NCSX Work Approval Form (WAF)

WBS Number: 825
WBS Title: Dimensional Control Coordination
Job Number: 8205
Job Title: Dimensional Control Coordination
Job Manager: Bob Ellis

Description:

Support design and construction activities in the realization of dimensional accuracy requirements by developing strategies and procedures for dimensional control and supporting their implementation.

Schedule: See Attachment

Approvals:

Robert Ellis
Digitally signed by Robert Ellis
DN: CN = Robert Ellis, C = US, O = Princeton Plasma Physics Laboratory, OU = Mechanical Engineering Division
Date: 2007.07.30 11:50:15 -04'00'

Job Manager _____ Date _____

Wayne Reiersen
Digitally signed by Wayne Reiersen
DN: cn=Wayne Reiersen, c=US, o=PPPL
Date: 2007.07.30 12:05:49 -04'00'

Responsible Line Manager _____ Date _____

James L Anderson
Digitally signed by James L Anderson
DN: cn=James L Anderson, c=US, o=PPPL, ou=NCSX, email=jlanders@pppl.gov
Reason: I am approving this document
Date: 2007.07.30 13:54:30 -04'00'

Project Manager _____ Date _____

Mike Williams
Digitally signed by Mike Williams
DN: cn=Mike Williams, o=PPPL, ou=Engineering, email=williams@pppl.gov, c=US
Date: 2007.07.31 12:31:19 -04'00'

Engineering Department Head _____ Date _____

NCSX June 2007 ETC
TABLE I - Design Labor

WBS Number: 825
WBS Title: Dimensional Control Coordination
Job Number: 8205
Job Title: Dimensional Control Coordination
Job Manager: Bob Ellis

Job	WBS	Function	Resource Requirements	Basis of Estimate
8205 - Dimensional Control (Ellis)				
	825 - Dimensional Control Coordination			
		Develop dimensional control plan for Station 2. Support field activities.	480 hours for Ellis leading to development of dimensional control plan for Station 2. 240 hours for Ellis, 240 hours for EA/EM engineer during operations on Station 2 to support field activities.	Based on consideration of detailed steps to accomplish tasks. Station 2 is expected to be the most demanding for the dimensional control effort.
		Develop dimensional control plan for Station 3. Support field activities.	160 hours for Ellis to develop dimensional control plan for Station 3. 240 hours for Ellis, 240 hours for EA/EM engineer during operations on Station 3 to support field activities.	Station 3 is expected to less demanding because fundamentals and common issues will have been worked out on Station 2.
		Develop dimensional control plan for Station 5. Support field activities.	320 hours for Ellis to develop dimensional control plan for Station 5. 160 hours for Ellis, 160 hours for EA/EM engineer during operations on Station 5 to support field activities.	Station 5 dimensional control elements include alignment of ports and initial fitup of TF coils.
		Develop dimensional control plan for final assembly. Support field activities.	480 hours for Ellis to develop dimensional control plan for final assembly. 240 hours for Ellis, 240 hours for EA/EM engineer during final assembly to support field activities.	Final assembly includes fitup of three field period and final placement of TF coils, PF coils and CS assembly.

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TABLE I - Materials and Subcontracts

Description:	None											

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TABLE III - Fabrication and Assembly

WBS Number: 825							
WBS Title: Dimensional Control Coordination							
Job Number: 8205							
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Fabrication and Assembly		None					

NCSX June 2007 ETC
TABLE IV - Uncertainty of Estimate and Residual Risk Assessment

WBS Number: 825
WBS Title: Dimensional Control Coordination
Job Number: 8205
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Uncertainty of the Estimate

	High	Medium	Low	Uncertainty Range (%)	Comments/Other Considerations
Design Maturity			X	-30%/+60%	Dimensional control is critical to the assembly processes - techniques still being developed.
Design Complexity	X				Tight tolerances are especially challenging

Note: High/Medium/Low uncertainty assessment from Job Manager. Uncertainty range based on AACEI recommended practice 18R-97 as amended for NCSX.

Residual Impacts

Job	Risk Description	Likelihood of Occurring	Mitigation Plan	Basis of estimate	Cost Impact Low	Cost Impact High	Schedule Impact Low	Schedule Impact High
8205	Loss or prolonged unavailability of certain key personnel (Ellis) from the project could substantially impact the schedule.	VU	An EA/EM engineer has been budgeted to provide support to Ellis in Dimensional Control Coordination during peak demands and pick up the slack for Ellis should he become unavailable.	Estimated impact is <0.5 months on the critical path. No impact on FPA cost because impacted personnel would be assigned to other activities.	+ $0	+ $0	+ 0.00	+ 0.50

Notes:
[1] Low cost and schedule impacts are considered the minimum (0-percentile) impacts should the event occur.
High cost and schedule impacts are considered the maximum (100-percentile) impacts should the event occur
[2] Cost impacts should be entered as loaded costs
Cost impacts should NOT include standing army costs which are separately calculated from the schedule impact
[3] The schedule impacts should be entered as the min and max impacts on the critical path.
If there is no critical path impact then the schedule entries should be zero.
[4] Likelihood of occurrence should be entered consistent with our risk classification methodology, i.e.
VL= Very Likely (P>80%), L=Likely (80%>P>40%), U=Unlikley (40%>P>10%), VU=Very Unlikely (P<10%), NC=Non-credible (P<1%

Activity ID	MILE-stones (level 2 & 3)	Activity Description	Duration (work days	Baseline Start	Baseline Finish	Shifts	Total Float	% cmplt	Proposed Budgeted
Job: 8205 - Dimensional Control Coordin-ELLIS									
METFY07R1	3	Dimensional control plans for station 2	65	01JUN07*	31AUG07		6		83,630.40
METDCP-3	3	Dimensional control plans for station 3	30	04SEP07	15OCT07		111		28,553.23
METDCP-5	3	Dimensional control plans for station 5	80	16OCT07	15FEB08		111		59,443.20
METDCP-6	3	Dimensional control plans for station 6	80	18FEB08	09JUN08		111		89,164.80
METFY08R		Support FPA Station 2	326*	24OCT07	19FEB09		4	LOE	89,911.08
METFY08RX		Support FPA Station 3	318*	03MAR08	08JUN09		0	LOE	90,555.06
METFY09		Support FPA Station 5	260*	30OCT08	13NOV09		0	LOE	61,443.20
METFY10		Support Final Machine Assy	482*	26JAN09	03JAN11		0	LOE	94,162.86
Subtotal			890	01JUN07	03JAN11		0		596,863.83