

Title: Passive Plate Tile Pre-Load Peer

CAT: X A1 A2 ☐ A3 ☐Type of Review: X Peer ☐ CDR ☐ PDR ☐ FDR

Cognizant Individual: J. Klabacha, M. Pauley, B. Linn

Date of Review: 12/17/19

Review Board Members:

Chair: T. Stevenson
 RE: S. Raftopoulos
 TA: R. Ellis
 TA: J. Petrella
 TA: P. Titus
 P. Dugan
 Y. Zhai
 QA: A. Castenada
 ES&H: n/a

Attendees:

J. Klabacha
 S. Gifford
 J. Basler
 R. Hawryluk
 H. Zhang
 D. Niemenski
 T. Indelicato

Attendees:**Items Reviewed:****Sat.****Unsat.****Comments or n/a if not applicable**

Appropriate requirements identified

X

☐

Development plans and schedules

X

☐

Reg. compliance incl. USI/USID and NEPA

X

☐

NSTX-U; n/a

Disposition of CHITS from previous reviews

X

☐

n/a

Calculations (all listed are signed and filed)

X

☐

chit to address numbering

Cost objectives

☐

n/a

Other review objectives addressed

☐

n/a

SUMMARY OF RESULTS:

This review covered the slipping test of the tile pre-load system to determine allowable ranges, assembly deformation analysis under various pre-loads, and stress analysis pre-load set by tolerances, and the acceptable range of thermal conductivities for global bakeout analysis. A torque value of 30 in-lbs was recommended. The historical torque value was 49 in-lbs. Mechanical testing and analysis provide supporting arguments. Torques from 3 up to 60 in-lbs were tested; sufficient friction existed above 6 in-lbs to exceed 80 lbs halo loads required. No fractures occurred up to the tested 60 in-lbs. and may well be higher. Analysis indicates a SDC limit of 16 in-lbs. with some 10% increase in loading for deflections; these values are heavily dependent on approximations in developing properties and provide an order of magnitude check of the test data despite differences in absolute values. Using the test data at 30 in-lbs. pre-load provides sufficient friction for halo loads, provides margin for stress, and provides assurance of Grafoil thermal conductivity. Therefore, 30 in-lbs was accepted as the appropriate pre-load with a chit to perform additional testing for statistical purposes. The other chit addressed documentation issues.

Disposition: [check one]

X Acceptable pending resolution of concerns- CHITS identified above must be resolved prior to installation.

Design Review Chair

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