



Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381-2000

October 19, 2011

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555-0001

Watts Bar Nuclear Plant, Unit 2  
NRC Docket No. 50-391

**Subject: Watts Bar Nuclear Plant (WBN) Unit 2 - Submittal of Pre-op Test Instruction**

The following approved WBN Unit 2 Pre-op Test Instruction (PTI) is enclosed:

PTI NUMBER	Rev.	TITLE
2-PTI-070-01	0	Component Cooling Water Pump/Valve Logic Test

If you have any questions, please contact Pete Olson at (423) 365-3294.

Respectfully,

David Stinson  
Watts Bar Unit 2 Vice President

Enclosure  
cc (Enclosure):

U. S. Nuclear Regulatory Commission  
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NRC Resident Inspector Unit 2  
Watts Bar Nuclear Plant  
1260 Nuclear Plant Road  
Spring City, Tennessee 37381

DO30  
NRC

**WATTS BAR NUCLEAR PLANT  
UNIT 2 PREOPERATIONAL TEST**

**TITLE:** Component Cooling Water Pump Valve Logic Test

**Instruction No:** 2-PTI-070-01

**Revision No:** 0000

**PREPARED BY:** Daniel D. Orr / Daniel D. Orr **DATE:** 9/15/11  
PRINT NAME / SIGNATURE

**REVIEWED BY:** Kurt McCormack / Kurt McCormack **DATE:** 9/15/11  
PRINT NAME / SIGNATURE

**INSTRUCTION APPROVAL**

**JTG MEETING No:** 2-11-016

**JTG CHAIRMAN:** [Signature] **DATE:** 9/15/11

**APPROVED BY:** [Signature] **DATE:** 9/15/11  
PREOPERATIONAL STARTUP MANAGER

**TEST RESULTS APPROVAL**

**JTG MEETING No:** \_\_\_\_\_

**JTG CHAIRMAN:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

**APPROVED BY:** \_\_\_\_\_ **DATE:** \_\_\_\_\_  
PREOPERATIONAL STARTUP MANAGER

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**Revision Log**

<b>Revision or Change Number</b>	<b>Effective Date</b>	<b>Affected Page Numbers</b>	<b>Description of Revision/Change</b>
0000	<i>9/15/11</i>		Initial Issue based on 1-PTI-70-01, Rev 1.

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## **1.0 INTRODUCTION**

### **1.1 Test Objectives**

This PTI pertains to testing of Unit 2 System 70, Component Cooling Water System (CCS) to verify component and logic function according to design and Engineered Safety Function requirements. Pump and valve logic will be tested. System components will be tested to verify expected component operation.

### **1.2 Scope**

- A. Demonstrate manual and automatic operation and proper valve position associated with the CCS active valves from their remote, auxiliary and local control stations.
- B. Demonstrate all active CCS valves will open and close within the specified time period.
- C. Demonstrate the operation of interlocks associated with the CCS active air operated valves and their operation from their remote, auxiliary and local control station.
- D. Demonstrate the manual and automatic operation of the CCS Thermal Barrier Booster Pump logic and controls from their remote, auxiliary and local control stations.
- E. Demonstrate the operation of the CCS remote annunciators and Status Monitoring System inputs.
- F. Demonstrate the automatic operation of the Unit 2 CCS pumps based on accident and/or process signals from Unit 2.

## **2.0 REFERENCES**

### **2.1 Performance References**

- A. SMP-9.0, Conduct of Test
- B. TI-300, Electrical Arc Flash Personal Protective Equipment & Protection Boundary Matrices

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## **2.2 Developmental References**

### **A. Final Safety Analysis Report**

1. FSAR Amendment 105
  - a. Section 9.2.2
  - b. Table 14.2-1 Sheet 7 of 89

### **B. Drawings**

1. Flow Diagrams
  - a. 2-47W859-1, Rev 2, Flow Diagram Component Cooling Water System
  - b. 2-47W859-3, Rev 6, Flow Diagram Component Cooling Water System
  - c. 2-47W859-4, Rev 5, Flow Diagram Component Cooling Water System
  - d. 2-47W848-5 Rev 1, Flow Diagram Control Air
2. Electrical
  - a. 2-45W600-55-18, Rev 0, Wiring Diagram Annunciator System Key Panel 6C & 6F  
DCA 52630-115
  - b. 1-45W600-55-35, Rev 9, Wiring Diagram Annunciator System Key Diagram
  - c. 2-45W600-55-41, Rev 0, Wiring Diagram Annunciator System Key Diagram; DRA 52453-02 Rev 1
  - d. 2-45W600-55-42, Rev 0, Wiring Diagram Annunciator System Schematic Diagram; DRA 52453-03 Rev 1
  - e. 2-45W600-57-2, Rev 0, Wiring Diagram Separation & Misc Aux Relays Schematic Diagrams
  - f. 2-45W600-57-5, Rev 2, Wiring Diagram Separation & Misc Aux Relays Schematic Diagrams
  - g. 2-45W600-57-23, Rev 1, Wiring Diagram Separation & Misc Aux Relays Schematic Diagrams

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**2.2 Developmental References (continued)**

- h. 1-45W703-8A, Rev 15, Wiring Diagrams 125V Vital Battery Board III Panel 4 Connection Diagram Sheet 8A
- i. 1-45W760-55-3, Rev 0, Wiring Diagrams Annunciator System Schematic Diagrams
- j. 2-45W760-70-1, Rev 1, Wiring Diagrams Component Cooling System Schematic Diagram
- k. 1-45W760-70-2, Rev 18, Wiring Diagrams Component Cooling System Schematic Diagram  
DCA 54703-161
- l. 2-45W760-70-3, Rev 0, Wiring Diagrams Component Cooling System Schematic Diagram  
DRA 53288-072, 54499-018, 53293-050, 54499-006
- m. 2-45W760-70-4, Rev 0, Wiring Diagrams Component Cooling System Schematic Diagram  
DRA 53288-075, 53293-046, 54499-007
- n. 2-45W760-70-5, Rev 0, Wiring Diagrams Component Cooling System Schematic Diagram  
DRA 53288-076, 54499-127, 54499-128
- o. 1-45W760-70-6, Rev 14, Wiring Diagrams Component Cooling System Schematic Diagrams
- p. 2-45W760-70-6, Rev 0, Wiring Diagrams Component Cooling System Schematic Diagrams  
DRA 54912-141, 144, 53293-056, 55477-223
- q. 2-45W760-70-7, Rev 0, Wiring Diagrams Component Cooling System Schematic Diagrams  
DRA 53293-054
- r. 2-45W760-70-8, Rev 1, Wiring Diagrams Component Cooling System Schematic Diagram  
DRA 53288-077, 53288-078, 54499-008
- s. 2-45W760-70-9, Rev 1, Wiring Diagrams Component Cooling System Schematic Diagram  
DRA 53292-053, 53287-130

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## 2.2 Developmental References (continued)

- t. 2-45W760-70-10, Rev 0, Wiring Diagrams Component Cooling System Schematic Diagram  
DRA 53287-132
- u. 2-45W600-70, Rev 0, Wiring Diagrams Component Cooling System Schematic Diagram
- v. 2-45W760-270-2, Rev 1, Wiring Diagram Miscellaneous System Schematic Diagram  
DRA 53288-056, 54499-013, FCR 55769-A
- w. 2-45W760-211-12 Rev 0, Wiring Diagrams 6900V Shutdown Power 2A-A Schematic Drawing
- x. 2-45W760-211-14 Rev 0, Wiring Diagrams 6900V Shutdown Power 2B-B Schematic Drawing
- y. 45N2635-87, Rev 22, Local Control PNL Conn. Diagram Sheet 87
- z. 45N2639-3, Rev 2, Aux. Cont BD PNL 2-L-11B, Connection Diagram, Sh. 3
- aa. 45B2766-2C, Rev 6, 480V Reactor MOV BD 2A1-A, Compt. 2C
- bb. 45B2766-9D, Rev 1, 480V Reactor MOV BD 2A1-A, Compt. 9D
- cc. 45B2767-5A, Rev 5, 480V Reactor MOV BD 2A2-A, Compt. 5A
- dd. 45B2767-6D, Rev 7, 480V Reactor MOV BD 2A2-A, Compt. 6D
- ee. 45B2767-6D-2, Rev 1, Wiring Diagram 480V Reactor MOV BD Connection Diagram
- ff. 45B2767-11E, Rev 5, 480V Reactor MOV BD 2A2-A, Compt. 11E
- gg. 45B2767-12D, Rev 6, 480V Reactor MOV BD 2A2-A, Compt. 12D
- hh. 45B2767-16A, Rev 9, 480V Reactor MOV BD 2A2-A, Compt. 16A
- ii. 45B2767-16B, Rev 8, 480V Reactor MOV BD 2A2-A, Compt. 16B
- jj. 45B2767-16D, Rev 5, 480V Reactor MOV BD 2A2-A, Compt. 16D
- kk. 45B2767-16E, Rev G, 480V Reactor MOV BD 2A2-A, COMPT 16E  
DCA 54912-145

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- ii. 45B2767-17A, Rev 4, 480V Reactor MOV BD 2A2-A, Compt. 17A
- mm. 45B2768-2C, Rev 4, 480V Reactor MOV BD 2B1-B, Compt. 2C
- nn. 45B2769-6D, Rev 5, 480V Reactor MOV BD 2B2-B, Compt. 6D
- oo. 45B2769-6E, Rev 5, 480V Reactor MOV BD 2B2-B, Compt. 6E
- pp. 45B2769-6F, Rev 7, 480V Reactor MOV BD 2B2-B, Compt. 6F
- qq. 45B2769-12D, Rev 9, 480V Reactor MOV BD 2B2-B, Compt. 12D
- rr. 45B2769-13D, Rev 1, 480V Reactor MOV BD 2B2-B, Compt. 13D
- ss. 1-45B2769-13F, Rev 0, 480V Reactor MOV BD 2B2-B, Compt. 13F
- tt. 45B2769-14B, Rev 5, 480V Reactor MOV BD 2B2-B, Compt. 14B
- uu. 45B2769-15E, Rev 7, 480V Reactor MOV BD 2B2-B, Compt. 15E
- vv. 45B2769-16B, Rev 0, 480V Reactor MOV BD 2B2-B, Compt. 16B
- ww. 2-45W751-1, Rev 1, Wiring Diagrams 480V Reactor MOV BD 2A1-A  
Single Line, Sh. 1
- xx. 2-45W751-2, Rev 0, Wiring Diagrams 480V Reactor MOV BD 2A1-A  
Single Line, Sh. 2
- yy. 2-45W751-3, Rev 1, Wiring Diagrams 480V Reactor MOV BD 2A1-A  
Single Line, Sh. 3
- zz. 2-45W751-4, Rev 1, Wiring Diagrams 480V Reactor MOV BD 2A2-A  
Single Line, Sh. 1  
DRA 53288-081
- aaa. 2-45W751-5, Rev 2, Wiring Diagrams 480V Reactor MOV BD 2A2-A  
Single Line, Sh. 2
- bbb. 2-45W751-6, Rev 0, Wiring Diagrams 480V Reactor MOV BD 2A2-A  
Single Line, Sh. 3
- ccc. 2-45W751-9, Rev 0, Wiring Diagrams 480V Reactor MOV BD 2B1-B  
Single Line, Sh. 3
- ddd. 2-45W751-10, Rev 3, Wiring Diagrams 480V Reactor MOV BD 2B2-B  
Single Line, Sh. 1

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## **2.2 Developmental References (continued)**

- eee. 2-45W751-12, Rev 0, Wiring Diagrams 480V Reactor MOV BD 2B2-B Single Line, Sh. 3
- fff. 45N2637-9, Rev 6, Aux Cont Bd Pnl 2-L-10 Connection Diagram Sh. 9
- ggg. 2-45N2676-4, Solid State Protection Sys Train A, Connection Diagram, Sh. 4;  
DRA 53352-017 Rev 0
- hhh. 2-45N2676-5, Rev 0, Solid State Protection Sys Train A, Connection Diagram, Sh. 5;  
DRA 54655-017 Rev 0
- iii. 45N2676-6, Rev 3, Solid State Protection Sys Train A, Connection Diagram, Sh. 6  
DRA 53352-016
- jjj. 45N2677-4, Rev 18, Solid State Protection Sys Train B, Connection Diagram, Sh. 4
- kkk. 45N2677-5, Rev 9, Solid State Protection Sys Train B, Connection Diagram, Sh. 5
- lll. 45N2677-6, Rev 5, Solid State Protection Sys Train B, Connection Diagram, Sh. 6
- mmm. 45W2672-1, Rev 11, PH U2 Balance of Plant Instrument Racks  
DRA 52427-234, 52427-235
- nnn. 45W2673-3, Rev 2, PH U2 Balance of Plant Instrument Racks
- ooo. 45N2688-3, Rev 12, Separation Aux. Relay PNL 2-R-73, Connection Diagram, Sh. 3
- ppp. 45N2693-3, Rev 16, Separation Aux. Relay PNL 2-R-78, Connection Diagram, Sh. 3
- qqq. 45W2671-1, Rev 9, PH U2 Balance of Plant Instrument Racks  
DRA 52427-208, 52427-209, 52378-337
- rrr. 45W2671-2, Rev 3, PH U2 Balance of Plant Instrument Racks
- sss. 2-45W2671-3, Rev 0, PH U2 Balance of Plant Instrument Racks;  
DRA 52376-052, 52376-088, 52427-259, 52427-260

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## **2.2 Developmental References (continued)**

ttt. 45W2672-2, Rev 2, PH U2 Balance of Plant Instrument Racks

uuu. 2-45W2672-3, Rev 0,  
DRA 52427-261, 52376-168

### **3. Logic/Control**

a. 2-47W610-70-3, Rev 1, Electrical Control Diagram Component Cooling Water System

b. 2-47W611-70-2, Rev 2, Electrical Logic Diagram Component Cooling System  
DRA 55337-013

c. 1-47W611-70-2, Rev 11, Electrical Logic Diagram Component Cooling System

d. 2-47W611-70-3, Rev 1, Electrical Logic Diagram Component Cooling System

### **4. Other Drawings**

a. 1-45B655-27D, Rev 2, Main Control Room Annunciator Inputs Window XA-55-27D

b. 2-45B655-E6F, Rev 0, ANN Window Box XA-55-6F Engraving

c. 2-45B655-6F, Rev 0, Main Control Room ANN Inputs Window Box XA-55-6F  
DRA 52630-092, 52343-236

d. E3619E-2, Rev J, Wiring Diagram PNL 2 6900 SD BD 2AA Logic Relay PNL

e. 2-47A615-0, Rev 1, Integrated Computer System Terminations And I/O List

f. 6947D56, Rev L, U2 Switchgear Shutdown Board 2A1-A

g. 6947D73, Rev M, U2 Conn Diag Shutdown Board 2B1-B

h. 2-54114-1-7246D11-20, Rev 0  
DRA 52328-777

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## 2.2 Developmental References (continued)

### C. Documents

1. 2-TSD-70-1, Rev 1, Component Cooling Water Pump/Valve Operability
2. 2-PTI-62-01, Rev 0, Charging and Letdown Logic Test.
3. TI-50.056, Rev 7, Valve Full Stroke Exercising During Plant Operation Component Cooling Water (TRAIN B)
4. 1-SI-70-904-A, Rev 12, Valve Full Stroke Exercising During Plant Operation Component Cooling Water (TRAIN A)

## 3.0 PRECAUTIONS AND LIMITATIONS

- A. Standard precautions shall be followed for working around energized electrical equipment in accordance with TVA Safety Procedure 1021.
- B. Steps may be repeated if all components cannot be tested in a step. However, if the test has been exited, prerequisite steps must be re-verified and a Chronological Test Log (CTL) entry made.
- C. Discrepancies between component ID tags and the description in a procedure/instruction if the UNIDs match, exclusive of place keeping zeros and train designators (e.g.; 2-HS-31-468 vs. 2-HS-031-0468) and the noun description is sufficient to identify the component. This condition does not require a TDN in accordance SMP-14.0. If the component label needs to be changed, a Tag Request Form (TR Card) should be processed in accordance with TI-12.14. Make an entry in the CTL and continue testing.
- D. All wires removed/lifted from a terminal shall be identified and taped or covered with an insulator to prevent personnel or equipment hazard and possible spurious initiations. The wires should be grouped together and labeled with the work implementing document number that required them to be lifted if left unattended.
- E. All open problems are to be tracked by a corrective action document and entered on the appropriate system punchlist.
- F. Problems identified during the test shall be annotated on the Chronological Test Log (CTL) from SMP-9.0 including a description of the problem, the procedure step when/where the problem was identified, corrective action steps taken to resolve the problem, and the number of the corrective action document, if one was required.

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### 3.0 PRECAUTIONS AND LIMITATIONS (continued)

- G. Observe all Radiation Protection (RP) requirements when working in or near radiological areas.
- H. Ensure there are no adverse effects to the operation of Unit 1 structures, systems, or components.
- I. Test personnel will coordinate with Unit 1 Operations when manipulating Unit 1 equipment if required.
- J. System water chemistry is within system specifiable parameters especially for fluids supplied from external sources.
- K. During the performance of this procedure visual observation of piping and components is required. This includes steady state and transient operations with visual confirmation that vibration is not excessive. If the vibration is determined to be excessive the Test Engineer shall initiate a Test Deficiency Notice (TDN).
- L. Performance of Sections 6.24 and 6.25 will cause one train of CCS to be inoperable. Operations shall be notified of the inoperability of one train of CCS and enter the LCO 3.7.7.

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#### 4.0 PREREQUISITE ACTIONS

##### NOTE

Prerequisite steps may be performed in any order unless otherwise stated and should be completed as close in time as practicable to the start of the instruction subsection to which they apply.

#### 4.1 Preliminary Actions

- [1] **EVALUATE** open items on Watts Bar Integrated Task Equipment List (WITEL), **AND**

**ENSURE** that they will NOT adversely affect the test performance. \_\_\_\_\_
- [2] **ENSURE** changes to the references listed on Appendix A, Test Procedures/Instructions Reference Review, have been reviewed and determined NOT to adversely affect the test results. \_\_\_\_\_
- [3] **VERIFY** current revisions and change paper for referenced drawings has been reviewed and determined NOT to adversely affect the test performance, **AND**

**ATTACH** documentation of current drawing revision numbers and change paper that were reviewed to the data package. \_\_\_\_\_
- [4] **VERIFY** the test/performance copy of this Preoperational Test Instruction (PTI) is the current revision and as needed, each test person assisting in this test has the current revision. \_\_\_\_\_
- [5] **ENSURE** special environmental conditions are available for testing if required. \_\_\_\_\_
- [6] **ENSURE** outstanding Design Change Notices (DCN's), Engineering Document Construction Releases (EDCR's) or Temporary Alterations (TA's) do NOT adversely impact testing, **AND**

**ATTACH** documentation of DCN's, EDCR's and TA's that were reviewed to the data package. \_\_\_\_\_
- [7] **ENSURE** required Component Testing has been completed prior to start of test. \_\_\_\_\_

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**4.1 Preliminary Actions (continued)**

[8] **ENSURE** TI-50.056, Valve Full Stroke Exercising During Plant Operation Component Cooling Water (TRAIN B) has been submitted to the JTG for concurrence:

JTG Meeting: \_\_\_\_\_

[9] **ENSURE** 1-SI-70-904-A, Valve Full Stroke Exercising During Plant Operation Component Cooling Water (TRAIN A) has been submitted to the JTG for concurrence:

JTG Meeting: \_\_\_\_\_

[10] **VERIFY** System cleanness as required for the performance of this test has been completed in accordance with SMP-7.0 for piping systems under 2-CP-70-01.

[11] **ENSURE** a 50.59 SR has been issued to address the operation of 2-FCV-70-3 in Section 6.18 before performance of this test instruction.

[12] **ENSURE** all piping supports required for testing are installed and adjusted as required.

[13] **CONDUCT** a pretest briefing with Test and Operations personnel in accordance with SMP-9.0.

[14] **VERIFY** plant instruments listed on Appendix C, Permanent Plant Instrumentation Log, are placed in service and are within their calibration interval.

Subsection 6.21 \_\_\_\_\_

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**4.1 Preliminary Actions (continued)**

<b>NOTES</b>
<p>1) Any Annunciator points associated with 2-MUX-55-12 and 2-MUX-55-13 ONLY have master switches at the bottom of each terminal strip.</p> <p>2) All points associated with 2-TBK-55-25, 2-TBK-55-26, 2-TBK-55-27, and 2-TKB-55-28 will not have individual switches or a master switch.</p>

[15] **ENSURE** System 55, Annunciator and Sequential Events Recording System applicable TBK switches are ON, the applicable Master Switches are ON, and window software input (s) are ENABLED for the following Annunciator windows:

A. 2-XA-55-6F/149C, 480 RX MOV BD 2A1-A/2A2-A  
(Subsections 6.2, 6.3, 6.5, 6.9, 6.19) \_\_\_\_\_

B. 2-XA-55-6F/150C, 480 RX MOV BD 2B1-B/2B2-B  
(Subsection 6.4, 6.12, 6.18, 6.20) \_\_\_\_\_

C. 2-XA-55-6F/148C, ACR PNL 2-L-11B  
(Subsection 6.11) \_\_\_\_\_

D. 2-XA-55-27D/254D, RHR HX 2A-A RET FLOW LO  
(2-FS-70-158) (Subsection 6.21) \_\_\_\_\_

E. 2-XA-55-27D/255D, RHR HX 2B-B RET FLOW LO  
(2-FS-70-155) (Subsection 6.21) \_\_\_\_\_

F. 2-XA-55-27D/263D, EXC LTDN HX & GFFD RET FLOW  
LO (2-FS-70-84) (Subsection 6.21) \_\_\_\_\_

[16] **ENSURE** water chemistry for systems/components with water sources other than normal water sources is appropriate for testing. \_\_\_\_\_

[17] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) and/or Plant Operations. \_\_\_\_\_

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**4.1 Preliminary Actions (continued)**

[18] **ENSURE** a review of outstanding Clearances has been coordinated with Operations for impact to the test performance, **AND**

**RECORD** in Appendix B, Temporary Condition Log if required. \_\_\_\_\_

[19] **OBTAIN** copies of the applicable forms from the latest revision of SMP-9.0, **AND**

**ATTACH** to this PTI for use during the performance of this PTI. \_\_\_\_\_

[20] **VERIFY** Measuring and Test Equipment (M&TE) required for test performance has been (as required) filled, vented, place in service and recorded on Measuring and Test Equipment Log. N/A subsections where no M&TE is used.

Subsection 6.1 \_\_\_\_\_

Subsection 6.2 \_\_\_\_\_

Subsection 6.3 \_\_\_\_\_

Subsection 6.4 \_\_\_\_\_

Subsection 6.5 \_\_\_\_\_

Subsection 6.6 \_\_\_\_\_

Subsection 6.7 \_\_\_\_\_

Subsection 6.8 \_\_\_\_\_

Subsection 6.9 \_\_\_\_\_

Subsection 6.10 \_\_\_\_\_

Subsection 6.11 \_\_\_\_\_

Subsection 6.12 \_\_\_\_\_

Subsection 6.13 \_\_\_\_\_

Subsection 6.14 \_\_\_\_\_

Subsection 6.15 \_\_\_\_\_

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**4.1 Preliminary Actions (continued)**

Subsection 6.16 \_\_\_\_\_

Subsection 6.17 \_\_\_\_\_

Subsection 6.18 \_\_\_\_\_

Subsection 6.19 \_\_\_\_\_

Subsection 6.20 \_\_\_\_\_

Subsection 6.21 \_\_\_\_\_

Subsection 6.22 \_\_\_\_\_

Subsection 6.23 \_\_\_\_\_

Subsection 6.24 \_\_\_\_\_

Subsection 6.25 \_\_\_\_\_

[21] **REVIEW** preventive maintenance for system/components covered by this test, **AND**

**VERIFY** no conditions exist that will impact test performance. \_\_\_\_\_

[22] **VERIFY** M&TE calibration due dates will support the completion of this test performance. N/A subsections where no M&TE is used.

Subsection 6.1 \_\_\_\_\_

Subsection 6.2 \_\_\_\_\_

Subsection 6.3 \_\_\_\_\_

Subsection 6.4 \_\_\_\_\_

Subsection 6.5 \_\_\_\_\_

Subsection 6.6 \_\_\_\_\_

Subsection 6.7 \_\_\_\_\_

Subsection 6.8 \_\_\_\_\_

Subsection 6.9 \_\_\_\_\_

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**4.1 Preliminary Actions (continued)**

- Subsection 6.10 \_\_\_\_\_
- Subsection 6.11 \_\_\_\_\_
- Subsection 6.12 \_\_\_\_\_
- Subsection 6.13 \_\_\_\_\_
- Subsection 6.14 \_\_\_\_\_
- Subsection 6.15 \_\_\_\_\_
- Subsection 6.16 \_\_\_\_\_
- Subsection 6.17 \_\_\_\_\_
- Subsection 6.18 \_\_\_\_\_
- Subsection 6.19 \_\_\_\_\_
- Subsection 6.20 \_\_\_\_\_
- Subsection 6.21 \_\_\_\_\_
- Subsection 6.22 \_\_\_\_\_
- Subsection 6.23 \_\_\_\_\_
- Subsection 6.24 \_\_\_\_\_
- Subsection 6.25 \_\_\_\_\_

[23] **ENSURE** the following systems/equipment are operable to the extent necessary as not to preclude the conduct of this PTI:

- A. System 55, Plant Annunciator System, 0-M-27 annunciator panels \_\_\_\_\_
- B. System 235, 120VAC Vital Power System, AOV control power \_\_\_\_\_
- C. System 236, 125VDC Vital Control Power System, AOV control power \_\_\_\_\_

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**4.1 Preliminary Actions (continued)**

D. System 213, 480V Reactor MOV Boards, MOVs and Thermal Barrier Booster Pumps \_\_\_\_\_

E. System 212, 480V Shutdown power System, CCS pumps \_\_\_\_\_

F. System 32, Control Air System, AOV air supply \_\_\_\_\_

G. System 261, Plant Process Computer System \_\_\_\_\_

[24] **PERFORM** a pretest walkdown on equipment to be tested to ensure no conditions exist that will impact test performance. \_\_\_\_\_

[25] **ENSURE** Attachment 1 has been completed. \_\_\_\_\_

[26] **PERFORM** Electrical Lineup listed in Appendix D. \_\_\_\_\_

[27] **ENSURE** that communications are available for areas where testing is to be conducted. \_\_\_\_\_

[28] **ENSURE** the ABSCE DCN 55050 has been completed \_\_\_\_\_

**OR** the valves in the following subsections have been evaluated by the TI-12.08 process: \_\_\_\_\_

Subsection 6.2 \_\_\_\_\_

Subsection 6.4 \_\_\_\_\_

Subsection 6.7 \_\_\_\_\_

Subsection 6.8 \_\_\_\_\_

Subsection 6.9 \_\_\_\_\_

Subsection 6.11 \_\_\_\_\_

[29] **ENSURE** WO is approved for work for the removal and reinstallation of covers for breaker cubicles with appropriate torque requirements for restoration of covers **AND** \_\_\_\_\_

**RECORD** WO \_\_\_\_\_

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#### 4.2 Special Tools, Measuring and Test Equipment, Parts, and Supplies

[1] **ENSURE** the following M&TE is available and within their calibration due dates **AND**  
**RECORD** the M&TE data on SMP-9.0, Measuring and Test Equipment (M&TE) Log.

- Triplet Model 60 AMM or equivalent, 0-600V(volt) AC/DC
- Digital Stopwatch (2), accuracy  $\pm 0.1$  sec
- Jumpers
- Test Switches

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### 4.3 Field Preparations

[1] Thermal Barrier Booster Pump 2A-A

A. **ENSURE** the following valves are in the CLOSED position:

- 2-ISV-70-673A, CCS TBBP 2A-A SUCTION ISV \_\_\_\_\_
- 2-ISV-70-677A, CCS TBBP 2A-A DISCH ISLN \_\_\_\_\_

B. **ENSURE** the following handswitch is in the STOP/PULL-TO-LOCK position:

- 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP) \_\_\_\_\_

C. **ENSURE** the following handswitch is in the P-AUTO position:

- 2-HS-70-131C, THRM BAR BSTR PMP A-A MOTOR CONTROL \_\_\_\_\_

[2] Thermal Barrier Booster Pump 2B-B

A. **ENSURE** the following valves are in the CLOSED position:

- 2-ISV-70-673B, CCS TBBP 2B-B SUCTION ISV \_\_\_\_\_
- 2-ISV-70-677B, CCS TBBP 2B-B DISCH ISLN \_\_\_\_\_

B. **ENSURE** the following handswitch is in the STOP/PULL-TO-LOCK position:

- 2-HS-70-130A, TRHM BAR BSTR PMP 2B (TBBP) \_\_\_\_\_

C. **ENSURE** the following handswitch is in the P-AUTO position:

- 2-HS-70-130C, THRM BAR BSTR PMP B-B MOTOR CONTROL \_\_\_\_\_

[3] **ENSURE** CCS pump 2A-A is running before performing Subsection 6.21. \_\_\_\_\_

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**4.4 Approvals and Notifications**

- [1] **OBTAIN** permission of the Preoperational Startup Manager to start the test.

Preoperational Startup Manager Signature	Date

- [2] **OBTAIN** the Unit 2 Shift Supervisor's (US/SRO) or Shift Manager's (SM) authorization.

U2 US/SRO/SM Signature	Date

- [3] **OBTAIN** the Unit 1 Supervisor's (US/SRO) or Shift Manager's (SM) authorization.

U2 US/SRO/SM Signature	Date

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**5.0 ACCEPTANCE CRITERIA**

<b>NOTE</b>
2-TCV-70-192, NON REGEN LETDN HTX OUTLET VLV, will be tested in 2-PTI-62-01, Charging and Letdown Logic Test, Section 6.28.

- A. The following valves will open and/or close within the specified time period:

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**5.0 ACCEPTANCE CRITERIA (continued)**

<b>Item</b>	<b>Valve No.</b>	<b>Acceptance Criteria</b>	<b>Verification Step</b>
1.	2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV, SAMPLE HTX HDR OUTLET VLV	Less than or equal to 30 sec. to close	6.5[31]A
2.	2-FCV-70-215, SAMPLE HTX CCS INLET ISOLATION VLV,	Less than or equal to 30 sec. to close	6.5[64]A
3.	2-FCV-70-85, EXCESS LETDN CCS HTX OUTLET VLV	Less than or equal to 10 sec. to close	6.11[56]A
4.	2-FCV-70-87, THERMAL BARRIER CCS RETURN	Less than or equal to 66 sec. to close	6.1[38]A
5.	2-FCV-70-89, RC PMP OIL CLR RET CONTMNT ISOL VLV	Less than or equal to 66 sec. to close	6.6[28]A
6.	2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV	Less than or equal to 66 sec. to close	6.2[36]A
7.	2-FCV-70-92, RCP OIL COOLER CCS RETURN	Less than or equal to 66 sec. to close	6.7[25]A
8.	2-FCV-70-134, THERMAL BARRIER CCS SUPPLY	Less than or equal to 66 sec. to close	6.4[48]A
9.	2-FCV-70-140, RC PMP OIL CLR HDR CONT ISOL VLV	Less than or equal to 66 sec. to close	6.8[24]A

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**5.0 ACCEPTANCE CRITERIA (continued)**

<b>Item</b>	<b>Valve No.</b>	<b>Acceptance Criteria</b>	<b>Verification Step</b>
10.	2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV	Less than or equal to 66 sec. to close	6.9[45]A
11.	2-FCV-70-133, THERMAL BARRIER CCS SUPPLY	Less than or equal to 66 sec. to close	6.3[48]A
12.	2-FCV-70-100, RCP OIL COOLER CCS SUPPLY	Less than or equal to 66 sec. to close	6.10[22]A
13	2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET	Less than or equal to 90 sec. to open and close	6.12[54]A, 6.12[56]A
14	2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET	Less than or equal to 90 sec. to open and close	6.13[53]A, 6.13[55]A
15	0-FCV-70-197-A, SFP HEAT EXCHANGER A CCS SUPPLY	Less than or equal to 100 sec. to open and close	6.16[2]
16	0-FCV-70-194-B, SFP HEAT EXCHANGER B CCS SUPPLY	Less than or equal to 100 sec. to open and close	6.17[2]
17	1-FCV-70-156, RHR HEAT EXCHANGER 1A CCS OUTLET	Less than or equal to 90 sec. to open and close	6.14[1]
18	1-FCV-70-153, RHR HEAT EXCHANGER 1B CCS OUTLET	Less than or equal to 90 sec. to open and close	6.15[1]

B. Valve 2-FCV-70-87, THERMAL BARRIER CCS RETURN will close on receipt of a high differential flow signal (Verification Step 6.1[60]).

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## 5.0 ACCEPTANCE CRITERIA (continued)

- C. Valve 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV will close on receipt of a high differential flow signal (Verification Step 6.2[58]).
- D. Valve 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY will close on receipt of a high differential flow signal (Verification Step 6.3[79]).
- E. Valve 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY will close on receipt of a high differential flow signal (Verification Step 6.4[72]).
- F. Valve 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV will close on receipt of a low level signal from the CCS surge tanks and high differential flow (Verification Steps 6.5[68] and 6.5[75]).
- G. Valve 2-FCV-70-215, SAMPLE HTX CCS INLET ISOLATION VLV will close upon closure of 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV (Verification Step 6.5[70]).
- H. Component Cooling System Thermal Barrier Booster Pumps will stop upon receipt of a phase B Containment Isolation signal (CIS) and remain off when signal is reset (Verification Steps 6.19[34], 6.19[37], 6.19[55], 6.19[57]; 6.20[34], 6.20[37], 6.20[55], 6.20[57]).
- I. The Containment Isolation Status Panel (CNTMT ISOL STATUS PNL) will indicate the CCS Thermal Barrier Booster Pumps status as designed (Verification Steps 6.19[14], 6.19[22], 6.20[14], 6.20[22]).
- J. Component Cooling System Pumps 2A-A and 2B-B will start upon receipt of low Train A (B) header pressure signal from 2-PS-70-17B/A (Verification Steps 6.22[28], 6.23[27])
- K. Component Cooling System Pumps 2A-A, 2B-B, and C-S will start upon receipt of a Unit 2 safety injection signal and remain on when the signal is reset (Verification Steps 6.22[34], 6.22[36], 6.23[33], 6.23[35], 6.24[27], 6.24[29], 6.25[27], 6.25[29])
- L. Component Cooling System Thermal Barrier Booster Pumps will stop upon receipt of a high differential flow signal, start on low pump discharge flow, start on loss of off-site power; SI signal, coincident with LOOP, adds 3-second extra delay (to normal 35-sec delay) for loading TBBP onto DG after LOOP. (Verification Steps 6.19[42], 6.19[49], 6.19[69], 6.19[92], 6.20[42], 6.20[49], 6.20[69], 6.20[92]).

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**5.0 ACCEPTANCE CRITERIA (continued)**

M. The following motor operated valves will operate with their thermal overload bypass (TOB) contact closed and be inoperable with TOB contact open:

	<b>Valve No.</b>	<b>Verification Step</b>
1.	2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV	6.5[89], 6.5[92], 6.5[101]
2.	2-FCV-70-87, THERMAL BARRIER CCS RETURN	6.1[76], 6.1[79], 6.1[81]
3.	2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV	6.2[75], 6.2[78], 6.2[80]
4.	2-FCV-70-133, THERMAL BARRIER CCS SUPPLY	6.3[85], 6.3[88], 6.3[90]
5.	2-FCV-70-134, THERMAL BARRIER CCS SUPPLY	6.4[85], 6.4[88], 6.4[90]
6.	2-FCV-70-215, SAMPLE HTX CCS INLET ISOLATION VLV	6.5[94], 6.5[97], 6.5[99]
7.	2-FCV-70-89-B, RC PMP OIL CLR RET CONTMNT ISOL VLV	6.6[42], 6.6[45], 6.6[47]
8.	2-FCV-70-92, RCP OIL COOLER CCS RETUR	6.7[40], 6.7[43], 6.7[45]
9.	2-FCV-70-140, RC PMP OIL CLR HDR CONT ISOL VLV	6.8[39], 6.8[42], 6.8[44]
10.	2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV	6.9[56], 6.9[59], 6.9[61]
11.	2-FCV-70-100, RCP OIL COOLER CCS SUPPLY, RCP OIL COOLER CCS SUPPLY	6.10[36], 6.10[39], 6.10[41]
12	2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET	6.12[61], 6.12[64], 6.12[66]
13	2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET	6.13[60], 6.13[63], 6.13[65]
14	0-FCV-70-197-A, SFP HEAT EXCHANGER A CCS SUPPLY	6.16[8], 6.16[11], 6.16[13]

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**5.0 ACCEPTANCE CRITERIA (continued)**

	<b>Valve No.</b>	<b>Verification Step</b>
15	0-FCV-70-194-B, SFP HEAT EXCHANGER B CCS SUPPLY	6.17[8], 6.17[11], 6.17[13]
16	1-FCV-70-156, RHR HEAT EXCHANGER 1A CCS OUTLET	6.14[2]
17	1-FCV-70-153, RHR HEAT EXCHANGER 1B CCS OUTLET	6.15[1]

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**5.0 ACCEPTANCE CRITERIA (continued)**

N. The following valves will close on receipt of a CIS and remain in their final accident position when the signal is clear:

<b>Phase B Containment Isolation</b>		
	<b>Valve No.</b>	<b>Verification Step</b>
1.	2-FCV-70-87, THERMAL BARRIER CCS RETURN	6.1[66], 6.1[68]
2.	2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV	6.2[64], 6.2[66]
3.	2-FCV-70-133, THERMAL BARRIER CCS SUPPLY	6.3[71], 6.3[73]
4.	2-FCV-70-134, THERMAL BARRIER CCS SUPPLY	6.4[78], 6.4[80]
5.	2-FCV-70-140, RC PMP OIL CLR HDR CONT ISOL VLV	6.8[30], 6.8[34]
6.	2-FCV-70-100, RCP OIL COOLER CCS SUPPLY, RCP OIL COOLER CCS SUPPLY	6.10[28], 6.10[32]
7.	2-FCV-70-92, RCP OIL COOLER CCS RETURN	6.7[31], 6.7[35]
8.	2-FCV-70-89, RC PMP OIL CLR RET CONTMNT ISOL VLV	6.6[34], 6.6[38]
<b>Phase A Containment Isolation</b>		
	<b>Valve No.</b>	<b>Verification Step</b>
9.	2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV	6.9[49], 6.9[51]
10.	2-FCV-70-85, EXCESS LETDN CCS HTX OUTLET VLV	6.11[60], 6.11[62]

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**5.0 ACCEPTANCE CRITERIA (continued)**

- O. The following components' manual and automatic controls from the main control room (MCR), switchgear (SWG), auxiliary control room (ACR), and locally (LOC) (each as applicable), interlocks, annunciators, alarms and indications operate correctly.

<b>VALVE No.</b>	<b>MCR</b>	<b>SWG</b>	<b>ACR</b>	<b>LOC</b>
2-FCV-70-87, THERMAL BARRIER CCS RETURN	6.1	N/A	6.1	6.1
2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV,	6.2	N/A	6.2	6.2
2-FCV-70-133, THERMAL BARRIER CCS SUPPLY	6.3	N/A	6.3	6.3
2-FCV-70-134, THERMAL BARRIER CCS SUPPLY	6.4	N/A	6.4	6.4
2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV	6.5	N/A	6.5	6.5
2-FCV-70-89, RC PMP OIL CLR RET CONTMNT ISOL VLV	6.6	N/A	N/A	6.6
2-FCV-70-92, RCP OIL COOLER CCS RETURN	6.7	N/A	N/A	6.7
2-FCV-70-140, RC PMP OIL CLR HDR CONT ISOL VLV	6.8	N/A	N/A	6.8
2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV	6.9	N/A	6.9	6.9
2-FCV-70-100, RCP OIL COOLER CCS SUPPLY	6.10	N/A	6.10	6.10
2-FCV-70-85, EXCESS LETDN CCS HTX OUTLET VLV	6.11	N/A	6.11	6.11

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5.0 ACCEPTANCE CRITERIA (continued)

VALVE No.	MCR	SWG	ACR	LOC
2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET	6.12	N/A	6.12	6.12
2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET	6.13	N/A	6.13	6.13
1-FCV-70-156-A RHR HEAT EXCHANGER 1A CCS OUTLET	6.14	N/A	6.14	6.14
1-FCV-70-153-B RHR HEAT EXCHANGER 1B CCS OUTLET	6.15	N/A	6.15	6.15
0-FCV-70-197-A SFP HEAT EXCHANGER A CCS SUPPLY	6.16	N/A	6.16	6.16
0-FCV-70-194-B, SFP HEAT EXCHANGER B CCS SUPPLY	6.17	N/A	6.17	6.17
2-PMP-070-0131-A, THERMAL BARRIER BOOSTER PUMP 2A-A	6.19	N/A	N/A	6.19
2-PMP-070-0130-B, THERMAL BARRIER BOOSTER PUMP 2B-B	6.20	N/A	N/A	6.20

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## 6.0 PERFORMANCE

### NOTES

- 1) Subsections may be performed in any order unless otherwise specified by the Test Director.
- 2) Stroke time of active valves will be measured from the handswitch actuation to GREEN light OFF upon opening and RED light OFF upon closing.
- 3) Field wires landed on the SSPS output terminal are insulated from the terminal block.
- 4) Reset stopwatches before performing the second timed stroke on valves.

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**6.1 Valve 2-FCV-70-87-B RCP Thermal Barrier Return Containment Isolation Valve Operational Test**

<b>NOTES</b>	
1)	This section will test 2-FCV-70-87, THERMAL BARRIER CCS RETURN from its control stations and verify operability of all interlocks, indicating lights, annunciators and status monitoring input relays.
2)	Reference drawing 2-45W760-70-4, valve location RB AZ300/716

- [1] **ENSURE** prerequisite actions for subsection 6.1 are completed. \_\_\_\_\_
- [2] **ENSURE** thermal barrier booster pumps 2A-A and 2B-B are not in service. \_\_\_\_\_
- [3] **ENSURE** locally that 2-FCV-70-87, THERMAL BARRIER CCS RETURN is CLOSED. \_\_\_\_\_
- [4] **ENSURE** that 2-HS-70-87C RC, PMP THRM BAR RET CONTMNT ISL VLV SW is in NORMAL. \_\_\_\_\_
- [5] **PLACE** 2-XS-70-87, RCP THERMAL BARRIER CCS RETURN (2-FCV-70-87) [A4/772], in NORMAL. \_\_\_\_\_
- [6] **ENSURE** the following Integrated Computer System (ICS) points are in scan:
  - A. FD2327 \_\_\_\_\_
  - B. FD2328 \_\_\_\_\_
- [7] **ENSURE** 2-BKR-70-87B-B, 480V RX MOV BD 2B2 BKR 12D for 2-FCV-70-87-B [A4/772], at 480V Reactor MOV Bd 2B2-B, compartment 12D is OPEN. \_\_\_\_\_
- [8] **ENSURE** 2-BKR-70-87A-B, 480V RX MOV BD 2B2 BKR 6D for 2-FCV-70-87-B, [A5R/772], at 480V Reactor MOV Bd 2B2-B, compartment 6D is OPEN, 772/A4R. \_\_\_\_\_

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**6.1 Valve 2-FCV-70-87-B RCP Thermal Barrier Return Containment Isolation Valve Operational Test (continued)**

[9] **INSTALL** jumper with test switch labeled TS-1 in the OPEN position on terminal points 57 (wire FCBX) and 58 (wire FCB1) of terminal board TB-2 in panel 2-R-132 [AUX INSTR RM] (simulate a normal output flow signal from 2-FDS-70-81B, THRM BARRIER SUP/RET HDR FLOW DIFF SW).

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[10] **INSTALL** jumper with test switch labeled K618 in the OPEN position on terminal board TB613, terminal points 1 (wire 7) and 2 (wire 8) in SSPS cabinet 2-R-51 [AUX INSTR RM] (simulate a phase B CI signal)

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[11] **INSTALL** jumper on terminal points 5 (wire 12DC5) and 6 (wire 12DC4) on terminal board TB816 in SSPS cabinet 2-R-53 [AUX INSTR RM], (jumpers contact from SSPS test switch).

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[12] **ENSURE** annunciator 150C, 480 RX MOV 2B1-B/2B2B on Panel XA-55-6F is CLEAR.

[13] **VERIFY** ICS point FD2327 displays PWR OFF.

[14] **CLOSE** 2-BKR-70-87A-B, 480V RX MOV BD 2B2 BKR 6D for 2-FCV-70-87-B, at compartment 6D on Reactor MOV Bd 2B2-B.

[15] **VERIFY** ICS point FD2327 displays PWR OFF.

