Personnel Safety System Design Review Results

PDR summary: NSTXU_1-7-3-1_PDRs_100

REVISION 0

August 20, 2019

PREPARED BY:	**Kathleen Lukazik**	7/19/2019 3:39:27 PM
	Kathleen Lukazik,	
REVIEWED BY:	**Joseph Petrella**	7/22/2019 8:09:14 AM
	Joseph Petrella,	
REVIEWED BY:	**Charles L. Neumeyer**	8/16/2019 2:28:50 PM
	Charles L. Neumeyer,	
APPROVED BY:	**Joseph Petrella**	8/20/2019 10:45:20 AM
	Joseph Petrella,	

PRINCETON PLASMA PHYSICS LABORATORY
P.O. BOX 451
PRINCETON, N.J. 08543

DESIGN REVIEW DOCUMENTATION – RESULTS

Title: Personnel Safety System

CAT: ☒A1 ☐A2 ☐A3

Type of Review: ☐ Peer ☐ CDR ☒ PDR ☐ FDR

Cognizant Individual: Joe Petrella **Date of Review:** 6/26/19

Review Board Members:	Invited Attendees:	Other Attendees:
Chairperson C. Neumeyer	A. Indelicato – DOE FPM	M. D'Agostino
RE Ops +TA Heat.- T. Stevenson	D. Niemenski – DOE PSO	C. Hines
TA Electrical - R. Camp	J. King - DOE	X. Zhao
TA Cnt. + Data - P. Sichta	B. Sullivan - DOE	P. Dugan
QA – K. Cortes		R. Langan
ESH J. Levine		G. Anderson
RE Power Systems – J. Dellas		T. Estes
Sys. Eng. + Int. – S. Gerhardt		S. Horst
ASO SME – J. Malo		A. Castano
FCPC Ops Supervisor – J. Corl		M. Thomas
CI&C RE – G. Tchilingurian		B. Smith
PLC SME - M. Cropper		S. Depasquale
Ext. SME - P. Bong (LBL)		G. Ascione
Ext. SME - S. Buda (BNL)		
Ext. SME - D. Freeman (ORNL)		
Ext. SME - J. Kowal (JLAB)		
Ext. SME - K. Mahoney (ORNL)		
Ext. SME - J. Veasey (AE Sol'ns)		

Note: J. Malo was unable to attend

Items Reviewed:	Sat.	Unsat.	Comments or n/a if not applicable
Appropriate requirements identified	☒	☐	
Development plans and schedules	☒	☐	
Reg. compliance incl. USI/USID and NEPA	☒	☐	
Disposition of CHITS from previous reviews	☒	☐	
Cost objectives	☒	☐	
Other review objectives addressed	☒	☐	

SUMMARY OF RESULTS:

This PDR (https://sites.google.com/pppl.gov/20190626-pss-pdr/home) covered the implementation of scope defined in the SRD (NSTX-U-RQMT-SRD-012) for Operations and Safety Systems (OSS), namely the Personnel Safety System (PSS), but not the Central Control System (CCS), which will be reviewed separately.

Additional requirements are given in the following RDs:

- Personnel Safety System Requirements (NSTX-RQMT-RD-024-01)
- Trapped Key System Requirements (NSTX-RQMT-RD-026-00)
- Configuration Managed Safeguard Requirements (NSTX-RQMT-RD-027-00)

A CDR was held on December 13, 2018 and a Peer Review on May 8, 2019.

A total of 3 chits were generated during the review and dispositioned by the committee. After the meeting, 7 additional chits were submitted that were dispositioned by the committee via e-mail correspondence.

See attached table of chits and record of attendance.

Disposition: [check one]
_____ **Acceptable**
X_____ **Acceptable pending resolution of concerns**- CHITS identified above must be resolved prior to installation.
_____ **Incomplete -** Additional design work is required prior to another design review.
_____ **Unsuccessful** – Corrective actions must be taken and another review process must be initiated.

Design Review Chair Person _____ Date: _____

Cognizant Individual Acceptance _____ Date: _____

Distribution: Review Board Members, Operations Center, Responsible Engineer (RE), Cognizant Individuals, Project Manager, Project Director, relevant Technical Authorities (TAs), Chief Engineer (CE), Fire Protection Engineer, Attendees, QA, ES&H, Security, Requesting & Performing Dept. Head

Originator (First & Last Name):	Comment/Concern/Recommendation:	Review Board Comment:	Review Board Recommendation:
Ray Camp	Consider adding the grounding cage interlock in the TFTR TCB. Particularly if it is intended to remove the junction area transfer station.		Concur
T. Stevenson	Consider getting a full set of spare TKS keys for a variety of reasons		Concur
Joe Petrella	Ensure that the 2nd floor RWM Kirk Key is accommodated for in TKS.		Concur
Stefan Gerhardt	Please include the SPA more explicitly in the requirements for TKS and CMS		Concur
JP on Behalf of Kelly Mahoney	Monitoring of TKS should include appropriate CCS alarms when the key configuration is inconsistent or unsafe.		Consider
JP on behalf of Kelly Mahoney	The maturity of the trapped key design is well below that of the electrical safety systems. E.g. not even red-line diagrams were presented. I would not consider the trapped key design at the PDR level.	The material presented addresses ENG-033 requirements for a PDR	Do not concur
JP on behalf of Kelly Mahoney	I strongly recommend using two separate DC power supplies – one for chain A and one for B. High, low, and noisy power is a known common cause failure mechanism for PLCs and IO. If you still want to go with one supply, at least monitor the power supply fault contacts.		Consider
JP on behalf of Kelly Mahoney	The project should address human factors to include operator interfaces and alarms at this stage. This may affect things like tags and tag properties, fault diagnostics and testability, and disambiguation.		Concur
JP on behalf of Kelly Mahoney	Also schedule needs to include labor for independent review of both hardware and software. Include any tools needed, e.g. RS5000 to review and compare software. Should include at least one iteration.		Concur
Joe Veasey	Perform analysis for any instrument failure before proceeding with like-for-like replacement		Concur

Yellow = Chit uploaded after review meeting