB												etc = 4																																																			
8220-613	Wedge cover plates to NCTC	01OCT08*	02OCT08		334.28													EM//TB												etc = 4																																																			
8220-617	5 ton lift beam to RESA	01OCT08*	02OCT08		334.28													EM//TB												etc = 4																																																			
8220-621	14 ton lift beam to RESA	01OCT08*	02OCT08		167.14													EM//TB												etc = 2																																																			
8220-625	Remove coil winding rooms & dispose	27AUG08	01OCT08		69,377.38													EM//TB												etc = 480 Langella etc = 241																																																			
8220-633	Equipment in MU machine shop-Electrical to RESA	02SEP08*	29SEP08		11,536.00													EM//TB												etc = 80Langella etc = 40																																																			
8220-641	Equipment in MU machine shop-Mechanical to RESA	02SEP08*	15SEP08		12,635.20													EM//TB												etc = 160																																																			
8220-645	Cryo pump skid- Electrical to NCTCB	02JUL08*	23JUL08		13,815.44													EM//TB												etc = 56Langella etc = 72																																																			
8220-653	Cryo pump skid- Mechanical to NCTCB	02JUL08*	16JUL08		3,790.56													EM//TB												etc = 48																																																			
8220-657	Cryostat-dispose	02JUL08*	16JUL08		3,790.56													EM//TB												etc = 48																																																			
8220-661	Interlocked cryo room-leave in place	02JUN08*	02JUN08		0.00																																																																												
8220-665	Spherical bearings (Dahlgren) to NCTCB	02JUL08*	03JUL08		78.97													EM//TB												etc = 1																																																			
8220-669	Prototype castings to NCTC	13AUG08	14AUG08		631.76													EM//TB												etc = 8																																																			
8220-673	Prototype VV cross sections-Scrap	02JUL08*	03JUL08		157.94													EM//TB												etc = 2																																																			
8220-677	TF coil fabrication fixtures to NCTC-VPI fixture	13AUG08	14AUG08		315.88													EM//TB												etc = 4																																																			
8220-681	TF coil fabrication fixtures to NCTC-Mandrel	13AUG08	14AUG08		315.88													EM//TB												etc = 4																																																			
8220-685	TF coil fabrication fixtures to NCTC-Misc fixtur	13AUG08	14AUG08		315.88													EM//TB												etc = 4																																																			

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Activity ID	Activity Description	Forecast Start	Forecast Finish	% cmplt	ETC	FY08												FY09												FY10																																																			
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<b>Rej</b>																																																																																	
<b>Job: 8101 - Project Management &amp;Control-REJ</b>																																																																																	
<b>810.900</b>																																																																																	
810.900	Project Management Office PPPL FY08 (LOE)	01OCT07A	30SEP08	LOE	216,292.20													NEILSON etc =414hr ; STRYKOWSKY etc =540																																																															
810.9005A	Project Management Office PPPL fy08 etc	02JUN08	30SEP08	LOE	125,600.00													B//CB etc =680hr ; 35etc =12\$ ; 41etc =03\$ ; DEPUTYPC etc =95hr ;																																																															
810.901	Project Management Office PPPL FY09 (SA LOE)	01OCT08*	31MAR09	LOE	290,785.02													DON REJ1 etc =126\$ ;																																																															
																														NEILSON etc =335hr ; Hampton etc =484hr ; 41etc =05\$ ;																																																			
																														DON REJ1 etc =100\$ ; SIMMONS etc =61																																																			
																														STRYKOWSKY etc =417																																																			
<b>Stratton</b>																																																																																	
<b>Job: 3101 - Magnetic Diagnostics-STRATTON</b>																																																																																	
<b>Rogowski Coils</b>																																																																																	
3101-359	Install Rogowski coils support (in job 1815)	02APR08A	20JUN08	30	28,185.66	LABIK												etc =40hr ; GUTTADORA etc =302																																																															
																		EM/TB												etc =15hr ;																																																			
