NCSX Work Approval Form (WAF)

WBS Number: 142

WBS Title: Windings and Assembly

Job Number: 1416

Job Title: Type A/B Coil Final Design

Job Manager:David Williamson

Description:

Job 1416 consists of the effort to complete the final design for the Type A and Type B Modular Coils.

Schedule:

Approvals:

_____   _____
Job Manager   Date

_____   _____
Responsible Line Manager   Date

_____   _____
Project Manager   Date

_____   _____
Engineering Department Head   Date

WBS Number: 142
WBS Title: Windings and Assembly
Job Number: 1416
Job Title: Design of Modular Coil Interfaces
Job Manager: David Williamson

Description:
Title I and II Engineering for design of the modular coil interfaces. Title III for these components is included in Job 1802.

Task ID	Description	Comments	41MS	48MS	37STK	35TRVL	31OT	ORNL EM	EMEM	EMTB	EAEM	EASB	Basis of Estimate
							FY07$K						
Clamp Hardware Modifications								50					**Added 40 ORNL hours based on experience to date.**
1416-204.1	Modify Type-B clamps for stud attaqchments												
Blanket Thermal Insulation								60					**Added 40 ORNL hours based on experience to date.**
1416-304	Revise assembly drawings							30			10		**Added 20 ORNL hours based on experience to date.**
1416-305	Review and approve insulation concept							40			8		**Added 40 ORNL hours based on experience to date.**
1416-33198	Report results												
FY07 Rebaseline													
ecp53rbx04								8					
Top Level Assembly Drawings													
1416-501	Complete models/drawings of coolant line routing							0					**Complete**
1416-502	Check layout of flux loop terminations and revise							0					**Complete**
1416-503	Complete models/drawings of power cable connections							120					**Work remaining - modify leads per analysis**
1416-504	Complete models/drawings of protective covers							120					**Work remaining - assume covers are different for reach coil**
1416-505	Drawing callouts for interface hdw (prelim model)							0					**Task deleted**
1416-507	Update, review, %& approve coil assembly spec							80					
1416-508	Complete drawing rev to leades, terminals asm (ECN)							80					**Work remaining - drawing in checking cycle**
1416-506	Check and promote top-level models/drawings							80					**Added 20 ORNL hours based on experience to date.**
Analysis and coseout documentation													
1416-601	Prepare EM and structural analysis of loads		$60k					80			192		**ORNL Contract w/ Myatt**
1416-602	Design memo for KF structueal analysis							96					**Added 16 ORNL hours based on experience to date.**
1416-603	Update, review and approve FEMEC							60					
1416-604	Finalize drdaft documents - materials, eddy currents, etc.							40					
1416-605	Prepare Type ABC coselout FDR							72					**Added 32 ORNL hours based on experience to date.**
1416-606	Resolve FDR comments							72					**Added 32 ORNL hours based on experience to date.**
Type C Design Closeout													
1403-47C	Perform cool-down/warmup analysis										40		
	TOTALS		$60k					1088	0	0	250	0	

WBS Number: 142						
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Materials and Supplies		Resp Org.			Basis of Estimate	
Included in Table I						

WBS Number: 142															
WBS Title: Windings and Assembly															
Job Number: 1416															
Job Title: Design of Modular Coil Interfaces															
Job Manager:David Williamson															
	NONE														

WBS Number: 142
WBS Title: Windings and Assembly
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Uncertainty of the Estimate

	High	Medium	Low	Uncertainty Range (%)	Comments/Other Considerations
Design Maturity			X		Major issue is continuous iteration of design
				-20% to +40%	
Design Complexity		X			Major uncertainty is C-C access for bolting at machine assembly

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

Residual Impacts

					Cost Impact		Schedule Impact	
Job	Risk Description	Likelihood of Occurring	Mitigation Plan	Basis of estimate	Low	High	Low	High
NONE								

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 man-hours (by demographic) and M&S direct cost under basis of estimate.
         Cost impacts should NOT include standing army costs which are separately calculated from the schedule impact
         Project control is reponsible for quantifying the low and high cost impacts based on the labor hours and M&S identified
[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%)