[16] **CLOSE** 2-BKR-70-87B-B, 480V RX MOV BD 2B2 BKR 12D for 2-FCV-70-87-B, breaker at compartment 12D on Reactor MOV Bd 2B2-B.

[17] **VERIFY** ICS point FD2327 displays PWR ON.

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**6.1 Valve 2-FCV-70-87-B RCP Thermal Barrier Return Containment Isolation Valve Operational Test (continued)**

- [18] **ENSURE** 2-FCV-70-87, THERMAL BARRIER CCS RETURN, is in the CLOSED position. \_\_\_\_\_
- [19] **VERIFY** the GREEN light is ON and the RED light is OFF for the following handswitches:
  - A. 2-HS-70-87A, THERMAL BAR RET CIV-ΦB. \_\_\_\_\_
  - B. 2-HS-70-87C, RC PMP THRM BAR RET CONTMNT ISL VLV SW. \_\_\_\_\_
- [20] **VERIFY** the GREEN light is ON and the RED light is OFF for the CNTMT ISOL STATUS PNL (XX-55-6F) Window 72. \_\_\_\_\_
- [21] **VERIFY** ICS point FD2328 displays NOT OPE. \_\_\_\_\_
- [22] **PLACE** handswitch 2-HS-70-87C, RC PMP THRM BAR RET CONTMNT ISL VLV SW, in the OPEN position. \_\_\_\_\_
- [23] **VERIFY** 2-FCV-70-87, THERMAL BARRIER CCS RETURN, remains in the CLOSED position. \_\_\_\_\_

**NOTE**

Steps 6.1[24] through 6.1[28] verify the opening seal-in and interlock features of the valve circuitry.

- [24] **PLACE** 2-HS-70-87A, THERMAL BAR RET CIV-ΦB, to OPEN, **THEN**  
  
**CLOSE** and **RELEASE** to A AUTO. \_\_\_\_\_
- [25] **VERIFY** RED motor energized light is ON for cubicle 12D of Reactor MOV Bd 2B2-B during valve travel. \_\_\_\_\_

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**6.1 Valve 2-FCV-70-87-B RCP Thermal Barrier Return Containment Isolation Valve Operational Test (continued)**

- [26] **VERIFY** both RED and GREEN light is ON for the following handswitches during valve travel:
  - A. 2-HS-70-87A, THERMAL BAR RET CIV-ΦB. \_\_\_\_\_
  - B. 2-HS-70-87C, RC PMP THRM BAR RET CONTMNT ISL VLV SW. \_\_\_\_\_
- [27] **VERIFY** locally, 2-FCV-70-87, THERMAL BARRIER CCS RETURN, travels to the OPEN position. \_\_\_\_\_
- [28] **VERIFY** the RED light is ON and the GREEN light is OFF for the following handswitches:
  - A. 2-HS-70-87A, THERMAL BAR RET CIV-ΦB. \_\_\_\_\_
  - B. 2-HS-70-87C, RC PMP THRM BAR RET CONTMNT ISL VLV SW. \_\_\_\_\_
- [29] **VERIFY** the RED light is ON and the GREEN light is OFF for the CNTMT ISOL STATUS PNL (XX-55-6F) Window 72. \_\_\_\_\_
- [30] **VERIFY** ICS point FD2328 displays FULL OP. \_\_\_\_\_
- [31] **PLACE** handswitch 2-HS-70-87C, RC PMP THRM BAR RET CONTMNT ISL VLV SW, in the CLOSE position. \_\_\_\_\_
- [32] **VERIFY** locally, 2-FCV-70-87, THERMAL BARRIER CCS RETURN, remains in the OPEN position. \_\_\_\_\_

**NOTE**

Steps 6.1[33] and 6.1[34] verify the closing seal-in and interlock features of the valve circuitry.

- [33] **PLACE** 2-HS-70-87A, THERMAL BAR RET CIV-ΦB to CLOSE, **THEN**  
  
**OPEN** and **RELEASE** to A AUTO. \_\_\_\_\_
- [34] **VERIFY** locally, 2-FCV-70-87, THERMAL BARRIER CCS RETURN, travels to the CLOSED position. \_\_\_\_\_

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**6.1 Valve 2-FCV-70-87-B RCP Thermal Barrier Return Containment Isolation Valve Operational Test (continued)**

**NOTE**

Stopwatch timing of 2-FCV-70-87, THERMAL BARRIER CCS RETURN, will be done at handswitch 2-HS-70-87A, THERMAL BAR RET CIV-ΦB, and locally at 2-FCV-70-87, THERMAL BARRIER CCS RETURN. Perform steps 6.1[35]/6.1[36] and 6.1[37]/6.1[38] sequentially to obtain stroke time data.

[35] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-87A, THERMAL BAR RET CIV-ΦB, to the OPEN position, **AND**

**START** stopwatches. \_\_\_\_\_

[36] **STOP** stopwatches when 2-FCV-70-87, THERMAL BARRIER CCS RETURN, reaches the OPEN position, **AND**

**RECORD** stroke times below:

A. Remote Open Time \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Open Time \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[37] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-87A, THERMAL BAR RET CIV-ΦB, to the CLOSE position, **AND**

**START** stopwatches. \_\_\_\_\_

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**6.1 Valve 2-FCV-70-87-B RCP Thermal Barrier Return Containment Isolation Valve Operational Test (continued)**

[38] **STOP** stopwatches when 2-FCV-70-87, THERMAL BARRIER CCS RETURN, reaches the CLOSE position, **AND**

**RECORD** stroke times below:

A. Remote Close Time (**Acc Crit**) \_\_\_\_\_  
 \_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Close Time \_\_\_\_\_  
 \_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[39] **PLACE** Transfer Switch 2-XS-70-87, RCP THERMAL BARRIER CCS RETURN (2-FCV-70-87), to the AUXILIARY (AUX) position. \_\_\_\_\_

[40] **VERIFY** annunciator 150C, 480V RX MOV BD 2B1-B/2B2-B (XA-55-6F) ALARMS. \_\_\_\_\_

[41] **VERIFY** GREEN light is OFF for handswitch 2-HS-70-87A, THERMAL BAR RET CIV-ΦB. \_\_\_\_\_

[42] **VERIFY** both RED and GREEN lights are OFF for the CNTMT ISOL STATUS PNL (XX-55-6F) Window 72. \_\_\_\_\_

[43] **VERIFY** GREEN light is ON for handswitch 2-HS-70-87C, RC PMP THRM BAR RET CONTMNT ISL VLV SW. \_\_\_\_\_

[44] **PLACE** handswitch 2-HS-70-87A, THERMAL BAR RET CIV-ΦB, to the OPEN position. \_\_\_\_\_

[45] **VERIFY** locally, 2-FCV-70-87, THERMAL BARRIER CCS RETURN, remains in the CLOSED position. \_\_\_\_\_

[46] **PLACE** handswitch 2-HS-70-87C, RC PMP THRM BAR RET CONTMNT ISL VLV SW, to the OPEN position. \_\_\_\_\_

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**6.1 Valve 2-FCV-70-87-B RCP Thermal Barrier Return Containment Isolation Valve Operational Test (continued)**

- [47] **VERIFY** locally, 2-FCV-70-87, THERMAL BARRIER CCS RETURN, travels to the OPEN position. \_\_\_\_\_
- [48] **PLACE** handswitch 2-HS-70-87A, THERMAL BAR RET CIV-ΦB, to the CLOSE position. \_\_\_\_\_
- [49] **VERIFY** locally, 2-FCV-70-87, THERMAL BARRIER CCS RETURN, remains in the OPEN position. \_\_\_\_\_
- [50] **PLACE** handswitch 2-HS-70-87C, RC PMP THRM BAR RET CONTMNT ISL VLV SW, to the CLOSE position. \_\_\_\_\_
- [51] **VERIFY** locally, 2-FCV-70-87, THERMAL BARRIER CCS RETURN, travels to the CLOSED position. \_\_\_\_\_
- [52] **PLACE** Transfer Switch 2-XS-70-87, RCP THERMAL BARRIER CCS RETURN (2-FCV-70-87), to the NORMAL position. \_\_\_\_\_
- [53] **VERIFY** annunciator 150C, 480V RX MOV BD 2B1-B/2B2-B (2-XA-55-6F) CLEARS. \_\_\_\_\_
- [54] **VERIFY** GREEN light is ON for the following handswitches:
  - A. 2-HS-70-87A, THERMAL BAR RET CIV-ΦB. \_\_\_\_\_
  - B. 2-HS-70-87C, RC PMP THRM BAR RET CONTMNT ISL VLV SW. \_\_\_\_\_
- [55] **PLACE** handswitch 2-HS-70-87A, THERMAL BAR RET CIV-ΦB, to the OPEN position. \_\_\_\_\_
- [56] **VERIFY** locally, 2-FCV-70-87, THERMAL BARRIER CCS RETURN, travels to the OPEN position. \_\_\_\_\_
- [57] **ENSURE** handswitch 2-HS-70-87A, THERMAL BAR RET CIV-ΦB, is in the A AUTO position. \_\_\_\_\_
- [58] **CLOSE** test switch TS-1 installed on terminal points 57 and 58 of terminal board TB-2 in panel 2-R-132 to simulate a high differential flow signal from 2-FDS-70-81B THRM BARRIER SUP/RET HDR FLOW DIFF SW **AND**  
**START** stopwatch. \_\_\_\_\_

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**6.1 Valve 2-FCV-70-87-B RCP Thermal Barrier Return Containment Isolation Valve Operational Test (continued)**

[59] **VERIFY** 2-FCV-70-87, THERMAL BARRIER CCS RETURN, starts to travel after approximately a 5 second time delay using a stopwatch **AND**

**RECORD** time below:

A. Delay Time \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 5 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[60] **VERIFY** locally, 2-FCV-70-87, THERMAL BARRIER CCS RETURN, travels to the CLOSED position. (**Acc Crit**) \_\_\_\_\_

[61] **OPEN** test switch TS-1 installed on terminal points 57 and 58 of terminal board TB-2 in panel 2-R-132 to simulate a normal flow signal from 2-FDS-70-81B THRM BARRIER SUP/RET HDR FLOW DIFF SW. \_\_\_\_\_

[62] **PLACE** handswitch 2-HS-70-87A, THERMAL BAR RET CIV-ΦB, in the OPEN position. \_\_\_\_\_

[63] **VERIFY** locally, 2-FCV-70-87, THERMAL BARRIER CCS RETURN, travels to the OPEN position. \_\_\_\_\_

[64] **ENSURE** handswitch 2-HS-70-87A, THERMAL BAR RET CIV-ΦB, is in the A AUTO position. \_\_\_\_\_

[65] **CLOSE** test switch labeled K618 installed on terminal board TB613 in SSPS cabinet 2-R-51 (simulate a containment isolation phase B signal). \_\_\_\_\_

[66] **VERIFY** locally, 2-FCV-70-87, THERMAL BARRIER CCS RETURN, travels to the CLOSED position. (**Acc Crit**) \_\_\_\_\_

[67] **OPEN** test switch labeled K618 to simulate containment isolation signal reset. \_\_\_\_\_

[68] **VERIFY** locally, 2-FCV-70-87, THERMAL BARRIER CCS RETURN, remains in the CLOSED position. (**Acc Crit**) \_\_\_\_\_

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**6.1 Valve 2-FCV-70-87-B RCP Thermal Barrier Return Containment Isolation Valve Operational Test (continued)**

[69] **PLACE** handswitch 2-HS-70-87A, THERMAL BAR RET CIV-ΦB, in the OPEN position. \_\_\_\_\_

[70] **VERIFY** locally, 2-FCV-70-87, THERMAL BARRIER CCS RETURN, is OPEN. \_\_\_\_\_

[71] **PLACE** handswitch 2-HS-70-87A, THERMAL BAR RET CIV-ΦB, in the CLOSE position. \_\_\_\_\_

[72] **VERIFY** locally, 2-FCV-70-87, THERMAL BARRIER CCS RETURN, is CLOSED. \_\_\_\_\_

**WARNING**

Arc Flash PPE per TI-300 will be required for step 6.1[73].

[73] **MANUALLY TRIP** the thermal overload for 2-BKR-70-87B-B, 480V RX MOV BD 2B2 BKR 12D for 2-FCV-70-87-B, at compartment 12D on Reactor MOV Bd 2B2-B. (thermal overload bypass) \_\_\_\_\_

1st

CV

[74] **CLOSE** 2-BKR-70-87B-B, 480V RX MOV BD 2B2 BKR 12D for 2-FCV-70-87-B, at compartment 12D on Reactor MOV Bd 2B2-B. \_\_\_\_\_

[75] **PLACE** handswitch 2-HS-70-87A, THERMAL BAR RET CIV-ΦB, in the OPEN position. \_\_\_\_\_

[76] **VERIFY** locally, 2-FCV-70-87, THERMAL BARRIER CCS RETURN, remains in the CLOSED position. (**Acc Crit**) \_\_\_\_\_

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**6.1 Valve 2-FCV-70-87-B RCP Thermal Barrier Return Containment Isolation Valve Operational Test (continued)**

**CAUTION**

Steps 6.1[77] through 6.1[78] will operate the valve without thermal overload protection.

**[77] DEPRESS AND**

**HOLD** the armature of the K5 relay in the rear of Reactor MOV Bd 2B2-B, cubicle 6F [A4/772].

\_\_\_\_\_

**[78] PLACE** handswitch 2-HS-70-87A, THERMAL BAR RET CIV-ΦB, in the OPEN position.

\_\_\_\_\_

**[79] VERIFY** locally, 2-FCV-70-87, THERMAL BARRIER CCS RETURN, travels to the OPEN position. **(Acc Crit)**

\_\_\_\_\_

**[80] PLACE** handswitch 2-HS-70-87A, THERMAL BAR RET CIV-ΦB, in the CLOSE position.

\_\_\_\_\_

**[81] VERIFY** locally, 2-FCV-70-87, THERMAL BARRIER CCS RETURN, travels to the CLOSED position. **(Acc Crit)**

\_\_\_\_\_

**[82] RELEASE** the armature of the K5 relay in the rear of Reactor MOV Bd 2B2-B, cubicle 6F.

\_\_\_\_\_

**[83] OPEN** 2-BKR-70-87B-B, 480V RX MOV BD 2B2 BKR 12D for 2-FCV-70-87-B, at compartment 12D on Reactor MOV Bd 2B2-B.

\_\_\_\_\_

**WARNING**

Arc Flash PPE per TI-300 will be required for step 6.1[84].

**[84] RESET** the thermal overload for 2-BKR-70-87B-B 480V RX MOV BD 2B2 BKR 12D for 2-FCV-70-87-B at compartment 12D on Reactor MOV Bd 2B2-B.

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**6.1 Valve 2-FCV-70-87-B RCP Thermal Barrier Return Containment Isolation Valve Operational Test (continued)**

- [85] **REMOVE** jumper with test switch labeled K618 on terminal board TB613, terminal points 1 and 2 in SSPS cabinet 2-R-51.

\_\_\_\_\_  
1st  
\_\_\_\_\_  
CV
- [86] **REMOVE** jumper with test switch TS-1 in the OPEN position on terminal points 57 and 58 of terminal board TB-2 in panel 2-R-132.

\_\_\_\_\_  
1st  
\_\_\_\_\_  
CV
- [87] **REMOVE** jumper on terminal points 5 and 6 on terminal board TB816 in SSPS cabinet 2-R-52.

\_\_\_\_\_  
1st  
\_\_\_\_\_  
CV
- [88] **CLOSE** 2-BKR-70-87B-B, 480V RX MOV BD 2B2 BKR 12D for 2-FCV-70-87-B, at compartment 12D on Reactor MOV Bd 2B2-B.

\_\_\_\_\_
- [89] **PLACE** handswitch 2-HS-70-87A, THERMAL BAR RET CIV-ΦB, in the OPEN position.

\_\_\_\_\_
- [90] **VERIFY** locally, 2-FCV-70-87, THERMAL BARRIER CCS RETURN, travels to the OPEN position.

\_\_\_\_\_
- [91] **PLACE** handswitch 2-HS-70-87A, THERMAL BAR RET CIV-ΦB, in the CLOSE position.

\_\_\_\_\_
- [92] **VERIFY** locally, 2-FCV-70-87, THERMAL BARRIER CCS RETURN, travels to the CLOSED position.

\_\_\_\_\_
- [93] **VERIFY** successful completion of Subsection 6.1 (**ACC CRIT 5.00**)

\_\_\_\_\_

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**6.2 Valve 2-FCV-70-90-A RCP Thermal Barrier Return Containment Isolation Valve Operational Test**

<b>NOTES</b>	
1)	This section will test 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, from its control stations and verify operability of all interlocks, indicating lights, annunciators and status monitoring input relays.
2)	Reference drawing 2-45W760-70-4, valve location RB A11W/713.

[1] **ENSURE** prerequisite actions for subsection 6.2 are completed.

\_\_\_\_\_

[2] **ENSURE** thermal barrier booster pumps 2A-A and 2B-B are not in service.

\_\_\_\_\_

[3] **ENSURE** the following Integrated Computer System (ICS) points are in scan:

A. FD2177

\_\_\_\_\_

B. FD2178

\_\_\_\_\_

[4] **ENSURE** 2-BKR-70-90B-A, 480V RX MOV BD 2A2-A BKR 16A for 2-FCV-70-90 [A4S/774], at compartment 16A on Reactor MOV Bd 2A2-A is OPEN.

\_\_\_\_\_

[5] **ENSURE** 2-BKR-70-90A-A, 480V RX MOV BD 2A2-A BKR 11D for 2-FCV-70-90-A [A4S/774], at compartment 11D on Reactor MOV Bd 2A2-A, is OPEN.

\_\_\_\_\_

[6] **INSTALL** jumper with test switch TS-2 in the OPEN position on terminal points 59 (wire FCAX) and 60 (wire FCA1) of terminal board TB-2 in panel 2-R-129 [AUX INSTR RM] (simulate a normal output flow signal from 2-FDS-70-81E THRM BARRIER SUP/RET HDR FLOW DIFF SW).

\_\_\_\_\_

1st

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**6.2 Valve 2-FCV-70-90-A RCP Thermal Barrier Return Containment Isolation Valve Operational Test (continued)**

[7] **INSTALL** jumper with test switch labeled K618 in the OPEN position on terminal board TB613, terminal points 1 (wire 16AC4) and 2 (16AC3) in SSPS cabinet 2-R-48 [AUX INSTR RM] (simulate CI phase B).

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[8] **INSTALL** jumper on terminal points 5 (wire 16AC5) and 6 (wire 16AC4) on terminal board TB816 in SSPS cabinet 2-R-52 [AUX INSTR RM] (jumpers contact from SSPS test switch).

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[9] **ENSURE** transfer switch 2-XS-70-90 RC PMP THRM BAR RET CONTMNT ISL VLV TRF SW [A4S/772], is in the NORMAL position.

[10] **ENSURE** annunciator 149C, 480 RX MOV BD 2A1-A/2A-2, on Panel 2-XA-55-6F is CLEAR.

[11] **VERIFY** ICS point FD2177 displays PWR OFF.

[12] **CLOSE** 2-BKR-70-90A-A, 480V RX MOV BD 2A2-A BKR 11D for 2-FCV-70-90-A, at compartment 11D on Reactor MOV Bd 2A2-A.

[13] **VERIFY** ICS point FD2177 displays PWR OFF.

[14] **CLOSE** 2-BKR-70-90B-A, 480V RX MOV BD 2A2-A BKR 16A for 2-FCV-70-90, at compartment 16A on Reactor MOV Bd 2A2-A.

[15] **VERIFY** ICS point FD2177 displays PWR ON.

[16] **ENSURE** 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, is in the CLOSED position.

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**6.2 Valve 2-FCV-70-90-A RCP Thermal Barrier Return Containment Isolation Valve Operational Test (continued)**

- [17] **VERIFY** the GREEN light is ON and the RED light is OFF for the following handswitches:
  - A. 2-HS-70-90A, RCP THERMAL BARRIER CCS RETURN VLV \_\_\_\_\_
  - B. 2-HS-70-90C, RC PMP THRM BAR RET CONTMNT ISOL VLV SW \_\_\_\_\_
- [18] **VERIFY** the GREEN light is ON and the RED light is OFF for the CNTMT ISOL STATUS PNL (XX-55-6E) Window 72. \_\_\_\_\_
- [19] **VERIFY** ICS point FD2178 displays NOT OPE. \_\_\_\_\_
- [20] **PLACE** handswitch 2-HS-70-90C, RC PMP THRM BAR RET CONTMNT ISOL VLV SW, in the OPEN position. \_\_\_\_\_
- [21] **VERIFY** 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, remains in the CLOSED position. \_\_\_\_\_

**NOTE**

Steps 6.2[22] through 6.2[26] verify the opening seal-in and interlock features of the valve circuitry.

- [22] **PLACE** 2-HS-70-90A, THERMAL BAR RET CIV-ΦB, to OPEN,  
  
**THEN CLOSE** and **RELEASE** to A AUTO. \_\_\_\_\_
- [23] **VERIFY** RED motor energized light is ON for cubicle 16A of Reactor MOV Bd 2A2-A during valve travel. \_\_\_\_\_
- [24] **VERIFY** both RED and GREEN light is ON during travel for the following handswitches:
  - A. 2-HS-70-90A, THERMAL BAR RET CIV-ΦB. \_\_\_\_\_
  - B. 2-HS-70-90C, RC PMP THRM BAR RET CONTMNT ISOL VLV SW. \_\_\_\_\_
- [25] **VERIFY** locally, 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, travels to the OPEN position. \_\_\_\_\_

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**6.2 Valve 2-FCV-70-90-A RCP Thermal Barrier Return Containment Isolation Valve Operational Test (continued)**

[26] **VERIFY** the RED light is ON and the GREEN light is OFF for the following handswitches:

A. 2-HS-70-90A, THERMAL BAR RET CIV-ΦB. \_\_\_\_\_

B. 2-HS-70-90C, RC PMP THRM BAR RET CONTMNT ISOL VLV SW. \_\_\_\_\_

[27] **VERIFY** the RED light is ON and the GREEN light is OFF for the CNTMT ISOL STATUS PNL (XX-55-6E) Window 72. \_\_\_\_\_

[28] **VERIFY** ICS point FD2178 displays FULL OP. \_\_\_\_\_

[29] **PLACE** handswitch 2-HS-70-90C, RC PMP THRM BAR RET CONTMNT ISOL VLV SW, in the CLOSE position. \_\_\_\_\_

[30] **VERIFY** locally, 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, remains in the OPEN position. \_\_\_\_\_

**NOTE**

Steps 6.2[31] and 6.2[32] verify the closing seal-in and interlock features of the valve circuitry.

[31] **PLACE** 2-HS-70-90A, THERMAL BAR RET CIV-ΦB, to CLOSE, **THEN**

**OPEN** and **RELEASE** to A AUTO. \_\_\_\_\_

[32] **VERIFY** locally, 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, travels to the CLOSED position. \_\_\_\_\_

<b>WBN Unit 2</b>	<b>Component Cooling Water Pump/Valve Logic Test</b>	<b>2-PTI-070-01 Rev. 0000 Page 50 of 236</b>
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**6.2 Valve 2-FCV-70-90-A RCP Thermal Barrier Return Containment Isolation Valve Operational Test (continued)**

**NOTE**

Stopwatch timing of 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, will be done at handswitch 2-HS-70-90A, RC PMP THRM BAR RET CONTMNT ISOL VLV, SW and locally at 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV. Perform steps 6.2[33]/6.2[34] and 6.2[35]/6.2[36] sequentially to obtain stroke time data.

[33] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-90A, THERMAL BAR RET CIV-ΦB, to the OPEN position, **AND**

**START** stopwatches. \_\_\_\_\_

[34] **STOP** stopwatches when 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, reaches the OPEN position, **AND**

**RECORD** stroke times below:

A. Remote Open Time \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Open Time \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[35] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-90A, THERMAL BAR RET CIV-ΦB, to the CLOSE position, **AND**

**START** stopwatches. \_\_\_\_\_

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**6.2 Valve 2-FCV-70-90-A RCP Thermal Barrier Return Containment Isolation Valve Operational Test (continued)**

[36] **STOP** stopwatches when 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, reaches the CLOSE position, **AND**

**RECORD** stroke times below:

A. Remote Close Time (**Acc Crit**) \_\_\_\_\_  
 \_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Close Time \_\_\_\_\_  
 \_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[37] **PLACE** Transfer Switch 2-XS-70-90, RCP THERMAL BARRIER CCS RETURN (2-FCV-70-90), to the AUXILIARY (AUX) position. \_\_\_\_\_

[38] **VERIFY** annunciator 149C, 480 RX MOV BD 2A1-A/2A2-A (2-XA-55-6F) ALARMS. \_\_\_\_\_

[39] **VERIFY** GREEN light is OFF for handswitch 2-HS-70-90A, THERMAL BAR RET CIV-ΦB. \_\_\_\_\_

[40] **VERIFY** both RED and GREEN lights are OFF for the CNTMT ISOL STATUS PNL (XX-55-6E) Window 72. \_\_\_\_\_

[41] **VERIFY** GREEN light is ON for handswitch 2-HS-70-90C, RC PMP THRM BAR RET CONTMNT ISOL VLV SW. \_\_\_\_\_

[42] **PLACE** handswitch 2-HS-70-90A, THERMAL BAR RET CIV-ΦB, to the OPEN position. \_\_\_\_\_

[43] **VERIFY** locally, 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, remains in the CLOSED position. \_\_\_\_\_

[44] **PLACE** handswitch 2-HS-70-90C, RC PMP THRM BAR RET CONTMNT ISOL VLV SW, to the OPEN position. \_\_\_\_\_

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**6.2 Valve 2-FCV-70-90-A RCP Thermal Barrier Return Containment Isolation Valve Operational Test (continued)**

- [45] **VERIFY** locally, 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, travels to the OPEN position. \_\_\_\_\_
- [46] **PLACE** handswitch 2-HS-70-90A, THERMAL BAR RET CIV-ΦB to the CLOSE position. \_\_\_\_\_
- [47] **VERIFY** locally, 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, remains in the OPEN position. \_\_\_\_\_
- [48] **PLACE** handswitch 2-HS-70-90C, RC PMP THRM BAR RET CONTMNT ISOL VLV SW, to the CLOSE position. \_\_\_\_\_
- [49] **VERIFY** locally, 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, travels to the CLOSED position. \_\_\_\_\_
- [50] **PLACE** Transfer Switch 2-XS-70-90, RCP THERMAL BARRIER CCS RETURN (2-FCV-70-90), to the NORMAL position. \_\_\_\_\_
- [51] **VERIFY** annunciator 149C, 480 RX MOV BD 2A1-A/2A2-A (2-XA-55-6F) CLEARS. \_\_\_\_\_
- [52] **VERIFY** GREEN light is ON for the following handswitches:
  - A. 2-HS-70-90A, THERMAL BAR RET CIV-ΦB. \_\_\_\_\_
  - B. 2-HS-70-90C, RC PMP THRM BAR RET CONTMNT ISOL VLV SW. \_\_\_\_\_
- [53] **PLACE** handswitch 2-HS-70-90A, THERMAL BAR RET CIV-ΦB, to the OPEN position. \_\_\_\_\_
- [54] **VERIFY** locally, 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, travels to the OPEN position. \_\_\_\_\_
- [55] **ENSURE** handswitch 2-HS-70-90A, THERMAL BAR RET CIV-ΦB, is in the A AUTO position. \_\_\_\_\_
- [56] **CLOSE** test switch TS-2 installed on terminal points 59 and 60 of terminal board TB-2 in panel 2-R-129 to simulate a high differential flow signal from 2-FDS-70-81E, THRM BARRIER SUP/RET HDR FLOW DIFF SW. \_\_\_\_\_

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**6.2 Valve 2-FCV-70-90-A RCP Thermal Barrier Return Containment Isolation Valve Operational Test (continued)**

[57] **VERIFY** 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, starts to travel after approximately a 5 second time delay.

\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[58] **VERIFY** locally, 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, travels to the CLOSED position.  
**(Acc Crit)**

[59] **OPEN** test switch TS-2 installed on terminal points 59 and 60 of terminal board TB-2 in panel 2-R-129 to simulate a normal flow signal from 2-FDS-70-81E, THRM BARRIER SUP/RET HDR FLOW DIFF SW.

[60] **PLACE** handswitch 2-HS-70-90A, THERMAL BAR RET CIV-ΦB, in the OPEN position.

[61] **VERIFY** locally, 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, travels to the OPEN position.

[62] **ENSURE** handswitch 2-HS-70-90A RC PMP THRM BAR RET CONTMNT ISOL VLV SW, is in the A AUTO position.

[63] **CLOSE** test switch labeled K618 installed on terminal board TB613 in SSPS cabinet 2-R-48 to simulate a containment isolation phase B signal.

[64] **VERIFY** locally, 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, travels to the CLOSED position.  
**(Acc Crit)**

[65] **OPEN** test switch labeled K618 to simulate containment isolation signal reset.

[66] **VERIFY** locally, 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, remains in the CLOSED position.  
**(Acc Crit)**

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**6.2 Valve 2-FCV-70-90-A RCP Thermal Barrier Return Containment Isolation Valve Operational Test (continued)**

- [67] **PLACE** handswitch 2-HS-70-90A, THERMAL BAR RET CIV-ΦB, in the OPEN position. \_\_\_\_\_
- [68] **VERIFY** locally, 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, is OPEN. \_\_\_\_\_
- [69] **PLACE** handswitch 2-HS-70-90A, THERMAL BAR RET CIV-ΦB, in the CLOSE position. \_\_\_\_\_
- [70] **VERIFY** locally, 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, travels to the CLOSED position. \_\_\_\_\_
- [71] **OPEN** 2-BKR-70-90B-A, 480 RX MOV BD 2A2-A BKR 16A FOR 2-FCV-70-90, at compartment 16A on Reactor MOV Bd 2A2-A. \_\_\_\_\_

**WARNING**

Arc Flash PPE per TI-300 will be required for step 6.2[72].

- [72] **MANUALLY TRIP** the thermal overload for 2-BKR-70-90B-A, 480V RX MOV BD 2A2-A BKR 16A FOR 2-FCV-70-90, at compartment 16A on Reactor MOV Bd 2A2-A. \_\_\_\_\_  
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- [73] **CLOSE** 2-BKR-70-90B-A, 480V RX MOV BD 2A2-A BKR 16A for 2-FCV-70-90, at compartment 16A on Reactor MOV Bd 2A2-A. \_\_\_\_\_
- [74] **PLACE** handswitch 2-HS-70-90A, THERMAL BAR RET CIV-ΦB, in the OPEN position. \_\_\_\_\_
- [75] **VERIFY** locally, 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, remains in the CLOSED position. **(Acc Crit)** \_\_\_\_\_

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**6.2 Valve 2-FCV-70-90-A RCP Thermal Barrier Return Containment Isolation Valve Operational Test (continued)**

**CAUTION**

Steps 6.2[76] through 6.2[77] will operate the valve without thermal overload protection.

**[76] DEPRESS AND**

**HOLD** the armature of the K7 relay in the rear of Reactor MOV Bd 2A2-A, cubicle 6D [A4S/774]. \_\_\_\_\_

**[77] PLACE** handswitch 2-HS-70-90A, THERMAL BAR RET CIV-ΦB, in the OPEN position. \_\_\_\_\_

**[78] VERIFY** locally, 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, travels to the OPEN position. **(Acc Crit)** \_\_\_\_\_

**[79] PLACE** handswitch 2-HS-70-90A, THERMAL BAR RET CIV-ΦB, in the CLOSE position. \_\_\_\_\_

**[80] VERIFY** locally, 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, travels to the CLOSED position. **(Acc Crit)** \_\_\_\_\_

**[81] RELEASE** the armature of the K7 relay in the rear of Reactor MOV Bd 2A2-A, cubicle 6D. \_\_\_\_\_

**[82] OPEN** 2-BKR-70-90B-A, 480V RX MOV BD 2A2-A BKR 16A FOR 2-FCV-70-90 at compartment 16A on Reactor MOV Bd 2A2-A. \_\_\_\_\_

**WARNING**

Arc Flash PPE per TI-300 will be required for the following step 6.2[83].

**[83] RESET** the thermal overload for 2-BKR-70-90B-A, 480V RX MOV BD 2A2-A BKR 16A FOR 2-FCV-70-90, at compartment 16A on Reactor MOV Bd 2A2-A.

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**6.2 Valve 2-FCV-70-90-A RCP Thermal Barrier Return Containment Isolation Valve Operational Test (continued)**

[84] **REMOVE** jumper with test switch labeled K618 on terminal board TB613, terminal points 1 and 2 in SSPS cabinet 2-R-48.

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[85] **REMOVE** jumper with test switch TS-2 in the OPEN position on terminal points 59 and 60 of terminal board TB-2 in panel 2-R-129.

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[86] **REMOVE** jumper on terminal points 5 and 6 on terminal board TB816 in SSPS cabinet 2-R-52.

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[87] **CLOSE** 2-BKR-70-90B-A, 480V RX MOV BD 2A2-A BKR 16A for 2-FCV-70-90, at compartment 16A on Reactor MOV Bd 2A2-A.

[88] **PLACE** handswitch 2-HS-70-90A, THERMAL BAR RET CIV-ΦB, in the OPEN position.

[89] **VERIFY** locally, 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, travels to the OPEN position.

[90] **PLACE** handswitch 2-HS-70-90A, THERMAL BAR RET CIV-ΦB, in the CLOSE position.

[91] **VERIFY** locally, 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV, travels to the CLOSED position.

[92] **VERIFY** successful completion of Subsection 6.2 (**ACC CRIT 5.00**)

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**6.3 Valve 2-FCV-70-133 RCP Thermal Barrier Containment Isolation Valve Operational Test**

<b>NOTES</b>	
1)	This section will test 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, from its control stations and verify operability of all interlocks, indicating lights, annunciators and status monitoring input relays.
2)	Reference drawing 2-45W760-70-5, valve location A11.5W/741.

[1] **ENSURE** prerequisite actions for subsection 6.3 are completed. \_\_\_\_\_

[2] **ENSURE** the following Integrated Computer System (ICS) points are in scan: \_\_\_\_\_

A. FD2171 \_\_\_\_\_

B. FD2172 \_\_\_\_\_

[3] **ENSURE** 2-BKR-70-133B -A, 480V RX MOV BD 2A2-A BKR 16B for 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY [A12/772], at compartment 16B on Reactor MOV Bd 2A2-A is OPEN. \_\_\_\_\_

[4] **ENSURE** 2-BKR-70-133A-A, 480V RX MOV BD 2A2-A BKR 11E for 2-FCV-70-133, at compartment 11E on Reactor MOV Bd 2A2A is OPEN. \_\_\_\_\_

[5] **INSTALL** jumper with test switch TS-3 in the OPEN position on terminal points 59 (wire FCAX) and 60 (wire FCA1) of terminal board TB-2 in panel 2-R-129 [AUX INSTR RM] (simulate a normal output flow signal from 2-FDS-70-81E, THRM BARRIER SUP/RET HDR FLOW DIFF SW). \_\_\_\_\_

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**6.3 Valve 2-FCV-70-133 RCP Thermal Barrier Containment Isolation Valve Operational Test (continued)**

[6] **INSTALL** jumper with test switch labeled K618 in the OPEN position on terminal board TB612, terminal points 11(wire 16BC4) and 12 (wire 16BC3) in SSPS cabinet 2-R-48 [AUX INSTR RM] (simulate CI phase B).

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[7] **INSTALL** jumper on terminal points 5 (16BC5) and 6 (16BC4) on terminal board TB815 in SSPS cabinet 2-R-52 [AUX INSTR RM] (jumpers contact from SSPS test switch).

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CV

[8] **VERIFY** ICS point FD2171 displays PWR OFF.

[9] **CLOSE** 2-BKR-70-133A-A, 480V RX MOV BD 2A2-A BKR 11E for 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, at compartment 11E on Reactor MOV Bd 2A2-A.

[10] **VERIFY** ICS point FD2171 displays PWR OFF.

[11] **CLOSE** 2-BKR-70-133B -A, 480V RX MOV BD 2A2-A BKR 16B for 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, at compartment 16B on Reactor MOV Bd 2A2-A.

[12] **VERIFY** ICS point FD2171 displays PWR ON.

[13] **ENSURE** transfer switch 2-XS-70-133, RCP THERMAL BARRIER CCS SUPPLY (2-FCV-70-133, THERMAL BARRIER CCS SUPPLY) [A4S/772], is in the NORMAL position.

[14] **ENSURE** annunciator 149C, 480V RX MOV BD 2A1-A/2A2A, on Panel 2-XA-55-6F is CLEAR.

[15] **ENSURE** 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, is in the CLOSED position.

[16] **VERIFY** ICS point FD2172 displays NOT OPE.

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**6.3 Valve 2-FCV-70-133 RCP Thermal Barrier Containment Isolation Valve Operational Test (continued)**

[17] **VERIFY** the GREEN light is ON and the RED light is OFF for the following handswitches:

A. 2-HS-70-133A, THERMAL BAR SUP CIV-ΦB. \_\_\_\_\_

B. 2-HS-70-133B, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_

C. 2-HS-70-133C, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_

[18] **VERIFY** the GREEN light is ON and the RED light is OFF for the CNTMT ISOL STATUS PNL (XX-55-6E) Window 75. \_\_\_\_\_

[19] **PLACE** handswitch 2-HS-70-133C, RC PMP THRM BAR CONT ISOL VLV SW, in the OPEN position. \_\_\_\_\_

[20] **VERIFY** 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, remains in the CLOSED position. \_\_\_\_\_

[21] **MOMENTARILY PLACE** 2-HS-70-133A, THERMAL BAR SUP CIV-ΦB, to OPEN position, **THEN**

**MOMENTARILY PLACE** 2-HS-70-133A, THERMAL BAR SUP CIV-ΦB, to the CLOSE position. \_\_\_\_\_

[22] **VERIFY** RED motor energized light is ON for cubicle 16B of Reactor MOV Bd 2A2-A during valve travel. \_\_\_\_\_

[23] **VERIFY** both RED and GREEN light is ON for the following handswitches during valve travel:

A. 2-HS-70-133A, THERMAL BAR SUP CIV-ΦB. \_\_\_\_\_

B. 2-HS-70-133B, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_

C. 2-HS-70-133C, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_

[24] **VERIFY** locally, 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, travels to the OPEN position. \_\_\_\_\_

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**6.3 Valve 2-FCV-70-133 RCP Thermal Barrier Containment Isolation Valve Operational Test (continued)**

- [25] **VERIFY** the RED light is ON and the GREEN light is OFF for the following handswitches:
  - A. 2-HS-70-133A, THERMAL BAR SUP CIV-ΦB. \_\_\_\_\_
  - B. 2-HS-70-133B, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_
  - C. 2-HS-70-133C, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_
  
- [26] **VERIFY** the RED light is ON and the GREEN light is OFF for the CNTMT ISOL STATUS PNL (XX-55-6E) Window 75. \_\_\_\_\_
  
- [27] **VERIFY** ICS point FD2172 displays OPEN. \_\_\_\_\_
  
- [28] **PLACE** handswitch 2-HS-70-133C, RC PMP THRM BAR CONT ISOL VLV SW, in the CLOSE position. \_\_\_\_\_
  
- [29] **VERIFY** locally, 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, remains in the OPEN position. \_\_\_\_\_
  
- [30] **MOMENTARILY PLACE** 2-HS-70-133A, THERMAL BAR SUP CIV-ΦB, to CLOSE position, **THEN**  
**MOMENTARILY PLACE** 2-HS-70-133A, THERMAL BAR SUP CIV-ΦB, to the OPEN position. \_\_\_\_\_
  
- [31] **VERIFY** the RED and GREEN lights are ON for the following handswitches during valve travel:
  - A. 2-HS-70-133A, THERMAL BAR SUP CIV-ΦB. \_\_\_\_\_
  - B. 2-HS-70-133B, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_
  - C. 2-HS-70-133C, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_
  
- [32] **VERIFY** locally, 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, travels to the CLOSED position. \_\_\_\_\_
  
- [33] **PLACE** handswitch 2-HS-70-133C, RC PMP THRM BAR CONT ISOL VLV SW, in the OPEN position. \_\_\_\_\_

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**6.3 Valve 2-FCV-70-133 RCP Thermal Barrier Containment Isolation  
Valve Operational Test (continued)**

- [34] **VERIFY** locally, 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, remains in the CLOSED position. \_\_\_\_\_
- [35] **DEPRESS** OPEN pushbutton on handswitch 2-HS-70-133B, RC PMP THRM BAR CONT ISOL VLV SW \_\_\_\_\_
- [36] **DEPRESS** STOP pushbutton on handswitch 2-HS-70-133B, RC PMP THRM BAR CONT ISOL VLV SW after completion of an approximate 20 second stroke period. \_\_\_\_\_
- [37] **VERIFY** locally, 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, stops its travel. \_\_\_\_\_
- [38] **DEPRESS** OPEN pushbutton on handswitch 2-HS-70-133B, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_
- [39] **VERIFY** locally, 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, travels to the OPEN position. \_\_\_\_\_
- [40] **DEPRESS** CLOSE pushbutton on handswitch 2-HS-70-133B, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_
- [41] **DEPRESS** STOP pushbutton on handswitch 2-HS-70-133B, RC PMP THRM BAR CONT ISOL VLV SW, after completion of an approximate 20 second stroke period. \_\_\_\_\_
- [42] **VERIFY** locally, 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, stops its travel. \_\_\_\_\_
- [43] **DEPRESS** CLOSE pushbutton on handswitch 2-HS-70-133B, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_
- [44] **VERIFY** locally, 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, travels to the CLOSED position. \_\_\_\_\_

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**6.3 Valve 2-FCV-70-133 RCP Thermal Barrier Containment Isolation  
Valve Operational Test (continued)**

**NOTE**

Stopwatch timing of 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, will be done at handswitch 2-HS-70-133A, THERMAL BAR SUP CIV-ΦB, and locally at 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY. Perform steps 6.3[45]/6.3[46] and 6.3[47]/6.3[48] sequentially to obtain stroke time data.

[45] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-133A, THERMAL BAR SUP CIV-ΦB, to the OPEN position, **AND**  
**START** stopwatches. \_\_\_\_\_

[46] **STOP** stopwatches when 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, reaches the OPEN position, **AND**  
**RECORD** stroke times below:

A. Remote Open Time \_\_\_\_\_  
\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Open Time \_\_\_\_\_  
\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[47] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-133A, THERMAL BAR SUP CIV-ΦB, to the CLOSE position, **AND**  
**START** stopwatches.

