

NCSX June 2007 ETC  
 TABLE I - DESIGN LABOR

WBS Number: 181  
 WBS Title: FPA Planning & Design  
 Job Number: 1806  
 Job Title: FPA Specs & Drawings  
 Job Manager: Mike Cole

Description:

Task ID	HOURS			Basis of Estimate
	ORNL EM	ORNL DSN	RM3	
Pro-E models	600			Assumed 10 models (see details below). Estimate based on past experience on preparing specifications and drawings for equipment of this size and technical difficulty.
Assembly Drawings	1680			Assumed 3 assy drawings (see details below). Estimate based on past experience on preparing specifications and drawings for equipment of this size and technical difficulty.
Detailed Drawings	520			Assumed 3 detail drawings (see details below). Estimate based on past experience on preparing specifications and drawings for equipment of this size and technical difficulty.
Electrical Schematic				<b>Electrical schematic will be part of the Coil services WBS12</b>
I&C Schematic				<b>Any instrumentation for the Machine will be part of the the specific WBS element and not this WBS</b>
Stress Analysis				<b>Any analysis required for the Machine will be included will be part of the the specific WBS element and not this WBS</b>
Thermal Analysis				<b>Any analysis required for the Machine will be included will be part of the the specific WBS element and not this WBS</b>
Special Analysis				<b>Any analysis required for the Machine will be included will be part of the the specific WBS element and not this WBS</b>
Specifications	960			Assumed 6 specifications (see details below). Estimate based on past experience on preparing specifications and drawings for equipment of this size and technical difficulty.
Design Reviews	320			<b>Hrs for the design reviews are shown below one FDR and one for undefined reviews</b>
meetings/reporting/presentations	612			Assumed 15% of the above
Total Hrs	<b>4692</b>			
<b>Title III Design in Jobs 1802 (PFA) and Job 1451 (MC Winding)</b>				
<i>Subtotal Title III Design</i>	<b>0</b>	<b>0</b>		

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Notes and Worksheets

1532

Notes and worksheets

Details of Estimate

Specs	Hrs
Preparation of a specification for the assembly of the Type A, Type B and Type C coil into a half period assembly - Station 2	80
Preparation of aspecifacaton for the assembly of the half field period assemblies into a Field Period Assembly w/ VV - Station 3	240
Prepare spec for assy of ports to VV - Station 5	120
Prepare spec for welding spool piece to VV -Station 5	80
Prepare spec for installation of shims on the C-C flange	120
Machine Assembly specification - Station 6	320
<i>Total Specifications</i>	<b>960</b>

Analysis	Hrs/Calc	# Calcs	Total Hrs
stress analysis	40	0	
thermal analysis	40	0	
special analysis (electromagnetics)	160	0	

Models	# Models	Hrs/Model	Total Hrs
Prepare models for using in upper level assy	10	60	600

Design Reviews	Hrs
Prepare final design review for machine assy	160
Additional reviews that have not been defined	160

Drawings	Hrs
<b>Assembly Drawings</b>	
Station 2	160
Station 3	160
Station 5	240
Prepare dwgs for Field Period Asy	480
Prepare dwgs for Mach Assy	640
<i>Subtotal Assembly Drawings</i>	<b>1680</b>
<b>Detailed Drawings</b>	
Prepare dwgs for mach spool piece	200
Prepare dwgs for welding ports to VV at machine assy	240
Prepare dwgs for man access port	80
<i>Subtotal Detailed Drawings</i>	<b>520</b>