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

January 12, 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 Instructions**

The following approved WBN 2 Pre-op Test Instructions (PTIs) are enclosed:

PTI NUMBER	Rev.	TITLE
2-PTI-074-01	0	Residual Heat Removal System Pump/Valve Logic
2-PTI-077-01	0	Liquid Waste Processing System

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

Sincerely,

M. Bajestani

Masoud Bajestani
Watts Bar Unit 2 Vice President

D030
NRR

cc (Enclosures):

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

WATTS BAR NUCLEAR PLANT

UNIT 2 STARTUP

TITLE: RESIDUAL HEAT REMOVAL SYSTEM PUMP/VALVE LOGIC

Instruction No: 2-PTI-074-01

Revision No: 0000

PREPARED BY: Chris Boudreaux Chris Boudreaux DATE 9-17-10

PRINT NAME/ SIGNATURE

REVIEWED BY: Joe Mayo Joe Mayo DATE 9-17-10

PRINT NAME/ SIGNATURE

INSTRUCTION APPROVAL

JTG MEETING NO: 2-10-012

JTG CHAIRMAN: _____ DATE 12/14/10

APPROVED BY: _____ DATE 12/14/10

PREOPERATIONAL STARTUP MANAGER

TEST RESULTS APPROVAL

JTG MEETING NO: _____

JTG CHAIRMAN: _____ DATE _____

APPROVED BY: _____ DATE _____

PREOPERATIONAL STARTUP MANAGER

Revision Log

Revision or Change Number	Effective Date	Affected Page Numbers	Description of Revision/Change
0000	12/14/10	ALL	This procedure was converted from Word 95 to Word 2002 (XP) using Rev. 0 of 1-PTI-074-01. It was then converted from Word 2003 to Word 2007. Initial Issue.

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1.0 INTRODUCTION

1.1 TEST OBJECTIVES

This test is being performed to demonstrate the operability of the Residual Heat Removal System and its capability to provide recirculation flows required to remove heat from the Reactor Coolant System.

1.2 SCOPE

Verify System 74, Residual Heat Removal System (RHR) components function according to design requirements and required safety functions. Pump and valve logic will be tested. RHR pumps will be operated to verify miniflow condition.

To ensure proper operation of Residual Heat Removal System motor operated valves under no-load conditions.

To ensure proper operation of the Residual Heat Removal Pump breakers.

To ensure proper operation of Residual Heat Removal System air operated valves under static conditions.

To ensure proper operation of transfer switch alarms.

To ensure proper operation of the RHR system motor operated valves interlocks.

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2.0 REFERENCES

2.1 Performance References

- SMP-9.0, CONDUCT OF TEST
- SMP-15.0, STATUS AND CONTROL OF ISOLATION DEVICES
- TVA Safety Manual Procedure 1021
- TI-300, ELECTRICAL ARC FLASH PERSONAL PROTECTIVE EQUIPMENT & PROTECTIVE BOUNDARY MATRICES
- 2-SOI-74.01, RESIDUAL HEAT REMOVAL SYSTEM OPERATING INSTRUCTION

2.2 Developmental References

A. Final Safety Analysis Report

1. FSAR-Amendment 101

a. Section 6.2 - 6.3, Containment Systems AND Emergency Core Cooling Systems

b. Section 14.2, Test Program

B. Drawings

1. Flow Diagrams

a. 2-47W810-1, Flow Diagram Residual Heat Removal System, Rev 3

(1) 53618-039

(2) 53618-040

(3) 52637-003

(4) 52637-004

(5) 52637-005

(6) 52637-006

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2.2 Developmental References (continued)

b. 2-47W811-1, Flow Diagram Safety Injection System, Rev 4

2. Electrical Control Diagrams

a. 2-47W610-63-1, Electrical Control Diagram Safety Injection System, Rev 2

b. 2-47W610-74-1, Electrical Control Diagram Residual Heat Removal System, Rev 1

(1) 55707-001

(2) 55707-002

(3) 52639-090

(4) 53321-119

3. Electrical Logic Diagrams

a. 2-47W611-74-1, Electrical Logic Diagram Residual Heat Removal System, Rev 1

(1) 52639-091

(2) 53321-015

(3) 53321-016

b. 2-47W611-74-2, Electrical Logic Diagram Residual Heat Removal System, Rev 1

(1) 55707-003

(2) 55707-004

(3) 52639-092

4. Schematic Drawings

a. 45W600-57-1, Wiring Diagram Separation & Misc AUX Relays Schematic Diagrams, Rev 28

b. 2-45W600-57-2, Wiring Diagram Separation & Misc AUX Relays Schematic Diagrams, Sh. 2, Rev 0

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2.2 Developmental References (continued)

c. 2-45W600-57-6, Wiring Diagram Separation & Misc AUX Relays Schematic Diagrams, Rev 0

d. 2-45W600-57-8, Wiring Diagram Separation & Misc AUX Relays Schematic Diagrams, Rev 0

e. 2-45W600-57-17, Wiring Diagram Separation & Misc AUX Relays Schematic Diagrams, Rev 0

(1) 53288-066

(2) 52639-075

f. 2-45W600-57-20, Wiring Diagram Separation & Misc AUX Relays Schematic Diagrams, Rev 0

g. 2-45W600-57-22, Wiring Diagram Separation & Misc AUX Relays Schematic Diagrams, Rev 1

h. 2-45W600-57-23,Wiring Diagram Separation & Misc AUX Relays Schematic Diagrams, Rev 1

i. 2-45W600-57-30,Wiring Diagram Separation & Misc AUX Relays Schematic Diagrams, Rev 0

j. 2-45W600-57-32,Wiring Diagram Separation & Misc AUX Relays Schematic Diagrams, Rev 0

k. 2-45W600-57-37,Wiring Diagram Separation & Misc AUX Relays Schematic Diagrams, Rev Anticipated

(1) 54172-177

(2) 54172-178

(3) 54172-179

(4) 54172-464

(5) 54172-465

(6) 54172-466

l. 2-45W600-74, Wiring Diagram Residual Heat Removal System Schematic Diagram, Rev 0

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2.2 Developmental References (continued)

(1) 52671-089

(2) 52378-140

m. 1-45W706-1, Wiring Diagram 120V AC Vital INST PWR BDS 1-I & 2-I Connection Diagram Sheet 1, Rev 68

n. 1-45W706-2, Wiring Diagram 120V AC Vital INST PWR BDS 1-II & 2-II Connection Diagram Sheet 2, Rev 63

o. 1-45W706-3, Wiring Diagram 120V AC Vital INST PWR BDS 1-III & 2-III Connection Diagram SH 1, Rev 48

p. 1-45W706-4, Wiring Diagram 120V AC Vital INST PWR BDS 1-IV & 2-IV Connection Diagram SH 1, Rev 50

q. 1-45W760-211-12, Wiring Diagram 6900V Shutdown Power-2A-A Schematic Diagram, Rev 16

(1) 54210-058

r. 1-45W760-211-14, Wiring Diagram 6900V Shutdown Power-2B-B Schematic Diagram, Rev 15

(1) 54210-154

s. 2-45W760-30-18, Wiring Diagrams Ventilating System Schematic Diagrams, Rev 0

(1) 53290-049

(2) 53290-066

t. 45W760-55-2, Wiring Diagrams Annunciator System Schematic Diagrams, Rev 7

(1) 52639-076

u. 45W760-55-3, Wiring Diagrams Annunciator System Schematic Diagrams, Rev 2

(1) 52639-074

v. 2-45W760-63-4, Wiring Diagrams Safety Injection System Schematic Diagram, Rev 0

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2.2 Developmental References (continued)

w. 2-45W760-63-5, Wiring Diagrams Safety Injection System Schematic Diagram, Rev 0

x. 2-45W760-63-6, Wiring Diagrams Safety Injection System Schematic Diagram, Rev 0

y. 2-45W760-63-7, Wiring Diagrams Safety Injection System Schematic Diagram, Rev 0

z. 2-45W760-63-8, Wiring Diagrams Safety Injection System Schematic Diagram, Rev 0

aa. 2-45W760-74-1, Wiring Diagrams Residual Heat Removal System Schematic Diagram, Rev 1

(1) 54191-032

bb. 2-45W760-74-2, Wiring Diagrams Residual Heat Removal System Schematic Diagram Rev 0

(1) 53287-142

(2) 52639-005

(3) 53290-046

(4) 53290-062

(5) 53292-078

cc. 2-45W760-74-3, Wiring Diagrams Residual Heat Removal System Schematic Diagram, Rev 0

(1) 53287-146

(2) 52639-006

(3) 55707-203

(4) 55707-204

(5) 53292-050

(6) 53292-073

(7) 53287-144

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2.2 Developmental References (continued)

dd. 2-45W760-74-4, Wiring Diagrams Residual Heat Removal System Schematic Diagram, Rev 0

(1) 52639-007

(2) 54499-012

(3) 53288-052

(4) 53292-056

ee. 2-45W760-270-2, Wiring Diagram Miscellaneous System Schematic Diagram, Rev 0

(1) 54499-013

5. Single Line Diagrams

a. 2-45W724-3, Wiring Diagrams 6900V Shutdown Board 2A-A Single Line, Rev 0

b. 2-45W724-4, Wiring Diagrams 6900V Shutdown Board 2B-B Single Line, Rev 0

c. 2-45W751-2, Wiring Diagrams 480V REAC MOV BD 1A1-A & 2A1-A Single Line SH-2, Rev 0

d. 2-45W751-3, Wiring Diagrams 480V REAC MOV BD 1A1-A & 2A1-A Single Line SH-3, Rev 1

e. 2-45W751-4, Wiring Diagrams 480V REAC MOV BD 1A2-A & 2A2-A Single Line SH-1, Rev 0

f. 2-45W751-7, Wiring Diagrams 480V REAC MOV BD 1B1-B & 2B1-B Single Line SH-1, Rev 1

g. 2-45W751-9, Wiring Diagrams 480V REAC MOV BD 1B1-B & 2B1-B Single Line SH-3, Rev 0

(1) 53292-094

(2) 55707-202

h. 2-45W756-2, Wiring Diagrams 480V CONT & AUX BLDG VT BD 2A1-A Single Line SH-2, Rev 0

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2.2 Developmental References (continued)

(1) 53290-096

i. 2-45W756-6, Wiring Diagrams 480V CONT & AUX BLDG VT BD 2B1-B Single Line SH-2, Rev 0

(1) 53290-104

6. Connection Diagrams

a. 45N2635-50, Wiring Diagrams Local Instrument Panels Connection Diagram Sh-50, Rev 9

b. 2-45W2656-2, Unit Control Board Panel 2-M-21 Connection Diagram Sh-2, Rev 0

c. 2-45W2656-5, Unit Control Board Panel 2-M-21 Connection Diagram Sh-2, Rev 0

(1) 52630-035

(2) 52630-036

(3) 52343-271

d. 2-45W2656-8, Unit Control Board Panel 2-M-21 Connection Diagram Sh-2, Rev 0

e. 2-45W2656-9, Unit Control Board Panel 2-M-21 Connection Diagram Sh-2, Rev 0

f. 45B2766-5B, 480V React MOV BD 2A1-A Compt 5B, Rev 6

(1) 53287-010

g. 45B2766-10D, 480V React MOV BD 2A1-A Compt 10D, Rev 12

(1) 53287-027

h. 45B2766-14D, 480V React MOV BD 2A1-A Compt 14D, Rev 9

(1) 52639-079

(2) 53287-042

i. 45B2766-14E, 480V React MOV BD 2A1-A Compt 14E, Rev 6

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2.2 Developmental References (continued)

(1) 53287-043

j. 45B2766-5B, 480V React MOV BD 2A2-A Compt 5B, Rev 6

(1) 53288-004

(2) 54499-022

k. 45B2768-5B, 480V React MOV BD 2B1-B Compt 5B, Rev 6

(1) 53292-052

l. 45B2768-5C, 480V React MOV BD 2B1-B Compt 5C, Rev 4

(1) 53292-031

(2) 52639-014

m. 45B2768-10D, 480V React MOV BD 2B1-B Compt 10D, Rev 9

(1) 52639-015

(2) 53292-032

n. 45B2768-15B, 480V React MOV BD 2B1-B Compt 15B, Rev 8

(1) 52639-081

(2) 53292-034

o. 45B2768-15D, 480V React MOV BD 2B1-B Compt 15D, Rev 6

(1) 52639-082

(2) 53292-033

p. 45B2770-7D, 480V Cont & Aux Bldg Vt BD 2A1-A Compt 7D, Rev 1

(1) 53290-006

q. 45B2772-7D, 480V Cont & Aux Bldg Vt BD 2B1-B Compt 7D, Rev 0

(1) 52639-018

(2) 53290-029

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2.2 Developmental References (continued)

r. 45N2632-11, Wiring Diagrams Miscellaneous Controls Connection Diagrams SH 11 Rev 5

(1) 53321-025

s. 45N2635-11, Wiring Diagrams Local Instrument Panels Connection Diagrams, Sheet 11 Rev 16

t. 45N2676-4, SOLID STATE PROT SYS TRN A CONN DIAG SH4 Rev 16

u. 45N2676-5, SOLID STATE PROT SYS TRN A CONN DIAG SH5 Rev 10

v. 45N2677-4, SOLID STATE PROT SYS TRN B CONN DIAG SH4 Rev 18

w. 45N2677-5, SOLID STATE PROT SYS TRN B CONN DIAG SH5 Rev 9

x. 45N2680-3, Wiring Diagrams NSSS Aux Relay Panel 2-R-54 Connection Diagrams Rev 9

(1) 52639-032

(2) 53756-255

(3) 53756-256

y. 45N2681-3, Wiring Diagrams NSSS Aux Relay Panel 2-R-55 Connection Diagrams, SH-3, R11

z. 45W2766-3, Wiring Diagrams 480V Reactor MOV BD 2A1-A Connection Diagrams Rev 12

(1) 52639-047

aa. 45W2768-8, Wiring Diagrams 480V Reactor MOV BD 2B1-B Connection Diagrams Rev 7

(1) 52639-061

(2) 52639-060

bb. 45W2766-2, Wiring Diagrams 480V Reactor MOV BD 2A1-A 'Conn Diag Rev 20

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2.2 Developmental References (continued)

(1) 52639-045

7. Annuciator Drawings

   a. 2-45B655-1B, Main Control Room Annunciator Inputs Window Box XA-55-1B Rev 0

   b. 2-45B655-E1B, Electrical Annuciator Window Box XA-55-1B Engraving Rev 0

   c. 2-45B655-6A, Main Control Room Annunciator Inputs Window Box XA-55-6A Rev 0

      (1) 52378-227

   d. 2-45B655-E6A, Electrical Annunciator Window Box XA-55-5A Engraving Rev 0

      (1) 52378-238

   e. 2-45B655-6D, Main Control Room Annunciator Inputs Window Box XA-55-6D Rev 1

   f. 2-45B655-E6D, Electrical Annunciator Window Box XA-55-6D Engraving Rev 1

   g. 2-45B655-6F, Main Control Room Annunciator Inputs Window Box XA-55-6F Rev 0

      (1) 52630-092

      (2) 52639-077

      (3) 52343-236

   h. 2-45B655-E6F, Electrical Annunciator Window Box XA-55-6F Engraving Rev 0

      (1) 52630-101

      (2) 52343-237

8. Vendor Drawings

   a. E-3619E SH 1, Wiring Diagram Panel 1 6900 V Shutdown Board 2A-A Logic Relay Pnl, Contract No. 75K2-85354 Rev H

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2.2 Developmental References (continued)

(1) 54210-025

(2) 54210-027

b. E-3619E SH 5, Wiring Diagram Panel 1 6900 V Shutdown Board 2A-A Logic Relay Pnl, Contract No. 75K2-85354 Rev P

(1) 54210-039

c. E-3620E SH 1, Wiring Diagram Panel 1 6900 V Shutdown Board 2B-B Logic Relay Pnl, Contract No. 75K2-85354 Rev G

(1) 54210-120

(2) 54210-122

d. E-3620E SH 5, Wiring Diagram Panel 1 6900 V Shutdown Board 2B-B Logic Relay Pnl, Contract No. 75K2-85354 Rev S

(1) 54210-134

e. 0126D4454, Switchgear Interconnection Diagram, Contract No. 74C2-84376 Ref 909

f. 0126D4513, Switchgear Interconnection Diagram, Contract No. 74C2-84376 Rev 908

9. Other Drawings

a. 2-47A615-0, Integrated Computer System Terminations and I/O List R1

C. Other Documents

1. Test Scoping Documents

a. 2-TSD-030A-1, Select Auxiliary Building ESF Coolers and HELB Detection Rev 1

b. 2-TSD-074-1, Residual Heat Removal System Component Testing (No Heat Load) Rev 0

2. Setpoint Scaling Documents

a. 2-F-74-12, Rev 0

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2.2 Developmental References (continued)

b. 2-F-74-24, Rev 0

3. System Operating Instruction

a. 2-SOI-74.01, RESIDUAL HEAT REMOVAL SYSTEM OPERATING INSTRUCTION, Draft Rev 0000 Tracking Number 0002.

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3.0 PRECAUTIONS AND LIMITATIONS

A. Standard precautions shall be followed for working around energized electrical equipment in accordance with TVA Safety Manual 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. Component tags and labels may differ slightly (abbreviations, punctuation, letter case, etc.) from the description given in this test. If this situation occurs, it shall NOT be considered a test deficiency or procedure deviation. It shall be documented in the CTL and reconciled by way of a plant labeling request or drawing discrepancy or single-line date typo change in the procedure as appropriate.

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 test deficiencies are to be tracked by a corrective action document and entered on the appropriate system punchlist.

F. Deficiencies 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.

G. Observe all Radiation Protection (RP) requirements when working in or near contaminated areas.

H. Exercise caution when obtaining high pressure leakage flow through the test lines.

I. The containment sump valves 2-FCV-63-72 and 2-FCV-63-73 will be cycled during the performance of this test. If the valve 2-FCV-63-1 is open during this time it may allow a path for the RWST to drain to the sump.

J. Portions of this test isolate the RHR pumps suction and miniflow paths. Precautions shall be taken to preclude the pumps from starting during these portions.

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3.0 PRECAUTIONS AND LIMITATIONS (continued)

K. Treat terminal points as though they are energized whether they are or not.

L. Exercise caution when manually actuating relays to avoid contact with control circuit power.

M. Do NOT operate RHR pumps below 500 gpm.

N. Unit 1 Operations should be briefed on work activities since test activities such as temporarily removing a compartment from a board could impact Unit 1 owned equipment on a Unit 2 board.

O. Unit 1 Annunciator Window 135F is a common Unit 2 alarm window and may not clear during this test. After acknowledging any such alarm, an additional alarm input will cause the window to reflash. In such event the steady "acknowledged" light will be utilized to identify "no additional alarm occurring."

P. Unit 1 should be briefed that the Unit 1 Annunciator Window 135F may come in while testing U2 alarms.

Q. Local timing begins with the initiating signal and is concluded with the completion of valve stem movement. Remote timing begins with the initiating signal and is concluded with the position indication lights status change. Stroke time acceptance criteria will be based on the movement to the safety function final position of the valve.

R. During pump operation, observe piping and components for possible vibration and ensure overheating does NOT occur during miniflow operation.

S. RHR pumps should NOT be operated on minimum flow recirculation simultaneously with both letdown line valves open (74-530 and -531) and/or both heat exchanger bypass valves open (HCV-74-36 and -37) because of a potential pump-to-pump interaction problem that could result in back pressure from one pump being strong enough to close the pump discharge check valve of the other pump, causing it to dead-head.

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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] **VERIFY** the test/performance copy of this Preoperational Test Instruction (PTI) is the current revision including any change notices and as needed, each test person assisting in this test has the current revision including any change notices. _____

[2] **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. _____

[3] **ENSURE** changes to the references listed on "Test Procedure and Instruction Reference Review", Appendix A, have been reviewed, and determined NOT to adversely affect the test performance. _____

[4] **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. _____

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4.1 Preliminary Actions (continued)

[5] **EVALUATE** items on Open Watts Bar Integrated Task Equipment List (WITEL) **AND**

ENSURE that they will NOT adversely affect the test performance.

A. Subsection 6.1 _____

B. Subsection 6.2 _____

C. Subsection 6.3 _____

D. Subsection 6.4 _____

E. Subsection 6.5 _____

F. Subsection 6.6 _____

G. Subsection 6.7 _____

H. Subsection 6.8 _____

I. Subsection 6.9 _____

J. Subsection 6.10 _____

K. Subsection 6.11 _____

L. Subsection 6.12 _____

M. Subsection 6.13 _____

N. Subsection 6.14 _____

O. Subsection 6.15 _____

P. Subsection 6.16 _____

Q. Subsection 6.17 _____

R. Subsection 6.18 _____

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4.1 Preliminary Actions (continued)

[6] **ENSURE** Component Test Matrix Generic Tracking Report has been evaluated and outstanding component test exceptions will NOT impact test start.

A. Subsection 6.1 _____

B. Subsection 6.2 _____

C. Subsection 6.3 _____

D. Subsection 6.4 _____

E. Subsection 6.5 _____

F. Subsection 6.6 _____

G. Subsection 6.7 _____

H. Subsection 6.8 _____

I. Subsection 6.9 _____

J. Subsection 6.10 _____

K. Subsection 6.11 _____

L. Subsection 6.12 _____

M. Subsection 6.13 _____

N. Subsection 6.14 _____

O. Subsection 6.15 _____

P. Subsection 6.16 _____

Q. Subsection 6.17 _____

R. Subsection 6.18 _____

[7] **ENSURE** outstanding Design Change Notices (DCN's), Engineering Design Change Requests (EDCR's) or Temporary Alterations (TA's) do NOT adversely impact testing. _____

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4.1 Preliminary Actions (continued)

[8] **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. _____

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

A. Subsection 6.17 _____

[10] **VERIFY** the following systems are in service or operable to the extent necessary to perform this test:

A. System 032, Control Air - Provide control air to all AOV's. _____

B. Subsection 6.1

- 2-MCC-213-A001-A, 480V REACTOR MOV BOARD 2A1-A is energized _____
- 2-MCC-214-A001-A, 480V Control & Aux Bldg Vent Board 2A1-A is energized _____
- Annunciator System is energized _____

C. Subsection 6.2

- 2-MCC-213-B001-B, 480V REACTOR MOV BOARD 2B1-B is energized _____
- 2-MCC-214-B001-B, 480V Control & Aux Bldg Vent Board 2B1-B is energized _____
- Annunciator System is energized _____

D. Subsection 6.3

- 2-MCC-213-A001-A, 480V REACTOR MOV BOARD 2A1-A is energized _____
- 2-BD-235-0001-D, 120V AC VITAL POWER BOARD 2-I is energized _____

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4.1 Preliminary Actions (continued)

- Annunciator System is energized _____

E. Subsection 6.4

- 2-MCC-213-B001-B, 480V REACTOR MOV BOARD 2B1-B is energized _____
- 2-BD-235-0001-D, 120V AC VITAL POWER BOARD 2-I is energized. _____
- 2-BD-235-0002-E, 120V AC VITAL POWER BOARD 2-II is energized _____
- Annunciator System is energized _____

F. Subsection 6.5

- 2-MCC-213-A002-A, 480V REACTOR MOV BOARD 2A2-A is energized _____
- 2-BD-235-0001-D, 120V AC VITAL POWER BOARD 2-I is energized _____
- Annunciator System is energized _____

G. Subsection 6.6

- 2-MCC-213-B001-B, 480V REACTOR MOV BOARD 2B1-B is energized _____
- 2-BD-235-0002-E, 120V AC VITAL POWER BOARD 2-II is energized _____
- Annunciator System is energized _____

H. Subsection 6.7

- 2-MCC-213-A001-A, 480V REACTOR MOV BOARD 2A1-A is energized _____
- Annunciator System is energized _____

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4.1 Preliminary Actions (continued)

I. Subsection 6.8

- 2-MCC-213-B001-B, 480V REACTOR MOV BOARD 2B1-B is energized _____
- Annunciator System is energized _____

J. Subsection 6.9

- 2-MCC-213-A001-A, 480V REACTOR MOV BOARD 2A1-A is energized _____
- Annunciator System is energized _____

K. Subsection 6.10

- 2-MCC-213-B001-B, 480V REACTOR MOV BOARD 2B1-B is energized _____
- Annunciator System is energized _____

L. Subsection 6.11

- 2-BD-235-0001-D, 120V AC VITAL POWER BOARD 2-I is energized _____
- 2-BD-235-0002-E, 120V AC VITAL POWER BOARD 2-II is energized _____
- 2-BD-235-0003-F, 120V AC VITAL POWER BOARD 2-III is energized _____
- Annunciator System is energized _____

M. Subsection 6.12

- 2-BD-235-0002-E, 120V AC VITAL POWER BOARD 2-II is energized _____
- 2-BD-235-0004-G, 120V AC VITAL POWER BOARD 2-IV is energized _____
- Annunciator System is energized _____

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4.1 Preliminary Actions (continued)

N. Subsection 6.13

- 2-BD-235-0003-F, 120V AC VITAL POWER BOARD 2-III is energized _____
- Annunciator System is energized _____

O. Subsection 6.14

- 2-BD-211-A-A, 6900 SHUTDOWN BOARD 2A-A is energized _____
- 2-BD-235-0003-F, 120V AC VITAL POWER BOARD 2-III is energized _____
- Annunciator System is energized _____

P. Subsection 6.15

- 2-BD-211-B-B, 6900 SHUTDOWN BOARD 2B-B is energized _____
- 2-BD-235-0004-G, 120V AC VITAL POWER BOARD 2-IV is energized _____
- Annunciator System is energized _____

Q. Subsection 6.16

- 2-BD-235-0003-F, 120V AC VITAL POWER BOARD 2-III is energized _____
- 2-BD-235-0004-G, 120V AC VITAL POWER BOARD 2-IV is energized _____
- Annunciator System is energized _____

R. Subsection 6.17

- 2-MCC-213-A001-A, 480V REACTOR MOV BOARD 2A1-A is energized _____
- 2-MCC-213-B001-B, 480V REACTOR MOV BOARD 2B1-B is energized _____

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4.1 Preliminary Actions (continued)

- 2-BD-211-A-A, 6900 SHUTDOWN BOARD 2A-A is energized _____
- 2-BD-211-B-B, 6900 SHUTDOWN BOARD 2B-B is energized _____
- Annunciator System is energized _____

S. Subsection 6.18

- 2-BD-235-0001-D, 120V AC VITAL POWER BOARD 2-I is energized _____
- 2-BD-235-0002-E, 120V AC VITAL POWER BOARD 2-II is energized _____
- 2-BD-235-0003-F, 120V AC VITAL POWER BOARD 2-III is energized _____
- 2-BD-235-0004-G, 120V AC VITAL POWER BOARD 2-IV is energized _____
- Annunciator System is energized _____

[11] **VERIFY** System cleanliness as required for the performance of this test has been completed in accordance with SMP-7.0.

- Subsection 6.17. _____

[12] **REQUEST** a clearance on the following components.

A. 2-FCV-63-1, RWST TO RHR SUCTION _____

B. 2-FCV-72-40, RHR SPRAY HDR A ISOLATION _____

C. 2-FCV-72-41, RHR SPRAY HDR B ISOLATION _____

D. 2-PMP-74-10, RHR Pump 2A _____

E. 2-PMP-74-20, RHR Pump 2B _____

[13] **PERFORM** a pretest walkdown on equipment to be tested to ensure NO conditions exist that will impact test performance. _____

[14] **PERFORM** all of Appendix F, Valve Logic Electrical Checklist. _____

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4.1 Preliminary Actions (continued)

NOTE

Appendix E is an initial valve lineup only to establish control of System 74 for testing. The required valve positions to perform each individual section are identified within the section.

[15] **PERFORM** the valve lineup listed in Appendix E. _____

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

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

[18] **ENSURE** that communications are available for areas where testing is to be conducted. _____

[19] **VERIFY** the Responsible Startup Engineer (RSE) has been consulted prior to performing the following sections:

A. Subsection 6.1

- System 63 _____
- System 72 _____

B. Subsection 6.2

- System 63 _____
- System 72 _____

C. Subsection 6.3

- System 63 _____

D. Subsection 6.4

- System 63 _____

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4.1 Preliminary Actions (continued)

E. Subsection 6.14

- System 30 _____

F. Subsection 6.15

- System 30 _____

G. Subsection 6.16

- System 62 _____
- System 63 _____
- System 70 _____
- System 72 _____

H. Subsection 6.17

- System 30 _____
- System 63 _____

[20] **ENSURE** the RWST level is below the high level alarm, 127-C "RWST LEVEL FULL (LS-63-46A/49A)" AND above 40% as indicated on 2-M-6.

A. Subsection 6.17 _____

[21] **ENSURE** that Boundary Drawings are up to date or necessary changes accomplished prior to the start of testing and that any change to the Boundary Drawings do NOT impact the validity of the test. _____

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

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

[1] **ENSURE** the following M&TE is available **AND**

RECORD the M&TE data on SMP-9.0, Measuring and Test Equipment (M&TE) Log.

- Digital Stopwatch (2), accuracy ±1.5 sec/hr _____

[2] **ENSURE** the following equipment is available. _____

- Jumpers, (Grabber Type with Insulated Boots)
- Jumpers, (Momentary hand-held contact)
- Test Switches

4.3 Field Preparations

[1] **INSTALL** a jumper with a test switch in the CLOSE position across terminals TB115-9 and TB115-10 in 2-R-54 on the field side of the insulators prior to performing Subsection 6.3 (RCS Low Pressure Permissive) _____

_____
CV

[2] **INSTALL** a jumper with a test switch in the CLOSE position across terminals TB208-1 and TB208-2 in Panel 2-R-55 on the field side of the insulators prior to performing Subsection 6.4 (RCS Low Pressure Permissive) _____

_____
CV

[3] **INSTALL** a jumper with a test switch in the CLOSE position across terminals TB121-1 and TB121-2 in Panel 2-R-54 on the field side of the insulators prior to performing Subsection 6.5 (RCS Low Pressure Permissive) _____

_____
CV

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4.3 Field Preparations (continued)

[4] **INSTALL** a jumper with a test switch in the CLOSE position across TB219-1 and TB219-2 in Panel 2-R-55 on the field side of the insulators prior to performing Subsection 6.6 (RCS Low Pressure Permissive) _____

_____
CV

[5] **LIFT** the lead from TB112-1 on the field side of the insulators and **INSTALL** a jumper with a test switch in the OPEN position from the lifted wire to TB112-2 on the field side of the insulators in Panel 2-R-54 prior to performing the following Subsections (RCS HI Pressure):

A. Subsection 6.3 _____

_____
CV

B. Subsection 6.4 _____

_____
CV

C. Subsection 6.5 _____

_____
CV

D. Subsection 6.6 _____

_____
CV

[6] **LIFT** the lead from TB214-10 on the field side of the insulators and **INSTALL** a jumper with a test switch in the OPEN position from the lifted wire to TB214-11 on the field side of the insulators in Panel 2-R-55 prior to performing the following Subsections (RCS HI Pressure):

A. Subsection 6.3 _____

_____
CV

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4.3 Field Preparations (continued)

B. Subsection 6.4 _____

_____
CV

C. Subsection 6.5 _____

_____
CV

D. Subsection 6.6 _____

_____
CV

NOTES

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.
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.

[7] **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.

ANNUNCIATOR	TERMINAL BLOCK	SWITCH	TEST SUBSECTION	INITIALS/DATE
14-D	00	32	6.14	
14-D	00	32	6.15	
14-E	00	31	6.14	
14-E	00	31	6.15	
113-B	06	35	6.18	
113-C	05	97	6.17	
113-C	13	35	6.17	
113-C	13	36	6.17	
113-D	16	49	6.18	

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4.3 Field Preparations (continued)

ANNUNCIATOR	TERMINAL BLOCK	SWITCH	TEST SUBSECTION	INITIALS/DATE
113-D	16	50	6.18	
113-D	16	51	6.18	
113-D	16	52	6.18	
113-E	Master Switch on Mux 12		6.3, 6.4, 6.5, 6.6	
131-F	05	66	6.16	
131-F	05	73	6.16	
148-B	06	10	6.11, 6.13	
148-C	06	17	6.12	
149-A	06	08	6.14	
149-B	Master Switch on Mux 13		6.1	
149-C	06	03	6.3, 6.7, 6.9	
150-A	06	09	6.15	
150-B	Master Switch on Mux 13		6.2	
150-C	06	04	6.4, 6.8, 6.10	

[8] **VERIFY** Grade A demineralized water is available in the RWST prior to starting Subsection 6.17. _____

[9] **VERIFY** all relay trip targets are reset prior to testing the following 6900V breaker logic tests:

A. Subsection 6.14 _____

B. Subsection 6.15 _____

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4.4 Approvals and Notifications

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

_____ _____
Preoperational Startup Manager Signature — Date

[2] Prior to the start of the test, **OBTAIN** the Unit 2 Supervisor's (US/SRO) or Shift Manager's (SM) or Designee's (DS) authorization.

_____ _____
U2 US/SRO/SM/DS Signature — Date

[3] Prior to the start of the test, **OBTAIN** the Unit 1 Supervisor's (US/SRO) or Shift Manager's (SM) or Designee's (DS) authorization.

_____ _____
U1 US/SRO/SM/DS Signature — Date

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5.0 ACCEPTANCE CRITERIA

[1] The following System 74 motor operated valves will operate with the thermal overload protective device bypass in effect and will NOT operate with the overload protective device bypass reset:

VALVE NUMBER	STEP (OPERATE)	STEP (NOT OPERATE)
2-FCV-74-3	6.1[54]	6.1[51]
2-FCV-74-21	6.2[54]	6.2[51]
2-FCV-74-1	6.3[91]	6.3[88]
2-FCV-74-2	6.4[91]	6.4[88]
2-FCV-74-8	6.5[67]	6.5[64]
2-FCV-74-9	6.6[67]	6.6[64]
2-FCV-74-12	6.7[49]	6.7[46]
2-FCV-74-24	6.8[49]	6.8[46]
2-FCV-74-33	6.9[48]	6.9[45]
2-FCV-74-35	6.10[48]	6.10[45]

[2] Annunciator window 149-C, 480 RX MOV BD 2A1-A/2A2-A, ALARMS when the transfer switches are placed in the AUX position for the following valves:

VALVE NUMBER	STEP NUMBER
2-FCV-74-33	6.9[25]
2-FCV-74-12	6.7[26]
2-FCV-74-1	6.3[69]

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5.0 ACCEPTANCE CRITERIA (continued)

[3] Annunciator window 150-C, 480 RX MOV BD 2B1-B/2B2-B, ALARMS when the transfer switches are placed in the AUX position for the following valves:

VALVE NUMBER	STEP NUMBER
2-FCV-74-2	6.4[69]
2-FCV-74-24	6.8[26]
2-FCV-74-35	6.10[25]

[4] Annunciator window 148-B, ACR PNL 2-L-11A, ALARMS when the transfer switches are placed in the AUX position for the following valves:

VALVE NUMBER	STEP NUMBER
2-FCV-74-16	6.11[12]
2-FCV-74-32	6.13[11]

[5] Annunciator window 148-C, ACR PNL 2-L-11B, ALARMS when the transfer switch is placed in the AUX position for the following valve:

VALVE NUMBER	STEP NUMBER
2-FCV-74-28	6.12[12]

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5.0 ACCEPTANCE CRITERIA (continued)

[6] Annunciator window 131-F, ESF Component Not Normal, ALARMS when any of the following components are not in the normal ESF alignment:

VALVE NUMBER	POSITION	SET NUMBER
2-FCV-74-3	CLOSE	6.16[9]
2-FCV-74-21	CLOSE	6.16[15]
2-FCV-74-33	CLOSE	6.16[26]
2-FCV-74-35	CLOSE	6.16[32]
2-FCV-74-16	NOT FULLY OPEN	6.16[38]
2-FCV-74-28	NOT FULLY OPEN	6.16[44]

[7] Annunciator Window 149-A ALARMS when the transfer switch for RHR PUMP 2A-A is in the AUX position (Step 6.14[76]).

[8] Annunciator Window 150-A ALARMS when the transfer switch for RHR PUMP 2B-B is in the AUX position (Step 6.15[76]).