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**6.3 Valve 2-FCV-70-133 RCP Thermal Barrier Containment Isolation  
Valve Operational Test (continued)**

[48] **STOP** stopwatches when 2-FCV-70-133, THERMAL BARRIER  
CCS SUPPLY, reaches the CLOSE position, **AND**

**RECORD** stroke times below:

A. Remote Close Time (**Acc Crit**) \_\_\_\_\_  
\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Close Time \_\_\_\_\_  
\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[49] **PLACE** Transfer Switch 2-XS-70-133 RC PMP THRM BAR  
CONT ISOL VLV TRF SW, to the AUXILIARY (AUX) position. \_\_\_\_\_

[50] **VERIFY** annunciator 149C, 480 RX MOV BD 2A1-A/2A2-A  
(2-XA-55-6F), ALARMS. \_\_\_\_\_

[51] **VERIFY** GREEN light is OFF for handswitch 2-HS-70-133A,  
THERMAL BAR SUP CIV-ΦB. \_\_\_\_\_

[52] **VERIFY** GREEN light is OFF for the CNTMT ISOL STATUS  
PNL (XX-55-6E) Window 75. \_\_\_\_\_

[53] **PLACE** handswitch 2-HS-70-133A, THERMAL BAR SUP  
CIV-ΦB, to the OPEN position. \_\_\_\_\_

[54] **VERIFY** locally, 2-FCV-70-133, THERMAL BARRIER CCS  
SUPPLY, remains in the CLOSED position. \_\_\_\_\_

[55] **PLACE** handswitch 2-HS-70-133C, RC PMP THRM BAR  
CONT ISOL VLV SW, to the OPEN position. \_\_\_\_\_

[56] **VERIFY** RED motor energized light is ON for cubicle 16B of  
Reactor MOV Bd 2A2-A during valve travel. \_\_\_\_\_

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**6.3 Valve 2-FCV-70-133 RCP Thermal Barrier Containment Isolation  
Valve Operational Test (continued)**

- [57] **VERIFY** locally, 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, travels to the OPEN position. \_\_\_\_\_
- [58] **PLACE** handswitch 2-HS-70-133A, THERMAL BAR SUP CIV-ΦB, to the CLOSE position. \_\_\_\_\_
- [59] **VERIFY** locally, 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, remains in the OPEN position. \_\_\_\_\_
- [60] **VERIFY** RED light is OFF for handswitch 2-HS-70-133A, THERMAL BAR SUP CIV-ΦB. \_\_\_\_\_
- [61] **VERIFY** RED light is OFF for the CNTMT ISOL STATUS PNL (XX-55-6E) Window 75. \_\_\_\_\_
- [62] **PLACE** handswitch 2-HS-70-133C, RC PMP THRM BAR CONT ISOL VLV SW, to the CLOSE position. \_\_\_\_\_
- [63] **VERIFY** locally, 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, travels to the CLOSED position. \_\_\_\_\_
- [64] **PLACE** Transfer Switch 2-XS-70-133, RCP THERMAL BARRIER CCS SUPPLY (2-FCV-70-133, THERMAL BARRIER CCS SUPPLY), to the NORMAL position. \_\_\_\_\_
- [65] **VERIFY** annunciator 149C, 480 RX MOV BD 2A1-A/2A2-A (2-XA-55-6F), CLEARS. \_\_\_\_\_
- [66] **VERIFY** GREEN light is ON for the following handswitches:
  - A. 2-HS-70-133A, THERMAL BAR SUP CIV-ΦB. \_\_\_\_\_
  - B. 2-HS-70-133B, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_
  - C. 2-HS-70-133C, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_
- [67] **PLACE** handswitch 2-HS-70-133A, THERMAL BAR SUP CIV-ΦB, to the OPEN position. \_\_\_\_\_
- [68] **VERIFY** locally, 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, travels to the OPEN position. \_\_\_\_\_

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**6.3 Valve 2-FCV-70-133 RCP Thermal Barrier Containment Isolation Valve Operational Test (continued)**

- [69] **ENSURE** handswitch 2-HS-70-133A, THERMAL BAR SUP CIV-ΦB, is in the A AUTO position. \_\_\_\_\_
- [70] **CLOSE** test switch labeled K618 installed on terminal board TB612 in SSPS cabinet 2-R-48 to simulate a containment isolation phase B signal. \_\_\_\_\_
- [71] **VERIFY** locally, 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, travels to the CLOSED position. (**Acc Crit**) \_\_\_\_\_
- [72] **OPEN** test switch labeled K618 to simulate containment isolation signal reset. \_\_\_\_\_
- [73] **VERIFY** locally, 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, remains in the CLOSED position. (**Acc Crit**) \_\_\_\_\_
- [74] **PLACE** handswitch 2-HS-70-133A, THERMAL BAR SUP CIV-ΦB, in the OPEN position. \_\_\_\_\_
- [75] **VERIFY** locally, 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, is OPEN. \_\_\_\_\_
- [76] **ENSURE** handswitch 2-HS-70-133A, THERMAL BAR SUP CIV-ΦB, is in the A AUTO position. \_\_\_\_\_
- [77] **CLOSE** test switch TS-3 installed on terminal points 59 and 60 of terminal board TB-2 in panel 2-R-129 to simulate a high differential flow signal from 2-FDS-70-81E THRM BARRIER SUP/RET HDR FLOW DIFF SW. \_\_\_\_\_
- [78] **VERIFY** 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, starts to travel after approximately a 5 second time delay. \_\_\_\_\_
- [79] **VERIFY** locally, 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, travels to the CLOSED position. (**Acc Crit**) \_\_\_\_\_
- [80] **OPEN** test switch TS-3 installed on terminal points 59 and 60 of terminal board TB-2 in panel 2-R-129 to simulate a normal flow signal from 2-FDS-70-81E THRM BARRIER SUP/RET HDR FLOW DIFF SW. \_\_\_\_\_
- [81] **OPEN** 2-BKR-70-133B -A, 480V RX MOV BD 2A2-A BKR 16B for 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, at compartment 16B on Reactor MOV Bd 2A2-A. \_\_\_\_\_

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**6.3 Valve 2-FCV-70-133 RCP Thermal Barrier Containment Isolation  
Valve Operational Test (continued)**

**WARNING**

Arc Flash PPE per TI-300 will be required for step 6.3[82].

[82] **MANUALLY TRIP** the thermal overload for 2-BKR-70-133B -A, 480V RX MOV BD 2A2-A BKR 16B for 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, at compartment 16B on Reactor MOV Bd 2A2-A.

\_\_\_\_\_

1st

\_\_\_\_\_

CV

[83] **CLOSE** 2-BKR-70-133B -A, 480V RX MOV BD 2A2-A BKR 16B for 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, at compartment 16B on Reactor MOV Bd 2A2-A.

[84] **PLACE** handswitch 2-HS-70-133A, THERMAL BAR SUP CIV-ΦB, in the OPEN position.

[85] **VERIFY** locally, 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, remains in the CLOSED position. (**Acc Crit**)

**CAUTION**

Steps 6.3[86] through 6.3[87] will operate the valve without thermal overload protection.

[86] **DEPRESS AND**

**HOLD** the armature of the K6 relay in the rear of Reactor MOV Bd 2A2-A, cubicle 6D [A12/772].

[87] **PLACE** handswitch 2-HS-70-133A, THERMAL BAR SUP CIV-ΦB, in the OPEN position.

[88] **VERIFY** locally, 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, travels to the OPEN position. (**Acc Crit**)

[89] **PLACE** handswitch 2-HS-70-133A, THERMAL BAR SUP CIV-ΦB, in the CLOSE position.

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**6.3 Valve 2-FCV-70-133 RCP Thermal Barrier Containment Isolation Valve Operational Test (continued)**

- [90] **VERIFY** locally, 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, travels to the CLOSED position. (**Acc Crit**) \_\_\_\_\_
- [91] **RELEASE** the armature of the K6 relay in the rear of Reactor MOV Bd 2A2-A, cubicle 6D. \_\_\_\_\_
- [92] **OPEN** 2-BKR-70-133B -A, 480 RX MOV BD 2A2-A BKR 16B for 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, at compartment 16B on Reactor MOV Bd 2A2-A. \_\_\_\_\_

**WARNING**

Arc Flash PPE per TI-300 will be required for the following step 6.3[93].

- [93] **RESET** the thermal overload for 2-BKR-70-133B -A, 480V RX MOV BD 2A2-A BKR 16B for 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, at compartment 16B on Reactor MOV Bd 2A2-A. \_\_\_\_\_  
1st  
\_\_\_\_\_ CV
- [94] **REMOVE** jumper with test switch labeled K618 on terminal board TB612, terminal points 11 and 12 in SSPS cabinet 2-R-48. \_\_\_\_\_  
1st  
\_\_\_\_\_ CV
- [95] **REMOVE** jumper with test switch TS-3 in the OPEN position on terminal points 59 and 60 of terminal board TB-2 in panel 2-R-129. \_\_\_\_\_  
1st  
\_\_\_\_\_ CV
- [96] **REMOVE** jumper on terminal points 5 and 6 on terminal board TB815 in SSPS cabinet 2-R-52. \_\_\_\_\_  
1st  
\_\_\_\_\_ CV

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**6.3 Valve 2-FCV-70-133 RCP Thermal Barrier Containment Isolation  
Valve Operational Test (continued)**

[97] **CLOSE** 2-BKR-70-133B -A, 480V RX MOV BD 2A2-A BKR 16B for 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, at compartment 16B on Reactor MOV Bd 21A2-A. \_\_\_\_\_

[98] **PLACE** handswitch 2-HS-70-133A, THERMAL BAR SUP CIV-ΦB, in the OPEN position. \_\_\_\_\_

[99] **VERIFY** locally, 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, travels to the OPEN position. \_\_\_\_\_

[100] **PLACE** handswitch 2-HS-70-133A, THERMAL BAR SUP CIV-ΦB, in the CLOSE position. \_\_\_\_\_

[101] **VERIFY** locally, 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY, travels to the CLOSED position. \_\_\_\_\_

[102] **VERIFY** successful completion of Subsection 6.3 (**ACC CRIT 5.00**) \_\_\_\_\_

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**6.4 Valve 2-FCV-70-134-B RCP Thermal Barrier Containment  
Isolation Valve Operational Test**

**NOTES**

- 1) This section will test 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, from its control stations and verify operability of all interlocks, indicating lights, annunciators and status monitoring input relays.
- 2) Reference drawing 2-45W760-70-5, valve location A12W/737.

[1] **ENSURE** prerequisite actions for subsection 6.4 are completed. \_\_\_\_\_

[2] **ENSURE** the following Integrated Computer System (ICS) points are in scan: \_\_\_\_\_

A. FD2325 \_\_\_\_\_

B. FD2326 \_\_\_\_\_

[3] **ENSURE** 2-BKR-70-134B-B, 480V RX MOV BD 2B2 BKR 16B for 2-FCV-70-134-B [A4R/772], at compartment 16B on Reactor MOV Bd 2B2-B is OPEN. \_\_\_\_\_

[4] **ENSURE** 2-BKR-70-134A-B, 480V RX MOV BD 2B2 BKR 6E for 2-FCV-70-134-B, at compartment 6E on Reactor MOV Bd 2B2-B is OPEN. \_\_\_\_\_

[5] **INSTALL** jumper with test switch labeled K618 in the OPEN position on terminal board TB612, terminal points 11 (wire 16BC4) and 12 (wire 16BC3) in SSPS cabinet 2-R-51 [AUX INSTR RM] (simulate CI phase B). \_\_\_\_\_

1st

CV

[6] **INSTALL** jumper on terminal points 5 (wire 16BC5) and 6 (wire 16BC4) on terminal board TB815 in SSPS cabinet 2-R-53 (jumpers contact from SSPS test switch) [AUX INSTR RM]. \_\_\_\_\_

1st

CV

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**6.4 Valve 2-FCV-70-134-B RCP Thermal Barrier Containment  
Isolation Valve Operational Test (continued)**

[7] **INSTALL** jumper with test switch TS-4 in the OPEN position on terminal points 57(wire FCBX) and 58 (wire FCB1) of terminal board TB-2 in panel 2-R-132 [AUX INSTR RM] (simulate a normal output flow signal from 2-FDS-70-81B-B, THRM BARRIER SUP/RET HDR FLOW DIFF SW).

\_\_\_\_\_ 1st

\_\_\_\_\_ CV

[8] **VERIFY** ICS point FD2325 displays PWR OFF.

[9] **CLOSE** 2-BKR-70-134A-B, 480V RX MOV BD 2B2 BKR 6E for 2-FCV-70-134-B at compartment 6E on Reactor MOV Bd 2B2-B.

[10] **VERIFY** ICS point FD2325 displays PWR OFF.

[11] **CLOSE** 2-BKR-70-134B-B, 480V RX MOV BD 2B2 BKR 16B for 2-FCV-70-134-B at compartment 16B on Reactor MOV Bd 2B2-B.

[12] **VERIFY** ICS point FD2325 displays PWR ON.

[13] **ENSURE** transfer switch 2-XS-70-134, RCP THERMAL BARRIER CCS SUPPLY (2-FCV-70-134) [A4R/772], is in the NORMAL position.

[14] **ENSURE** annunciator 150C, 480 RX MOV 2B1-B/2B2-B on Panel 2-XA-55-6F, is CLEAR.

[15] **ENSURE** 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, is in the CLOSED position.

[16] **VERIFY** ICS point FD2326 displays NOT OPE.

[17] **VERIFY** the GREEN light is ON and the RED light is OFF for the following handswitches:

A. 2-HS-70-134A, THERMAL BAR SUP CIV-ΦB.

B. 2-HS-70-134B, RC PMP THRM BAR CONT ISOL VLV SW.

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**6.4 Valve 2-FCV-70-134-B RCP Thermal Barrier Containment Isolation Valve Operational Test (continued)**

C. 2-HS-70-134C, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_

[18] **VERIFY** the GREEN light is ON and the RED light is OFF for the CNTMT ISOL STATUS PNL (XX-55-6F) Window 75. \_\_\_\_\_

[19] **PLACE** handswitch 2-HS-70-134C, RC PMP THRM BAR CONT ISOL VLV SW, in the OPEN position. \_\_\_\_\_

[20] **VERIFY** 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, remains in the CLOSED position. \_\_\_\_\_

[21] **MOMENTARILY PLACE** 2-HS-70-134A, THERMAL BAR SUP CIV-ΦB, to OPEN position, **THEN**

**MOMENTARILY PLACE** 2-HS-70-134A, THERMAL BAR SUP CIV-ΦB, to the CLOSE position. \_\_\_\_\_

[22] **VERIFY** RED motor energized light is ON for cubicle 16B of Reactor MOV Bd 2B2-B during valve travel. \_\_\_\_\_

[23] **VERIFY** both RED and GREEN light is ON for the following handswitches during valve travel:

A. 2-HS-70-134A, THERMAL BAR SUP CIV-ΦB. \_\_\_\_\_

B. 2-HS-70-134B, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_

C. 2-HS-70-134C, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_

[24] **VERIFY** locally, 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, travels to the OPEN position. \_\_\_\_\_

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**6.4 Valve 2-FCV-70-134-B RCP Thermal Barrier Containment  
Isolation Valve Operational Test (continued)**

[25] **VERIFY** the RED light is ON and the GREEN light is OFF for the following handswitches:

A. 2-HS-70-134A, THERMAL BAR SUP CIV-ΦB. \_\_\_\_\_

B. 2-HS-70-134B, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_

C. 2-HS-70-134C, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_

[26] **VERIFY** the RED light is ON and the GREEN light is OFF for the CNTMT ISOL STATUS PNL (XX-55-6F) Window 75. \_\_\_\_\_

[27] **VERIFY** ICS point FD2326 displays FULL OP. \_\_\_\_\_

[28] **PLACE** handswitch 2-HS-70-134C, RC PMP THRM BAR CONT ISOL VLV SW, in the CLOSE position. \_\_\_\_\_

[29] **VERIFY** locally, 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, remains in the OPEN position. \_\_\_\_\_

[30] **MOMENTARILY PLACE** 2-HS-70-134A, THERMAL BAR SUP CIV-ΦB, to CLOSE position, **THEN**

**MOMENTARILY PLACE** 2-HS-70-134A, THERMAL BAR SUP CIV-ΦB, to the OPEN position. \_\_\_\_\_

[31] **VERIFY** the RED and GREEN lights are ON for the following handswitches during valve travel:

A. 2-HS-70-134A, THERMAL BAR SUP CIV-ΦB. \_\_\_\_\_

B. 2-HS-70-134B, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_

C. 2-HS-70-134C, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_

[32] **VERIFY** locally, 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, travels to the CLOSED position. \_\_\_\_\_

[33] **PLACE** handswitch 2-HS-70-134C, RC PMP THRM BAR CONT ISOL VLV SW, in the OPEN position. \_\_\_\_\_

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**6.4 Valve 2-FCV-70-134-B RCP Thermal Barrier Containment Isolation Valve Operational Test (continued)**

- [34] **VERIFY** locally, 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, remains in the CLOSED position. \_\_\_\_\_
- [35] **DEPRESS** OPEN pushbutton on handswitch 2-HS-70-134B, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_
- [36] **DEPRESS** STOP pushbutton on handswitch 2-HS-70-134B, RC PMP THRM BAR CONT ISOL VLV SW, after completion of an approximate 20 second stroke period. \_\_\_\_\_
- [37] **VERIFY** locally, 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, stops its travel. \_\_\_\_\_
- [38] **DEPRESS** OPEN pushbutton on handswitch 2-HS-70-134B, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_
- [39] **VERIFY** locally, 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, travels to the OPEN position. \_\_\_\_\_
- [40] **DEPRESS** CLOSE pushbutton on handswitch 2-HS-70-134B, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_
- [41] **DEPRESS** STOP pushbutton on handswitch 2-HS-70-134B, RC PMP THRM BAR CONT ISOL VLV SW, after completion of an approximate 20 second stroke period. \_\_\_\_\_
- [42] **VERIFY** locally, 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, stops its travel. \_\_\_\_\_
- [43] **DEPRESS** CLOSE pushbutton on handswitch 2-HS-70-134B, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_
- [44] **VERIFY** locally, 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, travels to the CLOSED position. \_\_\_\_\_

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**6.4 Valve 2-FCV-70-134-B RCP Thermal Barrier Containment  
Isolation Valve Operational Test (continued)**

**NOTE**

Stopwatch timing of 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, will be done at handswitch 2-HS-70-134A, THERMAL BAR SUP CIV-ΦB, and locally at 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY. Perform steps 6.4[45]/6.4[46] and 6.4[47]/6.4[48] sequentially to obtain stroke time data.

[45] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-134A, THERMAL BAR SUP CIV-ΦB, to the OPEN position, **AND**

**START** stopwatches. \_\_\_\_\_

[46] **STOP** stopwatches when 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, reaches the OPEN position, **AND**

**RECORD** stroke times below:

A. Remote Open Time \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Open Time \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[47] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-134A, THERMAL BAR SUP CIV-ΦB, to the CLOSE position, **AND**

**START** stopwatches. \_\_\_\_\_

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**6.4 Valve 2-FCV-70-134-B RCP Thermal Barrier Containment Isolation Valve Operational Test (continued)**

[48] **STOP** stopwatches when 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, reaches the CLOSE position, **AND**

**RECORD** stroke times below:

A. Remote Close Time (**Acc Crit**) \_\_\_\_\_  
 \_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Close Time \_\_\_\_\_  
 \_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[49] **PLACE** Transfer Switch 2-XS-70-134, RCP THERMAL BARRIER CCS SUPPLY (2-FCV-70-134), to the AUXILIARY (AUX) position. \_\_\_\_\_

[50] **VERIFY** annunciator 150C, 480 RX MOV BD 2B1-B/2B2-B 2-XA-55-6F ALARMS. \_\_\_\_\_

[51] **VERIFY** GREEN light is OFF for handswitch 2-HS-70-134A, THERMAL BAR SUP CIV-ΦB. \_\_\_\_\_

[52] **VERIFY** GREEN light is OFF for the CNTMT ISOL STATUS PNL (XX-55-6F) Window 75. \_\_\_\_\_

[53] **PLACE** handswitch 2-HS-70-134A, THERMAL BAR SUP CIV-ΦB, to the OPEN position. \_\_\_\_\_

[54] **VERIFY** locally, 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, remains in the CLOSED position. \_\_\_\_\_

[55] **PLACE** handswitch 2-HS-70-134C, RC PMP THRM BAR CONT ISOL VLV SW, to the OPEN position. \_\_\_\_\_

[56] **VERIFY** RED motor energized light is ON for cubicle 16B of Reactor MOV Bd 2B2-B during valve travel. \_\_\_\_\_

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**6.4 Valve 2-FCV-70-134-B RCP Thermal Barrier Containment Isolation Valve Operational Test (continued)**

- [57] **VERIFY** locally, 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, travels to the OPEN position. \_\_\_\_\_
- [58] **PLACE** handswitch 2-HS-70-134A, THERMAL BAR SUP CIV-ΦB, to the CLOSE position. \_\_\_\_\_
- [59] **VERIFY** locally, 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, remains in the OPEN position. \_\_\_\_\_
- [60] **VERIFY** RED light is OFF for handswitch 2-HS-70-134A, THERMAL BAR SUP CIV-ΦB. \_\_\_\_\_
- [61] **VERIFY** RED light is OFF for the CNTMT ISOL STATUS PNL (XX-55-6F) Window 75. \_\_\_\_\_
- [62] **PLACE** handswitch 2-HS-70-134C, RC PMP THRM BAR CONT ISOL VLV SW, to the CLOSE position. \_\_\_\_\_
- [63] **VERIFY** locally, 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, travels to the CLOSED position. \_\_\_\_\_
- [64] **PLACE** transfer switch 2-XS-70-134, RCP THERMAL BARRIER CCS SUPPLY (2-FCV-70-134), to the NORMAL position. \_\_\_\_\_
- [65] **VERIFY** annunciator 150C, 480 RX MOV BD 2B1-B/2B2-B 2-XA-55-6F CLEARS. \_\_\_\_\_
- [66] **VERIFY** GREEN light is ON for the following handswitches:
  - A. 2-HS-70-134A, THERMAL BAR SUP CIV-ΦB. \_\_\_\_\_
  - B. 2-HS-70-134B, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_
  - C. 2-HS-70-134C, RC PMP THRM BAR CONT ISOL VLV SW. \_\_\_\_\_
- [67] **PLACE** handswitch 2-HS-70-134A, THERMAL BAR SUP CIV-ΦB, to the OPEN position. \_\_\_\_\_
- [68] **VERIFY** locally, 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, travels to the OPEN position. \_\_\_\_\_

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**6.4 Valve 2-FCV-70-134-B RCP Thermal Barrier Containment Isolation Valve Operational Test (continued)**

- [69] **ENSURE** handswitch 2-HS-70-134A, THERMAL BAR SUP CIV-ΦB, is in the A AUTO position. \_\_\_\_\_
- [70] **CLOSE** test switch TS-4 installed on terminal points 57 and 58 of terminal board TB-2 in panel 2-R-132 to simulate a high differential flow signal from 2-FDS-70-81B, THRM BARRIER SUP/RET HDR FLOW DIFF SW. \_\_\_\_\_
- [71] **VERIFY** 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, starts to travel after approximately a 5 second time delay. \_\_\_\_\_
- [72] **VERIFY** locally, 2-FCV-70-134-A, RC PMP THRM BAR CONT ISOL VLV, travels to the CLOSED position. (**Acc Crit**) \_\_\_\_\_
- [73] **OPEN** test switch TS-4 installed on terminal points 57 and 58 of terminal board TB-2 in panel 2-R-132 to simulate a normal flow signal from 2-FDS-70-81B, THRM BARRIER SUP/RET HDR FLOW DIFF SW. \_\_\_\_\_
- [74] **PLACE** handswitch 2-HS-70-134A, THERMAL BAR SUP CIV-ΦB, in the OPEN position. \_\_\_\_\_
- [75] **VERIFY** locally, 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, is OPEN. \_\_\_\_\_
- [76] **ENSURE** handswitch 2-HS-70-134A, THERMAL BAR SUP CIV-ΦB, is in the A AUTO position. \_\_\_\_\_
- [77] **CLOSE** test switch labeled K618 installed on terminal board TB612 in SSPS cabinet 2-R-51 to simulate a containment isolation phase B signal. \_\_\_\_\_
- [78] **VERIFY** locally, 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, travels to the CLOSED position. (**Acc Crit**) \_\_\_\_\_
- [79] **OPEN** test switch labeled K618 to simulate containment isolation signal reset. \_\_\_\_\_
- [80] **VERIFY** locally, 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, remains in the CLOSED position. (**Acc Crit**) \_\_\_\_\_
- [81] **OPEN** 2-BKR-70-134B-B, 480V RX MOV BD 2B2 BKR 16B for 2-FCV-70-134-B, at compartment 16B on Reactor MOV Bd 2B2-B. \_\_\_\_\_

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**6.4 Valve 2-FCV-70-134-B RCP Thermal Barrier Containment  
Isolation Valve Operational Test (continued)**

**WARNING**

Arc Flash PPE per TI-300 will be required for step 6.4[82].

[82] **MANUALLY TRIP** the thermal overload for 2-BKR-70-134B-B, 480V RX MOV BD 2B2 BKR 16B for 2-FCV-70-134-B, at compartment 16B on Reactor MOV Bd 2B2-B.

\_\_\_\_\_

1st

\_\_\_\_\_

CV

[83] **CLOSE** 2-BKR-70-134B-B, 480V RX MOV BD 2B2 BKR 16B for 2-FCV-70-134-B, at compartment 16B on Reactor MOV Bd 2B2-B.

[84] **PLACE** handswitch 2-HS-70-134A, THERMAL BAR SUP CIV-ΦB, in the OPEN position.

[85] **VERIFY** locally, 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, remains in the CLOSED position. (**Acc Crit**)

**CAUTION**

Steps 6.4[86] through 6.4[87] will operate the valve without thermal overload protection.

[86] **DEPRESS AND**

**HOLD** the armature of the K5 relay in the rear of Reactor MOV Bd 2B2-B, cubicle 6E.

[87] **PLACE** handswitch 2-HS-70-134A, THERMAL BAR SUP CIV-ΦB, in the OPEN position.

[88] **VERIFY** locally, 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY, travels to the OPEN position. (**Acc Crit**)

[89] **PLACE** handswitch 2-HS-70-134A, THERMAL BAR SUP CIV-ΦB, in the CLOSE position.

[90] **VERIFY** locally, 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY travels to the CLOSED position. (**Acc Crit**)

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**6.4 Valve 2-FCV-70-134-B RCP Thermal Barrier Containment Isolation Valve Operational Test (continued)**

- [91] **RELEASE** the armature of the K5 relay in the rear of Reactor MOV Bd 2B2-B, cubicle 6E [A4R/772]. \_\_\_\_\_
- [92] **OPEN** 2-BKR-70-134B-B, 480V RX MOV BD 2B2 BKR 16B for 2-FCV-70-134-B, at compartment 16B on Reactor MOV Bd 2B2-B. \_\_\_\_\_

**WARNING**

Arc Flash PPE per TI-300 will be required for the following step 6.4[93].

- [93] **RESET** the thermal overload for 2-BKR-70-134B-B, 480V RX MOV BD 2B2 BKR 16B for 2-FCV-70-134-B, at compartment 16B on Reactor MOV Bd 2B2-B. \_\_\_\_\_  
1st  
CV
- [94] **REMOVE** jumper with test switch labeled K618 on terminal board TB612, terminal points 11 and 12 in SSPS cabinet 2-R-51. \_\_\_\_\_  
1st  
CV
- [95] **REMOVE** jumper with test switch TS-4 in the OPEN position on terminal points 57 and 58 of terminal board TB-2 in panel 2-R-132. \_\_\_\_\_  
1st  
CV
- [96] **REMOVE** jumper on terminal points 5 and 6 on terminal board TB815 in SSPS cabinet 2-R-53. \_\_\_\_\_  
1st  
CV
- [97] **CLOSE** 2-BKR-70-134B-B, 480V RX MOV BD 2B2 BKR 16B for 2-FCV-70-134-B at compartment 16B on Reactor MOV Bd 2B2-B. \_\_\_\_\_

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**6.4 Valve 2-FCV-70-134-B RCP Thermal Barrier Containment  
Isolation Valve Operational Test (continued)**

- [98] **PLACE** handswitch 2-HS-70-134A, THERMAL BAR SUP  
CIV-ΦB, in the OPEN position. \_\_\_\_\_
- [99] **VERIFY** locally, 2-FCV-70-134, THERMAL BARRIER CCS  
SUPPLY, travels to the OPEN position. \_\_\_\_\_
- [100] **PLACE** handswitch 2-HS-70-134A, THERMAL BAR SUP  
CIV-ΦB, in the CLOSE position. \_\_\_\_\_
- [101] **VERIFY** locally, 2-FCV-70-134, THERMAL BARRIER CCS  
SUPPLY, travels to the CLOSED position. \_\_\_\_\_
- [102] **VERIFY** successful completion of Subsection 6.4 (**ACC CRIT  
5.00**) \_\_\_\_\_

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**6.5 Valves 2-FCV-70-183-A Sample Heat Exchanger Header Outlet Isolation Valve and 2-FCV-70-215-A Sample Heat Exchanger Header Inlet Isolation Valve Operational Test**

<p align="center"><b>NOTES</b></p>	
<p>1)</p>	<p>This section will test 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV, and 2-FCV-70-215, SAMPLE HTX CCS INLET ISOLATION VLV, from their control stations and verify operability of all interlocks, indicating lights, annunciators and status monitoring input relays.</p>
<p>2)</p>	<p>Reference drawing 2-45W760-70-8, valve locations A8W/713 (183A) &amp; A7W/713 (215-A).</p>

[1] **ENSURE** prerequisite actions for subsection 6.5 are completed.

[2] **ENSURE** 2-BKR-70-183-A, 480V RX MOV BD 2A2-A BKR 17A SAMPLE HX HDR OUT [A4S/774], at compartment 17A on Reactor MOV Bd 2A2-A is OPEN.

[3] **ENSURE** 2-BKR-070-0215-A, 480V RX MOV BD 2A2-A BKR 5A SAMPLE HX ISV, at compartment 5A on 480V Reactor MOV Bd 2A2A is OPEN.

[4] **LIFT** internal wire 17AX from panel 2-R-129, terminal block TB-2, terminal point 61 [AUX INSTR RM].

\_\_\_\_\_

1st

\_\_\_\_\_

CV

[5] **LIFT** internal wire 17ATD from panel 2-R-129, terminal block TB-2, terminal point 62 [AUX INSTR RM].

\_\_\_\_\_

1st

\_\_\_\_\_

CV

[6] **INSTALL** test switch in the OPEN position across internal terminal points 61 (wire 17AX) and 62 (17ATD) on terminal block TB-2 in panel 2-R-129, and label LS-63D/B [AUX INSTR RM] (simulate Low Surge Tank Level).

\_\_\_\_\_

1st

\_\_\_\_\_

CV

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**6.5 Valves 2-FCV-70-183-A Sample Heat Exchanger Header Outlet Isolation Valve and 2-FCV-70-215-A Sample Heat Exchanger Header Inlet Isolation Valve Operational Test (continued)**

[7] **LIFT** internal wire 17ATD from panel 2-R-143 [AUX INSTR RM], terminal point 76.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[8] **LIFT** internal wire 17AX from panel 2-R-143 [AUX INSTR RM], terminal point 78.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[9] **INSTALL** test switch in the OPEN position across internal terminal points 76 (wire 17ATD) and 78 (wire 17AX) in panel 2-R-143 [AUX INSTR RM], and label FDS-215 (simulate high differential flow).

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[10] **CLOSE** 2-BKR-70-183-A, 480V RX MOV BD 2A2-A BKR 17A SAMPLE HX HDR OUT, at compartment 17A on Reactor MOV Bd 2A2-A.

[11] **CLOSE** 2-BKR-70-215-A, 480V RX MOV BD 2A2-A BKR 5A SAMPLE HX ISV, at compartment 5A on Reactor MOV Bd 2A2-A.

[12] **ENSURE** transfer switch 2-XS-70-183, SAMPLE HX CCS OUTLET (2-FCV-70-183) [A4S/774], is in the NORMAL position.

[13] **ENSURE** annunciator 149C, 480 RX MOV BD 2A1-A/2A2-A on 2-XA-55-6F, is CLEAR.

[14] **ENSURE** 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV, is in the CLOSED position.

[15] **ENSURE** 2-FCV-70-215, SAMPLE HTX CCS INLET ISOLATION VLV, is in the CLOSED position.

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**6.5 Valves 2-FCV-70-183-A Sample Heat Exchanger Header Outlet Isolation Valve and 2-FCV-70-215-A Sample Heat Exchanger Header Inlet Isolation Valve Operational Test (continued)**

- [16] **PLACE** handswitch 2-HS-70-183C, 480V REAC MOV BD 2A2-A HAND SWITCH SAMPLE HEAT EXCH HDR OUTLET VALVE (2-FCV-70-183-A), to the OPEN position. \_\_\_\_\_
- [17] **VERIFY** 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV, remains in the CLOSED position. \_\_\_\_\_
- [18] **MOMENTARILY PLACE** 2-HS-70-183A, SAMPLE HXS OUTLET, to OPEN position, **THEN**  
  
**MOMENTARILY PLACE** 2-HS-70-183A, SAMPLE HXS OUTLET, to the CLOSE position. \_\_\_\_\_
- [19] **VERIFY** both the RED and GREEN lights are ON during valve travel for the following handswitches:  
  
A. 2-HS-70-183A SAMPLE HTX HDR OUTLET VLV SW. \_\_\_\_\_  
  
B. 2-HS-70-183C, 480V REAC MOV BD 2A2-A HAND SWITCH SAMPLE HEAT EXCH HDR OUTLET VALVE (2-FCV-70-183-A). \_\_\_\_\_
- [20] **VERIFY** locally, 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV, travels to the OPEN position. \_\_\_\_\_
- [21] **VERIFY** the RED is ON and the GREEN light is OFF for the following handswitches:  
  
A. 2-HS-70-183A, SAMPLE HXS OUTLET. \_\_\_\_\_  
  
B. 2-HS-70-183C, 480V REAC MOV BD 2A2-A HAND SWITCH SAMPLE HEAT EXCH HDR OUTLET VALVE (2-FCV-70-183-A). \_\_\_\_\_
- [22] **PLACE** handswitch 2-HS-70-183C, 480V REAC MOV BD 2A2-A HAND SWITCH SAMPLE HEAT EXCH HDR OUTLET VALVE (2-FCV-70-183-A), to the CLOSED position. \_\_\_\_\_
- [23] **VERIFY** locally, 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV, remains in the OPEN position. \_\_\_\_\_

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**6.5 Valves 2-FCV-70-183-A Sample Heat Exchanger Header Outlet Isolation Valve and 2-FCV-70-215-A Sample Heat Exchanger Header Inlet Isolation Valve Operational Test (continued)**

[24] **MOMENTARILY PLACE** 2-HS-70-183A, SAMPLE HXS OUTLET, to CLOSE position, **THEN**

**MOMENTARILY PLACE** 2-HS-70-183A, SAMPLE HXS OUTLET, to the OPEN position. \_\_\_\_\_

[25] **VERIFY** both the RED and GREEN lights are ON during valve travel for the following handswitches:

A. 2-HS-70-183A, SAMPLE HXS OUTLET. \_\_\_\_\_

B. 2-HS-70-183C, 480V REAC MOV BD 2A2-A HAND SWITCH SAMPLE HEAT EXCH HDR OUTLET VALVE (2-FCV-70-183-A). \_\_\_\_\_

[26] **VERIFY** locally, 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV, travels to the CLOSED position. \_\_\_\_\_

[27] **VERIFY** the GREEN is ON and the RED light is OFF for the following handswitches:

A. 2-HS-70-183A, SAMPLE HXS OUTLET. \_\_\_\_\_

B. 2-HS-70-183C, 480V REAC MOV BD 2A2-A HAND SWITCH SAMPLE HEAT EXCH HDR OUTLET VALVE (2-FCV-70-183-A). \_\_\_\_\_

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**6.5 Valves 2-FCV-70-183-A Sample Heat Exchanger Header Outlet Isolation Valve and 2-FCV-70-215-A Sample Heat Exchanger Header Inlet Isolation Valve Operational Test (continued)**

**NOTE**

Stopwatch timing of 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV, will be done at handswitch 2-HS-70-183A SAMPLE HTX HDR OUTLET VLV SW, and locally at 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV. Perform steps 6.5[28]/6.5[29] and 6.5[30]/6.5[31] sequentially to obtain stroke time data.

[28] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-183A, SAMPLE HXS OUTLET, to the OPEN position, **AND**

**START** stopwatches. \_\_\_\_\_

[29] **STOP** stopwatches when 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV, reaches the OPEN position, **AND**

**RECORD** stroke times below:

A. Remote Open Time \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 30 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Open Time \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 30 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[30] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-183A, SAMPLE HXS OUTLET, to the CLOSE position, **AND**

**START** stopwatches.

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**6.5 Valves 2-FCV-70-183-A Sample Heat Exchanger Header Outlet Isolation Valve and 2-FCV-70-215-A Sample Heat Exchanger Header Inlet Isolation Valve Operational Test (continued)**

[31] **STOP** stopwatches when 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV, reaches the CLOSE position, **AND**

**RECORD** stroke times below:

A. Remote Close Time (**Acc Crit**) \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 30 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Close Time \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 30 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[32] **PLACE** transfer switch 2-XS-70-183, SAMPLE HX CCS OUTLET (2-FCV-70-183), is in the AUXILIARY (AUX) position. \_\_\_\_\_

[33] **VERIFY** annunciator 149C, 480 RX MOV BD 2A1-A/2A2-A on 2-XA-55-6F, ALARMS. \_\_\_\_\_

[34] **VERIFY** GREEN light is OFF for handswitch 2-HS-70-183A, SAMPLE HXS OUTLET. \_\_\_\_\_

[35] **PLACE** handswitch 2-HS-70-183A, SAMPLE HXS OUTLET, to the OPEN position. \_\_\_\_\_

[36] **VERIFY** locally, 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV, remains in the CLOSED position. \_\_\_\_\_

[37] **PLACE** handswitch 2-HS-70-183C, 480V REAC MOV BD 2A2-A HAND SWITCH SAMPLE HEAT EXCH HDR OUTLET VALVE (2-FCV-70-183-A), to the OPEN position. \_\_\_\_\_

[38] **VERIFY** locally, 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV, travels to the OPEN position. \_\_\_\_\_

[39] **PLACE** handswitch 2-HS-70-183A, SAMPLE HXS OUTLET, to the CLOSED position. \_\_\_\_\_

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**6.5 Valves 2-FCV-70-183-A Sample Heat Exchanger Header Outlet Isolation Valve and 2-FCV-70-215-A Sample Heat Exchanger Header Inlet Isolation Valve Operational Test (continued)**

- [40] **VERIFY** locally, 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV, remains in the OPEN position. \_\_\_\_\_
- [41] **VERIFY** RED light is OFF for handswitch 2-HS-70-183A, SAMPLE HXS OUTLET. \_\_\_\_\_
- [42] **PLACE** handswitch 2-HS-70-183C, 480V REAC MOV BD 2A2-A HAND SWITCH SAMPLE HEAT EXCH HDR OUTLET VALVE (2-FCV-70-183-A), to the CLOSED position. \_\_\_\_\_
- [43] **VERIFY** locally, 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV, travels to the CLOSED position. \_\_\_\_\_
- [44] **PLACE** Transfer Switch 2-XS-70-183, SAMPLE HX CCS OUTLET (2-FCV-70-183), is in the NORMAL position. \_\_\_\_\_
- [45] **VERIFY** annunciator 149C, 480 RX MOV BD 2A1-A/2A2-A on 2-XA-55-6F, CLEARS. \_\_\_\_\_
- [46] **PLACE** handswitch 2-HS-70-183A, SAMPLE HXS OUTLET, to the OPEN position. \_\_\_\_\_
- [47] **VERIFY** the RED motor energized light is ON for cubicle 17A of Reactor MOV Bd 2A2-A during valve travel. \_\_\_\_\_
- [48] **DEPRESS** OPEN pushbutton on handswitch 2-HS-70-215 SAMPLE HTX HDR INLET ISOLATION VALVE SW. \_\_\_\_\_
- [49] **VERIFY** the RED motor energized light is ON for cubicle 5A of Reactor MOV Bd 2A2-A during valve travel. \_\_\_\_\_
- [50] **DEPRESS** STOP pushbutton on handswitch 2-HS-70-215, SAMPLE HEAT EXCHANGER CCS INLET VLV shortly after 2-FCV-70-215, SAMPLE HTX CCS INLET ISOLATION VLV, starts to travel. \_\_\_\_\_
- [51] **VERIFY** 2-FCV-70-215, SAMPLE HTX CCS INLET ISOLATION VLV, stops its travel. \_\_\_\_\_
- [52] **DEPRESS** OPEN pushbutton on handswitch 2-HS-70-215, SAMPLE HEAT EXCHANGER CCS INLET VLV. \_\_\_\_\_

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**6.5 Valves 2-FCV-70-183-A Sample Heat Exchanger Header Outlet Isolation Valve and 2-FCV-70-215-A Sample Heat Exchanger Header Inlet Isolation Valve Operational Test (continued)**

- [53] **VERIFY** locally, 2-FCV-70-215, SAMPLE HTX CCS INLET ISOLATION VLV, travels to the OPEN position. \_\_\_\_\_
- [54] **VERIFY** the RED light is ON and the GREEN light is OFF for handswitch 2-HS-70-215, SAMPLE HEAT EXCHANGER CCS INLET VLV. \_\_\_\_\_
- [55] **DEPRESS** CLOSE pushbutton on handswitch 2-HS-70-215, SAMPLE HEAT EXCHANGER CCS INLET VLV. \_\_\_\_\_
- [56] **DEPRESS** STOP pushbutton on handswitch 2-HS-70-215, SAMPLE HEAT EXCHANGER CCS INLET VLV, shortly after 2-FCV-70-215, SAMPLE HTX CCS INLET ISOLATION VLV, starts to travel. \_\_\_\_\_
- [57] **VERIFY** 2-FCV-70-215, SAMPLE HTX CCS INLET ISOLATION VLV, stops its travel. \_\_\_\_\_
- [58] **DEPRESS** CLOSE pushbutton on handswitch 2-HS-70-215, SAMPLE HEAT EXCHANGER CCS INLET VLV. \_\_\_\_\_
- [59] **VERIFY** locally, 2-FCV-70-215, SAMPLE HTX CCS INLET ISOLATION VLV, travels to the CLOSED position. \_\_\_\_\_
- [60] **VERIFY** the GREEN light is ON and the RED light is OFF for handswitch 2-HS-70-215, SAMPLE HEAT EXCHANGER CCS INLET VLV. \_\_\_\_\_

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**6.5 Valves 2-FCV-70-183-A Sample Heat Exchanger Header Outlet Isolation Valve and 2-FCV-70-215-A Sample Heat Exchanger Header Inlet Isolation Valve Operational Test (continued)**

**NOTE**

Stopwatch timing of 2-FCV-70-215, SAMPLE HTX CCS INLET ISOLATION VLV, will be done at handswitch 2-HS-70-215, SAMPLE HEAT EXCHANGER CCS INLET VLV, and locally at 2-FCV-70-215, SAMPLE HTX CCS INLET ISOLATION VLV. Perform steps 6.5[61]/6.5[62] and 6.5[63]/6.5[64] sequentially to obtain stroke time data.

[61] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-215, SAMPLE HEAT EXCHANGER CCS INLET VLV, to the OPEN position, **AND**

**START** stopwatches. \_\_\_\_\_

[62] **STOP** stopwatches when 2-FCV-70-215, SAMPLE HTX CCS INLET ISOLATION VLV, reaches the OPEN position, **AND**

**RECORD** stroke times below:

A. Remote Open Time \_\_\_\_\_  
 \_\_\_\_\_ seconds (≤ 30 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Open Time \_\_\_\_\_  
 \_\_\_\_\_ seconds (≤ 30 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[63] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-215, SAMPLE HEAT EXCHANGER CCS INLET VLV, to the CLOSE position, **AND**

**START** stopwatches. \_\_\_\_\_

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**6.5 Valves 2-FCV-70-183-A Sample Heat Exchanger Header Outlet Isolation Valve and 2-FCV-70-215-A Sample Heat Exchanger Header Inlet Isolation Valve Operational Test (continued)**

[64] **STOP** stopwatches when 2-FCV-70-215, SAMPLE HTX CCS INLET ISOLATION VLV, reaches the CLOSE position, **AND**

**RECORD** stroke times below:

A. Remote Close Time (**Acc Crit**) \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 30 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Close Time \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 30 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[65] **DEPRESS** OPEN pushbutton on handswitch 2-HS-70-215, SAMPLE HEAT EXCHANGER CCS INLET VLV. \_\_\_\_\_

[66] **VERIFY** locally, 2-FCV-70-215, SAMPLE HTX CCS INLET ISOLATION VLV, travels to the OPEN position. \_\_\_\_\_

[67] **CLOSE** test switch LS-63D/B to simulate a Lo-Lo level interlock. \_\_\_\_\_

[68] **VERIFY** locally, 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV, travels to the CLOSED position after an approximate 5 second time delay. (**Acc Crit**) \_\_\_\_\_

[69] **VERIFY** 2-FCV-70-215, SAMPLE HTX CCS INLET ISOLATION VLV, starts to travel to the CLOSED position when 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV, is CLOSED. \_\_\_\_\_

[70] **VERIFY** locally, 2-FCV-70-215, SAMPLE HTX CCS INLET ISOLATION VLV, travels to the CLOSED position. (**Acc Crit**) \_\_\_\_\_

[71] **OPEN** test switch LS-63D/B. \_\_\_\_\_

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**6.5 Valves 2-FCV-70-183-A Sample Heat Exchanger Header Outlet Isolation Valve and 2-FCV-70-215-A Sample Heat Exchanger Header Inlet Isolation Valve Operational Test (continued)**

- [72] **PLACE** handswitch 2-HS-70-183A, SAMPLE HXS OUTLET, to the OPEN position. \_\_\_\_\_
- [73] **VERIFY** locally, 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV, travels to the OPEN position. \_\_\_\_\_
- [74] **CLOSE** test switch FDS-215 to simulate a Hi flow differential. \_\_\_\_\_
- [75] **VERIFY** locally, 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV, travels to the CLOSED position. **(Acc Crit)** \_\_\_\_\_
- [76] **OPEN** 2-BKR-70-183-A, 480V RX MOV BD 2A2-A BKR 17A SAMPLE HX HDR OUT, at compartment 17A on Reactor MOV Bd 2A2-A. \_\_\_\_\_
- [77] **OPEN** 2-BKR-70-215-A, 480V RX MOV BD 2A2-A BKR 5A SAMPLE HX ISV, at compartment 5A on Reactor MOV Bd 2A2-A. \_\_\_\_\_
- [78] **REMOVE** test switch LS-63D/B. \_\_\_\_\_  
1st  
CV
- [79] **REMOVE** test switch FDS-215. \_\_\_\_\_  
1st  
CV
- [80] **TERMINATE** internal wire 17AX from panel 2-R-129, terminal point 61. \_\_\_\_\_  
1st  
CV
- [81] **TERMINATE** internal wire 17ATD from panel 2-R-129, terminal point 62. \_\_\_\_\_  
1st  
CV

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**6.5 Valves 2-FCV-70-183-A Sample Heat Exchanger Header Outlet Isolation Valve and 2-FCV-70-215-A Sample Heat Exchanger Header Inlet Isolation Valve Operational Test (continued)**

[82] **TERMINATE** internal wire 17ATD from panel 2-R-143, terminal point 76.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[83] **TERMINATE** internal wire 17AX from panel 2-R-143, terminal point 78.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

**WARNING**

Arc Flash PPE per TI-300 will be required for steps 6.5[84] and 6.5[85].

