

NATIONAL COMPACT STELLARATOR PROJECT

Engineering Change Proposal (ECP)

COVER PAGE

(TO BE COMPLETED BY SYSTEMS ENGINEERING SUPPORT MANAGER)

Originator: Bob Simmons	Date: November 5, 2007
ECP No: 058	ECP Title: Update of VV & Station 1 FPA Requirement Documents

Required Reviewers

Required Reviewers for this ECP: J.L. Anderson, H. Neilson, P. Heitzenroeder, P. Goranson, R. Ramakrishnan, P. Sichta, M. Viola, L. Dudek, C. Phelps, J. Malsbury, J. Levine, M. Zarnstorff, F. Malinowski, W. Reiersen, B. Nelson

ECP Approval Level

Expedited ECP? ☐ Yes ☒ No

Change Level: **3 Project**

Approving Official: **3 Reg ECP - Project Manager**

Actions

- (1) Prepare NCSX-specific Grounding CSPEC by end of December, 2007
- (2) Update the NCSX-BSPEC-12 (Vacuum Vessel SRD) by 12/1/2007
- (3) Update NCSX-CSPEC-185-01 (Station 1 Field Period Assembly) by 11/15/2007
- (4) Updated NCSX-prl-12-002 (Product Requirements List for the Vacuum Vessel Heater Tapes) by 10/22/2007
- (5) Update NCSX-PRL-012-003 (Product Requirements List for the Vacuum Vessel System Thermocouples) by 10/22/2007
- (6) Updated NCSX-PRL-012-004 (Product Requirements List for the Thermal Insulation) by 10/24/2007

APPROVALS

(TO BE COMPLETED BY APPROVING OFFICIALS)

Change Level	Approving Official	Approval?	Signature
3	NCSX Project Manager	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
3a (Expedited ECP)	NCSX Engineering Manager	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2	NCSX Federal Project Director	<input type="checkbox"/> Yes <input type="checkbox"/> No	
1	Associate Director OFES	<input type="checkbox"/> Yes <input type="checkbox"/> No	
0	Deputy Secretary of Energy	<input type="checkbox"/> Yes <input type="checkbox"/> No	

NATIONAL COMPACT STELLARATOR PROJECT

Engineering Change Proposal (ECP)

PART I *(TO BE COMPLETED BY ORIGINATOR)* ECP- 058

Originator: Bob Simmons

Date: November 5, 2007

Overview of Change

Type of ECP: ☐ EXPEDITED ☒ STANDARD

Type of Change: ☒ TECHNICAL ☐ COST ☐ SCHEDULE ☐ EDITORIAL

(Check all that Apply)

Reason for Change:

- (1) BSPEC – incorrectly identifies in Section 3.3.2 (Electrical Grounding) a nonexistent “NCSX Grounding Specification for Personnel and Equipment Safety” => need to develop this specification for the NCSX Project.
- (2) Station 1 FPA CSPEC - Clarify pressure range and pressure flow requirements.
- (3) PRLs for Heat Tapes and Thermocouples – clarify electrical isolation requirements as specified in the Station 1 FPA CSPEC.

Impacted WBS Elements: WBS 12 & WBS 18

Impacts of Change (Briefly Describe):

- (1) Prepare new NCSX Grounding Specification for Personnel and Equipment Safety
- (2) VV BSPEC -Correct SRD to reflect proper electrical safety requirement.
- (3) FPA CSPEC - Original flow test requirements would have necessitated purchase of expensive components and test equipment, when original requirement was only to check for blockages. These revised requirements will satisfy that need.
- (4) PRLs for Heater Tapes and Thermocouples – clarify electrical isolation requirements for future procurements.
- (5) PRL for Thermal Insulation – replace obsolete “aerogel” silica with “Pyrogel 6671”

Does this Change Impact Material Already Procured or Parts/Assemblies Already Assembled/Manufactured using this Material: ☒ Yes ☐ No

If “Yes”, what is the recommended disposition of this material/part/assembly? “Use as is” – thermocouples as per revised NCR-3719 (Rev 1).

Assessment of Other Options: None – original disposition to NCR of “return to vendor” determined to be incorrect.

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PART I *(TO BE COMPLETED BY ORIGINATOR)* **ECP- 058**

Originator: Bob Simmons

Date: November 5, 2007

Detailed Description of the Change:

(Use Continuation Sheets and/or Attach Information/Sketches, As Needed)

List Attachments, Impacted Documents, etc.

- None.

Description of Change:

- (1) Prepare new NCSX CSPEC (NCSX-CSPEC-41-01-00) to reflect specific NCSX Project grounding requirements
- (2) VV BSPEC – revise Section 3.3.2 (Electrical Grounding) to replace, in subparagraphs a., b., & c., the reference to the “NCSX Grounding Specification for Personnel and Equipment Safety” with the specific CSPEC reference developed above in step #1.
- (3) Station 1 FPA CSPEC - Pressure range and Pressure-Flow Requirements: Change CSPEC 185-01-01, paragraph 4.2.1.1 to read:
 - ❖ “The heating/cooling system shall be leaked checked with helium gas at 300 psig in accordance with ENG-014.”
 - ❖ “The region around the compression fittings shall be checked with a helium leak detector tuned to 1×10^{-5} torr-l/s. Acceptance criteria shall be no detectable leaks.”
- (3) PRLs
 - a. PRL-12-002 (Heater Tapes) – Revise Section 2.3.3 (Heater Construction) to add CSPEC electrical isolation requirement of “>10.0 MOhms at a minimum of 600V”.
 - b. PRL-12-003 (Thermocouples) - Revise Section 2.1 (Item Definition) to add CSPEC electrical isolation requirement of “>1.5 MOhms at a minimum of 500V” and Section 2.2 (Characteristics) to read: “Similar to type XCIB-E, Style 4 (Ungrounded)
 - c. PRL-12-004 (Thermal Insulation) – Revise Section 1.2.1(Insulation Material) – deleted “aerogel” & replaced with “Pyrogel 6671” - Substitution of insulation material since original no longer made