[9] Annunciator Window 113-C "RHR PUMP DISCH PRESS HI/MINI FLOW CONDITION" ALARMS when either of the following occur:

A. 2-PS-74-13 (Train A) or 2-PS-74-26 (Train B) close (Steps 6.17[75], 6.17[81]), or

B. 2-FS-74-12 (Train A) or 2-FS-74-24 (Train B) close indicating miniflow valves are open when the respective pump is operating. (Steps 6.17[20], 6.17[50])

[10] The red light on 6900V Shutdown BD Relay Panel ILLUMINATES when an RHR pump is operating. (Steps 6.14[59]F, 6.15[59]F)

[11] Annunciator 14-E, M-1 THROUGH M-6 MOTOR TRIPOUT, ALARMS and audible buzzer sounds when an RHR pmp trips on instantaneous over current. (Steps 6.14[145], 6.15[145])

[12] Annunciator 14-D, M-1 THRU M-6 MOTOR OVERLOAD, ALARMS on a simulated overload of each RHR pump (Steps 6.14[167], 6.15[167])

[13] RHR pumps will start on receipt of "SI" signal and remain running with SI signal reset. (Steps 6.14[98], 6.14[100], 6.15[98], 6.15[100])

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5.0 ACCEPTANCE CRITERIA (continued)

[14] Each Integrated Computer System (ICS) input for RHR pumps 2A-A and 2B-B indicates control power available, hand switch is in the NOT P-L position, and pump is running when breaker is CLOSED. (Steps 6.14[35], 6.14[40], 6.14[58], 6.15[35], 6.15[40], 6.15[58])

[15] Annunciator Window 149-B, 480 SD BD 2A1-A/2A2-A/ CA VT BD 2A1-A, ALARMS when the transfer switch is placed in the AUX position for the following valve:

VALVE NUMBER	STEP NUMBER
2-FCV-74-3	6.1[24]

[16] Annunciator Window 150-B, 480 SD BD 2B1-B/2B2-B/ CA VT BD 2B1-B, ALARMS when the transfer switch is placed in the AUX position for the following valve:

VALVE NUMBER	STEP NUMBER
2-FCV-74-21	6.2[24]

[17] The following apply to 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL:

A. Control signal is interrupted on an SI signal and valve opens fully. (Step 6.11[32])

B. Valve remains open while SI signal is present. (Step 6.11[34])

C. After reset of main SI signal, valve remains full open until reset of its individual SI signal. (Step 6.11[36])

D. Valve can be reset by 2-HS-74-16, RHR HX A OUTLET FCV SI SIGNAL RESET after SI signal is removed. (Step 6.11[39])

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5.0 ACCEPTANCE CRITERIA (continued)

[18] The following apply to 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL:

A. Control signal is interrupted on an SI signal and valve opens fully. (Step 6.12[32])

B. Valve remains open while Si signal is present (Step 6.12[34]).

C. After reset of main SI signal, valve remains full open until reset of its individual SI signal. (Step 6.12[36])

D. Valve can be reset by 2-HS-74-28, RHR HX B OUTLET FCV SI SIGNAL RESET after SI signal is removed. (Step 6.12[39])

[19] While in recirculation mode with the RHR loops isolated from the RCS, RHR Pump miniflow is between 500 and 1500 gpm without the miniflow control valve "HUNTING". (Steps 6.17[19], 6.17[49])

[20] Annunciator 113-B "RHR/CVCS HI TEMP PIPE BREAK" alarms for Train A when both 2-TS-74-43 and 2-TS-74-44 close on increasing temperature. For Train B, the annunciator alarms when both 2-TS-74-45 and 2-TS-74-46 close on increasing temperature. Annunciation is accompanied by a white indicating light in the MCR. (Steps 6.18[10], 6.18[12], 6.18[25], 6.18[27])

[21] Annunciator 113-D "RHR PUMP A/B MECH SEAL HX TEMP HI/HI-HI alarms when either 2-TIS-74-7 or 2-TIS-74-19 opens on increasing (temperature (HI), or 2-TIS-74-7 or 2-TIS-74-19 on continued increasing temperature (HI-HI). (Steps 6.18[37], 6.18[43], 6.18[50], 6.18[56])

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5.0 ACCEPTANCE CRITERIA (continued)

[22] The following valves are interlocked properly (can be opened) when RCS pressure is below the set point and (a) for valve 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION, valves 2-FCV-63-1, RWST TO RHR SUCTION and 2-FCV-63-72, CONTAINMENT SUMP TO RHR PUMP 2A-A ISOL are fully closed, and (b) for valve 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION, valves 2-FCV-63-1, RWST TO RHR SUCTION and 2-FCV-63-73, CONTAINMENT SUMP TO RHR PUMP 2B-B ISOL are fully closed:

VALVE NUMBER	STEP NUMBER
2-FCV-74-1	6.3[55]E, 6.3[78]E
2-FCV-74-2	6.4[55]E, 6.4[78]E
2-FCV-74-8	6.5[50]E
2-FCV-74-9	6.6[50]E

[23] Annunciator Window 113-E, RHR SUCT FCV-74-1, -2, -8, -9 OPEN & HI PRESS, ALARMS when any of the following valves are open with RCS pressure above the set point:

VALVE NUMBER	STEP NUMBER
2-FCV-74-1	6.3[123], 6.3[133]
2-FCV-74-2	6.4[122], 6.4[130]
2-FCV-74-8	6.5[80], 6.5[86]
2-FCV-74-9	6.6[80], 6.6[86]

[24] 2-FCV-74-3, RHR PUMP 2A-A SUCTION will close when 2-FCV-63-72, CONTAINMENT SUMP TO RHR PUMP 2A-A ISOL starts to open and the transfer switch is in NORMAL. (Step 6.1[63])

[25] 2-FCV-74-21, RHR PUMP 2B-B SUCTION will close when 2-FCV-63-73, CONTAINMENT SUMP TO RHR PUMP 2B-B ISOL starts to open and the transfer switch is in NORMAL. (Step 6.2[63])

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5.0 ACCEPTANCE CRITERIA (continued)

[26] 2- FCV-74- 3 is interlocked properly (can be opened) when 2-FCV-63-72, CONTAINMENT SUMP TO RHR PUMP 2A-A ISOL, 2-FCV-63-8, RHR PMP 2A-A TO CHG PMP & SIP 2A-A SUCT ISOL and 2-FCV-72-40, RHR SPRAY HDR A ISOLATION are fully closed. (Step 6.1[10]E)

[27] 2-FCV-74-21, RHR PUMP 2B-B SUCTION is interlocked properly (can be opened) when 2-FCV-63-73, CONTAINMENT SUMP TO RHR PUMP 2B-B ISOL, 2-FCV-63-11, RHR HX 2B-B OUTLET TO SIP 2B-B SUCT ISOL and 2-FCV-72-41, RHR SPRAY HDR B ISOLATION are fully closed. (Step 6.2[10]E)

NOTES

1) The low setpoint for 2-FCV-74-12 is from NESSD 2-F-74-12 Rev 0 for 2-FS-74-12A
2) The high setpoint for 2-FCV-74-12 is from NESSD 2-F-74-12 Rev 0 for 2-FS-74-12B
3) The inaccuracy of ±22.5 is from the Acceptable As Left value for 2-FI-74-12 from NESSD 2-F-74-12 Rev 0.

[28] With valve 2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE closed, it will open when RHR pump 2A-A starts. With valve closed and pump running, valve will open when discharge flow falls below miniflow low set point of 750±22.5 gpm. With valve open and pump running, valve will close when discharge flow increases above miniflow high set point of 1400±22.5 gpm. (Steps 6.17[18], 6.17[23], 6.17[27])

NOTES

1) The low setpoint for 2-FCV-74-24 is from NESSD 2-F-74-24 Rev 0 for 2-FS-74-24A
2) The high setpoint for 2-FCV-74-24 is from NESSD 2-F-74-24 Rev 0 for 2-FS-74-24B
3) The inaccuracy of ±22.5 is from the Acceptable As Left value for 2-FI-74-24 from NESSD 2-F-74-24 Rev 0.

[29] With valve 2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE closed, it will open when RHR pump 2B-B starts. With valve closed and pump running, valve will open when discharge flow falls below miniflow low set point of 750 gpm. With valve open and pump running, valve will close when discharge flow increases above miniflow high set point of 1400 gpm. (Steps 6.17[48], 6.17[57], 6.17[53])

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5.0 ACCEPTANCE CRITERIA (continued)

[30] The following coolers START automatically upon receipt of pump START signal from their respective pump:

A. 2-PMCL-30-175-A, RHR Pump 2A-A ROOM COOLER (Step 6.14[57])

B. 2-PMCL-30-176-B, RHR PUMP 2B-B ROOM COOLER (Step 6.15[57])

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5.0 ACCEPTANCE CRITERIA (continued)

[31] The following valves have stroke times within the specified time period:

Valve No.	Specific Requirements	Verification Steps
2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION	Less than or equal to 120 sec. to close	6.3[63], 6.3[65]
2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION	Less than or equal to 120 sec. to close	6.4[63], 6.4[65]
2-FCV-74-3, RHR PUMP 2A-A SUCTION	Less than or equal to 60 sec. to close	6.1[18], 6.1[20]
2-FCV-74-8, 2-FCV-74-2 BYPASS RHR SUCTION	Less than or equal to 120 sec. to close	6.5[57], 6.5[59]
2-FCV-74-9, 2-FCV-74-1 BYPASS RHR SUCTION	Less than or equal to 120 sec. to close	6.6[57], 6.6[59]
2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE	Less than or equal to 15 sec. to close	6.7[20], 6.7[22]
2-FCV-74-21, RHR PUMP 2B-B SUCTION	Less than or equal to 60 sec. to close	6.2[18], 6.2[20]
2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE	Less than or equal to 15 sec. to close	6.8[20], 6.8[22]
2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE	Less than or equal to 15 sec. to close	6.9[19], 6.9[21]
2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE	Less than or equal to 15 sec. to close	6.10[19], 6.10[21]

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5.0 ACCEPTANCE CRITERIA (continued)

[32] The following components can be operated from the main control room (MCR), switchgear (SWG), locally (LOC), and auxiliary control station (ACS) (each as applicable).

Valve No.	MCR	SWG	LOC	ACS
2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION	6.3	6.3	N/A	N/A
2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION	6.4	6.4	N/A	N/A
2-FCV-74-3, RHR PUMP 2A-A SUCTION	6.1	6.1	6.1	N/A
2-FCV-74-8, 2-FCV-74-2 BYPASS RHR SUCTION	N/A	6.5	N/A	N/A
2-FCV-74-9, 2-FCV-74-1 BYPASS RHR SUCTION	N/A	6.6	N/A	N/A
2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE	6.7	6.7	N/A	N/A
2-FCV-74-21, RHR PUMP 2B-B SUCTION	6.2	6.2	6.2	N/A
2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE	6.8	6.8	N/A	N/A
2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE	6.9	6.9	N/A	N/A
2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE	6.10	6.10	N/A	N/A
2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL	6.11	N/A	N/A	6.11
2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL	6.12	N/A	N/A	6.12
2-FCV-74-32, RHR HEAT EXCHANGER A/B BYPASS FLOW CONTROL	6.13	N/A	N/A	6.13

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5.0 ACCEPTANCE CRITERIA (continued)

Valve No.	MCR	SWG	LOC	ACS
2-PMP-74-10, RHR Pump 2A-A	6.17	6.17	N/A	N/A
2-PMP-74-20, RHR Pump 2B-B	6.17	6.17	N/A	N/A

Data Package: Page ____ of ____ **Date _____**

5.0 ACCEPTANCE CRITERIA (continued)

[33] Indication lights at the main control room and switchgear (as applicable) indicate the correct valve position.

Valve No.	MCR	SWG
2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION	6.3	6.3
2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION	6.4	6.4
2-FCV-74-3, RHR PUMP 2A-A SUCTION	6.1	6.1
2-FCV-74-8, 2-FCV-74-2 BYPASS RHR SUCTION	6.5	6.5
2-FCV-74-9, 2-FCV-74-1 BYPASS RHR SUCTION	6.6	6.6
2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE	6.7	6.7
2-FCV-74-21, RHR PUMP 2B-B SUCTION	6.2	6.2
2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE	6.8	6.8
2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE	6.9	6.9
2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE	6.10	6.10
2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL	6.11	N/A
2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL	6.12	N/A
2-FCV-74-32, RHR HEAT EXCHANGER A/B BYPASS FLOW CONTROL	6.13	N/A
2-PMP-74-10, RHR Pump 2A-A	6.14	6.14
2-PMP-74-20, RHR Pump 2B-B	6.15	6.15

Data Package: Page ____ of ____ **Date _____**

5.0 ACCEPTANCE CRITERIA (continued)

[34] The Plant Integrated Computer System (ICS) input reflects the correct status for the following valves.

Valve No.	Section
2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION	6.3
2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION	6.4
2-FCV-74-3, RHR PUMP 2A-A SUCTION	6.1
2-FCV-74-8, 2-FCV-74-2 BYPASS RHR SUCTION	6.5
2-FCV-74-9, 2-FCV-74-1 BYPASS RHR SUCTION	6.6
2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE	6.7
2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL	6.11
2-FCV-74-21, RHR PUMP 2B-B SUCTION	6.2
2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE	6.8
2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL	6.12
2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE	6.9
2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE	6.10

[35] Each RHR pump motor ampmeter operates correctly.

Pump No.	Verification Steps
2-PMP-74-10, RHR Pump 2A-A	6.17[26]
2-PMP-74-20, RHR Pump 2B-B	6.17[56]

Data Package: Page ____ of ____ **Date _____**

5.0 ACCEPTANCE CRITERIA (continued)

[36] The following valves can maintain a valve position at setpoint from the main control room and auxiliary control room.

Valve No.	Section
2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL	6.11
2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL	6.12
2-FCV-74-32, RHR HEAT EXCHANGER A/B BYPASS FLOW CONTROL	6.13

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6.0 INSTRUCTIONS

NOTES

1) Subsections 6.1 through 6.16 and 6.18 may be performed in any order provided the Prerequisites for the individual section are complete. Subsection 6.17 may NOT be performed until Subsections 6.7, 6.8, 6.14, and 6.15 have been completed.
2) Throughout this instruction, the Control Room operator should verify, acknowledge, clear and otherwise respond to annunciators in the normal fashion.
3) Stroke time of active valves will be measured from the handswitch actuation to GREEN light OFF upon opening and RED light OFF upon closing.
4) Stopwatches should be reset after recording the stroke time.

6.1 Valve 2-FCV-74-3 Logic Test

NOTE

Arc Flash PPE per TI-300 will be required during section 6.1 of the test.

[1] **VERIFY** the following prerequisites have been completed for Subsection 6.1. (4.1[1]-4.1[8], 4.1[10], 4.1[12]-4.1[19], 4.1[21], 4.1[22], 4.2[1], 4.2[2], 4.3[7]) _____

[2] **ESTABLISH** communications between MCR Panel 2-M-6, 480V C & A VT Board 2A1-A, 480V RX MOV BOARD 2A1-A, and at valve 2-FCV-74-3, RHR PUMP 2A-A SUCTION in RHR A Pump Room. _____

[3] **ENSURE** the following valves are CLOSED from 2-M-6:

A. 2-FCV-63-8, RHR PMP 2A-A TO CHG PMP & SIP 2A-A SUCT ISOL _____

B. 2-FCV-72-40, RHR SPRAY HDR A ISOLATION _____

C. 2-FCV-63-72, CONTAINMENT SUMP TO RHR PUMP 2A-A ISOL _____

Data Package: Page ____ of ____ **Date _____**

6.1 Valve 2-FCV-74-3 Logic Test (continued)

D. 2-FCV-74-3, RHR PUMP 2A-A SUCTION _____

E. 2-FCV-63-1, RWST TO RHR SUCTION _____

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

A. FD2191 _____

B. FD2231 _____

[5] **VERIFY** ICS point FD2191 displays "PWR ON". _____

[6] **ENSURE** the following transfer switch on the 480V Control and Aux Bldg Vent Board 2A1-A is in NORMAL:

A. 2-XS-74-3, RHR PUMP 2A-A INLET FLOW CONTROL TRANS SW _____

[7] **PLACE** hand switch 2-HS-74-3C, RHR PMP A SUCTION to OPEN and then to NORMAL. _____

[8] **VERIFY** valve 2-FCV-74-3, RHR PUMP 2A-A SUCTION does NOT open. _____

[9] **PLACE** hand switch 2-HS-74-3A, RHR PMP A SUCTION to OPEN and while valve 2-FCV-74-3, RHR PUMP 2A-A SUCTION is opening, **PLACE** hand switch 2-HS-74-3A, RHR PMP A SUCTION to CLOSE **AND RELEASE**. _____

[10] **VERIFY** the following indications:

A. 2-HS-74-3A red light ON. _____

B. 2-HS-74-3A green light OFF. _____

C. 2-HS-74-3C red light ON. _____

D. 2-HS-74-3C green light OFF. _____

E. Valve is OPEN using local position indicator **(Acc Crit 5.0[26])** _____

[11] **VERIFY** ICS point FD2231 displays "OPEN". _____

Data Package: Page ____ of ____ **Date _____**

6.1 Valve 2-FCV-74-3 Logic Test (continued)

[12] **PLACE** hand switch 2-HS-74-3C, RHR PMP A SUCTION to CLOSE and then to NORMAL. _____

[13] **VERIFY** valve 2-FCV-74-3, RHR PUMP 2A-A SUCTION does NOT close. _____

[14] **PLACE** hand switch 2-HS-74-3A, RHR PMP A SUCTION to CLOSE and while valve 2-FCV-74-3, RHR PUMP 2A-A SUCTION is closing, **PLACE** hand switch 2-HS-74-3A, RHR PMP A SUCTION to OPEN **AND RELEASE**. _____

[15] **VERIFY** the following indications:

A. 2-HS-74-3A red light OFF _____

B. 2-HS-74-3A green light ON _____

C. 2-HS-74-3C red light OFF _____

D. 2-HS-74-3C green light ON _____

E. Valve is CLOSED using local position indicator _____

[16] **VERIFY** ICS point FD2231 displays "NOT OPE". _____

Data Package: Page ____ of ____ **Date _____**

6.1 Valve 2-FCV-74-3 Logic Test (continued)

NOTE

Stopwatch timing of 2-FCV-74-3, RHR PUMP 2A-A SUCTION, will be done at handswitch 2-HS-74-3A, RHR PMP A SUCTION, and locally at 2-FCV-74-3, RHR PUMP 2A-A SUCTION. Perform steps 6.1[17]/6.1[18] and 6.1[19]/6.1[20] sequentially to obtain stroke time data.

[17] **SIMULTANEOUSLY PLACE** handswitch 2-HS-74-3A, RHR PMP A SUCTION, to the OPEN position **AND**

START stopwatches. _____

[18] **STOP** stopwatches when 2-FCV-74-3, RHR PUMP 2A-A SUCTION, reaches the OPEN position **AND**

RECORD stroke times below:

A. Remote Open Time (**Acc Crit 5.0[31]**) _____

_____ seconds (≤ 60 secs)

M&TE _____ Cal Due Date _____

B. Local Open Time _____

_____ seconds (≤ 60 secs)

M&TE _____ Cal Due Date _____

Data Package: Page ____ of ____ **Date _____**

6.1 Valve 2-FCV-74-3 Logic Test (continued)

[19] **SIMULTANEOUSLY PLACE** handswitch 2-HS-74-3A, RHR PMP A SUCTION, to the CLOSE position **AND**

START stopwatches. _____

[20] **STOP** stopwatches when 2-FCV-74-3, RHR PUMP 2A-A SUCTION, reaches the CLOSE position **AND**

RECORD stroke times below:

A. Remote Close Time (**Acc Crit 5.0[31]**) _____

_____ seconds (≤ 60 secs)

M&TE _____ Cal Due Date _____

B. Local Close Time _____

_____ seconds (≤ 60 secs)

M&TE _____ Cal Due Date _____

[21] **ENSURE** Annunciator Window 149-B, 480 SD BD 2A1-A /2A2-A/ CA VT BD 2A1-A, is CLEAR. _____

[22] **ENSURE** Event Display Monitor 149-B reports 149-B 480V VENT BDS 2A1-A (XS-67-431) XS IN AUX, NORMAL _____

[23] **PLACE** transfer switch 2-XS-74-3, RHR PUMP 2A-A INLET FLOW CONTROL TRANS SW to AUX. _____

[24] **VERIFY** Annunciator Window 149-B, 480 SD BD 2A1-A /2A2-A/ CA VT BD 2A1-A, ALARMS **(Acc Crit 5.0[15])**. _____

[25] **VERIFY** Event Display Monitor 149-B reports 149-B 480V VENT BDS 2A1-A (XS-67-431) XS IN AUX, ALARM _____

[26] **PLACE** transfer switch 2-XS-74-3, RHR PUMP 2A-A INLET FLOW CONTROL TRANS SW to NORMAL. _____

[27] **VERIFY** Annunciator Window 149-B, 480 SD BD 2A1-A /2A2-A/ CA VT BD 2A1-A, CLEARS. _____

Data Package: Page ____ of ____ **Date _____**

6.1 Valve 2-FCV-74-3 Logic Test (continued)

[28] **VERIFY** Event Display Monitor 149-B reports 149-B 480V VENT BDS 2A1-A (XS-67-431) XS IN AUX, NORMAL _____

[29] **PLACE** transfer switch 2-XS-74-3, RHR PUMP 2A-A INLET FLOW CONTROL TRANS SW to AUX. _____

[30] **PLACE** hand switch 2-HS-74-3A, RHR PMP A SUCTION to OPEN **AND RELEASE**. _____

[31] **VERIFY** valve 2-FCV-74-3, RHR PUMP 2A-A SUCTION does NOT open. _____

[32] **PLACE** hand switch 2-HS-74-3C, RHR PMP A SUCTION to OPEN and then to NORMAL, while valve is traveling **PLACE** 2-HS-74-3C, RHR PMP A SUCTION to CLOSE and then to NORMAL. _____

[33] **VERIFY** the following indications:

A. 2-HS-74-3C red light ON. _____

B. 2-HS-74-3C green light OFF. _____

C. 2-HS-74-3A red light OFF. _____

D. 2-HS-74-3A green light OFF. _____

E. Valve is OPEN using local position indicator _____

[34] **PLACE** hand switch 2-HS-74-3A, RHR PMP A SUCTION to CLOSE **AND RELEASE**. _____

[35] **VERIFY** valve 2-FCV-74-3, RHR PUMP 2A-A SUCTION does NOT close. _____

[36] **PLACE** hand switch 2-HS-74-3C, RHR PMP A SUCTION to CLOSE and then to NORMAL, while valve is traveling **PLACE** 2-HS-74-3C, RHR PMP A SUCTION to OPEN and then to NORMAL. _____

Data Package: Page ____ of ____ **Date _____**

6.1 Valve 2-FCV-74-3 Logic Test (continued)

[37] **VERIFY** the following indications:

A. 2-HS-74-3C red light OFF _____

B. 2-HS-74-3C green light ON _____

C. 2-HS-74-3A red light OFF _____

D. 2-HS-74-3A green light OFF _____

E. Valve is CLOSED using local position indicator _____

[38] **DEPRESS AND RELEASE** 2-HS-74-3B, RHR PMP A SUCTION OPEN pushbutton, and while the valve is opening, **DEPRESS AND RELEASE** 2-HS-74-3B, RHR PMP A SUCTION STOP pushbutton. _____

[39] **VERIFY** the following indications:

A. 2-HS-74-3B red light ON _____

B. 2-HS-74-3B green light ON _____

C. Valve mid-position using local position indicator _____

[40] **DEPRESS AND RELEASE** 2-HS-74-3B, RHR PMP A SUCTION OPEN pushbutton. _____

[41] **VERIFY** the following indications:

A. 2-HS-74-3B red light ON _____

B. 2-HS-74-3B green light OFF _____

C. Valve OPEN using local position indicator _____

[42] **DEPRESS AND RELEASE** 2-HS-74-3B, RHR PMP A SUCTION CLOSE pushbutton, and while the valve is closing **DEPRESS AND RELEASE** 2-HS-74-3B, RHR PMP A SUCTION STOP pushbutton. _____

Data Package: Page ____ of ____ **Date _____**

6.1 Valve 2-FCV-74-3 Logic Test (continued)

[43] **VERIFY** the following indications:

A. 2-HS-74-3B red light ON _____

B. 2-HS-74-3B green light ON _____

C. Valve mid-position using local position indicator _____

[44] **DEPRESS AND RELEASE** 2-HS-74-3B, RHR PMP A SUCTION CLOSE pushbutton. _____

[45] **VERIFY** the following indications:

A. 2-HS-74-3B red light OFF _____

B. 2-HS-74-3B green light ON _____

C. Valve CLOSED using local position indicator _____

[46] **OPEN** 2-BKR-74-3, RHR PMP 2A-A INLET (2-FCV-74-3); BKR 7D [480V C&A VENT BD 2A1-A, COMPT 7D]. _____

[47] **VERIFY** ICS point FD2191 displays "PWR OFF". _____

WARNING

Arc Flash PPE per TI-300 will be required for step 6.1[48]

[48] **MANUALLY TRIP** the thermal overload for 2-BKR-74-3 at 480V C&A VENT BD 2A1-A, COMPT 7D. _____

_____
CV

[49] **CLOSE** 2-BKR-74-3, RHR PMP 2A-A INLET (2-FCV-74-3); BKR 7D [480V C&A VENT BD 2A1-A, COMPT 7D]. _____

[50] **PLACE** control switch 2-HS-74-3C, RHR PMP A SUCTION to the OPEN position and then to NORMAL. _____

[51] **VERIFY** that valve 2-FCV-74-3, RHR PUMP 2A-A SUCTION does NOT open **(Acc Crit 5.0[1])**. _____

Data Package: Page ____ of ____ **Date _____**

6.1 Valve 2-FCV-74-3 Logic Test (continued)

[52] **DEPRESS and HOLD** the armature of relay K7 in back of Panel 4F on 480V RX MOV BD 2A1-A to simulate Overload Bypass. _____

[53] **PLACE** control switch 2-HS-74-3C, RHR PMP A SUCTION to the OPEN position and then to NORMAL. _____

[54] **VERIFY** valve 2-FCV-74-3, RHR PUMP 2A-A SUCTION OPENS **(Acc Crit 5.0[1])**. _____

[55] **RELEASE** K7 relay armature. _____

[56] **OPEN** 2-BKR-74-3, RHR PMP 2A-A INLET (2-FCV-74-3); BKR 7D [480V C&A VENT BD 2A1-A, COMPT 7D]. _____

WARNING

Arc Flash PPE per TI-300 will be required for the following step 6.1[57]

[57] **RESET** the thermal overload for 2-BKR-74-3 at 480V C&A VENT BD 2A1-A, COMPT 7D. _____

_____ CV

[58] **CLOSE** 2-BKR-74-3, RHR PMP 2A-A INLET (2-FCV-74-3); BKR 7D [480V C&A VENT BD 2A1-A, COMPT 7D]. _____

[59] **PLACE** transfer switch 2-XS-74-3, RHR PUMP 2A-A INLET FLOW CONTROL TRANS SW to NORMAL. _____

[60] **ENSURE** transfer switch 2-XS-63-72, CNTMT SUMP TO RHR PUMP A-A is in NORMAL. _____

[61] **ENSURE** transfer switch 2-XS-63-8, RHR HTX A TO CVCS CHG PUMP is in NORMAL. _____

[62] **INSTALL** jumper across terminals TB 631-11 and TB 631-12 on the field side of the plastic insulators in Panel 2-R-48. _____

_____ CV

Data Package: Page ____ of ____ **Date _____**

6.1 Valve 2-FCV-74-3 Logic Test (continued)

[63] **OPEN** valve 2-FCV-63-72, CONTAINMENT SUMP TO RHR PUMP 2A-A ISOL, using 2-HS-63-72A, CNTMT SUMP TO RHR PMP A SUCT AND **VERIFY** valve 2-FCV-74-3, RHR PUMP 2A-A SUCTION closes when 2-FCV-63-72, CONTAINMENT SUMP TO RHR PUMP 2A-A ISOL starts to open **(Acc Crit 5.0[24])**. _____

[64] **REMOVE** jumper across terminals TB 631-11 and TB 631-12 in Panel 2-R-48. _____

_____
CV

[65] **PLACE** control switch 2-HS-74-3A, RHR PMP A SUCTION to OPEN **AND RELEASE**. _____

[66] **VERIFY** valve 2-FCV-74-3, RHR PUMP 2A-A SUCTION does NOT open. _____

[67] **REMOVE** the cover from the CLOSED stem mounted limit switch on valve 2-FCV-72-40, RHR SPRAY HDR A ISOLATION and **LIFT** wire 7D05 to simulate valve OPEN condition. _____

_____
CV

[68] **CLOSE** valve 2-FCV-63-72, CONTAINMENT SUMP TO RHR PUMP 2A-A ISOL using 2-HS-63-72A, CNTMT SUMP TO RHR PMP A SUCT. _____

[69] **PLACE** control switch 2-HS-74-3A, RHR PMP A SUCTION to OPEN **AND RELEASE**. _____

[70] **VERIFY** valve 2-FCV-74-3, RHR PUMP 2A-A SUCTION does NOT open. _____

[71] **LAND** wire 7D05 in the CLOSE stem mounted limit switch of valve 2-FCV-74-40 and **REPLACE** limit switch cover. _____

_____
CV

Data Package: Page ____ of ____ **Date _____**

6.1 Valve 2-FCV-74-3 Logic Test (continued)

[72] **OPEN** valve 2-FCV-63-72, CONTAINMENT SUMP TO RHR PUMP 2A-A ISOL using 2-HS-63-72A, CNTMT SUMP TO RHR PMP A SUCT. _____

[73] **OPEN** valve 2-FCV-63-8, RHR PMP 2A-A TO CHG PMP & SIP 2A-A SUCT ISOL using 2-HS-63-8A, RHR PMP A TO CHARGING PMPS SUCT. _____

[74] **CLOSE** valve 2-FCV-63-72, CONTAINMENT SUMP TO RHR PUMP 2A-A ISOL using 2-HS-63-72A, CNTMT SUMP TO RHR PMP A SUCT. _____

[75] **PLACE** control switch 2-HS-74-3A, RHR PMP A SUCTION to OPEN **AND RELEASE**. _____

[76] **VERIFY** valve 2-FCV-74-3, RHR PUMP 2A-A SUCTION does NOT OPEN. _____

[77] **CLOSE** valve 2-FCV-63-8, RHR PMP 2A-A TO CHG PMP & SIP 2A-A SUCT ISOL using 2-HS-63-8A, RHR PMP A TO CHARGING PMPS SUCT. _____

[78] **VERIFY** successful completion of Subsection 6.1 **(Acc Crit 5.0[32], 5.0[33], 5.0[34]).** _____

Data Package: Page ____ of ____ **Date _____**

6.2 Valve 2-FCV-74-21 Logic Test

NOTE

Arc Flash PPE per TI-300 will be required during section 6.2 of the test.

[1] **VERIFY** the following prerequisites have been completed for Subsection 6.2. (4.1[1]-4.1[8], 4.1[10], 4.1[12]-4.1[19], 4.1[21], 4.1[22], 4.2[1], 4.2[2], 4.3[7]) _____

[2] **ESTABLISH** communications between MCR Panel 2-M-6, 480V C & A VT Board 2B1-B, 480V RX MOV BOARD 2B1-B, and at valve 2-FCV-74-21, RHR PUMP 2B-B SUCTION in RHR B Pump Room. _____

[3] **ENSURE** the following valves are CLOSED from 2-M-6:

A. 2-FCV-63-11, RHR HX 2B-B OUTLET TO SIP 2B-B SUCT ISOL _____

B. 2-FCV-72-41, RHR SPRAY HDR B ISOLATION _____

C. 2-FCV-63-73, CONTAINMENT SUMP TO RHR PUMP 2B-B ISOL _____

D. 2-FCV-74-21, RHR PUMP 2B-B SUCTION _____

E. 2-FCV-63-1, RWST TO RHR SUCTION _____

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

A. FD2343 _____

B. FD2256 _____

[5] **VERIFY** ICS point FD2343 displays "PWR ON". _____

Data Package: Page ____ of ____ **Date _____**

6.2 Valve 2-FCV-74-21 Logic Test (continued)

[6] **ENSURE** the following transfer switch on the 480V Control and Aux Bldg Vent Board 2B1-B is in NORMAL:

A. 2-XS-74-21, RHR PUMP 2B-B INLET FLOW CONTROL TRANS SW _____

[7] **PLACE** hand switch 2-HS-74-21C, RHR PMP B SUCTION to OPEN and then to NORMAL. _____

[8] **VERIFY** valve 2-FCV-74-21, RHR PUMP 2B-B SUCTION does NOT open. _____

[9] **PLACE** hand switch 2-HS-74-21A, RHR PMP B SUCTION to OPEN and while valve 2-FCV-74-21, RHR PUMP 2B-B SUCTION is opening, **PLACE** hand switch 2-HS-74-21A, RHR PMP B SUCTION to CLOSE **AND RELEASE**. _____

[10] **VERIFY** the following indications:

A. 2-HS-74-21A red light ON. _____

B. 2-HS-74-21A green light OFF. _____

C. 2-HS-74-21C red light ON. _____

D. 2-HS-74-21C green light OFF. _____

E. Valve is OPEN using local position indicator **(Acc Crit 5.0[27])** _____

[11] **VERIFY** ICS point FD2256 displays "OPEN". _____

[12] **PLACE** hand switch 2-HS-74-21C, RHR PMP B SUCTION to CLOSE and then to NORMAL. _____

[13] **VERIFY** valve 2-FCV-74-21, RHR PUMP 2B-B SUCTION does NOT close. _____

[14] **PLACE** hand switch 2-HS-74-21A, RHR PMP B SUCTION to CLOSE and while valve 2-FCV-74-21, RHR PUMP 2B-B SUCTION is closing, **PLACE** hand switch 2-HS-74-21A, RHR PMP B SUCTION to OPEN **AND RELEASE**. _____

Data Package: Page ____ of ____ **Date _____**

6.2 Valve 2-FCV-74-21 Logic Test (continued)

[15] **VERIFY** the following indications:

A. 2-HS-74-21A red light OFF _____

B. 2-HS-74-21A green light ON _____

C. 2-HS-74-21C red light OFF _____

D. 2-HS-74-21C green light ON _____

E. Valve is CLOSED using local position indicator _____

[16] **VERIFY** ICS point FD2256 displays "NOT OPE". _____

NOTE

Stopwatch timing of 2-FCV-74-21, RHR PUMP 2B-B SUCTION, will be done at handswitch 2-HS-74-21A, RHR PMP B SUCTION, and locally at 2-FCV-74-21, RHR PUMP 2B-B SUCTION. Perform steps 6.2[17]/6.2[18] and 6.2[19]/6.2[20] sequentially to obtain stroke time data.

[17] **SIMULTANEOUSLY PLACE** handswitch 2-HS-74-21A, RHR PMP B SUCTION, to the OPEN position **AND**

START stopwatches. _____

[18] **STOP** stopwatches when 2-FCV-74-21, RHR PUMP 2B-B SUCTION, reaches the OPEN position **AND**

RECORD stroke times below:

A. Remote Open Time (**Acc Crit 5.0[31]**) _____

_____ seconds (≤ 60 secs)

M&TE _____ Cal Due Date _____

B. Local Open Time _____

_____ seconds (≤ 60 secs)

M&TE _____ Cal Due Date _____

Data Package: Page ____ of ____ **Date _____**

6.2 Valve 2-FCV-74-21 Logic Test (continued)

[19] **SIMULTANEOUSLY PLACE** handswitch 2-HS-74-21A, RHR PMP B SUCTION, to the CLOSE position **AND**

START stopwatches. _____

[20] **STOP** stopwatches when 2-FCV-74-21, RHR PUMP 2B-B SUCTION, reaches the CLOSE position **AND**

RECORD stroke times below:

A. Remote Close Time (**Acc Crit 5.0[31]**) _____

_____ seconds (≤ 60 secs)

M&TE _____ Cal Due Date _____

B. Local Close Time _____

_____ seconds (≤ 60 secs)

M&TE _____ Cal Due Date _____

[21] **ENSURE** Annunciator Window 150-B, 480 SD BD 2B1-B/2B2-B/ CA VT BD 2B1-B, is CLEAR. _____

[22] **ENSURE** Event Display Monitor 150-B reports 150-B 480V VENT BDS 2B1-B (XS-67-440) XS IN AUX, NORMAL _____

[23] **PLACE** transfer switch 2-XS-74-21, RHR PUMP 2B-B INLET FLOW CONTROL TRANS SW to AUX. _____

[24] **VERIFY** Annunciator Window 150-B, 480 SD BD 2B1-B/2B2-B/ CA VT BD 2B1-B, ALARMS **(Acc Crit 5.0[16])**. _____

[25] **VERIFY** Event Display Monitor 150-B reports 150-B 480V VENT BDS 2B1-B (XS-67-440) XS IN AUX, ALARM _____

[26] **PLACE** transfer switch 2-XS-74-21, RHR PUMP 2B-B INLET FLOW CONTROL TRANS SW to NORMAL. _____

[27] **VERIFY** Annunciator Window 150-B, 480 SD BD 2B1-B/2B2-B/ CA VT BD 2B1-B, CLEARS. _____

Data Package: Page ____ of ____ **Date _____**

6.2 Valve 2-FCV-74-21 Logic Test (continued)

[28] **VERIFY** Event Display Monitor 150-B reports 150-B 480V VENT BDS 2B1-B (XS-67-440) XS IN AUX, NORMAL _____

[29] **PLACE** transfer switch 2-XS-74-21, RHR PUMP 2B-B INLET FLOW CONTROL TRANS SW to AUX. _____

[30] **PLACE** hand switch 2-HS-74-21A, RHR PMP B SUCTION to OPEN **AND RELEASE**. _____

[31] **VERIFY** valve 2-FCV-74-21, RHR PUMP 2B-B SUCTION does NOT open. _____

[32] **PLACE** hand switch 2-HS-74-21C, RHR PMP B SUCTION to OPEN and then to NORMAL, while valve is traveling **PLACE** 2-HS-74-21C, RHR PMP B SUCTION to CLOSE and then to NORMAL. _____

[33] **VERIFY** the following indications:

A. 2-HS-74-21C red light ON. _____

B. 2-HS-74-21C green light OFF. _____

C. 2-HS-74-21A red light OFF. _____

D. 2-HS-74-21A green light OFF. _____

E. Valve is OPEN using local position indicator _____

[34] **PLACE** hand switch 2-HS-74-21A, RHR PMP B SUCTION to CLOSE **AND RELEASE**. _____

[35] **VERIFY** valve 2-FCV-74-21, RHR PUMP 2B-B SUCTION does NOT close. _____

[36] **PLACE** hand switch 2-HS-74-21C, RHR PMP B SUCTION to CLOSE and then to NORMAL, while valve is traveling **PLACE** 2-HS-74-21C, RHR PMP B SUCTION to OPEN and then to NORMAL. _____

Data Package: Page ____ of ____ **Date _____**

6.2 Valve 2-FCV-74-21 Logic Test (continued)

[37]. **VERIFY** the following indications:

A. 2-HS-74-21C red light OFF _____

B. 2-HS-74-21C green light ON _____

C. 2-HS-74-21A red light OFF _____

D. 2-HS-74-21A green light OFF _____

E. Valve is CLOSED using local position indicator _____

[38] **DEPRESS AND RELEASE** 2-HS-74-21B, RHR PMP B SUCTION OPEN pushbutton, and while the valve is opening, **DEPRESS AND RELEASE** 2-HS-74-21B, RHR PMP B SUCTION STOP pushbutton. _____

[39] **VERIFY** the following indications:

A. 2-HS-74-21B red light ON _____

B. 2-HS-74-21B green light ON _____

C. Valve mid-position using local position indicator _____

[40] **DEPRESS AND RELEASE** 2-HS-74-21B, RHR PMP B SUCTION OPEN pushbutton. _____

[41] **VERIFY** the following indications:

A. 2-HS-74-21B red light ON _____

B. 2-HS-74-21B green light OFF _____

C. Valve OPEN using local position indicator _____

[42] **DEPRESS AND RELEASE** 2-HS-74-21B, RHR PMP B SUCTION CLOSE pushbutton, and while the valve is closing **DEPRESS AND RELEASE** 2-HS-74-21B, RHR PMP B SUCTION STOP pushbutton. _____

Data Package: Page ____ of ____ **Date _____**

6.2 Valve 2-FCV-74-21 Logic Test (continued)

[43] **VERIFY** the following indications:

A. 2-HS-74-21B red light ON _____

B. 2-HS-74-21B green light ON _____

C. Valve mid-position using local position indicator _____

[44] **DEPRESS AND RELEASE** 2-HS-74-21B, RHR PMP B SUCTION CLOSE pushbutton.