[84] **MANUALLY TRIP** the thermal overload for 2-BKR-70-183-A, 480V RX MOV BD 2A2-A BKR 17A SAMPLE HX HDR OUT [A4S/774], at compartment 17A on Reactor MOV Bd 2A2-A.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[85] **MANUALLY TRIP** the thermal overload for 2-BKR-70-215-A, 480V RX MOV BD 2A2-A BKR 5A SAMPLE HX ISV, at compartment 5A on Reactor MOV Bd 2A2-A.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[86] **CLOSE** 2-BKR-70-183-A, 480V RX MOV BD 2A2-A BKR 17A SAMPLE HX HDR OUT, at compartment 17A on Reactor MOV Bd 2A2-A.

[87] **CLOSE** 2-BKR-70-215-A, 480V RX MOV BD 2A2-A BKR 5A SAMPLE HX ISV, at compartment 5A on Reactor MOV Bd 2A2-A.

[88] **PLACE** handswitch 2-HS-70-183A, SAMPLE HXS OUTLET, to the OPEN position.

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**6.5 Valves 2-FCV-70-183-A Sample Heat Exchanger Header Outlet Isolation Valve and 2-FCV-70-215-A Sample Heat Exchanger Header Inlet Isolation Valve Operational Test (continued)**

- [89] **VERIFY** locally, 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV, remains in the CLOSED position. (**Acc Crit**) \_\_\_\_\_
- [90] **DEPRESS AND**  
  
**HOLD** the armature of the K8 relay in the rear of Reactor MOV Bd 2A2-A, cubicle 6D [A4S/774]. \_\_\_\_\_
- [91] **PLACE** handswitch 2-HS-70-183A, SAMPLE HXS OUTLET, to the OPEN position. \_\_\_\_\_
- [92] **VERIFY** locally, 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV, travels to the OPEN position. (**Acc Crit**) \_\_\_\_\_
- [93] **PUSH** handswitch 2-HS-70-215, SAMPLE HEAT EXCHANGER CCS INLET VLV, to the OPEN position. \_\_\_\_\_
- [94] **VERIFY** locally, 2-FCV-70-215, SAMPLE HTX CCS INLET ISOLATION VLV, remains in the CLOSED position. (**Acc Crit**) \_\_\_\_\_

**CAUTION**

Steps 6.5[95] through 6.5[96] will operate the valve without thermal overload protection.

- [95] **DEPRESS AND**  
  
**HOLD** the armature of the K8 relay in the rear of Reactor MOV Bd 2A2-A, cubicle 6D. \_\_\_\_\_
- [96] **PUSH** handswitch 2-HS-70-215, SAMPLE HEAT EXCHANGER CCS INLET VLV, to the OPEN position. \_\_\_\_\_
- [97] **VERIFY** locally, 2-FCV-70-215, SAMPLE HTX CCS INLET ISOLATION VLV, travels to the OPEN position. (**Acc Crit**) \_\_\_\_\_
- [98] **PUSH** handswitch 2-HS-70-215, SAMPLE HEAT EXCHANGER CCS INLET VLV, to the CLOSE position. \_\_\_\_\_
- [99] **VERIFY** locally, 2-FCV-70-215, SAMPLE HTX CCS INLET ISOLATION VLV, travels to the CLOSED position. (**Acc Crit**) \_\_\_\_\_
- [100] **PLACE** handswitch 2-HS-70-183A, SAMPLE HXS OUTLET, to the CLOSE position. \_\_\_\_\_

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**6.5 Valves 2-FCV-70-183-A Sample Heat Exchanger Header Outlet Isolation Valve and 2-FCV-70-215-A Sample Heat Exchanger Header Inlet Isolation Valve Operational Test (continued)**

[101] **VERIFY** locally, 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV, travels to the CLOSED position. (**Acc Crit**) \_\_\_\_\_

[102] **RELEASE** the armature of the K8 relay in the rear of Reactor MOV Bd 2A2-A, cubicle 6D. \_\_\_\_\_

[103] **OPEN** 2-BKR-70-183-A, 480V RX MOV BD 2A2-A BKR 17A SAMPLE HX HDR OUT, at compartment 17A on Reactor MOV Bd 2A2-A, \_\_\_\_\_

[104] **OPEN** 2-BKR-70-215-A, 480V RX MOV BD 2A2-A BKR 5A SAMPLE HX ISV, at compartment 5A on Reactor MOV Bd 2A2-A. \_\_\_\_\_

**WARNING**

Arc Flash PPE per TI-300 will be required for steps 6.5[105] and 6.5[106].

[105] **RESET** the thermal overload for 2-BKR-70-183-A, 480V RX MOV BD 2A2-A BKR 17A SAMPLE HX HDR OUT, compartment 17A on Reactor MOV Bd 2A2-A. \_\_\_\_\_

1st

CV

[106] **RESET** the thermal overload for 2-BKR-70-215-A, 480V RX MOV BD 2A2-A BKR 5A SAMPLE HX ISV, compartment 5A on Reactor MOV Bd 2A2-A. \_\_\_\_\_

1st

CV

[107] **CLOSE** 2-BKR-70-183-A, 480V RX MOV BD 2A2-A BKR 17A SAMPLE HX HDR OUT, at compartment 17A on Reactor MOV Bd 2A2-A, \_\_\_\_\_

[108] **CLOSE** 2-BKR-70-215-A, 480V RX MOV BD 2A2-A BKR 5A SAMPLE HX ISV, at compartment 5A on Reactor MOV Bd 2A2-A. \_\_\_\_\_

[109] **PLACE** handswitch 2-HS-70-183A, SAMPLE HXS OUTLET, to the OPEN position. \_\_\_\_\_

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**6.5 Valves 2-FCV-70-183-A Sample Heat Exchanger Header Outlet Isolation Valve and 2-FCV-70-215-A Sample Heat Exchanger Header Inlet Isolation Valve Operational Test (continued)**

- [110] **VERIFY** locally, 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV, travels to the OPEN position. \_\_\_\_\_
- [111] **PUSH** handswitch 2-HS-70-215, SAMPLE HTX HDR INLET ISOLATION VLV, to the OPEN position. \_\_\_\_\_
- [112] **VERIFY** locally, 2-FCV-70-215, SAMPLE HTX CCS INLET ISOLATION VLV, travels to the OPEN position. \_\_\_\_\_
- [113] **PUSH** handswitch 2-HS-70-215, SAMPLE HTX HDR INLET ISOLATION VLV, to the CLOSE position. \_\_\_\_\_
- [114] **VERIFY** locally, 2-FCV-70-215, SAMPLE HTX CCS INLET ISOLATION VLV, travels to the CLOSED position. \_\_\_\_\_
- [115] **PLACE** handswitch 2-HS-70-183A, SAMPLE HXS OUTLET, to the CLOSE position. \_\_\_\_\_
- [116] **VERIFY** locally, 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV, travels to the CLOSED position. \_\_\_\_\_
- [117] **VERIFY** successful completion of Subsection 6.5 (**ACC CRIT 5.00**) \_\_\_\_\_

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**6.6 Valve 2-FCV-70-89-B RCP Oil Cooler Return Containment  
Isolation Valve Operational Test**

<b>NOTES</b>	
1)	This section will test 2-FCV-70-89, RC PMP OIL CLR RET CONTMNT ISOL VLV, from its control stations and verify operability of all interlocks, indicating lights, annunciators and status monitoring input relays.
2)	Reference drawing 2-45W760-70-3, valve location AZ289/716.

- [1] **ENSURE** prerequisite actions for subsection 6.6 are completed. \_\_\_\_\_
- [2] **ESTABLISH** communications between MCR Panel 0-M-27B, 480V REACTOR MOV Bd 2B2-B, and at valve 2-FCV-70-89, RC PMP OIL CLR RET CONTMNT ISOL VLV AZ289/716. \_\_\_\_\_
- [3] **PLACE** 2-HS-70-89A, RCP OIL CLRS RET CIV-ΦB to CLOSED. \_\_\_\_\_
- [4] **ENSURE** that 2-FCV-70-89, RC PMP OIL CLR RET CONTMNT ISOL VLV is CLOSED. \_\_\_\_\_
- [5] **ENSURE** the following Integrated Computer System (ICS) points are in scan:
  - A. FD2329 \_\_\_\_\_
  - B. FD2330 \_\_\_\_\_
- [6] **ENSURE** 2-BKR-070-0089-B, RCP OIL COOLER CCS RETURN (2-FCV-70-89) [A4R//772], at compartment 13D on Reactor MOV Bd 2B2-B is OPEN. \_\_\_\_\_
- [7] **VERIFY** ICS point FD2329 displays PWR OFF. \_\_\_\_\_
- [8] **INSTALL** jumper with test switch labeled K618 in the OPEN position on terminal board TB613, terminal points 11 (wire 13DC3) and 12 (wire 13DC2) in SSPS cabinet 2-R-51 [AUX INSTR RM] (simulate CI phase B). \_\_\_\_\_

1st

CV

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**6.6 Valve 2-FCV-70-89-B RCP Oil Cooler Return Containment Isolation Valve Operational Test (continued)**

[9] **INSTALL** jumper on terminal points 5 (wire 13DC4) and 6 (wire 13DC3) on terminal board TB818 in SSPS cabinet 2-R-53 (jumpers contact from SSPS test switch) [AUX INSTR RM].

\_\_\_\_\_ 1st

\_\_\_\_\_ CV

[10] **CLOSE** 2-BKR-070-0089-B, RCP OIL COOLER CCS RETURN (2-FCV-70-89), at compartment 13D on Reactor MOV Bd 2B2-B.

[11] **VERIFY** ICS point FD2329 displays PWR ON.

[12] **ENSURE** 2-FCV-70-89, RC PMP OIL CLR RET CONTMNT ISOL VLV, is in the CLOSED position.

[13] **VERIFY** ICS point FD2330 displays NOT OPE.

**NOTE**

Steps 6.6[14] through 6.6[16] verify the opening seal-in and interlock features of the valve circuitry.

[14] **PLACE** 2-HS-70-89A RC PMP OIL CLR RET CONTMNT ISOL VLV SW, to OPEN, **THEN**

**CLOSE** and **RELEASE** to A AUTO.

[15] **VERIFY** RED motor energized light is ON for cubicle 13D of Reactor MOV Bd 2B2-B during valve travel.

[16] **VERIFY** locally, 2-FCV-70-89, RC PMP OIL CLR RET CONTMNT ISOL VLV, travels to the OPEN position.

[17] **VERIFY** ICS point FD2330 displays FULL OP.

[18] **VERIFY** the RED light is ON and the GREEN light is OFF for 2-HS-70-89A, RCP OIL CLRS RET CIV-ΦB.

[19] **VERIFY** the RED light is ON and the GREEN light is OFF for the CNTMT ISOL STATUS PNL (XX-55-6F) Window 73.

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**6.6 Valve 2-FCV-70-89-B RCP Oil Cooler Return Containment  
Isolation Valve Operational Test (continued)**

**NOTE**

Steps 6.6[20] through 6.6[22] verify the closing seal-in and interlock features of the valve circuitry.

[20] **PLACE** 2-HS-70-89A, RCP OIL CLRS RET CIV-ΦB, to  
CLOSE, **THEN**

**OPEN** and **RELEASE** to A AUTO. \_\_\_\_\_

[21] **VERIFY** RED motor energized light is ON for cubicle 13D of  
Reactor MOV Bd 2B2-B during valve travel. \_\_\_\_\_

[22] **VERIFY** locally, 2-FCV-70-89, RC PMP OIL CLR RET  
CONTMNT ISOL VLV, travels to the CLOSED position. \_\_\_\_\_

[23] **VERIFY** the GREEN light is ON and the RED light is OFF for  
2-HS-70-89A, RCP OIL CLRS RET CIV-ΦB. \_\_\_\_\_

[24] **VERIFY** the GREEN light is ON and the RED light is OFF on  
CNTMT ISOL STATUS PNL (XX-55-6F) Window 73. \_\_\_\_\_

**NOTE**

Stopwatch timing of 2-FCV-70-89, RC PMP OIL CLR RET CONTMNT ISOL VLV, will be done at handswitch 2-HS-70-89A, RCP OIL CLRS RET CIV-ΦB, and locally at 2-FCV-70-89, RC PMP OIL CLR RET CONTMNT ISOL VLV. Perform steps 6.6[25]/6.6[26] and 6.6[27]/6.6[28] sequentially to obtain stroke time data.

[25] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-89A, RCP  
OIL CLRS RET CIV-ΦB, to the OPEN position, **AND**

**START** stopwatches. \_\_\_\_\_

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**6.6 Valve 2-FCV-70-89-B RCP Oil Cooler Return Containment Isolation Valve Operational Test (continued)**

[26] **STOP** stopwatches when 2-FCV-70-89, RC PMP OIL CLR RET CONTMNT ISOL VLV, reaches the OPEN position, **AND**

**RECORD** stroke times below:

A. Remote Open Time \_\_\_\_\_  
\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Open Time \_\_\_\_\_  
\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[27] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-89A, RCP OIL CLRS RET CIV-ΦB, to the CLOSE position, **AND**

**START** stopwatches. \_\_\_\_\_

[28] **STOP** stopwatches when 2-FCV-70-89, RC PMP OIL CLR RET CONTMNT ISOL VLV, reaches the CLOSE position, **AND**

**RECORD** stroke times below:

A. Remote Close Time (**Acc Crit**) \_\_\_\_\_  
\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Close Time \_\_\_\_\_  
\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[29] **PLACE** handswitch 2-HS-70-89A, RCP OIL CLRS RET CIV-ΦB, to the OPEN position. \_\_\_\_\_

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**6.6 Valve 2-FCV-70-89-B RCP Oil Cooler Return Containment Isolation Valve Operational Test (continued)**

- [30] **VERIFY** locally, 2-FCV-70-89, RC PMP OIL CLR RET CONTMNT ISOL VLV, travels to the OPEN position. \_\_\_\_\_
- [31] **ENSURE** handswitch 2-HS-70-89A, RCP OIL CLRS RET CIV-ΦB, is in the A AUTO position. \_\_\_\_\_
- [32] **VERIFY** the RED light is ON and the GREEN light is OFF on CNTMT ISOL STATUS PNL (XX-55-6F) Window 73. \_\_\_\_\_
- [33] **CLOSE** test switch labeled K618 on terminal board TB613 in SSPS cabinet 2-R-51 to simulate a Containment Isolation Signal. \_\_\_\_\_
- [34] **VERIFY** locally, 2-FCV-70-89, RC PMP OIL CLR RET CONTMNT ISOL VLV, travels to the CLOSED position. **(Acc Crit)** \_\_\_\_\_
- [35] **VERIFY** the GREEN light is ON and the RED light is OFF for the CNTMT ISOL STATUS PNL (XX-55-6F) Window 73. \_\_\_\_\_
- [36] **VERIFY** the GREEN light is ON and the RED light is OFF at handswitch 2-HS-70-89A, RCP OIL CLRS RET CIV-ΦB. \_\_\_\_\_
- [37] **OPEN** test switch labeled K618 on terminal board TB613 in SSPS cabinet 2-R-51. \_\_\_\_\_
- [38] **VERIFY** locally, 2-FCV-70-89, RC PMP OIL CLR RET CONTMNT ISOL VLV, remains in the CLOSED position. **(Acc Crit)** \_\_\_\_\_

**WARNING**  
Arc Flash PPE per TI-300 will be required for step 6.6[39].

- [39] **MANUALLY TRIP** the thermal overload for 2-BKR-070-0089-B, RCP OIL COOLER CCS RETURN (2-FCV-70-89) [A4R/772], compartment 13D on Reactor MOV Bd 2B2-B.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

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**6.6 Valve 2-FCV-70-89-B RCP Oil Cooler Return Containment Isolation Valve Operational Test (continued)**

[40] **CLOSE** 2-BKR-70-89-B, RCP OIL COOLER CCS RETURN (2-FCV-70-89), at compartment 13D on Reactor MOV Bd 2B2-B. \_\_\_\_\_

[41] **PLACE** handswitch 2-HS-70-89A, RCP OIL CLRS RET CIV-ΦB, to the OPEN position. \_\_\_\_\_

[42] **VERIFY** locally, 2-FCV-70-89, RC PMP OIL CLR RET CONTMNT ISOL VLV, remains in the CLOSED position. **(Acc Crit)** \_\_\_\_\_

**CAUTION**

Steps 6.6[43] through 6.6[44] will operate the valve without thermal overload protection.

[43] **DEPRESS AND**

**HOLD** the armature of the K5 relay in the rear of Reactor MOV Bd 2B2-B [A4R/772], cubicle 6F. \_\_\_\_\_

[44] **PLACE** handswitch 2-HS-70-89A, RCP OIL CLRS RET CIV-ΦB, to the OPEN position. \_\_\_\_\_

[45] **VERIFY** locally, 2-FCV-70-89, RC PMP OIL CLR RET CONTMNT ISOL VLV, travels to the OPEN position. **(Acc Crit)** \_\_\_\_\_

[46] **PLACE** handswitch 2-HS-70-89A, RCP OIL CLRS RET CIV-ΦB, to the CLOSE position. \_\_\_\_\_

[47] **VERIFY** locally, 2-FCV-70-89, RC PMP OIL CLR RET CONTMNT ISOL VLV, travels to the CLOSED position. **(Acc Crit)** \_\_\_\_\_

[48] **RELEASE** the armature of the K5 relay in the rear of Reactor MOV Bd 2B2-B, cubicle 6F. \_\_\_\_\_

[49] **OPEN** 2-BKR-70-89-B, RCP OIL COOLER CCS RETURN (2-FCV-70-89), at compartment 13D on Reactor MOV Bd 2B2-B. \_\_\_\_\_

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**6.6 Valve 2-FCV-70-89-B RCP Oil Cooler Return Containment  
Isolation Valve Operational Test (continued)**

**WARNING**  
Arc Flash PPE per TI-300 will be required for step 6.6[50].

[50] **RESET** the thermal overload for 2-BKR-70-89-B, RCP OIL COOLER CCS RETURN (2-FCV-70-89), compartment 13D on Reactor MOV Bd 2B2-B.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[51] **REMOVE** jumper with test switch labeled K618 in the OPEN position on terminal board TB613, terminal points 11 and 12 in SSPS cabinet 2-R-51.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[52] **REMOVE** jumper on terminal points 5 and 6 on terminal board TB818 in SSPS cabinet 2-R-53.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[53] **CLOSE** 2-BKR-70-89-B, RCP OIL COOLER CCS RETURN (2-FCV-70-89), at compartment 13D on Reactor MOV Bd 2B2-B.

[54] **PLACE** handswitch 2-HS-70-89A, RCP OIL CLRS RET CIV-ΦB, to the OPEN position.

[55] **VERIFY** locally, 2-FCV-70-89, RC PMP OIL CLR RET CONTMNT ISOL VLV, travels to the OPEN position.

[56] **PLACE** handswitch 2-HS-70-89A, RCP OIL CLRS RET CIV-ΦB, to the CLOSE position.

[57] **VERIFY** locally, 2-FCV-70-89, RC PMP OIL CLR RET CONTMNT ISOL VLV, travels to the CLOSED position.

<b>WBN Unit 2</b>	<b>Component Cooling Water Pump/Valve Logic Test</b>	<b>2-PTI-070-01 Rev. 0000 Page 103 of 236</b>
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**6.6 Valve 2-FCV-70-89-B RCP Oil Cooler Return Containment  
Isolation Valve Operational Test (continued)**

[58] **VERIFY** successful completion of Subsection 6.6 (**ACC CRIT  
5.00**) \_\_\_\_\_

<b>WBN Unit 2</b>	<b>Component Cooling Water Pump/Valve Logic Test</b>	<b>2-PTI-070-01 Rev. 0000 Page 104 of 236</b>
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**6.7 Valve 2-FCV-70-92-A RCP Oil Cooler Return Containment  
Isolation Valve Operational Test**

**NOTES**

- 1) This section will test 2-FCV-70-92, RCP OIL COOLER CCS RETURN is in the CLOSED, from its control stations and verify operability of all interlocks, indicating lights, annunciators and status monitoring input relays.
- 2) Reference drawing 2-45W760-70-3, valve location A12W/713.

[1] **ENSURE** prerequisite actions for subsection 6.7 are completed. \_\_\_\_\_

[2] **ENSURE** the following Integrated Computer System (ICS) points are in scan: \_\_\_\_\_

A. FD2175 \_\_\_\_\_

B. FD2176 \_\_\_\_\_

[3] **ENSURE** 2-BKR-70-92-A, RCP OIL COOLER CCS RETURN (2-FCV-70-92) [A12S/772] , on Reactor MOV Bd 2A2-A, compartment 12D is OPEN. \_\_\_\_\_

[4] **VERIFY** ICS point FD2175 displays PWR OFF. \_\_\_\_\_

[5] **INSTALL** jumper with test switch labeled K618 in the OPEN position on terminal board TB613, terminal points 11 (wire 12DTC) and 12 (wire 12DC2) in SSPS cabinet 2-R-48 [AUX INSTR RM] (simulate CI phase B). \_\_\_\_\_

1st

CV

[6] **INSTALL** jumper on terminal points 5 (wire 12DC3) and 6 (12DTC) on terminal board TB818 in SSPS cabinet 2-R-52 (jumpers contact from SSPS test switch) [AUX INSTR RM]. \_\_\_\_\_

1st

CV

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**6.7 Valve 2-FCV-70-92-A RCP Oil Cooler Return Containment Isolation Valve Operational Test (continued)**

[7] **CLOSE** 2-BKR-70-92-A, RCP OIL COOLER CCS RETURN (2-FCV-70-92), at compartment 12D on Reactor MOV Bd 2A2-A. \_\_\_\_\_

[8] **VERIFY** ICS point FD2175 displays PWR ON. \_\_\_\_\_

[9] **ENSURE** 2-FCV-70-92, RCP OIL COOLER CCS RETURN, is in the CLOSED position. \_\_\_\_\_

[10] **VERIFY** ICS point FD2176 displays NOT OPE \_\_\_\_\_

**NOTE**

Steps 6.7[11] through 6.7[15] verify the opening seal-in and interlock features of the valve circuitry.

[11] **PLACE** 2-HS-70-92A, RCP OIL CLRS RET CIV-ΦB, to OPEN, **THEN**

**CLOSE** and **RELEASE** to A AUTO. \_\_\_\_\_

[12] **VERIFY** RED motor energized light is ON for cubicle 12D of Reactor MOV Bd 2A2-A during valve travel. \_\_\_\_\_

[13] **VERIFY** locally, 2-FCV-70-92, RCP OIL COOLER CCS RETURN, travels to the OPEN position. \_\_\_\_\_

[14] **VERIFY** ICS point FD2176 displays FULL OP. \_\_\_\_\_

[15] **VERIFY** the RED light is ON and the GREEN light is OFF for 2-HS-70-92A, RCP OIL CLRS RET CIV-ΦB. \_\_\_\_\_

[16] **VERIFY** the RED light is ON and the GREEN light is OFF for the CNTMT ISOL STATUS PNL (XX-55-6E) Window 73. \_\_\_\_\_

<b>WBN Unit 2</b>	<b>Component Cooling Water Pump/Valve Logic Test</b>	<b>2-PTI-070-01 Rev. 0000 Page 106 of 236</b>
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**6.7 Valve 2-FCV-70-92-A RCP Oil Cooler Return Containment  
Isolation Valve Operational Test (continued)**

**NOTE**

Steps 6.7[17] through 6.7[19] verify the closing seal-in and interlock features of the valve circuitry.

[17] **PLACE** 2-HS-70-92A, RCP OIL CLRS RET CIV-ΦB, to  
CLOSE, **THEN**

**OPEN** and **RELEASE** to A AUTO. \_\_\_\_\_

[18] **VERIFY** RED motor energized light is ON for cubicle 12D of  
Reactor MOV Bd 2A2-A during valve travel. \_\_\_\_\_

[19] **VERIFY** locally, 2-FCV-70-92, RCP OIL COOLER CCS  
RETURN, travels to the CLOSED position. \_\_\_\_\_

[20] **VERIFY** the GREEN light is ON and the RED light is OFF for  
2-HS-70-92A, RCP OIL CLRS RET CIV-ΦB. \_\_\_\_\_

[21] **VERIFY** the GREEN light is ON and the RED light is OFF on  
CNTMT ISOL STATUS PNL (XX-55-6E) Window 73. \_\_\_\_\_

**NOTE**

Stopwatch timing of 2-FCV-70-92, RCP OIL COOLER CCS RETURN, will be done at  
handswitch 2-HS-70-92A, RCP OIL CLRS RET CIV-ΦB, and locally at 2-FCV-70-92, RCP  
OIL COOLER CCS RETURN. Perform steps 6.7[22]/6.7[23] and 6.7[24]/6.7[25]  
sequentially to obtain stroke time data.

[22] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-92A, RCP  
OIL CLRS RET CIV-ΦB, to the OPEN position, **AND**

**START** stopwatches. \_\_\_\_\_

<b>WBN Unit 2</b>	<b>Component Cooling Water Pump/Valve Logic Test</b>	<b>2-PTI-070-01 Rev. 0000 Page 107 of 236</b>
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**6.7 Valve 2-FCV-70-92-A RCP Oil Cooler Return Containment Isolation Valve Operational Test (continued)**

[23] **STOP** stopwatches when 2-FCV-70-92, RCP OIL COOLER CCS RETURN, reaches the OPEN position, **AND**

**RECORD** stroke times below:

A. Remote Open Time \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Open Time \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[24] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-92A, RCP OIL CLRS RET CIV-φB, to the CLOSE position, **AND**

**START** stopwatches. \_\_\_\_\_

[25] **STOP** stopwatches when 2-FCV-70-92, RCP OIL COOLER CCS RETURN, reaches the CLOSE position, **AND**

**RECORD** stroke times below:

A. Remote Close Time (**Acc Crit**) \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Close Time \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[26] **PLACE** handswitch 2-HS-70-92A, RCP OIL CLRS RET CIV-φB, to the OPEN position. \_\_\_\_\_

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**6.7 Valve 2-FCV-70-92-A RCP Oil Cooler Return Containment Isolation Valve Operational Test (continued)**

- [27] **VERIFY** locally, 2-FCV-70-92, RCP OIL COOLER CCS RETURN, travels to the OPEN position. \_\_\_\_\_
- [28] **ENSURE** handswitch 2-HS-70-92A, RCP OIL CLRS RET CIV-ΦB, is in the A AUTO position. \_\_\_\_\_
- [29] **VERIFY** the RED light is ON and the GREEN light is OFF on CNTMT ISOL STATUS PNL (XX-55-6E) Window 73. \_\_\_\_\_
- [30] **CLOSE** test switch labeled K618 on terminal board TB613 in SSPS cabinet 2-R-48 to simulate a Containment Isolation Signal. \_\_\_\_\_
- [31] **VERIFY** locally, 2-FCV-70-92, RCP OIL COOLER CCS RETURN, travels to the CLOSED position. (**Acc Crit**) \_\_\_\_\_
- [32] **VERIFY** the GREEN light is ON and the RED light is OFF for the CNTMT ISOL STATUS PNL (XX-55-6E) Window 73. \_\_\_\_\_
- [33] **VERIFY** the GREEN light is ON and the RED light is OFF at handswitch 2-HS-70-92A, RCP OIL CLRS RET CIV-ΦB. \_\_\_\_\_
- [34] **OPEN** test switch labeled K618 on terminal board TB613 in SSPS cabinet 2-R-48. \_\_\_\_\_
- [35] **VERIFY** locally, 2-FCV-70-92, RCP OIL COOLER CCS RETURN, remains in the CLOSED position. (**Acc Crit**) \_\_\_\_\_
- [36] **OPEN** 2-BKR-70-92-A, RCP OIL COOLER CCS RETURN (2-FCV-70-92), at compartment 12D on Reactor MOV Bd 2A2-A. \_\_\_\_\_

**WARNING**

Arc Flash PPE per TI-300 will be required for steps 6.7[37].

- [37] **MANUALLY TRIP** the thermal overload for 2-BKR-70-92-A, RCP OIL COOLER CCS RETURN (2-FCV-70-92), compartment 12D on Reactor MOV Bd 2A2-A. \_\_\_\_\_

1st

CV

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**6.7 Valve 2-FCV-70-92-A RCP Oil Cooler Return Containment Isolation Valve Operational Test (continued)**

[38] **CLOSE** 2-BKR-70-92-A, RCP OIL COOLER CCS RETURN (2-FCV-70-92), at compartment 12D on Reactor MOV Bd 2A2-A. \_\_\_\_\_

[39] **PLACE** handswitch 2-HS-70-92A, RCP OIL CLRS RET CIV-ΦB, to the OPEN position. \_\_\_\_\_

[40] **VERIFY** locally, 2-FCV-70-92, RCP OIL COOLER CCS RETURN, remains in the CLOSED position. (**Acc Crit**) \_\_\_\_\_

**CAUTION**

Steps 6.7[41] through 6.7[42] will operate the valve without thermal overload protection.

[41] **DEPRESS AND**

**HOLD** the armature of the K6 relay in the rear of Reactor MOV Bd 2A2-A, cubicle 6D [A12S/772]. \_\_\_\_\_

[42] **PLACE** handswitch 2-HS-70-92A, RCP OIL CLRS RET CIV-ΦB, to the OPEN position. \_\_\_\_\_

[43] **VERIFY** locally, 2-FCV-70-92, RCP OIL COOLER CCS RETURN, travels to the OPEN position. (**Acc Crit**) \_\_\_\_\_

[44] **PLACE** handswitch 2-HS-70-92A, RCP OIL CLRS RET CIV-ΦB, to the CLOSE position. \_\_\_\_\_

[45] **VERIFY** locally, 2-FCV-70-92, RCP OIL COOLER CCS RETURN, travels to the CLOSED position. (**Acc Crit**) \_\_\_\_\_

[46] **RELEASE** the armature of the K6 relay in the rear of Reactor MOV Bd 2A2-A, cubicle 6D. \_\_\_\_\_

[47] **OPEN** 2-BKR-70-92-A, RCP OIL COOLER CCS RETURN (2-FCV-70-92), at compartment 12D on Reactor MOV Bd 2A2-A. \_\_\_\_\_

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**6.7 Valve 2-FCV-70-92-A RCP Oil Cooler Return Containment  
Isolation Valve Operational Test (continued)**

**WARNING**  
Arc Flash PPE per TI-300 will be required for steps 6.7[48].

[48] **RESET** the thermal overload for 2-BKR-70-92-A, RCP OIL COOLER CCS RETURN (2-FCV-70-92), compartment 12D on Reactor MOV Bd 2A2-A.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[49] **REMOVE** jumper with test switch labeled K618 in the OPEN position on terminal board TB613, terminal points 11 and 12 in SSPS cabinet 2-R-48.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[50] **REMOVE** jumper on terminal points 5 and 6 on terminal board TB818 in SSPS cabinet 2-R-52.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[51] **CLOSE** 2-BKR-70-92-A, RCP OIL COOLER CCS RETURN (2-FCV-70-92), at compartment 12D on Reactor MOV Bd 2A2-A.

[52] **PLACE** handswitch 2-HS-70-92A, RCP OIL CLRS RET CIV-ΦB, to the OPEN position.

[53] **VERIFY** locally, 2-FCV-70-92, RCP OIL COOLER CCS RETURN, travels to the OPEN position.

[54] **PLACE** handswitch 2-HS-70-92A, RCP OIL CLRS RET CIV-ΦB, to the CLOSE position.

[55] **VERIFY** locally, 2-FCV-70-92, RCP OIL COOLER CCS RETURN, travels to the CLOSED position.

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**6.7 Valve 2-FCV-70-92-A RCP Oil Cooler Return Containment  
Isolation Valve Operational Test (continued)**

[56] **VERIFY** successful completion of Subsection 6.7 (**ACC CRIT  
5.00**) \_\_\_\_\_

<b>WBN Unit 2</b>	<b>Component Cooling Water Pump/Valve Logic Test</b>	<b>2-PTI-070-01 Rev. 0000 Page 112 of 236</b>
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**6.8 Valve 2-FCV-70-140-B RCP Oil Cooler Header Containment Isolation Valve Operational Test**

<b>NOTES</b>	
1)	This section will test 2-FCV-70-140, RC PMP OIL CLR HDR CONT ISOL VLV, from its control stations and verify operability of all interlocks, indicating lights, annunciators and status monitoring input relays.
2)	Reference drawing 2-45W760-70-3, valve location A12W/722.

[1] **ENSURE** prerequisite actions for subsection 6.8 are completed. \_\_\_\_\_

[2] **ENSURE** the following Integrated Computer System (ICS) points are in scan: \_\_\_\_\_

A. FD2323 \_\_\_\_\_

B. FD2324 \_\_\_\_\_

[3] **ENSURE** 2-BKR-70-140-B, RCP OIL COOLER HDR CCS SUPPLY (2-FCV-70-140) [A4R/772], at compartment 13F on Reactor MOV Bd 2B2-B is OPEN. \_\_\_\_\_

[4] **VERIFY** ICS point FD2323 displays PWR OFF. \_\_\_\_\_

[5] **INSTALL** jumper with test switch labeled K618 in the OPEN position on terminal board TB613, terminal points 9 (wire 13FC3) and 10 (wire 13FC2) in SSPS cabinet 2-R-51 [AUX INSTR RM] (simulate a CI phase B). \_\_\_\_\_

1st

CV

[6] **INSTALL** jumper on terminal points 5 (wire 13FC4) and 6 (wire 13FC3) on terminal board TB817 in SSPS cabinet 2-R-53 [AUX INSTR RM] (jumpers contact from SSPS test switch). \_\_\_\_\_

1st

CV

<b>WBN Unit 2</b>	<b>Component Cooling Water Pump/Valve Logic Test</b>	<b>2-PTI-070-01 Rev. 0000 Page 113 of 236</b>
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**6.8 Valve 2-FCV-70-140-B RCP Oil Cooler Header Containment Isolation Valve Operational Test (continued)**

[7] **CLOSE** 2-BKR-70-140-B, RCP OIL COOLER HDR CCS SUPPLY (2-FCV-70-140), at compartment 13F on Reactor MOV Bd 2B2-B. \_\_\_\_\_

[8] **VERIFY** ICS point FD2323 displays PWR ON. \_\_\_\_\_

[9] **ENSURE** 2-FCV-70-140, RC PMP OIL CLR HDR CONT ISOL VLV, is in the CLOSED position. \_\_\_\_\_

[10] **VERIFY** ICS point FD2324 displays NOT OPE. \_\_\_\_\_

**NOTE**

Steps 6.8[11] through 6.8[15] verify the opening seal-in and interlock features of the valve circuitry.

[11] **PLACE** 2-HS-70-140A, RCP OIL CLRS SUP CIV-ΦB, to OPEN, **THEN** \_\_\_\_\_

**CLOSE** and **RELEASE** to A AUTO. \_\_\_\_\_

[12] **VERIFY** RED motor energized light is ON for cubicle 13F of Reactor MOV Bd 2B2-B during valve travel. \_\_\_\_\_

[13] **VERIFY** locally, 2-FCV-70-140, RC PMP OIL CLR HDR CONT ISOL VLV, travels to the OPEN position. \_\_\_\_\_

[14] **VERIFY** ICS point FD2324 displays FULL OP. \_\_\_\_\_

[15] **VERIFY** the RED light is ON and the GREEN light is OFF for 2-HS-70-140A, RCP OIL CLRS SUP CIV-ΦB. \_\_\_\_\_

[16] **VERIFY** the RED light is ON and the GREEN light is OFF for the CNTMT ISOL STATUS PNL (XX-55-6F) Window 74. \_\_\_\_\_

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**6.8 Valve 2-FCV-70-140-B RCP Oil Cooler Header Containment  
Isolation Valve Operational Test (continued)**

**NOTE**

Steps 6.8[17] through 6.8[19] verify the closing seal-in and interlock features of the valve circuitry.

[17] **PLACE** 2-HS-70-140A, RCP OIL CLRS SUP CIV-ΦB, to  
CLOSE, **THEN**

**OPEN** and **RELEASE** to A AUTO. \_\_\_\_\_

[18] **VERIFY** locally, 2-FCV-70-140, RC PMP OIL CLR HDR CONT  
ISOL VLV, travels to the CLOSED position. \_\_\_\_\_

[19] **VERIFY** the GREEN light is ON and the RED light is OFF for  
2-HS-70-140A, RCP OIL CLRS SUP CIV-ΦB. \_\_\_\_\_

[20] **VERIFY** the GREEN light is ON and the RED light is OFF on  
CNTMT ISOL STATUS PNL (XX-55-6F) Window 74. \_\_\_\_\_

**NOTE**

Stopwatch timing of 2-FCV-70-140, RC PMP OIL CLR HDR CONT ISOL VLV, will be done at handswitch 2-HS-70-140A, RCP OIL CLRS SUP CIV-ΦB, and locally at 2-FCV-70-140, RC PMP OIL CLR HDR CONT ISOL VLV. Perform steps 6.8[21]/6.8[22] and 6.8[23]/6.8[24] sequentially to obtain stroke time data.

[21] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-140A, RCP  
OIL CLRS SUP CIV-ΦB, to the OPEN position, **AND**

**START** stopwatches. \_\_\_\_\_

[22] **STOP** stopwatches when 2-FCV-70-140, RC PMP OIL CLR  
HDR CONT ISOL VLV, reaches the OPEN position, **AND**

**RECORD** stroke times below:

A. Remote Open Time \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

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**6.8 Valve 2-FCV-70-140-B RCP Oil Cooler Header Containment Isolation Valve Operational Test (continued)**

B. Local Open Time \_\_\_\_\_  
\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[23] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-140A, RCP OIL CLRS SUP CIV-ΦB, to the CLOSE position **AND**

**START** stopwatches. \_\_\_\_\_

[24] **STOP** stopwatches when 2-FCV-70-140, RC PMP OIL CLR HDR CONT ISOL VLV, reaches the CLOSE position **AND**

**RECORD** stroke times below:

A. Remote Close Time (**Acc Crit**) \_\_\_\_\_  
\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Close Time \_\_\_\_\_  
\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[25] **PLACE** handswitch 2-HS-70-140A, RCP OIL CLRS SUP CIV-ΦB, to the OPEN position. \_\_\_\_\_

[26] **VERIFY** locally, 2-FCV-70-140, RC PMP OIL CLR HDR CONT ISOL VLV, travels to the OPEN position. \_\_\_\_\_

[27] **ENSURE** handswitch 2-HS-70-140A, RCP OIL CLRS SUP CIV-ΦB, is in the A AUTO position. \_\_\_\_\_

[28] **VERIFY** the RED light is ON and the GREEN light is OFF on CNTMT ISOL STATUS PNL (XX-55-6F) Window 74. \_\_\_\_\_

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**6.8 Valve 2-FCV-70-140-B RCP Oil Cooler Header Containment Isolation Valve Operational Test (continued)**

[29] **CLOSE** test switch labeled K618 on terminal board TB613 in SSPS cabinet 2-R-51 to simulate a Containment Isolation Signal. \_\_\_\_\_

[30] **VERIFY** locally, 2-FCV-70-140, RC PMP OIL CLR HDR CONT ISOL VLV, travels to the CLOSED position. (**Acc Crit**) \_\_\_\_\_

[31] **VERIFY** the GREEN light is ON and the RED light is OFF for the CNTMT ISOL STATUS PNL (XX-55-6F) Window 74. \_\_\_\_\_

[32] **VERIFY** the GREEN light is ON and the RED light is OFF at handswitch 2-HS-70-140A, RCP OIL CLRS SUP CIV-ΦB. \_\_\_\_\_

[33] **OPEN** test switch labeled K618 on terminal board TB613 in SSPS cabinet 2-R-51. \_\_\_\_\_

[34] **VERIFY** locally, 2-FCV-70-140, RC PMP OIL CLR HDR CONT ISOL VLV, remains in the CLOSED position. (**Acc Crit**) \_\_\_\_\_

[35] **OPEN** 2-BKR-70-140-B, RCP OIL COOLER HDR CCS SUPPLY (2-FCV-70-140), at compartment 13F on Reactor MOV Bd 2B2-B. \_\_\_\_\_

**WARNING**

Arc Flash PPE per TI-300 will be required for step 6.8[36].

[36] **MANUALLY TRIP** the thermal overload for 2-BKR-70-140-B, RCP OIL COOLER HDR CCS SUPPLY (2-FCV-70-140), compartment 13F on Reactor MOV Bd 2B2-B. \_\_\_\_\_

1st

CV

[37] **CLOSE** 2-BKR-70-140-B, RCP OIL COOLER HDR CCS SUPPLY (2-FCV-70-140), at compartment 13F on Reactor MOV Bd 2B2-B. \_\_\_\_\_

[38] **PLACE** handswitch 2-HS-70-140A, RCP OIL CLRS SUP CIV-ΦB, to the OPEN position. \_\_\_\_\_

[39] **VERIFY** locally, 2-FCV-70-140, RC PMP OIL CLR HDR CONT ISOL VLV, remains in the CLOSED position. (**Acc Crit**) \_\_\_\_\_

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**6.8 Valve 2-FCV-70-140-B RCP Oil Cooler Header Containment  
Isolation Valve Operational Test (continued)**

**CAUTION**

Steps 6.8[40]through 6.8[41] will operate the valve without thermal overload protection.

**[40] DEPRESS AND**

**HOLD** the armature of the K5 relay in the rear of Reactor MOV Bd 2B2-B, cubicle 6F [A4R/772]. \_\_\_\_\_

**[41] PLACE** handswitch 2-HS-70-140A, RCP OIL CLRS SUP CIV-ΦB, to the OPEN position. \_\_\_\_\_

**[42] VERIFY** locally, 2-FCV-70-140, RC PMP OIL CLR HDR CONT ISOL VLV, travels to the OPEN position. (**Acc Crit**) \_\_\_\_\_

**[43] PLACE** handswitch 2-HS-70-140A, RCP OIL CLRS SUP CIV-ΦB, to the CLOSE position. \_\_\_\_\_

**[44] VERIFY** locally, 2-FCV-70-140, RC PMP OIL CLR HDR CONT ISOL VLV, travels to the CLOSED position. (**Acc Crit**) \_\_\_\_\_

**[45] RELEASE** the armature of the K5 relay in the rear of Reactor MOV Bd 2B2-B, cubicle 6F. \_\_\_\_\_

**[46] OPEN** 2-BKR-70-140-B, RCP OIL COOLER HDR CCS SUPPLY (2-FCV-70-140), at compartment 13F on Reactor MOV Bd 2B2-B. \_\_\_\_\_

**WARNING**

Arc Flash PPE per TI-300 will be required for steps 6.8[47].

**[47] RESET** the thermal overload for 2-BKR-70-140-B, RCP OIL COOLER HDR CCS SUPPLY (2-FCV-70-140), compartment 13F on Reactor MOV Bd 2B2-B. \_\_\_\_\_

\_\_\_\_\_ 1st

\_\_\_\_\_ CV

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**6.8 Valve 2-FCV-70-140-B RCP Oil Cooler Header Containment Isolation Valve Operational Test (continued)**

[48] **REMOVE** jumper with test switch labeled K618 in the OPEN position on terminal board TB613, terminal points 9 and 10 in SSPS cabinet 2-R-51.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[49] **REMOVE** jumper on terminal points 5 and 6 on terminal board TB817 in SSPS cabinet 2-R-53.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[50] **CLOSE** 2-BKR-70-140-B, RCP OIL COOLER HDR CCS SUPPLY (2-FCV-70-140), at compartment 13F on Reactor MOV Bd 2B2-B.

[51] **PLACE** handswitch 2-HS-70-140A, RCP OIL CLRS SUP CIV-ΦB, to the OPEN position.

[52] **VERIFY** locally, 2-FCV-70-140, RC PMP OIL CLR HDR CONT ISOL VLV, travels to the OPEN position.

[53] **PLACE** handswitch 2-HS-70-140A, RCP OIL CLRS SUP CIV-ΦB, to the CLOSE position.

[54] **VERIFY** locally, 2-FCV-70-140, RC PMP OIL CLR HDR CONT ISOL VLV, travels to the CLOSED position.

