



ENG-033 - CDRS - CDR SUMMARY

Alternative to Aerodag Conceptual Design Review Summary

NSTXU_1-4-1-23_CDRS_100

Work Planning #: **3059**
Effective Date: **01/11/2020**
Prepared By: **Yusi Cao**

Approved By

Kathleen Lukazik, Preparer

01/11/2020
13:28:07 PM

DESIGN REVIEW DOCUMENTATION – RESULTS – No:

Title: Alternative to Aerodag (WP# 3059, WBS#) _____

CAT: ☒ A1 ☐ A2 ☐ A3

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

Cognizant Individual: A. Cao _____ Date of Review: 8/22/19

Review Board Members:

W. Blanchard, Chairperson
B. Stratton, RE Diagnostics
M. Cropper (for T. Stevenson), Operations
D. Cai, TA Vacuum
P. Dugan, System Engineering
P. Titus, TA Analysis
V. Riccardo, Alt. Chief Engineer
Y. Zhai, NSTX-U Project Engineer
A. Castaneda, QA

Other Attendees

R. Hawryluk
R. Ellis
D. Loesser
J. Galayda
W. Gattoni

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 type="checkbox"/>	<input type="checkbox"/>	N/A _____
Cost objectives	<input type="checkbox"/>	<input type="checkbox"/>	will be updated _____
Other review objectives addressed	<input type="checkbox"/>	<input type="checkbox"/>	_____

SUMMARY OF RESULTS:

The purpose of this CDR was to review an alternative to Aerodag to darken background areas for the MPTS and CHERS/RTV diagnostics. The 2016 run revealed that the spray-on Aerodag was flaking off. A. Cao reviewed an alternative darkening method using a ferrous oxide coating which was used in Alcator C-Mod. The process requires plates and parts/equipment to be coated in an ex-vessel operation and requires the coated plates to be mounted inside the vacuum vessel. A preliminary cost and schedule was also presented.

The review generated nine chits all of which were concurred with. One chit dealt with completing a survey of other facilities to check if there is a method for darkening the areas in-situ and eliminating the need for installing hardware and plates. A couple of chits concerned completing outgassing, lithium and permeability tests. A few of the chits concerned analysis that is required with the addition of hardware inside of the vacuum vessel. These concerns include changes in loads on existing components, and eddy current, thermal and heat balance calculations. One chit concerned updating the cost of the presented design and another chit concerned documentation.

The review committee deemed the design review successful pending resolution of the chits with one additional caveat.

* A Peer Review will be held to review the results of the survey of other facilities to determine if there is a satisfactory and economical in-situ solution prior to committing to the significant time/manpower and cost required for a PDR for the proposed design.



Disposition: [check one]

 Acceptable

X see (*) above **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 W. Blanchard Digitally signed by W. Blanchard
Date: 2019.08.23 10:35:22 -04'00' **Date:** _____

Cognizant Individual Acceptance A. Cao  **Date:** 8-23-19

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

Revised 8/10/18