[45] **VERIFY** the following indications:

A. 2-HS-74-21B red light OFF _____

B. 2-HS-74-21B green light ON _____

C. Valve CLOSED using local position indicator _____

[46] **OPEN** 2-BKR-74-21, RHR PMP 2B-B INLET (2-FCV-74-21); BKR 7D [480V C&A VENT BD 2B1-B, COMPT 7D]. _____

[47] **VERIFY** ICS point FD2343 displays "PWR OFF". _____

WARNING

Arc Flash PPE per TI-300 will be required for step 6.2[48]

[48] **MANUALLY TRIP** the thermal overload for 2-BKR-74-21 at 480V C&A VENT BD 2B1-B, COMPT 7D. _____

_____
CV

[49] **CLOSE** 2-BKR-74-21, RHR PMP 2B-B INLET (2-FCV-74-21); BKR 7D [480V C&A VENT BD 2B1-B, COMPT 7D]. _____

[50] **PLACE** control switch 2-HS-74-21C, RHR PMP B SUCTION to the OPEN position and then to NORMAL. _____

[51] **VERIFY** that valve 2-FCV-74-21, RHR PUMP 2B-B SUCTION does NOT open **(Acc Crit 5.0[1])**. _____

Data Package: Page ____ of ____ **Date _____**

6.2 Valve 2-FCV-74-21 Logic Test (continued)

[52] **DEPRESS and HOLD** the armature of relay K6 in back of Panel 16D on 480V RX MOV BD 2B1-B to simulate Overload Bypass. _____

[53] **PLACE** control switch 2-HS-74-21C, RHR PMP B SUCTION to the OPEN position and then to NORMAL. _____

[54] **VERIFY** valve 2-FCV-74-21, RHR PUMP 2B-B SUCTION OPENS **(Acc Crit 5.0[1])**. _____

[55] **RELEASE** K6 relay armature. _____

[56] **OPEN** 2-BKR-74-21, RHR PMP 2B-B INLET (2-FCV-74-21); BKR 7D [480V C&A VENT BD 2B1-B, COMPT 7D]. _____

WARNING

Arc Flash PPE per TI-300 will be required for step 6.2[57]

[57] **RESET** the thermal overload for 2-BKR-74-21 at 480V C&A VENT BD 2B1-B, COMPT 7D. _____

_____ CV

[58] **CLOSE** 2-BKR-74-21, RHR PMP 2B-B INLET (2-FCV-74-21); BKR 7D [480V C&A VENT BD 2B1-B, COMPT 7D]. _____

[59] **PLACE** transfer switch 2 XS-74-21 to NORMAL. _____

[60] **ENSURE** transfer switch 2-XS-63-73, CNTMT SUMP TO RHR PUMP B-B is in NORMAL. _____

[61] **ENSURE** transfer switch 2-XS-63-1, RHR HTX B TO SIS PUMP is in NORMAL. _____

[62] **INSTALL** jumper across terminals TB 631-11 and TB 631-12 on the field side of the plastic insulators in Panel 2-R-51. _____

_____ CV

Data Package: Page ____ of ____ **Date _____**

6.2 Valve 2-FCV-74-21 Logic Test (continued)

[63] **OPEN** valve 2-FCV-63-73, CONTAINMENT SUMP TO RHR PUMP 2B-B ISOL, using 2-HS-63-73A, CNTMT SUMP TO RHR PMP B SUCT AND **VERIFY** valve 2-FCV-74-21, RHR PUMP 2B-B SUCTION closes when 2-FCV-63-73, CONTAINMENT SUMP TO RHR PUMP 2B-B ISOL starts to open **(Acc Crit 5.0[25])**. _____

[64] **REMOVE** jumper across terminals TB 631-11 and TB 631-12 in Panel 2-R-51. _____

_____
CV

[65] **PLACE** control switch 2-HS-74-21A, RHR PMP B SUCTION to **OPEN AND LEASE**. _____

[66] **VERIFY** valve 2-FCV-74-21, RHR PUMP 2B-B SUCTION does NOT open. _____

[67] **REMOVE** the cover from the CLOSED stem mounted limit switch on valve 2-FCV-72-41, RHR SPRAY HDR B ISOLATION and **LIFT** wire 7D05 to simulate valve OPEN condition. _____

_____
CV

[68] **CLOSE** valve 2-FCV-63-73, CONTAINMENT SUMP TO RHR PUMP 2B-B ISOL using 2-HS-63-73A, CNTMT SUMP TO RHR PMP B SUCT. _____

[69] **PLACE** control switch 2-HS-74-21A, RHR PMP B SUCTION to OPEN **AND RELEASE**. _____

[70] **VERIFY** valve 2-FCV-74-21, RHR PUMP 2B-B SUCTION does NOT open. _____

[71] **LAND** wire 7D05 in the CLOSE stem mounted limit switch of valve 2-FCV-74-41 and **REPLACE** limit switch cover. _____

_____
CV

Data Package: Page ____ of ____ **Date _____**

6.2 Valve 2-FCV-74-21 Logic Test (continued)

[72] **OPEN** valve 2-FCV-63-73, CONTAINMENT SUMP TO RHR PUMP 2B-B ISOL using 2-HS-63-73A, CNTMT SUMP TO RHR PMP B SUCT. _____

[73] **OPEN** valve 2-FCV-63-11, RHR HX 2B-B OUTLET TO SIP 2B-B SUCT ISOL using 2-HS-63-11A, RHR PUMP B TO SI PMPS SUCT. _____

[74] **CLOSE** valve 2-FCV-63-73, CONTAINMENT SUMP TO RHR PUMP 2B-B ISOL using 2-HS-63-73A, CNTMT SUMP TO RHR PMP B SUCT. _____

[75] **PLACE** control switch 2-HS-74-21A, RHR PMP B SUCTION to OPEN **AND RELEASE**. _____

[76] **VERIFY** valve 2-FCV-74-21, RHR PUMP 2B-B SUCTION does NOT OPEN. _____

[77] **CLOSE** valve 2-FCV-63-11, RHR HX 2B-B OUTLET TO SIP 2B-B SUCT ISOL using 2-HS-63-11A, RHR PUMP B TO SI PMPS SUCT. _____

[78] **VERIFY** successful completion of Subsection 6.2 **(Acc Crit 5.0[32], 5.0[33], 5.0[34]).** _____

Data Package: Page ____ of ____ **Date _____**

6.3 Valve 2-FCV-74-1 Logic Test

NOTE

Arc Flash PPE per TI-300 will be required during section 6.3 of the test.

[1] **VERIFY** the following prerequisites have been completed for Subsection 6.3. (4.1[1]-4.1[8], 4.1[10], 4.1[12]-4.1[19], 4.1[21], 4.1[22], 4.2[1], 4.2[2], 4.3[1], 4.3[5]-4.3[7]) _____

[2] **ESTABLISH** communications between MCR Panel 2-M-6, 480V RX MOV BOARD 2A1-A, and at valve 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION, Inside Polar Crane Wall El 706 Az 354. _____

[3] **ENSURE** the following valves are CLOSED from 2-M-6:

A. 2-FCV-63-1, RWST TO RHR SUCTION _____

B. 2-FCV-63-72, CONTAINMENT SUMP TO RHR PUMP 2A-A ISOL _____

C. 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION _____

D. 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION _____

E. 2-FCV-74-8, 2-FCV-74-2 BYPASS RHR SUCTION _____

F. 2-FCV-74-9, 2-FCV-74-1 BYPASS RHR SUCTION _____

[4] **ENSURE** that 2-HS-74-1C, LOOP 4 HL TO RHR SUCTION is in NORMAL _____

[5] **ENSURE** that 2-XS-74-1, RHR SYSTEM ISOLATION TRANS SW is in AUX _____

[6] **ENSURE** that 2-BKR-74-1, 480V REAC MOV BD 2A1-A BKR 10D is OPEN. _____

[7] **OPEN** compartment door for compartment 10D of 480V REACTOR MOV 2A1-A _____

Data Package: Page ____ of ____ **Date _____**

6.3 Valve 2-FCV-74-1 Logic Test (continued)

WARNING

Arc Flash PPE per TI-300 will be required for steps 6.3[8] through 6.3[17]

[8] **DISENGAGE** the compartment locking devices at the top and bottom. _____

[9] **PULL** the breaker compartment forward until the compartment stabs disengage from the board bus. _____

[10] **ENGAGE** the compartment locking devices at the top and bottom of the compartment while the bucket is on the outside to prevent the bucket from accidentally engaging the bus stabs. _____

NOTE

Wire lifts are NOT required if MCC buckets are equipped with pull apart terminal blocks.

[11] **IF** the breaker compartment wiring hinders the breaker compartment from safely disengaging the board bus, **THEN**

DISCONNECT the wiring as needed **AND RECORD** on Appendix J or **REMOVE** door mounted devices **AND RECORD** on Appendix B. _____

[12] **REMOVE** the thermal overloads for 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION _____

_____
CV

[13] **DISENGAGE** the locking devices at the top and bottom of the breaker compartment to allow the breaker bucket to fully engage the bus stabs. _____

[14] **INSTALL** the breaker bucket into the compartment, ensuring that the bus stabs are fully engaged. _____

Data Package: Page ____ of ____ **Date _____**

6.3 Valve 2-FCV-74-1 Logic Test (continued)

[15] **IF** the breaker compartment wiring was disconnected, **THEN**

RECONNECT the wiring as needed **AND RECORD** on Appendix J or **REINSTALL** door devices **AND RECORD** on Appendix B. _____

[16] **IF** the MCC bucket has pull apart terminal blocks, **THEN**

ENSURE the blocks re-engage. _____

[17] **ENGAGE** the compartment locking devices at the top and bottom of the compartment. _____

[18] **CLOSE** compartment door for compartment 10D of 480V REACTOR MOV 2A1-A _____

[19] **CLOSE** 2-BKR-74-1, 480V REAC MOV BD 2A1-A BKR 10D. _____

WARNING

Arc Flash PPE per TI-300 will be required for steps 6.3[20] through 6.3[22]

[20] **OPEN** compartment door for compartment 10D of 480V REACTOR MOV 2A1-A with the breaker closed by using the screw-driven defeater. _____

[21] **VERIFY** the red LED on the BFD is lit indicating the phase rotation for the BFD is correct. _____

[22] **CLOSE** compartment door for compartment 10D of 480V REACTOR MOV 2A1-A _____

[23] **OPEN** 2-BKR-74-1, 480V REAC MOV BD 2A1-A BKR 10D. _____

[24] **OPEN** compartment door for compartment 10D of 480V REACTOR MOV 2A1-A _____

Data Package: Page ____ of ____ **Date _____**

6.3 Valve 2-FCV-74-1 Logic Test (continued)

WARNING

Arc Flash PPE per TI-300 will be required for step 6.3[25]

[25] **REMOVE** the A Phase penetration fuse of 2-FU-213-A110/32 in compartment 10D of 480V REACTOR MOV 2A1-A. _____

_____
CV

[26] **CLOSE** compartment door for compartment 10D of 480V REACTOR MOV 2A1-A. _____

[27] **CLOSE** 2-BKR-74-1, 480V REAC MOV BD 2A1-A BKR 10D. _____

[28] **PLACE** 2-HS-74-1C, LOOP 4 HL TO RHR SUCTION to OPEN and then to NORMAL. _____

[29] **VERIFY** that the breaker 2-BKR-74-1, 480V REAC MOV BD 2A1-A BKR 10D trips OPEN. _____

[30] **CLOSE** 2-BKR-74-1, 480V REAC MOV BD 2A1-A BKR 10D. _____

[31] **PLACE** a handheld jumper across the terminal block points 3 (10DC1) to point 7 (10DC2) in the back of compartment 10D of 480V REACTOR MOV 2A1-A. _____

[32] **PLACE** 2-HS-74-1C, LOOP 4 HL TO RHR SUCTION to CLOSE and then to NORMAL. _____

[33] **VERIFY** that the breaker 2-BKR-74-1, 480V REAC MOV BD 2A1-A BKR 10D trips OPEN. _____

[34] **OPEN** compartment door for compartment 10D of 480V REACTOR MOV 2A1-A _____

Data Package: Page ____ of ____ **Date _____**

6.3 Valve 2-FCV-74-1 Logic Test (continued)

WARNING

Arc Flash PPE per TI-300 will be required for steps 6.3[35] through 6.3[45]

[35] **REINSTALL** the A Phase penetration fuse of 2-FU-213-A110/32 in compartment 10D of 480V REACTOR MOV 2A1-A. _____

_____
CV

[36] **DISENGAGE** the compartment locking devices at the top and bottom. _____

[37] **PULL** the breaker compartment forward until the compartment stabs disengage from the board bus. _____

[38] **ENGAGE** the compartment locking devices at the top and bottom of the compartment while the bucket is on the outside to prevent the bucket from accidentally engaging the bus stabs. _____

NOTE

Wire lifts are NOT required if MCC buckets are equipped with pull apart terminal blocks.

[39] **IF** the breaker compartment wiring hinders the breaker compartment from safely disengaging the board bus, **THEN**

DISCONNECT the wiring as needed **AND RECORD** on Appendix J or **REMOVE** door mounted devices **AND RECORD** on Appendix B. _____

[40] **REINSTALL** the thermal overloads for 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION. _____

_____
CV

[41] **DISENGAGE** the locking devices at the top and bottom of the breaker compartment to allow the breaker bucket to fully engage the bus stabs. _____

Data Package: Page ____ of ____ **Date _____**

6.3 Valve 2-FCV-74-1 Logic Test (continued)

[42] **INSTALL** the breaker bucket into the compartment, ensuring that the bus stabs are fully engaged. _____

[43] **IF** the breaker compartment wiring was disconnected, **THEN**

RECONNECT the wiring as needed **AND RECORD** on Appendix J or **REINSTALL** door devices **AND RECORD** on Appendix B. _____

[44] **IF** the MCC bucket has pull apart terminal blocks, **THEN**

ENSURE the blocks re-engage. _____

[45] **ENGAGE** the compartment locking devices at the top and bottom of the compartment. _____

[46] **CLOSE** compartment door for compartment 10D of 480V REACTOR MOV 2A1-A. _____

[47] **CLOSE** 2-BKR-74-1, 480V REAC MOV BD 2A1-A BKR 10D. _____

[48] **PLACE** 2-XS-74-1, RHR SYSTEM ISOLATION TRANS SW in NORMAL _____

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

A. FD2189 _____

B. FD2190 _____

[50] **VERIFY** ICS point FD2189 displays "PWR ON". _____

[51] **ENSURE** the following transfer switches on RX MOV Boards 2A1-A are in NORMAL:

- 2-XS-63-8, RHR HTX A TO CVCS CHG PUMP _____
- 2-XS-74-1, RHR SYSTEM ISOLATION TRANS SW _____

[52] **PLACE** hand switch 2-HS-74-1C, LOOP 4 HL TO RHR SUCTION to OPEN and then to NORMAL. _____

[53] **VERIFY** valve 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION does NOT open. _____

Data Package: Page ____ of ____ **Date _____**

6.3 Valve 2-FCV-74-1 Logic Test (continued)

[54] **PLACE** hand switch 2-HS-74-1A, LOOP 4 HL TO RHR SUCTION to OPEN and while valve 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION is opening, **PLACE** hand switch 2-HS-74-1A, LOOP 4 HL TO RHR SUCTION to CLOSE **AND RELEASE**. _____

[55] **VERIFY** the following indications:

A. 2-HS-74-1A red light ON. _____

B. 2-HS-74-1A green light OFF. _____

C. 2-HS-74-1C red light ON. _____

D. 2-HS-74-1C green light OFF. _____

E. Valve is OPEN using local position indicator **(Acc Crit 5.0[22])** _____

[56] **VERIFY** ICS point FD2190 displays "NOT CLS". _____

[57] **PLACE** hand switch 2-HS-74-1C, LOOP 4 HL TO RHR SUCTION to CLOSE and then to NORMAL. _____

[58] **VERIFY** valve 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION does NOT close. _____

[59] **PLACE** hand switch 2-HS-74-1A, LOOP 4 HL TO RHR SUCTION to CLOSE and while valve 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION is closing, **PLACE** hand switch 2-HS-74-1A, LOOP 4 HL TO RHR SUCTION to OPEN **AND RELEASE**. _____

[60] **VERIFY** the following indications:

A. 2-HS-74-1A red light OFF _____

B. 2-HS-74-1A green light ON _____

C. 2-HS-74-1C red light OFF _____

D. 2-HS-74-1C green light ON _____

E. Valve is CLOSED using local position indicator _____

[61] **VERIFY** ICS point FD2190 displays "CLOSED". _____

Data Package: Page ____ of ____ **Date _____**

6.3 Valve 2-FCV-74-1 Logic Test (continued)

NOTE

Stopwatch timing of 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION, will be done at handswitch 2-HS-74-1A, LOOP 4 HL TO RHR SUCTION, and locally at 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION. Perform steps 6.3[62]/6.3[63] and 6.3[64]/6.3[65] sequentially to obtain stroke time data.

[62] **SIMULTANEOUSLY PLACE** handswitch 2-HS-74-1A, LOOP 4 HL TO RHR SUCTION, to the OPEN position **AND**

START stopwatches. _____

[63] **STOP** stopwatches when 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION, reaches the OPEN position **AND**

RECORD stroke times below:

A. Remote Open Time (**Acc Crit 5.0[31]**) _____

_____ seconds (≤ 120 secs)

M&TE _____ Cal Due Date _____

B. Local Open Time _____

_____ seconds (≤ 120 secs)

M&TE _____ Cal Due Date _____

Data Package: Page ____ of ____ **Date _____**

6.3 Valve 2-FCV-74-1 Logic Test (continued)

[64] **SIMULTANEOUSLY PLACE** handswitch 2-HS-74-1A, LOOP 4 HL TO RHR SUCTION, to the CLOSE position **AND**

START stopwatches. _____

[65] **STOP** stopwatches when 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION, reaches the CLOSE position **AND**

RECORD stroke times below:

A. Remote Close Time (**Acc Crit 5.0[31]**) _____

_____ seconds (≤ 120 secs)

M&TE _____ Cal Due Date _____

B. Local Close Time _____

_____ seconds (≤ 120 secs)

M&TE _____ Cal Due Date _____

[66] **ENSURE** Annunciator Window 149-C, 480 RX MOV BD 2A1-A/2A2-A, is CLEAR. _____

[67] **ENSURE** Event Display Monitor reports 149-C 480 RX MOV BD 2A1-A/2A2-A XS IN AUX, NORMAL _____

[68] **PLACE** transfer switch 2-XS-74-1, RHR SYSTEM ISOLATION TRANS SW to AUX. _____

[69] **VERIFY** Annunciator Window 149-C, 480 RX MOV BD 2A1-A/2A2-A ALARMS **(Acc Crit 5.0[2])**. _____

[70] **VERIFY** Event Display Monitor reports 149-C 480 RX MOV BD 2A1-A/2A2-A XS IN AUX, ALARM _____

[71] **PLACE** transfer switch 2-XS-74-1, RHR SYSTEM ISOLATION TRANS SW to NORMAL. _____

[72] **VERIFY** Annunciator Window 149-C, 480 RX MOV BD 2A1-A/2A2-A, is CLEAR. _____

Data Package: Page ____ of ____ **Date _____**

6.3 Valve 2-FCV-74-1 Logic Test (continued)

[73] **VERIFY** Event Display Monitor reports 149-C 480 RX MOV BD 2A1-A/2A2-A XS IN AUX, NORMAL _____

[74] **PLACE** transfer switch 2-XS-74-1, RHR SYSTEM ISOLATION TRANS SW to AUX. _____

[75] **PLACE** hand switch 2-HS-74-1A, LOOP 4 HL TO RHR SUCTION to OPEN **AND RELEASE**. _____

[76] **VERIFY** valve 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION does NOT open. _____

[77] **PLACE** hand switch 2-HS-74-1C, LOOP 4 HL TO RHR SUCTION to OPEN and then to NORMAL, while valve is traveling **PLACE** 2-HS-74-1C, LOOP 4 HL TO RHR SUCTION to CLOSE and then to NORMAL. _____

[78] **VERIFY** the following indications:

A. 2-HS-74-1C red light ON. _____

B. 2-HS-74-1C green light OFF. _____

C. 2-HS-74-1A red light OFF. _____

D. 2-HS-74-1A green light OFF. _____

E. Valve is OPEN using local position indicator **(Acc Crit 5.0[22])** _____

[79] **PLACE** hand switch 2-HS-74-1A, LOOP 4 HL TO RHR SUCTION to CLOSE **AND RELEASE**. _____

[80] **VERIFY** valve 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION does NOT close. _____

[81] **PLACE** hand switch 2-HS-74-1C, LOOP 4 HL TO RHR SUCTION to CLOSE and then to NORMAL, while valve is traveling **PLACE** 2-HS-74-1C, LOOP 4 HL TO RHR SUCTION to OPEN and then to NORMAL. _____

Data Package: Page ____ of ____ **Date _____**

6.3 Valve 2-FCV-74-1 Logic Test (continued)

[82] **VERIFY** the following indications:

A. 2-HS-74-1C red light OFF _____

B. 2-HS-74-1C green light ON _____

C. 2-HS-74-1A red light OFF _____

D. 2-HS-74-1A green light OFF _____

E. Valve is CLOSED using local position indicator _____

[83] **OPEN** 2-BKR-74-1 in 480V RX MOV BD 2A1-A, COMPT 10D. _____

[84] **VERIFY** ICS point FD2189 displays "PWR OFF". _____

WARNING

Arc Flash PPE per TI-300 will be required for step 6.3[85].

[85] **MANUALLY TRIP** the thermal overload for 2-BKR-74-1, 480V REAC MOV BD 2A1-A BKR 10D. _____

_____
CV

[86] **CLOSE** 2-BKR-74-1 in 480V RX MOV BD 2A1-A, COMPT 10D. _____

[87] **PLACE** control switch 2-HS-74-1C, LOOP 4 HL TO RHR SUCTION to the OPEN and then to NORMAL. _____

[88] **VERIFY** that valve 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION does NOT open **(Acc Crit 5.0[1])**. _____

[89] **DEPRESS and HOLD** the armature of relay K5 in back of Panel 4F on 480V RX MOV BD 2A1-A to simulate Overload Bypass. _____

[90] **PLACE** control switch 2-HS-74-1C, LOOP 4 HL TO RHR SUCTION to the OPEN and then to NORMAL. _____

[91] **VERIFY** valve 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION OPENS **(Acc Crit 5.0[1])**. _____

Data Package: Page ____ of ____ **Date _____**

6.3 Valve 2-FCV-74-1 Logic Test (continued)

[92] **RELEASE** K5 relay armature. _____

[93] **OPEN** 2-BKR-74-1 in 480V RX MOV BD 2A1-A, COMPT 10D. _____

WARNING

Arc Flash PPE per TI-300 will be required for step 6.3[94].

[94] **RESET** the thermal overload for 2-BKR-74-1, 480V REAC MOV BD 2A1-A BKR 10D. _____

_____ CV

[95] **CLOSE** 2-BKR-74-1 in 480V RX MOV BD 2A1-A, COMPT 10D. _____

[96] **PLACE** hand switch 2-HS-74-1C, LOOP 4 HL TO RHR SUCTION to CLOSE and then to NORMAL. _____

[97] **LIFT** wire 10D05 in 2-L-358A (Az 341, El. 716) (Pressure Switch). _____

_____ CV

[98] **PLACE** hand switch 2-HS-74-1C, LOOP 4 HL TO RHR SUCTION to OPEN and then to NORMAL. _____

[99] **VERIFY** valve 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION does NOT open. _____

[100] **RELAND** wire 10D05 in 2-L-358A.(Az 341, El. 716) _____

_____ CV

[101] **PLACE** transfer switch 2-XS-74-1, RHR SYSTEM ISOLATION TRANS SW to NORMAL. _____

[102] **ENSURE** transfer switch 2-XS-63-1 is in NORMAL. _____

Data Package: Page ____ of ____ **Date _____**

6.3 Valve 2-FCV-74-1 Logic Test (continued)

[103] **ENSURE** transfer switch 2-XS-63-72, CNTMT SUMP TO RHR PUMP A-A is in NORMAL. _____

[104] **OPEN** valve 2-FCV-63-72, CONTAINMENT SUMP TO RHR PUMP 2A-A ISOL using 2-HS-63-72A, CNTMT SUMP TO RHR PMP A SUCT. _____

[105] **PLACE** hand switch 2-HS-74-1A, LOOP 4 HL TO RHR SUCTION to OPEN **AND RELEASE.** _____

[106] **VERIFY** valve 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION does NOT OPEN. _____

[107] **CLOSE** valve 2-FCV-63-72, CONTAINMENT SUMP TO RHR PUMP 2A-A ISOL using 2-HS-63-72A, CNTMT SUMP TO RHR PMP A SUCT. _____

[108] **IF** a danger tag is placed on 2-FCV-63-1, **THEN**

REQUEST a temporary lift of the clearance. _____

[109] **OPEN** valve 2-FCV-63-1, RWST TO RHR SUCTION using 2-HS-63-1A, RWST TO RHR ECCS SUCTION. _____

[110] **PLACE** hand switch 2-HS-74-1A, LOOP 4 HL TO RHR SUCTION to OPEN **AND RELEASE.** _____

[111] **VERIFY** valve 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION does NOT OPEN. _____

[112] **CLOSE** valve 2-FCV-63-1, RWST TO RHR SUCTION using 2-HS-63-1A, RWST TO RHR ECCS SUCTION. _____

[113] **IF** a temporary lift was obtained in step 6.3[108], **THEN**

RE-ESTABLISH the clearance on 2-FCV-63-1. _____

[114] **OPEN** test switch in the jumper across terminals TB115-9 and TB115-10, Panel 2-R-54 (RCS LOW Pressure Permissive). _____

[115] **Place** hand switch 2-HS-74-1A, LOOP 4 HL TO RHR SUCTION to **OPEN and RELEASE.** _____

[116] **VERIFY** valve 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION did NOT open. _____

Data Package: Page ____ of ____ **Date _____**

6.3 Valve 2-FCV-74-1 Logic Test (continued)

[117] **ENSURE** Annunciator Window 113-E, RHR SUCT FCV-74-1, 2, 8, 9 OPEN & HI PRESS, is CLEAR. _____

[118] **ENSURE** Event Display Monitor reports 113-E LOOP 4 HL/RHR FCV OPEN AND HI PRESS (FCV-74-1, 2, 8, 9), NORMAL. _____

[119] **CLOSE** test switch in the jumper across terminals TB115-9 and TB115-10, Panel 2-R-54. _____

[120] **CLOSE** test switch in the jumper across terminals TB112-1 and TB112-2, Panel 2-R-54 (RCS High Pressure). _____

[121] **PLACE** hand switch 2-HS-74-1A, LOOP 4 HL TO RHR SUCTION to OPEN **AND RELEASE.** _____

[122] **VERIFY** valve 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION OPENS. _____

[123] **VERIFY** Annunciator Window 113-E, RHR SUCT FCV-74-1, 2, 8, 9 OPEN & HI PRESS, ALARMS **(Acc Crit 5.0[23])**. _____

[124] **VERIFY** Event Display Monitor reports 113-E LOOP 4 HL/RHR FCV OPEN AND HI PRESS (FCV-74-1, 2, 8, 9), ALARM. _____

[125] **PLACE** hand switch 2-HS-74-1A, LOOP 4 HL TO RHR SUCTION to CLOSE **AND RELEASE.** _____

[126] **VERIFY** valve 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION CLOSES. _____

[127] **VERIFY** Annunciator Window 113-E, RHR SUCT FCV-74-1, 2, 8, 9 OPEN & HI PRESS, is CLEAR. _____

[128] **VERIFY** Event Display Monitor reports 113-E LOOP 4 HL/RHR FCV OPEN AND HI PRESS (FCV-74-1, 2, 8, 9), NORMAL. _____

[129] **OPEN** test switch in the jumper across terminals TB112-1 and TB112-2, Panel 2-R-54. _____

[130] **CLOSE** test switch in the jumper across terminals TB214-10 and TB214-11, Panel 2-R-55 (RCS High Pressure). _____

[131] **Place** hand switch 2-HS-74-1A, LOOP 4 HL TO RHR SUCTION to **OPEN and RELEASE**. _____

Data Package: Page ____ of ____ **Date _____**

6.3 Valve 2-FCV-74-1 Logic Test (continued)

[132] **VERIFY** valve 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION OPENS. _____

[133] **VERIFY** Annunciator Window 113-E, RHR SUCT FCV-74-1, 2, 8, 9 OPEN & HI PRESS, ALARMS **(Acc Crit 5.0[23])**. _____

[134] **VERIFY** Event Display Monitor reports 113-E LOOP 4 HL/RHR FCV OPEN AND HI PRESS (FCV-74-1, 2, 8, 9), ALARM. _____

[135] **Place** hand switch 2-HS-74-1A, LOOP 4 HL TO RHR SUCTION to **CLOSE and RELEASE**. _____

[136] **VERIFY** valve 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION CLOSES. _____

[137] **VERIFY** Annunciator Window 113-E, RHR SUCT FCV-74-1, 2, 8, 9 OPEN & HI PRESS, is CLEAR. _____

[138] **VERIFY** Event Display Monitor reports 113-E LOOP 4 HL/RHR FCV OPEN AND HI PRESS (FCV-74-1, 2, 8, 9), NORMAL. _____

[139] **OPEN** test switch in the jumper across terminals TB214-10 and TB214-11, Panel 2-R-55. _____

[140] **REMOVE** the temporary jumper across terminals TB115-9 and TB115-10, Panel 2-R-54 on the field side. _____

_____
CV

[141] **VERIFY** successful completion of Subsection 6.3 **(Acc Crit 5.0[32], 5.0[33], 5.0[34])**. _____

Data Package: Page ____ of ____ **Date _____**

6.4 Valve 2-FCV-74-2 Logic Test

NOTE
Arc Flash PPE per TI-300 will be required during section 6.4 of the test.

[1] **VERIFY** the following prerequisites have been completed for Subsection 6.4. (4.1[1]-4.1[8], 4.1[10], 4.1[12]-4.1[19], 4.1[21], 4.1[22], 4.2[1], 4.2[2], 4.3[2], 4.3[5]-4.3[7]) _____

[2] **ESTABLISH** communications between MCR Panel 2-M-6, 480V RX MOV BOARD 2B1-B, and at valve 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION, Acc Room 4 El 718 Az 300. _____

[3] **ENSURE** the following valves are CLOSED from 2-M-6:

A. 2-FCV-63-1, RWST TO RHR SUCTION _____

B. 2-FCV-63-73, CONTAINMENT SUMP TO RHR PUMP 2B-B ISOL _____

C. 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION _____

D. 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION _____

E. 2-FCV-74-8, 2-FCV-74-2 BYPASS RHR SUCTION _____

F. 2-FCV-74-9, 2-FCV-74-1 BYPASS RHR SUCTION _____

[4] **ENSURE** that 2-HS-74-2C, LOOP 4 HL TO RHR SUCTION is in NORMAL _____

[5] **ENSURE** that 2-XS-74-2, RHR SYSTEM ISOLATION TRANS SW is in AUX _____

[6] **ENSURE** that 2-BKR-74-2, 480V RX MOV BD 2B1-B, COMPT 10D is OPEN. _____

[7] **OPEN** compartment door for compartment 10D of 480V REACTOR MOV 2B1-B _____

Data Package: Page ____ of ____ **Date _____**

6.4 Valve 2-FCV-74-2 Logic Test (continued)

WARNING

Arc Flash PPE per TI-300 will be required for steps 6.4[8] through 6.4[17]

[8] **DISENGAGE** the compartment locking devices at the top and bottom. _____

[9] **PULL** the breaker compartment forward until the compartment stabs disengage from the board bus. _____

[10] **ENGAGE** the compartment locking devices at the top and bottom of the compartment while the bucket is on the outside to prevent the bucket from accidentally engaging the bus stabs. _____

NOTE

Wire lifts are NOT required if MCC buckets are equipped with pull apart terminal blocks.

[11] **IF** the breaker compartment wiring hinders the breaker compartment from safely disengaging the board bus, **THEN**

DISCONNECT the wiring as needed **AND RECORD** on Appendix J or **REMOVE** door mounted devices **AND RECORD** on Appendix B. _____

[12] **REMOVE** the thermal overloads for 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION _____

_____
CV

[13] **DISENGAGE** the locking devices at the top and bottom of the breaker compartment to allow the breaker bucket to fully engage the bus stabs. _____

[14] **INSTALL** the breaker bucket into the compartment, ensuring that the bus stabs are fully engaged. _____

Data Package: Page ____ of ____ **Date _____**

6.4 Valve 2-FCV-74-2 Logic Test (continued)

[15] **IF** the breaker compartment wiring was disconnected, **THEN**

RECONNECT the wiring as needed **AND RECORD** on Appendix J or **REINSTALL** door devices **AND RECORD** on Appendix B. _____

[16] **IF** the MCC bucket has pull apart terminal blocks, **THEN**

ENSURE the blocks re-engage. _____

[17] **ENGAGE** the compartment locking devices at the top and bottom of the compartment. _____

[18] **CLOSE** compartment door for compartment 10D of 480V REACTOR MOV 2B1-B _____

[19] **CLOSE** 2-BKR-74-2, 480V RX MOV BD 2B1-B, COMPT 10D. _____

WARNING

Arc Flash PPE per TI-300 will be required for steps 6.4[20] through 6.4[22]

[20] **OPEN** compartment door for compartment 10D of 480V REACTOR MOV 2B1-B with the breaker closed by using the screw-driven defeater. _____

[21] **VERIFY** the red LED on the BFD is lit indicating the phase rotation for the BFD is correct. _____

[22] **CLOSE** compartment door for compartment 10D of 480V REACTOR MOV 2B1-B _____

[23] **OPEN** 2-BKR-74-2, 480V RX MOV BD 2B1-B, COMPT 10D. _____

[24] **OPEN** compartment door for compartment 10D of 480V REACTOR MOV 2B1-B _____

Data Package: Page ____ of ____ **Date _____**

6.4 Valve 2-FCV-74-2 Logic Test (continued)

WARNING

Arc Flash PPE per TI-300 will be required for step 6.4[25]

[25] **REMOVE** the A Phase penetration fuse of 2-FU-213-B110/32 in compartment 10D of 480V REACTOR MOV 2B1-B. _____

_____
CV

[26] **CLOSE** compartment door for compartment 10D of 480V REACTOR MOV 2B1-B. _____

[27] **CLOSE** 2-BKR-74-2, 480V RX MOV BD 2B1-B, COMPT 10D. _____

[28] **PLACE** 2-HS-74-2C, LOOP 4 HL TO RHR SUCTION to OPEN and then to NORMAL. _____

[29] **VERIFY** that the breaker 2-BKR-74-2, 480V RX MOV BD 2B1-B, COMPT 10D trips OPEN. _____

[30] **CLOSE** 2-BKR-74-2, 480V RX MOV BD 2B1-B, COMPT 10D. _____

[31] **PLACE** a handheld jumper across the terminal block points 3 (10DC1) to point 7 (10DC2) in the back of compartment 10D of 480V REACTOR MOV 2B1-B. _____

[32] **PLACE** 2-HS-74-2C, LOOP 4 HL TO RHR SUCTION to CLOSE and then to NORMAL. _____

[33] **VERIFY** that the breaker 2-BKR-74-2, 480V RX MOV BD 2B1-B, COMPT 10D trips OPEN. _____

[34] **OPEN** compartment door for compartment 10D of 480V REACTOR MOV 2B1-B _____

Data Package: Page ____ of ____ **Date _____**

6.4 Valve 2-FCV-74-2 Logic Test (continued)

WARNING

Arc Flash PPE per TI-300 will be required for steps 6.4[35] through 6.4[45]

[35] **REINSTALL** the A Phase penetration fuse of 2-FU-213-B110/32 in compartment 10D of 480V REACTOR MOV 2B1-B. _____

_____
CV

[36] **DISENGAGE** the compartment locking devices at the top and bottom. _____

[37] **PULL** the breaker compartment forward until the compartment stabs disengage from the board bus. _____

[38] **ENGAGE** the compartment locking devices at the top and bottom of the compartment while the bucket is on the outside to prevent the bucket from accidentally engaging the bus stabs. _____

NOTE

Wire lifts are NOT required if MCC buckets are equipped with pull apart terminal blocks.

[39] **IF** the breaker compartment wiring hinders the breaker compartment from safely disengaging the board bus, **THEN**

DISCONNECT the wiring as needed **AND RECORD** on Appendix J or **REMOVE** door mounted devices **AND RECORD** on Appendix B. _____

[40] **REINSTALL** the thermal overloads for 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION. _____

_____
CV

[41] **DISENGAGE** the locking devices at the top and bottom of the breaker compartment to allow the breaker bucket to fully engage the bus stabs. _____

Data Package: Page ____ of ____ **Date _____**

6.4 Valve 2-FCV-74-2 Logic Test (continued)

[42] **INSTALL** the breaker bucket into the compartment, ensuring that the bus stabs are fully engaged. _____

[43] **IF** the breaker compartment wiring was disconnected, **THEN**

RECONNECT the wiring as needed **AND RECORD** on Appendix J or **REINSTALL** door devices **AND RECORD** on Appendix B. _____

[44] **IF** the MCC bucket has pull apart terminal blocks, **THEN**

ENSURE the blocks re-engage. _____

[45] **ENGAGE** the compartment locking devices at the top and bottom of the compartment. _____

[46] **CLOSE** compartment door for compartment 10D of 480V REACTOR MOV 2B1-B. _____

[47] **CLOSE** 2-BKR-74-2, 480V RX MOV BD 2B1-B, COMPT 10D. _____

[48] **PLACE** 2-XS-74-2, RHR SYSTEM ISOLATION TRANS SW in NORMAL _____

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

A. FD2341 _____

B. FD2342 _____

[50] **VERIFY** ICS point FD2341 displays "PWR ON". _____

[51] **ENSURE** the following transfer switches on RX MOV Boards 2B1-B are in NORMAL:

- 2-XS-63-11, RHR HTX B TO SIS PUMP _____
- 2-XS-74-2, RHR SYSTEM ISOLATION TRANS SW _____

[52] **PLACE** hand switch 2-HS-74-2C, LOOP 4 HL TO RHR SUCTION to OPEN and then to NORMAL. _____

[53] **VERIFY** valve 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION does NOT open. _____

Data Package: Page ____ of ____ **Date _____**

6.4 Valve 2-FCV-74-2 Logic Test (continued)

[54] **PLACE** hand switch 2-HS-74-2A, LOOP 4 HL TO RHR SUCTION to OPEN and while valve 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION is opening, **PLACE** hand switch 2-HS-74-2A, LOOP 4 HL TO RHR SUCTION to CLOSE **AND RELEASE**. _____

[55] **VERIFY** the following indications:

A. 2-HS-74-2A red light ON. _____

B. 2-HS-74-2A green light OFF. _____

C. 2-HS-74-2C red light ON. _____

D. 2-HS-74-2C green light OFF. _____

E. Valve is OPEN using local position indicator **(Acc Crit 5.0[22])** _____

[56] **VERIFY** ICS point FD2342 displays "NOT CLS". _____

[57] **PLACE** hand switch 2-HS-74-2C, LOOP 4 HL TO RHR SUCTION to CLOSE and then to NORMAL. _____

[58] **VERIFY** valve 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION does NOT close. _____

[59] **PLACE** hand switch 2-HS-74-2A, LOOP 4 HL TO RHR SUCTION to CLOSE and while valve 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION is closing, **PLACE** hand switch 2-HS-74-2A, LOOP 4 HL TO RHR SUCTION to OPEN **AND RELEASE**. _____

[60] **VERIFY** the following indications:

A. 2-HS-74-2A red light OFF _____

B. 2-HS-74-2A green light ON _____

C. 2-HS-74-2C red light OFF _____

D. 2-HS-74-2C green light ON _____

E. Valve is CLOSED using local position indicator _____

[61] **VERIFY** ICS point FD2342 displays "CLOSED". _____

Data Package: Page ____ of ____ **Date _____**

6.4 Valve 2-FCV-74-2 Logic Test (continued)

NOTE

Stopwatch timing of 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION, will be done at handswitch 2-HS-74-2A, LOOP 4 HL TO RHR SUCTION, and locally at 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION. Perform steps 6.4[62]/6.4[63] and 6.4[64]/6.4[65] sequentially to obtain stroke time data.