[55] **VERIFY** successful completion of Subsection 6.8 (**ACC CRIT 5.00**)

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**6.9 Valve 2-FCV-70-143-A Excess Letdown Heat Exchanger Inlet Isolation Valve Operational Test**

<b>NOTES</b>	
1)	This section will test 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV, from its control stations and verify operability of all interlocks, indicating lights, annunciators and status monitoring input relays.
2)	Reference drawing 2-45W760-70-8, valve location A12W/722.

- [1] **ENSURE** prerequisite actions for subsection 6.9 are completed. \_\_\_\_\_
- [2] **ENSURE** the following Integrated Computer System (ICS) points are in scan:
  - A. FD2173 \_\_\_\_\_
  - B. FD2174 \_\_\_\_\_
- [3] **ENSURE** 2-BKR-70-143-A, EXCESS LETDOWN HX CCS SUPPLY (2-FCV-70-143) [A12/772], at compartment 16D on Reactor MOV Bd 2A2-A is OPEN. \_\_\_\_\_
- [4] **VERIFY** ICS point FD2173 displays PWR OFF. \_\_\_\_\_
- [5] **CLOSE** 2-BKR-70-143-A, EXCESS LETDOWN HX CCS SUPPLY (2-FCV-70-143), at compartment 16D on Reactor MOV Bd 2A2-A. \_\_\_\_\_
- [6] **VERIFY** ICS point FD2173 displays PWR ON. \_\_\_\_\_
- [7] **ENSURE** transfer switch 2-XS-70-143, EXCESS LETDOWN HX CCS SUPPLY (2-FCV-70-143) [A12/772], is in the NORMAL position. \_\_\_\_\_
- [8] **ENSURE** annunciator 149C, 480 RX MOV BD 2A1-A/2A2-A on 2-XA-55-6F, is CLEAR. \_\_\_\_\_
- [9] **ENSURE** 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV, is in the CLOSED position. \_\_\_\_\_
- [10] **VERIFY** ICS point FD2174 displays NOT OPE. \_\_\_\_\_

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**6.9 Valve 2-FCV-70-143-A Excess Letdown Heat Exchanger Inlet Isolation Valve Operational Test (continued)**

[11] **PLACE** handswitch 2-HS-70-143C, 480V REAC MOV BD 2A2-A HAND SWITCH EXCESS LETDOWN HEAT EXCH CONTROL INLET ISLN VALVE (2-FCV-70-143-A), to the OPEN position. \_\_\_\_\_

[12] **VERIFY** locally, 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV, remains in the CLOSED position. \_\_\_\_\_

[13] **MOMENTARILY PLACE** 2-HS-70-143A, EXC LTDN HX SUP CIV-ΦA, to OPEN position, **THEN**  
**MOMENTARILY PLACE** 2-HS-70-143A, EXC LTDN HX SUP CIV-ΦA, to the CLOSE position. \_\_\_\_\_

[14] **VERIFY** both the RED and GREEN lights are ON during valve travel for the following handswitches:  
A. 2-HS-70-143A, EXC LTDN HX SUP CIV-ΦA. \_\_\_\_\_  
B. 2-HS-70-143C, 480V REAC MOV BD 2A2-A HAND SWITCH EXCESS LETDOWN HEAT EXCH CONTROL INLET ISLN VALVE (2-FCV-70-143-A). \_\_\_\_\_

[15] **VERIFY** the RED motor energized light is ON at cubicle 16D of reactor MOV Bd 2A2-A during valve travel. \_\_\_\_\_

[16] **VERIFY** locally, 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV, travels to the OPEN position. \_\_\_\_\_

[17] **VERIFY** the RED light is ON and the GREEN light is OFF for the following handswitches:  
A. 2-HS-70-143A, EXC LTDN HX SUP CIV-ΦA. \_\_\_\_\_  
B. 2-HS-70-143C, 480V REAC MOV BD 2A2-A HAND SWITCH EXCESS LETDOWN HEAT EXCH CONTROL INLET ISLN VALVE (2-FCV-70-143-A). \_\_\_\_\_

[18] **VERIFY** the RED light is ON and the GREEN light is OFF on CNTMT ISOL STATUS PNL (XX-55-6E) Window 92. \_\_\_\_\_

[19] **VERIFY** ICS point FD2174 displays FULL OP. \_\_\_\_\_

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**6.9 Valve 2-FCV-70-143-A Excess Letdown Heat Exchanger Inlet Isolation Valve Operational Test (continued)**

[20] **PLACE** handswitch 2-HS-70-143C, 480V REAC MOV BD 2A2-A HAND SWITCH EXCESS LETDOWN HEAT EXCH CONTROL INLET ISLN VALVE (2-FCV-70-143-A), to the CLOSE position. \_\_\_\_\_

[21] **VERIFY** locally, 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV, remains in the OPEN position. \_\_\_\_\_

[22] **MOMENTARILY PLACE** 2-HS-70-143A, EXC LTDN HX SUP CIV-ΦA, to CLOSE position, **THEN**

**MOMENTARILY PLACE** 2-HS-70-143A, EXC LTDN HX SUP CIV-ΦA, to the OPEN position. \_\_\_\_\_

[23] **VERIFY** both the RED and GREEN lights are ON during valve travel for the following handswitches:

A. 2-HS-70-143A, EXC LTDN HX SUP CIV-ΦA. \_\_\_\_\_

B. 2-HS-70-143C, 480V REAC MOV BD 2A2-A HAND SWITCH EXCESS LETDOWN HEAT EXCH CONTROL INLET ISLN VALVE (2-FCV-70-143-A). \_\_\_\_\_

[24] **VERIFY** the RED motor energized light is ON at cubicle 16D of reactor MOV Bd 2A2-A during valve travel. \_\_\_\_\_

[25] **VERIFY** locally, 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV, travels to the CLOSED position. \_\_\_\_\_

[26] **VERIFY** the GREEN is ON and the RED light is OFF for the following handswitches:

A. 2-HS-70-143A, EXC LTDN HX SUP CIV-ΦA. \_\_\_\_\_

B. 2-HS-70-143C, 480V REAC MOV BD 2A2-A HAND SWITCH EXCESS LETDOWN HEAT EXCH CONTROL INLET ISLN VALVE (2-FCV-70-143-A). \_\_\_\_\_

[27] **VERIFY** the GREEN light is ON and the RED light is OFF on CNTMT ISOL STATUS PNL (XX-55-6E) Window 92. \_\_\_\_\_

[28] **PLACE** transfer switch 2-XS-70-143, EXCESS LETDOWN HX CCS SUPPLY (2-FCV-70-143), is in the AUXILIARY (AUX) position. \_\_\_\_\_

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**6.9 Valve 2-FCV-70-143-A Excess Letdown Heat Exchanger Inlet Isolation Valve Operational Test (continued)**

- [29] **VERIFY** annunciator 149C, 480 RX MOV BD 2A1-A/2A2-A on 2-XA-55-6F, ALARMS. \_\_\_\_\_
- [30] **VERIFY** the RED and GREEN lights are OFF on CNTMT ISOL STATUS PNL (XX-55-6E) Window 92. \_\_\_\_\_
- [31] **PLACE** handswitch 2-HS-70-143A, EXC LTDN HX SUP CIV-ΦA, to the OPEN position. \_\_\_\_\_
- [32] **VERIFY** locally, 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV, remains in the CLOSED position. \_\_\_\_\_
- [33] **PLACE** handswitch 2-HS-70-143C, 480V REAC MOV BD 2A2-A HAND SWITCH EXCESS LETDOWN HEAT EXCH CONTROL INLET ISLN VALVE (2-FCV-70-143-A), to the OPEN position. \_\_\_\_\_
- [34] **VERIFY** locally, 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV, travels to the OPEN position. \_\_\_\_\_
- [35] **PLACE** handswitch 2-HS-70-143A, EXC LTDN HX SUP CIV-ΦA, to the CLOSE position. \_\_\_\_\_
- [36] **VERIFY** locally, 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV, remains in the OPEN position. \_\_\_\_\_
- [37] **VERIFY** the RED and GREEN lights are OFF on CNTMT ISOL STATUS PNL (XX-55-6E) Window 92. \_\_\_\_\_
- [38] **PLACE** handswitch 2-HS-70-143C, 480V REAC MOV BD 2A2-A HAND SWITCH EXCESS LETDOWN HEAT EXCH CONTROL INLET ISLN VALVE (2-FCV-70-143-A), to the CLOSE position. \_\_\_\_\_
- [39] **VERIFY** locally, 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV, travels to the CLOSE position. \_\_\_\_\_
- [40] **PLACE** transfer switch 2-XS-70-143, EXCESS LETDOWN HX CCS SUPPLY (2-FCV-70-143), in the NORMAL position. \_\_\_\_\_
- [41] **VERIFY** annunciator 149C, 480 RX MOV BD 2A1-A/2A2-A on 2-XA-55-6F, CLEARS. \_\_\_\_\_

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**6.9 Valve 2-FCV-70-143-A Excess Letdown Heat Exchanger Inlet Isolation Valve Operational Test (continued)**

**NOTE**

Stopwatch timing of 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV, will be done at handswitch 2-HS-70-143A, EXCESS LTDN HTX CONT INLET ISOL VLV, and locally at 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV. Perform steps 6.9[42]/6.9[43] and 6.9[44]/6.9[45] sequentially to obtain stroke time data

[42] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-143A, EXC LTDN HX SUP CIV-ΦA, to the OPEN position **AND**

**START** stopwatches. \_\_\_\_\_

[43] **STOP** stopwatches when 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV, reaches the OPEN position, **AND**

**RECORD** stroke times below:

A. Remote Open Time \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Open Time \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[44] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-143A, EXC LTDN HX SUP CIV-ΦA, to the CLOSE position **AND**

**START** stopwatches. \_\_\_\_\_

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**6.9 Valve 2-FCV-70-143-A Excess Letdown Heat Exchanger Inlet Isolation Valve Operational Test (continued)**

[45] **STOP** stopwatches when 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV, reaches the CLOSE position, **AND**

**RECORD** stroke times below:

A. Remote Close Time (**Acc Crit**) \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Close Time \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[46] **PLACE** handswitch 2-HS-70-143A, EXC LTDN HX SUP CIV-ΦA, to the OPEN position. \_\_\_\_\_

[47] **VERIFY** locally, 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV, travels to the OPEN position. \_\_\_\_\_

[48] **PLACE** a jumper across terminal points 5(wire 16DC4) and 6 (16DC3) of terminal board TB646 in SSPS cabinet 2-R-48 [AUX INSTR RM] (simulate a phase A containment isolation). \_\_\_\_\_

1st

CV

[49] **VERIFY** locally, 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV, travels to the CLOSED position. (**Acc Crit**) \_\_\_\_\_

[50] **REMOVE** jumper across terminal points 5 and 6 of terminal board TB646 in SSPS cabinet 2-R-48. \_\_\_\_\_

1st

CV

[51] **VERIFY** locally, 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV, remains in the CLOSED position. (**Acc Crit**) \_\_\_\_\_

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**6.9 Valve 2-FCV-70-143-A Excess Letdown Heat Exchanger Inlet Isolation Valve Operational Test (continued)**

[52] **OPEN** 2-BKR-70-143-A, EXCESS LETDOWN HX CCS SUPPLY (2-FCV-70-143), at compartment 16D on Reactor MOV Bd 2A2-A. \_\_\_\_\_

**WARNING**

Arc Flash PPE per TI-300 will be required for step 6.9[53].

[53] **MANUALLY TRIP** the thermal overload for 2-BKR-70-143-A, EXCESS LETDOWN HX CCS SUPPLY (2-FCV-70-143), compartment 16D on Reactor MOV Bd 2A2-A. \_\_\_\_\_

1st

CV

[54] **CLOSE** 2-BKR-70-143-A, EXCESS LETDOWN HX CCS SUPPLY (2-FCV-70-143), at compartment 16D on Reactor MOV Bd 2A2-A. \_\_\_\_\_

[55] **PLACE** handswitch 2-HS-70-143A, EXC LTDN HX SUP CIV-ΦA, to the OPEN position. \_\_\_\_\_

[56] **VERIFY** locally, 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV, remains in the CLOSED position. (**Acc Crit**) \_\_\_\_\_

**CAUTION**

Steps 6.9[57] through 6.9[58] will operate the valve without thermal overload protection.

[57] **DEPRESS AND**

**HOLD** the armature of the K6 relay in the rear of Reactor MOV Bd 2A2-A, cubicle 6D [A12/772]. \_\_\_\_\_

[58] **PLACE** handswitch 2-HS-70-143A, EXC LTDN HX SUP CIV-ΦA, to the OPEN position. \_\_\_\_\_

[59] **VERIFY** locally, 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV, travels to the OPEN position. (**Acc Crit**) \_\_\_\_\_

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**6.9 Valve 2-FCV-70-143-A Excess Letdown Heat Exchanger Inlet Isolation Valve Operational Test (continued)**

- [60] **PLACE** handswitch 2-HS-70-143A, EXC LTDN HX SUP CIV-ΦA, to the CLOSE position. \_\_\_\_\_
- [61] **VERIFY** locally, 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV, travels to the CLOSED position. (**Acc Crit**) \_\_\_\_\_
- [62] **RELEASE** the armature of the K6 relay in the rear of Reactor MOV Bd 2A2-A, cubicle 6D. \_\_\_\_\_
- [63] **OPEN** 2-BKR-70-143-A, EXCESS LETDOWN HX CCS SUPPLY (2-FCV-70-143), at compartment 16D on Reactor MOV Bd 2A2-A. \_\_\_\_\_

<p><b>WARNING</b></p> <p>Arc Flash PPE per TI-300 will be required for step 6.9[64].</p>
--

- [64] **RESET** the thermal overload for 2-BKR-70-143-A, EXCESS LETDOWN HX CCS SUPPLY (2-FCV-70-143), compartment 16D on Reactor MOV Bd 2A2-A. \_\_\_\_\_  
1st  
CV
- [65] **CLOSE** 2-BKR-70-143-A, EXCESS LETDOWN HX CCS SUPPLY (2-FCV-70-143), at compartment 16D on Reactor MOV Bd 2A2-A. \_\_\_\_\_
- [66] **PLACE** handswitch 2-HS-70-143A, EXC LTDN HX SUP CIV-ΦA, to the OPEN position. \_\_\_\_\_
- [67] **VERIFY** locally, 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV, travels to the OPEN position. \_\_\_\_\_
- [68] **PLACE** handswitch 2-HS-70-143A, EXCESS LTDN HTX CONT INLET ISOL VLV, to the CLOSE position. \_\_\_\_\_
- [69] **VERIFY** locally, 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV, travels to the CLOSED position. \_\_\_\_\_
- [70] **VERIFY** successful completion of Subsection 6.9 (**ACC CRIT 5.00**) \_\_\_\_\_

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**6.10 Valve 2-FCV-70-100-A RCP OIL COOLERS CCS SUPPLY  
Operational Test**

<b>NOTES</b>
1) This section will test 2-FCV-70-100, RCP OIL COOLER CCS SUPPLY, from its control stations and verify operability of all interlocks, indicating lights, annunciators and status monitoring input relays.
2) Reference drawing 2-45W760-70-10, valve location A12W/722.

- [1] **ENSURE** prerequisite actions for subsection 6.10 are completed. \_\_\_\_\_
- [2] **ESTABLISH** communications between MCR Panel 0-M-27B, 480V REAC MOV BD 2A1-A, and at valve 2-FCV-70-100, RCP OIL COOLER CCS SUPPLY [A12W/722]. \_\_\_\_\_
- [3] **ENSURE** that 2-FCV-70-100, RCP OIL COOLER CCS SUPPLY is CLOSED. \_\_\_\_\_
- [4] **ENSURE** 2-BKR-70-100-A, 480V REAC MOV BD 2A1-A BKR 9D RCP OIL COOLER SUPPLY CNTMT ISLN VALVE (2-FCV-70-100-A), at compartment 9D on Reactor MOV Bd 2A1-A is OPEN. \_\_\_\_\_
- [5] **INSTALL** jumper with test switch labeled K618 in the OPEN position on terminal board TB613, terminal points 9 (wire 9DC3) and 10 (wire 9DC2) in SSPS cabinet 2-R-48 [AUX INSTR RM]. \_\_\_\_\_
- [6] **INSTALL** jumper on terminal points 5 (wire 9DC4) and 6 (9DC3) on terminal board TB817 in SSPS cabinet 2-R-52 [AUX INSTR RM] (jumpers contact from SSPS test switch). \_\_\_\_\_
- [7] **CLOSE** 2-BKR-70-100-A, 480V REAC MOV BD 2A1-A BKR 9D RCP OIL COOLER SUPPLY CNTMT ISLN VALVE (2-FCV-70-100-A), at compartment 9D on Reactor MOV Bd 2A1-A. \_\_\_\_\_
- [8] **ENSURE** 2-FCV-70-100, RCP OIL COOLER CCS SUPPLY, RCP OIL COOLER CCS SUPPLY, is in the CLOSED position. \_\_\_\_\_

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**6.10 Valve 2-FCV-70-100-A RCP OIL COOLERS CCS SUPPLY  
Operational Test (continued)**

**NOTE**

Steps 6.10[9] through 6.10[12] verify the opening seal-in and interlock features of the valve circuitry.

[9] **PLACE** 2-HS-70-100A, RCP OIL CLRS SUP CIV-ΦB, to  
OPEN, **THEN**

**CLOSE** and **RELEASE** to A AUTO. \_\_\_\_\_

[10] **VERIFY** RED motor energized light is ON for cubicle 9D of  
Reactor MOV Bd 2A1-A during valve travel. \_\_\_\_\_

[11] **VERIFY** locally, 2-FCV-70-100, RCP OIL COOLER CCS  
SUPPLY, travels to the OPEN position. \_\_\_\_\_

[12] **VERIFY** the RED light is ON and the GREEN light is OFF for  
2-HS-70-100A, RCP OIL CLRS SUP CIV-ΦB. \_\_\_\_\_

[13] **VERIFY** the RED light is ON and the GREEN light is OFF for  
the CNTMT ISOL STATUS PNL (XX-55-6E) Window 74. \_\_\_\_\_

**NOTE**

Steps 6.10[14] through 6.10[16] verify the closing seal-in and interlock features of the valve circuitry.

[14] **PLACE** 2-HS-70-100A, RCP OIL CLRS SUP CIV-ΦB, to  
CLOSE, **THEN**

**OPEN** and **RELEASE** to A AUTO. \_\_\_\_\_

[15] **VERIFY** RED motor energized light is ON for cubicle 9D of  
Reactor MOV Bd 2A1-A during valve travel. \_\_\_\_\_

[16] **VERIFY** locally, 2-FCV-70-100, RCP OIL COOLER CCS  
SUPPLY, travels to the CLOSED position. \_\_\_\_\_

[17] **VERIFY** the GREEN light is ON and the RED light is OFF for  
2-HS-70-100A, RCP OIL CLRS SUP CIV-ΦB. \_\_\_\_\_

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**6.10 Valve 2-FCV-70-100-A RCP OIL COOLERS CCS SUPPLY  
Operational Test (continued)**

- [18] **VERIFY** the GREEN light is ON and the RED light is OFF on CNTMT ISOL STATUS PNL (XX-55-6E) Window 74. \_\_\_\_\_

**NOTE**

Stopwatch timing of 2-FCV-70-100, RCP OIL COOLER CCS SUPPLY, will be done at handswitch 2-HS-70-100A, RCP OIL CLRS SUP CIV-ΦB, and locally at 2-FCV-70-100, RCP OIL COOLER CCS SUPPLY. Perform steps 6.10[19]/6.10[20] and 6.10[21]/6.10[22] sequentially to obtain stroke time data.

- [19] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-100A, RCP OIL CLRS SUP CIV-ΦB, to the OPEN position, **AND**

**START** stopwatches. \_\_\_\_\_

- [20] **STOP** stopwatches when 2-FCV-70-100, RCP OIL COOLER CCS SUPPLY, reaches the OPEN position, **AND**

**RECORD** stroke times below:

A. Remote Open Time \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Open Time \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

- [21] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-100A, RCP OIL CLRS SUP CIV-ΦB, to the CLOSE position, **AND**

**START** stopwatches. \_\_\_\_\_

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**6.10 Valve 2-FCV-70-100-A RCP OIL COOLERS CCS SUPPLY  
Operational Test (continued)**

[22] **STOP** stopwatches when 2-FCV-70-100, RCP OIL COOLER CCS SUPPLY, reaches the CLOSE position **AND**

**RECORD** stroke times below:

A. Remote Close Time (**Acc Crit**) \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Close Time \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 66 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[23] **PLACE** handswitch 2-HS-70-100A, RCP OIL CLRS SUP CIV-ΦB, to the OPEN position. \_\_\_\_\_

[24] **VERIFY** locally, 2-FCV-70-100, RCP OIL COOLER CCS SUPPLY, travels to the OPEN position. \_\_\_\_\_

[25] **ENSURE** handswitch 2-HS-70-100A, RCP OIL CLRS SUP CIV-ΦB, is in the A AUTO position. \_\_\_\_\_

[26] **VERIFY** the RED light is ON and the GREEN light is OFF on CNTMT ISOL STATUS PNL (XX-55-6E) Window 74. \_\_\_\_\_

[27] **CLOSE** test switch labeled K618 on terminal board TB613 in SSPS cabinet 2-R-48 to simulate a Containment Isolation Signal. \_\_\_\_\_

[28] **VERIFY** locally, 2-FCV-70-100, RCP OIL COOLER CCS SUPPLY, travels to the CLOSED position. (**Acc Crit**) \_\_\_\_\_

[29] **VERIFY** the GREEN light is ON and the RED light is OFF for the CNTMT ISOL STATUS PNL (XX-55-6E) Window 74. \_\_\_\_\_

[30] **VERIFY** the GREEN light is ON and the RED light is OFF at handswitch 2-HS-70-100A, RCP OIL CLRS SUP CIV-ΦB. \_\_\_\_\_

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**6.10 Valve 2-FCV-70-100-A RCP OIL COOLERS CCS SUPPLY  
Operational Test (continued)**

[31] **OPEN** test switch labeled K618 on terminal board TB613 in  
SSPS cabinet 2-R-48. \_\_\_\_\_

[32] **VERIFY** locally, 2-FCV-70-100, RCP OIL COOLER CCS  
SUPPLY, remains in the CLOSED position. (**Acc Crit**) \_\_\_\_\_

**WARNING**

Arc Flash PPE per TI-300 will be required for steps 6.10[33].

[33] **MANUALLY TRIP** the thermal overload for 2-BKR-70-100-A,  
480V REAC MOV BD 2A1-A BKR 9D RCP OIL COOLER  
SUPPLY CNTMT ISLN VALVE (2-FCV-70-100-A), at  
compartment 9D on Reactor MOV Bd 2A1-A (thermal overload  
bypass). \_\_\_\_\_

1st

CV

[34] **CLOSE** 2-BKR-70-100-A, 480V REAC MOV BD 2A1-A BKR  
9D RCP OIL COOLER SUPPLY CNTMT ISLN VALVE  
(2-FCV-70-100-A), at compartment 9D on Reactor MOV Bd  
2A1-A. \_\_\_\_\_

[35] **PLACE** handswitch 2-HS-70-100A, RCP OIL CLRS SUP  
CIV-ΦB, to the OPEN position. \_\_\_\_\_

[36] **VERIFY** locally, 2-FCV-70-100, RCP OIL COOLER CCS  
SUPPLY, remains in the CLOSED position. (**Acc Crit**) \_\_\_\_\_

**CAUTION**

Steps 6.10[37] through 6.10[38] will operate the valve without thermal overload protection.

[37] **DEPRESS AND**

**HOLD** the armature of the K9 relay in the rear of Reactor MOV  
Bd 2A1-A, cubicle 4F. \_\_\_\_\_

[38] **PLACE** handswitch 2-HS-70-100A, RCP OIL CLRS SUP  
CIV-ΦB, to the OPEN position. \_\_\_\_\_

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**6.10 Valve 2-FCV-70-100-A RCP OIL COOLERS CCS SUPPLY  
Operational Test (continued)**

- [39] **VERIFY** locally, 2-FCV-70-100, RCP OIL COOLER CCS SUPPLY, travels to the OPEN position. (**Acc Crit**) \_\_\_\_\_
- [40] **PLACE** handswitch 2-HS-70-100A, RCP OIL CLRS SUP CIV-ΦB, to the CLOSE position. \_\_\_\_\_
- [41] **VERIFY** locally, 2-FCV-70-100, RCP OIL COOLER CCS SUPPLY, travels to the CLOSED position. (**Acc Crit**) \_\_\_\_\_
- [42] **RELEASE** the armature of the K9 relay in the rear of Reactor MOV Bd 2A1-A, cubicle 4F. \_\_\_\_\_
- [43] **OPEN** 2-BKR-70-100-A, 480V REAC MOV BD 2A1-A BKR 9D RCP OIL COOLER SUPPLY CNTMT ISLN VALVE (2-FCV-70-100-A), at compartment 9D on Reactor MOV Bd 2A1-A. \_\_\_\_\_

**WARNING**  
Arc Flash PPE per TI-300 will be required for steps 6.10[44].

- [44] **RESET** the thermal overload for 2-BKR-70-100-A, 480V REAC MOV BD 2A1-A BKR 9D RCP OIL COOLER SUPPLY CNTMT ISLN VALVE (2-FCV-70-100-A), at compartment 9D on Reactor MOV Bd 2A1-A. \_\_\_\_\_  
1st  
CV
- [45] **REMOVE** jumper with test switch labeled K618 in the OPEN position on terminal board TB613, terminal points 9 and 10 in SSPS cabinet 2-R-48. \_\_\_\_\_  
1st  
CV
- [46] **REMOVE** jumper on terminal points 5 and 6 on terminal board TB817 in SSPS cabinet 2-R-52. \_\_\_\_\_  
1st  
CV

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**6.10 Valve 2-FCV-70-100-A RCP OIL COOLERS CCS SUPPLY  
Operational Test (continued)**

[47] **CLOSE** 2-BKR-70-100-A, 480V REAC MOV BD 2A1-A BKR  
9D RCP OIL COOLER SUPPLY CNTMT ISLN VALVE  
(2-FCV-70-100-A), at compartment 9D on Reactor MOV Bd  
2A1-A. \_\_\_\_\_

[48] **PLACE** handswitch 2-HS-70-100A, RCP OIL CLRS SUP  
CIV-ΦB, to the OPEN position. \_\_\_\_\_

[49] **VERIFY** locally, 2-FCV-70-100, RCP OIL COOLER CCS  
SUPPLY, travels to the OPEN position. \_\_\_\_\_

[50] **PLACE** handswitch 2-HS-70-100A, RCP OIL CLRS SUP  
CIV-ΦB, to the CLOSE position. \_\_\_\_\_

[51] **VERIFY** locally, 2-FCV-70-100, RCP OIL COOLER CCS  
SUPPLY, travels to the CLOSED position. \_\_\_\_\_

[52] **VERIFY** successful completion of Subsection 6.10 (**ACC CRIT  
5.00**) \_\_\_\_\_

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**6.11 Valve 2-FCV-70-85-B Excess Letdown Hx Outlet Valve  
Operational Test**

**NOTES**

- 1) This section will test air operated valve 2-FCV-70-85, EXCESS LETDN CCS HTX OUTLET VLV, from its control stations and verify operability of all interlocks, indicating lights and annunciators.
- 2) Reference drawing 2-45W600-70, valve location A12W/729.

- [1] **ENSURE** prerequisite actions for subsection 6.11 are completed. \_\_\_\_\_
- [2] **ENSURE** the following Integrated Computer System (ICS) point is in scan: \_\_\_\_\_
  - A. FD4001 \_\_\_\_\_
- [3] **INSTALL** a jumper across field wire CCA2 of terminal 3 and field wire CCA5 of terminal 4 of TB647, in SSPS panel 2-R-51 [AUX INSTR RM]. \_\_\_\_\_
- [4] **ENSURE** transfer Switch 2-XS-70-85, EXCESS LTDN HX CCS OUTLET [A10/757], is in the NORMAL position. \_\_\_\_\_
- [5] **ENSURE** annunciator 148C, ACR PNL 2-L-11B on panel 2-XA-55-6F, is CLEAR. \_\_\_\_\_
- [6] **ENSURE** locally, 2-FCV-70-85, EXCESS LETDN CCS HTX OUTLET VLV, is in the OPEN position. \_\_\_\_\_
- [7] **VERIFY** the RED light is ON and the GREEN light is OFF for handswitch 2-HS-70-85A, EXC LTDN HX OUT CIV-ΦA. \_\_\_\_\_
- [8] **VERIFY** the RED light is ON and the GREEN light is OFF at CNTMT ISOL STATUS PNL (XX-55-6F) Window 92. \_\_\_\_\_
- [9] **VERIFY** ICS point FD4001 displays PWR ON. \_\_\_\_\_
- [10] **VERIFY** the RED light is OFF at handswitch 2-HS-70-85C, EXCESS LETDN HTX OUTLET VLV SW. \_\_\_\_\_
- [11] **PLACE** handswitch 2-HS-70-85C, EXCESS LETDN HTX OUTLET VLV SW, in the CLOSE position. \_\_\_\_\_

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**6.11 Valve 2-FCV-70-85-B Excess Letdown Hx Outlet Valve  
Operational Test (continued)**

- [12] **VERIFY** locally, 2-FCV-70-85, EXCESS LETDN CCS HTX OUTLET VLV, remains in the OPEN position. \_\_\_\_\_
- [13] **PLACE** handswitch 2-HS-70-85A, EXC LTDN HX OUT CIV-ΦA, in the CLOSE position. \_\_\_\_\_
- [14] **VERIFY** locally, 2-FCV-70-85, EXCESS LETDN CCS HTX OUTLET VLV, travels to the CLOSED position. \_\_\_\_\_
- [15] **VERIFY** the GREEN light is ON and the RED light is OFF for handswitch 2-HS-70-85A, EXC LTDN HX OUT CIV-ΦA. \_\_\_\_\_
- [16] **VERIFY** the GREEN light is ON and the RED light is OFF at CNTMT ISOL STATUS PNL (XX-55-6F) Window 92. \_\_\_\_\_
- [17] **VERIFY** the GREEN light is OFF at handswitch 2-HS-70-85C, EXCESS LETDN HTX OUTLET VLV SW. \_\_\_\_\_
- [18] **PLACE** handswitch 2-HS-70-85C, EXCESS LETDN HTX OUTLET VLV SW, in the OPEN position. \_\_\_\_\_
- [19] **VERIFY** locally, 2-FCV-70-85, EXCESS LETDN CCS HTX OUTLET VLV, remains in the CLOSED position. \_\_\_\_\_
- [20] **PLACE** handswitch 2-HS-70-85A, EXC LTDN HX OUT CIV-ΦA, in the OPEN position. \_\_\_\_\_
- [21] **VERIFY** locally, 2-FCV-70-85, EXCESS LETDN CCS HTX OUTLET VLV, travels to the OPEN position. \_\_\_\_\_
- [22] **PLACE** transfer switch 2-XS-70-85, EXCESS LTDN HX CCS OUTLET is in the AUXILIARY (AUX) position. \_\_\_\_\_
- [23] **VERIFY** annunciator 148C, ACR PNL 2-L-11B on panel 2-XA-55-6F, ALARMS. \_\_\_\_\_
- [24] **VERIFY** the RED light is ON and the GREEN light is OFF for handswitch 2-HS-70-85C, EXCESS LETDN HTX OUTLET VLV SW. \_\_\_\_\_
- [25] **VERIFY** the RED light is OFF at CNTMT ISOL STATUS PNL (XX-55-6F) Window 92. \_\_\_\_\_

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**6.11 Valve 2-FCV-70-85-B Excess Letdown Hx Outlet Valve  
Operational Test (continued)**

- [26] **VERIFY** the RED light is OFF at handswitch 2-HS-70-85A, EXC LTDN HX OUT CIV-ΦA. \_\_\_\_\_
- [27] **PLACE** handswitch 2-HS-70-85A, EXC LTDN HX OUT CIV-ΦA, in the CLOSE position. \_\_\_\_\_
- [28] **VERIFY** locally, 2-FCV-70-85, EXCESS LETDN CCS HTX OUTLET VLV, remains in the OPEN position. \_\_\_\_\_
- [29] **PLACE** handswitch 2-HS-70-85C, EXCESS LETDN HTX OUTLET VLV SW, in the CLOSE position. \_\_\_\_\_
- [30] **VERIFY** locally, 2-FCV-70-85, EXCESS LETDN CCS HTX OUTLET VLV, travels to the CLOSED position. \_\_\_\_\_
- [31] **VERIFY** the GREEN light is ON and the RED light is OFF for handswitch 2-HS-70-85C, EXCESS LETDN HTX OUTLET VLV SW. \_\_\_\_\_
- [32] **VERIFY** the GREEN light is OFF at CNTMT ISOL STATUS PNL (XX-55-6F) Window 92. \_\_\_\_\_
- [33] **VERIFY** the GREEN light is OFF at handswitch 2-HS-70-85A, EXC LTDN HX OUT CIV-ΦA. \_\_\_\_\_
- [34] **VERIFY** ICS point FD4001 displays PWR OFF. \_\_\_\_\_
- [35] **PLACE** handswitch 2-HS-70-85A, EXC LTDN HX OUT CIV-ΦA, in the OPEN position. \_\_\_\_\_
- [36] **VERIFY** locally, 2-FCV-70-85, EXCESS LETDN CCS HTX OUTLET VLV, remains in the CLOSED position. \_\_\_\_\_
- [37] **PLACE** transfer switch 2-XS-70-85, EXCESS LTDN HX CCS OUTLET, is in the NORMAL position. \_\_\_\_\_
- [38] **VERIFY** annunciator 148C, ACR PNL 2-L-11B on panel 2-XA-55-6F, CLEARS. \_\_\_\_\_
- [39] **PLACE** handswitch 2-HS-70-85A, EXC LTDN HX OUT CIV-ΦA, in the OPEN position. \_\_\_\_\_
- [40] **VERIFY** locally, 2-FCV-70-85, EXCESS LETDN CCS HTX OUTLET VLV, travels to the OPEN position. \_\_\_\_\_

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**6.11 Valve 2-FCV-70-85-B Excess Letdown Hx Outlet Valve  
Operational Test (continued)**

- [41] **CLOSE** air supply valve 2-ISV-32-3178, CONTROL AIR ISOLATION VALVE TO 2-FCV-70-85 [A8W/715]. \_\_\_\_\_
- [42] **OPEN** the petcock on the bottom of the regulator for 2-FCV-70-85, EXCESS LETDN CCS HTX OUTLET VLV. \_\_\_\_\_
- [43] **VERIFY** locally, 2-FCV-70-85, EXCESS LETDN CCS HTX OUTLET VLV, travels to the CLOSED position. \_\_\_\_\_
- [44] **CLOSE** the petcock on the bottom of the regulator for 2-FCV-70-85, EXCESS LETDN CCS HTX OUTLET VLV. \_\_\_\_\_
- [45] **OPEN** air supply valve 2-ISV-32-3178, CONTROL AIR ISOLATION VALVE TO 2-FCV-70-85. \_\_\_\_\_
- [46] **VERIFY** locally, 2-FCV-70-85, EXCESS LETDN CCS HTX OUTLET VLV, remains in the CLOSED position. \_\_\_\_\_
- [47] **PLACE** handswitch 2-HS-70-85A, EXC LTDN HX OUT CIV-ΦA, in the OPEN position. \_\_\_\_\_
- [48] **VERIFY** locally, 2-FCV-70-85, EXCESS LETDN CCS HTX OUTLET VLV, travels to the OPEN position. \_\_\_\_\_
- [49] **REMOVE** fuse 0-FU-236-0004/A1, EXCESS LTDN HTX OUTLET VLV, located in 125V DC vital battery BD IV [VITAL BATT BD RM]. \_\_\_\_\_
- 1st
- CV
- [50] **VERIFY** locally, 2-FCV-70-85, EXCESS LETDN CCS HTX OUTLET VLV, travels to the CLOSED position. \_\_\_\_\_

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**6.11 Valve 2-FCV-70-85-B Excess Letdown Hx Outlet Valve  
Operational Test (continued)**

**NOTE**

The fuse in the following step has a blown fuse indicator which must be oriented towards the annunciator circuit.

[51] **REINSTALL** fuse 0-FU-236-0004/A1, EXCESS LTDN HTX  
OUTLET VLV, located in 125V DC vital battery BD IV.

\_\_\_\_\_

1st

\_\_\_\_\_

CV

[52] **VERIFY** locally, 2-FCV-70-85, EXCESS LETDN CCS HTX  
OUTLET VLV, remains in the CLOSED position.

[53] **PLACE** handswitch 2-HS-70-85A, EXC LTDN HX OUT  
CIV-ΦA, in the OPEN position.

[54] **VERIFY** locally, 2-FCV-70-85, EXCESS LETDN CCS HTX  
OUTLET VLV, travels to the OPEN position.

**NOTE**

Stopwatch timing of 2-FCV-70-85, EXCESS LETDN CCS HTX OUTLET VLV, will be done at handswitch 2-HS-70-85A, EXC LTDN HX OUT CIV-ΦA, and locally at 2-FCV-70-85, EXCESS LETDN CCS HTX OUTLET VLV. Perform steps 6.11[55]/6.11[56] sequentially to obtain stroke time data.

[55] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-85A, EXC  
LTDN HX OUT CIV-ΦA, to the CLOSE position, **AND**

**START** stopwatches.

[56] **STOP** stopwatches when 2-FCV-70-85, EXCESS LETDN CCS  
HTX OUTLET VLV, reaches the CLOSED position, **AND**

**RECORD** stroke times below:

A. Remote Close Time (**Acc Crit**)

\_\_\_\_\_ seconds (≤ 10 secs)

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**6.11 Valve 2-FCV-70-85-B Excess Letdown Hx Outlet Valve  
Operational Test (continued)**

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Close Time \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 10 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[57] **PLACE** handswitch 2-HS-70-85A, EXC LTDN HX OUT  
CIV-ΦA, in the OPEN position. \_\_\_\_\_

[58] **VERIFY** locally, 2-FCV-70-85, EXCESS LETDN CCS HTX  
OUTLET VLV, travels to the OPEN position. \_\_\_\_\_

[59] **REMOVE** jumper across field wire CCA2 of terminal 3 and field  
wire CCA5 of terminal 4 of TB647, in SSPS panel 2-R-51. \_\_\_\_\_  
1st  
CV

[60] **VERIFY** locally, 2-FCV-70-85, EXCESS LETDN CCS HTX  
OUTLET VLV, travels to the CLOSED position. (**Acc Crit**) \_\_\_\_\_

[61] **MOMENTARILY PLACE** jumper across field wire CCA2 of  
terminal 3 and field wire CCA5 of terminal 4 of TB647, in  
SSPS panel 2-R-51 and **REMOVE** (simulate Ci phase A) . \_\_\_\_\_  
1st  
CV

[62] **VERIFY** locally, 2-FCV-70-85, EXCESS LETDN CCS HTX  
OUTLET VLV, remains in the CLOSED position. (**Acc Crit**) \_\_\_\_\_

[63] **VERIFY** successful completion of Subsection 6.11 (**ACC CRIT  
5.00**) \_\_\_\_\_

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**6.12 Valve 2-FCV-70-153-B RHR HEAT EXCHANGER 2B CCS OUTLET  
Operational Test**

<b>NOTES</b>
<p>1) This section will test 2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET, from its control stations and verify operability of all interlocks, indicating lights, annunciators and status monitoring input relays.</p> <p>2) Reference drawing 2-45W760-70-6, valve location A10T/713.</p>

- [1] **ENSURE** prerequisite actions for subsection 6.12 are completed. \_\_\_\_\_
- [2] **ENSURE** Attachment 1 has been completed. \_\_\_\_\_
- [3] **ENSURE** the following Integrated Computer System (ICS) points are in scan:
  - A. FD2321. \_\_\_\_\_
  - B. FD2322 \_\_\_\_\_
- [4] **ENSURE** 2-BKR-70-153-B, RHR HX 2B CCS OUTLET (2-FCV-70-153) [A4R/772], at compartment 15E on Reactor MOV Bd 2B2-B is OPEN. \_\_\_\_\_
- [5] **VERIFY** ICS point FD2321 displays PWR OFF. \_\_\_\_\_
- [6] **CLOSE** 2-BKR-70-153-B, RHR HX 2B CCS OUTLET (2-FCV-70-153), at compartment 15E on Reactor MOV Bd 2B2-B. \_\_\_\_\_
- [7] **VERIFY** ICS point FD2321 displays PWR ON. \_\_\_\_\_
- [8] **ENSURE** transfer switch 2-XS-70-153, RHR HX 2B CCS OUTLET (2-FCV-70-153) [A4R/772], is in the NORMAL position. \_\_\_\_\_
- [9] **ENSURE** annunciator 150C, 480 RX MOV BD 2B1-B/2B2-B on 2-XA-55-6F, is CLEAR. \_\_\_\_\_
- [10] **ENSURE** 2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET, is in the CLOSED position. \_\_\_\_\_
- [11] **VERIFY** ICS point FD2322 displays NOT OPE. \_\_\_\_\_

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**6.12 Valve 2-FCV-70-153-B RHR HEAT EXCHANGER 2B CCS OUTLET  
Operational Test (continued)**

- [12] **PLACE** handswitch 2-HS-70-153C, RHR HTX B-B OUTLET VLV SW, to the OPEN position. \_\_\_\_\_
- [13] **VERIFY** locally, 2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET, remains in the CLOSED position. \_\_\_\_\_

**NOTE**

Coordinate with Unit 1 Ops to monitor Unit 2 Surge Tank Level during valve stroke.

