

# Conceptual Design Review Summary

**CDR summary: NSTXU\_1-4-1-22-3\_CDRs\_100**

**REVISION 0**

**November 6, 2019**

**PREPARED BY:**      **Kathleen Lukazik**      9/19/2019 1:31:11 PM

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Kathleen Lukazik,

**REVIEWED BY:**      **Robert A. Ellis**      9/20/2019 1:13:44 PM

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Robert A. Ellis,

**REVIEWED BY:**      **William R. Blanchard**      11/1/2019 1:16:43 PM

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William R. Blanchard,

**APPROVED BY:**      **Yuhu Zhai**      11/6/2019 2:13:12 PM

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Yuhu Zhai,

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**DESIGN REVIEW DOCUMENTATION – RESULTS – No:** NSTXU\_1-4-1-22-3\_CDRS\_100

**Title:** Seal Repair (WP# 3063, WBS# 1.04.01.05) \_\_\_\_\_

**CAT:** ☒A1 ☐A2 ☐A3

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

**Cognizant Individual:** J. Bradley \_\_\_\_\_ **Date of Review:** 9/17/19

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**Review Board Members:**

W. Blanchard, Chairperson  
R. Ellis, RE, VV and Internal Hardware  
M. Kalish (for D. Loesser), TA, Mech  
D. Cai, TA, Vacuum  
P. Dugan, System Engineering  
P. Titus, TA, Analysis  
J. Winston, Mach Assembly SME  
T. Stevenson, Alt. Chief Engineer  
Y. Zhai, NSTX-U Project Engineer  
W. Slavin, TA, Industrial Hygiene  
A. Castaneda, QA

**Other Attendees**

S. Gerhardt  
L. Hill  
M. Safabakhsh  
D. Kidd  
A. Indelicato  
W. Gattoni  
M. Cropper  
D. Niemenski  
B. Stratton  
J. Mitchell

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**Items Reviewed:**

	<b>Sat.</b>	<b>Unsat.</b>	<b>Comments or n/a if not applicable</b>
Appropriate requirements identified	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Development plans and schedules	<input type="checkbox"/>	<input type="checkbox"/>	Will be updated for FDR_____
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 for FDR_____
Other review objectives addressed	<input type="checkbox"/>	<input type="checkbox"/>	_____

**SUMMARY OF RESULTS:**

During the 2016 run of NSTX-U, there were large leaks in the three of the midplane 27" wire seal flanges (Bays I, H and F). J. Bradley reviewed options for repairing the leaks including jacking the flanges into shape, elongating the existing through holes on the vacuum vessel flanges, and cutting off the existing flange and welding a new flange on the vacuum vessel spool piece. Metrology was done on the Bay I flange and the distortion was found to be greater than 0.200" which precluded all solutions except replacing the existing 27" flange. A design for cutting off the flange and welding a new modified flange on the nozzle was presented. The cog also reviewed a design for leak checking the seal and weld.

The review generated 16 chits of which 14 were concurred with by the review committee. A couple concerned the need for completing metrology on Bays F and H for a peer review to review the proposed repair techniques to be used for those flanges. A couple of chits concerned the need for a more detailed cost and schedule. A few concerned the leak checking design, and others pertained to tolerances, minimizing weld distortions, lip seals, re-installation and documentation.

The review committee deemed the design review successful and recommends proceeding to an FDR pending resolution of the chits.

**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

Revised 8/10/18