[62] **SIMULTANEOUSLY PLACE** handswitch 2-HS-74-2A, LOOP 4 HL TO RHR SUCTION, to the OPEN position **AND**

START stopwatches. _____

[63] **STOP** stopwatches when 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION, reaches the OPEN position **AND**

RECORD stroke times below:

A. Remote Open Time (**Acc Crit 5.0[31]**) _____

_____ seconds (≤ 120 secs)

M&TE _____ Cal Due Date _____

B. Local Open Time _____

_____ seconds (≤ 120 secs)

M&TE _____ Cal Due Date _____

Data Package: Page ____ of ____ **Date _____**

6.4 Valve 2-FCV-74-2 Logic Test (continued)

[64] **SIMULTANEOUSLY PLACE** handswitch 2-HS-74-2A, LOOP 4 HL TO RHR SUCTION, to the CLOSE position **AND**

START stopwatches. _____

[65] **STOP** stopwatches when 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION, reaches the CLOSE position **AND**

RECORD stroke times below:

A. Remote Close Time (**Acc Crit 5.0[31]**) _____

_____ seconds (≤ 120 secs)

M&TE _____ Cal Due Date _____

B. Local Close Time _____

_____ seconds (≤ 120 secs)

M&TE _____ Cal Due Date _____

[66] **ENSURE** Annunciator Window 150-C, 480 RX MOV BD 2B1-B/2B2-B, is CLEAR. _____

[67] **ENSURE** Event Display Monitor reports 150-C 480 RX MOV BD 2B1-B/2B2-B XS IN AUX, NORMAL _____

[68] **PLACE** transfer switch 2-XS-74-2, RHR SYSTEM ISOLATION TRANS SW to AUX. _____

[69] **VERIFY** Annunciator Window 150-C, 480 RX MOV BD 2B1-B/2B2-B ALARMS **(Acc Crit 5.0[3])**. _____

[70] **VERIFY** Event Display Monitor reports 150-C 480 RX MOV BD 2B1-B/2B2-B XS IN AUX, ALARM _____

[71] **PLACE** transfer switch 2-XS-74-2, RHR SYSTEM ISOLATION TRANS SW to NORMAL. _____

[72] **VERIFY** Annunciator Window 150-C, 480 RX MOV BD 2B1-B/2B2-B, is CLEAR. _____

Data Package: Page ____ of ____ **Date _____**

6.4 Valve 2-FCV-74-2 Logic Test (continued)

[73] **VERIFY** Event Display Monitor reports 150-C 480 RX MOV BD 2B1-B/2B2-B XS IN AUX, NORMAL _____

[74] **PLACE** transfer switch 2-XS-74-2, RHR SYSTEM ISOLATION TRANS SW to AUX. _____

[75] **PLACE** hand switch 2-HS-74-2A, LOOP 4 HL TO RHR SUCTION to OPEN **AND RELEASE**. _____

[76] **VERIFY** valve 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION does NOT open. _____

[77] **PLACE** hand switch 2-HS-74-2C, LOOP 4 HL TO RHR SUCTION to OPEN and then to NORMAL, while valve is traveling **PLACE** 2-HS-74-2C, LOOP 4 HL TO RHR SUCTION to CLOSE and then to NORMAL. _____

[78] **VERIFY** the following indications:

A. 2-HS-74-2C red light ON. _____

B. 2-HS-74-2C green light OFF. _____

C. 2-HS-74-2A red light OFF. _____

D. 2-HS-74-2A green light OFF. _____

E. Valve is OPEN using local position indicator **(Acc Crit 5.0[22])** _____

[79] **PLACE** hand switch 2-HS-74-2A, LOOP 4 HL TO RHR SUCTION to CLOSE **AND RELEASE**. _____

[80] **VERIFY** valve 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION does NOT close. _____

[81] **PLACE** hand switch 2-HS-74-2C, LOOP 4 HL TO RHR SUCTION to CLOSE and then to NORMAL, while valve is traveling **PLACE** 2-HS-74-2C, LOOP 4 HL TO RHR SUCTION to OPEN and then to NORMAL. _____

Data Package: Page ____ of ____ **Date _____**

6.4 Valve 2-FCV-74-2 Logic Test (continued)

[82] **VERIFY** the following indications:

A. 2-HS-74-2C red light OFF _____

B. 2-HS-74-2C green light ON _____

C. 2-HS-74-2A red light OFF _____

D. 2-HS-74-2A green light OFF _____

E. Valve is CLOSED using local position indicator _____

[83] **OPEN** 2-BKR-74-2 in 480V RX MOV BD 2B1-B, COMPT 10D. _____

[84] **VERIFY** ICS point FD2341 displays "PWR OFF". _____

WARNING

Arc Flash PPE per TI-300 will be required for step 6.4[85]

[85] **MANUALLY TRIP** the thermal overload for 2-BKR-74-2 in 480V RX MOV BD 2B1-B, COMPT 10D. _____

_____
CV

[86] **CLOSE** 2-BKR-74-2 in 480V RX MOV BD 2B1-B, COMPT 10D. _____

[87] **PLACE** control switch 2-HS-74-2C, LOOP 4 HL TO RHR SUCTION to the OPEN and then to NORMAL. _____

[88] **VERIFY** that valve 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION does NOT open **(Acc Crit 5.0[1])**. _____

[89] **DEPRESS and HOLD** the armature of relay K6 in back of Panel 16D on 480V RX MOV BD 2B1-B to simulate Overload Bypass. _____

[90] **PLACE** control switch 2-HS-74-2C, LOOP 4 HL TO RHR SUCTION to the OPEN and then to NORMAL. _____

[91] **VERIFY** valve 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION OPENS **(Acc Crit 5.0[1])**. _____

Data Package: Page ____ of ____ **Date _____**

6.4 Valve 2-FCV-74-2 Logic Test (continued)

[92] **RELEASE** K6 relay armature. _____

[93] **OPEN** 2-BKR-74-2 in 480V RX MOV BD 2B1-B, COMPT 10D. _____

WARNING

Arc Flash PPE per TI-300 will be required for step 6.4[94]

[94] **RESET** the thermal overload for 2-BKR-74-2 in 480V RX MOV BD 2B1-B, COMPT 10D. _____

_____ CV

[95] **CLOSE** 2-BKR-74-2 in 480V RX MOV BD 2B1-B, COMPT 10D. _____

[96] **PLACE** hand switch 2-HS-74-2C, LOOP 4 HL TO RHR SUCTION to CLOSE and then to NORMAL. _____

[97] **LIFT** wire 10D05 in 2-L-183 (Az 351, El. 716) (Pressure Switch). _____

_____ CV

[98] **PLACE** hand switch 2-HS-74-2C, LOOP 4 HL TO RHR SUCTION to OPEN and then to NORMAL. _____

[99] **VERIFY** valve 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION does NOT open. _____

[100] **RELAND** wire 10D05 in 2-L-183. _____

_____ CV

[101] **PLACE** transfer switch 2-XS-74-2, RHR SYSTEM ISOLATION TRANS SW to NORMAL. _____

[102] **ENSURE** transfer switch 2-XS-63-1 is in NORMAL. _____

Data Package: Page ____ of ____ **Date _____**

6.4 Valve 2-FCV-74-2 Logic Test (continued)

[103] **ENSURE** transfer switch 2-XS-63-73, CNTMT SUMP TO RHR PUMP B-B is in NORMAL. _____

[104] **OPEN** valve 2-FCV-63-73, CONTAINMENT SUMP TO RHR PUMP 2B-B ISOL using 2-HS-63-73A, CNTMT SUMP TO RHR PMP B SUCT. _____

[105] **PLACE** control switch 2-HS-74-2A, LOOP 4 HL TO RHR SUCTION to OPEN **AND RELEASE.** _____

[106] **VERIFY** valve 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION does NOT OPEN. _____

[107] **CLOSE** valve 2-FCV-63-73, CONTAINMENT SUMP TO RHR PUMP 2B-B ISOL using 2-HS-63-73A, CNTMT SUMP TO RHR PMP B SUCT. _____

[108] **IF** a danger tag is placed on 2-FCV-63-1, **THEN**

REQUEST a temporary lift of the clearance. _____

[109] **OPEN** valve 2-FCV-63-1, RWST TO RHR SUCTION using 2-HS-63-1A, RWST TO RHR ECCS SUCTION. _____

[110] **PLACE** control switch 2-HS-74-2A, LOOP 4 HL TO RHR SUCTION to OPEN **AND RELEASE.** _____

[111] **VERIFY** valve 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION does NOT OPEN. _____

[112] **CLOSE** valve 2-FCV-63-1, RWST TO RHR SUCTION using 2-HS-63-1A, RWST TO RHR ECCS SUCTION. _____

[113] **IF** a temporary lift was obtained in step 6.4[108], **THEN**

RE-ESTABLISH the clearance on 2-FCV-63-1. _____

[114] **OPEN** test switch in the jumper across terminals TB208-1 and TB208-2, Panel 2-R-55 (RCS LOW Pressure Permissive). _____

[115] **Place** hand switch 2-HS-74-2A, LOOP 4 HL TO RHR SUCTION to **OPEN and RELEASE**. _____

[116] **VERIFY** valve 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION did NOT open. _____

Data Package: Page ____ of ____ **Date _____**

6.4 Valve 2-FCV-74-2 Logic Test (continued)

[117] **ENSURE** Annunciator Window 113-E, RHR SUCT FCV-74-1, 2, 8, 9 OPEN & HI PRESS, is CLEAR. _____

[118] **CLOSE** test switch in the jumper across terminals TB208-1 and TB208-2, Panel 2-R-55. _____

[119] **CLOSE** test switch in the jumper across terminals TB112-1 and TB112-2, Panel 2-R-54 (RCS High Pressure). _____

[120] **PLACE** hand switch 2-HS-74-2A, LOOP 4 HL TO RHR SUCTION to OPEN **AND RELEASE.** _____

[121] **VERIFY** valve 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION OPENS. _____

[122] **VERIFY** Annunciator Window 113-E, RHR SUCT FCV-74-1, 2, 8, 9 OPEN & HI PRESS, ALARMS **(Acc Crit 5.0[23])**. _____

[123] **PLACE** hand switch 2-HS-74-2A, LOOP 4 HL TO RHR SUCTION to CLOSE **AND RELEASE.** _____

[124] **VERIFY** valve 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION CLOSES. _____

[125] **VERIFY** Annunciator Window 113-E, RHR SUCT FCV-74-1, 2, 8, 9 OPEN & HI PRESS, is CLEAR. _____

[126] **OPEN** test switch in the jumper across terminals TB112-1 and TB112-2, Panel 2-R-54. _____

[127] **CLOSE** test switch in the jumper across terminals TB214-10 and TB214-11, Panel 2-R-55 (RCS High Pressure). _____

[128] **Place** hand switch 2-HS-74-2A, LOOP 4 HL TO RHR SUCTION to **OPEN and RELEASE**. _____

[129] **VERIFY** valve 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION OPENS. _____

[130] **VERIFY** Annunciator Window 113-E, RHR SUCT FCV-74-1, 2, 8, 9 OPEN & HI PRESS, ALARMS **(Acc Crit 5.0[23])**. _____

[131] **Place** hand switch 2-HS-74-2A, LOOP 4 HL TO RHR SUCTION to **CLOSE and RELEASE**. _____

Data Package: Page ____ of ____ **Date _____**

6.4 Valve 2-FCV-74-2 Logic Test (continued)

[132] **VERIFY** valve 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION CLOSES. _____

[133] **VERIFY** Annunciator Window 113-E, RHR SUCT FCV-74-1, 2, 8, 9 OPEN & HI PRESS, is CLEAR. _____

[134] **OPEN** test switch in the jumper across terminals TB214-10 and TB214-11, Panel 2-R-55. _____

[135] **REMOVE** the temporary jumper across terminals TB208-1 and TB208-2, Panel 2-R-55 on the field side. _____

_____
CV

[136] **VERIFY** successful completion of Subsection 6.4 **(Acc Crit 5.0[32], 5.0[33], 5.0[34]).** _____

Data Package: Page ____ of ____ **Date _____**

6.5 Valve 2-FCV-74-8 Logic Test

NOTE

Arc Flash PPE per TI-300 will be required during section 6.5 of the test.

[1] **VERIFY** the following prerequisites have been completed for Subsection 6.5. (4.1[1]-4.1[8], 4.1[10], 4.1[12]-4.1[18], 4.1[21], 4.1[22], 4.2[1], 4.2[2], 4.3[3], 4.3[5]-4.3[7]) _____

[2] **ESTABLISH** communications between MCR Panel 2-M-6, 480V RX MOV BOARD 2A2-A, and at valve 2-FCV-74-8, 2-FCV-74-2 BYPASS RHR SUCTION, Acc Room 4 El 718 Az 304. _____

[3] **ENSURE** the following valves are CLOSED from 2-M-6:

A. 2-FCV-63-1, RWST TO RHR SUCTION _____

B. 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION _____

C. 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION _____

D. 2-FCV-74-8, 2-FCV-74-2 BYPASS RHR SUCTION _____

E. 2-FCV-74-9, 2-FCV-74-1 BYPASS RHR SUCTION _____

[4] **ENSURE** that 2-BKR-74-8, 480V REAC MOV BD 2A2-A BKR 5C is OPEN. _____

[5] **OPEN** compartment door for compartment 5C of 480V REACTOR MOV 2A2-A _____

WARNING

Arc Flash PPE per TI-300 will be required for steps 6.5[6] through 6.5[15]

[6] **DISENGAGE** the compartment locking devices at the top and bottom. _____

Data Package: Page ____ of ____ **Date _____**

6.5 Valve 2-FCV-74-8 Logic Test (continued)

[7] **PULL** the breaker compartment forward until the compartment stabs disengage from the board bus. _____

[8] **ENGAGE** the compartment locking devices at the top and bottom of the compartment while the bucket is on the outside to prevent the bucket from accidentally engaging the bus stabs. _____

NOTE

Wire lifts are NOT required if MCC buckets are equipped with pull apart terminal blocks.

[9] **IF** the breaker compartment wiring hinders the breaker compartment from safely disengaging the board bus, **THEN**

DISCONNECT the wiring as needed **AND RECORD** on Appendix J or **REMOVE** door mounted devices **AND RECORD** on Appendix B. _____

[10] **REMOVE** the thermal overloads for 2-FCV-74-8, 2-FCV-74-2 BYPASS RHR SUCTION _____

_____
CV

[11] **DISENGAGE** the locking devices at the top and bottom of the breaker compartment to allow the breaker bucket to fully engage the bus stabs. _____

[12] **INSTALL** the breaker bucket into the compartment, ensuring that the bus stabs are fully engaged. _____

[13] **IF** the breaker compartment wiring was disconnected, **THEN**

RECONNECT the wiring as needed **AND RECORD** on Appendix J or **REINSTALL** door devices **AND RECORD** on Appendix B. _____

[14] **IF** the MCC bucket has pull apart terminal blocks, **THEN**

ENSURE the blocks re-engage. _____

[15] **ENGAGE** the compartment locking devices at the top and bottom of the compartment. _____

Data Package: Page ____ of ____ **Date _____**

6.5 Valve 2-FCV-74-8 Logic Test (continued)

[16] **CLOSE** compartment door for compartment 5C of 480V REACTOR MOV 2A2-A _____

[17] **CLOSE** 2-BKR-74-8, 480V REAC MOV BD 2A2-A BKR 5C. _____

WARNING

Arc Flash PPE per TI-300 will be required for steps 6.5[18] through 6.5[20]

[18] **OPEN** compartment door for compartment 5C of 480V REACTOR MOV 2A2-A with the breaker closed by using the screw-driven defeater. _____

[19] **VERIFY** the red LED on the BFD is lit indicating the phase rotation for the BFD is correct. _____

[20] **CLOSE** compartment door for compartment 5C of 480V REACTOR MOV 2A2-A _____

[21] **OPEN** 2-BKR-74-8, 480V REAC MOV BD 2A2-A BKR 5C. _____

[22] **OPEN** compartment door for compartment 5C of 480V REACTOR MOV 2A2-A _____

WARNING

Arc Flash PPE per TI-300 will be required for step 6.5[23]

[23] **REMOVE** the A Phase penetration fuse of 2-FU-213-A26/32 in 480V RX MOV BD 2A2-A, COMPT 5C. _____

_____
CV

[24] **CLOSE** compartment door for compartment 5C of 480V REACTOR MOV 2A2-A. _____

[25] **CLOSE** 2-BKR-74-8, 480V REAC MOV BD 2A2-A BKR 5C. _____

[26] **PLACE** 2-HS-74-8, RHR SYSTEM ISOLATION BYPASS CNTL to OPEN and RELEASE. _____

Data Package: Page ____ of ____ **Date _____**

6.5 Valve 2-FCV-74-8 Logic Test (continued)

[27] **VERIFY** that the breaker 2-BKR-74-8, 480V REAC MOV BD 2A2-A BKR 5C trips OPEN. _____

[28] **CLOSE** 2-BKR-74-8, 480V REAC MOV BD 2A2-A BKR 5C. _____

[29] **PLACE** a handheld jumper across the terminal block points 3 (5CC1) to point 7 (5CC2) in the back of compartment 5C of 480V REACTOR MOV 2A2-A. _____

[30] **PLACE** 2-HS-74-8, RHR SYSTEM ISOLATION BYPASS CNTL to CLOSE and RELEASE. _____

[31] **VERIFY** that the breaker 2-BKR-74-8, 480V REAC MOV BD 2A2-A BKR 5C trips OPEN. _____

[32] **OPEN** compartment door for compartment 5C of 480V REACTOR MOV 2A2-A _____

WARNING

Arc Flash PPE per TI-300 will be required for steps 6.5[33] through 6.5[43]

[33] **REINSTALL** the A Phase penetration fuse of 2-FU-213-A26/32 in 480V RX MOV BD 2A2-A, COMPT 5C. _____

_____
CV

[34] **DISENGAGE** the compartment locking devices at the top and bottom. _____

[35] **PULL** the breaker compartment forward until the compartment stabs disengage from the board bus. _____

[36] **ENGAGE** the compartment locking devices at the top and bottom of the compartment while the bucket is on the outside to prevent the bucket from accidentally engaging the bus stabs. _____

Data Package: Page ____ of ____ **Date _____**

6.5 Valve 2-FCV-74-8 Logic Test (continued)

NOTE

Wire lifts are NOT required if MCC buckets are equipped with pull apart terminal blocks.

[37] **IF** the breaker compartment wiring hinders the breaker compartment from safely disengaging the board bus, **THEN**

DISCONNECT the wiring as needed **AND RECORD** on Appendix J or **REMOVE** door mounted devices **AND RECORD** on Appendix B. _____

[38] **REINSTALL** the thermal overloads for 2-FCV-74-8, 2-FCV-74-2 BYPASS RHR SUCTION. _____

_____
CV

[39] **DISENGAGE** the locking devices at the top and bottom of the breaker compartment to allow the breaker bucket to fully engage the bus stabs. _____

[40] **INSTALL** the breaker bucket into the compartment, ensuring that the bus stabs are fully engaged. _____

[41] **IF** the breaker compartment wiring was disconnected, **THEN**

RECONNECT the wiring as needed **AND RECORD** on Appendix J or **REINSTALL** door devices **AND RECORD** on Appendix B. _____

[42] **IF** the MCC bucket has pull apart terminal blocks, **THEN**

ENSURE the blocks re-engage. _____

[43] **ENGAGE** the compartment locking devices at the top and bottom of the compartment. _____

[44] **CLOSE** compartment door for compartment 5C of 480V REACTOR MOV 2A2-A. _____

[45] **CLOSE** 2-BKR-74-8, 480V REAC MOV BD 2A2-A BKR 5C. _____

Data Package: Page ____ of ____ **Date _____**

6.5 Valve 2-FCV-74-8 Logic Test (continued)

[46] **ENSURE** the following Integrated Computer System (ICS) point is in scan:

A. Y0336D _____

[47] **VERIFY** the following indications:

A. 2-HS-74-8 red light OFF _____

B. 2-HS-74-8 green light ON _____

C. 2-XI-74-8 red light OFF _____

D. 2-XI-74-8 green light ON _____

E. Valve is CLOSED using local position indicator _____

[48] **PLACE** hand switch 2-HS-74-8, RHR SYSTEM ISOLATION BYPASS CNTL to OPEN, and while valve 2-FCV-74-8, 2-FCV-74-2 BYPASS RHR SUCTION is opening, **PLACE** hand switch 2-HS-74-8, RHR SYSTEM ISOLATION BYPASS CNTL to CLOSE **AND RELEASE**. _____

[49] **VERIFY** valve 2-FCV-74-8, 2-FCV-74-2 BYPASS RHR SUCTION continues to open. _____

[50] **VERIFY** the following indications:

A. 2-HS-74-8 red light ON _____

B. 2-HS-74-8 green light OFF _____

C. 2-XI-74-8 red light ON _____

D. 2-XI-74-8 green light OFF _____

E. Valve is OPEN using local position indicator **(Acc Crit 5.0[22])** _____

[51] **VERIFY** ICS point Y0336D displays "OPEN". _____

Data Package: Page ____ of ____ **Date _____**

6.5 Valve 2-FCV-74-8 Logic Test (continued)

[52] **PLACE** hand switch 2-HS-74-8, RHR SYSTEM ISOLATION BYPASS CNTL to CLOSE and while valve 2-FCV-74-8, 2-FCV-74-2 BYPASS RHR SUCTION is closing, **PLACE** hand switch 2-HS-74-8, RHR SYSTEM ISOLATION BYPASS CNTL to OPEN **AND RELEASE**. _____

[53] **VERIFY** valve 2-FCV-74-8, 2-FCV-74-2 BYPASS RHR SUCTION continues to close. _____

[54] **VERIFY** the following indications:

A. 2-HS-74-8 red light OFF _____

B. 2-HS-74-8 green light ON _____

C. 2-XI-74-8 red light OFF _____

D. 2-XI-74-8 green light ON _____

[55] **VERIFY** ICS point Y0336D displays "NOT OP". _____

Data Package: Page ____ of ____ **Date _____**

6.5 Valve 2-FCV-74-8 Logic Test (continued)

NOTE

Stopwatch timing of 2-FCV-74-8, 2-FCV-74-2 BYPASS RHR SUCTION, will be done at handswitch 2-HS-74-8, RHR SYSTEM ISOLATION BYPASS CNTL, and locally at 2-FCV-74-8, 2-FCV-74-2 BYPASS RHR SUCTION. Perform steps 6.5[56]/6.5[57] and 6.5[58]/6.5[59] sequentially to obtain stroke time data.

[56] **SIMULTANEOUSLY PLACE** handswitch 2-HS-74-8, RHR SYSTEM ISOLATION BYPASS CNTL, to the OPEN position **AND**

START stopwatches. _____

[57] **STOP** stopwatches when 2-FCV-74-8, 2-FCV-74-2 BYPASS RHR SUCTION, reaches the OPEN position **AND**

RECORD stroke times below:

A. Remote Open Time (**Acc Crit 5.0[31]**) _____

_____ seconds (≤ 120 secs)

M&TE _____ Cal Due Date _____

B. Local Open Time _____

_____ seconds (≤ 120 secs)

M&TE _____ Cal Due Date _____

Data Package: Page ____ of ____ **Date _____**

6.5 Valve 2-FCV-74-8 Logic Test (continued)

[58] **SIMULTANEOUSLY PLACE** handswitch 2-HS-74-8, RHR SYSTEM ISOLATION BYPASS CNTL, to the CLOSE position **AND**

START stopwatches. _____

[59] **STOP** stopwatches when 2-FCV-74-8, 2-FCV-74-2 BYPASS RHR SUCTION, reaches the CLOSE position **AND**

RECORD stroke times below:

A. Remote Close Time (**Acc Crit 5.0[31]**) _____

_____ seconds (≤ 120 secs)

M&TE _____ Cal Due Date _____

B. Local Close Time _____

_____ seconds (≤ 120 secs)

M&TE _____ Cal Due Date _____

[60] **OPEN** 2-BKR-74-8 in 480V RX MOV BD 2A2-A, COMPT 5C. _____

WARNING

Arc Flash PPE per TI-300 will be required for step 6.5[61].

[61] **MANUALLY TRIP** the thermal overload for 2-BKR-74-8-A, 480V REAC MOV BD 2A2-A BKR 5C. _____

_____
CV

[62] **CLOSE** 2-BKR-74-8-A, 480V REAC MOV BD 2A2-A BKR 5C. _____

[63] **PLACE** hand switch 2-HS-74-8, RHR SYSTEM ISOLATION BYPASS CNTL to OPEN. _____

[64] **VERIFY** that valve 2-FCV-74-8, 2-FCV-74-2 BYPASS RHR SUCTION does NOT open. **(Acc Crit 5.0[1])** _____

Data Package: Page ____ of ____ **Date _____**

6.5 Valve 2-FCV-74-8 Logic Test (continued)

[65] **PLACE** a jumper across terminals 2 and 12 (wires 5CY1 & 5CSM), on the terminal strip of panel 5C on 480V RX MOV BD 2A2-A to simulate Overload Bypass. _____

_____ CV

[66] **PLACE** control switch 2-HS-74-8, RHR SYSTEM ISOLATION BYPASS CNTL to OPEN.

[67] **VERIFY** valve 2-FCV-74-8, 2-FCV-74-2 BYPASS RHR SUCTION OPENS **(Acc Crit 5.0[1])**

[68] **REMOVE** the jumper across terminals 2 and 12 (wires 5CY1 & 5CSM), on the terminal strip of panel 5C on 480V RX MOV BD 2A2-A. _____

_____ CV

[69] **OPEN** 2-BKR-74-8 in 480V RX MOV BD 2A2-A, COMPT 5C. _____

WARNING

Arc Flash PPE per TI-300 will be required for step 6.5[70].

[70] **RESET** the thermal overload for 2-BKR-74-8-A, 480V REAC MOV BD 2A2-A BKR 5C. _____

_____ CV

[71] **CLOSE** 2-BKR-74-8 in 480V RX MOV BD 2A2-A, COMPT 5C. _____

[72] **CLOSE** valve 2-FCV-74-8, 2-FCV-74-2 BYPASS RHR SUCTION using 2-HS-74-8, RHR SYSTEM ISOLATION BYPASS CNTL. _____

[73] **OPEN** test switch in the jumper across terminals TB121-1 and TB121-2 Panel 2-R-54. (RCS Low Pressure Permissive). _____

[74] **PLACE** hand switch 2-HS-74-8, RHR SYSTEM ISOLATION BYPASS CNTL to OPEN **AND RELEASE**. _____

Data Package: Page ____ of ____ **Date _____**

6.5 Valve 2-FCV-74-8 Logic Test (continued)

[75] **VERIFY** valve 2-FCV-74-8, 2-FCV-74-2 BYPASS RHR SUCTION did NOT open. _____

[76] **CLOSE** test switch in the jumper across terminals TB121-1 and TB121-2. Panel 2-R-54. _____

[77] **ENSURE** Annunciator Window 113-E, RHR SUCT FCV-74-1,2,8,9 OPEN & HI PRESS, is CLEAR. _____

[78] **CLOSE** test switch in the jumper across terminals TB112-1 and TB112-2, Panel 2-R-54 (RCS HI Pressure). _____

[79] **PLACE** hand switch 2-HS-74-8, RHR SYSTEM ISOLATION BYPASS CNTL to OPEN **AND RELEASE**. _____

[80] **VERIFY** Annunciator Window 113-E, RHR SUCT FCV-74-1,2,8,9 OPEN &.HI PRESS, ALARMS **(Acc Crit 5.0[23])**. _____

[81] **PLACE** hand switch 2-HS-74-8, RHR SYSTEM ISOLATION BYPASS CNTL to CLOSE **AND RELEASE**. _____

[82] **VERIFY** Annunciator Window 113-E, RHR SUCT FCV-74-1,2,8,9 OPEN & HI PRESS, is CLEAR. _____

[83] **OPEN** test switch in the jumper across terminals TB112-1 and TB112-2. Panel 2-R-54. _____

[84] **CLOSE** test switch in the jumper across terminals TB214-10 and TB214-11. Panel 2-R-55 (RCS HI Pressure). _____

[85] **PLACE** hand switch 2-HS-74-8, RHR SYSTEM ISOLATION BYPASS CNTL to OPEN **AND RELEASE**. _____

[86] **VERIFY** Anniunciator Window 113-E, RHR SUCT FCV-74-1,2,8,9 OPEN & HI PRPSS, ALARMS **(Acc Crit 5.0[23])**. _____

[87] **PLACE** hand switch 2-HS-74-8, RHR SYSTEM ISOLATION BYPASS CNTL to CLOSE **AND RELEASE**. _____

[88] **VERIFY** Annunciator Window 113-E RHR SUCT FCV-74-1,2,8,9 OPEN & HI PRESS, is CLEAR. _____

Data Package: Page ____ of ____ **Date _____**

6.5 Valve 2-FCV-74-8 Logic Test (continued)

[89] **OPEN** test switch in the jumper across terminals TB214-10 and TB214-11, Panel 2-R-55. _____

[90] **REMOVE** the temporary jumper across terminals TB121-1 and TB121-2, Panel 2-R-54 on the field side. _____

_____
CV

[91] **VERIFY** successful completion of Subsection 6.5 **(Acc Crit 5.0[32], 5.0[33], 5.0[34])**. _____

Data Package: Page ____ of ____ **Date _____**

6.6 Valve 2-FCV-74-9 Logic Test

NOTE

Arc Flash PPE per TI-300 will be required during section 6.6 of the test.

[1] **VERIFY** the following prerequisites have been completed for Subsection 6.6. (4.1[1]-4.1[8], 4.1[10], 4.1[12]-4.1[18], 4.1[21], 4.1[22], 4.2[1], 4.2[2], 4.3[5]-4.3[7]) _____

[2] **ESTABLISH** communications between MCR Panel 2-M-6, 480V RX MOV Board 2B1-B, and at valve 2-FCV-74-9, 2-FCV-74-1 BYPASS RHR SUCTION, Inside Polar Crane Wall El 706 Az 354. _____

[3] **ENSURE** the following valves are CLOSED from 2-M-6:

A. 2-FCV-63-1, RWST TO RHR SUCTION _____

B. 2-FCV-74-1, LOOP 4 HOT LEG TO RHR SUCTION _____

C. 2-FCV-74-2, LOOP 4 HOT LEG TO RHR SUCTION _____

D. 2-FCV-74-8, 2-FCV-74-2 BYPASS RHR SUCTION _____

E. 2-FCV-74-9, 2-FCV-74-1 BYPASS RHR SUCTION _____

[4] **ENSURE** that 2-BKR-74-9, 480V RX MOV BD 2B1-B, COMPT 5C is OPEN. _____

[5] **OPEN** compartment door for compartment 5C of 480V REACTOR MOV 2B1-B _____

WARNING

Arc Flash PPE per TI-300 will be required for steps 6.6[6] through 6.6[15]

[6] **DISENGAGE** the compartment locking devices at the top and bottom. _____

Data Package: Page ____ of ____ **Date _____**

6.6 Valve 2-FCV-74-9 Logic Test (continued)

[7] **PULL** the breaker compartment forward until the compartment stabs disengage from the board bus. _____

[8] **ENGAGE** the compartment locking devices at the top and bottom of the compartment while the bucket is on the outside to prevent the bucket from accidentally engaging the bus stabs. _____

NOTE

Wire lifts are NOT required if MCC buckets are equipped with pull apart terminal blocks.

[9] **IF** the breaker compartment wiring hinders the breaker compartment from safely disengaging the board bus, **THEN**

DISCONNECT the wiring as needed **AND RECORD** on Appendix J or **REMOVE** door mounted devices **AND RECORD** on Appendix B. _____

[10] **REMOVE** the thermal overloads for 2-FCV-74-9, 2-FCV-74-1 BYPASS RHR SUCTION _____

_____
CV

[11] **DISENGAGE** the locking devices at the top and bottom of the breaker compartment to allow the breaker bucket to fully engage the bus stabs. _____

[12] **INSTALL** the breaker bucket into the compartment, ensuring that the bus stabs are fully engaged. _____

[13] **IF** the breaker compartment wiring was disconnected, **THEN**

RECONNECT the wiring as needed **AND RECORD** on Appendix J or **REINSTALL** door devices **AND RECORD** on Appendix B. _____

[14] **IF** the MCC bucket has pull apart terminal blocks, **THEN**

ENSURE the blocks re-engage. _____

[15] **ENGAGE** the compartment locking devices at the top and bottom of the compartment. _____

Data Package: Page ____ of ____ **Date _____**

6.6 Valve 2-FCV-74-9 Logic Test (continued)

[16] **CLOSE** compartment door for compartment 5C of 480V REACTOR MOV 2B1-B _____

[17] **CLOSE** 2-BKR-74-9, 480V RX MOV BD 2B1-B, COMPT 5C. _____

WARNING

Arc Flash PPE per TI-300 will be required for steps 6.6[18] through 6.6[20]

[18] **OPEN** compartment door for compartment 5C of 480V REACTOR MOV 2B1-B with the breaker closed by using the screw-driven defeater. _____

[19] **VERIFY** the red LED on the BFD is lit indicating the phase rotation for the BFD is correct. _____

[20] **CLOSE** compartment door for compartment 5C of 480V REACTOR MOV 2B1-B _____

[21] **OPEN** 2-BKR-74-9, 480V RX MOV BD 2B1-B, COMPT 5C. _____

[22] **OPEN** compartment door for compartment 5C of 480V REACTOR MOV 2B1-B _____

WARNING

Arc Flash PPE per TI-300 will be required for step 6.6[23]

[23] **REMOVE** the A Phase penetration fuse of 2-FU-213-B15/22 in compartment 5C of 480V REACTOR MOV 2B1-B. _____

_____
CV

[24] **CLOSE** compartment door for compartment 5C of 480V REACTOR MOV 2B1-B _____

[25] **CLOSE** 2-BKR-74-9, 480V RX MOV BD 2B1-B, COMPT 5C. _____

[26] **PLACE** 2-HS-74-9, RHR SYSTEM ISOLATION BYPASS CNTL to OPEN and RELEASE. _____

Data Package: Page ____ of ____ **Date _____**

6.6 Valve 2-FCV-74-9 Logic Test (continued)

[27] **VERIFY** that the breaker 2-BKR-74-9, 480V RX MOV BD 2B1-B, COMPT 5C trips OPEN. _____

[28] **CLOSE** 2-BKR-74-9, 480V RX MOV BD 2B1-B, COMPT 5C. _____

[29] **PLACE** a handheld jumper across the terminal block points 3 (5CC1) to point 7 (5CC2) in the back of compartment 5C of 480V REACTOR MOV 2B1-B. _____

[30] **PLACE** 2-HS-74-9, RHR SYSTEM ISOLATION BYPASS CNTL to CLOSE and RELEASE. _____

[31] **VERIFY** that the breaker 2-BKR-74-9, 480V RX MOV BD 2B1-B, COMPT 5C trips OPEN. _____

[32] **OPEN** compartment door for compartment 5C of 480V REACTOR MOV 2B1-B _____

WARNING

Arc Flash PPE per TI-300 will be required for steps 6.6[33] through 6.6[43]

[33] **REINSTALL** the A Phase penetration fuse of 2-FU-213-B15/22 in compartment 5C of 480V REACTOR MOV 2B1-B. _____

_____
CV

[34] **DISENGAGE** the compartment locking devices at the top and bottom. _____

[35] **PULL** the breaker compartment forward until the compartment stabs disengage from the board bus. _____

[36] **ENGAGE** the compartment locking devices at the top and bottom of the compartment while the bucket is on the outside to prevent the bucket from accidentally engaging the bus stabs. _____

Data Package: Page ____ of ____ **Date _____**

6.6 Valve 2-FCV-74-9 Logic Test (continued)

NOTE

Wire lifts are NOT required if MCC buckets are equipped with pull apart terminal blocks.

[37] **IF** the breaker compartment wiring hinders the breaker compartment from safely disengaging the board bus, **THEN**

DISCONNECT the wiring as needed **AND RECORD** on Appendix J or **REMOVE** door mounted devices **AND RECORD** on Appendix B. _____

[38] **REINSTALL** the thermal overloads for 2-FCV-74-9, 2-FCV-74-1 BYPASS RHR SUCTION. _____

_____
CV

[39] **DISENGAGE** the locking devices at the top and bottom of the breaker compartment to allow the breaker bucket to fully engage the bus stabs. _____

[40] **INSTALL** the breaker bucket into the compartment, ensuring that the bus stabs are fully engaged. _____

[41] **IF** the breaker compartment wiring was disconnected, **THEN**

RECONNECT the wiring as needed **AND RECORD** on Appendix J or **REINSTALL** door devices **AND RECORD** on Appendix B. _____

[42] **IF** the MCC bucket has pull apart terminal blocks, **THEN**

ENSURE the blocks re-engage. _____

[43] **ENGAGE** the compartment locking devices at the top and bottom of the compartment. _____

[44] **CLOSE** compartment door for compartment 5C of 480V REACTOR MOV 2B1-B. _____

[45] **CLOSE** 2-BKR-74-9, 480V RX MOV BD 2B1-B, COMPT 5C. _____

Data Package: Page ____ of ____ **Date _____**

6.6 Valve 2-FCV-74-9 Logic Test (continued)

[46] **ENSURE** the following Integrated Computer System (ICS) point is in scan:

A. Y0337D _____

[47] **VERIFY** the following indications:

A. 2-HS-74-9 red light OFF _____

B. 2-HS-74-9 green light ON _____

C. 2-XI-74-9 red light OFF _____

D. 2-XI-74-9 green light ON _____

E. Valve is CLOSED using local position indicator _____

[48] **PLACE** hand switch 2-HS-74-9, RHR SYSTEM ISOLATION BYPASS CNTL to OPEN, and while valve 2-FCV-74-9, 2-FCV-74-1 BYPASS RHR SUCTION is opening, **PLACE** hand switch 2-HS-74-9, RHR SYSTEM ISOLATION BYPASS CNTL to CLOSE **AND RELEASE**. _____

[49] **VERIFY** valve 2-FCV-74-9, 2-FCV-74-1 BYPASS RHR SUCTION continues to open. _____

[50] **VERIFY** the following indications:

A. 2-HS-74-9 red light ON _____

B. 2-HS-74-9 green light OFF _____

C. 2-XI-74-9 red light ON _____

D. 2-XI-74-9 green light OFF _____

E. Valve is OPEN using local position indicator **(Acc Crit 5.0[22])** _____

[51] **VERIFY** ICS point Y0337D displays "OPEN". _____

Data Package: Page ____ of ____ **Date _____**

6.6 Valve 2-FCV-74-9 Logic Test (continued)

[52] **PLACE** hand switch 2-HS-74-9, RHR SYSTEM ISOLATION BYPASS CNTL to CLOSE and while valve 2-FCV-74-9, 2-FCV-74-1 BYPASS RHR SUCTION is closing, **PLACE** hand switch 2-HS-74-9, RHR SYSTEM ISOLATION BYPASS CNTL to OPEN **AND RELEASE**. _____

[53] **VERIFY** valve 2-FCV-74-9, 2-FCV-74-1 BYPASS RHR SUCTION continues to close. _____

[54] **VERIFY** the following indications:

A. 2-HS-74-9 red light OFF _____

B. 2-HS-74-9 green light ON _____

C. 2-XI-74-9 red light OFF _____

D. 2-XI-74-9 green light ON _____

[55] **VERIFY** ICS point Y0337D displays "NOT OP". _____

Data Package: Page ____ of ____ **Date _____**

6.6 Valve 2-FCV-74-9 Logic Test (continued)

NOTE

Stopwatch timing of 2-FCV-74-9, 2-FCV-74-1 BYPASS RHR SUCTION, will be done at handswitch 2-HS-74-9, RHR SYSTEM ISOLATION BYPASS CNTL, and locally at 2-FCV-74-9, 2-FCV-74-1 BYPASS RHR SUCTION. Perform steps 6.6[56]/6.6[57] and 6.6[58]/6.6[59] sequentially to obtain stroke time data.

