NCSX Work Approval Form (WAF)

WBS Number: 52
WBS Title: Central I&C Systems
Job Number: 5201
Job Title: Central I&C Systems
Job Manager: Paul Sichta

Description:

The central process control system will provide supervisory control and a common user interface to all engineering subsystems and high-energy systems. It will provide the synchronization between two or more operating machines at PPPL using shared power conversion resources. It will support current and historical trending, alarm logging, mimic displays, machine state archival, and process control and monitoring functions for NCSX. It will be designed using the Experimental Physics and Industrial Control System (EPICS)

Schedule:

See Attached

Approvals:

Paul Sichta Date: 2007.07.05 11:55:57 -04'00'

Job Manager _____ Date _____

Al von Halle Digitally signed by Al von Halle DN: CN = Al von Halle, C = US Date: 2007.07.06 07:47:40 -04'00'

Responsible Line Manager _____ Date _____

Hutch Neilson Digitally signed by Hutch Neilson DN: CN = Hutch Neilson, C = US, O = PPPL Date: 2007.07.06 08:02:19 -04'00'

Project Manager _____ Date _____

Mike Williams Digitally signed by Mike Williams DN: cn=Mike Williams, o=PPPL, ou=Engineering, email=williams@pppl.gov, c=US Date: 2007.07.06 08:43:39 -04'00'

Engineering Department Head _____ Date _____

NCSX June 2007 ETC
TABLE I - DESIGN LABOR

WBS Number: 52
WBS Title: Central I&C Systems
Job Number: 5201
Job Title: Central I&C Systems
Job Manager: Paul Sichta

Description:

Title I and ...

		FY07$K										
Activity ID	**Activity Description**	41MS	43MS/CC	48MS	37STK	35 Trvl	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 expereience on other similar networking installation projects.
52-10	Preliminary Design						40						
52-20	Final Design						40						
52-30	Procurement	$18K	$17K		$3K		20						
52-40	EPICS Programming - Base						80						
52-50	EPICS Programming - VDCT db editor						40						
52-60	IOC Programming - MDSplus data & events						120						
52-70	OPC - EPICS/PLC Interface		$2K			$2K	160						
52-80	Appl. Program						80						
52-90	Programming - misc.						100						
52-100	Installation						40	100	240	120			
52-110	Test						40						
	Subtotal Job 5201	***$18K***	***$19K***	***$0K***	***$3K***	***$2K***	***720***	***100***	***240***	***120***	***0***	***0***	

M&S Details:	**K$**	**Basis of M&S Estimate**
Travel/training	$2.0K	**Based on recent NSTX experience and other lab infrastructure projects**
NTC web cam (4)	$3.0K	**Based on recent purchased of parts for NSTX and other lab infrastructure projects**
PC - appl. TBD (2)	$6.0K	**Based on recent purchased of parts for NSTX and other lab infrastructure projects**
Linux soft IOC (2)	$3.0K	**Based on recent purchased of parts for NSTX and other lab infrastructure projects**
OPC client & server HW/SW/TRNG (for T/C)	$10.0K	**Based on recent purchased of parts for NSTX and other lab infrastructure projects**
EPICS server (use NSTX)		**Based on recent purchased of parts for NSTX and other lab infrastructure projects**
EPICS gateway	$8.0K	**Based on recent purchased of parts for NSTX and other lab infrastructure projects**
misc	$10.0K	**Based on recent purchased of parts for NSTX and other lab infrastructure projects**
Total M&S	**$42.0K**	

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TABLE II - Materials and Subcontracts

WBS Number: 52							
WBS Title: Central I&C Systems							
Job Number: 5201							
Job Title: Central I&C 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: 52									
WBS Title: Central I&C Systems									
Job Number: 5201									
Job Title: Central I&C 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: 52
WBS Title: Central I&C Systems
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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

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%