- [14] **MOMENTARILY PLACE** 2-HS-70-153A, RHR HX 2B OUTLET, to OPEN position, **THEN**  
  
**MOMENTARILY PLACE** 2-HS-70-153A, RHR HX 2B OUTLET, to the CLOSE position. \_\_\_\_\_
- [15] **VERIFY** both the RED and GREEN lights are ON during valve travel for the following handswitches:
  - A. 2-HS-70-153A, RHR HX 2B OUTLET. \_\_\_\_\_
  - B. 2-HS-70-153B, RHR HEAT EXCHANGER 2B CCS OUTLET VLV. \_\_\_\_\_
  - C. 2-HS-70-153C, RHR HTX B-B OUTLET VLV SW. \_\_\_\_\_
- [16] **VERIFY** the RED motor energized light is ON at cubicle 15E of reactor MOV Bd 2B2-B during valve travel. \_\_\_\_\_
- [17] **VERIFY** locally, 2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET, travels to the OPEN position. \_\_\_\_\_
- [18] **VERIFY** ICS point FD2322 displays FULL OP. \_\_\_\_\_
- [19] **VERIFY** the RED light is ON and the GREEN light is OFF for the following handswitches:
  - A. 2-HS-70-153A, RHR HX 2B OUTLET. \_\_\_\_\_

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**6.12 Valve 2-FCV-70-153-B RHR HEAT EXCHANGER 2B CCS OUTLET  
Operational Test (continued)**

- B. 2-HS-70-153B, RHR HEAT EXCHANGER 2B CCS  
OUTLET VLV. \_\_\_\_\_
- C. 2-HS-70-153C, RHR HTX B-B OUTLET VLV SW. \_\_\_\_\_
- [20] **PLACE** handswitch 2-HS-70-153C, RHR HTX B-B OUTLET  
VLV SW, to the CLOSED position. \_\_\_\_\_
- [21] **VERIFY** locally, 2-FCV-70-153, RHR HEAT EXCHANGER 2B  
CCS OUTLET, remains in the OPEN position. \_\_\_\_\_
- [22] **MOMENTARILY PLACE** 2-HS-70-153A, RHR HX 2B  
OUTLET, to CLOSE position, **THEN**  
  
**MOMENTARILY PLACE** 2-HS-70-153A, RHR HX 2B  
OUTLET, to the OPEN position. \_\_\_\_\_
- [23] **VERIFY** both the RED and GREEN lights are ON during valve  
travel for the following handswitches:
  - A. 2-HS-70-153A, RHR HX 2B OUTLET. \_\_\_\_\_
  - B. 2-HS-70-153B, RHR HEAT EXCHANGER 2B CCS  
OUTLET VLV. \_\_\_\_\_
  - C. 2-HS-70-153C, RHR HTX B-B OUTLET VLV SW. \_\_\_\_\_
- [24] **VERIFY** the RED motor energized light is ON at cubicle 15E of  
reactor MOV Bd 2B2-B during valve travel. \_\_\_\_\_
- [25] **VERIFY** locally, 2-FCV-70-153, RHR HEAT EXCHANGER 2B  
CCS OUTLET, travels to the CLOSED position. \_\_\_\_\_
- [26] **VERIFY** the GREEN is ON and the RED light is OFF for the  
following handswitches:
  - A. 2-HS-70-153A, RHR HX 2B OUTLET. \_\_\_\_\_
  - B. 2-HS-70-153B, RHR HEAT EXCHANGER 2B CCS  
OUTLET VLV. \_\_\_\_\_
  - C. 2-HS-70-153C, RHR HTX B-B OUTLET VLV SW. \_\_\_\_\_

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**6.12 Valve 2-FCV-70-153-B RHR HEAT EXCHANGER 2B CCS OUTLET  
Operational Test (continued)**

- [27] **PLACE** transfer switch 2-XS-70-153, RHR HX 2B CCS OUTLET (2-FCV-70-153), to the AUXILIARY (AUX) position. \_\_\_\_\_
- [28] **VERIFY** annunciator 150C, 480 RX MOV BD 2B1-B/2B2-B on 2-XA-55-6F, ALARMS. \_\_\_\_\_
- [29] **VERIFY** GREEN light is OFF for 2-HS-70-153A, RHR HX 2B OUTLET. \_\_\_\_\_
- [30] **PLACE** handswitch 2-HS-70-153A, RHR HX 2B OUTLET, to the OPEN position. \_\_\_\_\_
- [31] **VERIFY** locally, 2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET, remains in the CLOSED position. \_\_\_\_\_
- [32] **PLACE** handswitch 2-HS-70-153C, RHR HTX B-B OUTLET VLV SW, to the OPEN position. \_\_\_\_\_
- [33] **VERIFY** locally, 2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET, travels to the OPEN position. \_\_\_\_\_
- [34] **PLACE** handswitch 2-HS-70-153A, RHR HX 2B OUTLET, to the CLOSE position. \_\_\_\_\_
- [35] **VERIFY** locally, 2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET, remains in the OPEN position. \_\_\_\_\_
- [36] **VERIFY** RED light is OFF for 2-HS-70-153A, RHR HX 2B OUTLET. \_\_\_\_\_
- [37] **PLACE** handswitch 2-HS-70-153C, RHR HTX B-B OUTLET VLV SW to the CLOSE position. \_\_\_\_\_
- [38] **VERIFY** locally, 2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET, travels to the CLOSED position. \_\_\_\_\_
- [39] **DEPRESS** OPEN pushbutton on 2-HS-70-153B, RHR HEAT EXCHANGER 2B CCS OUTLET VLV. \_\_\_\_\_
- [40] **VERIFY** 2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET, starts to travel to the OPEN position. \_\_\_\_\_

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**6.12 Valve 2-FCV-70-153-B RHR HEAT EXCHANGER 2B CCS OUTLET  
Operational Test (continued)**

- [41] **DEPRESS** STOP pushbutton on 2-HS-70-153B, RHR HEAT EXCHANGER 2B CCS OUTLET VLV, after approximately a 20 second stroke period. \_\_\_\_\_
- [42] **VERIFY** 2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET STOPS. \_\_\_\_\_
- [43] **DEPRESS** OPEN pushbutton on 2-HS-70-153B, RHR HEAT EXCHANGER 2B CCS OUTLET VLV. \_\_\_\_\_
- [44] **VERIFY** 2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET, travels to the OPEN position. \_\_\_\_\_
- [45] **DEPRESS** CLOSE pushbutton on 2-HS-70-153B, RHR HEAT EXCHANGER 2B CCS OUTLET VLV. \_\_\_\_\_
- [46] **VERIFY** 2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET, starts traveling to the CLOSED position. \_\_\_\_\_
- [47] **DEPRESS** STOP pushbutton on 2-HS-70-153B, RHR HEAT EXCHANGER 2B CCS OUTLET VLV, after approximately a 20 second stroke period. \_\_\_\_\_
- [48] **VERIFY** 2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET, STOPS. \_\_\_\_\_
- [49] **DEPRESS** CLOSE pushbutton on 2-HS-70-153B, RHR HEAT EXCHANGER 2B CCS OUTLET VLV. \_\_\_\_\_
- [50] **VERIFY** 2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET, travels to the CLOSED position. \_\_\_\_\_
- [51] **PLACE** transfer switch 2-XS-70-153, RHR HX 2B CCS OUTLET (2-FCV-70-153), to the NORMAL position. \_\_\_\_\_
- [52] **VERIFY** annunciator 150C, 480 RX MOV BD 2B1-B/2B2-B on 2-XA-55-6F, CLEARS. \_\_\_\_\_

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**6.12 Valve 2-FCV-70-153-B RHR HEAT EXCHANGER 2B CCS OUTLET  
Operational Test (continued)**

**NOTE**

Stopwatch timing of 2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET, will be done at handswitch 2-HS-70-153A, RHR HX 2B OUTLET, and locally at 2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET. Perform steps 6.12[53]/6.12[54] and 6.12[55]/6.12[56] sequentially to obtain stroke time data

[53] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-153A, RHR HX 2B OUTLET, to the OPEN position, **AND**

**START** stopwatches. \_\_\_\_\_

[54] **STOP** stopwatches when 2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET, reaches the OPEN position, **AND**

**RECORD** stroke times below:

A. Remote Open Time (**Acc Crit**) \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 90 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Open Time \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 90 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[55] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-153A, RHR HX 2B OUTLET, to the CLOSE position, **AND**

**START** stopwatches. \_\_\_\_\_

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**6.12 Valve 2-FCV-70-153-B RHR HEAT EXCHANGER 2B CCS OUTLET  
Operational Test (continued)**

[56] **STOP** stopwatches when 2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET, reaches the CLOSE position, **AND**

**RECORD** stroke times below:

A. Remote Close Time (**Acc Crit**) \_\_\_\_\_  
\_\_\_\_\_ seconds (≤ 90 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Close Time \_\_\_\_\_  
\_\_\_\_\_ seconds (≤ 90 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[57] **OPEN** 2-BKR-70-153-B, RHR HX 2B CCS OUTLET (2-FCV-70-153), at compartment 15E on Reactor MOV Bd 2B2-B. \_\_\_\_\_

**WARNING**

Arc Flash PPE per TI-300 will be required for step 6.12[58].

[58] **MANUALLY TRIP** the thermal overload for 2-BKR-70-153-B, RHR HX 2B CCS OUTLET (2-FCV-70-153), at compartment 15E on Reactor MOV Bd 2B2-B.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[59] **CLOSE** 2-BKR-70-153-B, RHR HX 2B CCS OUTLET (2-FCV-70-153), at compartment 15E on Reactor MOV Bd 2B2-B. \_\_\_\_\_

[60] **PLACE** handswitch 2-HS-70-153A, RHR HX 2B OUTLET, to the OPEN position. \_\_\_\_\_

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**6.12 Valve 2-FCV-70-153-B RHR HEAT EXCHANGER 2B CCS OUTLET  
Operational Test (continued)**

- [61] **VERIFY** locally, 2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET, remains in the CLOSED position.  
(Acc Crit) \_\_\_\_\_

**CAUTION**

Steps 6.12[62] through 6.12[63] will operate the valve without thermal overload protection.

[62] **DEPRESS AND**

**HOLD** the armature of the K7 relay in the rear of Reactor MOV Bd 2B2-B, cubicle 6F [A4R/772]. \_\_\_\_\_

- [63] **PLACE** handswitch 2-HS-70-153A, RHR HX 2B OUTLET to the OPEN position. \_\_\_\_\_

- [64] **VERIFY** locally, 2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET, travels to the OPEN position. (Acc Crit) \_\_\_\_\_

- [65] **PLACE** handswitch 2-HS-70-153A, RHR HX 2B OUTLET, to the CLOSE position. \_\_\_\_\_

- [66] **VERIFY** locally, 2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET, travels to the CLOSED position. (Acc Crit) \_\_\_\_\_

- [67] **RELEASE** the armature of the K7 relay in the rear of Reactor MOV Bd 2B2-B, cubicle 6F. \_\_\_\_\_

- [68] **OPEN** 2-BKR-70-153-B, RHR HX 2B CCS OUTLET (2-FCV-70-153), at compartment 15E on Reactor MOV Bd 2B2-B. \_\_\_\_\_

**WARNING**

Arc Flash PPE per TI-300 will be required for steps 6.12[69].

- [69] **RESET** the thermal overload for 2-BKR-70-153-B, RHR HX 2B CCS OUTLET (2-FCV-70-153), compartment 15E on Reactor MOV Bd 2B2-B. \_\_\_\_\_

1st

CV

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**6.12 Valve 2-FCV-70-153-B RHR HEAT EXCHANGER 2B CCS OUTLET  
Operational Test (continued)**

[70] **CLOSE** 2-BKR-70-153-B, RHR HX 2B CCS OUTLET  
(2-FCV-70-153), at compartment 15E on Reactor MOV Bd  
2B2-B. \_\_\_\_\_

[71] **PLACE** handswitch 2-HS-70-153A, RHR HX 2B OUTLET, to  
the OPEN position. \_\_\_\_\_

[72] **VERIFY** locally, 2-FCV-70-153, RHR HEAT EXCHANGER 2B  
CCS OUTLET, travels to the OPEN position. \_\_\_\_\_

[73] **PLACE** handswitch 2-HS-70-153A, RHR HX 2B OUTLET, to  
the CLOSE position. \_\_\_\_\_

[74] **VERIFY** locally, 2-FCV-70-153, RHR HEAT EXCHANGER 2B  
CCS OUTLET, travels to the CLOSE position. \_\_\_\_\_

[75] **VERIFY** successful completion of Subsection 6.12 (**ACC CRIT  
5.00**) \_\_\_\_\_

[76] **NOTIFY** U1 Ops of the successful completion of Subsection  
6.12. \_\_\_\_\_

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**6.13 Valve 2-FCV-70-156-A RHR HEAT EXCHANGER 2A CCS OUTLET  
Operational Test**

**NOTES**

- 1) This section will test 2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET, from its control stations and verify operability of all interlocks, indicating lights, annunciators and status monitoring input relays.
- 2) Reference drawing 1-45W760-70-6, valve location A10T/713.

[1] **ENSURE** prerequisite actions for subsection 6.13 have been completed. \_\_\_\_\_

[2] **ENSURE** the following Integrated Computer System (ICS) points are in scan: \_\_\_\_\_

A. FD2167. \_\_\_\_\_

B. FD2168. \_\_\_\_\_

[3] **ENSURE** 2-BKR-70-156-A, RHR HX 2A CCS OUTLET (2-FCV-70-156) [A12/772] at compartment 16E on Reactor MOV Bd 2A2-A is OPEN. \_\_\_\_\_

[4] **VERIFY** ICS point FD2167 displays PWR OFF. \_\_\_\_\_

[5] **CLOSE** 2-BKR-70-156-A, RHR HX 2A CCS OUTLET (2-FCV-70-156), at compartment 16E on Reactor MOV Bd 2A2-A. \_\_\_\_\_

[6] **VERIFY** ICS point FD2167 displays PWR ON. \_\_\_\_\_

[7] **ENSURE** transfer switch 2-XS-70-156, RHR HX 2A CCS OUTLET (2-FCV-70-156) [A12/772], is in the NORMAL position. \_\_\_\_\_

[8] **ENSURE** annunciator 149C, 480 RX MOV BD 2A1-A/2A2-A on 2-XA-55-6F, is CLEAR. \_\_\_\_\_

[9] **ENSURE** 2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET, is in the CLOSED position. \_\_\_\_\_

[10] **VERIFY** ICS point FD2168 displays NOT OPE. \_\_\_\_\_

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**6.13 Valve 2-FCV-70-156-A RHR HEAT EXCHANGER 2A CCS OUTLET  
Operational Test (continued)**

[11] **PLACE** handswitch 2-HS-70-156C, RHR HTX A-A to the OPEN position, **THEN** to the NEUTRAL position. \_\_\_\_\_

[12] **VERIFY** locally, 2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET, remains in the CLOSED position. \_\_\_\_\_

[13] **MOMENTARILY PLACE** 2-HS-70-156A, RHR HX 2A OUTLET, to OPEN position, **THEN**

**MOMENTARILY PLACE** 2-HS-70-156A, RHR HX 2A OUTLET, to the CLOSE position. \_\_\_\_\_

[14] **VERIFY** both the RED and GREEN lights are ON during valve travel for the following handswitches:

A. 2-HS-70-156A, RHR HX 2A OUTLET. \_\_\_\_\_

B. 2-HS-70-156B, RHR HEAT EXCHANGER 2A CCS OUTLET VLV. \_\_\_\_\_

C. 2-HS-70-156C, RHR HTX A-A. \_\_\_\_\_

[15] **VERIFY** the RED motor energized light is ON at cubicle 16E of reactor MOV Bd 2A2-A during valve travel. \_\_\_\_\_

[16] **VERIFY** locally, 2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET, travels to the OPEN position. \_\_\_\_\_

[17] **VERIFY** ICS point FD2168 displays FULL OP. \_\_\_\_\_

[18] **VERIFY** the RED light is ON and the GREEN light is OFF for the following handswitches:

A. 2-HS-70-156A, RHR HX 2A OUTLET. \_\_\_\_\_

B. 2-HS-70-156B, RHR HEAT EXCHANGER 2A CCS OUTLET VLV. \_\_\_\_\_

C. 2-HS-70-156C, RHR HTX A-A. \_\_\_\_\_

[19] **PLACE** handswitch 2-HS-70-156C, RHR HTX A-A, to the CLOSED position. \_\_\_\_\_

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**6.13 Valve 2-FCV-70-156-A RHR HEAT EXCHANGER 2A CCS OUTLET  
Operational Test (continued)**

[20] **VERIFY** locally, 2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET, remains in the OPEN position. \_\_\_\_\_

[21] **MOMENTARILY PLACE** 2-HS-70-156A, RHR HX 2A OUTLET, to CLOSE position, **THEN**

**MOMENTARILY PLACE** 2-HS-70-156A, RHR HX 2A OUTLET, to the OPEN position. \_\_\_\_\_

[22] **VERIFY** both the RED and GREEN lights are ON during valve travel for the following handswitches:

A. 2-HS-70-156A, RHR HX 2A OUTLET. \_\_\_\_\_

B. 2-HS-70-156B, RHR HEAT EXCHANGER 2A CCS OUTLET VLV. \_\_\_\_\_

C. 2-HS-70-156C, RHR HTX A-A. \_\_\_\_\_

[23] **VERIFY** the RED motor energized light is ON at cubicle 16E of reactor MOV Bd 2A2-A during valve travel. \_\_\_\_\_

[24] **VERIFY** locally, 2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET, travels to the CLOSED position. \_\_\_\_\_

[25] **VERIFY** the GREEN is ON and the RED light is OFF for the following handswitches:

A. 2-HS-70-156A, RHR HX 2A OUTLET. \_\_\_\_\_

B. 2-HS-70-156B, RHR HEAT EXCHANGER 2A CCS OUTLET VLV. \_\_\_\_\_

C. 2-HS-70-156C, RHR HTX A-A. \_\_\_\_\_

[26] **PLACE** transfer switch 2-XS-70-156, RHR HX 2B CCS OUTLET (2-FCV-70-156), to the AUXILIARY (AUX) position. \_\_\_\_\_

[27] **VERIFY** annunciator 149C, 480 RX MOV BD 2A1-A/2A2-A on 2-XA-55-6F, ALARMS. \_\_\_\_\_

[28] **VERIFY** GREEN light is OFF for 2-HS-70-156A, RHR HX 2A OUTLET. \_\_\_\_\_

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**6.13 Valve 2-FCV-70-156-A RHR HEAT EXCHANGER 2A CCS OUTLET  
Operational Test (continued)**

- [29] **PLACE** handswitch 2-HS-70-156A, RHR HX 2A OUTLET, to the OPEN position. \_\_\_\_\_
- [30] **VERIFY** locally, 2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET, remains in the CLOSED position. \_\_\_\_\_
- [31] **PLACE** handswitch 2-HS-70-156C, RHR HTX A-A , to the OPEN position, **THEN** to the NEUTRAL position. \_\_\_\_\_
- [32] **VERIFY** locally, 2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET, travels to the OPEN position. \_\_\_\_\_
- [33] **PLACE** handswitch 2-HS-70-156A, RHR HX 2A OUTLET, to the CLOSE position. \_\_\_\_\_
- [34] **VERIFY** locally, 2-FCV-70-153, RHR HEAT EXCHANGER 2A CCS OUTLET, remains in the OPEN position. \_\_\_\_\_
- [35] **VERIFY** RED light is OFF for 2-HS-70-156A, RHR HX 2A OUTLET. \_\_\_\_\_
- [36] **PLACE** handswitch 2-HS-70-156C, RHR HTX A-A to the CLOSE position, **THEN** to the NEUTRAL position \_\_\_\_\_
- [37] **VERIFY** locally, 2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET, travels to the CLOSED position. \_\_\_\_\_
- [38] **DEPRESS** OPEN pushbutton on 2-HS-70-156B, RHR HEAT EXCHANGER 2A CCS OUTLET VLV. \_\_\_\_\_
- [39] **VERIFY** 2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET, starts to travel to the OPEN position. \_\_\_\_\_
- [40] **DEPRESS** STOP pushbutton on 2-HS-70-156B, RHR HEAT EXCHANGER 2A CCS OUTLET VLV, after approximately a 20 second stroke period. \_\_\_\_\_
- [41] **VERIFY** 2-FCV-70-156, RHR HEAT EXCHANGER 2B CCS OUTLET STOPS. \_\_\_\_\_
- [42] **DEPRESS** OPEN pushbutton on 2-HS-70-156B, RHR HEAT EXCHANGER 2A CCS OUTLET VLV. \_\_\_\_\_

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**6.13 Valve 2-FCV-70-156-A RHR HEAT EXCHANGER 2A CCS OUTLET  
Operational Test (continued)**

- [43] **VERIFY** 2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET, travels to the OPEN position. \_\_\_\_\_
- [44] **DEPRESS** CLOSE pushbutton on 2-HS-70-156B, RHR HEAT EXCHANGER 2A CCS OUTLET VLV. \_\_\_\_\_
- [45] **VERIFY** 2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET, starts traveling to the CLOSED position. \_\_\_\_\_
- [46] **DEPRESS** STOP pushbutton on 2-HS-70-156B, RHR HEAT EXCHANGER 2A CCS OUTLET VLV, after approximately a 20 second stroke period. \_\_\_\_\_
- [47] **VERIFY** 2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET, STOPS. \_\_\_\_\_
- [48] **DEPRESS** CLOSE pushbutton on 2-HS-70-156B, RHR HEAT EXCHANGER 2A CCS OUTLET VLV. \_\_\_\_\_
- [49] **VERIFY** 2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET, travels to the CLOSED position. \_\_\_\_\_
- [50] **PLACE** transfer switch 2-XS-70-156, RHR HX 2A CCS OUTLET (2-FCV-70-156), to the NORMAL position. \_\_\_\_\_
- [51] **VERIFY** annunciator 149C, 480 RX MOV BD 2A1-A/2A2-A on 2-XA-55-6F, CLEARS. \_\_\_\_\_

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**6.13 Valve 2-FCV-70-156-A RHR HEAT EXCHANGER 2A CCS OUTLET  
Operational Test (continued)**

**NOTE**

Stopwatch timing of 2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET, will be done at handswitch 2-HS-70-156A, RHR HX 2A OUTLET, and locally at 2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET. Perform steps 6.13[52]/6.13[53] and 6.13[54]/6.13[55] sequentially to obtain stroke time data

[52] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-156A, RHR HX 2A OUTLET, to the OPEN position, **AND**

**START** stopwatches. \_\_\_\_\_

[53] **STOP** stopwatches when 2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET, reaches the OPEN position, **AND**

**RECORD** stroke times below:

A. Remote Open Time (**Acc Crit**) \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 90 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Open Time \_\_\_\_\_

\_\_\_\_\_ seconds (≤ 90 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[54] **SIMULTANEOUSLY PLACE** handswitch 2-HS-70-156A, RHR HX 2A OUTLET, to the CLOSE position, **AND**

**START** stopwatches. \_\_\_\_\_

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**6.13 Valve 2-FCV-70-156-A RHR HEAT EXCHANGER 2A CCS OUTLET  
Operational Test (continued)**

[55] **STOP** stopwatches when 2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET, reaches the CLOSE position, **AND**

**RECORD** stroke times below:

A. Remote Close Time (**Acc Crit**) \_\_\_\_\_  
\_\_\_\_\_ seconds (≤ 90 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Close Time \_\_\_\_\_  
\_\_\_\_\_ seconds (≤ 90 secs)

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[56] **OPEN** 2-BKR-70-156-B, RHR HX 2A CCS OUTLET (2-FCV-70-156), at compartment 16E on Reactor MOV Bd 2A2-A. \_\_\_\_\_

**WARNING**

Arc Flash PPE per TI-300 will be required for step 6.13[57].

[57] **MANUALLY TRIP** the thermal overload for 2-BKR-70-156-B, RHR HX 2A CCS OUTLET (2-FCV-70-156) [A12/772], at compartment 16E on Reactor MOV Bd 2A2-A. \_\_\_\_\_  
1st  
\_\_\_\_\_ CV

[58] **CLOSE** 2-BKR-70-156-B, RHR HX 2A CCS OUTLET (2-FCV-70-156), at compartment 16E on Reactor MOV Bd 2A2-A. \_\_\_\_\_

[59] **PLACE** handswitch 2-HS-70-156A, RHR HX 2A OUTLET, to the OPEN position. \_\_\_\_\_

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**6.13 Valve 2-FCV-70-156-A RHR HEAT EXCHANGER 2A CCS OUTLET  
Operational Test (continued)**

- [60] **VERIFY** locally, 2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET, remains in the CLOSED position. **(Acc Crit)**

**CAUTION**

Steps 6.13[61] through 6.13[62] will operate the valve without thermal overload protection.

[61] **DEPRESS AND**

**HOLD** the armature of the K10 relay in the rear of Reactor MOV Bd 2A2-A, cubicle 6D [A12/772].

- [62] **PLACE** handswitch 2-HS-70-156A, RHR HX 2A OUTLET to the OPEN position.

- [63] **VERIFY** locally, 2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET, travels to the OPEN position. **(Acc Crit)**

- [64] **PLACE** handswitch 2-HS-70-156A, RHR HX 2A OUTLET, to the CLOSE position.

- [65] **VERIFY** locally, 2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET, travels to the CLOSED position. **(Acc Crit)**

- [66] **RELEASE** the armature of the K9 relay in the rear of Reactor MOV Bd 2A2-A, cubicle 6D.

- [67] **OPEN** 2-BKR-70-156-A, RHR HX 2A CCS OUTLET (2-FCV-70-156), at compartment 16E on Reactor MOV Bd 2B2-B.

**WARNING**

Arc Flash PPE per TI-300 will be required for steps 6.13[68].

- [68] **RESET** the thermal overload for 2-BKR-70-156-A, RHR HX 2A CCS OUTLET (2-FCV-70-156), compartment 16E on Reactor MOV Bd 2A2-A.

\_\_\_\_\_  
1st

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**6.13 Valve 2-FCV-70-156-A RHR HEAT EXCHANGER 2A CCS OUTLET  
Operational Test (continued)**

- [69] **CLOSE** 2-BKR-70-156-A, RHR HX 2A CCS OUTLET (2-FCV-70-156), at compartment 16E on Reactor MOV Bd 2A2-A. \_\_\_\_\_
- [70] **PLACE** handswitch 2-HS-70-156A, RHR HX 2A OUTLET, to the OPEN position. \_\_\_\_\_
- [71] **VERIFY** locally, 2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET, travels to the OPEN position. \_\_\_\_\_
- [72] **PLACE** handswitch 2-HS-70-156A, RHR HX 2A OUTLET, to the CLOSE position. \_\_\_\_\_
- [73] **VERIFY** locally, 2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET, travels to the CLOSE position. \_\_\_\_\_
- [74] **VERIFY** successful completion of Subsection 6.13 (**ACC CRIT 5.00**) \_\_\_\_\_

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**6.14 Valve 1-FCV-70-156-A RHR HEAT EXCHANGER 1A CCS OUTLET  
Operational Test**

<b>NOTES</b>
1) Valve stroke time testing is performed under 1-SI-70-904-A, Appendix B. This satisfies the valve stroke acceptance criteria as referenced in the TSD.
2) WO 112051886 performs DCN 54912 Stage 14 PMT which performs 1-SI-70-908-A.
3) DCN 54912-14 there is a PMT to Perform MOVATS test 0-MI-0.006 on this valve.
4) DCN 54912 Stage 14 there is a PMT to Perform a complete control circuit functional test added by PIC 56638.

[1] **OBTAIN** a copy of the latest performed quarterly procedure 1-SI-70-904-A, Appendix B data sheet for 1-FCV-70-156 **AND**

**VERIFY** the data meets the stroke time acceptance criteria. **(ACC CRIT)** \_\_\_\_\_

[2] **OBTAIN** a copy of the PMT data for DCN 54912 Stage 14 to perform MOVATS test 0-MI-0.006 for 1-FCV-70-156 **AND**

**VERIFY** data meets the acceptance criteria. **(ACC CRIT)** \_\_\_\_\_

[3] **VERIFY** successful completion of Subsection 6.14 **(ACC CRIT 5.00)** \_\_\_\_\_

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**6.15 Valve 1-FCV-70-153-B RHR HEAT EXCHANGER 1B CCS OUTLET  
Operational Test**

**NOTES**

- 1) In DCN 54912-13 there is a PMT to "Perform a complete control circuit functional test" added by PIC 56638.
- 2) In DCN 54912-13 there is a PMT to " Perform MOVATS test 0-MI-0.006"

[1] **OBTAIN** a copy of the PMT data for DCN 54912 Stage 13 to perform MOVATS test 0-MI-0.006 for 1-FCV-70-153 **AND**

**VERIFY** data meets the acceptance criteria. **(ACC CRIT)** \_\_\_\_\_

[2] **VERIFY** successful completion of Subsection 6.15 **(ACC CRIT 5.00)** \_\_\_\_\_

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**6.16 Valve 0-FCV-70-197-A SFP HEAT EXCHANGER A CCS SUPPLY  
Operational Test**

**NOTES**

- 1) This section will test 0-FCV-70-197-A, SFP HEAT EXCHANGER A CCS SUPPLY.
- 2) Reference drawing 1-45W760-70-11, valve location A7T/737
- 3) Valve full stroke time testing is performed under 1-SI-70-904-A, Appendix G, Component Cooling System Valve Position Indication Verification. This satisfies the stroke time acceptance criteria for the TSD.

[1] **ENSURE** B SFPCS Heat Exchanger is in service per SOI-70.01. \_\_\_\_\_

[2] **OBTAIN** a copy of the latest performed quarterly procedure 1-SI-70-904-A, Appendix G data sheet for 0-FCV-70-197 **AND**

**VERIFY** the data meets the stroke time acceptance criteria. **(ACC CRIT)** \_\_\_\_\_

[3] **ENSURE** 0-FCV-70-197-A, SFP HEAT EXCHANGER A CCS SUPPLY [A7T/737], is in the CLOSED position. \_\_\_\_\_

[4] **OPEN** 0-BKR-70-197-A, SFP HX A CCS SUP (0-FCV-70-197), at compartment 17B on Reactor MOV Bd 1A2-A. \_\_\_\_\_

**WARNING**

Arc Flash PPE per TI-300 will be required for step 6.16[5].

[5] **MANUALLY TRIP** the thermal overload for 0-BKR-70-197-A, SFP HX A CCS SUP (0-FCV-70-197), compartment 17B on Reactor MOV Bd 1A2-A. \_\_\_\_\_

1st

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[6] **CLOSE** 0-BKR-70-197-A, SFP HX A CCS SUP (0-FCV-70-197), at compartment 17B on Reactor MOV Bd 1A2-A. \_\_\_\_\_

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**6.16 Valve 0-FCV-70-197-A SFP HEAT EXCHANGER A CCS SUPPLY  
Operational Test (continued)**

[7] **PLACE** handswitch 0-HS-70-197A, SFPCS HTX SUP HDR VALVE SW, to the OPEN position. \_\_\_\_\_

[8] **VERIFY** locally, 0-FCV-70-197-A, SFP HEAT EXCHANGER A CCS SUPPLY, remains in the CLOSED position. (**Acc Crit**) \_\_\_\_\_

**CAUTION**

Steps 6.16[9]through 6.16[10] will operate the valve without thermal overload protection.

[9] **DEPRESS AND**

**HOLD** the armature of the K9 relay in the rear of Reactor MOV Bd 1A2-A, cubicle 17B. \_\_\_\_\_

[10] **PLACE** handswitch 0-HS-70-197A, SFPCS HTX SUP HDR VALVE SW, to the OPEN position. \_\_\_\_\_

[11] **VERIFY** locally, 0-FCV-70-197-A, SFP HEAT EXCHANGER A CCS SUPPLY, travels to the OPEN position. (**Acc Crit**) \_\_\_\_\_

[12] **PLACE** handswitch 0-HS-70-197A, SFPCS HTX SUP HDR VALVE SW, to the CLOSE position. \_\_\_\_\_

[13] **VERIFY** locally, 0-FCV-70-197-A, SFP HEAT EXCHANGER A CCS SUPPLY, travels to the CLOSED position. (**Acc Crit**) \_\_\_\_\_

[14] **RELEASE** the armature of the K9 relay in the rear of Reactor MOV Bd 1A2-A, cubicle 17B. \_\_\_\_\_

[15] **OPEN** 0-BKR-70-197-A, SFP HX A CCS SUP (0-FCV-70-197), at compartment 17B on Reactor MOV Bd 1A2-A. \_\_\_\_\_

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**6.16 Valve 0-FCV-70-197-A SFP HEAT EXCHANGER A CCS SUPPLY  
Operational Test (continued)**

**WARNING**

Arc Flash PPE per TI-300 will be required for steps 6.16[16].

[16] **RESET** the thermal overload for 0-BKR-70-197-A, SFP HX A CCS SUP (0-FCV-70-197), compartment 17B on Reactor MOV Bd 1A2-A.

\_\_\_\_\_

1st

\_\_\_\_\_

CV

[17] **CLOSE** 0-BKR-70-197-A, SFP HX A CCS SUP (0-FCV-70-197), at compartment 17B on Reactor MOV Bd 1A2-A.

[18] **PLACE** handswitch 0-HS-70-197A, SFPCS HTX SUP HDR VALVE SW, to the OPEN position.

[19] **VERIFY** locally, 0-FCV-70-197-A, SFP HEAT EXCHANGER A CCS SUPPLY, travels to the OPEN position.

[20] **PLACE** handswitch 0-HS-70-197A, SFPCS HTX SUP HDR VALVE SW to the CLOSE position.

[21] **VERIFY** locally, 0-FCV-70-197-A, SFP HEAT EXCHANGER A CCS SUPPLY, travels to the CLOSED position.

[22] **VERIFY** successful completion of Subsection 6.16 (**ACC CRIT 5.00**)

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**6.17 Valve 0-FCV-70-194-B SFP HEAT EXCHANGER B CCS SUPPLY  
Operational Test**

<b>NOTES</b>	
1)	This section will test 0-FCV-70-194-B, SFP HEAT EXCHANGER B CCS SUPPLY.
2)	Reference drawing 1-45W760-70-11, valve location A12W/722.
3)	Valve full stroke time testing is performed under TI-50.056, Appendix A, Valve Full Stroke Exercising During Plant Operation-Component Cooling Water. This satisfies the stroke time acceptance criteria in the TSD.
4)	At any time during Section 6.17 Operations has the flexibility to manipulate 0-FCV-70-194 as needed.

[1] **ENSURE** A SFPCS Heat Exchanger is in service per SOI-70.01. \_\_\_\_\_

[2] **OBTAIN** a copy of the latest performed quarterly procedure TI-50.056, Appendix A data sheet for 0-FCV-70-194 **AND** \_\_\_\_\_

**VERIFY** the data meets the stroke time acceptance criteria. **(ACC CRIT)** \_\_\_\_\_

[3] **ENSURE** 0-FCV-70-194-B, SFP HEAT EXCHANGER B CCS SUPPLY [A12W/722], is in the CLOSED position. \_\_\_\_\_

[4] **OPEN** 0-BKR-70-194-B, SFP HX B CCS SUPPLY (0-FCV-70-194), at compartment 17A on Reactor MOV Bd 2B2-B. \_\_\_\_\_

<b>WARNING</b>	
Arc Flash PPE per TI-300 will be required for step 6.17[5].	

[5] **MANUALLY TRIP** the thermal overload for 0-BKR-70-194-B, SFP HX B CCS SUPPLY (0-FCV-70-194), compartment 17A on Reactor MOV Bd 2B2-B. \_\_\_\_\_

1st

CV

[6] **CLOSE** 0-BKR-70-194-B, SFP HX B CCS SUPPLY (0-FCV-70-194), at compartment 17A on Reactor MOV Bd 2B2-B. \_\_\_\_\_

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**6.17 Valve 0-FCV-70-194-B SFP HEAT EXCHANGER B CCS SUPPLY  
Operational Test (continued)**

[7] **PLACE** handswitch 0-HS-70-194A, SFPCS HTX SUP HDR VLV SW, to the OPEN position. \_\_\_\_\_

[8] **VERIFY** locally, 0-FCV-70-194-B, SFP HEAT EXCHANGER B CCS SUPPLY, remains in the CLOSED position. (**Acc Crit**) \_\_\_\_\_

**CAUTION**

Steps 6.17[9] through 6.17[10] will operate the valve without thermal overload protection.

[9] **DEPRESS AND**

**HOLD** the armature of the K7 relay in the rear of Reactor MOV Bd 2B2-B, cubicle 17A. \_\_\_\_\_

[10] **PLACE** handswitch 0-HS-70-194A, SFPCS HTX SUP HDR VLV SW, to the OPEN position. \_\_\_\_\_

[11] **VERIFY** locally, 0-FCV-70-194-B, SFP HEAT EXCHANGER B CCS SUPPLY, travels to the OPEN position. (**Acc Crit**) \_\_\_\_\_

[12] **PLACE** handswitch 0-HS-70-194A, SFPCS HTX SUP HDR VLV SW, to the CLOSE position. \_\_\_\_\_

[13] **VERIFY** locally, 0-FCV-70-194-B, SFP HEAT EXCHANGER B CCS SUPPLY, travels to the CLOSED position. (**Acc Crit**) \_\_\_\_\_

[14] **RELEASE** the armature of the K7 relay in the rear of Reactor MOV Bd 2B2-B, cubicle 17A. \_\_\_\_\_

[15] **OPEN** 0-BKR-70-194-B, SFP HX B CCS SUPPLY (0-FCV-70-194), at compartment 17A on Reactor MOV Bd 2B2-B. \_\_\_\_\_

**WARNING**

Arc Flash PPE per TI-300 will be required for steps 6.17[16].

[16] **RESET** the thermal overload for 0-BKR-70-194-B, SFP HX B CCS SUPPLY (0-FCV-70-194, compartment 17A on Reactor MOV Bd 2B2-B.

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**6.17 Valve 0-FCV-70-194-B SFP HEAT EXCHANGER B CCS SUPPLY  
Operational Test (continued)**

- [17] **CLOSE** 0-BKR-70-194-B, SFP HX B CCS SUPPLY (0-FCV-70-194), at compartment 17A on Reactor MOV Bd 2B2-B. \_\_\_\_\_
- [18] **PLACE** handswitch 0-HS-70-194A, SFPCS HTX SUP HDR VLV SW, to the OPEN position. \_\_\_\_\_
- [19] **VERIFY** locally, 0-FCV-70-194-B, SFP HEAT EXCHANGER B CCS SUPPLY, travels to the OPEN position. \_\_\_\_\_
- [20] **PLACE** handswitch 0-HS-70-194A, SFPCS HTX SUP HDR VLV SW to the CLOSE position. \_\_\_\_\_
- [21] **VERIFY** locally, 0-FCV-70-194-B, SFP HEAT EXCHANGER B CCS SUPPLY, travels to the CLOSED position. \_\_\_\_\_
- [22] **VERIFY** successful completion of Subsection 6.17 (**ACC CRIT 5.00**) \_\_\_\_\_

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**6.18 Valve 2-FCV-70-3-B RHR HTX B HDR INLET VLV Operational Test**

**NOTES**

- 1) This section will test non-active MOV, 2-FCV-70-3-B, RHR HTX B HDR INLET VLV
- 2) Reference drawing 2-45W760-70-7, valve location A6S/744.

- [1] **ENSURE** Attachment 1 has been completed. \_\_\_\_\_
- [2] **ENSURE** the following Integrated Computer System (ICS) points are in scan:
  - A. FD2389 \_\_\_\_\_
  - B. FD2320 \_\_\_\_\_
- [3] **ENSURE** 2-XS-70-3, 2B ESF EQUIP CCS SUP HDR (2-FCV-70-3) [A4R/772], is in the NORMAL position. \_\_\_\_\_
- [4] **ENSURE** annunciator 150C, 480 RX MOV BD 2B1-B/2B2-B on 2-XA-55-6F is CLEAR. \_\_\_\_\_
- [5] **ENSURE** 2-BKR-70-3-B, 480V RX MOV BD 2B2-B BKR 14B RHR HX B HDR IN [A4R/772] at compartment 14B on Reactor MOV Bd 2B2-B is OPEN. \_\_\_\_\_
- [6] **VERIFY** ICS point FD2389 displays PWR OFF. \_\_\_\_\_
- [7] **CLOSE** 2-BKR-70-3-B, 480V RX MOV BD 2B2-B BKR 14B RHR HX B HDR IN, at compartment 14B on Reactor MOV Bd 2B2-B. \_\_\_\_\_
- [8] **VERIFY** ICS point FD2389 displays PWR ON. \_\_\_\_\_
- [9] **ENSURE** 2-FCV-70-3-B, RHR HTX B HDR INLET VLV is in the CLOSED, position. \_\_\_\_\_
- [10] **VERIFY** ICS point FD2320 displays NOT OPE. \_\_\_\_\_
- [11] **VERIFY** the GREEN light is ON and the RED light is OFF for the following handswitches:
  - A. 2-HS-70-3A, 2B ESF EQ SUP HDR. \_\_\_\_\_

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**6.18 Valve 2-FCV-70-3-B RHR HTX B HDR INLET VLV Operational Test  
(continued)**

- B. 2-HS-70-3C, RHR HTX B HDR INLET VLV SW. \_\_\_\_\_
- [12] **MOMENTARILY PLACE** 2-HS-70-3A, 2B ESF EQ SUP HDR, to the OPEN position, **THEN**  
  
**MOMENTARILY PLACE** 2-HS-70-3A, 2B ESF EQ SUP HDR, to the CLOSE position. \_\_\_\_\_
- [13] **VERIFY** both RED and GREEN lights are ON for the following handswitches during valve travel:
  - A. 2-HS-70-3A, 2B ESF EQ SUP HDR. \_\_\_\_\_
  - B. 2-HS-70-3C, RHR HTX B HDR INLET VLV SW. \_\_\_\_\_
- [14] **VERIFY** locally 2-FCV-70-3-B, RHR HTX B HDR INLET VLV, travels to the OPEN position. \_\_\_\_\_
- [15] **VERIFY** ICS point FD2320 displays FULL OP. \_\_\_\_\_
- [16] **VERIFY** the RED light is ON and the GREEN light is OFF for the following handswitches:
  - A. 2-HS-70-3A, 2B ESF EQ SUP HDR. \_\_\_\_\_
  - B. 2-HS-70-3C, RHR HTX B HDR INLET VLV SW. \_\_\_\_\_
- [17] **PLACE** 2-HS-70-3C, RHR HTX B HDR INLET VLV SW, to the CLOSE position. \_\_\_\_\_
- [18] **VERIFY** 2-FCV-70-3-B, RHR HTX B HDR INLET VLV, remains in the OPEN position. \_\_\_\_\_
- [19] **MOMENTARILY PLACE** 2-HS-70-3A, 2B ESF EQ SUP HDR, to the CLOSE position, **THEN**  
  
**MOMENTARILY PLACE** 2-HS-70-3A, 2B ESF EQ SUP HDR, to the OPEN position. \_\_\_\_\_
- [20] **VERIFY** locally 2-FCV-70-3-B, RHR HTX B HDR INLET VLV, travels to the CLOSED position. \_\_\_\_\_
- [21] **PLACE** 2-HS-70-3C, RHR HTX B HDR INLET VLV SW, to the OPEN position. \_\_\_\_\_

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**6.18 Valve 2-FCV-70-3-B RHR HTX B HDR INLET VLV Operational Test (continued)**

- [22] **VERIFY** 2-FCV-70-3-B, RHR HTX B HDR INLET VLV, remains in the CLOSED position. \_\_\_\_\_
- [23] **PLACE** 2-HS-70-3C, RHR HTX B HDR INLET VLV SW, to the CLOSE position. \_\_\_\_\_
- [24] **PLACE** 2-XS-70-3, 2B ESF EQUIP CCS SUP HDR (2-FCV-70-3), to the AUXILIARY (AUX) position. \_\_\_\_\_
- [25] **VERIFY** annunciator 150C, 480 RX MOV BD 2B1-B/2B2-B on 2-XA-55-6F ALARMS. \_\_\_\_\_
- [26] **VERIFY** the GREEN light for 2-HS-70-3A, 2B ESF EQ SUP HDR, is OFF. \_\_\_\_\_
- [27] **PLACE** 2-HS-70-3A, 2B ESF EQ SUP HDR, to the OPEN position. \_\_\_\_\_
- [28] **VERIFY** locally 2-FCV-70-3-B, RHR HTX B HDR INLET VLV, remains in the CLOSED position. \_\_\_\_\_
- [29] **PLACE** 2-HS-70-3C, RHR HTX B HDR INLET VLV SW, to the OPEN position. \_\_\_\_\_
- [30] **VERIFY** RED Motor Energized light is ON at Reactor MOV BD cubicle 14B during valve travel. \_\_\_\_\_
- [31] **VERIFY** locally 2-FCV-70-3-B, RHR HTX B HDR INLET VLV, travels to the OPEN position. \_\_\_\_\_
- [32] **PLACE** 2-HS-70-3A, 2B ESF EQ SUP HDR, to the CLOSE position. \_\_\_\_\_
- [33] **VERIFY** locally 2-FCV-70-3-B, RHR HTX B HDR INLET VLV, remains in the OPEN position. \_\_\_\_\_
- [34] **VERIFY** RED light is OFF for 2-HS-70-3A, 2B ESF EQ SUP HDR. \_\_\_\_\_
- [35] **PLACE** 2-HS-70-3C, RHR HTX B HDR INLET VLV SW, to the CLOSE position. \_\_\_\_\_
- [36] **VERIFY** locally 2-FCV-70-3-B, RHR HTX B HDR INLET VLV, travels to the CLOSED position. \_\_\_\_\_

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**6.18 Valve 2-FCV-70-3-B RHR HTX B HDR INLET VLV Operational Test  
(continued)**

- [37] **DEPRESS** OPEN pushbutton on 2-HS-70-3B, RHR HTX B HDR INLET VLV SW. \_\_\_\_\_
- [38] **VERIFY** locally 2-FCV-70-3-B, RHR HTX B HDR INLET VLV, starts to travel to the OPEN position. \_\_\_\_\_
- [39] **DEPRESS** STOP pushbutton on 2-HS-70-3B, RHR HTX B HDR INLET VLV SW, after 2-FCV-70-3-B, RHR HTX B HDR INLET VLV, completes approximately a 20 second stroke period. \_\_\_\_\_
- [40] **VERIFY** dual indication in the MCR that 2-FCV-70-3-B, RHR HTX B HDR INLET VLV, stops its travel to the OPEN position. \_\_\_\_\_
- [41] **DEPRESS** OPEN pushbutton on 2-HS-70-3B, RHR HTX B HDR INLET VLV SW. \_\_\_\_\_
- [42] **VERIFY** RED light is ON and GREEN light is OFF for 2-HS-70-3B, RHR HTX B HDR INLET VLV SW. \_\_\_\_\_
- [43] **DEPRESS** the CLOSE pushbutton on 2-HS-70-3B, RHR HTX B HDR INLET VLV SW. \_\_\_\_\_
- [44] **VERIFY** locally 2-FCV-70-3-B, RHR HTX B HDR INLET VLV, starts to travel to the CLOSED position. \_\_\_\_\_
- [45] **DEPRESS** STOP pushbutton on 2-HS-70-3B, RHR HTX B HDR INLET VLV SW, after 2-FCV-70-3-B, RHR HTX B HDR INLET VLV, completes approximately a 20 second stroke period. \_\_\_\_\_
- [46] **VERIFY** locally 2-FCV-70-3-B, RHR HTX B HDR INLET VLV, stops its travel to the CLOSED position. \_\_\_\_\_
- [47] **DEPRESS** the CLOSE pushbutton on 2-HS-70-3B, RHR HTX B HDR INLET VLV SW. \_\_\_\_\_
- [48] **VERIFY** locally 2-FCV-70-3-B, RHR HTX B HDR INLET VLV, travel to the CLOSED position. \_\_\_\_\_
- [49] **VERIFY** GREEN light is ON and RED light is OFF for 2-HS-70-3C, RHR HTX B HDR INLET VLV SW. \_\_\_\_\_

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**6.18 Valve 2-FCV-70-3-B RHR HTX B HDR INLET VLV Operational Test  
(continued)**

**NOTE**

Stopwatch timing of 2-FCV-70-3-B, RHR HTX B HDR INLET VLV, will be done at handswitch 2-HS-70-3A, 2B ESF EQ SUP HDR., and locally at 2-FCV-70-3-B, RHR HTX B HDR INLET VLV. Perform steps 6.18[50]/6.18[51] and 6.18[52]/6.18[53] sequentially to obtain stroke time data

[50] **SIMULTANEOUSLY PLACE** 2-HS-70-3A, 2B ESF EQ SUP HDR, to the OPEN position, **AND**

**START** stopwatches. \_\_\_\_\_

[51] **STOP** stopwatches when 2-FCV-70-3-B, RHR HTX B HDR INLET VLV, reaches the OPEN position, **AND**

**RECORD** stroke times below:

A. Remote Open Time \_\_\_\_\_  
\_\_\_\_\_ seconds

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Open Time \_\_\_\_\_  
\_\_\_\_\_ seconds

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[52] **SIMULTANEOUSLY PLACE** 2-HS-70-3A, 2B ESF EQ SUP HDR, to the CLOSED position, **AND**

**START** stopwatches. \_\_\_\_\_

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**6.18 Valve 2-FCV-70-3-B RHR HTX B HDR INLET VLV Operational Test (continued)**

[53] **STOP** stopwatches when 2-FCV-70-3-B, RHR HTX B HDR INLET VLV, reaches the CLOSED position, **AND**

**RECORD** stroke times below:

A. Remote Close Time \_\_\_\_\_ seconds

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

B. Local Close Time \_\_\_\_\_ seconds

M&TE \_\_\_\_\_ Cal Due Date \_\_\_\_\_

[54] **PLACE** 2-XS-70-3, 2B ESF EQUIP CCS SUP HDR (2-FCV-70-3), to the NORMAL position. \_\_\_\_\_

[55] **VERIFY** annunciator 150C, 480 RX MOV BD 2B1-B/2B2-B on 2-XA-55-6F CLEARS. \_\_\_\_\_

[56] **PLACE** handswitch 2-HS-70-3A, 2B ESF EQ SUP HDR, to the OPEN position. \_\_\_\_\_

[57] **VERIFY** locally, 2-FCV-70-3-B, RHR HTX B HDR INLET VLV, travels to the OPEN position. \_\_\_\_\_

[58] **PLACE** handswitch 2-HS-70-3A, 2B ESF EQ SUP HDR, to the CLOSE position. \_\_\_\_\_

[59] **VERIFY** locally, 2-FCV-70-3-B, RHR HTX B HDR INLET VLV, travels to the CLOSE position. \_\_\_\_\_

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**6.19 Thermal Barrier Booster Pump 2A-A Operational Test**

<b>NOTES</b>	
1)	This section will test the operation of the thermal barrier booster pump from its control stations and verify operability of all interlocks, indicating lights and annunciators and status monitoring input signals.
2)	2-PTI-70-01 will not be testing from inside the 6900V Shutdown Board 2A-A Logic Relay Panel. This relay panel is in service for Unit 1. Testing will be done from the MCC cubicle. Component Testing will check out the wiring from MCC to the logic panel and the Integrated Safeguards Test 2-PTI-262-01 will verify function.

