



ENG-033 - FDRS - FDR SUMMARY

Final Design Review Summary for the Vacuum Vessel Blackening

NSTXU_1-4-1-23_FDRS_100

Work Planning #:

Effective Date:

02/04/2020

Prepared By:

William R. Blanchard

Reviewed By	William R. Blanchard, Design Review Chair	02/04/2020 08:06:07 AM
Reviewed By	Yusi Cao, Cognizant Individual	01/31/2020 16:05:40 PM
Approved By	Robert A. Ellis, Chief Engineer	02/04/2020 08:20:43 AM



DESIGN REVIEW DOCUMENTATION – RESULTS – No:

Title: Vacuum Vessel Blackening (Alternative to Aerodag) (WP# 3059, WBS# 1.04.01.03)

CAT: ☒A1 ☐A2 ☐A3

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

Cognizant Individual: A. Cao _____

Date of Review: 1/30/20

Review Board Members:

W. Blanchard, Chairperson
B. Stratton, Diagnostics RE
T. Stevenson, Head of Operations
S. Gerhardt, Sys Integration & Physics Requirements
D. Cai, Vacuum TA
S. Raftopoulos, Construction Manager & VVIH RE
R. Ellis, Chief Engineer & Mechanical TA
P. Titus, Analysis TA
Y. Zhai, NSTX-U Project Engineer
A. Castaneda, QA
N. Gerrish, ES&H

Other Attendees

R. Upcavage
R. Hawryluk
M. Cropper
J. Galayda

Items Reviewed:

	Sat.	Unsat.	Comments or n/a if not applicable
Appropriate requirements identified	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Development plans and schedules	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Reg. compliance incl. USI/USID and NEPA	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NEPA 1128 _____
Disposition of CHITS from previous reviews	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Cost objectives	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Other review objectives addressed	<input type="checkbox"/>	<input type="checkbox"/>	_____

SUMMARY OF RESULTS:

The purpose of this FDR was to review the design for darkening the background areas for the Multipoint Thomson Scattering (MPTS), Charge Exchange Recombination Spectroscopy (CHERS), Real Time Velocity (RTV) and Motional Stark Effect (MSE) diagnostics. A. Cao reviewed the darkening method using ferrous oxide coated plates which will be installed near the midplane of the vacuum vessel. The design was proposed at the CDR and followed by a Peer Review to explore alternative methods, all of which were rejected. He also reviewed the resolution of chits from the CDR, the thermal and disruption analysis and FMEA. He further reviewed the method for installing the plates in the vacuum vessel and the cost and schedule for completing the project.

There was one chit generated during the review concerning ensuring sufficient tolerances of the parts for installation in the vacuum vessel. The review committee deemed the design review successful pending resolution of the chit.

Disposition: [check one]

_____ **Acceptable**

☒ **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
Approved 02/04/2020
Revised 8/10/18