<b>Strykowski</b>																																																																																	
<b>Job: 8998 - Allocations-STRYKOWSKY</b>																																																																																	
99.08	PPPL Allocations FY08 LOE	01OCT07A	29SEP08	LOE	142,323.48													54etc =88 ;																																																															
99.09C	PPPL Allocations FY09 LOE	01OCT08*	31MAR09	LOE	59,465.00																									54 etc =35																																																			
<b>Viola</b>																																																																																	
<b>Job: 1802 - FP Assy Oversight&amp;Support-VIOLA</b>																																																																																	
<b>Oversight and Supervision</b>																																																																																	
1802ORN02	ORNL Title III field period assy station 2/3	02JUN08	30SEP08	LOE	13,860.00													mcginnis=140																																																															
R1802-003	Metrology Engr Super FY08	01OCT07A	30SEP08	LOE	45,122.13													PRINISKI etc =293hr ;																																																															
R1802-007	FPA Management FY08	01OCT07A	30SEP08	LOE	85,747.73													VIOLA etc =558hr ;																																																															
R1802-009	PU Title III support	02JUN08	30SEP08	LOE	62,742.24													SANDS etc =408hr ;																																																															
R1802-010	Drexel co-op student support	02JUN08	30JUN08	LOE	2,520.00	DREXEL												etc =168 ;																																																															
R1802-015	HP Coverage in the TFTR TC LOE FY08	01OCT07A	30SEP08	LOE	53,157.42													SH//TB etc =440hr ;																																																															
R1802-016	HP Coverage in the TFTR TC LOE FY09	01OCT08*	23DEC08	LOE	36,276.45													SH//TB etc =629hr ;																																																															
1802MISC	Misc materials,tools, GSA vehicle,rigging	01FEB08A	30SEP08	LOE	55,890.00													41etc =45\$ ;																																																															
<b>Station 3 procedures,JHA,ACC,Training,Prep</b>																																																																																	
R1802-307	Procedures written & approved	14APR08A			0.00																																																																												
R1802-309	JHA completed	02JUN08	09JUN08		0.00																																																																												
R1802-311	Training needs identified & released	10JUN08	17JUN08		0.00																																																																												
R1802-313	ACC review completed	18JUN08	25JUN08		0.00																																																																												
R1802-315	Pre-job brief completed	26JUN08	03JUL08		0.00																																																																												
R1802-320	Update FPA cost estimate for FPA station 2&3	14OCT08	20OCT08		0.00																																																																												
<b>Job: 1810 - Field Period AssyStation 1,2,3 VIOLA</b>																																																																																	
<b>General Assy Support</b>																																																																																	
R1810-003	LOE Crane support, fixture setupfor FY08	01OCT07A	30SEP08	LOE	55,605.94													EM//TB etc =704hr ;																																																															
R1810-025	Crane & Rigging inspections	01FEB08A	30SEP08	LOE	3,948.50													EM//TB etc =50hr ;																																																															
R1810-007	LOE Field Supervision for FY08	01OCT07A	30SEP08	LOE	79,035.61													EDWARDS etc =587hr ;																																																															
R1810-2001	Misc Hardware and hardware rework (1/2 fte loe)	01FEB08A	30SEP08	LOE	23,691.00													EM//TB etc =300hr ;																																																															
S21-4.02	Perform routine metrology set-up and checks (loe)	01FEB08A	30SEP08	LOE	61,094.25													ZMET etc =525 ;																																																															
<b>Setup</b>																																																																																	
R1810-2034	Misc Tool and Hardware	02JUN08	30SEP08	LOE	18,630.00													41etc =15\$ ;																																																															
<b>Pre-Measuring and fitup checks</b>																																																																																	
<b>Pre measurement of MCHP A2,B2,C2 flanges</b>																																																																																	
2-2-2.99	Drill Stycast fill holes C2	01JUL08*	03JUL08		9,476.40	EM//TB												etc =120hr ;																																																															