- [1] **ENSURE** prerequisite actions for subsection 6.19 are completed.

<b>WARNING</b>
Arc Flash PPE per TI-300 will be required for steps 6.19[2] through 6.19[4]

- [2] **OPEN** 2-BKR-70-131-A 480V REAC MOV BD 2A1-A BKR 2C THERMAL BARRIER BSTR PMP 2A-A (2-MTR-70-131-A) [A12T/772], located in Reactor MOV BD 2A1-A, cubicle 2C.
- [3] **PERFORM** live-dead-live check on load.
- [4] **REMOVE** the Thermal Overloads (3) for 2-BKR-70-131-A 480V REAC MOV BD 2A1-A BKR 2C THERMAL BARRIER BSTR PMP 2A-A (2-MTR-70-131-A).

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**6.19 Thermal Barrier Booster Pump 2A-A Operational Test  
(continued)**

- [5] **LIFT** wire 2C10 from terminal point 1 in TB 609 in SSPS cabinet 2-R-48 [AUX INSTR RM] **AND**

**INSTALL** jumper with test switch labeled TS-5.1 in the CLOSED position in series with wire 2C10 and field terminal point 2 (wire 2C11) in TB609 in SSPS cabinet 2-R-48 [AUX INSTR RM] (K619 Test).

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- [6] **INSTALL** jumper with test switch labeled TS-5.2 in the OPEN position, on field terminal points 7 (wire 2CTC) and 8 (wire 2C20) on TB609 in SSPS cabinet 2-R-48 [AUX INSTR RM] (simulate CI phase B).

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- [7] **LIFT** wire CPCX from terminal 1 of TB022 in panel 2-L-10 on relay CPC [A8R/757] **AND**

**INSTALL** OPEN test switch labeled TS-5.3 in series with wire CPCX and terminal 1 of TB022. (low flow simulation)

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- [8] **CLOSE** 2-BKR-70-131-A, 480V REAC MOV BD 2A1-A BKR 2C THERMAL BARRIER BSTR PMP 2A-A (2-MTR-70-131-A), located in Reactor MOV BD 2A1-A, cubicle 2C.

- [9] **ENSURE** transfer switch 2-XS-70-131, CCS THRM BAR BSTR PMP 2A (2-PMP-70-131), located in Reactor MOV BD 2A1-A, cubicle 2C [A12T/772], is in the NORMAL position.

- [10] **ENSURE** annunciator 149C, 480 RX MOV 2A1-A/2A2-A on Panel 2-XA-55-6F, is CLEAR.

- [11] **PLACE** handswitch 2-HS-70-131C, THRM BARR BST PMP 2A-A MOTOR CONTROL, located in Reactor MOV BD 2A1-A, cubicle 2C, to the START position.

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**6.19 Thermal Barrier Booster Pump 2A-A Operational Test  
(continued)**

- [12] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A DOES NOT ENGAGE. \_\_\_\_\_
- [13] **VERIFY** the GREEN light is ON and the RED light is OFF on handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP), on panel 0-M-27B. \_\_\_\_\_
- [14] **VERIFY** the GREEN light is ON and the RED light is OFF on CNTMT ISOL STATUS PNL (XX-55-6E) Window 118. **(Acc Crit)** \_\_\_\_\_
- [15] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP), to the START position. \_\_\_\_\_
- [16] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A ENGAGES by observing breaker cubicle 2C RED light is ON. \_\_\_\_\_
- [17] **DEPRESS** STOP pushbutton 2-HS-70-131B, THRM BARR BST PMP A-A MOTOR CONTROL, at local control station. \_\_\_\_\_
- [18] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A DISENGAGES by observing breaker cubicle 2C RED light is OFF. \_\_\_\_\_
- [19] **DEPRESS** START pushbutton 2-HS-70-131B, THRM BARR BST PMP A-A MOTOR CONTROL [A9W/737], at local control station. \_\_\_\_\_

**NOTE**

For the remainder of this test section, contactor engaging/disengaging will be verified by RED light ON/OFF observation at the breaker cubicle.

- [20] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A ENGAGES. \_\_\_\_\_
- [21] **VERIFY** the RED light is ON and the GREEN light is OFF on handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP). \_\_\_\_\_

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**6.19 Thermal Barrier Booster Pump 2A-A Operational Test  
(continued)**

- [22] **VERIFY** the RED light is ON and the GREEN light is OFF on CNTMT ISOL STATUS PNL (XX-55-6E) Window 118.  
(Acc Crit) \_\_\_\_\_
- [23] **PLACE** handswitch 2-HS-70-131C, THRM BARR BST PMP 2A-A MOTOR CONTROL, to the STOP position. \_\_\_\_\_
- [24] **VERIFY** the RED light is ON and the GREEN light is OFF on handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP). \_\_\_\_\_
- [25] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A remains ENGAGED. \_\_\_\_\_
- [26] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP), to the STOP position. \_\_\_\_\_
- [27] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A DISENGAGES. \_\_\_\_\_
- [28] **VERIFY** the GREEN light is ON and the RED light is OFF on handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP). \_\_\_\_\_
- [29] **VERIFY** the GREEN light is ON and the RED light is OFF on CNTMT ISOL STATUS PNL (XX-55-6E) Window 118. \_\_\_\_\_
- [30] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP), to the START position. \_\_\_\_\_
- [31] **VERIFY** the RED light is ON and the GREEN light is OFF on CNTMT ISOL STATUS PNL (XX-55-6E) Window 118. \_\_\_\_\_
- [32] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A ENGAGES. \_\_\_\_\_
- [33] **OPEN** test switch TS-5.1. \_\_\_\_\_
- [34] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A DISENGAGES. (Acc Crit) \_\_\_\_\_
- [35] **VERIFY** the GREEN light is ON and the RED light is OFF on handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP). \_\_\_\_\_

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**6.19 Thermal Barrier Booster Pump 2A-A Operational Test  
(continued)**

- [36] **CLOSE** test switch TS-5.1. \_\_\_\_\_
- [37] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A is DISENGAGED. (**Acc Crit**) \_\_\_\_\_
- [38] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP), to the START position. \_\_\_\_\_
- [39] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A ENGAGES. \_\_\_\_\_
- [40] **VERIFY** the RED light is ON and the GREEN light is OFF on handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP). \_\_\_\_\_
- [41] **INSTALL** a jumper from terminal 59 (wire FCAX) to terminal 60 (wire FCA1) of TB-2 in panel 2-R-129 [AUX INSTR RM] (flow differential simulation). \_\_\_\_\_  

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- [42] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A DISENGAGES. (**Acc Crit**) \_\_\_\_\_
- [43] **REMOVE** jumper from terminal 59 to terminal 60 of TB-2 in panel 2-R-129. \_\_\_\_\_  

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- [44] **VERIFY** the GREEN light is ON and the RED light is OFF on handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP). \_\_\_\_\_
- [45] **VERIFY** the GREEN light is ON and the RED light is OFF on CNTMT ISOL STATUS PNL (XX-55-6E) Window 118. \_\_\_\_\_
- [46] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP), to the PULL A-P AUTO position. \_\_\_\_\_
- [47] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A DOES NOT ENGAGE. \_\_\_\_\_

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**6.19 Thermal Barrier Booster Pump 2A-A Operational Test  
(continued)**

- [48] **CLOSE** test switch TS-5.3. \_\_\_\_\_
- [49] **VERIFY** the starter contactor for breaker 2C on Reactor MOV  
BD 2A1-A ENGAGES. (**Acc Crit**) \_\_\_\_\_
- [50] **OPEN** test switch TS-5.3. \_\_\_\_\_
- [51] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP  
2A (TBBP), to the STOP position, **THEN**  
  
**PLACE** in PULL A-P AUTO position. \_\_\_\_\_
- [52] **VERIFY** the starter contactor for breaker 2C on Reactor MOV  
BD 2A1-A DISENGAGES. \_\_\_\_\_
- [53] **CLOSE** test switch TS-5.2. \_\_\_\_\_
- [54] **CLOSE** test switch TS-5.3. \_\_\_\_\_
- [55] **VERIFY** the starter contactor for breaker 2C on Reactor MOV  
BD 2A1-A DOES NOT ENGAGE. (**Acc Crit**) \_\_\_\_\_
- [56] **OPEN** test switch TS-5.2. \_\_\_\_\_
- [57] **VERIFY** the starter contactor for breaker 2C on Reactor MOV  
BD 2A1-A DOES NOT ENGAGE. (**Acc Crit**) \_\_\_\_\_
- [58] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP  
2A (TBBP), to the STOP position. \_\_\_\_\_
- [59] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP  
2A (TBBP), to the PULL A-P AUTO position. \_\_\_\_\_
- [60] **VERIFY** the starter contactor for breaker 2C on Reactor MOV  
BD 2A1-A ENGAGES. \_\_\_\_\_
- [61] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP  
2A (TBBP), to the STOP position. \_\_\_\_\_
- [62] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP  
2A (TBBP), to the START position. \_\_\_\_\_
- [63] **VERIFY** the starter contactor for breaker 2C on Reactor MOV  
BD 2A1-A ENGAGES. \_\_\_\_\_

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**6.19 Thermal Barrier Booster Pump 2A-A Operational Test  
(continued)**

[64] **CLOSE** test switch TS-5.2. \_\_\_\_\_

[65] **VERIFY** the starter contactor for breaker 2C on Reactor MOV  
BD 2A1-A is ENGAGED. \_\_\_\_\_

[66] **OPEN** test switch TS-5.2. \_\_\_\_\_

[67] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP  
2A (TBBP), to the PULL A-P AUTO position. \_\_\_\_\_

[68] **INSTALL** a jumper from terminal 59 (wire FCAX) to terminal  
60 (wire FCA1) of TB-2 in panel 2-R-129 [AUX INSTR RM]  
(flow differential simulation). \_\_\_\_\_

1st

CV

[69] **VERIFY** the starter contactor for breaker 2C on Reactor MOV  
BD 2A1-A DISENGAGES. (**Acc Crit**) \_\_\_\_\_

[70] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP  
2A (TBBP), to the STOP PULL TO LOCK position. \_\_\_\_\_

[71] **VERIFY** the starter contactor for breaker 2C on Reactor MOV  
BD 2A1-A DISENGAGES. \_\_\_\_\_

[72] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP  
2A (TBBP), to the PULL A-P AUTO position. \_\_\_\_\_

[73] **VERIFY** the starter contactor for breaker 2C on Reactor MOV  
BD 2A1-A DOES NOT ENGAGE. \_\_\_\_\_

[74] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP  
2A (TBBP), to the STOP position. \_\_\_\_\_

[75] **REMOVE** a jumper from terminal 59 (wire FCAX) to terminal  
60 (wire FCA1) of TB-2 in panel 2-R-129 [AUX INSTR RM]  
(flow differential simulation). \_\_\_\_\_

1st

CV

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**6.19 Thermal Barrier Booster Pump 2A-A Operational Test  
(continued)**

[76] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP), to the PULL A-P AUTO position. \_\_\_\_\_

[77] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A ENGAGES. \_\_\_\_\_

[78] **INSTALL** a jumper across terminal points 9 (wire 2CX1) and 10 (wire 2C9) on TB620 in panel 2-R-48 [AUX INSTR RM] (SI Lockout). \_\_\_\_\_

1st

CV

[79] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP), to the STOP PULL TO LOCK position. \_\_\_\_\_

[80] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A DISENGAGES. \_\_\_\_\_

[81] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP), to the PULL A-P AUTO position. \_\_\_\_\_

[82] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A DOES NOT ENGAGE. \_\_\_\_\_

[83] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP), to the STOP PULL TO LOCK position. \_\_\_\_\_

[84] **REMOVE** jumper across terminal points 9 (wire 2CX1) and 10 (wire 2C9) on TB620 in panel 2-R-48. \_\_\_\_\_

1st

CV

[85] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP), to the PULL A-P AUTO position. \_\_\_\_\_

[86] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A ENGAGES. \_\_\_\_\_

[87] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP), to the STOP-PULLOUT position. \_\_\_\_\_

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**6.19 Thermal Barrier Booster Pump 2A-A Operational Test  
(continued)**

[88] **INSTALL** jumper across terminal points 9 (wire 2CX1) and 10 (wire 2C9) on TB620 in panel 2-R-48.

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1st

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CV

[89] **INSTALL** a jumper across terminal 28 (wire 2C13) and terminal 29 (wire 2C14) in rear of Reactor MOV BD 2A1-A, cubicle 2C [A12T/772] (Thermal Barrier Booster Pump 2A-A).

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1st

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CV

[90] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP), to the PULL A-P AUTO position **AND**

**START** stopwatch.

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1st

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CV

[91] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A DOES NOT ENGAGE IMMEDIATELY.

[92] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A [A12T/772] ENGAGES after an approximate 38 second delay. (**Acc Crit**)

[93] **REMOVE** jumper across terminal points 9 (wire 2CX1) and 10 (wire 2C9) on TB620 in panel 2-R-48.

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1st

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CV

[94] **REMOVE** jumper across terminal 28 (wire 2C13) and terminal (wire 2C14) in rear of Reactor MOV BD 2A1-A, cubicle 2C (Thermal Barrier Booster Pump 2A-A).

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1st

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CV

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**6.19 Thermal Barrier Booster Pump 2A-A Operational Test  
(continued)**

[95] **INSTALL** voltmeter across relay 62 coil, terminals B1 (wire 2C13) and B4 (wire 2CY1) in rear of Reactor MOV BD 2A1-A, cubicle 2C.

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1st

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CV

[96] **VERIFY** approximately zero volts across relay 62 coil (CCSA BOX contact OPEN).

[97] **INSTALL** a jumper across wire 2C13 and wire 2C14 in rear of Reactor MOV BD 2A1-A, cubicle 2C (Thermal Barrier Booster Pump 2A-A).

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1st

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CV

[98] **VERIFY** approximately 120 volts across relay 62 coil.

[99] **INSTALL** a jumper across terminal points 9 (wire 2CX1) and 10 (wire 2C9) on TB620 in panel 2-R-48 (simulate SI signal).

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1st

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CV

[100] **VERIFY** voltage across relay 62 coil IMMEDIATELY goes to approximately zero, THEN RETURNS to 120 volts in approximately 3 seconds.

[101] **REMOVE** jumper across terminal 28 (wire 2C13) and terminal 29 (wire 2C14) in rear of Reactor MOV BD 2A1-A, cubicle 2C (Thermal Barrier Booster Pump 2A-A).

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[102] **VERIFY** voltage across relay 62 coil goes to approximately zero.

\_\_\_\_\_

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**6.19 Thermal Barrier Booster Pump 2A-A Operational Test  
(continued)**

[103] **REMOVE** voltmeter across relay 62 coil, terminals B1 (wire 2C13) and B4 (wire 2CY1) in rear of Reactor MOV BD 2A1-A, cubicle 2C.

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1st

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CV

[104] **REMOVE** jumper across terminal points 9 (wire 2CX1) and 10 (wire 2C9) on TB620 in panel 2-R-48.

\_\_\_\_\_  
1st

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CV

[105] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A is ENGAGED.

[106] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP), to the STOP PULLOUT position.

[107] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A DISENGAGES.

[108] **PLACE** Transfer Switch 2-XS-70-131, CCS THRM BAR BSTR PMP 2A (2-PMP-70-131), in the AUXILIARY (AUX) position.

[109] **VERIFY** annunciator 149C, 480 RX MOV 2A1-A/2A2-A on panel 2-XA-55-6F, ALARMS.

[110] **OPEN** test switch TS-5.3.

[111] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP), to the START position.

[112] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A DOES NOT ENGAGE.

[113] **VERIFY** the GREEN light is OFF for handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP).

[114] **VERIFY** the GREEN light is OFF at CNTMT ISOL STATUS PNL (XX-55-6E) Window 118.

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**6.19 Thermal Barrier Booster Pump 2A-A Operational Test  
(continued)**

- [115] **PLACE** handswitch 2-HS-70-131C, THRM BARR BST PMP 2A-A MOTOR CONTROL, to the START position. \_\_\_\_\_
- [116] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A ENGAGES. \_\_\_\_\_
- [117] **VERIFY** the RED light is OFF for handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP). \_\_\_\_\_
- [118] **VERIFY** the RED light is OFF at CNTMT ISOL STATUS PNL (XX-55-6E) Window 118. \_\_\_\_\_
- [119] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP), to the STOP position. \_\_\_\_\_
- [120] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A is ENGAGED. \_\_\_\_\_
- [121] **PLACE** handswitch 2-HS-70-131C, THRM BARR BST PMP 2A-A MOTOR CONTROL, to the STOP position. \_\_\_\_\_
- [122] **VERIFY** the starter contactor for breaker 2C Reactor MOV BD 2A1-A DISENGAGES. \_\_\_\_\_
- [123] **PLACE** handswitch 2-HS-70-131C, THRM BARR BST PMP 2A-A MOTOR CONTROL, to the P-AUTO position. \_\_\_\_\_
- [124] **CLOSE** test switch TS-5.3 (low flow simulation). \_\_\_\_\_
- [125] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A ENGAGES. \_\_\_\_\_
- [126] **OPEN** test switch TS-5.3. \_\_\_\_\_
- [127] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A is ENGAGED. \_\_\_\_\_
- [128] **INSTALL** a jumper across terminal points 9 (wire 2CX1) and 10 (wire 2C9) on TB620 in panel 2-R-48 (simulate SI signal). \_\_\_\_\_

1st

CV

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**6.19 Thermal Barrier Booster Pump 2A-A Operational Test  
(continued)**

[129] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A DISENGAGES after an approximate delay of 3 seconds.

\_\_\_\_\_

[130] **REMOVE** jumper across terminal points 9 and 10 on TB620 in panel 2-R-48.

\_\_\_\_\_

1st

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CV

[131] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A is DISENGAGED.

\_\_\_\_\_

[132] **CLOSE** test switch TS-5.3.

\_\_\_\_\_

[133] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A ENGAGES.

\_\_\_\_\_

[134] **OPEN** test switch TS-5.3.

\_\_\_\_\_

[135] **INSTALL** a jumper across wire 2C13 and wire 2C14 in rear of Reactor MOV BD 2A1-A, cubicle 2C (Thermal Barrier Booster Pump 2A-A).

\_\_\_\_\_

1st

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CV

[136] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A DISENGAGES IMMEDIATELY.

\_\_\_\_\_

[137] **REMOVE** a jumper across terminal 28 (wire 2C13) and terminal 29 (wire 2C14) in rear of Reactor MOV BD 2A1-A, cubicle 2C (Thermal Barrier Booster Pump 2A-A).

\_\_\_\_\_

1st

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CV

[138] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2A1-A remains DISENGAGED.

\_\_\_\_\_

[139] **PLACE** handswitch 2-HS-70-131C, THRM BARR BST PMP 2A-A MOTOR CONTROL, to the STOP position.

\_\_\_\_\_

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**6.19 Thermal Barrier Booster Pump 2A-A Operational Test  
(continued)**

[140] **PLACE** handswitch 2-HS-70-131A, THRM BAR BSTR PMP 2A (TBBP), to the STOP PULL TO LOCK position. \_\_\_\_\_

[141] **PLACE** Transfer Switch 2-XS-70-131, CCS THRM BAR BSTR PMP 2A (2-PMP-70-131), in the NORMAL position. \_\_\_\_\_

[142] **VERIFY** annunciator 149C, 480 RX MOV 2A1-A/2A2-A on panel 2-XA-55-6F, CLEARS. \_\_\_\_\_

**WARNING**

Arc Flash PPE per TI-300 will be required for steps 6.19[143] through 6.19[145]

[143] **OPEN** 2-BKR-70-131-A 480V REAC MOV BD 2A1-A BKR 2C THERMAL BARRIER BSTR PMP 2A-A (2-MTR-70-131-A) [A12T/772], located in Reactor MOV BD 2A1-A, cubicle 2C. \_\_\_\_\_

[144] **PERFORM** live-dead-live check on load. \_\_\_\_\_

[145] **INSTALL** the Thermal Overloads (3) for 2-BKR-70-131-A 480V REAC MOV BD 2A1-A BKR 2C THERMAL BARRIER BSTR PMP 2A-A (2-MTR-70-131-A). \_\_\_\_\_

[146] **REMOVE** jumper with test switch labeled TS-5.1 in the CLOSED position, between wire 2C10 and terminal 1 on TB609 in SSPS cabinet 2-R-48 **AND**

**LAND** wire 2C10 to terminal point 1. \_\_\_\_\_

1st

CV

[147] **REMOVE** jumper with test switch labeled TS-5.2 in the OPEN position, on field terminal points 7 and 8 on TB609 in SSPS cabinet 2-R-48. \_\_\_\_\_

1st

CV

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**6.19 Thermal Barrier Booster Pump 2A-A Operational Test  
(continued)**

[148] **REMOVE** test switch TS-5.3.

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1st

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CV

[149] **TERMINATE** relay CPC wire CPCX to terminal 1 of TB022 in  
panel 2-L-10.

\_\_\_\_\_  
1st

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CV

[150] **VERIFY** successful completion of Subsection 6.19 (**ACC CRIT  
5.00**)

\_\_\_\_\_

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## 6.20 Thermal Barrier Booster Pump 2B-B Operational Test

### NOTES

- 1) This section will test the operation of the thermal barrier booster pump from its control stations and verify operability of all interlocks, indicating lights and annunciators and status monitoring input signals.
- 2) 2-PTI-70-01 will not be testing from inside the 6900V Shutdown Board 2A-A Logic Relay Panel. This relay panel is in service for Unit 1. Testing will be done from the MCC cubicle. Component Testing will check out the wiring from MCC to the logic panel and the Integrated Safeguards Test 2-PTI-262-01 will verify function.

- [1] **ENSURE** prerequisite actions for subsection 6.20 are completed. \_\_\_\_\_

### WARNING

Arc Flash PPE per TI-300 will be required for steps 6.20[2] through 6.20[4]

- [2] **OPEN** 2-BKR-70-130-B, BREAKER FOR THERMAL BARRIER BOOSTER PUMP 2B-B MOTOR [A12S/772], located in Reactor MOV BD 2B1-B, cubicle 2C. \_\_\_\_\_
- [3] **PERFORM** live-dead-live check on load. \_\_\_\_\_
- [4] **REMOVE** the Thermal Overloads (3) for 2-BKR-70-130-B, BREAKER FOR THERMAL BARRIER BOOSTER PUMP 2B-B MOTOR. \_\_\_\_\_

1st

CV

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**6.20 Thermal Barrier Booster Pump 2B-B Operational Test  
(continued)**

- [5] **LIFT** wire 2C10 from terminal point 1 in TB 609 in SSPS cabinet 2-R-51 [AUX INSTR RM] **AND**

**INSTALL** jumper with test switch labeled TS-5.1 in the CLOSED position in series with wire 2C10 and field terminal point 2 (wire 2C11) in TB609 in SSPS cabinet 2-R-51 [AUX INSTR RM] (K619 Test).

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

- [6] **INSTALL** jumper with test switch labeled TS-5.2 in the OPEN position, on field terminal points 7 (wire 2CTC) and 8 (wire 2C20) on TB609 in SSPS cabinet 2-R-51 [AUX INSTR RM] (simulate CI phase B).

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

- [7] **LIFT** wire 2C5 in junction box 2-JB-292-2173-B on panel 2-L-290 [A11W/744], **AND**

**INSTALL** OPEN test switch labeled TS-5.3 in series with wire 2C5 (low flow simulation).

\_\_\_\_\_  
1st

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CV

- [8] **CLOSE** 2-BKR-70-130-B, BREAKER FOR THERMAL BARRIER BOOSTER PUMP 2B-B MOTOR, located in Reactor MOV BD 2B1-B, cubicle 2C.

- [9] **ENSURE** transfer switch 2-XS-70-130, CCS THRM BAR BSTR PMP 2B (2-PMP-70-130) [A12S/772], located in Reactor MOV BD 2B1-B, cubicle 2C, is in the NORMAL position.

- [10] **ENSURE** annunciator 150C, 480 RX MOV 2B1-B/2B2-B on Panel 2-XA-55-6F, is CLEAR.

- [11] **PLACE** handswitch 2-HS-70-130C, THRM BARR BST PMP B-B MOTOR CONTROL, located in Reactor MOV BD 2B1-B, cubicle 2C, to the START position.

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**6.20 Thermal Barrier Booster Pump 2B-B Operational Test  
(continued)**

- [12] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B DOES NOT ENGAGE. \_\_\_\_\_
- [13] **VERIFY** the GREEN light is ON and the RED light is OFF on handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP), on panel 0-M-27B. \_\_\_\_\_
- [14] **VERIFY** the GREEN light is ON and the RED light is OFF on CNTMT ISOL STATUS PNL (XX-55-6F) Window 118.  
**(Acc Crit)** \_\_\_\_\_
- [15] **PLACE** handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP), to the START position. \_\_\_\_\_
- [16] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B [A12S/772] ENGAGES by observing breaker cubicle 2C RED light is ON. \_\_\_\_\_
- [17] **DEPRESS** STOP pushbutton 2-HS-70-130B, THRM BARR BST PMP B-B MOTOR CONTROL, at local control station. \_\_\_\_\_
- [18] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B DISENGAGES by observing breaker cubicle 2C RED light is OFF. \_\_\_\_\_
- [19] **DEPRESS** START pushbutton 2-HS-70-130B, THRM BARR BST PMP B-B MOTOR CONTROL [A9W/737], at local control station. \_\_\_\_\_

**NOTE**

For the remainder of this test section, contactor engaging/disengaging will be verified by RED light ON/OFF observation at the breaker cubicle.

- [20] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B ENGAGES. \_\_\_\_\_
- [21] **VERIFY** the RED light is ON and the GREEN light is OFF on handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP). \_\_\_\_\_

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**6.20 Thermal Barrier Booster Pump 2B-B Operational Test  
(continued)**

- [22] **VERIFY** the RED light is ON and the GREEN light is OFF on CNTMT ISOL STATUS PNL (XX-55-6F) Window 118.  
**(Acc Crit)** \_\_\_\_\_
- [23] **PLACE** handswitch 2-HS-70-130C, THRM BARR BST PMP B-B MOTOR CONTROL to the STOP position. \_\_\_\_\_
- [24] **VERIFY** the RED light is ON and the GREEN light is OFF on handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP). \_\_\_\_\_
- [25] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B remains ENGAGED. \_\_\_\_\_
- [26] **PLACE** handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP), to the STOP position. \_\_\_\_\_
- [27] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B DISENGAGES. \_\_\_\_\_
- [28] **VERIFY** the GREEN light is ON and the RED light is OFF on handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP). \_\_\_\_\_
- [29] **VERIFY** the GREEN light is ON and the RED light is OFF on CNTMT ISOL STATUS PNL (XX-55-6F) Window 118. \_\_\_\_\_
- [30] **PLACE** handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP), to the START position. \_\_\_\_\_
- [31] **VERIFY** the RED light is ON and the GREEN light is OFF on CNTMT ISOL STATUS PNL (XX-55-6F) Window 118. \_\_\_\_\_
- [32] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B ENGAGES. \_\_\_\_\_
- [33] **OPEN** test switch TS-5.1. \_\_\_\_\_
- [34] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B DISENGAGES. **(Acc Crit)** \_\_\_\_\_
- [35] **VERIFY** the GREEN light is ON and the RED light is OFF on handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP). \_\_\_\_\_

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**6.20 Thermal Barrier Booster Pump 2B-B Operational Test  
(continued)**

- [36] **OPEN** test switch TS-5.1. \_\_\_\_\_
- [37] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B is DISENGAGED. (**Acc Crit**) \_\_\_\_\_
- [38] **PLACE** handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP), to the START position. \_\_\_\_\_
- [39] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B ENGAGES. \_\_\_\_\_
- [40] **VERIFY** the RED light is ON and the GREEN light is OFF on handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP). \_\_\_\_\_
- [41] **INSTALL** a jumper from terminal 57 (wire FCBX) to terminal 58 (wire FCB1) of TB-2 in panel 2-R-132 (flow differential simulation). \_\_\_\_\_  
1st  
CV
- [42] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B DISENGAGES. (**Acc Crit**) \_\_\_\_\_
- [43] **REMOVE** jumper from terminal 57 to terminal 58 of TB-2 in panel 2-R-132. \_\_\_\_\_  
1st  
CV
- [44] **VERIFY** the GREEN light is ON and the RED light is OFF on handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP). \_\_\_\_\_
- [45] **VERIFY** the GREEN light is ON and the RED light is OFF on CNTMT ISOL STATUS PNL (XX-55-6F) Window 118. \_\_\_\_\_
- [46] **PLACE** handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP), to the PULL A-P AUTO position. \_\_\_\_\_
- [47] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B DOES NOT ENGAGE. \_\_\_\_\_

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**6.20 Thermal Barrier Booster Pump 2B-B Operational Test  
(continued)**

- [48] **CLOSE** test switch TS-5.3. \_\_\_\_\_
- [49] **VERIFY** the starter contactor for breaker 2C on Reactor MOV  
BD 2B1-B ENGAGES. (**Acc Crit**) \_\_\_\_\_
- [50] **OPEN** test switch TS-5.3. \_\_\_\_\_
- [51] **PLACE** handswitch 2-HS-70-130A, THRM BAR BSTR PMP  
2B (TBBP), to the STOP position, **THEN**  
  
**PLACE** in PULL A-P AUTO position. \_\_\_\_\_
- [52] **VERIFY** the starter contactor for breaker 2C on Reactor MOV  
BD 2A1-A DISENGAGES. \_\_\_\_\_
- [53] **CLOSE** test switch TS-5.2. \_\_\_\_\_
- [54] **CLOSE** test switch TS-5.3. \_\_\_\_\_
- [55] **VERIFY** the starter contactor for breaker 2C on Reactor MOV  
BD 2B1-B DOES NOT ENGAGE. (**Acc Crit**) \_\_\_\_\_
- [56] **OPEN** test switch TS-5.2. \_\_\_\_\_
- [57] **VERIFY** the starter contactor for breaker 2C on Reactor MOV  
BD 2B1-B DOES NOT ENGAGE. (**Acc Crit**) \_\_\_\_\_
- [58] **PLACE** handswitch 2-HS-70-130A, THRM BAR BSTR PMP  
2B (TBBP) to the STOP position. \_\_\_\_\_
- [59] **PLACE** handswitch 2-HS-70-130A THRM BARR BST PMP  
B-B MOTOR CONTROL, to the PULL A-P AUTO position. \_\_\_\_\_
- [60] **VERIFY** the starter contactor for breaker 2C on Reactor MOV  
BD 2B1-B ENGAGES. \_\_\_\_\_
- [61] **PLACE** handswitch 2-HS-70-130A, THRM BAR BSTR PMP  
2B (TBBP), to the STOP position. \_\_\_\_\_
- [62] **PLACE** handswitch 2-HS-70-130A, THRM BAR BSTR PMP  
2B (TBBP), to the START position. \_\_\_\_\_
- [63] **VERIFY** the starter contactor for breaker 2C on Reactor MOV  
BD 2B1-B ENGAGES. \_\_\_\_\_

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**6.20 Thermal Barrier Booster Pump 2B-B Operational Test  
(continued)**

[64] **CLOSE** test switch TS-5.2. \_\_\_\_\_

[65] **VERIFY** the starter contactor for breaker 2C on Reactor MOV  
BD 2B1-B is ENGAGED. \_\_\_\_\_

[66] **OPEN** test switch TS-5.2. \_\_\_\_\_

[67] **PLACE** handswitch 2-HS-70-130A, THRM BAR BSTR PMP  
2B (TBBP), to the PULL A-P AUTO position. \_\_\_\_\_

[68] **INSTALL** a jumper from terminal 57 (wire FCBX) to terminal  
58 (wire FCB1) of TB-2 in panel 2-R-132 (flow differential  
simulation). \_\_\_\_\_

1st

CV

[69] **VERIFY** the starter contactor for breaker 2C on Reactor MOV  
BD 2B1-B DISENGAGES. (**Acc Crit**) \_\_\_\_\_

[70] **PLACE** handswitch 2-HS-70-130A, THRM BAR BSTR PMP  
2B (TBBP), to the STOP PULL TO LOCK position. \_\_\_\_\_

[71] **VERIFY** the starter contactor for breaker 2C on Reactor MOV  
BD 2B1-B DISENGAGES. \_\_\_\_\_

[72] **PLACE** handswitch 2-HS-70-130A, THRM BAR BSTR PMP  
2B (TBBP), to the PULL A-P AUTO position. \_\_\_\_\_

[73] **VERIFY** the starter contactor for breaker 2C on Reactor MOV  
BD 2B1-B DOES NOT ENGAGE. \_\_\_\_\_

[74] **PLACE** handswitch 2-HS-70-130A, THRM BAR BSTR PMP  
2B (TBBP), to the STOP position. \_\_\_\_\_

[75] **REMOVE** a jumper from terminal 57 (wire FCBX) to terminal  
58 (wire FCB1) of TB-2 in panel 2-R-132 (flow differential  
simulation). \_\_\_\_\_

1st

CV

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**6.20 Thermal Barrier Booster Pump 2B-B Operational Test  
(continued)**

[76] **PLACE** handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP), to the PULL A-P AUTO position. \_\_\_\_\_

[77] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B ENGAGES. \_\_\_\_\_

[78] **INSTALL** a jumper across terminal points 9 (wire 2CX1) and 10 (wire 2C9) on TB620 in panel 2-R-51 (SI Lockout). \_\_\_\_\_

1st

CV

[79] **PLACE** handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP), to the STOP PULL TO LOCK position. \_\_\_\_\_

[80] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B DISENGAGES. \_\_\_\_\_

[81] **PLACE** handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP), to the PULL A-P AUTO position. \_\_\_\_\_

[82] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B DOES NOT ENGAGE. \_\_\_\_\_

[83] **PLACE** handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP), to the STOP PULL TO LOCK position. \_\_\_\_\_

[84] **REMOVE** jumper across terminal points 9 (wire 2CX1) and 10 (wire 2C9) on TB620 in panel 2-R-51. \_\_\_\_\_

1st

CV

[85] **PLACE** handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP), to the PULL A-P AUTO position. \_\_\_\_\_

[86] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B ENGAGES. \_\_\_\_\_

[87] **PLACE** handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP), to the STOP-PULLOUT position. \_\_\_\_\_

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**6.20 Thermal Barrier Booster Pump 2B-B Operational Test  
(continued)**

[88] **INSTALL** jumper across terminal points 9 (wire 2CX1) and 10 (wire 2C9) on TB620 in panel 2-R-51.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[89] **INSTALL** a jumper across terminal 28 (wire 2C13) and terminal 29 (wire 2C14) in rear of Reactor MOV BD 2B1-B cubicle 2C (Thermal Barrier Booster Pump 2B-B).

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[90] **PLACE** handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP), to the PULL A-P AUTO position **AND**

**START** stopwatch.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[91] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B [A12S/772] DOES NOT ENGAGE IMMEDIATELY.

[92] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B ENGAGES after an approximate 38 second delay. **(Acc Crit)**

[93] **REMOVE** jumper across terminal points 9 (wire 2CX1) and 10 (wire 2C9) on TB620 in panel 2-R-51.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[94] **REMOVE** jumper across terminal 28 (wire 2C13) and terminal 29 (wire 2C14) in rear of Reactor MOV BD 2B1-B cubicle 2C (Thermal Barrier Booster Pump 2B-B).

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

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**6.20 Thermal Barrier Booster Pump 2B-B Operational Test  
(continued)**

[95] **INSTALL** voltmeter across relay 62 coil, terminals B1 (wire 2C13) and B4 (wire 2CY1) in rear of Reactor MOV BD 2B1-B, cubicle 2C [A12S/772].

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[96] **VERIFY** approximately zero volts across relay 62 coil (CCSB BOX contact OPEN).

[97] **INSTALL** a jumper across wire 2C13 and wire 2C14 in rear of Reactor MOV BD 2B1-B cubicle 2C (Thermal Barrier Booster Pump 2B-B).

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[98] **VERIFY** approximately 120 volts across relay 62 coil.

[99] **INSTALL** a jumper across terminal points 9 (wire 2CX1) and 10 (wire 2C9) on TB620 in panel 2-R-51.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[100] **VERIFY** voltage across relay 62 coil IMMEDIATELY goes to approximately zero, THEN RETURNS to 120 volts in approximately 3 seconds.

[101] **REMOVE** jumper across terminal 28 (wire 2C13) and terminal 29 (wire 2C14) in rear of Reactor MOV BD 2B1-B cubicle 2C (Thermal Barrier Booster Pump 2B-B).

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[102] **VERIFY** voltage across relay 62 coil goes to approximately zero.

\_\_\_\_\_

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**6.20 Thermal Barrier Booster Pump 2B-B Operational Test  
(continued)**

[103] **REMOVE** voltmeter across relay 62 coil, terminals B1 (wire 2C13) and B4 (wire 2Cy1) in rear of Reactor MOV BD 2B1-B, cubicle 2C.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[104] **REMOVE** a jumper across terminal points 9 (wire 2CX1) and 10 (wire 2C9) on TB620 in panel 2-R-51.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[105] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B is ENGAGED.

[106] **PLACE** handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP), to the STOP PULL TO LOCK position.

[107] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B DISENGAGES.

[108] **PLACE** Transfer Switch 2-XS-70-130, CCS THRM BAR BSTR PMP 2B (2-PMP-70-130), in the AUXILIARY (AUX) position.

[109] **VERIFY** annunciator 150C, 480 RX MOV 2B1-B/2B2-B on panel 2-XA-55-6F, ALARMS.

[110] **OPEN** test switch TS-5.3.

[111] **PLACE** handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP), to the START position.

[112] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B DOES NOT ENGAGE.

[113] **VERIFY** the GREEN light is OFF for handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP).

[114] **VERIFY** the GREEN light is OFF at CNTMT ISOL STATUS PNL (XX-55-6F) Window 118.

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**6.20 Thermal Barrier Booster Pump 2B-B Operational Test  
(continued)**

- [115] **PLACE** handswitch 2-HS-70-130C, THRM BARR BST PMP B-B MOTOR CONTROL, to the START position. \_\_\_\_\_
- [116] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B ENGAGES. \_\_\_\_\_
- [117] **VERIFY** the RED light is OFF for handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP). \_\_\_\_\_
- [118] **VERIFY** the RED light is OFF at CNTMT ISOL STATUS PNL (XX-55-6F) Window 118. \_\_\_\_\_
- [119] **PLACE** handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP), to the STOP position. \_\_\_\_\_
- [120] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B is ENGAGED. \_\_\_\_\_
- [121] **PLACE** handswitch 2-HS-70-130C, THRM BARR BST PMP B-B MOTOR CONTROL, to the STOP position. \_\_\_\_\_
- [122] **VERIFY** the starter contactor for breaker 2C Reactor MOV BD 2B1-B DISENGAGES. \_\_\_\_\_
- [123] **PLACE** handswitch 2-HS-70-130C, THRM BARR BST PMP B-B MOTOR CONTROL, to the P-AUTO position. \_\_\_\_\_
- [124] **CLOSE** test switch TS-5.3 (low flow simulation). \_\_\_\_\_
- [125] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B ENGAGES. \_\_\_\_\_
- [126] **OPEN** test switch TS-5.3. \_\_\_\_\_
- [127] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B is ENGAGED. \_\_\_\_\_
- [128] **INSTALL** a jumper across terminal points 9 (wire 2CX1) and 10 (wire 2C9) on TB620 in panel 2-R-51. \_\_\_\_\_

1st

CV

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**6.20 Thermal Barrier Booster Pump 2B-B Operational Test  
(continued)**

[129] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B DISENGAGES after an approximate delay of 3 seconds.

\_\_\_\_\_

[130] **REMOVE** jumper across terminal points 9 (wire 2CX1) and 10 (wire 2C9) on TB620 in panel 2-R-51.

\_\_\_\_\_

1st

\_\_\_\_\_

CV

[131] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B is DISENGAGED.

\_\_\_\_\_

[132] **CLOSE** test switch TS-5.3.

\_\_\_\_\_

[133] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B ENGAGES.

\_\_\_\_\_

[134] **OPEN** test switch TS-5.3.

\_\_\_\_\_

[135] **INSTALL** a jumper across terminal 28 (wire 2C13) and terminal 29 (wire 2C14) in rear of Reactor MOV BD 2B1-B cubicle 2C (Thermal Barrier Booster Pump 2B-B).

\_\_\_\_\_

1st

\_\_\_\_\_

CV

[136] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 2B1-B DISENGAGES IMMEDIATELY.

\_\_\_\_\_

[137] **REMOVE** jumper across wire 2C13 and wire 2C14 in rear of Reactor MOV BD 2B1-B cubicle 2C (Thermal Barrier Booster Pump 2B-B).

\_\_\_\_\_

1st

\_\_\_\_\_

CV

[138] **VERIFY** the starter contactor for breaker 2C on Reactor MOV BD 21B1-B remains DISENGAGED.

\_\_\_\_\_

[139] **PLACE** handswitch 2-HS-70-130C, THRM BARR BST PMP B-B MOTOR CONTROL to the STOP position.

