

## 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**

<b>WBS Number: 52</b>														
<b>WBS Title: Central I&amp;C Systems</b>														
<b>Job Number: 5201</b>														
<b>Job Title: Central I&amp;C Systems</b>														
<b>Job Manager: Paul Sichta</b>														
<b>Description:</b>														
<i>Title I and</i>														
<b>FY07\$K</b>														
<b>Activity ID</b>	<b>Activity Description</b>	<b>41MS</b>	<b>43MS/CC</b>	<b>48MS</b>	<b>37STK</b>	<b>35 Trvl</b>	<b>ECEM</b>	<b>ECTB</b>	<b>EMTB</b>	<b>EASB</b>	<b>EEEM</b>	<b>EETB</b>	<b>Basis of Estimate</b>	
													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							
<b>Subtotal Job 5201</b>		<b>\$18K</b>	<b>\$19K</b>	<b>\$0K</b>	<b>\$3K</b>	<b>\$2K</b>	<b>720</b>	<b>100</b>	<b>240</b>	<b>120</b>	<b>0</b>	<b>0</b>		
<b>M&amp;S Details:</b>		<b>K\$</b>	<b>Basis of M&amp;S Estimate</b>											
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											
<b>Total M&amp;S</b>		<b>\$42.0K</b>												

**NCSX June 2007 ETC**  
**TABLE II - Materials and Subcontracts**

<b>WBS Number: 52</b>							
<b>WBS Title: Central I&amp;C Systems</b>							
<b>Job Number: 5201</b>							
<b>Job Title: Central I&amp;C Systems</b>							
<b>Job Manager: Paul Sichta</b>							
<b>Materials and Subcontracts (M&amp;S)</b>						<b>Basis of Estimate</b>	
<b>Description:</b>							
<b>See Table I</b>							

**NCSX June 2007 ETC**  
**TABLE III - Fabrication/Assembly Installation**

<b>WBS Number: 52</b>									
<b>WBS Title: Central I&amp;C Systems</b>									
<b>Job Number: 5201</b>									
<b>Job Title: Central I&amp;C Systems</b>									
<b>Job Manager: Paul Sichta</b>									
<b>In-house Fabrication and Assembly and Installation</b>									
<b>See Table I</b>									



Activity ID	MILE-stones (level 2 & 3)	Activity Description	Duration (work days)	Baseline Start	Baseline Finish	Shifts	Total Float	% cmplt	Proposed Budgeted							
										FY07	FY08	FY09	FY10	FY11	FY12	
<b>52 - Central Instrumentation &amp; Control</b>																
<b>Job: 5201 - I&amp;C Systems-SICHTA</b>																
R52-10		Preliminary Design	30	02MAR09*	10APR09		49		6,203.60							
R52-11		PDR	0		10APR09		49		0.00							
R52-20		Final Design	60	13APR09	07JUL09		49		6,203.60							
R52-21		FDR	0		07JUL09		49		0.00							
R52-30		Procurement	30	08JUL09	18AUG09		49		33,500.80							
R52-40		EPICS Programming - Base	10	19AUG09	01SEP09		49		12,407.20							
R52-50		EPICS Programming - VDCT db editor	30	02SEP09	14OCT09		229		6,273.87							
R52-60		IOC Programming - MDSplus data & events	30	02SEP09	14OCT09		229		18,821.60							
R52-70		OPC - EPICS/PLC Interface	90	02SEP09	20JAN10		49		28,002.44							
R52-80		Appl. Programming-T/C	30	21JAN10	03MAR10		49		12,828.80							
R52-90		Programming - misc.	90	04MAR10	09JUL10		49		16,036.00							
R52-100		Installation	60	15APR10	09JUL10		49		49,987.20							
R52-110		Test	14	12JUL10	29JUL10		49		6,414.40							
Subtotal			354	02MAR09	29JUL10		49		196,679.51							

