NCSX Work Approval Form (WAF)

WBS Number: 54

WBS Title: Facility Timing & Synchronization Systems

Job Number: 5401

Job Title: Data Acquistion & Facility Computing Systems

Job Manager: Paul Sichta

Description:

The Facility Timing and Synchronization System will provide up to 256 preprogrammed events triggers to define the NCSX shot cycle. These systems will utilize a new timing and synchronization technology since the old CAMAC-based TFTR Timing System will not be adequate for NCSX. It is anticipated that this new system will include a 10 MHZ time base and an off-the-shelf or existing solution.

Schedule:

See Attached

Approvals:

Paul Sichta Date: 2007.07.24 10:43:40 -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 09:04:52 -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 09:50:35 -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 10:25:31 -04'00'

Engineering Department Head _____ Date _____

NCSX June 2007 ETC
TABLE I - DESIGN LABOR

WBS Number: 54

WBS Title: Facility Timing & Synchronization Systems

Job Number: 5401

Job Title: Data Acquistion & Facility Computing 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.
54-10	Preliminary System Design						40						
54-20	Final SystemDesign						40						
54-30	Preliminary Design - Clock Dist.						20				40		
54-40	Final Design - Clock Dist.						20				120		
54-50	Test - Clock Dist.						20				100	120	
54-60	Procurement	$16K	$14K		$4K		40						
54-70	UNT - Timing & Seq Emulation (FPGA Pgm)							160					
54-80	UNT - Device Driver Prog (EPICS/MDSplus)						160						
54-90	Central Clock (EPICS) Programming						80						
54-100	Installation						40	80	120	40			
54-110	Test						40	40					
	Subtotal Job 5401	***$16K***	***$14K***	***$0K***	***$4K***	***$0K***	***500***	***280***	***120***	***40***	***260***	***120***	

NCSX June 2007 ETC
TABLE II - Materials and Subcontracts

WBS Number: 54							
WBS Title: Facility Timing & Synchronization Systems							
Job Number: 5401							
Job Title: Data Acquistion & Facility Computing 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: 54										
WBS Title: Facility Timing & Synchronization Systems										
Job Number: 5401										
Job Title: Data Acquistion & Facility Computing 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: 54
WBS Title: Facility Timing & Synchronization Systems
Job Number: 5401
Job Title: Data Acquistion & Facility Computing 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.
					-15%/+25%	
	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

Job	Risk Description	Likelihood of Occurring	Mitigation Plan	Basis of estimate	Cost Impact Low	Cost Impact High	Schedule Impact Low	Schedule Impact 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
54 - Facility Timing & Synchronization									
Job: 5401 - Facility Timing & Synchron.-SICHTA									
R54-10		Preliminary System Design	30	01JUL09*	12AUG09		43		6,203.60
R54-11		PDR	0		12AUG09		43		0.00
R54-20		Final SystemDesign	40	13AUG09	08OCT09		43		6,235.22
R54-21		FDR	0		08OCT09		143		0.00
R54-30		Preliminary Design - Clock Dist.	20	09OCT09	05NOV09		143		10,593.20
R54-40		Final Design - Clock Dist.	30	06NOV09	21DEC09		143		25,365.20
R54-50		Test - Clock Dist.	40	26FEB10	22APR10		103		31,617.80
R54-60		Procurement	90	09OCT09	25FEB10		53		36,330.40
R54-70		UNT - Timing & Seq Emulation (FPGA Pgm)	90	02NOV09*	19MAR10		127		12,473.60
R54-80		UNT - Device Driver Prog (EPICS/MDSplus)	120	08DEC09	04JUN10		43		25,657.60
R54-90		Central Clock (EPICS) Programming	30	07JUN10	19JUL10		43		12,828.80
R54-100		Installation	90	26FEB10	02JUL10		53		27,987.20
R54-110		Test	14	20JUL10	06AUG10		43		9,532.80
Subtotal			274	01JUL09	06AUG10		43		204,825.42