[56] **SIMULTANEOUSLY PLACE** handswitch 2-HS-74-9, RHR SYSTEM ISOLATION BYPASS CNTL, to the OPEN position **AND**

START stopwatches. _____

[57] **STOP** stopwatches when 2-FCV-74-9, 2-FCV-74-1 BYPASS RHR SUCTION, reaches the OPEN position **AND**

RECORD stroke times below:

A. Remote Open Time (**Acc Crit 5.0[31]**) _____

_____ seconds (≤ 120 secs)

M&TE _____ Cal Due Date _____

B. Local Open Time _____

_____ seconds (≤ 120 secs)

M&TE _____ Cal Due Date _____

Data Package: Page ____ of ____ **Date _____**

6.6 Valve 2-FCV-74-9 Logic Test (continued)

[58] **SIMULTANEOUSLY PLACE** handswitch 2-HS-74-9, RHR SYSTEM ISOLATION BYPASS CNTL, to the CLOSE position **AND**

START stopwatches. _____

[59] **STOP** stopwatches when 2-FCV-74-9, 2-FCV-74-1 BYPASS RHR SUCTION, reaches the CLOSE position **AND**

RECORD stroke times below:

A. Remote Close Time (**Acc Crit 5.0[31]**) _____

_____ seconds (≤ 120 secs)

M&TE _____ Cal Due Date _____

B. Local Close Time _____

_____ seconds (≤ 120 secs)

M&TE _____ Cal Due Date _____

[60] **OPEN** 2-BKR-74-9 in 480V RX MOV BD 2B1-B, COMPT 5C. _____

WARNING

Arc Flash PPE per TI-300 will be required for step 6.6[61].

[61] **MANUALLY TRIP** the thermal overload for 2-BKR-74-9-B, 480V REAC MOV BD 2B1-B BKR 5C. _____

_____
CV

[62] **CLOSE** 2-BKR-74-9 in 480V RX MOV BD 2B1-B, COMPT 5C. _____

[63] **PLACE** hand switch 2-HS-74-9, RHR SYSTEM ISOLATION BYPASS CNTL to OPEN. _____

[64] **VERIFY** that valve 2-FCV-74-9, 2-FCV-74-1 BYPASS RHR SUCTION does NOT open. **(Acc Crit 5.0[1])** _____

Data Package: Page ____ of ____ **Date _____**

6.6 Valve 2-FCV-74-9 Logic Test (continued)

[65] **PLACE** a jumper across terminals 2 and 12 (wires 5CY1 & 5CSM), on the terminal strip of panel 5C on 480V RX MOV BD 2B1-B to simulate Overload Bypass. _____

_____ CV

[66] **PLACE** control switch 2-HS-74-9, RHR SYSTEM ISOLATION BYPASS CNTL to OPEN.

[67] **VERIFY** valve 2-FCV-74-9, 2-FCV-74-1 BYPASS RHR SUCTION OPENS **(Acc Crit 5.0[1])**

[68] **REMOVE** the jumper across terminals 2 and 12 (wires 5CY1 & 5CSM), on the terminal strip of panel 5C on 480V RX MOV BD 2B1-B. _____

_____ CV

[69] **OPEN** 2-BKR-74-9 in 480V RX MOV BD 2B1-B, COMPT 5C. _____

WARNING

Arc Flash PPE per TI-300 will be required for step 6.6[70].

[70] **RESET** the thermal overload for 2-BKR-74-9-B, 480V REAC MOV BD 2B1-B BKR 5C. _____

_____ CV

[71] **CLOSE** 2-BKR-74-9 in 480V RX MOV BD 2B1-B, COMPT 5C _____

[72] **CLOSE** valve 2-FCV-74-9, 2-FCV-74-1 BYPASS RHR SUCTION using 2-HS-74-9, RHR SYSTEM ISOLATION BYPASS CNTL. _____

[73] **OPEN** test switch in the jumper across terminals TB219-1 and TB219-2 Panel 2-R-55. (RCS Low Pressure Permissive). _____

[74] **PLACE** hand switch 2-HS-74-9, RHR SYSTEM ISOLATION BYPASS CNTL to OPEN **AND RELEASE**. _____

Data Package: Page ____ of ____ **Date _____**

6.6 Valve 2-FCV-74-9 Logic Test (continued)

[75] **VERIFY** valve 2-FCV-74-9, 2-FCV-74-1 BYPASS RHR SUCTION did NOT open. _____

[76] **CLOSE** test switch in the jumper across terminals TB219-1 and TB219-2. Panel 2-R-55. _____

[77] **ENSURE** Annunciator Window 113-E, RHR SUCT FCV-74-1,2,8,9 OPEN & HI PRESS, is CLEAR. _____

[78] **CLOSE** test switch in the jumper across terminals TB112-1 and TB112-2, Panel 2-R-54 (RCS HI Pressure). _____

[79] **PLACE** hand switch 2-HS-74-9, RHR SYSTEM ISOLATION BYPASS CNTL to OPEN **AND RELEASE**. _____

[80] **VERIFY** Annunciator Window 113-E, RHR SUCT FCV-74-1,2,8,9 OPEN &.HI PRESS, ALARMS **(Acc Crit 5.0[23])**. _____

[81] **PLACE** hand switch 2-HS-74-9, RHR SYSTEM ISOLATION BYPASS CNTL to CLOSE **AND RELEASE**. _____

[82] **VERIFY** Annunciator Window 113-E, RHR SUCT FCV-74-1-2-8-9 OPEN & HI PRESS, is CLEAR. _____

[83] **OPEN** test switch in the jumper across terminals TB112-1 and TB112-2. Panel 2-R-54. _____

[84] **CLOSE** test switch in the jumper across terminals TB214-10 and TB214-11. Panel 2-R-55 (RCS HI Pressure). _____

[85] **PLACE** hand switch 2-HS-74-9, RHR SYSTEM ISOLATION BYPASS CNTL to OPEN **AND RELEASE**. _____

[86] **VERIFY** Annunciator Window 113-E, RHR SUCT FCV-74-1,2,8,9 OPEN & HI PRPSS, ALARMS **(Acc Crit 5.0[23])**. _____

[87] **PLACE** hand switch 2-HS-74-9, RHR SYSTEM ISOLATION BYPASS CNTL to CLOSE **AND RELEASE**. _____

[88] **VERIFY** Annunciator Window 113-E, RHR SUCT FCV-74-1,2,8,9 OPEN & HI PRESS, is CLEAR. _____

Data Package: Page ____ of ____ **Date _____**

6.6 Valve 2-FCV-74-9 Logic Test (continued)

[89] **OPEN** test switch in the jumper across terminals TB214-10 and TB214-11, Panel 2-R-55. _____

[90] **REMOVE** the temporary jumper across terminals TB219-1 and T8219-2, Panel 2-R-55 on the field side. _____

_____
CV

[91] **VERIFY** successful completion of Subsection 6.6 **(Acc Crit 5.0[32], 5.0[33], 5.0[34]).** _____

Data Package: Page ____ of ____ **Date _____**

6.7 Valve 2-FCV-74-12 Logic Test

NOTE

Arc Flash PPE per TI-300 will be required during section 6.7 of the test.

[1] **VERIFY** the following prerequisites have been completed for Subsection 6.7. (4.1[1]-4.1[8], 4.1[10], 4.1[12]-4.1[18], 4.1[21], 4.1[22], 4.2[1], 4.2[2], 4.3[7]) _____

[2] **ESTABLISH** communications between MCR Panel 2-M-6, 480V RX MOV Board 2A1-A, and at valve 2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE (A11V El 689). _____

[3] **ENSURE** that 2-BKR-74-10 in 6.9KV SD BD 2A-A Compt 14 is OPEN and RACKED DOWN. _____

[4] **ENSURE** 2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE is CLOSED from 2-M-6. _____

[5] **LIFT** the white wire at terminal block DD point 1 (cable number 2V1939A) on the 52 STA terminal strip inside 2-BKR-74-10, 6.9KV SD BD 2A-A Comp 14 Breaker Compartment. _____

_____
CV

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

A. FD2192 _____

B. FD2193 _____

[7] **VERIFY** ICS point FD2192 displays "PWR ON". _____

[8] **ENSURE** the following transfer switch on RX MOV Board 2A1-A is in NORMAL:

- 2-XS-74-12, RHR PUMP A-A MIN FLOW TRANS SW _____

[9] **PLACE** hand switch 2-HS-74-12C, RHR PMP A MINI FLOW to OPEN and then to NORMAL. _____

Data Package: Page ____ of ____ **Date _____**

6.7 Valve 2-FCV-74-12 Logic Test (continued)

[10] **VERIFY** valve 2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE does NOT open. _____

[11] **PLACE** hand switch 2-HS-74-12A, RHR PMP A MINI FLOW to OPEN, and while valve 2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE is opening, **PLACE** hand switch 2-HS-74-12A, RHR PMP A MINI FLOW to CLOSE **AND RELEASE**. _____

[12] **VERIFY** the following indications:

A. 2-HS-74-12A red light ON _____

B. 2-HS-74-12A green light OFF _____

C. 2-HS-74-12C red light ON _____

D. 2-HS-74-12C green light OFF _____

E. Valve is OPEN using local position indicator _____

[13] **VERIFY** ICS point FD2193 displays "NOT CLS". _____

[14] **PLACE** hand switch 2-HS-74-12C, RHR PMP A MINI FLOW to CLOSE and then to NORMAL. _____

[15] **VERIFY** valve 2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE does NOT close. _____

[16] **PLACE** hand switch 2-HS-74-12A, RHR PMP A MINI FLOW to CLOSE and while valve 2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE is closing, **PLACE** hand switch 2-HS-74-12A, RHR PMP A MINI FLOW to OPEN **AND RELEASE**. _____

Data Package: Page ____ of ____ **Date _____**

6.7 Valve 2-FCV-74-12 Logic Test (continued)

[17] **VERIFY** the following indications:

A. 2-HS-74-12A red light OFF _____

B. 2-HS-74-12A green light ON _____

C. 2-HS-74-12C red light OFF _____

D. 2-HS-74-12C green light ON _____

E. Valve is CLOSED using local position indicator _____

[18] **VERIFY** ICS point FD2193 displays "CLOSED". _____

NOTE

Stopwatch timing of 2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE, will be done at handswitch 2-HS-74-12A, RHR PMP A MINI FLOW, and locally at 2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE. Perform steps 6.7[19]/6.7[20] and 6.7[21]/6.7[22] sequentially to obtain stroke time data.

[19] **SIMULTANEOUSLY PLACE** handswitch 2-HS-74-12A, RHR PMP A MINI FLOW, to the OPEN position **AND**

START stopwatches. _____

[20] **STOP** stopwatches when 2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE, reaches the OPEN position **AND**

RECORD stroke times below:

A. Remote Open Time (**Acc Crit 5.0[31]**) _____

_____ seconds (≤ 15 secs)

M&TE _____ Cal Due Date _____

B. Local Open Time _____

_____ seconds (≤ 15 secs)

M&TE _____ Cal Due Date _____

Data Package: Page ____ of ____ **Date _____**

6.7 Valve 2-FCV-74-12 Logic Test (continued)

[21] **SIMULTANEOUSLY PLACE** handswitch 2-HS-74-12A, RHR PMP A MINI FLOW, to the CLOSE position **AND**

START stopwatches. _____

[22] **STOP** stopwatches when 2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE, reaches the CLOSE position **AND**

RECORD stroke times below:

A. Remote Close Time (**Acc Crit 5.0[31]**) _____

_____ seconds (≤ 15 secs)

M&TE _____ Cal Due Date _____

B. Local Close Time _____

_____ seconds (≤ 15 secs)

M&TE _____ Cal Due Date _____

[23] **ENSURE** Annunciator Window 149-C, 480 RX MOV BD 2A1-A/2A2-A, is CLEAR. _____

[24] **ENSURE** Event Display Monitor reports 149-C 480 RX MOV BD 2A1-A/2A2-A XS IN AUX, NORMAL _____

[25] **PLACE** transfer switch 2-XS-74-12, RHR PUMP A-A MIN FLOW TRANS SW to AUX. _____

[26] **VERIFY** Annunciator Window 149-C, 480 RX MOV BD 2A1-A/2A2-A ALARMS **(Acc Crit 5.0[2])**. _____

[27] **VERIFY** Event Display Monitor reports 149-C 480 RX MOV BD 2A1-A/2A2-A XS IN AUX, ALARM _____

[28] **PLACE** transfer switch 2-XS-74-12, RHR PUMP A-A MIN FLOW TRANS SW to NORMAL. _____

[29] **VERIFY** Annunciator Window 149-C, 480 RX MOV BD 2A1-A/2A2-A, is CLEAR. _____

Data Package: Page ____ of ____ **Date _____**

6.7 Valve 2-FCV-74-12 Logic Test (continued)

[30] **VERIFY** Event Display Monitor reports 149-C 480 RX MOV BD 2A1-A/2A2-A XS IN AUX, NORMAL _____

[31] **PLACE** transfer switch 2-XS-74-12, RHR PUMP A-A MIN FLOW TRANS SW to AUX. _____

[32] **PLACE** hand switch 2-HS-74-12A, RHR PMP A MINI FLOW to OPEN **AND RELEASE**. _____

[33] **VERIFY** valve 2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE does NOT open. _____

[34] **PLACE** hand switch 2-HS-74-12C, RHR PMP A MINI FLOW to OPEN and then to NORMAL, while valve is traveling **PLACE** 2-HS-74-12C, RHR PMP A MINI FLOW to CLOSE and then to NORMAL. _____

[35] **VERIFY** the following indications:

A. 2-HS-74-12C red light ON _____

B. 2-HS-74-12C green light OFF _____

C. 2-HS-74-12A red light OFF _____

D. 2-HS-74-12A green light OFF _____

E. Valve is OPEN. using local position indicator _____

[36] **PLACE** hand switch 2-HS-74-12A, RHR PMP A MINI FLOW to CLOSE **AND RELEASE**. _____

[37] **VERIFY** valve 2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE does NOT close. _____

[38] **PLACE** hand switch 2-HS-74-12C, RHR PMP A MINI FLOW to CLOSE and then to NORMAL, while valve is traveling **PLACE** 2-HS-74-12C, RHR PMP A MINI FLOW to OPEN and then to NORMAL. _____

[39] **VERIFY** the following indications:

A. 2-HS-74-12C red light OFF _____

B. 2-HS-74-12C green light On _____

Data Package: Page ____ of ____ **Date _____**

6.7 Valve 2-FCV-74-12 Logic Test (continued)

C. 2-HS-74-12A red light OFF _____

D. 2-HS-74-12A green light OFF _____

E. Valve is CLOSED using local position indicator _____

[40] **OPEN** 2-BKR-74-12 in 480V RX MOV BD 2A1-A COMPT 14D. _____

[41] **VERIFY** ICS point FD2192 displays "PWR OFF". _____

WARNING

Arc Flash PPE per TI-300 will be required for step 6.7[42]

[42] **MANUALLY TRIP** the thermal overload for 2-BKR-74-12 in 480V RX MOV BD 2A1-A COMPT 14D. _____

_____ CV

[43] **CLOSE** 2-BKR-74-12 in 480V RX MOV BD 2A1-A COMPT 14D. _____

[44] **PLACE** transfer switch 2-XS-74-12, RHR PUMP A-A MIN FLOW TRANS SW to NORMAL. _____

[45] **PLACE** control switch 2-HS-74-12A, RHR PMP A MINI FLOW to OPEN **AND RELEASE**. _____

[46] **VERIFY** valve 2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE does NOT open **(Acc Crit 5.0[1])**. _____

[47] **DEPRESS and HOLD** the armature of relay K6 in back of Panel 4F on 480V RX MOV BD 2A1-A to simulate Overload Bypass. _____

[48] **PLACE** control switch 2-HS-74-12A, RHR PMP A MINI FLOW to OPEN **AND RELEASE**. _____

[49] **VERIFY** valve 2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE OPENS **(Acc Crit 5.0[1])**. _____

[50] **RELEASE** K6 relay armature. _____

Data Package: Page ____ of ____ **Date _____**

6.7 Valve 2-FCV-74-12 Logic Test (continued)

[51] **OPEN** 2-BKR-74-12 in 480V RX MOV BD 2A1-A COMPT 14D. _____

WARNING

Arc Flash PPE per TI-300 will be required for step 6.7[52]

[52] **RESET** the thermal overload for 2-BKR-74-12 in 480V RX MOV BD 2A1-A COMPT 14D. _____

_____
CV

[53] **CLOSE** 2-BKR-74-12 in 480V RX MOV BD 2A1-A COMPT 14D. _____

[54] **CLOSE** valve 2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE using 2-HS-74-12A, RHR PMP A MINI FLOW. _____

[55] **ENSURE** that 2-BKR-74-10 in 6.9KV SD BD 2A-A Compt 14 is OPEN and RACKED DOWN. _____

[56] **REINSTALL** the white wire from terminal block DD point 1 (cable number 2V1939A) on the 52 STA terminal strip inside 6.9KV SD BD 2A-A Comp 14 Breaker Compartment. _____

_____
CV

[57] **VERIFY** successful completion of Subsection 6.7 **(Acc Crit 5.0[32], 5.0[33], 5.0[34]).** _____

Data Package: Page ____ of ____ **Date _____**

6.8 Valve 2-FCV-74-24 Logic Test

NOTE

Arc Flash PPE per TI-300 will be required during section 6.8 of the test.

[1] **VERIFY** the following prerequisites have been completed for Subsection 6.8. (4.1[1]-4.1[8], 4.1[10], 4.1[12]-4.1[18], 4.1[21], 4.1[22], 4.2[1], 4.2[2], 4.3[7]) _____

[2] **ESTABLISH** communications between MCR Panel 2-M-6, 480V Reactor MOV Board 2B1-B, and at valve 2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE (A11V EI 689). _____

[3] **ENSURE** that 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt 14 is OPEN and RACKED DOWN. _____

[4] **ENSURE** 2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE is CLOSED from 2-M-6. _____

[5] **LIFT** the white wire at terminal block DD point 1 (cable number 2V1919B) on the 52 STA terminal strip inside 6.9KV SD BD 2B-B Comp 14 Breaker Compartment. _____

_____
CV

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

A. FD2344 _____

B. FD2345 _____

[7] **VERIFY** ICS point FD2344 displays "PWR ON". _____

[8] **ENSURE** the following transfer switch on RX MOV Board 2B1-B is in NORMAL:

- 2-XS-74-24, RHR PUMP B-B MIN FLOW TRANS SW _____

[9] **PLACE** hand switch 2-HS-74-24C, RHR PMP B MINI FLOW to OPEN and then to NORMAL. _____

Data Package: Page ____ of ____ **Date _____**

6.8 Valve 2-FCV-74-24 Logic Test (continued)

[10] **VERIFY** valve 2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE does NOT open. _____

[11] **PLACE** hand switch 2-HS-74-24A, RHR PMP B MINI FLOW to OPEN, and while valve 2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE is opening, **PLACE** hand switch 2-HS-74-24A, RHR PMP B MINI FLOW to CLOSE **AND RELEASE**. _____

[12] **VERIFY** the following indications:

A. 2-HS-74-24A red light ON _____

B. 2-HS-74-24A green light OFF _____

C. 2-HS-74-24C red light ON _____

D. 2-HS-74-24C green light OFF _____

E. Valve is OPEN using local position indicator _____

[13] **VERIFY** ICS point FD2345 displays "NOT CLS". _____

[14] **PLACE** hand switch 2-HS-74-24C, RHR PMP B MINI FLOW to CLOSE and then to NORMAL. _____

[15] **VERIFY** valve 2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE does NOT close. _____

[16] **PLACE** hand switch 2-HS-74-24A, RHR PMP B MINI FLOW to CLOSE and while valve 2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE is closing, **PLACE** hand switch 2-HS-74-24A, RHR PMP B MINI FLOW to OPEN **AND RELEASE**. _____

Data Package: Page ____ of ____ **Date _____**

6.8 Valve 2-FCV-74-24 Logic Test (continued)

[17] **VERIFY** the following indications:

A. 2-HS-74-24A red light OFF _____

B. 2-HS-74-24A green light ON _____

C. 2-HS-74-24C red light OFF _____

D. 2-HS-74-24C green light ON _____

E. Valve is CLOSED using local position indicator _____

[18] **VERIFY** ICS point FD2345 displays "CLOSED". _____

NOTE

Stopwatch timing of 2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE, will be done at handswitch 2-HS-74-24A, RHR PMP B MINI FLOW, and locally at 2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE. Perform steps 6.8[19]/6.8[20] and 6.8[21]/6.8[22] sequentially to obtain stroke time data.

[19] **SIMULTANEOUSLY PLACE** handswitch 2-HS-74-24A, RHR PMP B MINI FLOW, to the OPEN position **AND**

START stopwatches. _____

[20] **STOP** stopwatches when 2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE, reaches the OPEN position **AND**

RECORD stroke times below:

A. Remote Open Time (**Acc Crit 5.0[31]**) _____

_____ seconds (≤ 15 secs)

M&TE _____ Cal Due Date _____

B. Local Open Time _____

_____ seconds (≤ 15 secs)

M&TE _____ Cal Due Date _____

Data Package: Page ____ of ____ **Date _____**

6.8 Valve 2-FCV-74-24 Logic Test (continued)

[21] **SIMULTANEOUSLY PLACE** handswitch 2-HS-74-24A, RHR PMP B MINI FLOW, to the CLOSE position **AND**

START stopwatches. _____

[22] **STOP** stopwatches when 2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE, reaches the CLOSE position **AND**

RECORD stroke times below:

A. Remote Close Time (**Acc Crit 5.0[31]**) _____

_____ seconds (≤ 15 secs)

M&TE _____ Cal Due Date _____

B. Local Close Time _____

_____ seconds (≤ 15 secs)

M&TE _____ Cal Due Date _____

[23] **ENSURE** Annunciator Window 150-C, 480 RX MOV BD 2B1-B/2B2-B, is CLEAR. _____

[24] **ENSURE** Event Display Monitor reports 150-C 480 RX MOV BD 2B1-B/2B2-B XS IN AUX, NORMAL _____

[25] **PLACE** transfer switch 2-XS-74-24, RHR PUMP B-B MIN FLOW TRANS SW to AUX. _____

[26] **VERIFY** Annunciator Window 150-C, 480 RX MOV BD 2B1-B/2B2-B ALARMS **(Acc Crit 5.0[3])**. _____

[27] **VERIFY** Event Display Monitor reports 150-C 480 RX MOV BD 2B1-B/2B2-B XS IN AUX, ALARM _____

[28] **PLACE** transfer switch 2-XS-74-24, RHR PUMP B-B MIN FLOW TRANS SW to NORMAL. _____

[29] **VERIFY** Annunciator Window 150-C, 480 RX MOV BD 2B1-B/2B2-B, is CLEAR. _____

Data Package: Page ____ of ____ **Date _____**

6.8 Valve 2-FCV-74-24 Logic Test (continued)

[30] **VERIFY** Event Display Monitor reports 150-C 480 RX MOV BD 2B1-B/2B2-B XS IN AUX, NORMAL _____

[31] **PLACE** transfer switch 2-XS-74-24, RHR PUMP B-B MIN FLOW TRANS SW to AUX. _____

[32] **PLACE** hand switch 2-HS-74-24A, RHR PMP B MINI FLOW to OPEN **AND RELEASE**. _____

[33] **VERIFY** valve 2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE does NOT open. _____

[34] **PLACE** hand switch 2-HS-74-24C, RHR PMP B MINI FLOW to OPEN and then to NORMAL, while valve is traveling **PLACE** 2-HS-74-24C, RHR PMP B MINI FLOW to CLOSE and then to NORMAL. _____

[35] **VERIFY** the following indications:

A. 2-HS-74-24C red light ON _____

B. 2-HS-74-24C green light OFF _____

C. 2-HS-74-24A red light OFF _____

D. 2-HS-74-24A green light OFF _____

E. Valve is OPEN. using local position indicator _____

[36] **PLACE** hand switch 2-HS-74-24A, RHR PMP B MINI FLOW to CLOSE **AND RELEASE**. _____

[37] **VERIFY** valve 2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE does NOT close. _____

[38] **PLACE** hand switch 2-HS-74-24C, RHR PMP B MINI FLOW to CLOSE and then to NORMAL, while valve is traveling **PLACE** 2-HS-74-24C, RHR PMP B MINI FLOW to OPEN and then to NORMAL. _____

[39] **VERIFY** the following indications:

A. 2-HS-74-24C red light OFF _____

B. 2-HS-74-24C green light On _____

Data Package: Page ____ of ____ **Date _____**

6.8 Valve 2-FCV-74-24 Logic Test (continued)

C. 2-HS-74-24A red light OFF _____

D. 2-HS-74-24A green light OFF _____

E. Valve is CLOSED using local position indicator _____

[40] **OPEN** 2-BKR-74-24 in 480V RX MOV BD 2B1-B COMPT 15B. _____

[41] **VERIFY** ICS point FD2344 displays "PWR OFF". _____

WARNING

Arc Flash PPE per TI-300 will be required for step 6.8[42]

[42] **MANUALLY TRIP** the thermal overload for 2-BKR-74-24 in 480V RX MOV BD 2B1-B COMPT 15B. _____

_____ CV

[43] **CLOSE** 2-BKR-74-24 in 480V RX MOV BD 2B1-B COMPT 15B. _____

[44] **PLACE** transfer switch 2-XS-74-24, RHR PUMP B-B MIN FLOW TRANS SW to NORMAL. _____

[45] **PLACE** control switch 2-HS-74-24A, RHR PMP B MINI FLOW to OPEN **AND RELEASE**. _____

[46] **VERIFY** valve 2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE does NOT open **(Acc Crit 5.0[1])**. _____

[47] **DEPRESS and HOLD** the armature of relay K6 in back of Panel 16D on 480V RX MOV BD 2B1-B to simulate Overload Bypass. _____

[48] **PLACE** control switch 2-HS-74-24A, RHR PMP B MINI FLOW to OPEN **AND RELEASE**. _____

[49] **VERIFY** valve 2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE OPENS **(Acc Crit 5.0[1])**. _____

[50] **RELEASE** K6 relay armature. _____

Data Package: Page ____ of ____ **Date _____**

6.8 Valve 2-FCV-74-24 Logic Test (continued)

[51] **OPEN** 2-BKR-74-24 in 480V RX MOV BD 2B1-B COMPT 15B. _____

WARNING

Arc Flash PPE per TI-300 will be required for step 6.8[52]

[52] **RESET** the thermal overload for 2-BKR-74-24 in 480V RX MOV BD 2B1-B COMPT 15B. _____

_____
CV

[53] **CLOSE** 2-BKR-74-24 in 480V RX MOV BD 2B1-B COMPT 15B. _____

[54] **CLOSE** valve 2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE using 2-HS-74-24A, RHR PMP B MINI FLOW. _____

[55] **ENSURE** that 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt 14 is OPEN and RACKED DOWN. _____

[56] **REINSTALL** the white wire from terminal block DD point 1 (cable number 2V1919B) on the 52 STA terminal strip inside 6.9KV SD BD 2B-B Comp 14 Breaker Compartment. _____

_____
CV

[57] **VERIFY** successful completion of Subsection 6.8 **(Acc Crit 5.0[32], 5.0[33], 5.0[34]).** _____

Data Package: Page ____ of ____ **Date _____**

6.9 Valve 2-FCV-74-33 Logic Test

NOTE

Arc Flash PPE per TI-300 will be required during section 6.9 of the test.

[1] **VERIFY** the following prerequisites have been completed for Subsection 6.9. (4.1[1]-4.1[8], 4.1[10], 4.1[12]-4.1[18], 4.1[21], 4.1[22], 4.2[1], 4.2[2], 4.3[7]) _____

[2] **ESTABLISH** communications between MCR Panel 2-M-6, 480V RX MOV Board 2A1-A, and at valve 2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE in RHR HTX Room A. _____

[3] **ENSURE** the following valves are CLOSED from 2-M-6:

A. 2-FCV-63-93, RHR TO COLD LEG 2 & 3 INJECTION ISOLATION _____

B. 2-FCV-63-172, RHR TO HOT LEG 1 & 3 INJECTION ISOLATION _____

C. 2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE _____

[4] **ENSURE** the following valves are CLOSED using local position indication:

A. 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL _____

B. 2-FCV-74-32, RHR HEAT EXCHANGER A/B BYPASS FLOW CONTROL _____

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

A. FD2194 _____

B. FD2195 _____

[6] **VERIFY** ICS point FD2194 displays "PWR ON". _____

Data Package: Page ____ of ____ **Date _____**

6.9 Valve 2-FCV-74-33 Logic Test (continued)

[7] **ENSURE** the following transfer switch on RX MOV Board 2A1-A is in NORMAL:

- 2-XS-74-33, RHR HT EXCH A BYPASS _____

[8] **PLACE** hand switch 2-HS-74-33C, RHR HX A OUTLET XTIE to OPEN and then to NORMAL. _____

[9] **VERIFY** valve 2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE does NOT open.

[10] **PLACE** hand switch 2-HS-74-33A, RHR HX A OUTLET XTIE to OPEN, and while valve 2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE is opening, **PLACE** hand switch 2-HS-74-33A, RHR HX A OUTLET XTIE to CLOSE **AND RELEASE**. _____

[11] **VERIFY** the following indications:

A. 2-HS-74-33A red light ON _____

B. 2-HS-74-33A green light OFF _____

C. 2-HS-74-33C red light ON _____

D. 2-HS-74-33C green light OFF _____

E. Valve is OPEN using local position indicator _____

[12] **VERIFY** ICS point FD2195 displays "NOT CLS". _____

[13] **PLACE** hand switch 2-HS-74-33C, RHR HX A OUTLET XTIE to CLOSE and then to NORMAL. _____

[14] **VERIFY** valve 2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE does NOT close. _____

[15] **PLACE** hand switch 2-HS-74-33A, RHR HX A OUTLET XTIE to CLOSE, and while valve 2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE is closing, **PLACE** hand switch 2-HS-74-33A, RHR HX A OUTLET XTIE to OPEN **AND RELEASE**. _____

Data Package: Page ____ of ____ **Date _____**

6.9 Valve 2-FCV-74-33 Logic Test (continued)

[16] **VERIFY** the following indications:

A. 2-HS-74-33A red light OFF _____

B. 2-HS-74-33A green light ON _____

C. 2-HS-74-33C red light OFF _____

D. 2-HS-74-33C green light ON _____

E. Valve is CLOSED using local position indicator _____

[17] **VERIFY** ICS point FD2195 displays "CLOSED". _____

NOTE

Stopwatch timing of 2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE, will be done at handswitch 2-HS-74-33A, RHR HX A OUTLET XTIE, and locally at 2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE. Perform steps 6.9[18]/6.9[19] and 6.9[20]/6.9[21] sequentially to obtain stroke time data.

[18] **SIMULTANEOUSLY PLACE** handswitch 2-HS-74-33A, RHR HX A OUTLET XTIE, to the OPEN position **AND**

START stopwatches. _____

[19] **STOP** stopwatches when 2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE, reaches the OPEN position **AND**

RECORD stroke times below:

A. Remote Open Time (**Acc Crit 5.0[31]**) _____

_____ seconds (≤ 15 secs)

M&TE _____ Cal Due Date _____

B. Local Open Time _____

_____ seconds (≤ 15 secs)

M&TE _____ Cal Due Date _____

Data Package: Page ____ of ____ **Date _____**

6.9 Valve 2-FCV-74-33 Logic Test (continued)

[20] **SIMULTANEOUSLY PLACE** handswitch 2-HS-74-33A, RHR HX A OUTLET XTIE, to the CLOSE position **AND**

START stopwatches. _____

[21] **STOP** stopwatches when 2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE, reaches the CLOSE position **AND**

RECORD stroke times below:

A. Remote Close Time (**Acc Crit 5.0[31]**) _____

_____ seconds (≤ 15 secs)

M&TE _____ Cal Due Date _____

B. Local Close Time _____

_____ seconds (≤ 15 secs)

M&TE _____ Cal Due Date _____

[22] **ENSURE** Annunciator Window 149-C, 480 RX MOV BD 2A1-A/2A2-A, is CLEAR. _____

[23] **ENSURE** Event Display Monitor reports 149-C 480 RX MOV BD 2A1-A/2A2-A XS IN AUX, NORMAL _____

[24] **PLACE** transfer switch 2-XS-74-33, RHR HT EXCH A BYPASS to AUX. _____

[25] **VERIFY** Annunciator Window 149-C, 480 RX MOV BD 2A1-A/2A2-A ALARMS **(Acc Crit 5.0[2])**. _____

[26] **VERIFY** Event Display Monitor reports 149-C 480 RX MOV BD 2A1-A/2A2-A XS IN AUX, ALARM _____

[27] **PLACE** transfer switch 2-XS-74-33, RHR HT EXCH A BYPASS to NORMAL. _____

[28] **VERIFY** Annunciator Window 149-C, 480 RX MOV BD 2A1-A/2A2-A, is CLEAR. _____

Data Package: Page ____ of ____ **Date _____**

6.9 Valve 2-FCV-74-33 Logic Test (continued)

[29] **VERIFY** Event Display Monitor reports 149-C 480 RX MOV BD 2A1-A/2A2-A XS IN AUX, NORMAL _____

[30] **PLACE** transfer switch 2-XS-74-33, RHR HT EXCH A BYPASS to AUX. _____

[31] **PLACE** hand switch 2-HS-74-33A, RHR HX A OUTLET XTIE to OPEN **AND RELEASE**. _____

[32] **VERIFY** valve 2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE does NOT open. _____

[33] **PLACE** hand switch 2-HS-74-33C, RHR HX A OUTLET XTIE to OPEN and then to NORMAL, while valve is traveling **PLACE** 2-HS-74-33C, RHR HX A OUTLET XTIE to CLOSE and then to NORMAL. _____

[34] **VERIFY** the following indications:

A. 2-HS-74-33C red light ON _____

B. 2-HS-74-33C green light OFF _____

C. 2-HS-74-33A red light OFF _____

D. 2-HS-74-33A green light OFF _____

E. Valve is OPEN using local position indicator _____

[35] **PLACE** hand switch 2-HS-74-33A, RHR HX A OUTLET XTIE to CLOSE **AND RELEASE**. _____

[36] **VERIFY** valve 2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE does NOT close. _____

[37] **PLACE** hand switch 2-HS-74-33C, RHR HX A OUTLET XTIE to CLOSE and then to NORMAL, while valve is traveling **PLACE** 2-HS-74-33C, RHR HX A OUTLET XTIE to OPEN and then to NORMAL. _____

Data Package: Page ____ of ____ **Date _____**

6.9 Valve 2-FCV-74-33 Logic Test (continued)

[38] **VERIFY** the following indications:

A. 2-HS-74-33C red light OFF _____

B. 2-HS-74-33C green light ON _____

C. 2-HS-74-33A red light OFF _____

D. 2-HS-74-33A green light OFF _____

E. Valve is CLOSED using local position indicator _____

[39] **OPEN** 2-BKR-74-33 in 480V RX MOV BD 2A1-A COMPT 14E. _____

[40] **VERIFY** ICS point FD2194 displays "PWR OFF". _____

WARNING

Arc Flash PPE per TI-300 will be required for step 6.9[41]

[41] **MANUALLY TRIP** the thermal overload for 2-BKR-74-33 in 480V RX MOV BD 2A1-A COMPT 14E. _____

_____ CV

[42] **CLOSE** 2-BKR-74-33 in 480V RX MOV BD 2A1-A COMPT 14E. _____

[43] **PLACE** transfer switch 2-XS-74-33, RHR HT EXCH A BYPASS to NORMAL. _____

[44] **PLACE** control switch 2-HS-74-33A, RHR HX A OUTLET XTIE to OPEN **AND RELEASE**. _____

[45] **VERIFY** valve 2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE does NOT open **(Acc Crit 5.0[1])**. _____

[46] **DEPRESS and HOLD** the armature of relay K6 in back of Panel 4F on 480V RX MOV BD 2A1-A to simulate Overload Bypass. _____

[47] **PLACE** control switch 2-HS-74-33A, RHR HX A OUTLET XTIE to OPEN **AND RELEASE**. _____

Data Package: Page ____ of ____ **Date _____**

6.9 Valve 2-FCV-74-33 Logic Test (continued)

[48] **VERIFY** valve 2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE OPENS **(Acc Crit 5.0[1])**. _____

[49] **RELEASE** K6 relay armature. _____

[50] **OPEN** 2-BKR-74-33 in 480V RX MOV BD 2A1-A COMPT 14E. _____

WARNING

Arc Flash PPE per TI-300 will be required for step 6.9[51]

[51] **RESET** the thermal overload for 2-BKR-74-33 in 480V RX MOV BD 2A1-A COMPT 14E. _____

_____
CV

[52] **CLOSE** 2-BKR-74-33 in 480V RX MOV BD 2A1-A COMPT 14E. _____

[53] **CLOSE** valve 2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE using 2-HS-74-33A, RHR HX A OUTLET XTIE. _____

[54] **VERIFY** successful completion of Subsection 6.9 **(Acc Crit 5.0[32], 5.0[33], 5.0[34])**. _____

Data Package: Page ____ of ____ **Date _____**

6.10 Valve 2-FCV-74-35 Logic Test

NOTE

Arc Flash PPE per TI-300 will be required during section 6.10 of the test.

[1] **VERIFY** the following prerequisites have been completed for Subsection 6.10. (4.1[1]-4.1[8], 4.1[10], 4.1[12]-4.1[18], 4.1[21], 4.1[22], 4.2[1], 4.2[2], 4.3[7]) _____

[2] **ESTABLISH** communications between MCR Panel 2-M-6, 480V Reactor MOV Board 2B1-B, and at valve 2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE in RHR HTX Room B. _____

[3] **ENSURE** the following valves are CLOSED from 2-M-6:

A. 2-FCV-63-94, RHR TO COLD LEG 1 & 4 INJECTION ISOLATION _____

B. 2-FCV-63-172, RHR TO HOT LEG 1 & 3 INJECTION ISOLATION _____

C. 2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE _____

D. 2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE _____

[4] **ENSURE** the following valves are CLOSED using local position indication:

A. 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL _____

B. 2-FCV-74-32, RHR HEAT EXCHANGER A/B BYPASS FLOW CONTROL _____

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

A. FD2346 _____

B. FD2347 _____

Data Package: Page ____ of ____ **Date _____**

6.10 Valve 2-FCV-74-35 Logic Test (continued)

[6] **VERIFY** ICS point FD2346 displays "PWR ON". _____

[7] **ENSURE** the following transfer switch on RX MOV Board 2B1-B is in NORMAL:

A. 2-XS-74-35, RHR HT EXCH B BYPASS _____

[8] **PLACE** hand switch 2-HS-74-35C, RHR HX B OUTLET XTIE to OPEN and then to NORMAL. _____

[9] **VERIFY** valve 2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE does NOT open.

[10] **PLACE** hand switch 2-HS-74-35A, RHR HX B OUTLET XTIE to OPEN, and while valve 2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE is opening, **PLACE** hand switch 2-HS-74-35A, RHR HX B OUTLET XTIE to CLOSE **AND RELEASE**. _____

[11] **VERIFY** the following indications:

A. 2-HS-74-35A red light ON _____

B. 2-HS-74-35A green light OFF _____

C. 2-HS-74-35C red light ON _____

D. 2-HS-74-35C green light OFF _____

E. Valve is OPEN using local position indicator _____

[12] **VERIFY** ICS point FD2347 displays "OPEN". _____

[13] **PLACE** hand switch 2-HS-74-35C, RHR HX B OUTLET XTIE to CLOSE and then to NORMAL. _____

[14] **VERIFY** valve 2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE does NOT close. _____

[15] **PLACE** hand switch 2-HS-74-35A, RHR HX B OUTLET XTIE to CLOSE, and while valve 2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE is closing, **PLACE** hand switch 2-HS-74-35A, RHR HX B OUTLET XTIE to OPEN **AND RELEASE**. _____

Data Package: Page ____ of ____ **Date _____**

6.10 Valve 2-FCV-74-35 Logic Test (continued)

[16] **VERIFY** the following indications:

A. 2-HS-74-35A red light OFF _____

B. 2-HS-74-35A green light ON _____

C. 2-HS-74-35C red light OFF _____

D. 2-HS-74-35C green light ON _____

E. Valve is CLOSED using local position indicator _____

[17] **VERIFY** ICS point FD2347 displays "NOT OPEN". _____

NOTE

Stopwatch timing of 2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE, will be done at handswitch 2-HS-74-35A, RHR HX B OUTLET XTIE, and locally at 2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE. Perform steps 6.10[18]/6.10[19] and 6.10[20]/6.10[21] sequentially to obtain stroke time data.

