

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:

Job Manager

Date

Responsible Line Manager

Date

Project Manager

Date

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:														
<i>Title I and</i>														
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 experience 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																				
Job Number: 5201																				
Job Title: Central I&C Systems																				
Job Manager: Paul Sichta																				
Uncertainty of the Estimate																				
						<u>Uncertainty</u>														
			<u>High</u>	<u>Medium</u>	<u>Low</u>	<u>Range (%)</u>												<u>Comments/Other Considerations</u>		
	Design Maturity			X															Although PDR, some more design needed to finalize.	
	Design Complexity				X	-10%/+15%													Duplication of NSTX architecture	
Note: High/Medium/Low uncertainty assessment from Job Manager. Uncertainty range based on ACEI 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 responsible 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 Unlikley (P<10%), NC=Non-credible (P<1%)																			