NCSX Work Approval Form (WAF)

WBS Number: 55
WBS Title: Real Time Plasma and Power Supply Control Systems
Job Number: 5501
Job Title: Real Time Plasma and Power Supply Control Systems
Job Manager: Paul Sichta

Description:

The real time software is divided into two functions, the power supply real time control system (PSRTC) and the plasma control system (PCS). The PSRTC will calculate the alpha control signal required by the power conversion firing generators. The basic code of the NSTX PSRTC will be modified for use on NCSX. The NCSX PCS will share that developed for NSTX with a new real time data acquisition system in the NCSX test cell.

Schedule:

See Attached

Approvals:

Paul Sichta Date: 2007.07.24 10:43:58 -04'00'
_____ _____
Job Manager Date

Al von Halle Digitally signed by Al von Halle DN: CN = Al von Halle, C = US Date: 2007.08.02 09:05:33 -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: 2007.08.02 09:51:28 -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: 2007.08.02 10:25:53 -04'00'
_____ _____
Engineering Department Head Date

NCSX June 2007 ETC
TABLE I - DESIGN LABOR

WBS Number: 55
WBS Title: Real Time Plasma and Power Supply Control Systems
Job Number: 5501
Job Title: Real Time Plasma and Power Supply Control Systems
Job Manager: Paul Sichta

Description:

Title I and ..

		FY07$K											
Activity ID	**Activity Description**	**41MS**	**43MS/CC**	**48MS**	**37STK**	**35TRVL**	ECEM	ECTB	EMTB	EASB	EEEM	EETB	**Basis of Estimate**
													Originally manhours estimate based on NSTX experience. However, this estimate has been updated to reflect experience of experieince on other similar networking installation projects.
55-10	FCPC - Preliminary Design						40						
55-20	FCPC -Final Design						80						
55-30	FCPC - Procurement	$6.0K	$7.0K		$1.0K		20						
55-40	LabVIEW Programming						120						
55-50	FCPC PLC Integration - EPICS Prog.						40						
55-50	FCPC - Installation						40	40					
55-60	FCPC -Test						40	20					
55-70	GISRTC - Preliminary Design						40						
55-80	GISRTC -Final Design						20						
55-90	GISRTC - Procurement	$5.0K	$5.5K		$1.0K		20						
55-100	LabVIEW Programming						120						
55-110	GISRTC - Installation						20	20		24			
55-120	GISRTC -Test						20						
	Subtotal Job 5501	***$11K***	***$13K***	***$0K***	***$2K***	***$0.0K***	***620***	***80***	***0***	***24***	***0***	***0***	

NCSX June 2007 ETC
TABLE II - Materials and Subcontracts

WBS Number: 55							
WBS Title: Real Time Plasma and Power Supply Control Systems							
Job Number: 5501							
Job Title: Real Time Plasma and Power Supply Control Systems							
Job Manager: Paul Sichta							
Materials and Subcontracts (M&S)					**Basis of Estimate**		
Description:							
See Table I							

NCSX June 2007 ETC

TABLE III - Fabrication/Assembly Installation

WBS Number: 55										
WBS Title: Real Time Plasma and Power Supply Control Systems										
Job Number: 5501										
Job Title: Real Time Plasma and Power Supply Control Systems										
Job Manager: Paul Sichta										
In-house Fabrication and Assembly and Installation										
See Table I										

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

WBS Number: 55
WBS Title: Real Time Plasma and Power Supply Control Systems
Job Number: 5501
Job Title: Real Time Plasma and Power Supply Control Systems
Job Manager: Paul Sichta

Uncertainty of the Estimate

		High	Medium	Low	Uncertainty Range (%)	Comments/Other Considerations
	Design Maturity		X			Although PDR, some more design needed to finalize.
					-10%/+15%	
	Design Complexity			X		Duplication of NSTX architecture

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%

Activity ID	MILE-stones (level 2 & 3)	Activity Description	Duration (work days	Baseline Start	Baseline Finish	Shifts	Total Float	% cmplt	Proposed Budgeted
55 - Real Time Plasma & Power Supply Control Sys									
Job: 5501 - Real Time Control System-SICHTA									
R55-10		FCPC - Preliminary Design	30	03AUG09*	14SEP09		71		6,203.60
R55-11		PDR	0		14SEP09		71		0.00
R55-20		FCPC -Final Design	60	15SEP09	09DEC09		71		12,744.48
R55-21		FDR	0		09DEC09		71		0.00
R55-30		FCPC - Procurement	60	10DEC09	15MAR10		71		13,550.20
R55-40		FCPC LabVIEW Programming	30	26MAR10	06MAY10		93		19,243.20
R55-45		FCPC PLC Integration-EPICS Prog.	30	26MAR10	06MAY10		93		6,414.40
R55-50		FCPC - Installation	60	16MAR10	08JUN10		71		9,532.80
R55-60		FCPC -Test	14	09JUN10	28JUN10		71		7,973.60
R55-70		GISRTC - Preliminary Design	30	01JUL09*	12AUG09		63		6,203.60
R55-71		PDR	0		12AUG09		63		0.00
R55-80		GISRTC -Final Design	60	13AUG09	05NOV09		63		3,147.47
R55-81		FDR	0		05NOV09		63		0.00
R55-90		GISRTC - Procurement	60	06NOV09	11FEB10		63		13,550.20
R55-100		GISRTC LabVIEW Programming	30	12FEB10	25MAR10		63		19,243.20
R55-110		GISRTC - Installation	60	26MAR10	18JUN10		63		7,829.28
R55-120		GISRTC -Test	14	21JUN10	09JUL10		63		3,207.20
Subtotal			254	01JUL09	09JUL10		63		128,843.23