[18] **SIMULTANEOUSLY PLACE** handswitch 2-HS-74-35A, RHR HX B OUTLET XTIE, to the OPEN position **AND**

START stopwatches. _____

[19] **STOP** stopwatches when 2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE, reaches the OPEN position **AND**

RECORD stroke times below:

A. Remote Open Time (**Acc Crit 5.0[31]**) _____

_____ seconds (≤ 15 secs)

M&TE _____ Cal Due Date _____

B. Local Open Time _____

_____ seconds (≤ 15 secs)

M&TE _____ Cal Due Date _____

Data Package: Page ____ of ____ **Date _____**

6.10 Valve 2-FCV-74-35 Logic Test (continued)

[20] **SIMULTANEOUSLY PLACE** handswitch 2-HS-74-35A, RHR HX B OUTLET XTIE, to the CLOSE position **AND**

START stopwatches. _____

[21] **STOP** stopwatches when 2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE, reaches the CLOSE position **AND**

RECORD stroke times below:

A. Remote Close Time (**Acc Crit 5.0[31]**) _____

_____ seconds (≤ 15 secs)

M&TE _____ Cal Due Date _____

B. Local Close Time _____

_____ seconds (≤ 15 secs)

M&TE _____ Cal Due Date _____

[22] **ENSURE** Annunciator Window 150-C, 480 RX MOV BD 2B1-B/2B2-B, is CLEAR. _____

[23] **ENSURE** Event Display Monitor reports 150-C 480 RX MOV BD 2B1-B/2B2-B XS IN AUX, NORMAL _____

[24] **PLACE** transfer switch 2-XS-74-35, RHR HT EXCH B BYPASS to AUX. _____

[25] **VERIFY** Annunciator Window 150-C, 480 RX MOV BD 2B1-B/2B2-B ALARMS **(Acc Crit 5.0[3])**. _____

[26] **VERIFY** Event Display Monitor reports 150-C 480 RX MOV BD 2B1-B/2B2-B XS IN AUX, ALARM _____

[27] **PLACE** transfer switch 2-XS-74-35, RHR HT EXCH B BYPASS to NORMAL. _____

[28] **VERIFY** Annunciator Window 150-C, 480 RX MOV BD 2B1-B/2B2-B, is CLEAR. _____

Data Package: Page ____ of ____ **Date _____**

6.10 Valve 2-FCV-74-35 Logic Test (continued)

[29] **VERIFY** Event Display Monitor reports 150-C 480 RX MOV BD 2B1-B/2B2-B XS IN AUX, NORMAL _____

[30] **PLACE** transfer switch 2-XS-74-35, RHR HT EXCH B BYPASS to AUX. _____

[31] **PLACE** hand switch 2-HS-74-35A, RHR HX B OUTLET XTIE to OPEN **AND RELEASE**. _____

[32] **VERIFY** valve 2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE does NOT open. _____

[33] **PLACE** hand switch 2-HS-74-35C, RHR HX B OUTLET XTIE to OPEN and then to NORMAL, while valve is traveling **PLACE** 2-HS-74-35C, RHR HX B OUTLET XTIE to CLOSE and then to NORMAL. _____

[34] **VERIFY** the following indications:

A. 2-HS-74-35C red light ON _____

B. 2-HS-74-35C green light OFF _____

C. 2-HS-74-35A red light OFF _____

D. 2-HS-74-35A green light OFF _____

E. Valve is OPEN using local position indicator _____

[35] **PLACE** hand switch 2-HS-74-35A, RHR HX B OUTLET XTIE to CLOSE **AND RELEASE**. _____

[36] **VERIFY** valve 2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE does NOT close. _____

[37] **PLACE** hand switch 2-HS-74-35C, RHR HX B OUTLET XTIE to CLOSE and then to NORMAL, while valve is traveling **PLACE** 2-HS-74-35C, RHR HX B OUTLET XTIE to OPEN and then to NORMAL. _____

Data Package: Page ____ of ____ **Date _____**

6.10 Valve 2-FCV-74-35 Logic Test (continued)

[38] **VERIFY** the following indications:

A. 2-HS-74-35C red light OFF _____

B. 2-HS-74-35C green light ON _____

C. 2-HS-74-35A red light OFF _____

D. 2-HS-74-35A green light OFF _____

E. Valve is CLOSED using local position indicator _____

[39] **OPEN** 2-BKR-74-35 in 480V RX MOV BD 2B1-B COMPT 15D. _____

[40] **VERIFY** ICS point FD2346 displays "PWR OFF". _____

WARNING

Arc Flash PPE per TI-300 will be required for step 6.10[41]

[41] **MANUALLY TRIP** the thermal overload for 2-BKR-74-35 in 480V RX MOV BD 2B1-B COMPT 15D. _____

_____ CV

[42] **CLOSE** 2-BKR-74-35 in 480V RX MOV BD 2B1-B COMPT 15D. _____

[43] **PLACE** transfer switch 2-XS-74-35, RHR HT EXCH B BYPASS to NORMAL. _____

[44] **PLACE** control switch 2-HS-74-35A, RHR HX B OUTLET XTIE to OPEN **AND RELEASE**. _____

[45] **VERIFY** valve 2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE does NOT open **(Acc Crit 5.0[1])**. _____

[46] **DEPRESS and HOLD** the armature of relay K6 in back of Panel 16D on 480V RX MOV BD 2B1-B to simulate Overload Bypass. _____

[47] **PLACE** control switch 2-HS-74-35A, RHR HX B OUTLET XTIE to OPEN **AND RELEASE**. _____

Data Package: Page ____ of ____ **Date _____**

6.10 Valve 2-FCV-74-35 Logic Test (continued)

[48] **VERIFY** valve 2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE OPENS **(Acc Crit 5.0[1])**. _____

[49] **RELEASE** K6 relay armature. _____

[50] **OPEN** 2-BKR-74-35 in 480V RX MOV BD 2B1-B COMPT 15D. _____

WARNING

Arc Flash PPE per TI-300 will be required for step 6.10[51]

[51] **RESET** the thermal overload for 2-BKR-74-35 in 480V RX MOV BD 2B1-B COMPT 15D. _____

_____
CV

[52] **CLOSE** 2-BKR-74-35 in 480V RX MOV BD 2B1-B COMPT 15D. _____

[53] **CLOSE** valve 2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE using 2-HS-74-35A, RHR HX B OUTLET XTIE. _____

[54] **VERIFY** successful completion of Subsection 6.10 **(Acc Crit 5.0[32], 5.0[33], 5.0[34]).** _____

Data Package: Page ____ of ____ **Date _____**

6.11 Valve 2-FCV-74-16 Logic Test

NOTE

The main and auxiliary Hand Indicating Controller (HIC) for 2-FCV-74-16 indicates demand and NOT actual position. Any steps that need position verification should be done by using local position indication.

[1] **VERIFY** the following prerequisites have been completed for Subsection 6.11. (4.1[1]-4.1[8], 4.1[10], 4.1[12]-4.1[18], 4.1[21], 4.1[22], 4.2[1], 4.2[2], 4.3[7]) _____

[2] **ESTABLISH** communications between MCR Panel 2-M-6, Backup Control Room Panel L-11A, and at valve 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL AUX (A11W El 713). _____

[3] **ENSURE** the following valves are CLOSED from 2-M-6:

A. 2-FCV-63-8, RHR PMP 2A-A TO CHG PMP & SIP 2A-A SUCT ISOL _____

B. 2-FCV-63-93, RHR TO COLD LEG 2 & 3 INJECTION ISOLATION _____

C. 2-FCV-74-3, RHR PUMP 2A-A SUCTION _____

D. 2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE _____

[4] **ENSURE** 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL is CLOSED using local position indication. _____

Data Package: Page ____ of ____ **Date _____**

6.11 Valve 2-FCV-74-16 Logic Test (continued)

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

A. FD2024 _____

[6] **ENSURE** the following transfer switch on Panel 2-L-11A is in NORMAL:

- 2-XS-74-16, RHR HT EX A OUTLET FLOW CNTL VLV TRANS _____

[7] **ADJUST** 2-HIC-74-16C, RHR HX A FLOW CONTROL from 100 to 0% and back to 100%, AND **VERIFY** 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL does NOT move. _____

[8] **ADJUST** 2-HIC-74-16A, RHR HX A FLOW CONTROL from 100 to 0% and back to 100%, AND **VERIFY** 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL cycles from closed to open to closed. _____

[9] **ENSURE** Annunciator Window 148-B, ACR PNL 2-L-11A, is CLEAR. _____

[10] **ENSURE** Event Display Monitor 148-B reports 148-B ACR PNL 2-L-11A XS IN AUX, NORMAL _____

[11] **PLACE** transfer switch 2-XS-74-16, RHR HT EX A OUTLET FLOW CNTL VLV TRANS to AUX. _____

[12] **VERIFY** Annunciator Window 148-B, ACR PNL 2-L-11A, ALARMS **(Acc Crit 5.0[4])**. _____

[13] **VERIFY** Event Display Monitor 148-B reports 148-B ACR PNL 2-L-11A XS IN AUX, ALARM _____

[14] **PLACE** transfer switch 2-XS-74-16, RHR HT EX A OUTLET FLOW CNTL VLV TRANS to NORMAL. _____

[15] **VERIFY** Annunciator Window 148-B, ACR PNL 2-L-11A, is CLEAR. _____

[16] **VERIFY** Event Display Monitor 148-B reports 148-B ACR PNL 2-L-11A XS IN AUX, NORMAL _____

Data Package: Page ____ of ____ **Date _____**

6.11 Valve 2-FCV-74-16 Logic Test (continued)

[17] **PLACE** transfer switch 2-XS-74-16, RHR HT EX A OUTLET FLOW CNTL VLV TRANS to AUX. _____

[18] **ADJUST** 2-HIC-74-16A, RHR HX A FLOW CONTROL from 100 to 0% and back to 100%, AND **VERIFY** 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL does NOT move. _____

[19] **ADJUST** 2-HIC-74-16C, RHR HX A FLOW CONTROL from 100 to 0% and back to 100%, AND **VERIFY** 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL cycles from closed to open to closed. _____

[20] **ADJUST** 2-HIC-74-16C, RHR HX A FLOW CONTROL from 100 to 0%. _____

[21] **VERIFY** 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL OPENS. _____

[22] **VERIFY** ICS point FD2024 displays "NOT CLS". _____

[23] **VERIFY** 2-XI-74-16, RHR HX A OUTLET FLOW CNTL FCV-74-16 light is ON. _____

[24] **ADJUST** 2-HIC-74-16C, RHR HX A FLOW CONTROL from 0 to 100%. _____

[25] **VERIFY** 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL CLOSES. _____

[26] **VERIFY** ICS point FD2024 displays "CLOSED". _____

[27] **VERIFY** 2-XI-74-16, RHR HX A OUTLET FLOW CNTL FCV-74-16 light is OFF. _____

[28] **INSTALL** a jumper across TB-603-3 and TB-603-4 in Panel 2-R-48 on the field side of the plastic isolators. (SI signal) _____

_____
CV

[29] **VERIFY** both white lights on 2-HS-74-16, RHR HX A OUTLET FCV SI SIGNAL RESET ON. _____

Data Package: Page ____ of ____ **Date _____**

6.11 Valve 2-FCV-74-16 Logic Test (continued)

[30] **VERIFY** 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL does NOT open. _____

[31] **PLACE** transfer switch 2-XS-74-16, RHR HT EX A OUTLET FLOW CNTL VLV TRANS to NORMAL. _____

[32] **VERIFY** 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL opens **(Acc Crit 5.0[17]A)**. _____

[33] **PLACE** 2-HS-74-16, RHR HX A OUTLET FCV SI SIGNAL RESET to RESET. _____

[34] **VERIFY** 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL remains open **(Acc Crit 5.0[17]B)**. _____

[35] **REMOVE** jumper from TB-603-3 and TB-603-4 in Panel 2-R-48. _____

_____
CV

[36] **VERIFY** 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL remains open **(Acc Crit 5.0[17]C)**. _____

[37] **RESET** relay S1A using 2-HS-74-16, RHR HX A OUTLET FCV SI SIGNAL RESET (turn hand switch clockwise). _____

[38] **VERIFY** both white lights on 2-HS-74-16, RHR HX A OUTLET FCV SI SIGNAL RESET OFF. _____

[39] **VERIFY** 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL closes **(Acc Crit 5.0[17]D)**. _____

[40] **INSTALL** a jumper across TB 603-3 and TB 603-4 in Panel 2-R-48 on the field side of the plastic insulators. _____

_____
CV

[41] **VERIFY** both white lights at 2-HS-74-16, RHR HX A OUTLET FCV SI SIGNAL RESET ON. _____

[42] **VERIFY** 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL OPENS. _____

Data Package: Page ____ of ____ **Date _____**

6.11 Valve 2-FCV-74-16 Logic Test (continued)

[43] **REMOVE** jumper from TB 603-3 and TB 603-4 in Panel 2-R-48. _____

_____
CV

[44] **RESET** relay S1A using 2-HS-74-16, RHR HX A OUTLET FCV SI SIGNAL RESET (Turn Hand switch Counterclockwise). _____

[45] **VERIFY** both white lights at 2-HS-74-16, RHR HX A OUTLET FCV SI SIGNAL RESET OFF. _____

[46] **VERIFY** 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL CLOSES. _____

[47] **VERIFY** successful completion of Subsection 6.11 **(Acc Crit 5.0[32], 5.0[33], 5.0[34], 5.0[36]).** _____

Data Package: Page ____ of ____ **Date _____**

6.12 Valve 2-FCV-74-28 Logic Test

NOTE

The main and auxiliary Hand Indicating Controller (HIC) for 2-FCV-74-28 indicates demand and NOT actual position. Any steps that need position verification should be done by using local position indication.

[1] **VERIFY** the following prerequisites have been completed for Subsection 6.12. (4.1[1]-4.1[8], 4.1[10], 4.1[12]-4.1[18], 4.1[21], 4.1[22], 4.2[1], 4.2[2], 4.3[7]) _____

[2] **ESTABLISH** communications between MCR Panel 2-M-6, Backup Control Room Panel L-11B, and at valve 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL, (A11V 713). _____

[3] **ENSURE** the following valves are CLOSED from 2-M-6:

A. 2-FCV-63-11, RHR HX 2B-B OUTLET TO SIP 2B-B SUCT ISOL _____

B. 2-FCV-63-94, RHR TO COLD LEG 1 & 4 INJECTION ISOLATION _____

C. 2-FCV-74-21, RHR PUMP 2B-B SUCTION _____

D. 2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE _____

[4] **ENSURE** 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL CLOSED using local position indication. _____

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

A. FD2372 _____

Data Package: Page ____ of ____ **Date _____**

6.12 Valve 2-FCV-74-28 Logic Test (continued)

[6] **ENSURE** the following transfer switch on Panel 2-L-11B is in NORMAL:

- 2-XS-74-28, RHR HT EX B OUTLET FLOW CNTL VLV TRANS _____

[7] **ADJUST** 2-HIC-74-28C, RHR HX B FLOW CONTROL from 100 to 0% and back to 100%, AND **VERIFY** 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL does NOT move. _____

[8] **ADJUST** 2-HIC-74-28A, RHR HX B FLOW CONTROL from 100 to 0% and back to 100%, AND **VERIFY** 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL cycles from closed to open to closed. _____

[9] **ENSURE** Annunciator Window 148-C, ACR PNL 2-L-11B, is CLEAR. _____

[10] **ENSURE** Event Display Monitor 148-C reports 148-C ACR PNL 2-L-11B XS IN AUX, NORMAL _____

[11] **PLACE** transfer switch 2-XS-74-28, RHR HT EX B OUTLET FLOW CNTL VLV TRANS to AUX. _____

[12] **VERIFY** Annunciator Window 148-C, ACR PNL 2-L-11B, ALARMS **(Acc Crit 5.0[5])**. _____

[13] **VERIFY** Event Display Monitor 148-C reports 148-C ACR PNL 2-L-11B XS IN AUX, ALARM _____

[14] **PLACE** transfer switch 2-XS-74-28, RHR HT EX B OUTLET FLOW CNTL VLV TRANS to NORMAL. _____

[15] **VERIFY** Annunciator Window 148-C, ACR PNL 2-L-11B, is CLEAR. _____

[16] **VERIFY** Event Display Monitor 148-C reports 148-C ACR PNL 2-L-11B XS IN AUX, NORMAL _____

[17] **PLACE** transfer switch 2-XS-74-28, RHR HT EX B OUTLET FLOW CNTL VLV TRANS to AUX. _____

Data Package: Page ____ of ____ **Date _____**

6.12 Valve 2-FCV-74-28 Logic Test (continued)

[18] **ADJUST** 2-HIC-74-28A, RHR HX B FLOW CONTROL from 100 to 0% and back to 100%, AND **VERIFY** 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL does NOT move. _____

[19] **ADJUST** 2-HIC-74-28C, RHR HX B FLOW CONTROL from 100 to 0% and back to 100%, AND **VERIFY** 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL cycles from closed to open to closed. _____

[20] **ADJUST** 2-HIC-74-28C, RHR HX B FLOW CONTROL from 100 to 0%. _____

[21] **VERIFY** 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL OPENS. _____

[22] **VERIFY** ICS point FD2372 displays "NOT CLS". _____

[23] **VERIFY** 2-XI-74-28, RHR HX B OUTLET FLOW CNTL FCV-74-28 light is ON. _____

[24] **ADJUST** 2-HIC-74-28C, RHR HX B FLOW CONTROL from 0 to 100%. _____

[25] **VERIFY** 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL CLOSES. _____

[26] **VERIFY** ICS point FD2372 displays "CLOSED". _____

[27] **VERIFY** 2-XI-74-28, RHR HX B OUTLET FLOW CNTL FCV-74-28 light is OFF. _____

[28] **INSTALL** a jumper across TB-603-3 and TB-603-4 in Panel 2-R-51 on the field side of the plastic isolators. (SI signal) _____

_____
CV

[29] **VERIFY** both white lights on 2-HS-74-28, RHR HX B OUTLET FCV SI SIGNAL RESET ON. _____

[30] **VERIFY** 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL does NOT open. _____

Data Package: Page ____ of ____ **Date _____**

6.12 Valve 2-FCV-74-28 Logic Test (continued)

[31] **PLACE** transfer switch 2-XS-74-28, RHR HT EX B OUTLET FLOW CNTL VLV TRANS to NORMAL. _____

[32] **VERIFY** 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL opens **(Acc Crit 5.0[18]A)**. _____

[33] **PLACE** 2-HS-74-28, RHR HX B OUTLET FCV SI SIGNAL RESET to RESET. _____

[34] **VERIFY** 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL remains open **(Acc Crit 5.0[18]B)**. _____

[35] **REMOVE** jumper from TB-603-3 and TB-603-4 in Panel 2-R-51. _____

_____
CV

[36] **VERIFY** 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL remains open **(Acc Crit 5.0[18]C)**. _____

[37] **RESET** relay S1B using 2-HS-74-28, RHR HX B OUTLET FCV SI SIGNAL RESET (turn hand switch clockwise). _____

[38] **VERIFY** both white lights on 2-HS-74-28, RHR HX B OUTLET FCV SI SIGNAL RESET OFF. _____

[39] **VERIFY** 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL closes **(Acc Crit 5.0[18]D)**. _____

[40] **INSTALL** a jumper across TB 603-3 and TB 603-4 in Panel 2-R-51 on the field side of the plastic insulators. _____

_____
CV

[41] **VERIFY** both white lights at 2-HS-74-28, RHR HX B OUTLET FCV SI SIGNAL RESET ON. _____

[42] **VERIFY** 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL OPENS. _____

Data Package: Page ____ of ____ **Date _____**

6.12 Valve 2-FCV-74-28 Logic Test (continued)

[43] **REMOVE** jumper from TB 603-3 and TB 603-4 in Panel 2-R-51. _____

_____
CV

[44] **RESET** relay S1B using 2-HS-74-28, RHR HX B OUTLET FCV SI SIGNAL RESET (Turn Hand switch Counterclockwise). _____

[45] **VERIFY** both white lights at 2-HS-74-28, RHR HX B OUTLET FCV SI SIGNAL RESET OFF. _____

[46] **VERIFY** 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL CLOSES. _____

[47] **VERIFY** successful completion of Subsection 6.12 **(Acc Crit 5.0[32], 5.0[33], 5.0[34], 5.0[36]).** _____

Data Package: Page ____ of ____ **Date _____**

6.13 Valve 2-FCV-74-32 Logic Test

NOTE

The main and auxiliary Hand Indicating Controller (HIC) for 2-FCV-74-32 indicates demand and NOT actual position. Any steps that need position verification should be done by using local position indication.

[1] **VERIFY** the following prerequisites have been completed for Subsection 6.13. (4.1[1]-4.1[8], 4.1[10], 4.1[12]-4.1[18], 4.1[21], 4.1[22], 4.2[1], 4.2[2], 4.3[7]) _____

[2] **ESTABLISH** communications between MCR Panel 2-M-6, Backup Control Room Panel L-11A, and at valve 2-FCV-74-32, RHR HEAT EXCHANGER A/B BYPASS FLOW CONTROL, (A11W 729). _____

[3] **ENSURE** the following valves are CLOSED from 2-M-6:

A. 2-FCV-63-172, RHR TO HOT LEG 1 & 3 INJECTION ISOLATION _____

B. 2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE _____

C. 2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE _____

[4] **ENSURE** 2-FCV-74-32, RHR HEAT EXCHANGER A/B BYPASS FLOW CONTROL CLOSED using local position indication. _____

[5] **ENSURE** the following transfer switch on Panel 2-L-11A is in NORMAL:

- 2-XS-74-32, RHR HT EXCH A&B BPS FLOW CNTL VLV TRANS _____

[6] **ADJUST** 2-HIC-74-32C, RHR HXS BYPASS FLOW CONTROL from 100 to 0% and back to 100%, AND **VERIFY** 2-FCV-74-32, RHR HEAT EXCHANGER A/B BYPASS FLOW CONTROL does NOT move. _____

Data Package: Page ____ of ____ **Date _____**

6.13 Valve 2-FCV-74-32 Logic Test (continued)

[7] **ADJUST** 2-HIC-74-32A, RHR HXS BYPASS FLOW CONTROL from 100 to 0% and back to 100%, AND **VERIFY** 2-FCV-74-32, RHR HEAT EXCHANGER A/B BYPASS FLOW CONTROL cycles from closed to open to closed. _____

[8] **ENSURE** Annunciator Window 148-B, ACR PNL 2-L-11A, is CLEAR. _____

[9] **ENSURE** Event Display Monitor 148-B reports 148-B ACR PNL 2-L-11A XS IN AUX, NORMAL _____

[10] **PLACE** transfer switch 2-XS-74-32, RHR HT EXCH A&B BPS FLOW CNTL VLV TRANS to AUX. _____

[11] **VERIFY** Annunciator Window 148-B, ACR PNL 2-L-11A, ALARMS **(Acc Crit 5.0[4])**. _____

[12] **VERIFY** Event Display Monitor 148-B reports 148-B ACR PNL 2-L-11A XS IN AUX, ALARM _____

[13] **PLACE** transfer switch 2-XS-74-32, RHR HT EXCH A&B BPS FLOW CNTL VLV TRANS to NORMAL. _____

[14] **VERIFY** Annunciator Window 148-B, ACR PNL 2-L-11A, is CLEAR. _____

[15] **VERIFY** Event Display Monitor 148-B reports 148-B ACR PNL 2-L-11A XS IN AUX, NORMAL _____

[16] **PLACE** transfer switch 2-XS-74-32, RHR HT EXCH A&B BPS FLOW CNTL VLV TRANS to AUX. _____

[17] **ADJUST** 2-HIC-74-32A, RHR HXS BYPASS FLOW CONTROL from 100 to 0% and back to 100%, AND **VERIFY** 2-FCV-74-32, RHR HEAT EXCHANGER A/B BYPASS FLOW CONTROL does NOT move. _____

[18] **ADJUST** 2-HIC-74-32C, RHR HXS BYPASS FLOW CONTROL from 100 to 0% and back to 100%, AND **VERIFY** 2-FCV-74-32, RHR HEAT EXCHANGER A/B BYPASS FLOW CONTROL cycles from closed to open to closed. _____

[19] **PLACE** transfer switch 2-XS-74-32, RHR HT EXCH A&B BPS FLOW CNTL VLV TRANS to NORMAL. _____

Data Package: Page ____ of ____ **Date _____**

6.13 Valve 2-FCV-74-32 Logic Test (continued)

[20] **VERIFY** successful completion of Subsection 6.13 **(Acc Crit 5.0[32], 5.0[33], 5.0[36]).** _____

Data Package: Page ____ of ____ **Date _____**

6.14 Residual Heat Removal Pump 2A-A Logic Test

[1] **VERIFY** the following prerequisites have been completed for Subsection 6.14. (4.1[1]-4.1[8], 4.1[10], 4.1[12]-4.1[19], 4.1[21], 4.1[22], 4.2[1], 4.2[2], 4.3[7], 4.3[9]) _____

[2] **ENSURE** clearance on 2-PMP-74-10, RHR Pump 2A-A is lifted for the performance of this section. _____

[3] **ENSURE** that Appendix G, Pump Logic Electrical Checklist has been completed. _____

[4] **ENSURE** the following relays in 6900V Shutdown Board 2A-A Logic Relay Panel are removed:

A. RHR BOX Relay _____

_____
CV

B. RHR BOY Relay _____

_____
CV

C. RHR UVX Relay _____

_____
CV

D. RHR UVY Relay _____

_____
CV

E. SIATX Relay _____

_____
CV

Data Package: Page ____ of ____ **Date _____**

6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

[5] **INSTALL** jumpers with test switches in the open position between the following relay socket terminals in the rear of 6900V Shutdown Board 2A-A Logic Relay Panel:

A. 13C to 13D for relay RHR BOX _____

_____ CV

B. 15C to 15D for relay RHR BOY _____

_____ CV

C. 13C to 13F for relay RHR UVX _____

_____ CV

D. 15C to 15F for relay RHR UVY _____

_____ CV

E. 13A to 13D for relay RHR UVX _____

_____ CV

F. 15A to 15D for relay RHR UVY _____

_____ CV

G. 18B to 18C for relay SIATX _____

_____ CV

Data Package: Page ____ of ____ **Date _____**

6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

[6] **CLOSE** the test switch for the following jumpers:

A. 13C to 13D for relay RHR BOX _____

B. 15C to 15D for relay RHR BOY _____

C. 13C to 13F for relay RHR UVX _____

D. 15C to 15F for relay RHR UVY _____

[7] **IF** terminals 9 and 10 of TB619 on 2-R-48 are NOT terminated on plastic, **THEN**

PERFORM steps 6.14[7]A through 6.14[7]I. _____

A. **ENSURE** the following fuses are removed.

A. 2-FU-211-A014/1N _____

_____ CV

B. 2-FU-211-A014/1A _____

_____ CV

C. 2-FU-211-A014/2N _____

_____ CV

D. 2-FU-211-A014/2A _____

_____ CV

E. 2-FU-211-A014/3N _____

_____ CV

Data Package: Page ____ of ____ **Date _____**

6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

F. 2-FU-211-A014/3A _____

_____
CV

B. **LOCATE** and **IDENTIFY** wire SA14C4 on TB619 terminal 9 on 2-R-48. _____

C. **DISCONNECT** wire SA14C4 on TB619 terminal 9 on 2-R-48. _____

D. **RETERMINATE** wire SA14C4 lifted from TB619 terminal 9 on 2-R-48 on plastic. _____

_____
CV

E. **LOCATE** and **IDENTIFY** wire SA14C5 on TB619 terminal 10 on 2-R-48. _____

F. **DISCONNECT** wire SA14C5 on TB619 terminal 10 on 2-R-48. _____

G. **RETERMINATE** wire SA14C5 lifted from TB619 terminal 10 on 2-R-48 on plastic. _____

_____
CV

H. **RECORD** on Appendix I _____

Data Package: Page ____ of ____ **Date _____**

6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

I. **ENSURE** the following fuses are installed.

A. 2-FU-211-A014/1N _____

_____ CV

B. 2-FU-211-A014/1A _____

_____ CV

C. 2-FU-211-A014/2N _____

_____ CV

D. 2-FU-211-A014/2A _____

_____ CV

E. 2-FU-211-A014/3N _____

_____ CV

F. 2-FU-211-A014/3A _____

_____ CV

[8] **INSTALL** a jumper with test switch open across terminals 11 and 12 of the K608 relay in cabinet 2-R-48 (SI signal). _____

_____ CV

Data Package: Page ____ of ____ **Date _____**

6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

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

A. HD2032 _____

B. XD2025 _____

C. XD2105 _____

D. Y0600D _____

[10] **ENSURE** the following transfer switch on 6.9KV SD BD 2A-A is in NORMAL:

A. 2-XS-74-10, RHR PUMP A-A TRANS SWITCH _____

[11] **ENSURE** hand switch 2-HS-74-10A, RHR PMP A (ECCS) is in STOP/PULL TO LOCK. _____

[12] **ENSURE** 2-BKR-74-10 in 6.9KV SD BD 2A-A Compt. 14 is installed in the test position and OPEN with the wheels chocked. _____

[13] **INSTALL** umbilical cord on 2-BKR-74-10 in 6.9KV SD BD 2A-A Compt. 14. _____

[14] **INSTALL** test link on 2-BKR-74-10 in 6.9KV SD BD 2A-A Compt. 14. _____

[15] **ESTABLISH** communications between MCR Panel 2-M-6, 6.9KV SD BD 2A-A, and 6900V Shutdown Board 2A-A Logic Relay Panel. _____

[16] **VERIFY** ICS point XD2025 displays "PWR OFF". _____

[17] **DEPRESS** the TEST CLOSE pushbutton on 2-BKR-74-10 in 6.9KV SD BD 2A-A Compt. 14. _____

[18] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A-A Compt. 14 CLOSES by observing the red closed flag and local red light on Compt. 14. _____

[19] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A-A Compt. 14 closing spring is discharged by observing the white discharged flag. _____

Data Package: Page ____ of ____ **Date _____**

6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

[20] **DEPRESS** the TEST TRIP pushbutton on 2-BKR-74-10 in 6.9KV SD BD 2A-A Compt. 14. _____

[21] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A-A Compt. 14 OPENS by observing the green open flag and local green light on Compt. 14. _____

[22] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A-A Compt. 14 closing spring is charged by observing the yellow charged flag. _____

[23] **PLACE** hand switch 2-HS-74-10A, RHR PMP A (ECCS) in the START position **AND RELEASE**. _____

[24] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A-A Compt. 14 did NOT CLOSE by observing the green open flag and local green light on Compt. 14. _____

[25] **PLACE** hand switch 2-HS-74-10A, RHR PMP A (ECCS) in the STOP/PULLTO LOCK position. _____

[26] **REMOVE** umbilical cord on 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14. _____

[27] **REMOVE** test link on 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14. _____

[28] **REMOVE** wheel chocks on 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14. _____

[29] **REMOVE** 2-BKR-74-10 from 6.9KV SD BD 2A A Compt. 14. _____

[30] **RAISE** 6.9KV SD BD 2A A Compt. 14 elevator until elevator reaches full up position. _____

[31] **INSTALL** 2-BKR-74-10 into 6.9KV SD BD 2A-A Compt. 14 to the test position. _____

[32] **INSTALL** umbilical cord on 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14. _____

[33] **INSTALL** test link on 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14. _____

[34] **INSTALL** wheel chocks on 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14. _____

Data Package: Page ____ of ____ **Date _____**

6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

[35] **VERIFY** ICS point XD2025 displays "PWR ON" **(Acc Crit 5.0[14])**. _____

[36] **ESTABLISH** communications between MCR Panel 2-M-6, 6900V Shutdown Board 2A-A, and SSPS cabinet 2-R-48. _____

[37] **VERIFY** ICS point HD2032 displays "PULLT-L". _____

[38] **VERIFY** the following indications:

A. 2-HS-74-10A green light ON _____

B. 2-HS-74-10A red light OFF _____

C. 2-HS-74-10A white light OFF _____

D. Compt. 14 green light ON _____

E. Compt: 14 red light OFF _____

F. Logic Panel red light OFF _____

G. Compt. 14 breaker OPEN (green open flag) _____

NOTE

Hand Switch 2-HS-74-10A, RHR PMP A (ECCS) spring returns to A AUTO.

[39] **PLACE** hand switch 2-HS-74-10A, RHR PMP A (ECCS) to A AUTO. _____

[40] **VERIFY** ICS point HD2032 displays "NOT P-L".**(Acc Crit 5.0[14])**. _____

[41] **PLACE** hand switch 2-HS-74-10A, RHR PMP A (ECCS) to STOP **AND RELEASE**. _____

Data Package: Page ____ of ____ **Date _____**

6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

[42] **VERIFY** the following indications:

A. 2-HS-74-10A green light ON _____

B. 2-HS-74-10A red light OFF _____

C. 2-HS-74-10A white light OFF _____

D. Compt. 14 green light ON _____

E. Compt: 14 red light OFF _____

F. Logic Panel red light OFF _____

G. Compt. 14 breaker OPEN (green open flag) _____

[43] **VERIFY** ICS point XD2105 displays "NOT RUN". _____

[44] **PLACE** cool clean damp cloth on bulb of 2-TS-30-175 (A11V El 676) _____

[45] **ENSURE** hand switch 2-HS-30-175, RHR PUMP 2A-A ROOM COOLER to AUTO. _____

[46] **ENSURE** the following fuse is INSTALLED:

A. 2-FU-214-A019/1-A _____

_____
CV

[47] **ENSURE** 2-BKR-30-175-A, 480V CONT & AUX BLDG VENT BD 2A1-A breaker 9A (RHR pump 2A-A RM Cooler Fan) is CLOSED. _____

[48] **DEPRESS** the TEST CLOSE pushbutton on 2-BKR-74-10 in 6.9KV SD BD 2A-A Compt. 14. _____

[49] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A-A Compt. 14 did NOT close by observing the green open flag and local green light on Compt. 14.

[50] **VERIFY** 2-PMCL-30-175 did NOT start. _____

[51] **PLACE** hand switch 2-HS-74-10C, RHR PMP A (ECCS) to START **AND RELEASE**. _____

Data Package: Page ____ of ____ **Date _____**

6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

[52] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A-A Compt. 14 does NOT close by observing the green open flag and local green light on Compt. 14. _____

[53] **VERIFY** 2-PMCL-30-175 did NOT start. _____

[54] **PLACE** hand switch 2-HS-74-10A, RHR PMP A (ECCS) to START **AND RELEASE**. _____

[55] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 closes by observing the red closed flag and local red light on Compt. 14. _____

[56] **VERIFY** ICS point Y0600D displays "CLOSED". _____

[57] **VERIFY** 2-PMCL-30-175 started **(Acc Crit 5.0[30]A)**. _____

[58] **VERIFY** ICS point XD2105 displays "RUNNING" **(Acc Crit 5.0[14])**. _____

[59] **VERIFY** the following indications:

A. 2-HS-74-10A green light OFF _____

B. 2-HS-74-10A red light ON _____

C. 2-HS-74-10A white light OFF _____

D. Compt. 14 green light OFF _____

E. Compt. 14 red light ON _____

F. Logic Panel red light ON. **(Acc Crit 5.0[10])** _____

[60] **DEPRESS** the TEST TRIP pushbutton on 6.9KV SD BD 2A-A Compt 14 breaker. _____

[61] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A-A Compt. 14 did NOT open by observing the red closed flag and local red light on Compt. 14. _____

[62] **VERIFY** 2-PMCL-30-175 is running. _____

[63] **PLACE** hand switch 2-HS-74-10C, RHR PMP A (ECCS) to STOP **AND RELEASE**. _____

Data Package: Page ____ of ____ **Date _____**

6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

[64] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 did NOT open by observing the red closed flag and local red light on Compt. 14. _____

[65] **VERIFY** 2-PMCL-30-175 is running. _____

[66] **PLACE** hand switch 2-HS-74-10A, RHR PMP A (ECCS) to STOP **AND RELEASE**. _____

[67] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 is OPEN by observing the green open flag and local green light on Compt. 14. _____

[68] **VERIFY** ICS point Y0600D displays "OPEN". _____

[69] **VERIFY** the following indications:

A. 2-HS-74-10A green light ON _____

B. 2-HS-74-10A red light OFF _____

C. 2-HS-74-10A white light OFF _____

D. Compt. 14 green light ON _____

E. Compt. 14 red light OFF _____

F. Logic Panel red light OFF _____

[70] **VERIFY** 2-PMCL-30-175 has stopped. _____

[71] **ENSURE** 2-BKR-30-175-A, 480V CONT & AUX BLDG VENT BD 2A1-A breaker 9A (RHR pump 2A-A RM Cooler Fan) is OPEN. _____

[72] **REMOVE** cloth on bulb of 2-TS-30-175 (A11V El 676) _____

[73] **ENSURE** Annunciator Window 149-A, 6.9 SD BD 2A-A, is CLEAR. _____

[74] **ENSURE** Event Display Monitor 149-A reports 149-A 6.9 SD BD 2A-A XS IN AUX, NORMAL _____

[75] **PLACE** transfer switch 2-XS-74-10, RHR PUMP A-A TRANS SWITCH to AUX. _____

Data Package: Page ____ of ____ **Date _____**

6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

[76] **VERIFY** Annunciator Window 149-A, 6.9 SD BD 2A-A, ALARMS **(Acc Crit 5.0[7])**. _____

[77] **VERIFY** Event Display Monitor 149-A reports 149-A 6.9 SD BD 2A-A XS IN AUX, ALARM _____

[78] **PLACE** transfer switch 2-XS-74-10, RHR PUMP A-A TRANS SWITCH to NORMAL. _____

[79] **VERIFY** Annunciator Window 149-A, 6.9 SD BD 2A-A, is CLEAR. _____

[80] **VERIFY** Event Display Monitor 149-A reports 149-A 6.9 SD BD 2A-A XS IN AUX, NORMAL _____

[81] **PLACE** transfer switch 2-XS-74-10, RHR PUMP A-A TRANS SWITCH to AUX. _____

[82] **PLACE** hand switch 2-HS-74-10A, RHR PMP A (ECCS) to START **AND RELEASE**. _____

[83] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 did NOT close by observing the green open flag and local green light on Compt. 14. _____

[84] **PLACE** hand switch 2-HS-74-10C, RHR PMP A (ECCS) to START **AND RELEASE**. _____

[85] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 is CLOSED by observing the red closed flag and local red light on Compt. 14. _____

Data Package: Page ____ of ____ **Date _____**

6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

[86] **VERIFY** the following indications:

A. 2-HS-74-10A green light OFF _____

B. 2-HS-74-10A red light OFF _____

C. 2-HS-74-10A white light OFF _____

D. Compt. 14 green light OFF _____

E. Compt. 14 red light ON _____

F. Logic Panel red light ON _____

[87] **PLACE** hand switch 2-HS-74-10A, RHR PMP A (ECCS) to STOP **AND RELEASE**. _____

[88] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 did NOT open by observing the red closed flag and local red light on Compt. 14. _____

[89] **PLACE** hand switch 2-HS-74-10C, RHR PMP A (ECCS) to STOP **AND RELEASE**. _____

[90] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A-A Compt. 14 is OPEN by observing the green open flag and local green light on Compt. 14. _____

[91] **VERIFY** the following indications:

A. 2-HS-74-10A green light OFF. _____

B. 2-HS-74-10A red light OFF. _____

C. 2-HS-74-10A white light OFF. _____

D. Compt. 14 green light ON. _____

E. Compt. 14 red light OFF. _____

F. Logic Panel red light OFF. _____

[92] **PLACE** transfer switch 2-XS-74-10, RHR PUMP A-A TRANS SWITCH to NORMAL. _____

Data Package: Page ____ of ____ **Date _____**

6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

[93] **CLOSE** the test switch on jumper connecting 18B to 18C for relay SIATX on Shutdown Board 2A-A Logic Relay Panel. _____

[94] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 is CLOSED by observing the red closed flag and local red light on Compt. 14. _____

[95] **OPEN** the test switch on jumper connecting 18B to 18C for relay SIATX, on SHUTDOWN BOARD 2A-A LOGIC RELAY PANEL. _____

[96] **PLACE** hand switch 2-HS-74-10A, RHR PMP A (ECCS) to STOP **AND RELEASE** to open 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. _____

[97] **CLOSE** the test switch on jumper connecting terminals 11 and 12 on the K608 relay in cabinet 2-R-48. _____

[98] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 is CLOSED by observing the red closed flag and local red light on Compt. 14 **(Acc Crit 5.0[13])**. _____

[99] **OPEN** the test switch on jumper connecting terminals 11 and 12 on the K608 relay in cabinet 2-R-48. _____

[100] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 remains CLOSED by observing the red closed flag and local red light on Compt. 14 **(Acc Crit 5.0[13])**. _____

[101] **CLOSE** the test switch connecting terminals 13A to 13D for relay RHR UVX. _____

[102] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 remains CLOSED by observing the red closed flag and local red light on Compt. 14. _____

[103] **OPEN** the test switch connecting terminals 13A to 13D for relay RHR UVX. _____

[104] **CLOSE** the test switch connecting terminals 15A to 15D for relay RHR UVY. _____

[105] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 remains CLOSED by observing the red closed flag and local red light on Compt. 14. _____

Data Package: Page ____ of ____ **Date _____**

6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

[106] **CLOSE** the test switch connecting terminals 13A to 13D for relay RHR UVX. _____

[107] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 is OPEN by observing the green open flag and local green light on Compt. 14. _____

[108] **OPEN** the test switch connecting terminals 13A to 13D for relay RHR UVX. _____

[109] **OPEN** the test switch connecting terminals 15A to 15D for relay RHR UVY. _____

[110] **OPEN** the test switch connecting terminals 13C to 13F for relay RHR UVX. _____

[111] **OPEN** the test switch connecting terminals 15C to 15F for relay RHR UVY. _____

[112] **CLOSE** the test switch on jumper connecting terminals 11 and 12 on the K608 relay in cabinet 2-R-48. _____

[113] **CLOSE** the test switch connecting terminals 13C to 13F for relay RHR UVX. _____

[114] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 is CLOSED by observing the red closed flag and local red light on Compt. 14. _____

[115] **OPEN** the test switch connecting terminals 13C to 13F for relay RHR UVX. _____

[116] **PLACE** 2-HS-74-10A, RHR PMP A (ECCS) to STOP **AND RELEASE** to open 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14. _____

[117] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A-A Compt. 14 is OPEN by observing the green open flag and local green light on Compt. 14. _____

[118] **CLOSE** the test switch connecting terminals 15C to 15F for relay RHR UVY. _____

Data Package: Page ____ of ____ **Date _____**

6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

[119] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 is CLOSED by observing the red closed flag and local red light on Compt. 14. _____

[120] **OPEN** the test switch connecting terminals 15C to 15F for relay RHR UVY. _____

[121] **OPEN** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 by placing 2-HS-74-10A, RHR PMP A (ECCS) to STOP **AND RELEASE**. _____

[122] **OPEN** the test switch connecting terminals 13C to 13D for relay RHR BOX. _____

[123] **OPEN** the test switch connecting terminals 15C to 15D for relay RHR BOY. _____

NOTE

Steps 6.14[124] through 6.14[136] will test breaker closing through time delay relay RHR/ST which has approximately a 15 second delay time.