\_\_\_\_\_

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**6.20 Thermal Barrier Booster Pump 2B-B Operational Test  
(continued)**

[140] **PLACE** handswitch 2-HS-70-130A, THRM BAR BSTR PMP 2B (TBBP) to the STOP PULL TO LOCK position. \_\_\_\_\_

[141] **PLACE** Transfer Switch 2-XS-70-130, CCS THRM BAR BSTR PMP 2B (2-PMP-70-130), in the NORMAL position. \_\_\_\_\_

[142] **VERIFY** annunciator 150C, 480 RX MOV 2B1-B/2B2-B on panel 2-XA-55-6F, CLEARS. \_\_\_\_\_

**WARNING**

Arc Flash PPE per TI-300 will be required for steps 6.20[143] through 6.20[145]

[143] **OPEN** 2-BKR-70-130-B, BREAKER FOR THERMAL BARRIER BOOSTER PUMP 2B-B MOTOR [A12S/772], located in Reactor MOV BD 2B1-B, cubicle 2C. \_\_\_\_\_

[144] **PERFORM** live-dead-live check on load. \_\_\_\_\_

[145] **REMOVE** the Thermal Overloads (3) for 2-BKR-70-130-B, BREAKER FOR THERMAL BARRIER BOOSTER PUMP 2B-B MOTOR. \_\_\_\_\_

[146] **REMOVE** jumper with test switch labeled TS-5.1 in the CLOSED position, between wire 2C10 and terminal 1 on TB609 in SSPS cabinet 2-R-51 **AND**

**LAND** wire 2C10 to terminal point 1. \_\_\_\_\_

1st

CV

[147] **REMOVE** jumper with test switch labeled TS-5.2 in the OPEN position, on field terminal points 7 and 8 on TB609 in SSPS cabinet 2-R-51. \_\_\_\_\_

1st

CV

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**6.20 Thermal Barrier Booster Pump 2B-B Operational Test  
(continued)**

[148] **REMOVE** test switch TS-5.3 between wire 2C5 and wire 2C2.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[149] **TERMINATE** wire 2C5 to wire 2C2 in junction box  
2-JB-292-2173-B panel 2-L-290.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[150] **VERIFY** successful completion of Subsection 6.20 (**ACC CRIT  
5.00**)

\_\_\_\_\_



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**6.21 Component Cooling System Annunciator Input Test (continued)**

[10] **VERIFY** alarm printer indicates 254D, RHR HX 2A-A RET FLOW LO (2-FS-70-158 RHR HTX A-A OUTLET FLOW SW) ALARM.

\_\_\_\_\_

[11] **LIFT** wire M737 on terminal point 11, terminal board TB-A-16 in panel 2-R-127, to simulate RHR Heat Exchanger Return Flow Lo alarm reset.

\_\_\_\_\_

1st

\_\_\_\_\_

CV

[12] **VERIFY** annunciator 254D CLEARS.

\_\_\_\_\_

[13] **VERIFY** alarm printer indicates 254D, RHR HX 2A-A RET FLOW LO (2-FS-70-158 RHR HTX A-A OUTLET FLOW SW) CLEAR.

\_\_\_\_\_

[14] **TERMINATE** wire M737 on terminal point 11, terminal board TB-A-16 in panel 2-R-127.

\_\_\_\_\_

1st

\_\_\_\_\_

CV

[15] **VERIFY** annunciator 254D ALARMS.

\_\_\_\_\_

[16] **CLOSE** 2-FCV-70-156-A, RHR HEAT EXCHANGER 2A CCS OUTLET.

\_\_\_\_\_

[17] **VERIFY** annunciator 254D CLEARS.

\_\_\_\_\_

[18] **PLACE** 2-FCV-70-156-A RHR HEAT EXCHANGER 2A CCS OUTLET, in the position required by the U1 Unit Supervisor.

\_\_\_\_\_

As-Left Position:      OPEN      CLOSE  
(circle one)

[19] **ENSURE** 2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET, is in the CLOSED position.

\_\_\_\_\_

[20] **ENSURE** annunciator 255D (2-XA-55-27D) is CLEAR.

\_\_\_\_\_

[21] **OPEN** 2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET.

\_\_\_\_\_



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**6.21 Component Cooling System Annunciator Input Test (continued)**

B. 2-ISV-70-702, CCS CVCS EXCESS LTDW HX SUPPLY ISLN. \_\_\_\_\_

[33] **ENSURE** 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV, is in the CLOSED position. \_\_\_\_\_

[34] **ENSURE** annunciator 263D (2-XA-55-27D) is CLEAR. \_\_\_\_\_

[35] **OPEN** 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV. \_\_\_\_\_

[36] **VERIFY** annunciator 263D ALARMS. \_\_\_\_\_

[37] **VERIFY** alarm printer indicates 263D, EXC LTDN HX & GFFD RET FLOW LO (2-FS-70-84 EXCESS LETDN HTX OUTLET FLOW SW FOXBORO I/A D/O), ALARM. \_\_\_\_\_

[38] **LIFT** wire M697 on terminal point 5, terminal board TB-C-130 in panel 2-R-126 [AUX INSTR RM], to simulate Excess Letdown Heat Exchanger Return Normal Flow signal. \_\_\_\_\_

1st

CV

[39] **VERIFY** annunciator 263D CLEARS. \_\_\_\_\_

[40] **VERIFY** alarm printer indicates 263D, EXC LTDN HX & GFFD RET FLOW LO (2-FS-70-84 EXCESS LETDN HTX OUTLET FLOW SW FOXBORO I/A D/O) CLEAR. \_\_\_\_\_

[41] **TERMINATE** wire M697 on terminal point 5, terminal board TB-C-130 in panel 2-R-126. \_\_\_\_\_

1st

CV

[42] **VERIFY** annunciator 263D ALARMS. \_\_\_\_\_

[43] **CLOSE** 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV, EXCESS LTDN HTX CONT INLET ISOL VLV. \_\_\_\_\_

[44] **VERIFY** annunciator 263D CLEARS. \_\_\_\_\_



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## 6.22 Component Cooling Pump 2A-A Pump Logic

### NOTE

This section tests the automatic start function of the CCS Pump 2A-A upon receipt of a Unit 2 Safety Injection Signal and Low Header Pressure. All other operability functions for this pump were tested under 1-PTI-70-01.

### CAUTION

For performance of the section, CCS 2B-B pump alignment changes shall be assessed for risk to Unit 1 B-train CCS operation.

- [1] **ENSURE** prerequisites actions for subsection 6.22 are completed. \_\_\_\_\_
- [2] **ENSURE** A SFPCS Heat Exchanger is in service per SOI-70.01. \_\_\_\_\_
- [3] **ENSURE** the following Integrated Computer System (ICS) point is in scan:
  - A. XD2106 \_\_\_\_\_
- [4] **ENSURE** transfer switch 2-XS-70-59, CCS PMP 2A-A MOTOR TRF SW [A12T/757], is in the NORMAL position. \_\_\_\_\_
- [5] **ENSURE** annunciator 149C on panel XA-55-6F is CLEAR. \_\_\_\_\_
- [6] **ENSURE** 2-HS-70-59A, CCS PUMP 2A-A, is in the STOP-PULL-TO-LOCK/STOP position. \_\_\_\_\_
- [7] **ENSURE** 2-HS-70-33A, CCS PUMP 2B-B, is in the STOP-PULL-TO-LOCK/STOP position. \_\_\_\_\_
- [8] **VERIFY/RACK** breaker 3B, 480V Shutdown Board 2A1-A, for CCS Pump 2A-A, to the CONNECT position. \_\_\_\_\_
- [9] **ENSURE** all (8) control power fuses (normal and auxiliary) are INSTALLED for breaker 3B inside 480V Shutdown Board 2A1-A cubicle 5A [A12T/757] \_\_\_\_\_
- [10] **VERIFY** ICS point XD2106 displays PWR ON. \_\_\_\_\_

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**6.22 Component Cooling Pump 2A-A Pump Logic (continued)**

[11] **PULL** 1 NORMAL CLOSE control fuse from fuse clip 2-FU-212-A13/12N for breaker 3B, 480V Shutdown Board 2A1-A, in cubicle 5A.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[12] **VERIFY** ICS point XD2106 displays PWR OFF.

[13] **INSTALL** NORMAL CLOSE control fuse in fuse clip 2-FU-212-A13/12N for breaker 3B, 480V Shutdown Board 2A1-A, in cubicle 5A.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[14] **VERIFY** ICS point XD2106 displays PWR ON.

[15] **RACK** breaker 3B on 480V Shutdown Board 2A1-A to the TEST position.

[16] **DEPRESS** TEST CLOSE pushbutton on 480V Shutdown Board 2A1-A breaker 3B cubicle.

[17] **VERIFY** breaker 3B on 480V Shutdown Board 2A1-A CLOSES by RED light ON indication on breaker cubicle.

[18] **DEPRESS** TEST TRIP pushbutton on bottom of 480V Shutdown Board 2A1-A cubicle 3B.

[19] **VERIFY** breaker 3B on 480V Shutdown Board 2A1-A TRIPS by GREEN light ON indication on breaker cubicle.

[20] **RACK OUT** breaker 3B on 480V Shutdown Board 2A1-A to the REMOVED position.

[21] **VERIFY** ICS point XD2106 displays PWR OFF.

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**6.22 Component Cooling Pump 2A-A Pump Logic (continued)**

[22] **INSTALL** the following jumpers on the stationary secondary contacts inside breaker cubicle 3B 480V Shutdown Board 2A1-A as viewed from the front to simulate normal pump operation.

A. FROM terminal 3TP to terminal 13.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

B. FROM terminal 6TP to terminal 9.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[23] **RACK** breaker 3B on 480V Shutdown Board 2A1-A to the TEST position.

[24] **PLACE** 2-HS-70-59A, CCS PUMP 2A-A, to the A-P AUTO position.

[25] **INSTALL** jumper with test switch labeled 2A-A in the OPEN position across terminal points 59 (wire CS1CX) and 60 (wire CS1C1) on terminal board TB-2 in panel 2-R-132 [AUX INSTR RM](to simulate system low pressure).

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[26] **INSTALL** jumper with test switch labeled 2A-A SI in the OPEN position across terminal points 1 and 2 on TB-620 in SSPS panel 2-R-48 [AUX INSTR RM] (to simulate Unit 2 Safety Injection signal).

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[27] **CLOSE** test switch labeled 2A-A.

[28] **VERIFY** breaker 3B on 480V Shutdown Board 2A1-A CLOSES. (**Acc Crit**)

[29] **PLACE** 2-HS-70-59A, CCS PUMP 2A-A, to the STOP-PULL-TO-LOCK/STOP position.

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**6.22 Component Cooling Pump 2A-A Pump Logic (continued)**

[30] **VERIFY** breaker 3B on 480V Shutdown Board 2A1-A OPENS. \_\_\_\_\_

[31] **REMOVE** jumper with test switch 2A-A in the OPEN position across terminal points 59 (wire CS1CX) and 60 (wire CS1C1) on terminal board TB-2 in panel 2-R-132 (to simulate normal system pressure). \_\_\_\_\_

1st

CV

[32] **PLACE** 2-HS-70-59A, CCS PUMP 2A-A, to the A-P AUTO position. \_\_\_\_\_

[33] **CLOSE** test switch labeled 2A-A SI. \_\_\_\_\_

[34] **VERIFY** breaker 3B on 480V Shutdown Board 2A1-A CLOSES after a time delay. (approximately 8 seconds). (**Acc Crit**) \_\_\_\_\_

[35] **REMOVE** jumper with test switch labeled 2A-A SI in the OPEN position across terminal points 1 and 2 on TB-620 in SSPS panel 2-R-48. \_\_\_\_\_

1st

CV

[36] **VERIFY** breaker 3B on 480V Shutdown Board 2A1-A remains CLOSED. (**Acc Crit**) \_\_\_\_\_

[37] **PLACE** 2-HS-70-59A, CCS PUMP 2A-A, to the STOP-PULL-TO-LOCK/STOP position. \_\_\_\_\_

[38] **VERIFY** breaker 3B on 480V Shutdown Board 2A1-A OPENS. \_\_\_\_\_

[39] **RACK OUT** breaker 3B on 480V Shutdown Board 2A1-A to the REMOVED position. \_\_\_\_\_

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**6.22 Component Cooling Pump 2A-A Pump Logic (continued)**

[40] **REMOVE** the following jumpers on the stationary secondary contacts inside breaker cubicle 3B 480V Shutdown Board 2A1-A as viewed from the front to simulate normal pump operation.

A. FROM terminal 3TP to terminal 13.

\_\_\_\_\_

1st

\_\_\_\_\_

CV

B. FROM terminal 6TP to terminal 9.

\_\_\_\_\_

1st

\_\_\_\_\_

CV

[41] **RACK** breaker 3B on 480V Shutdown Board 2A1-A to the CONNECT position.

\_\_\_\_\_

[42] **COORDINATE** with Unit 1 Ops to align system post testing.

\_\_\_\_\_

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### 6.23 Component Cooling Pump 2B-B Pump Logic

#### NOTE

This section tests the automatic start function of the CCS Pump 2B-B upon receipt of a Unit 2 Safety Injection Signal and Low Header Pressure. All other operability functions for this pump were tested under 1-PTI-70-01.

#### CAUTION

For performance of the section, CCS 2B-B pump alignment changes shall be assessed for risk to Unit 1 B-train CCS operation.

- [1] **ENSURE** prerequisites actions for subsection 6.23 are completed. \_\_\_\_\_
- [2] **ENSURE** the following Integrated Computer System (ICS) point is in scan: \_\_\_\_\_
  - A. XD2085 \_\_\_\_\_
- [3] **ENSURE** transfer switch 2-XS-70-33, CCS PMP 2B-B MOTOR TRF SW [A14T/757], is in the NORMAL position. \_\_\_\_\_
- [4] **ENSURE** annunciator 150C on panel XA-55-6F is CLEAR. \_\_\_\_\_
- [5] **ENSURE** 2-HS-70-33A, CCS PUMP 2B-B [C12/755], is in the STOP-PULL-TO-LOCK/STOP position. \_\_\_\_\_
- [6] **ENSURE** 2-HS-70-59A, CCS PUMP 2A-A [C12/755], is in the STOP-PULL-TO-LOCK/STOP position. \_\_\_\_\_
- [7] **VERIFY/RACK** breaker 3C, 480V Shutdown Board 2B1-B [A14T/757], for CCS Pump 2B-B, to the CONNECT position. \_\_\_\_\_
- [8] **ENSURE** all (8) control power fuses (normal and auxiliary) are INSTALLED for breaker 3C inside 480V Shutdown Board 2B1-B cubicle 5A. \_\_\_\_\_
- [9] **VERIFY** ICS point XD2085 displays PWR ON. \_\_\_\_\_

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**6.23 Component Cooling Pump 2B-B Pump Logic (continued)**

[10] **PULL** 1 NORMAL CLOSE control fuse from fuse clip 2-FU-212-B13/22N for breaker 3C, 480V Shutdown Board 2B1-B, in cubicle 5A.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[11] **VERIFY** ICS point XD2085 displays PWR OFF.

[12] **INSTALL** NORMAL CLOSE control fuse in fuse clip 2-FU-212-B13/22N for breaker 3C, 480V Shutdown Board 2B1-B, in cubicle 5A.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[13] **VERIFY** ICS point XD2085 displays PWR ON.

[14] **RACK** breaker 3C on 480V Shutdown Board 2B1-B to the TEST position.

[15] **DEPRESS** TEST CLOSE pushbutton on 480V Shutdown Board 2B1-B breaker 3C cubicle.

[16] **VERIFY** breaker 3C on 480V Shutdown Board 2B1-B CLOSES by RED light ON indication on breaker cubicle.

[17] **DEPRESS** TEST TRIP pushbutton on bottom of 480V Shutdown Board 2B1-B cubicle 3C.

[18] **VERIFY** breaker 3C on 480V Shutdown Board 2B1-B TRIPS by GREEN light ON indication on breaker cubicle.

[19] **RACK OUT** breaker 3C on 480V Shutdown Board 2B1-B to the REMOVED position.

[20] **VERIFY** ICS point XD2085 displays PWR OFF.

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**6.23 Component Cooling Pump 2B-B Pump Logic (continued)**

[21] **INSTALL** the following jumpers on the stationary secondary contacts inside breaker cubicle 3C [A14T/757], 480V Shutdown Board 2B1-B as viewed from the front to simulate normal pump operation.

A. FROM terminal 3TP to terminal 13.

\_\_\_\_\_

1st

\_\_\_\_\_

CV

B. FROM terminal 6TP to terminal 9.

\_\_\_\_\_

1st

\_\_\_\_\_

CV

[22] **RACK** breaker 3C on 480V Shutdown Board 2B1-B to the TEST position.

[23] **PLACE** 2-HS-70-33A, CCS PUMP 2B-B, to the A-P AUTO position.

[24] **INSTALL** jumper with test switch labeled 2B-B in the OPEN position across terminal points 59 (wire CS1CX) and 60 (wire CS1C1) on terminal board TB-2 in panel 2-R-132 [AUX INSTR RM] (to simulate system low pressure).

\_\_\_\_\_

1st

\_\_\_\_\_

CV

[25] **INSTALL** jumper with test switch labeled 2B-B SI in the OPEN position across terminal points 1 and 2 on TB-620 in SSPS panel 2-R-51 [AUX INSTR RM](to simulate Unit 2 safety injection signal).

\_\_\_\_\_

1st

\_\_\_\_\_

CV

[26] **CLOSE** test switch labeled 2B-B.

[27] **VERIFY** breaker 3C on 480V Shutdown Board 2B1-B CLOSES. (**Acc Crit**)

[28] **PLACE** 2-HS-70-33A, CCS PUMP 2B-B, to the STOP-PULL-TO-LOCK/STOP position.

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**6.23 Component Cooling Pump 2B-B Pump Logic (continued)**

[29] **VERIFY** breaker 3C on 480V Shutdown Board 2B1-B OPENS. \_\_\_\_\_

[30] **REMOVE** jumper with test switch 2B-B in the OPEN position across terminal points 59 (wire CS1CX) and 60 (wire CS1C1) on terminal board TB-2 in panel 2-R-132 (to simulate normal system pressure). \_\_\_\_\_  
1st

CV

[31] **PLACE** 2-HS-70-33A, CCS PUMP 2B-B, to the A-P AUTO position. \_\_\_\_\_

[32] **CLOSE** test switch labeled 2B-B SI. \_\_\_\_\_

[33] **VERIFY** breaker 3C on 480V Shutdown Board 2B1-B CLOSSES after a time delay. (approximately 8 seconds). **(Acc Crit)** \_\_\_\_\_

[34] **REMOVE** jumper with test switch labeled 2B-B SI in the OPEN position across terminal points 1 and 2 on TB-620 in SSPS panel 2-R-51. \_\_\_\_\_  
1st

CV

[35] **VERIFY** breaker 3C on 480V Shutdown Board 2B1-B remains CLOSED. **(Acc Crit)** \_\_\_\_\_

[36] **PLACE** 2-HS-70-33A, CCS PUMP 2B-B, to the STOP-PULL-TO-LOCK/STOP position. \_\_\_\_\_

[37] **VERIFY** breaker 3C on 480V Shutdown Board 2B1-B OPENS. \_\_\_\_\_

[38] **RACK OUT** breaker 3C on 480V Shutdown Board 2B1-B to the REMOVED position. \_\_\_\_\_

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**6.23 Component Cooling Pump 2B-B Pump Logic (continued)**

[39] **REMOVE** the following jumpers on the stationary secondary contacts inside breaker cubicle 3C, 480V Shutdown Board 2B1-B as viewed from the front to simulate normal pump operation.

A. FROM terminal 3TP to terminal 13.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

B. FROM terminal 6TP to terminal 9.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[40] **RACK** breaker 3C on 480V Shutdown Board 2B1-B to the CONNECT position.

[41] **COORDINATE** with Unit 1 Ops to align system post testing.

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**6.24 Component Cooling Pump C-S Pump Logic (Train A)**

**NOTE**

This section tests the automatic start function of the CCS Pump C-S upon receipt of a Unit 2 Safety Injection Signal. All other operability functions for this pump were tested under 1-PTI-70-01.

**CAUTIONS**

- 1) Performance of this Section will cause one train of CCS to be inoperable. Operations shall be notified of inoperability of one train of CCS.
- 2) For performance of the section, CCS 2B-B pump alignment changes shall be assessed for risk to Unit 1 B-train CCS operation.

- [1] **ENSURE** prerequisites actions for subsection 6.24 are completed. \_\_\_\_\_
- [2] **ENSURE** CCS Pump 2B-B is aligned to the B-train header and in service per the SOI-70.01. \_\_\_\_\_
- [3] **ENSURE** the following Integrated Computer System (ICS) point is in scan: \_\_\_\_\_
  - A. XD2038 \_\_\_\_\_
- [4] **ENSURE** Power Transfer switch 0-XSW-70-51, CCS PUMP C-S MOTOR POWER TRANSFER SWITCH [A2T/757], is to the ON position for CCS Pump C-S EMERGENCY Feeder Breaker (RED light ON). \_\_\_\_\_
- [5] **ENSURE** 1-XS-70-51, CCS PMP C-S MOTOR TRF SW, is in the NORMAL position. \_\_\_\_\_
- [6] **ENSURE** annunciator 149B (480V S/D BD 1A1-A/1A2-A CA VT BD 1A1-A) on panel XA-55-6F is CLEAR. \_\_\_\_\_
- [7] **ENSURE** 1-HS-70-51A, CCS PUMP C-S, is in the STOP-PULL-TO-LOCK/STOP position. \_\_\_\_\_
- [8] **VERIFY/RACK** breaker 3B [A2T/757], 480V Shutdown Board 1A2-A, for CCS Pump C-S, to the CONNECT position. \_\_\_\_\_

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**6.24 Component Cooling Pump C-S Pump Logic (Train A) (continued)**

- [9] **ENSURE** all (8) control power fuses (normal and auxiliary) are INSTALLED for breaker 3B [A2T/757] inside 480V Shutdown Board 1A2-A cubicle 5A. \_\_\_\_\_
- [10] **VERIFY** ICS point XD2038 displays PWR ON. \_\_\_\_\_
- [11] **PULL** 1 NORMAL CLOSE control fuse from fuse clip 1-FU-212-A23/12N for breaker 3B, 480V Shutdown Board 1A2-A, in cubicle 5A. \_\_\_\_\_  

1st

CV
- [12] **VERIFY** ICS point XD2038 displays PWR OFF. \_\_\_\_\_
- [13] **INSTALL** NORMAL CLOSE control fuse in fuse clip 1-FU-212-A23/12N for breaker 3B, 480V Shutdown Board 1A2-A, in cubicle 5A. \_\_\_\_\_  

1st

CV
- [14] **VERIFY** ICS point XD2038 displays PWR ON. \_\_\_\_\_
- [15] **RACK** breaker 3B on 480V Shutdown Board 1A2-A to the TEST position. \_\_\_\_\_
- [16] **DEPRESS** TEST CLOSE pushbutton on 480V Shutdown Board 1A2-A breaker 3B cubicle. \_\_\_\_\_
- [17] **VERIFY** breaker 3B on 480V Shutdown Board 1A2-A CLOSES by RED light ON indication on breaker cubicle. \_\_\_\_\_
- [18] **DEPRESS** TEST TRIP pushbutton on bottom of 480V Shutdown Board 1A2-A cubicle 3B. \_\_\_\_\_
- [19] **VERIFY** breaker 3B on 480V Shutdown Board 1A2-A TRIPS by GREEN light ON indication on breaker cubicle. \_\_\_\_\_
- [20] **RACK OUT** breaker 3B on 480V Shutdown Board 1A2-A to the REMOVED position. \_\_\_\_\_
- [21] **VERIFY** ICS point XD2038 displays PWR OFF. \_\_\_\_\_

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**6.24 Component Cooling Pump C-S Pump Logic (Train A) (continued)**

[22] **INSTALL** the following jumpers on the stationary secondary contacts inside breaker cubicle 3B [A2T/757], 480V Shutdown Board 1A2-A as viewed from the front to simulate normal pump operation.

A. FROM terminal 3TP to terminal 13.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

B. FROM terminal 6TP to terminal 9.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[23] **RACK** breaker 3B on 480V Shutdown Board 1A2-A to the TEST position.

[24] **PLACE** 1-HS-70-51A, CCS PUMP C-S, to the A-P AUTO position.

[25] **INSTALL** jumper with test switch labeled C-S SI in the OPEN position across terminal points 3 and 4 on TB-620 in SSPS panel 2-R-48 [AUX INSTR RM] (to simulate Unit 2 safety injection signal).

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[26] **CLOSE** test switch labeled C-S SI.

[27] **VERIFY** breaker 3B on 480V Shutdown Board 1A2-A CLOSES after a time delay. (approximately 8 seconds) (**Acc Crit**)

[28] **REMOVE** jumper with test switch labeled C-S SI in the OPEN position across terminal points 3 and 4 on TB-620 in SSPS panel 2-R-48.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[29] **VERIFY** breaker 3B on 480V Shutdown Board 1A2-A remains CLOSED. (**Acc Crit**)

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**6.24 Component Cooling Pump C-S Pump Logic (Train A) (continued)**

[30] **PLACE** 1-HS-70-A, CCS PUMP C-S, to the STOP-PULL-TO-LOCK/STOP position. \_\_\_\_\_

[31] **VERIFY** breaker 3B on 480V Shutdown Board 1A2-A OPENS. \_\_\_\_\_

[32] **RACK OUT** breaker 3B on 480V Shutdown Board 1A2-A to the REMOVED position. \_\_\_\_\_

[33] **REMOVE** the following jumpers on the stationary secondary contacts inside breaker cubicle 3B, 480V Shutdown Board 1A2-A as viewed from the front to simulate normal pump operation.

A. FROM terminal 3TP to terminal 13.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

B. FROM terminal 6TP to terminal 9.

\_\_\_\_\_  
1st

\_\_\_\_\_  
CV

[34] **RACK** breaker 3B on 480V Shutdown Board 1A2-A to the CONNECT position. \_\_\_\_\_

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**6.25 Component Cooling Pump C-S Pump Logic (Train B)**

**NOTE**

This section tests the automatic start function of the CCS Pump C-S upon receipt of a Unit 2 Safety Injection Signal. All other operability functions for this pump were tested under 1-PTI-70-01.

**CAUTIONS**

- 1) Performance of this Section will cause one train of CCS to be inoperable. Operations shall be notified of inoperability of one train of CCS.
- 2) For performance of the section, CCS 2B-B pump alignment changes shall be assessed for risk to Unit 1 B-train CCS operation.

- [1] **ENSURE** prerequisites actions for subsection 6.25 are completed. \_\_\_\_\_
- [2] **ENSURE** CCS Pump 2B-B is aligned to the B-train header and in service per the SOI-70.01. \_\_\_\_\_
- [3] **ENSURE** the following Integrated Computer System (ICS) point is in scan: \_\_\_\_\_
  - A. XD2089 \_\_\_\_\_
- [4] **ENSURE** Power Transfer switch 0-XSW-70-51, CCS PUMP C-S MOTOR POWER TRANSFER SWITCH [A2T/757], is to the ON position for CCS Pump C-S NORMAL Feeder Breaker (RED light ON). \_\_\_\_\_
- [5] **ENSURE** 2-XS-70-51, CCS PMP C-S MOTOR TRF SW, is in the NORMAL position. \_\_\_\_\_
- [6] **ENSURE** annunciator 135F (UNIT 2 ALARM) on panel XA-55-6D is CLEAR. \_\_\_\_\_
- [7] **ENSURE** 2-HS-70-51A, CCS PUMP C-S, is in the STOP-PULL-TO-LOCK/STOP position. \_\_\_\_\_
- [8] **VERIFY/RACK** breaker 2D [A2T/757], 480V Shutdown Board 2B2-B, for CCS Pump C-S, to the CONNECT position. \_\_\_\_\_

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**6.25 Component Cooling Pump C-S Pump Logic (Train B) (continued)**

- [9] **ENSURE** all (8) control power fuses (normal and auxiliary) are INSTALLED for breaker 2D [A2T/757] inside 480V Shutdown Board 2B2-B cubicle 5A. \_\_\_\_\_
- [10] **VERIFY** ICS point XD2089 displays PWR ON. \_\_\_\_\_
- [11] **PULL** 1 NORMAL CLOSE control fuse from fuse clip 2-FU-212-B22/32N for breaker 2D, 480V Shutdown Board 2B2-B, in cubicle 5A. \_\_\_\_\_
- [12] **VERIFY** ICS point XD2089 displays PWR OFF. \_\_\_\_\_
- [13] **INSTALL** NORMAL CLOSE control fuse in fuse clip 2-FU-212-B22/32N for breaker 2D, 480V Shutdown Board 2B2-B, in cubicle 5A. \_\_\_\_\_
- 1st
- CV
- [14] **VERIFY** ICS point XD2089 displays PWR ON. \_\_\_\_\_
- [15] **RACK** breaker 2D on 480V Shutdown Board 2B2-B to the TEST position. \_\_\_\_\_
- [16] **DEPRESS** TEST CLOSE pushbutton on 480V Shutdown Board 2B2-B breaker 2D cubicle. \_\_\_\_\_
- [17] **VERIFY** breaker 2D on 480V Shutdown Board 2B2-B CLOSES by RED light ON indication on breaker cubicle. \_\_\_\_\_
- [18] **DEPRESS** TEST TRIP pushbutton on bottom of 480V Shutdown Board 2B2-B cubicle 2D. \_\_\_\_\_
- [19] **VERIFY** breaker 2D on 480V Shutdown Board 2B2-B TRIPS by GREEN light ON indication on breaker cubicle. \_\_\_\_\_
- [20] **RACK OUT** breaker 2D on 480V Shutdown Board 2B2-B to the REMOVED position. \_\_\_\_\_
- [21] **VERIFY** ICS point XD2089 displays PWR OFF. \_\_\_\_\_

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**6.25 Component Cooling Pump C-S Pump Logic (Train B) (continued)**

- [22] **INSTALL** the following jumpers on the stationary secondary contacts inside breaker cubicle 2D [A2T/757], 480V Shutdown Board 2B2-B as viewed from the front to simulate normal pump operation.
  - A. FROM terminal 3TP to terminal 13.
 

---

 1st  


---

 CV
  - B. FROM terminal 6TP to terminal 9.
 

---

 1st  


---

 CV
- [23] **RACK** breaker 2D on 480V Shutdown Board 2B2-B to the TEST position.
 

---
- [24] **PLACE** 2-HS-70-51A, CCS PUMP C-S, to the A-P AUTO position.
 

---
- [25] **INSTALL** jumper with test switch labeled C-S SI in the OPEN position across terminal points 3 and 4 on TB-620 in SSPS panel 2-R-51 [AUX INSTR RM] (to simulate Unit 2 safety injection signal).
 

---
- [26] **CLOSE** test switch labeled C-S SI.
 

---
- [27] **VERIFY** breaker 3B on 480V Shutdown Board 2B2-B CLOSSES after a time delay. (approximately 8 seconds) (**Acc Crit**)
 

---
- [28] **REMOVE** jumper with test switch labeled C-S SI in the OPEN position across terminal points 3 and 4 on TB-620 in SSPS panel 2-R-51 (to simulate Unit 2 safety injection signal).
 

---

 1st  


---

 CV
- [29] **VERIFY** breaker 3B on 480V Shutdown Board 2B2-B remains CLOSED. (**Acc Crit**).
 

---
- [30] **PLACE** 2-HS-70-51A, CCS PUMP C-S, to the STOP-PULL-TO-LOCK/STOP position.
 

---
- [31] **VERIFY** breaker 3B on 480V Shutdown Board 2B2-B OPENS.
 

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**6.25 Component Cooling Pump C-S Pump Logic (Train B) (continued)**

[32] **RACK OUT** breaker 3B on 480V Shutdown Board 2B2-B to the REMOVED position. \_\_\_\_\_

[33] **REMOVE** the following jumpers on the stationary secondary contacts inside breaker cubicle 3B, 480V Shutdown Board 2B2-B as viewed from the front to simulate normal pump operation.

A. FROM terminal 3TP to terminal 13. \_\_\_\_\_

1st

CV

B. FROM terminal 6TP to terminal 9. \_\_\_\_\_

1st

CV

[34] **RACK** breaker 3B on 480V Shutdown Board 2B2-B to the CONNECT position. \_\_\_\_\_

[35] **RETURN** C-S Pump to as found condition. \_\_\_\_\_

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**7.0 POST PERFORMANCE ACTIVITY**

**NOTE**

Post-performance steps may be performed in any order unless otherwise stated and should be completed as close in time as practicable to the end of the instruction performance

[1] **NOTIFY** the Unit 2 US/SRO of the test completion and system alignment. \_\_\_\_\_

[2] **NOTIFY** the Unit 1 US/SRO of the test completion and system alignment \_\_\_\_\_

[3] **VERIFY** that Post-test calibration of permanent plant instruments used to record quantitative acceptance criteria has been satisfactorily performed, **AND**

**RECORD** the results on Appendix C, Permanent Plant Instrumentation Log. \_\_\_\_\_

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## **8.0 RECORDS**

### **A. QA Records**

Complete Test Package (PTI)

### **B. Non-QA Records**

None

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**Appendix A  
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**TEST PROCEDURES/INSTRUCTIONS REFERENCE REVIEW**

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Additional copies of this table may be made as necessary.

<b>PROCEDURE/ INSTRUCTION</b>	<b>REVISION/CHANGES</b>	<b>INITIAL AND DATE. (N/A for no change)</b>
Unit 2 FSAR Section 9.2.2 Table 14.2-1 Sheet 7 of 89		
2-TSD-70-1		
2-PTI-62-01		
TI-50.056		
1-SI-70-904-A		



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**Appendix C  
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**PERMANENT PLANT INSTRUMENTATION LOG**

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INSTRUMENT OR INSTRUMENT LOOP #	CAL DUE DATE	FILLED AND VENTED <sup>1</sup>	PLACED IN SERVICE <sup>1</sup>	USED FOR QUANTITATIVE ACC CRIT		POST-TEST CAL DATE <sup>2</sup>	POST-TEST CALIBRATION ACCEPTABLE <sup>2</sup> INITIAL/DATE
		INIT/DATE	INIT/DATE	YES	NO		
2-FI-70-200							

<sup>1</sup> These items may be initialed and dated by personnel performing the task. Instrumentation not required to be filled and vented may be identified as Not Applicable. (N/A)

<sup>2</sup> May be identified as Not Applicable (N/A) if instrument was not used to verify/record quantitative acceptance criteria data.

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**Appendix D  
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**ELECTRICAL LINEUP**

**Data Package: Page \_\_\_\_ of \_\_\_\_ Date \_\_\_\_\_**

BREAKER LOCATION	VALVE & BREAKER ID NO.	FUSES INSTALLED	TEST POSITION	TEST SECTION	INITIALS/DATE
480V Reactor MOV Bd 2B2-B Cub. 12D	Valve 2-FCV-70-87, THERMAL BARRIER CCS RETURN Breaker 2-BKR-70-87-B	2-FU-213-B212/31N 2-FU-213-B212/31A	ON	6.1	
480V Reactor MOV Bd 2A2-A Cub. 16A	Valve 2-FCV-70-90, RC PMP THRM BAR RET CONTMNT ISOL VLV Breaker 2-BKR-70-90-A	2-FU-213-A216/1N 2-FU-213-A216/1A	ON	6.2	
480V Reactor MOV Bd 2A2-A Cub. 16B	Valve 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY Breaker 2-BKR-70-133-A	2-FU-213-A216/11N 2-FU-213-A216/11A	ON	6.3	
480V Reactor MOV Bd 2B2-B Cub. 16B	Valve 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY Breaker 2-BKR-70-134-B	2-FU-213-B216/11N 2-FU-213-B216/11A	ON	6.4	
480V Reactor MOV Bd 2A2-A Cub. 17A	Valve 2-FCV-70-183, SAMPLE HTX CCS OUTLET VLV Breaker 2-BKR-70-183-A	2-FU-213-A217/1N 2-FU-213-A217/1A	ON	6.5	
480V Reactor MOV Bd 2A2-A Cub. 5A	Valve 2-FCV-70-215, SAMPLE HTX CCS INLET ISOLATION VLV Breaker 2-BKR-70-215-A	2-FU-213-A25/1	ON	6.5	

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BREAKER LOCATION	VALVE & BREAKER ID NO.	FUSES INSTALLED	TEST POSITION	TEST SECTION	INITIALS/DATE
480V Reactor MOV Bd 2B2-B Cub. 13D	Valve 2-FCV-70-89, RC PMP OIL CLR RET CONTMNT ISOL VLV Breaker 2-BKR-70-89-B	2-FU-213-B213/31 2-FU-213-B213/32	ON	6.6	
480V Reactor MOV Bd 2A2-A Cub. 12D	Valve 2-FCV-70-92, RCP OIL COOLER CCS RETURN Breaker 2-BKR-70-92-A	2-FU-213-A212/31	ON	6.7	
480V Reactor MOV Bd 2B2-B Cub. 13F	Valve 2-FCV-70-140, RC PMP OIL CLR HDR CONT ISOL VLV Breaker 2-BKR-70-140-B	2-FU-213-B213/51	ON	6.8	
480V Reactor MOV Bd 2A2-A Cub. 16D	Valve 2-FCV-70-143, EXCESS LTDN HTX CONT INLET ISOL VLV Breaker 2-BKR-70-143-A	2-FU-213-A216/31N 2-FU-213-A216/31A	ON	6.9	
480V Reactor MOV Bd 2A1-A Cub. 9D	Valve 2-FCV-70-100, RCP OIL COOLER CCS SUPPLY Breaker 2-BKR-70-100-A	2-FU-213-A19/31	ON	6.10	
480V Reactor MOV Bd 2A2-A Cub. 16E	Valve 2-FCV-70-156-A Breaker 2-BKR-70-156-A	2-FU-213-A216/41N 2-FU-213-A216/41A	ON	6.14	
480V Reactor MOV Bd 2B2-B Cub. 15E	Valve 2-FCV-70-153-B Breaker 2-BKR-70-153-B	2-FU-213-B215/41N 2-FU-213-B215/41A	ON	6.14	

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BREAKER LOCATION	VALVE & BREAKER ID NO.	FUSES INSTALLED	TEST POSITION	TEST SECTION	INITIALS/DATE
480V Reactor MOV Bd 2B2-B Cub. 6D	Valve 2-FCV-70-87, THERMAL BARRIER CCS RETURN Shunt Trip Breaker	N/A	ON	6.1	
480V Reactor MOV Bd 2B2-B Cub. 6E	Valve 2-FCV-70-134, THERMAL BARRIER CCS SUPPLY Shunt Trip Breaker	N/A	ON	6.4	
480V Reactor MOV Bd 2A2-A Cub. 11E	Valve 2-FCV-70-133, THERMAL BARRIER CCS SUPPLY Shunt Trip Breaker	N/A	ON	6.3	
125V DC Vital Battery Bd IV, BKR 310 and 311	Valve 2-FCV-70-85, EXCESS LETDN CCS HTX OUTLET VLV	0-FU-236-0004/A1 0-FU-236-0004/B1	CLOSED	6.11	



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**Attachment 1  
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**FILL AND VENT U2 ESF 2B PIPE**

[1] **ENSURE** the following valves are in the CLOSED position:

<b>NOMENCLATURE</b>	<b>LOC</b>	<b>POSITION</b>	<b>UNID</b>	<b>PERF INITIAL</b>	<b>VERIF INITIAL</b>
2-PI-70-166	A6T/737	CLOSED	2-RTV-70-271A		
2-FT-70-165A\165C ROOT	A6T/737	CLOSED	2-RTV-70-272A		
2-FT-70-165A\165C ROOT	A6T/737	CLOSED	2-RTV-70-273A		
2B ESF EQUIPMENT CCS HEADER DRAIN	A10T/737	CLOSED	2-DRV-70-787		
CCP 2B-B OIL COOLER CCS INLET ISOLATION	A6T/737	CLOSED	2-ISV-70-552B		
SI PUMP 2B-B LUBE OIL COOLER CCS INLET ISOL	A7U/692	CLOSED	2-ISV-70-558B		
RHR PMP 2B-B SEAL WATER HTX CCS INLET ISOL	A7V/676	CLOSED	2-ISV-70-564B		
CS PUMP 2B-B OIL HX CCS INLET ISOLATION	A7T/676	CLOSED	2-ISV-70-569B		
CS/RHR/SIS PUMP 2B-B HX CCS SUPPLY HEADER DRAIN	A7V/676	CLOSED	2-ISV-70-563B		
RHR HEAT EXCHANGER 2B-B CCS INLET ISOLATION	A9V/713	CLOSED	2-ISV-70-545B		
RHR HEAT EXCHANGER 2B-B CCS DRAIN	A7V/713	CLOSED	2-DRV-70-548B		
RHR HEAT EXCHANGER 2B-B CCS THROTTLE	A7W/713	CLOSED	2-THV-70-546B		
2-FT-70-155 ROOT	A7U/713	CLOSED	2-RTV-70-282A		
2-FT-70-155 ROOT	A7U/713	CLOSED	2-RTV-70-283A		
RHR HEAT EXCHANGER 2B-B CCS OUTLET DRAIN	A7V/713	CLOSED	2-DRV-70-549B		
RHR HTX B HDR INLET VLV	A8S/737	CLOSED	2-FCV-70-3		
RHR HEAT EXCHANGER 2B-B CCS VENT	A7W/713	CLOSED	2-VTV-70-547B		

<b>WBN Unit 2</b>	<b>Component Cooling Water Pump/Valve Logic Test</b>	<b>2-PTI-070-01 Rev. 0000 Page 235 of 236</b>
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**Attachment 1  
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**FILL AND VENT U2 ESF 2B PIPE**

<b>NOMENCLATURE</b>	<b>LOC</b>	<b>POSITION</b>	<b>UNID</b>	<b>PERF INITIAL</b>	<b>VERIF INITIAL</b>
RHR EXCHANGER 2B-B CCS VENT	A7V/713	CLOSED	2-VTV-70-550B		
CS/RHR/SIS PUMP 2B-B CCS RETURN ISOLATION	A10T/692	CLOSED	2-ISV-70-725B		
CCP 2B-B OIL COOLER CCS OUTLET ISOLATION	A10T/692	CLOSED	2-ISV-70-557B		

- [2] **ENSURE** blank plate has been installed at 2-FCV-70-207,  
COND DEMIN WASTE EVAP CCS SUPPLY HDR 2B. \_\_\_\_\_
- [3] **ENSURE** 2-RFV-70-551B CCS RHR HX 2B-B RETURN LINE  
RELIEF is installed. \_\_\_\_\_
- [4] **NOTIFY** U1 Operations there will be filling between  
2-FCV-70-3, RHR HTX B HDR INLET VLV and 2-FCV-70-153,  
RHR HEAT EXCHANGER 2B CCS OUTLET. \_\_\_\_\_  
Ops.
- [5] **SLOWLY MANUALLY THROTTLE** OPEN 2-FCV-70-3 RHR  
HTX B HDR INLET VLV. \_\_\_\_\_
- [6] **SLOWLY MANUALLY THROTTLE** OPEN 2-ISV-70-545B  
RHR HEAT EXCHANGER 2B-B CCS INLET ISOLATION. \_\_\_\_\_
- [7] **VENT** CCS as necessary using the following vents UNTIL a  
solid stream of water emerges from each vent, **THEN**

**CLOSE** the vent:

<b>NOMENCLATURE</b>	<b>LOC</b>	<b>POSITION</b>	<b>UNID</b>	<b>PERF INITIAL</b>
RHR HEAT EXCHANGER 2B-B CCS VENT	A7W/713		2-VTV-70-547B	

- [8] **SLOWLY MANUALLY THROTTLE** OPEN 2-THV-70-546B  
RHR HEAT EXCHANGER 2B-B CCS THROTTLE. \_\_\_\_\_

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**Attachment 1  
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**FILL AND VENT U2 ESF 2B PIPE**

- [9] **VENT** CCS as necessary using the following vents UNTIL a solid stream of water emerges from each vent, **THEN**

**CLOSE** the vent:

NOMENCLATURE	LOC	POSITION	UNID	PERF INITIAL
RHR EXCHANGER 2B-B CCS VENT	A7V/713		2-VTV-70-550B	

- [10] **SLOWLY MANUALLY THROTTLE OPEN** 2-FCV-70-153 RHR HEAT EXCHANGER 2B CCS OUTLET. \_\_\_\_\_
- [11] **MAINTAIN** U2 Surge Tank B level between 60 to 70%. \_\_\_\_\_
- [12] **WHEN** U2 CCS is vented, **THEN**  
**VERIFY** vent valves in Step 6 are CLOSED. \_\_\_\_\_
- [13] **NOTIFY** U1 Operations when filling and venting of U2 CCS ESF 2B piping is complete. \_\_\_\_\_
- [14] **CLOSE** 2-FCV-70-153, RHR HEAT EXHCANGER 2B CCS OUTLET. \_\_\_\_\_
- [15] **CLOSE** 2-FCV-70-3, RHR HTX B HDR INLET VLV. \_\_\_\_\_