S22-3.02	Compress shims sort by thickness	01MAY08A	11AUG08	50	3,158.80	EM//TB												etc =40hr ;																																																															

# ATTACHMENT 3

Activity ID	Activity Description	Forecast Start	Forecast Finish	% cmplt	ETC	FY08												FY09												FY10																																																			
						J				J				A				S				O				N				D				J				F				M				A				M				J				J				A				S				O				N				E			
<b>Station 2 MC subassy A1B1C1</b>																																																																																	
<b>AB-C MC Assembly</b>																																																																																	
2-1-7.16	"Lightly" tack weld nose flex shims	02JUN08*	02JUN08		947.64	EM/TB	etc =12hr ;																																																																										
2-1-7.17	remove "C" coil & place it on a separate fixtur	03JUN08	03JUN08		3,790.56	EM/TB	etc =48hr ;																																																																										
2-1-7.18	Recheck part alignment & weld all Type-B flex s	04JUN08	06JUN08		6,702.91	EM//TB	etc =00hr ; ZMET etc =58																																																																										
2-1-7.19	After welding "B" coil nose shims recheck align	09JUN08	09JUN08		2,234.30	EM//TB	etc =00hr ; ZMET etc =19																																																																										
2-1-7.20	Back office assessment of part after weld	10JUN08	11JUN08		4,468.61	EM//TB	etc =00hr ; ZMET etc =38																																																																										
2-1-7.21	Measure "C" fiducials	10JUN08	10JUN08		2,234.30	EM//TB	etc =00hr ; ZMET etc =19																																																																										
2-1-7.22	Weld all Type-C (A-flange) flex shims plasma sid	12JUN08	13JUN08		3,790.56	EM//TB	etc =48hr ;																																																																										
2-1-7.23	After welding determine metrology acceptance	16JUN08	16JUN08		2,234.30	EM//TB	etc =00hr ; ZMET etc =19																																																																										
2-1-7.24	Back office assessment	17JUN08	18JUN08		4,468.61	EM//TB	etc =00hr ; ZMET etc =38																																																																										
2-1-7.25	Remove shims for alignment mating coil	17JUN08	16JUN08		0.00	EM//TB	etc =00hr ;																																																																										
2-1-7.07	Place unfilled shim bags in wing areas	17JUN08	17JUN08		1,895.28	EM//TB	etc =24hr ;																																																																										
2-1-7.26	Lower mating "C" coil into position.	19JUN08	19JUN08		3,790.56	EM//TB	etc =48hr ;																																																																										
2-1-7.261	alignment "C" coil tooling balls	20JUN08	20JUN08		2,234.30	EM//TB	etc =00hr ; ZMET etc =19																																																																										
2-1-7.27	position coil accurately in x, y, & z directio	23JUN08	23JUN08		1,895.28	EM//TB	etc =24hr ;																																																																										
2-1-7.28	Install shims;studs,, & "wiggle"	24JUN08	24JUN08		2,842.92	EM//TB	etc =36hr ;																																																																										
2-1-7.29	Torque50% of final value.	25JUN08	25JUN08		947.64	EM//TB	etc =12hr ;																																																																										
2-1-7.30	Measure position of all monuments	26JUN08	26JUN08		3,351.46	EM//TB	etc =00hr ; ZMET etc =29																																																																										
2-1-7.301	Fuji paper, & examine load sharing. back office	27JUN08	30JUN08		8,259.17	EM//TB	etc =48hr ; ZMET etc =38																																																																										
2-1-7.302	Install new shims & Fuji paper. Lower & reposit	01JUL08	03JUL08		5,685.84	EM//TB	etc =72hr ;																																																																										
2-1-7.303	Install shims without Fuji paper, studs & torqu	07JUL08	08JUL08		3,790.56	EM//TB	etc =48hr ;																																																																										
2-1-7.31	Adjust shims locally. Re-torque all studs50%.	09JUL08	10JUL08		3,790.56	EM//TB	etc =48hr ;																																																																										
2-1-7.32	Install bushing. Replace nut & tighten back50%	11JUL08	15JUL08		5,685.84	EM//TB	etc =72hr ;																																																																										
2-1-7.33	After super bolt tightening, measure position	16JUL08	17JUL08		3,351.46	ZMET	etc =29 ; EM//TB etc =00h																																																																										
2-1-7.34	Tighten all boltsir final torque.	17JUL08	17JUL08		1,895.28	EM//TB	etc =24hr ;																																																																										