[124] **CLOSE** the test switch connecting terminals 15C to 15F for relay RHR UVY. _____

[125] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 CLOSES after a short delay by observing the red closed flag and local red light on Compt. 14. _____

[126] **OPEN** the test switch connecting terminals 15C to 15F for relay RHR UVY. _____

[127] **PLACE** hand switch 2-HS-74-10A, RHR PMP A (ECCS) to STOP **AND RELEASE** to open 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14. _____

[128] **CLOSE** the test switch connecting terminals 13C to 13D for relay RHR BOX. _____

[129] **CLOSE** the test switch connecting terminals 13C to 13F for relay RHR UVX. _____

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6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

[130] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 CLOSES after a short delay by observing the red closed flag and local red light on Compt. 14. _____

[131] **OPEN** the test switch connecting terminals 13C to 13F for relay RHR UVX. _____

[132] **PLACE** hand switch 2-HS-74-10A, RHR PMP A (ECCS) to STOP **AND RELEASE** to open 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14. _____

[133] **OPEN** the test switch connecting terminals 13C to 13D for relay RHR BOX. _____

[134] **CLOSE** the test switch connecting terminals 15C to 15D for relay RHR BOY. _____

[135] **CLOSE** the test switch connecting terminals 15C to 15F for relay RHR UVY. _____

[136] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A-A Compt. 14 after a short delay, by observing the red closed flag and local red light on Compt. 14. _____

[137] **OPEN** the test switch connecting terminals 15C to 15F for relay RHR UVY. _____

[138] **OPEN** the test switch on jumper connecting terminals 11 and 12 on the K608 relay in cabinet 2-R-48. _____

[139] **ENSURE** Annunciator 14-E, M-1 THRU M-6 MOTOR TRIPOUT, is CLEAR. _____

[140] **ENSURE** Event Display Monitor reports, 14-E M-1 THRU M-6 MOTOR TRIPOUT is CLEAR. _____

[141] **MANUALLY ACTUATE** the instantaneous over current relay 50 A∅ at 6.9KV SD BD 2A-A Compt. 14, **AND RELEASE**. _____

[142] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 is OPEN by observing the green open flag and local green light on Compt. 14. _____

[143] **VERIFY** the trip target is actuated on instantaneous over current relay 50 A∅ at 6.9KV SD BD 2A A Compt. 14. _____

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6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

[144] **VERIFY** 2-HS-74-10A white light is ON. _____

[145] **VERIFY** Annunciator 14-E, M-1 THROUGH M-6 MOTOR TRIPOUT, ALARMS and audible buzzer sounds **(Acc Crit 5.0[11])**. _____

[146] **VERIFY** Event Display Monitor reports, 14-E M-1 THRU M-6 MOTOR TRIPOUT is in ALARM. _____

[147] **RESET** the trip target on instantaneous over current relay 50 AØ at 6.9KV SD BD 2A A Compt. 14. _____

[148] **PLACE** hand switch 2-HS-74-10A, RHR PMP A (ECCS) to STOP **AND RELEASE**. _____

[149] **VERIFY** 2-HS-74-10A white light is OFF. _____

[150] **VERIFY** Annunciator 14-E, M-1 THRU M-6 MOTOR TRIPOUT, is CLEAR. _____

[151] **VERIFY** Event Display Monitor reports, 14-E M-1 THRU M-6 MOTOR TRIPOUT is CLEAR. _____

[152] **VERIFY** audible buzzer is SILENT. _____

[153] **CLOSE** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 by placing hand switch 2-HS-74-10A, RHR PMP A (ECCS) to START **AND RELEASE**. _____

[154] **MANUALLY ACTUATE** the instantaneous over current relay 50 CØ at 6.9KV SD BD 2A A Compt. 14, **AND RELEASE**. _____

[155] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 is OPEN by observing the green open flag and local green light on Compt. 14. _____

[156] **VERIFY** the trip target is actuated on instantaneous over current relay 50 CØ at 6.9KV SD BD 2A A Compt. 14. _____

[157] **RESET** the trip target on instantaneous over current relay 50 CØ at 6.9KV SD BD 2A A Compt. 14. _____

[158] **PLACE** hand switch 2-HS-74-10A, RHR PMP A (ECCS) to STOP **AND RELEASE**. _____

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6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

[159] **VERIFY** 2-HS-74-10A white light is OFF. _____

[160] **VERIFY** Annunciator 14-E, M-1 THRU M-6 MOTOR TRIPOUT, is CLEAR. _____

[161] **VERIFY** Event Display Monitor reports, 14-E M-1 THRU M-6 MOTOR TRIPOUT is CLEAR. _____

[162] **CLOSE** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 by placing hand switch 2-HS-74-10A, RHR PMP A (ECCS) to START **AND RELEASE**. _____

[163] **ENSURE** Annunciator 14-D, M-1 THRU M-6 MOTOR OVERLOAD is CLEAR. _____

[164] **ENSURE** Event Display Monitor reports, 14-D, M-1 THRU M-6 MOTOR OVERLOAD is CLEAR. _____

[165] **CLOSE** the contacts on Relay 51/83 AØ at 6.9KV SD BD 2A A Compt. 14 by manually rotating and holding the disk. _____

[166] **VERIFY** 2-HS-74-10A white light is ON. _____

[167] **VERIFY** Annunciator 14-D, M-1 THROUGH M-6 MOTOR OVERLOAD, ALARMS **(Acc Crit 5.0[12])**. _____

[168] **VERIFY** Event Display Monitor reports, 14-D, M-1 THRU M-6 MOTOR OVERLOAD is in ALARM. _____

[169] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 does NOT TRIP. _____

[170] **RELEASE** the disk on Relay 51/83 AØ at 6.9KV SD BD 2A A Compt. 14. _____

[171] **VERIFY** 2-HS-74-10A white light is OFF. _____

[172] **VERIFY** Annunciator 14-D, M-1 THRU M-6 MOTOR OVERLOAD is CLEAR. _____

[173] **VERIFY** Event Display Monitor reports, 14-D, M-1 THRU M-6 MOTOR OVERLOAD is CLEAR. _____

[174] **CLOSE** the contacts on Relay 51/83 AØ at 6.9KV SD BD 2A A Compt. 14 by manually rotating and holding the disk. _____

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6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

[175] **MOMENTARILY PLACE** a jumper across terminals 9 and 10 on the back of Relay 51/83 AØ at 6.9KV SD BD 2A A Compt. 14. _____

_____ CV

[176] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 is OPEN by observing the green open flag and local green light on Compt. 14. _____

[177] **VERIFY** the trip target is actuated on Relay 51/83 AØ at 6.9KV SD BD 2A A Compt. 14. _____

[178] **RELEASE** the disk on Relay 51/83 AØ at 6.9KV SD BD 2A A Compt. 14. _____

[179] **PLACE** hand switch 2-HS-74-10A, RHR PMP A (ECCS) to STOP **AND RELEASE**. _____

[180] **RESET** the trip target on Relay 51/83 AØ at 6.9KV SD BD 2A A Compt. 14. _____

[181] **CLOSE** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 by placing hand switch 2-HS-74-10A, RHR PMP A (ECCS) to START **AND RELEASE**. _____

[182] **CLOSE** the contacts on Relay 51/83 CØ at 6.9KV SD BD 2A A Compt. 14 by manually rotating and holding the disk. _____

[183] **MOMENTARILY PLACE** a jumper across terminals 9 and 10 on the back of Relay 51/83 CØ at 6.9KV SD BD 2A A Compt. 14. _____

_____ CV

[184] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 is OPEN by observing the green open flag and local green light on Compt. 14. _____

[185] **RELEASE** the disk on Relay 51/83 CØ at 6.9KV SD BD 2A A Compt. 14. _____

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6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

[186] **PLACE** hand switch 2-HS-74-10A, RHR PMP A (ECCS) to STOP **AND RELEASE**. _____

[187] **RESET** the trip target on the time over current Relay 51/83 CØ at 6.9KV SD BD 2A A Compt. 14. _____

[188] **VERIFY** Annunciator 14-D, M-1 THRU M-6 MOTOR OVERLOAD is CLEAR. _____

[189] **VERIFY** Event Display Monitor reports, 14-D, M-1 THRU M-6 MOTOR OVERLOAD is CLEAR. _____

[190] **CLOSE** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 by placing hand switch 2-HS-74-10A, RHR PMP A (ECCS) to START **AND RELEASE**. _____

[191] **MANUALLY ACTUATE** ground fault relay 50G at 6.9KV SD BD 2A A Compt. 14. _____

[192] **VERIFY** 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14 is OPEN by observing the green open flag and local green light on Compt. 14. _____

[193] **VERIFY** ground fault relay 50G trip target is actuated at 6.9KV SD BD 2A A Compt. 14. _____

[194] **RESET** ground fault relay 50G trip target at 6.9KV SD BD 2A A Compt. 14. _____

[195] **PLACE** hand switch 2-HS-74-10A, RHR PMP A (ECCS) to STOP **AND RELEASE**. _____

[196] **REMOVE** umbilical cord on 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14. _____

[197] **REMOVE** test link on 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14. _____

[198] **REMOVE** wheel chocks on 2-BKR-74-10 in 6.9KV SD BD 2A A Compt. 14. _____

[199] **REMOVE** the breaker from 6.9KV SD BD 2A-A Compt. 14. _____

[200] **LOWER** 6.9KV SD BD 2A A Compt. 14 elevator until elevator reaches full down position. _____

Data Package: Page ____ of ____ **Date _____**

6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

[201] **REPLACE** the breaker into 6.9KV SD BD 2A-A Compt. 14. _____

[202] **REMOVE** temporary jumpers from the following relay socket terminals in the rear of 6900V Shutdown Board 2A-A Logic Relay Panel:

A. 13C to 13D for relay RHR BOX _____

_____
CV

B. 15C to15D for relay RHR BOY _____

_____
CV

C. 13C to 13F for relay RHR UVX _____

_____
CV

D. 15C to 15F for relay RHR UVY _____

_____
CV

E. 13A to 13D for relay RHR UVX _____

_____
CV

F. 15A to 15D for relay RHR UVY _____

_____
CV

G. 18B to 18C for relay SIATX _____

_____
CV

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6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

[203] **IF** step6.14[7] was performed, **THEN**

PERFORM steps 6.14[203]A through 6.14[203]I. _____

A. **ENSURE** the following fuses are removed.

A. 2-FU-211-A014/1N _____

_____ CV

B. 2-FU-211-A014/1A _____

_____ CV

C. 2-FU-211-A014/2N _____

_____ CV

D. 2-FU-211-A014/2A _____

_____ CV

E. 2-FU-211-A014/3N _____

_____ CV

F. 2-FU-211-A014/3A _____

_____ CV

B. **LOCATE** and **IDENTIFY** wire SA14C4 on TB619 terminal 9 on 2-R-48. _____

C. **DISCONNECT** wire SA14C4 on TB619 terminal 9 on 2-R-48. _____

Data Package: Page ____ of ____ **Date _____**

6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

D. **RETERMINATE** wire SA14C4 lifted from TB619 terminal 9 on 2-R-48 on metal. _____

_____
CV

E. **LOCATE** and **IDENTIFY** wire SA14C5 on TB619 terminal 10 on 2-R-48. _____

F. **DISCONNECT** wire SA14C5 on TB619 terminal 10 on 2-R-48. _____

G. **RETERMINATE** wire SA14C5 lifted from TB619 terminal 10 on 2-R-48 on metal. _____

_____
CV

H. **RECORD** on Appendix I _____

Data Package: Page ____ of ____ **Date _____**

6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

I. **ENSURE** the following fuses are installed.

A. 2-FU-211-A014/1N _____

_____ CV

B. 2-FU-211-A014/1A _____

_____ CV

C. 2-FU-211-A014/2N _____

_____ CV

D. 2-FU-211-A014/2A _____

_____ CV

E. 2-FU-211-A014/3N _____

_____ CV

F. 2-FU-211-A014/3A _____

_____ CV

[204] **REMOVE** the jumper across terminals 11 and 12 on the K608 relay in cabinet 2-R-48. _____

_____ CV

[205] **PLACE** clearance back on 2-PMP-74-10, RHR Pump 2A-A if any sections from 6.1 to 6.13 are NOT complete. _____

Data Package: Page ____ of ____ **Date _____**

6.14 Residual Heat Removal Pump 2A-A Logic Test (continued)

[206] **REINSTALL** the following relays in 6900V Shutdown Board 2A-A Logic Relay Panel **OR ENTER** N/A for the relay **AND EXPLAIN** in the Test Log:

A. RHR BOX Relay _____

_____
CV

B. RHR BOY Relay _____

_____
CV

C. RHR UVX Relay _____

_____
CV

D. RHR UVY Relay _____

_____
CV

E. SIATX Relay _____

_____
CV

[207] **VERIFY** successful completion of Subsection 6.14 **(Acc Crit 5.0[33]).** _____

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test

[1] **VERIFY** the following prerequisites have been completed for Subsection 6.15. (4.1[1]-4.1[8], 4.1[10], 4.1[12]-4.1[19], 4.1[21], 4.1[22], 4.2[1], 4.2[2], 4.3[7], 4.3[9]) _____

[2] **ENSURE** clearance on 2-PMP-74-20, RHR Pump 2B-B is lifted for the performance of this section. _____

[3] **ENSURE** that Appendix G, Pump Logic Electrical Checklist has been completed. _____

[4] **ENSURE** the following relays in 6900V Shutdown Board 2B-B Logic Relay Panel are removed:

A. RHR BOX Relay _____

_____
CV

B. RHR BOY Relay _____

_____
CV

C. RHR UVX Relay _____

_____
CV

D. RHR UVY Relay _____

_____
CV

E. SIATX Relay _____

_____
CV

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

[5] **INSTALL** jumpers with test switches in the open position between the following relay socket terminals in the rear of 6900V Shutdown Board 2B-B Logic Relay Panel:

A. 13C to 13D for relay RHR BOX _____

_____
CV

B. 15C to 15D for relay RHR BOY _____

_____
CV

C. 13C to 13F for relay RHR UVX _____

_____
CV

D. 15C to 15F for relay RHR UVY _____

_____
CV

E. 13A to 13D for relay RHR UVX _____

_____
CV

F. 15A to 15D for relay RHR UVY _____

_____
CV

G. 18B to 18C for relay SIATX _____

_____
CV

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

[6] **CLOSE** the test switch for the following jumpers:

A. 13C to 13D for relay RHR BOX _____

B. 15C to 15D for relay RHR BOY _____

C. 13C to 13F for relay RHR UVX _____

D. 15C to 15F for relay RHR UVY _____

[7] **IF** terminals 9 and 10 of TB619 on 2-R-51 are NOT terminated on plastic, **THEN**

PERFORM steps 6.15[7]A through 6.15[7]I. _____

A. **ENSURE** the following fuses are removed.

A. 2-FU-211-B014/1N _____

_____
CV

B. 2-FU-211-B014/1A _____

_____
CV

C. 2-FU-211-B014/2N _____

_____
CV

D. 2-FU-211-B014/2A _____

_____
CV

E. 2-FU-211-B014/3N _____

_____
CV

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

F. 2-FU-211-B014/3A _____

_____
CV

B. **LOCATE** and **IDENTIFY** wire SB14C4 on TB619 terminal 9 on 2-R-48. _____

C. **DISCONNECT** wire SB14C4 on TB619 terminal 9 on 2-R-48. _____

D. **RETERMINATE** wire SB14C4 lifted from TB619 terminal 9 on 2-R-48 on plastic. _____

_____
CV

E. **LOCATE** and **IDENTIFY** wire SB14C5 on TB619 terminal 10 on 2-R-48. _____

F. **DISCONNECT** wire SB14C5 on TB619 terminal 10 on 2-R-48. _____

G. **RETERMINATE** wire SB14C5 lifted from TB619 terminal 10 on 2-R-48 on plastic. _____

_____
CV

H. **RECORD** on Appendix I _____

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

I. **ENSURE** the following fuses are installed.

A. 2-FU-211-B014/1N _____

_____ CV

B. 2-FU-211-B014/1A _____

_____ CV

C. 2-FU-211-B014/2N _____

_____ CV

D. 2-FU-211-B014/2A _____

_____ CV

E. 2-FU-211-B014/3N _____

_____ CV

F. 2-FU-211-B014/3A _____

_____ CV

[8] **INSTALL** a jumper with test switch open across terminals 11 and 12 of the K608 relay in cabinet 2-R-51 (SI signal). _____

_____ CV

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

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

A. HD2066 _____

B. XD2076 _____

C. XD2077 _____

D. Y0601D _____

[10] **ENSURE** the following transfer switch on 6.9KV SD BD 2B-B is in NORMAL:

A. 2-XS-74-20, RHR PUMP B-B TRANS SWITCH _____

[11] **ENSURE** hand switch 2-HS-74-20A, RHR PMP B (ECCS) is in STOP/PULL TO LOCK. _____

[12] **ENSURE** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 is installed in the test position and OPEN with the wheels chocked. _____

[13] **INSTALL** umbilical cord on 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14. _____

[14] **INSTALL** test link on 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14. _____

[15] **ESTABLISH** communications between MCR Panel 2-M-6, 6.9KV SD BD 2B-B, and 6900V Shutdown Board 2B-B Logic Relay Panel. _____

[16] **VERIFY** ICS point XD2076 displays "PWR OFF". _____

[17] **DEPRESS** the TEST CLOSE pushbutton on 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14. _____

[18] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 CLOSES by observing the red closed flag and local red light on Compt. 14. _____

[19] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 closing spring is discharged by observing the white discharged flag. _____

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6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

[20] **DEPRESS** the TEST TRIP pushbutton on 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14. _____

[21] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 OPENS by observing the green open flag and local green light on Compt. 14. _____

[22] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 closing spring is charged by observing the yellow charged flag. _____

[23] **PLACE** hand switch 2-HS-74-20A, RHR PMP B (ECCS) in the START position **AND RELEASE**. _____

[24] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 did NOT CLOSE by observing the green open flag and local green light on Compt. 14. _____

[25] **PLACE** hand switch 2-HS-74-20A, RHR PMP B (ECCS) in the STOP/PULLTO LOCK position. _____

[26] **REMOVE** umbilical cord on 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14. _____

[27] **REMOVE** test link on 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14. _____

[28] **REMOVE** wheel chocks on 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14. _____

[29] **REMOVE** the 2-BKR-74-20 from 6.9KV SD BD 2B-B Compt. 14. _____

[30] **RAISE** 6.9KV SD BD 2B-B Compt. 14 elevator until elevator reaches full up position. _____

[31] **INSTALL** 2-BKR-74-20 into 6.9KV SD BD 2B-B Compt. 14 to the test position. _____

[32] **INSTALL** umbilical cord on 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14. _____

[33] **INSTALL** test link on 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14. _____

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

[34] **INSTALL** wheel chocks on 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14. _____

[35] **VERIFY** ICS point XD2076 displays "PWR ON" **(Acc Crit 5.0[14])**. _____

[36] **ESTABLISH** communications between MCR Panel 2-M-6, 6900V Shutdown Board 2B-B and SSPS cabinet 2-R-51. _____

[37] **VERIFY** ICS point HD2066 displays "PULLT-L" _____

[38] **VERIFY** the following indications:

A. 2-HS-74-20A green light ON _____

B. 2-HS-74-20A red light OFF _____

C. 2-HS-74-20A white light OFF _____

D. Compt. 14 green light ON _____

E. Compt: 14 red light OFF _____

F. Logic Panel red light OFF _____

G. Compt. 14 breaker OPEN (green open flag) _____

NOTE

Hand Switch 2-HS-74-20A, RHR PMP B (ECCS) spring returns to A AUTO.

[39] **PLACE** hand switch 2-HS-74-20A, RHR PMP B (ECCS) to A AUTO. _____

[40] **VERIFY** ICS point HD2066 displays "NOT P-L".**(Acc Crit 5.0[14])**. _____

[41] **PLACE** hand switch 2-HS-74-20A, RHR PMP B (ECCS) to STOP **AND RELEASE**. _____

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

[42] **VERIFY** the following indications:

A. 2-HS-74-20A green light ON _____

B. 2-HS-74-20A red light OFF _____

C. 2-HS-74-20A white light OFF _____

D. Compt. 14 green light ON _____

E. Compt: 14 red light OFF _____

F. Logic Panel red light OFF _____

G. Compt. 14 breaker OPEN (green open flag) _____

[43] **VERIFY** ICS point XD2077 displays "NOT RUN". _____

[44] **PLACE** cool clean damp cloth on bulb of 2-TS-30-176 (A11V EI 676) _____

[45] **ENSURE** hand switch 2-HS-30-176, RHR PUMP 2B-B ROOM COOLER to AUTO. _____

[46] **ENSURE** the following fuse is INSTALLED:

A. 2-FU-214-B019/1-A _____

_____
CV

[47] **ENSURE** 2-BKR-30-176-B, 480V CONT & AUX BLDG VENT BD 2B1-B breaker 9A (RHR pump 2B-B RM Cooler Fan) is CLOSED. _____

[48] **DEPRESS** the TEST CLOSE pushbutton on 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14. _____

[49] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 did NOT close by observing the green open flag and local green light on Compt. 14. _____

[50] **VERIFY** 2-PMCL-30-176 did NOT start. _____

[51] **PLACE** hand switch 2-HS-74-20C, RHR PMP B (ECCS) to START **AND RELEASE**. _____

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

[52] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 does NOT close by observing the green open flag and local green light on Compt. 14. _____

[53] **VERIFY** 2-PMCL-30-176 did NOT start. _____

[54] **PLACE** hand switch 2-HS-74-20A, RHR PMP B (ECCS) to START **AND RELEASE**. _____

[55] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 closes by observing the red closed flag and local red light on Compt. 14. _____

[56] **VERIFY** ICS point Y0601D displays "CLOSED". _____

[57] **VERIFY** 2-PMCL-30-176 started **(Acc Crit 5.0[30]B)**. _____

[58] **VERIFY** ICS point XD2077 displays "RUNNING" **(Acc Crit 5.0[14])**. _____

[59] **VERIFY** the following indications:

A. 2-HS-74-20A green light OFF _____

B. 2-HS-74-20A red light ON _____

C. 2-HS-74-20A white light OFF _____

D. Compt. 14 green light OFF _____

E. Compt. 14 red light ON _____

F. Logic Panel red light ON. **(Acc Crit 5.0[10])** _____

[60] **DEPRESS** the TEST TRIP pushbutton on 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14. _____

[61] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 did NOT open by observing the red closed flag and local red light on Compt. 14. _____

[62] **VERIFY** 2-PMCL-30-176 is running. _____

[63] **PLACE** hand switch 2-HS-74-20C, RHR PMP B (ECCS) to STOP **AND RELEASE**. _____

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

[64] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 did NOT open by observing the red closed flag and local red light on Compt. 14. _____

[65] **VERIFY** 2-PMCL-30-176 is running. _____

[66] **PLACE** hand switch 2-HS-74-20A, RHR PMP B (ECCS) to STOP **AND RELEASE**. _____

[67] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 is OPEN by observing the green open flag and local green light on Compt. 14. _____

[68] **VERIFY** ICS point Y0601D displays "OPEN". _____

[69] **VERIFY** the following indications:

A. 2-HS-74-20A green light ON _____

B. 2-HS-74-20A red light OFF _____

C. 2-HS-74-20A white light OFF _____

D. Compt. 14 green light ON _____

E. Compt. 14 red light OFF _____

F. Logic Panel red light OFF _____

[70] **VERIFY** 2-PMCL-30-176 has stopped. _____

[71] **ENSURE** 2-BKR-30-176-B, 480V CONT & AUX BLDG VENT BD 2B1-B breaker 9A (RHR pump 2B-B RM Cooler Fan) is OPEN. _____

[72] **REMOVE** cloth on bulb of 2-TS-30-176 (A11V El 676) _____

[73] **ENSURE** Annunciator Window 150-A, 6.9 SD BD 2B-B is CLEAR. _____

[74] **ENSURE** Event Display Monitor 150-A reports 150-A 6.9 SD BD 2B-B XS IN AUX, NORMAL _____

[75] **PLACE** transfer switch 2-XS-74-20, RHR PUMP B-B TRANS SWITCH to AUX. _____

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

[76] **VERIFY** Annunciator Window 150-A, 6.9 SD BD 2B-B ALARMS **(Acc Crit 5.0[8])**. _____

[77] **VERIFY** Event Display Monitor 150-A reports 150-A 6.9 SD BD 2B-B XS IN AUX, ALARM _____

[78] **PLACE** transfer switch 2-XS-74-20, RHR PUMP B-B TRANS SWITCH to NORMAL. _____

[79] **VERIFY** Annunciator Window 150-A, 6.9 SD BD 2B-B is CLEAR. _____

[80] **VERIFY** Event Display Monitor 150-A reports 150-A 6.9 SD BD 2B-B XS IN AUX, NORMAL _____

[81] **PLACE** transfer switch 2-XS-74-20, RHR PUMP B-B TRANS SWITCH to AUX. _____

[82] **PLACE** hand switch 2-HS-74-20A, RHR PMP B (ECCS) to START **AND RELEASE**. _____

[83] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 did NOT close by observing the green open flag and local green light on Compt. 14. _____

[84] **PLACE** hand switch 2-HS-74-20C, RHR PMP B (ECCS) to START **AND RELEASE**. _____

[85] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 is CLOSED by observing the red closed flag and local red light on Compt. 14. _____

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

[86] **VERIFY** the following indications:

A. 2-HS-74-20A green light OFF _____

B. 2-HS-74-20A red light OFF _____

C. 2-HS-74-20A white light OFF _____

D. Compt. 14 green light OFF _____

E. Compt. 14 red light ON _____

F. Logic Panel red light ON _____

[87] **PLACE** hand switch 2-HS-74-20A, RHR PMP B (ECCS) to STOP **AND RELEASE**. _____

[88] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 did NOT open by observing the red closed flag and local red light on Compt. 14. _____

[89] **PLACE** hand switch 2-HS-74-20C, RHR PMP B (ECCS) to STOP **AND RELEASE**. _____

[90] **VERIFY** 2-BKR-74-20 in 6.9V SD BD 2B-B Compt. 14 is OPEN by observing the green open flag and local green light on Compt. 14. _____

[91] **VERIFY** the following indications:

A. 2-HS-74-20A green light OFF. _____

B. 2-HS-74-20A red light OFF. _____

C. 2-HS-74-20A white light OFF. _____

D. Compt. 14 green light ON. _____

E. Compt. 14 red light OFF. _____

F. Logic Panel red light OFF. _____

[92] **PLACE** transfer switch 2-XS-74-20, RHR PUMP B-B TRANS SWITCH to NORMAL. _____

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

[93] **CLOSE** the test switch on jumper connecting 18B to 18C for relay SIATX on Shutdown Board 2B-B Logic Relay Panel. _____

[94] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 is CLOSED by observing the red closed flag and local red light on Compt. 14. _____

[95] **OPEN** the test switch on jumper connecting 18B to 18C for relay SIATX, on SHUTDOWN BOARD 2B-B LOGIC RELAY PANEL. _____

[96] **PLACE** hand switch 2-HS-74-20A, RHR PMP B (ECCS) to STOP **AND RELEASE** to open 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14. _____

[97] **CLOSE** the test switch on jumper connecting terminals 11 and 12 on the K608 relay in cabinet 2-R-51. _____

[98] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 is CLOSED by observing the red closed flag and local red light on Compt. 14 **(Acc Crit 5.0[13])**. _____

[99] **OPEN** the test switch on jumper connecting terminals 11 and 12 on the K608 relay in cabinet 2-R-51. _____

[100] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 remains CLOSED by observing the red closed flag and local red light on Compt. 14 **(Acc Crit 5.0[13])**. _____

[101] **CLOSE** the test switch connecting terminals 13A to 13D for relay RHR UVX. _____

[102] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 remains CLOSED by observing the red closed flag and local red light on Compt. 14. _____

[103] **OPEN** the test switch connecting terminals 13A to 13D for relay RHR UVX. _____

[104] **CLOSE** the test switch connecting terminals 15A to 15D for relay RHR UVY. _____

[105] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 remains CLOSED by observing the red closed flag and local red light on Compt. 14. _____

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

[106] **CLOSE** the test switch connecting terminals 13A to 13D for relay RHR UVX. _____

[107] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 is OPEN by observing the green open flag and local green light on Compt. 14. _____

[108] **OPEN** the test switch connecting terminals 13A to 13D for relay RHR UVX. _____

[109] **OPEN** the test switch connecting terminals 15A to 15D for relay RHR UVY. _____

[110] **OPEN** the test switch connecting terminals 13C to 13F for relay RHR UVX. _____

[111] **OPEN** the test switch connecting terminals 15C to 15F for relay RHR UVY. _____

[112] **CLOSE** the test switch on jumper connecting terminals 11 and 12 on the K608 relay in cabinet 2-R-51. _____

[113] **CLOSE** the test switch connecting terminals 13C to 13F for relay RHR UVX. _____

[114] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 is CLOSED by observing the red closed flag and local red light on Compt. 14. _____

[115] **OPEN** the test switch connecting terminals 13C to 13F for relay RHR UVX. _____

[116] **PLACE** hand switch 2-HS-74-20A, RHR PMP B (ECCS) to STOP **AND RELEASE** to open 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14. _____

[117] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 is OPEN by observing the green open flag and local green light on Compt. 14. _____

[118] **CLOSE** the test switch connecting terminals 15C to 15F for relay RHR UVY. _____

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

[119] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 is CLOSED by observing the red closed flag and local red light on Compt. 14. _____

[120] **OPEN** the test switch connecting terminals 15C to 15F for relay RHR UVY. _____

[121] **PLACE** hand switch 2-HS-74-20A, RHR PMP B (ECCS) to STOP **AND RELEASE** to open 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14. _____

[122] **OPEN** the test switch connecting terminals 13C to 13D for relay RHR BOX. _____

[123] **OPEN** the test switch connecting terminals 15C to 15D for relay RHR BOY. _____

NOTE

Steps 6.15[124] through 6.15[136] will test breaker closing through time delay relay RHR/ST which has approximately a 15 second delay time.

