

NCSX Work Approval Form (WAF)

WBS Number: 19

WBS Title: Stellarator Core Management and Integration

Job Number: 1901

Job Title: Stellarator Core Management and Integration

Job Manager: Mike Cole

Description:

WBS 191 (Stellarator Core Management) - This effort covers general management and oversight for the Stellarator Core. It is assumed to be half time for the duration of the project. This is a Level of Effort task. WBS 192 (Stellarator Core Integration and Global Analysis) - This effort covers design integration activities for the Stellarator Core, including global Pro-E models and drawings for the Stellarator Core, Pro-Intralink database maintenance of all drawings and CAD models, analyses common to all of WBS 1, and design criteria documents. This is a level of effort task.

Schedule:

See Attached

Approvals:

M. J. Cole

Reason: Approved
Date: 2007.07.18 13:36:50
-04'00'

Job Manager

Date

Brad Nelson

Digitally signed by Brad Nelson
DN: cn=Brad Nelson, c=US, o=ORNL,
ou=FED, email=nelsonbe@ornl.gov
Date: 2007.08.01 10:24:48 -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: 2007.08.01 11:44:13 -04'00'

Project Manager

Date

Mike Williams

Digitally signed by Mike Williams
DN: cn=Mike Williams, o=PPPL, ou=Engineering
Department, email=williams@pppl.gov, c=US
Date: 2007.08.01 14:45:10 -04'00'

Engineering Department Head

Date

NCSX June 2007 ETC
TABLE I - DESIGN LABOR

WBS Number: 19
WBS Title: Stellarator Core Manafgement and Integration
Job Number: 1901
Job Title: Stellarator Core Manafgement and Integration
Job Manager: Mike Cole

Description:

WBS 191- This effort covers general management and oversight for the Stellarator Core. It is assumed to be half time for the duration of the project.

Task ID	HOURS				Basis of Estimate
	2007	2008 thru 2010	2011		
<p>Description: WBS 191 (Stellarator Core Management) - This effort covers general management and oversight for the Stellarator Core. It is assumed to be half time for the duration of the project. This is a Level of Effort task.</p>					
Labor - Composite of ORNL Engineer / Designer	488	1170	dependent upon schedule		Brad at 15% and Mike at 50%
Travel	3,000	6,000	6,000		
<p>Description: WBS 192 (Stellarator Core Integration and Global Analysis) - This effort covers design integration activities for the Stellarator Core, including global Pro-E models and drawings for the Stellarator Core, Pro-Intralink database maintenance of all drawings and CAD models, analyses common to all of WBS 1, and design criteria documents. This is a level of effort task.</p>					
Labor - Composite of ORNL Engineer / Designer	638	1530	dependent upon schedule		Assumed 0.3 my/yr for a design integration designer and 0.55 my/yr for an engineer. Based on an ORNL manyear of 1800 hours.
Travel	3,000	3,000	3,000		Assumed 2 trips/per of the designer and engineer

Title III is shown in WBS 73 reference 2505hrs
 see spreadsheet title 3 estimate for fpa and machine assy

NCSX June 2007 ETC
TABLE II- Materials and Subcontracts

WBS Number: 19
WBS Title: Stellarator Core Manafgement and Integration
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Job Title: Stellarator Core Manafgement
Job Manager: Mike Cole

Materials and Subcontracts (M&S)						Basis of Estimate
Description:						
WBS 191 - Management and Integration - no M&S						
WBS 192 - Stellarator Core Integration and Global Analysis						
Worksheet for FY2007 to 2009						
	no.	cost ea/yr	yrs	% to NCSX	total	
Software						
Pro-E licenses	6	\$3,330	4	60%	\$47,952	Based on actual FY 2007 maint costs
ANSYS maintenance	1	\$8,743	4	60%	\$20,983	Based on FY 2003 maint costs
IPA maint.	1	\$2,005	4	60%	\$4,812	Based on FY 2003 maint costs
Rhino	1	\$500	4	60%	\$1,200	Based on FY 2003 maint costs
Corel Draw	1	\$600	4	60%	\$1,440	Based on FY 2003 maint costs
misc software	1	\$1,500	4	60%	\$3,600	Based on historical costs
<i>subtotal, software</i>					\$79,987	
Hardware						
Workstations	6	\$2,500	4	60%	\$36,000	based on replacement every two years
Printer / Plotter maint.	2	\$1,200	4	60%	\$5,760	based on historical maint. Costs
<i>subtotal, hardware</i>					\$41,760	
Total Purchased Software/Hardware		\$20,378.00	Per Year		\$121,747	