2-1-7.35	After tightening hardware, meas position of monu	18JUL08	18JUL08		3,351.46	ZMET	etc =29 ; EM//TB etc =00h																																																																										
2-1-7.36	Weld B / C nose region solenoid side	21JUL08	23JUL08		5,685.84	EM//TB	etc =72hr ;																																																																										
2-1-7.37	Measure positions of all monuments	24JUL08	24JUL08		2,234.30	EM//TB	etc =00hr ; ZMET etc =19																																																																										
2-1-7.38	Back office of above results & INSTALL wing supp	25JUL08	28JUL08		4,468.61	EM//TB	etc =00hr ; ZMET etc =38																																																																										
2-1-7.39	Fill all lose bushings with Stycast 2850FT	29JUL08	30JUL08		3,790.56	EM//TB	etc =48hr ;																																																																										
<b>Stycast shim bags &amp; final measurements</b>																																																																																	
2-1-8.01	Fill all wing bladders & cure	31JUL08	01AUG08		3,790.56	EM//TB	etc =48hr ;																																																																										
2-1-11.01	Measure tooling balls on all coils.	04AUG08	05AUG08		4,468.61	EM//TB	etc =00hr ; ZMET etc =38																																																																										
2-1-11.02	Install or identify three primary fiducials	06AUG08	07AUG08		4,468.61	EM//TB	etc =00hr ; ZMET etc =38																																																																										
2-1-11.03	Scan "B" flange Type-C coil & interfacing base	08AUG08	12AUG08		6,702.91	EM//TB	etc =00hr ; ZMET etc =58																																																																										
2-1-11.04	Measure bolt length on all tension fasteners	13AUG08	13AUG08		1,895.28	EM//TB	etc =24hr ;																																																																										
2-1-11.05	Perform Electrical Megger test on each coil	14AUG08	15AUG08		3,790.56	EM//TB	etc =48hr ;																																																																										
2-1-11.06	Mark part for identification	18AUG08	15AUG08		0.00	EM//TB	etc =00hr ;																																																																										
2-1-11.07	Install lift support beams	18AUG08	19AUG08		7,581.12	EM//TB	etc =96hr ;																																																																										
2-1-11.08	Remove from stand & measure weight of completed	20AUG08	20AUG08		3,790.56	EM//TB	etc =48hr ;																																																																										
2-1-11.09	Move to holding area.	21AUG08	22AUG08		7,581.12	EM//TB	etc =96hr ;																																																																										
S21-11.07M	Complete 1st MCHP Assy (Sta 2)		22AUG08		0.00	EM//TB	etc =00hr ;																																																																										
2-1-11.10	Lift upper wedge & reinstall & grout at Assembly	25AUG08	08SEP08		18,952.80	EM//TB	etc =240hr ;																																																																										
<b>Station 2 MC subassy A2B2C2</b>																																																																																	
<b>A-B MC Assembly</b>																																																																																	
2-2-6.26	Torque50% of final value.	02JUN08	02JUN08		789.70	EM//TB	etc =10hr ;																																																																										
2-2-6.27	Measure position of all monuments	03JUN08	03JUN08		2,792.88	ZMET	etc =24 ; EM//TB etc =00h																																																																										
2-2-6.28	Adjust shims locally. Re-torque all studs50%.	04JUN08	04JUN08		10,323.96	EM//TB	etc =60hr ; ZMET etc =48																																																																										
2-2-6.29	Install bushing. Replace nut & tighten back 50%	05JUN08	05JUN08		4,738.20	EM//TB	etc =60hr ;																																																																										
2-2-6.30	After super bolt tightening, measure position	06JUN08	06JUN08		2,792.88	ZMET	etc =24 ; EM//TB etc =00h																																																																										
2-2-6.31	Tighten all boltsir final torque.	09JUN08	09JUN08		1,579.40	EM//TB	etc =20hr ;																																																																										
2-2-6.32	After tightening hardware, measure position	10JUN08	10JUN08		2,792.88	ZMET	etc =24 ; EM//TB etc =00h																																																																										
2-2-6.33	Weld A / B nose region solenoid side	11JUN08	11JUN08		10,323.96	EM//TB	etc =60hr ; ZMET etc =48																																																																										
2-2-6.34	Measure positions of all monuments	12JUN08	12JUN08		1,861.92	EM//TB	etc =00hr ; ZMET etc =16																																																																										







