



# **ENG-033 - FDRS - FDR SUMMARY**

## **Final Design Review Summary for CAMAC Phase 1 & 2**

*NSTXU\_1-6-1\_FDRS\_100*

|                  |                             |
|------------------|-----------------------------|
| Work Planning #: | <b>2327</b>                 |
| Effective Date:  | <b>02/13/2020</b>           |
| Prepared By:     | <b>Timothy N. Stevenson</b> |

|                    |  |                           |
|--------------------|--|---------------------------|
| <b>Approved By</b> | Greg Tchilinguirian, Responsible<br>Engineer | 02/13/2020<br>18:01:13 PM |
|--------------------|--|---------------------------|



## DESIGN REVIEW DOCUMENTATION – RESULTS

Title: CAMAC Phase 1 & 2 \_\_\_\_\_

WP#: 2327\_\_ (ENG-032)

CAT: ☐A1 ☐A2 ☒A3

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

Cognizant Individual: Greg Tchilinguirian \_\_\_\_\_ Date of Review: \_\_ 6/26/18

| Review Board Members:      | Invited Attendees: | Attendees: |
|----------------------------|--------------------|------------|
| Chair: T. N. Stevenson* __ | M. Cropper         | _____      |
| RE _G. Tchilinguirian_____ | J. Wertenbaker     | _____      |
| P. Sichta                  | G. Zimmer          | _____      |
| S. Gerhardt                | R. Rosenblat       | _____      |
| TA (* for N. Greenough)    | S. Daskoczynski    | _____      |
| TA (____)_____             | B. Stratton        | _____      |
| _____                      | X. Zhao            | _____      |
| QA _B. Jedic_____          | I. Zatz            | _____      |
| ESH __n/a_____             | J. Dong            | _____      |

| 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 type="checkbox"/>            | <input type="checkbox"/> | n/a; NEPA 33 _____                |
| 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 checked="" type="checkbox"/> | <input type="checkbox"/> | FMEA _____                        |

### SUMMARY OF RESULTS:

This FDR covered changes to the Jorway configuration and serial highways, RF Balcony CAMAC replacement, RF Enclosure CAMAC replacement, and D Site Pump House CAMAC replacement. Overall cost and schedule were presented from the WAF that has been developed. By replacing some CAMAC and consolidating highways, Jorway Serial Highway Drivers can be conserved thus regaining a spare unit. CAMAC continues as preferable in the NTC against radiation effects. Testing also revealed that some operation could be performed with only 1 Jorway online. To achieve this change replacement of CAMAC was targeted in RF (2 locations) and the D Site Pump House. In all 3 locations, the signal lists are one for one compatible with the existing configuration. In the pump house a Seimens S7 controller will be used. In RF. CAMAC will be replaced with D-tacq units and Reconfigurable Timing Units (RTU). Some fiber optics cables and adapters will be purchased. IPs and PTPs will be generated and used to install and test all changes. With the above changes most of which a rack mount or panel connect swaps, this FDR purports to match or improve performance over CAMAC, increase RAM, liberate spare Jorways and CAMAC modules, map to existing signal channels, and minimize cost and schedule. Drawings and signal lists were available and reviewed at the FDR. This review generated 3 minor chits that were accepted. The

charge, agenda, presentations, documentation, and chit log are available on the NSTX-U Recovery dashboard for



this review. Because this change liberates a spare Jorway and confirms operation the risk categorization was determined to reduce from A2 to A3.

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**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** T. Stevenson \_\_\_\_\_ **Date:** \_\_\_\_\_

**Cognizant Individual Acceptance** \_\_\_\_\_ **Date:** \_\_\_\_\_

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

Revised 2/19/2018