NCSX June 2007 ETC
TABLE III - Fabrication and Assembly

WBS Number: 19

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Job Number: 1901

Job Title: Stellarator Core M

Job Manager: Mike Cole

In-house Fabrication and Assembly and Installation

Description: N/A

NCSX June 2007 ETC

TABLE IV - Uncertainty of Estimate and Residual Risk Assessment

WBS Number: 19

WBS Title: Stellarator Core Manafgement and Integration

Job Number: 1901

Job Title:

Job Manager: Mike Cole

Uncertainty of the Estimate

	<u>High</u>	<u>Medium</u>	<u>Low</u>	<u>Uncertainty of Estimate (%)</u>	<u>Comments/Other Considerations</u>
Design Maturity			X		LOE - estimates based on recent experiences on NCSX
Design Complexity			X	-10%/+20%	LOE - estimates based on recent experiences on NCSX
Other Comments:					Work highly dependent of MC winding and FPA activities - as they are delayed/improved, this job follows.

Residual Risks

	<u>Risk</u>	<u>Likelihood of Occurring (%)</u>	<u>Mitigation Stgrategies</u>	<u>Consequence if Occurs</u>	
				<u>Cost</u>	<u>Schedule</u>
NONE					

Activity ID	MILEstones (level 2 & 3)	Activity Description	Duration (work days)	Baseline Start	Baseline Finish	Shifts	Total Float	% cmplt	Proposed Budgeted							
										FY07	FY08	FY09	FY10	FY11	FY12	
19 - Stellarator Core Management and Integration																
Job: 1901 - Stellarator Core Mngtt&Integr-COLE																
191 - Stellarator Core Management & Oversight																
1901-07		WBS 191 FY07	LOE	106*	01MAY07*	28SEP07	1	1,249	LOE	77,380.44	cole=.50 fte nelson=.15 fte ; 35=05\$k ;					
1901-08		WBS 191 FY08	LOE	249*	01OCT07*	29SEP08	1	1,000	LOE	208,453.58	cole=.50 fte nelson=.15 fte ; 35=06\$k ; ornl41=20.38k					
1901-09		WBS 191 FY09	LOE	247*	01OCT08*	28SEP09	1	752	LOE	221,094.09	cole=.50 fte nelson=.15 fte ; 35=06\$k ; ornl41=20.38k					
1901-10		WBS 191 FY10	SA LOE	248*	01OCT09*	30SEP10	1	502	LOE	229,029.48	cole=.50 fte nelson=.15 fte ; 35=06\$k ; ornl41=20.38k					
1901-11		WBS 191 FY10	LOE	79*	01OCT10*	31JAN11	1	423	LOE	95,379.48	cole=.50 fte nelson=.15 fte ; 35=06\$k ; ornl41=20.38k					
192 - Stellarator Core Integration & Analysis																
1902-07		WBS 192 FY07		106*	01MAY07*	28SEP07	1	1,249	LOE	84,180.68	ornlem=.55; ornl dsnr=.3 ornl35=3k					
1902-08		WBS 192 FY08		249*	01OCT07*	29SEP08	1	1,000	LOE	199,924.56	ornlem=.55; ornl dsnr=.3 ornl35=3k					
1902-09		WBS 192 FY09		247*	01OCT08*	28SEP09	1	752	LOE	210,949.08	ornlem=.55; ornl dsnr=.3 ornl35=3k					
1902-10		WBS 192 FY10		248*	01OCT09*	30SEP10	1	502	LOE	219,015.60	ornlem=.55; ornl dsnr=.3 ornl35=3k					
1902-11		WBS 192 FY10		79*	01OCT10*	31JAN11	1	423	LOE	74,333.10	ornlem=.55; ornl dsnr=.3 ornl35=3k					
Subtotal				932	01MAY07	31JAN11	1	423	LOE	1,619,740.09						