[124] **CLOSE** the test switch connecting terminals 15C to 15F for relay RHR UVY. _____

[125] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 CLOSES after a short delay, by observing the red closed flag and local red light on Compt. 14. _____

[126] **OPEN** the test switch connecting terminals 15C to 15F for relay RHR UVY. _____

[127] **PLACE** hand switch 2-HS-74-20A, RHR PMP B (ECCS) to STOP **AND RELEASE** to open 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14. _____

[128] **CLOSE** the test switch connecting terminals 13C to 13D for relay RHR BOX. _____

[129] **CLOSE** the test switch connecting terminals 13C to 13F for relay RHR UVX. _____

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

[130] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 CLOSES after a short delay, by observing the red closed flag and local red light on Compt. 14. _____

[131] **OPEN** the test switch connecting terminals 13C to 13F for relay RHR UVX. _____

[132] **PLACE** hand switch 2-HS-74-20A, RHR PMP B (ECCS) to STOP **AND RELEASE** to open 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14. _____

[133] **OPEN** the test switch connecting terminals 13C to 13D for relay RHR BOX. _____

[134] **CLOSE** the test switch connecting terminals 15C to 15D for relay RHR BOY. _____

[135] **CLOSE** the test switch connecting terminals 15C to 15F for relay RHR UVY. _____

[136] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 CLOSES after a short delay, by observing the red closed flag and local red light on Compt. 14. _____

[137] **OPEN** the test switch connecting terminals 15C to 15F for relay RHR UVY. _____

[138] **OPEN** the test switch on jumper connecting terminals 11 and 12 on the K608 relay in cabinet 2-R-51. _____

[139] **ENSURE** Annunciator 14-E, M-1 THRU M-6 MOTOR TRIPOUT, is CLEAR. _____

[140] **ENSURE** Event Display Monitor reports, 14-E M-1 THRU M-6 MOTOR TRIPOUT is CLEAR. _____

[141] **MANUALLY ACTUATE** the instantaneous over current relay 50 A∅ at 6.9KV SD BD 2B-B Compt. 14, **AND RELEASE**. _____

[142] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 is OPEN by observing the green open flag and local green light on Compt. 14. _____

[143] **VERIFY** the trip target is actuated on instantaneous over current relay 50 A∅ at 6.9KV SD BD 2B-B Compt. 14. _____

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

[144] **VERIFY** 2-HS-74-20A, RHR PMP B (ECCS) white light is ON. _____

[145] **VERIFY** Annunciator 14-E, M-1 THROUGH M-6 MOTOR TRIPOUT, ALARMS and audible buzzer sounds **(Acc Crit 5.0[11])**. _____

[146] **VERIFY** Event Display Monitor reports, 14-E M-1 THRU M-6 MOTOR TRIPOUT is in ALARM. _____

[147] **RESET** the trip target on instantaneous over current relay 50 AØ at 6.9KV SD BD 2B-B Compt. 14. _____

[148] **PLACE** hand switch 2-HS-74-20A, RHR PMP B (ECCS) to STOP **AND RELEASE**. _____

[149] **VERIFY** 2-HS-74-20A, RHR PMP B (ECCS) white light is OFF. _____

[150] **VERIFY** Annunciator 14-E, M-1 THRU M-6 MOTOR TRIPOUT, is CLEAR. _____

[151] **VERIFY** Event Display Monitor reports, 14-E M-1 THRU M-6 MOTOR TRIPOUT is CLEAR. _____

[152] **VERIFY** audible buzzer is SILENT. _____

[153] **CLOSE** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 by placing hand switch 2-HS-74-20A, RHR PMP B (ECCS) to START **AND RELEASE**. _____

[154] **MANUALLY ACTUATE** the instantaneous over current relay 50 CØ at 6.9KV SD BD 2B-B Compt. 14, **AND RELEASE**. _____

[155] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 is OPEN by observing the green open flag and local green light on Compt. 14. _____

[156] **VERIFY** the trip target is actuated on instantaneous over current relay 50 CØ at 6.9KV SD BD 2B-B Compt. 14. _____

[157] **RESET** the trip target on instantaneous over current relay 50 CØ at 6.9KV SD BD 2B-B Compt. 14. _____

[158] **PLACE** hand switch 2-HS-74-20A, RHR PMP B (ECCS) to STOP **AND RELEASE**. _____

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

[159] **VERIFY** 2-HS-74-20A, RHR PMP B (ECCS) white light is OFF. _____

[160] **VERIFY** Annunciator 14-E, M-1 THRU M-6 MOTOR TRIPOUT, is CLEAR. _____

[161] **VERIFY** Event Display Monitor reports, 14-E M-1 THRU M-6 MOTOR TRIPOUT is CLEAR. _____

[162] **CLOSE** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 by placing hand switch 2-HS-74-20A, RHR PMP B (ECCS) to START **AND RELEASE**. _____

[163] **ENSURE** Annunciator 14-D, M-1 THRU M-6 MOTOR OVERLOAD is CLEAR. _____

[164] **ENSURE** Event Display Monitor reports, 14-D, M-1 THRU M-6 MOTOR OVERLOAD is CLEAR. _____

[165] **CLOSE** the contacts on Relay 51/83 A∅ at 6.9KV SD BD 2B-B Compt. 14 by manually rotating and holding the disk. _____

[166] **VERIFY** 2-HS-74-20A, RHR PMP B (ECCS) white light is ON. _____

[167] **VERIFY** Annunciator 14-D, M-1 THRU M-6 MOTOR OVERLOAD, ALARMS **(Acc Crit 5.0[12])**. _____

[168] **VERIFY** Event Display Monitor reports, 14-D, M-1 THRU M-6 MOTOR OVERLOAD is in ALARM. _____

[169] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 does NOT TRIP. _____

[170] **RELEASE** the disk on Relay 51/83 A∅ at 6.9KV SD BD 2B-B Compt. 14. _____

[171] **VERIFY** 2-HS-74-20A, RHR PMP B (ECCS) white light is OFF. _____

[172] **VERIFY** Annunciator 14-D, M-1 THRU M-6 MOTOR OVERLOAD is CLEAR. _____

[173] **VERIFY** Event Display Monitor reports, 14-D, M-1 THRU M-6 MOTOR OVERLOAD is CLEAR. _____

[174] **CLOSE** the contacts on Relay 51/83 A∅ at 6.9KV SD BD 2B-B Compt. 14 by manually rotating and holding the disk. _____

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

[175] **MOMENTARILY PLACE** a jumper across terminals 9 and 10 on the back of Relay 51/83 AØ at 6.9KV SD BD 2B-B Compt. 14. _____

_____ CV

[176] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 is OPEN by observing the green open flag and local green light on Compt. 14. _____

[177] **VERIFY** the trip target is actuated on Relay 51/83 AØ at 6.9KV SD BD 2B-B Compt. 14. _____

[178] **RELEASE** the disk on Relay 51/83 AØ at 6.9KV SD BD 2B-B Compt. 14. _____

[179] **PLACE** hand switch 2-HS-74-20A, RHR PMP B (ECCS) to STOP **AND RELEASE**. _____

[180] **RESET** the trip target on Relay 51/83 AØ at 6.9KV SD BD 2B-B Compt. 14. _____

[181] **CLOSE** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 by placing hand switch 2-HS-74-20A, RHR PMP B (ECCS) to START **AND RELEASE**. _____

[182] **CLOSE** the contacts on Relay 51/83 CØ at 6.9KV SD BD 2B-B Compt. 14 by manually rotating and holding the disk. _____

[183] **MOMENTARILY PLACE** a jumper across terminals 9 and 10 on the back of Relay 51/83 CØ at 6.9KV SD BD 2B-B Compt. 14. _____

_____ CV

[184] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 is OPEN by observing the green open flag and local green light on Compt. 14. _____

[185] **RELEASE** the disk on Relay 51/83 CØ at 6.9KV SD BD 2B-B Compt. 14. _____

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

[186] **PLACE** hand switch 2-HS-74-20A, RHR PMP B (ECCS) to STOP **AND RELEASE**. _____

[187] **RESET** the trip target on the time over current Relay 51/83 CØ at 6.9KV SD BD 2B-B Compt. 14. _____

[188] **VERIFY** Annunciator 14-D, M-1 THRU M-6 MOTOR OVERLOAD is CLEAR. _____

[189] **VERIFY** Event Display Monitor reports, 14-D, M-1 THRU M-6 MOTOR OVERLOAD is CLEAR. _____

[190] **CLOSE** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 by placing hand switch 2-HS-74-20A, RHR PMP B (ECCS) t o START **AND RELEASE**. _____

[191] **MANUALLY ACTUATE** ground fault relay 50G at 6.9KV SD BD 2B-B Compt. 14. _____

[192] **VERIFY** 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14 is OPEN by observing the green open flag and local green light on Compt. 14. _____

[193] **VERIFY** ground fault relay 50G trip target is actuated at 6.9KV SD BD 2B-B Compt. 14. _____

[194] **RESET** ground fault relay 50G trip target at 6.9KV SD BD 2B-B Compt. 14. _____

[195] **PLACE** hand switch 2-HS-74-20A, RHR PMP B (ECCS) to STOP **AND RELEASE**. _____

[196] **REMOVE** umbilical cord on 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14. _____

[197] **REMOVE** test link on 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14. _____

[198] **REMOVE** wheel chocks on 2-BKR-74-20 in 6.9KV SD BD 2B-B Compt. 14. _____

[199] **REMOVE** 2-BKR-74-20 from 6.9KV SD BD 2B-B Compt. 14. _____

[200] **LOWER** 6.9KV SD BD 2B-B Compt. 14 elevator until elevator reaches full down position. _____

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

[201] **REPLACE** 2-BKR-74-20 into 6.9KV SD BD 2B-B Compt. 14. _____

[202] **REMOVE** temporary jumpers from the following relay socket terminals in the rear of 6900V Shutdown Board 2B-B Logic Relay Panel:

A. 13C to 13D for relay RHR BOX _____

_____ CV

B. 15C to15D for relay RHR BOY _____

_____ CV

C. 13C to 13F for relay RHR UVX _____

_____ CV

D. 15C to 15F for relay RHR UVY _____

_____ CV

E. 13A to 13D for relay RHR UVX _____

_____ CV

F. 15A to 15D for relay RHR UVY _____

_____ CV

G. 18B to 18C for relay SIATX _____

_____ CV

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

[203] **IF** step 6.15[7] was performed, **THEN**

PERFORM steps 6.15[203]A through 6.15[203]I. _____

A. **ENSURE** the following fuses are removed.

A. 2-FU-211-B014/1N _____

_____ CV

B. 2-FU-211-B014/1A _____

_____ CV

C. 2-FU-211-B014/2N _____

_____ CV

D. 2-FU-211-B014/2A _____

_____ CV

E. 2-FU-211-B014/3N _____

_____ CV

F. 2-FU-211-B014/3A _____

_____ CV

B. **LOCATE** and **IDENTIFY** wire SB14C4 on TB619 terminal 9 on 2-R-48. _____

C. **DISCONNECT** wire SB14C4 on TB619 terminal 9 on 2-R-48. _____

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

D. **RETERMINATE** wire SB14C4 lifted from TB619 terminal 9 on 2-R-48 on metal. _____

_____
CV

E. **LOCATE** and **IDENTIFY** wire SB14C5 on TB619 terminal 10 on 2-R-48. _____

F. **DISCONNECT** wire SB14C5 on TB619 terminal 10 on 2-R-48. _____

G. **RETERMINATE** wire SB14C5 lifted from TB619 terminal 10 on 2-R-48 on metal. _____

_____
CV

H. **RECORD** on Appendix I _____

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

I. **ENSURE** the following fuses are installed.

A. 2-FU-211-B014/1N _____

_____ CV

B. 2-FU-211-B014/1A _____

_____ CV

C. 2-FU-211-B014/2N _____

_____ CV

D. 2-FU-211-B014/2A _____

_____ CV

E. 2-FU-211-B014/3N _____

_____ CV

F. 2-FU-211-B014/3A _____

_____ CV

[204] **REMOVE** the jumper across terminals 11 and 12 on the K608 relay in cabinet 2-R-51. _____

_____ CV

[205] **PLACE** clearance back on 2-PMP-74-20, RHR Pump 2B-B if any sections from 6.1 to 6.13 are NOT complete. _____

Data Package: Page ____ of ____ **Date _____**

6.15 Residual Heat Removal Pump 2B-B Logic Test (continued)

[206] **REINSTALL** the following relays in 6900V Shutdown Board 2B-B Logic Relay Panel **OR ENTER** N/A for the relay **AND EXPLAIN** in the Test Log:

A. RHR BOX Relay _____

_____
CV

B. RHR BOY Relay _____

_____
CV

C. RHR UVX Relay _____

_____
CV

D. RHR UVY Relay _____

_____
CV

E. SIATX Relay _____

_____
CV

[207] **VERIFY** successful completion of Subsection 6.15 **(Acc Crit 5.0[33]).** _____

Data Package: Page ____ of ____ **Date _____**

6.16 System 074 131-F ESF Component Not Normal Annunciator Test

[1] **VERIFY** the following prerequisites have been completed for Subsection 6.16. (4.1[1]-4.1[8], 4.1[10], 4.1[12]-4.1[19], 4.1[21], 4.1[22], 4.2[1], 4.2[2], 4.3[7]) _____

[2] **IF** a danger tag is placed on 2-FCV-63-1, **THEN**

REQUEST a temporary lift of the clearance. _____

[3] **ENSURE** the following valves are CLOSED from 2-M-6:

A. 2-FCV-63-8, RHR PMP 2A-A TO CHG PMP & SIP 2A-A SUCT ISOL _____

B. 2-FCV-63-72, CONTAINMENT SUMP TO RHR PUMP 2A-A ISOL _____

C. 2-FCV-72-44, CNTMT SUMP TO HDR A FLOW CONT VALVE _____

D. 2-FCV-63-11, RHR HX 2B-B OUTLET TO SIP 2B-B SUCT ISOL _____

E. 2-FCV-63-73, CONTAINMENT SUMP TO RHR PUMP 2B-B ISOL _____

F. 2-FCV-72-45, CNTMT SUMP TO HDR B FLOW CONT VALVE _____

G. 2-FCV-72-40, RHR SPRAY HDR A ISOLATION _____

H. 2-FCV-72-41, RHR SPRAY HDR B ISOLATION _____

[4] **ENSURE** the following valves are CLOSED from 0-M-27B

A. :2-FCV-70-153, RHR HEAT EXCHANGER 2B CCS OUTLET _____

B. 2-FCV-70-156, RHR HEAT EXCHANGER 2A CCS OUTLET _____

Data Package: Page ____ of ____ **Date _____**

6.16 System 074 131-F ESF Component Not Normal Annunciator Test (continued)

[5] **ENSURE** the following valves are OPEN from 2-M-6:

A. 2-FCV-63-1, RWST TO RHR SUCTION _____

B. 2-FCV-63-3, SI PUMP MINI FLOW RECIRC HDR TO RWST ISOL _____

C. 2-FCV-74-3, RHR PUMP 2A-A SUCTION OPEN _____

D. 2-FCV-63-4, SI PUMP 2A-A MINI FLOW RECIRC TO RWST ISOL _____

E. 2-FCV-74-21, RHR PUMP 2B-B SUCTION OPEN _____

F. 2-FCV-63-175, SI PUMP 2B-B MINI FLOW RECIRC TO RWST _____

G. 2-FCV-63-5, RWST TO SI PUMP SUCTION ISOL _____

[6] **ENSURE** Annunciator Window 131-F, ESP COMPONENT NOT NORMAL, is CLEAR. _____

[7] **ENSURE** Event Display Monitor reports 131-F ESP ABNORMAL RECIRCULATION LINEUP, NORMAL _____

[8] **CLOSE** 2-FCV-74-3, RHR PUMP 2A-A SUCTION by using 2-HS-74-3A, RHR PMP A SUCTION. _____

[9] **VERIFY** Annunciator Window 131-F, ESF COMPONENT NOT NORMAL, ALARMS **(Acc Crit 5.0[6])**. _____

[10] **VERIFY** Event Display Monitor reports 131-F ESP ABNORMAL RECIRCULATION LINE UP, ALARM _____

[11] **OPEN** 2-FCV-74-3, RHR PUMP 2A-A SUCTION by using 2-HS-74-3A, RHR PMP A SUCTION. _____

[12] **VERIFY** Annunciator Window 131-F, ESF COMPONENT NOT NORMAL, is CLEAR. _____

[13] **VERIFY** Event Display Monitor reports 131-F ESP ABNORMAL RECIRCULATION LINE UP, NORMAL _____

Data Package: Page ____ of ____ **Date _____**

6.16 System 074 131-F ESF Component Not Normal Annunciator Test (continued)

[14] **CLOSE** 2-FCV-74-21, RHR PUMP 2B-B SUCTION by using 2-HS-74-21A, RHR PMP B SUCTION. _____

[15] **VERIFY** Annunciator Window 131-F, ESF COMPONENT NOT NORMAL, ALARMS **(Acc Crit 5.0[6])**. _____

[16] **VERIFY** Event Display Monitor reports 131-F ESP ABNORMAL RECIRCULATION LINE UP, ALARM _____

[17] **OPEN** 2-FCV-74-21, RHR PUMP 2B-B SUCTION by using 2-HS-74-21A, RHR PMP B SUCTION. _____

[18] **VERIFY** Annunciator Window 131-F, ESF COMPONENT NOT NORMAL, is CLEAR. _____

[19] **VERIFY** Event Display Monitor reports 131-F ESP ABNORMAL RECIRCULATION LINE UP, NORMAL _____

[20] **ENSURE** the following valves are CLOSED from 2-M-6:

A. 2-FCV-72-40, RHR SPRAY HDR A ISOLATION _____

B. 2-FCV-63-7, RHR HX 2A-A OUTLET TO SIP PUMP 2A-A SUCT _____

C. 2-FW-72-41, RHR SPRAY HDR B ISOLATION _____

D. 2-FCV-63-6, RHR HX A OUTLET TO SI PUMP SUCT _____

[21] **ENSURE** the following valves are OPEN from 2-M-6:

A. 2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE _____

B. 2-FCV-63-47, SAFETY INJ PUMP 2A-A SUCTION ISOLATION _____

C. 2-FCV-63-177, RHR HX 2A-A OUTLET TO SIP 2A-A SUCT ISOL _____

D. 2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE _____

Data Package: Page ____ of ____ **Date _____**

6.16 System 074 131-F ESF Component Not Normal Annunciator Test (continued)

E. 2-FCV-63-48, SAFETY INJ PUMP 2B-B SUCTION ISOLATION _____

[22] **ENSURE** the following valves are OPEN using local position indication:

A. 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL _____

B. 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL _____

[23] **ENSURE** Annunciator Window 131-F, ESF COMPONENT NOT NORMAL, is CLEAR. _____

[24] **ENSURE** Event Display Monitor reports 131-F ESP ABNORMAL RECIRCULATION MODE, NORMAL _____

[25] **CLOSE** valve 2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE using 2-HS-74-33A, RHR HX A OUTLET XTIE. _____

[26] **VERIFY** Annunciator Window 131-F, ESF COMPONENT NOT NORMAL, ALARMS. **(Acc Crit 5.0[6])**. _____

[27] **VERIFY** Event Display Monitor reports 131-F ESP ABNORMAL RECIRCULATION MODE, ALARM _____

[28] **OPEN** valve 2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE using 2-HS-74-33A, RHR HX A OUTLET XTIE. _____

[29] **VERIFY** Annunciator Window 131-F, ESF COMPONENT NOT NORMAL, is CLEAR. _____

[30] **VERIFY** Event Display Monitor reports 131-F ESP ABNORMAL RECIRCULATION MODE, NORMAL _____

[31] **CLOSE** valve 2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE using 2-HS-74-35A, RHR HX B OUTLET XTIE. _____

[32] **VERIFY** Annunciator Window 131-F, ESF COMPONENT NOT NORMAL, ALARMS **(Acc Crit 5.0[6])**. _____

Data Package: Page ____ of ____ **Date _____**

6.16 System 074 131-F ESF Component Not Normal Annunciator Test (continued)

[33] **VERIFY** Event Display Monitor reports 131-F ESP ABNORMAL RECIRCULATION MODE, ALARM _____

[34] **OPEN** valve 2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE using 2-HS-74-35A, RHR HX B OUTLET XTIE. _____

[35] **VERIFY** Annunciator Window 131-F, ESF COMPONENT NOT NORMAL, is CLEAR. _____

[36] **VERIFY** Event Display Monitor reports 131-F ESP ABNORMAL RECIRCULATION MODE, NORMAL _____

[37] **CLOSE** valve 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL using 2-HIC-74-16A, RHR HX A FLOW CONTROL. _____

[38] **VERIFY** Annunciator Window 131-F, ESF COMPONENT NOT NORMAL, ALARMS, when 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL comes off the full open position. **(Acc Crit 5.0[6])**. _____

[39] **VERIFY** Event Display Monitor reports 131-F ESP ABNORMAL RECIRCULATION MODE, ALARM _____

[40] **OPEN** valve 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL using 2-HIC-74-16A, RHR HX A FLOW CONTROL. _____

[41] **VERIFY** Annunciator Window 131-F, ESF COMPONENT NOT NORMAL does NOT CLEAR until 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL is fully OPEN. _____

[42] **VERIFY** Event Display Monitor reports 131-F ESP ABNORMAL RECIRCULATION MODE, NORMAL _____

[43] **CLOSE** valve 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL using 2-HIC-74-28A, RHR HX B FLOW CONTROL. _____

[44] **VERIFY** Annunciator Window 131-F, ESF COMPONENT NOT NORMAL, ALARMS, when 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL comes off the full open position. **(Acc Crit 5.0[6])**. _____

Data Package: Page ____ of ____ **Date _____**

6.16 System 074 131-F ESF Component Not Normal Annunciator Test (continued)

[45] **VERIFY** Event Display Monitor reports 131-F ESP ABNORMAL RECIRCULATION MODE, ALARM _____

[46] **OPEN** valve 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL using 2-HIC-74-28A, RHR HX B FLOW CONTROL. _____

[47] **VERIFY** Annunciator Window 131-F, ESF COMPONENT NOT NORMAL does NOT CLEAR until 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL is fully OPEN. _____

[48] **VERIFY** Event Display Monitor reports 131-F ESP ABNORMAL RECIRCULATION MODE, NORMAL _____

[49] **CLOSE** the following valves:

A. 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL 2-HIC-74-16 _____

B. 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL 2-HIC-74-28 _____

C. 2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE 2-HS-74-33 _____

D. 2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE 2-HS-74-35 _____

E. 2-FCV-74-3, RHR PUMP 2A-A SUCTION 2-HS-74-3 _____

F. 2-FCV-74-21, RHR PUMP 2B-B SUCTION 2-HS-74-21 _____

[50] **IF** a temporary lift was obtained in step 6.16[2], **THEN**

RE-ESTABLISH the clearance on 2-FCV-63-1. _____

Data Package: Page ____ of ____ **Date _____**

6.17 RHR Miniflow Recirculation

[1] **VERIFY** the following prerequisites have been completed for Subsection 6.17. (4.1[1]-4.1[22], 4.2[1], 4.2[2], 4.3[7], 4.3[8]) _____

[2] **COMPLETE** the checklists for this Section contained in Appendix H. _____

[3] **IF** a danger tag is placed on 2-FCV-63-1, **THEN**

REQUEST a temporary lift of the clearance. _____

[4] **ENSURE** clearance on 2-PMP-74-10, RHR Pump 2A-A is lifted for the performance of this section. _____

[5] **ENSURE** clearance on 2-PMP-74-20, RHR Pump 2B-B is lifted for the performance of this section. _____

[6] **FILL AND VENT** the RHR piping including the HTX bypass lines per 2-SOI-74.01 Sections 5.1 and 5.2. _____

[7] **ESTABLISH** communications between MCR Panel 2-M-6, 6900V SHUTDOWN BOARDS 2A-A AND 2B-B, and the RHR pump rooms. _____

[8] **ENSURE** Component Cooling is available to RHR pump mechanical seal water heat exchangers.

RHR Pump 2A-A _____

RHR Pump 2B-B _____

[9] **ENSURE** RHR pump room cooling is available for both RHR Pump 2A-A and 2B-B. _____

Data Package: Page ____ of ____ **Date _____**

6.17 RHR Miniflow Recirculation (continued)

[10] **ENSURE** the following valves are CLOSED from 2-M-6 :

A. 2-FCV-63-93, RHR TO COLD LEG 2 & 3 INJECTION ISOLATION _____

B. 2-FCV-63-94, RHR TO COLD LEG 1 & 4 INJECTION ISOLATION _____

C. 2-FCV-63-172, RHR TO HOT LEG 1 & 3 INJECTION ISOLATION _____

D. 2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE _____

[11] **ENSURE** the following valves are OPEN from 2-M-6 :

A. 2-FCV-63-1, RWST TO RHR SUCTION _____

B. 2-FCV-74-3, RHR PUMP 2A-A SUCTION _____

C. 2-FCV-74-21, RHR PUMP 2B-B SUCTION _____

D. 2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE _____

[12] **ENSURE** the following valve are closed using local position indication:

A. 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL _____

B. 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL _____

C. 2-FCV-74-32, RHR HEAT EXCHANGER A/B BYPASS FLOW CONTROL _____

[13] **ENSURE** the following hand switches are in P-AUTO:

A. 2-HS-74-12A, RHR PMP A MINI FLOW _____

B. 2-HS-74-24A, RHR PMP B MINI FLOW _____

[14] **ENSURE** Annunciator Window 113-C, RHR PUMP DISCH PRESS HI/MINI FLOW CONDITION, is CLEAR. _____

Data Package: Page ____ of ____ **Date _____**

6.17 RHR Miniflow Recirculation (continued)

[15] **ENSURE** Event Display Monitor reports, 113-C LOW FLOW ON RHR TRAIN A OR B, NORMAL. _____

CAUTION

Do NOT operate RHR pump at less than 500 gpm miniflow.

[16] **VERIFY** valve 2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE is CLOSED. _____

[17] **START** RHR Pump 2A-A using 2-HS-74-10A, RHR PMP A (ECCS). _____

[18] **VERIFY** valve 2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE OPENS **(Acc Crit 5.0[28])**. _____

[19] **RECORD** RHR Pump 2A-A miniflow **(Acc Crit 5.0[19])**.

2-FI-74-12 (A9V El 680) _____gpm (500 to 1500 gpm) _____

_____
CV

[20] **VERIFY** Annunciator Window 113-C, RHR PUMP DISCH PRESS HI/MINI FLOW CONDITION, ALARMS **(Acc Crit 5.0[9])**. _____

[21] **VERIFY** Event Display Monitor reports, 113-C LOW FLOW ON RHR TRAIN A OR B, ALARM. _____

[22] **THROTTLE OPEN** valve 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL to full open using 2-HIC-74-16. _____

[23] **SLOWLY THROTTLE OPEN** valve 2-HCV-74-34 until valve 2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE CLOSES **AND RECORD** RHR Pump 2A-A miniflow 2-FI-74-12 (A9V El 680) _____gpm (1400±22.5 gpm)**(Acc Crit 5.0[28])** _____

_____
CV

Data Package: Page ____ of ____ **Date _____**

6.17 RHR Miniflow Recirculation (continued)

[24] **VERIFY** Annunciator Window 113-C, RHR PUMP DISCH PRESS HI/MINI FLOW CONDITION, CLEARS. _____

[25] **VERIFY** Event Display Monitor reports, 113-C LOW FLOW ON RHR TRAIN A OR B, NORMAL. _____

[26] **VERIFY**:

A. Ammeter 2-EI-74-5A (Panel 2-M-6) is reading within its operating range (i.e. 0-30 AMPS). **(Acc Crit 5.0[35])** _____

B. Ammeter 2-EI-74-5B (6900 SD BD 2A-A, Compt 14) indicates approximately the same as 2-EI-74-5A. **(Acc Crit 5.0[35])** _____

[27] **SLOWLY CLOSE** valve 2-HCV-74-34 until valve 2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE OPENS **AND RECORD** RHR Pump 2A-A miniflow 2-FI-74-12 (A9V EI 680) _____gpm (750±22.5 gpm). **(Acc Crit 5.0[28])** _____

_____
CV

[28] **STOP** RHR Pump 2A-A using 2-HS-74-10A, RHR PMP A (ECCS). _____

[29] **CLOSE** valve 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL using 2-HIC-74-16. _____

[30] **ENSURE** 2-HS-74-12A, RHR PMP A MINI FLOW is in P AUTO. _____

[31] **PLACE** transfer switch 2-XS-74-10, RHR PUMP A-A TRANS SWITCH to AUX. _____

[32] **VERIFY** valve 2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE is CLOSED. _____

[33] **START** RHR Pump 2A-A using 2-HS-74-10C, RHR PMP A (ECCS). _____

[34] **VERIFY** valve 2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE OPENS. _____

Data Package: Page ____ of ____ **Date _____**

6.17 RHR Miniflow Recirculation (continued)

[35] **THROTTLE OPEN** valve 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL to full open using 2-HIC-74-16. _____

[36] **SLOWLY THROTTLE OPEN** valve 2-HCV-74-34 until valve 2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE CLOSES. _____

[37] **SLOWLY CLOSE** valve 2-HCV-74-34. _____

[38] **VERIFY** valve 2-FCV-74-12, RHR PUMP 2A-A MINIMUM FLOW VALVE OPENS. _____

[39] **STOP** RHR Pump 2A-A using 2-HS-74-10C, RHR PMP A (ECCS). _____

[40] **CLOSE** valve 2-FCV-74-16, RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL using 2-HIC-74-16. _____

[41] **CLOSE** valve 2-FCV-74-33, RHR HEAT EXCHANGER 2A OUTLET CROSSTIE using 2-HS-74-33A, RHR HX A OUTLET XTIE. _____

[42] **PLACE** transfer switch 2-XS-74-10, RHR PUMP A-A TRANS SWITCH to NORMAL. _____

[43] **VERIFY** Annunciator Window 113-C, RHR PUMP DISCH PRESS HI/MINI FLOW CONDITION, CLEARS. _____

[44] **VERIFY** Event Display Monitor reports, 113-C LOW FLOW ON RHR TRAIN A OR B, NORMAL. _____

[45] **CLOSE** valve 2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE using 2-HS-74-35A, RHR HX B OUTLET XTIE. _____

CAUTION

Do NOT operate RHR pump at less than 500 gpm miniflow.

[46] **VERIFY** valve 2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE is CLOSED. _____

Data Package: Page ____ of ____ **Date _____**

6.17 RHR Miniflow Recirculation (continued)

[47] **START** RHR Pump 2B-B using 2-HS-74-20A, RHR PMP B (ECCS). _____

[48] **VERIFY** valve 2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE OPENS **(Acc Crit 5.0[29])**. _____

[49] **RECORD** RHR Pump 2B-B miniflow **(Acc Crit 5.0[19])**.
2-FI-74-24 (A9V EI 680) _____gpm (500 to 1500 gpm) _____

_____
CV

[50] **VERIFY** Annunciator Window 113-C, RHR PUMP DISCH PRESS HI/MINI FLOW CONDITION, ALARMS **(Acc Crit 5.0[9])**. _____

[51] **VERIFY** Event Display Monitor reports, 113-C LOW FLOW ON RHR TRAIN A OR B, Alarm. _____

[52] **THROTTLE OPEN** valve 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL to full open using 2-HIC-74-28. _____

[53] **SLOWLY THROTTLE OPEN** valve 2-HCV-74-34 until valve 2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE CLOSES **AND RECORD** RHR Pump 2A-A miniflow
2-FI-74-24 (A9V EI 680) _____gpm (1400±22.5 gpm)**(Acc Crit 5.0[29])** _____

_____
CV

[54] **ENSURE** Annunciator Window 113-C, RHR PUMP DISCH PRESS HI/MINI FLOW CONDITION, CLEARS. _____

[55] **VERIFY** Event Display Monitor reports, 113-C LOW FLOW ON RHR TRAIN A OR B, Normal. _____

Data Package: Page ____ of ____ **Date _____**

6.17 RHR Miniflow Recirculation (continued)

[56] **VERIFY**:

A. Ammeter 2-EI-74-17A (Panel 2-M-6) is reading within its operating range (0-30 AMPS). **(Acc Crit 5.0[35])** _____

B. Ammeter 2-EI-74-17B (6900V SD BD 2B-B, Compt 14) indicates approximately the same as 2-EI-74-17A. **(Acc Crit 5.0[35])** _____

[57] **SLOWLY CLOSE** valve 2-HCV-74-34 until valve 2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE OPENS **AND RECORD** RHR Pump 2A-A miniflow 2-FI-74-24 (A9V EI 680) _____gpm (750±22.5 gpm). **(Acc Crit 5.0[29])** _____

_____
CV

[58] **STOP** RHR Pump 2B-B using 2-HS-74-20A, RHR PMP B (ECCS). _____

[59] **CLOSE** valve 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL using 2-HIC-74-28. _____

[60] **ENSURE** 2-HS-74-24A, RHR PMP B MINI FLOW is in P AUTO. _____

[61] **PLACE** transfer switch 2-XS-74-20, RHR PUMP B-B TRANS SWITCH to AUX. _____

[62] **VERIFY** valve 2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE is CLOSED. _____

[63] **START** RHR Pump 2B-B using 2-HS-74-20C, RHR PMP B (ECCS). _____

[64] **VERIFY** valve 2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE OPENS. _____

[65] **THROTTLE OPEN** valve 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL to full open using 2-HIC-74-28. _____

Data Package: Page ____ of ____ **Date _____**

6.17 RHR Miniflow Recirculation (continued)

[66] **SLOWLY THROTTLE OPEN** valve 2-HCV-74-34 until valve 2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE CLOSES. _____

[67] **SLOWLY CLOSE** valve 2-HCV-74-34. _____

[68] **VERIFY** valve 2-FCV-74-24, RHR PUMP 2B-B MINIMUM FLOW VALVE OPENS. _____

[69] **STOP** RHR Pump 2B-B using 2-HS-74-20C, RHR PMP B (ECCS). _____

[70] **CLOSE** valve 2-FCV-74-28, RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL using 2-HIC-74-28. _____

[71] **CLOSE** valve 2-FCV-74-35, RHR HEAT EXCHANGER 2B OUTLET CROSSTIE using 2-HS-74-35A, RHR HX B OUTLET XTIE. _____

[72] **PLACE** transfer 2-XS-74-20, RHR PUMP B-B TRANS SWITCH to NORMAL. _____

[73] **ENSURE** Annunciator Window 113-C, RHR PUMP DISCH PRESS HI/MINI FLOW CONDITION, is CLEAR. _____

[74] **LIFT** the lead at TB23L terminal 1 on the field side in Panel 2-R-23. _____

_____
CV

[75] **VERIFY** Annunciator Window 113-C, RHR PUMP DISCH PRESS HI/MINI FLOW CONDITION, ALARMS **(Acc Crit 5.0[9])**. _____

[76] **VERIFY** Event Display Monitor reports, 113-C RHR PUMP A HIGH DISCH PRESS (PS-74-13), Alarm. _____

[77] **RELAND** the lead at TB23L terminal 1 on the field side in Panel 2-R-23. _____

_____
CV

Data Package: Page ____ of ____ **Date _____**

6.17 RHR Miniflow Recirculation (continued)

[78] **ENSURE** Annunciator Window 113-C, RHR PUMP DISCH PRESS HI/MINI FLOW CONDITION, CLEARS. _____

[79] **VERIFY** Event Display Monitor reports, 113-C RHR PUMP A HIGH DISCH PRESS (PS-74-13), Normal. _____

[80] **LIFT** the lead at TB21L terminal 1 on the field side in Panel 2-R-21. _____

_____
CV

[81] **VERIFY** Annunciator Window 113-C, RHR PUMP DISCH PRESS HI/MINI FLOW CONDITION, ALARMS **(Acc Crit 5.0[9])**. _____

[82] **VERIFY** Event Display Monitor reports, 113-C RHR PUMP B HIGH DISCH PRESS (PS-74-26), ALARM. _____

[83] **RELAND** the lead at TB21L terminal 1 on the field side in Panel 2-R-21. _____

_____
CV

[84] **ENSURE** Annunciator Window 113-C, RHR PUMP DISCH PRESS HI/MINI FLOW CONDITION, CLEARS. _____

[85] **VERIFY** Event Display Monitor reports, 113-C RHR PUMP B HIGH DISCH PRESS (PS-74-26), Normal. _____

[86] **IF** a temporary lift was obtained in step 6.17[3], **THEN**

RE-ESTABLISH the clearance on 2-FCV-63-1. _____

[87] **VERIFY** successful completion of Subsection 6.17 **(Acc Crit 5.0[32])**. _____

Data Package: Page ____ of ____ **Date _____**

6.18 Miscellaneous Instrument Annunciators

[1] **VERIFY** the following prerequisites have been completed for Subsection 6.18. (4.1[1]-4.1[8], 4.1[10], 4.1[12]-4.1[18], 4.1[21], 4.1[22], 4.2[1], 4.2[2], 4.3[7]) _____

[2] **ESTABLISH** communications between MCR Panel 2-M-6 and upper level of pipe chase, El. 713 (A11V). _____

[3] **ENSURE** Annunciator Window 113-B "RHR/CVCS HI TEMP PIPE BREAK" is CLEAR. _____

[4] **ENSURE** Events Display Monitor reports, 113-B RHR RET LINE HI TEMP PIPE BREAK (TS-74-43) is CLEAR. _____

[5] **VERIFY** white light 2-XI-74-43, LOOP 4 HL TO RHR PIPE BREAK - 125 F is OFF. _____

[6] **PLACE** a jumper across the terminals (Wire Nos. HTR11 and HTR12) in JB-3443 (2-TS-74-43) on ceiling of pipe chase, El. 737, A11V). _____

_____
CV

[7] **VERIFY** Annunciator Window 113-B "RHR/CVCS HI TEMP PIPE BREAK" is CLEAR. _____

[8] **VERIFY** Events Display Monitor reports, 113-B RHR RET LINE HI TEMP PIPE BREAK (TS-74-43) is CLEAR. _____

[9] **PLACE** a jumper the terminals (Wire Nos. HTR12 and HTR13) in JB-3443 (2-TS-74-44) on ceiling of pipe chase, (El. 737, A11V). _____

_____
CV

[10] **VERIFY** Annunciator Window 113-B "RHR/CVCS HI TEMP PIPE BREAK" ALARMS **(Acc Crit 5.0[20])**. _____

[11] **VERIFY** Events Display Monitor reports, 113-B RHR RET LINE HI TEMP PIPE BREAK (TS-74-43) is in ALARM. _____

Data Package: Page ____ of ____ **Date _____**

6.18 Miscellaneous Instrument Annunciators (continued)

[12] **VERIFY** white light 2-XI-74-43, LOOP 4 HL TO RHR PIPE BREAK - 125 F is ON. **(Acc Crit 5.0[20])** _____

[13] **REMOVE** the jumper across the terminals HTR11 and HTR12) in JB-3443 (2-TS-74-43). _____

_____
CV

[14] **VERIFY** Annunciator Window 113-B "RHR/CVCS HI TEMP PIPE BREAK" is CLEAR. _____

[15] **VERIFY** Events Display Monitor reports, 113-B RHR RET LINE HI TEMP PIPE BREAK (TS-74-43) is CLEAR. _____

[16] **REMOVE** the jumper across the terminals (Wire Nos. HTR12 and HTR13) in JB-3443 (2-TS-74-44). _____

_____
CV

[17] **VERIFY** Annunciator Window 113-B "RHR/CVCS HI TEMP PIPE BREAK" is CLEAR. _____

[18] **VERIFY** Events Display Monitor reports, 113-B RHR RET LINE HI TEMP PIPE BREAK (TS-74-43) is CLEAR. _____

[19] **VERIFY** white light 2-XI-74-43, LOOP 4 HL TO RHR PIPE BREAK - 125 F is OFF. _____

[20] **VERIFY** white light 2-XI-74-45, LOOP 4 HL TO RHR PIPE BREAK - 125 F is OFF. _____

[21] **PLACE** a jumper across the terminals (Wire Nos. HTR21 and HTR22) in JB-3444 (2-TS-74-45) on ceiling of pipe chase, (el 737, A11V). _____

_____
CV

[22] **VERIFY** Annunciator Window 113-B "RHR/CVCS HI TEMP PIPE BREAK" is CLEAR. _____

[23] **VERIFY** Events Display Monitor reports, 113-B RHR RET LINE HI TEMP PIPE BREAK (TS-74-43) is CLEAR. _____

Data Package: Page ____ of ____ **Date _____**

6.18 Miscellaneous Instrument Annunciators (continued)

[24] **PLACE** a jumper across the terminals (Wire Nos. HTR22 and HTR23) in JB-3444 (2-TS-74-46)on ceiling of pipe chase, (el 737, A11V). _____

_____
CV

[25] **VERIFY** Annunciator Window 113-B "RHR/CVCS HI TEMP PIPE BREAK" ALARMS **(Acc Crit 5.0[20])**. _____

[26] **VERIFY** Events Display Monitor reports, 113-B RHR RET LINE HI TEMP PIPE BREAK (TS-74-43) is in ALARM. _____

[27] **VERIFY** white light 2-XI-74-45, LOOP 4 HL TO RHR PIPE BREAK - 125 F is ON. **(Acc Crit 5.0[20])** _____

[28] **REMOVE** the jumper across the terminals (Wire Nos. HTR21 and HTR22) in JB-3444 (2-TS-74-45). _____

_____
CV

[29] **VERIFY** Annunciator Window 113-B "RHR/CVCS HI TEMP PIPE BREAK" is CLEAR. _____

[30] **VERIFY** Events Display Monitor reports, 113-B RHR RET LINE HI TEMP PIPE BREAK (TS-74-43) is CLEAR. _____

[31] **REMOVE** the jumper across terminals (Wire Nos. HTR22 and HTR23) in JB-3444 (2-TS-74-46). _____

_____
CV

[32] **ESTABLISH** communications between MCR Panel 2-M-6 and Panel 2-L-12, El. 676, Col A9V. _____

[33] **ENSURE** Annunciator Window 113-D "RHR PUMP A/B MECH SEAL HX TEMP HI/HI-HI" is CLEAR. _____

[34] **ENSURE** Event Display Monitor reports, 113-D RHR PUMP A MECH SEAL HX TEMP HI (TIS-74-7), NORMAL. _____

[35] **VERIFY** white light 2-XI-74-45, LOOP 4 HL TO RHR PIPE BREAK - 125 F is OFF. _____

Data Package: Page ____ of ____ **Date _____**

6.18 Miscellaneous Instrument Annunciators (continued)

[36] **PLACE** a jumper across terminals BB4 and BB5 in Panel 2-L-12 El. 676, Col A9V (TIS-74-7, HI). _____

_____ CV

[37] **VERIFY** Annunciator Window 113-D "RHR PUMP A/B MECH SEAL HX TEMP HI/HI-HI" ALARMS **(Acc Crit 5.0[21])**. _____

[38] **VERIFY** Event Display Monitor reports, 113-D RHR PUMP A MECH SEAL HX TEMP HI (TIS-74-7), Alarm. _____

[39] **REMOVE** the jumper across terminals BB4 and BB5 in Panel 2-L-12. _____

_____ CV

[40] **ENSURE** Annunciator Window 113-D "RHR PUMP A/B MECH SEAL HX TEMP HI/HI-HI" is CLEAR. _____

[41] **VERIFY** Event Display Monitor reports, 113-D RHR PUMP A MECH SEAL HX TEMP HI (TIS-74-7), NORMAL. _____

[42] **PLACE** a jumper across terminals BB7 and BB8 in Panel 2-L-12 (TIS-74-7, HI-HI). _____

_____ CV

[43] **VERIFY** Annunciator Window 113-D "RHR PUMP A/B MECH SEAL HX TEMP HI/HI-HI" ALARMS **(Acc Crit 5.0[21])**. _____

[44] **VERIFY** Event Display Monitor reports, 113-D RHR PUMP A MECH SEAL HX TEMP HI-HI (TIS-74-7), Alarm. _____

[45] **REMOVE** the jumper across terminals BB7 and BB8 in Panel 2-L-12. _____

_____ CV

[46] **ENSURE** Annunciator Window 113-D "RHR PUMP A/B MECH SEAL HX TEMP HI/HI-HI" is CLEAR. _____

Data Package: Page ____ of ____ **Date _____**

6.18 Miscellaneous Instrument Annunciators (continued)

[47] **VERIFY** Event Display Monitor reports, 113-D RHR PUMP A MECH SEAL HX TEMP HI-HI (TIS-74-7), Normal. _____

[48] **ESTABLISH** communication between MCR Panel 2-M-6 and Panel 2-L-13, El. 676, Col A9V. _____

[49] **PLACE** a jumper across terminals BB4 and BB5 in Panel 2-L-13 El. 676, Col A9V (TIS-74-19, HI). _____

_____
CV

[50] **VERIFY** Annunciator Window 113-D "RHR PUMP A/B MECH SEAL HX TEMP HI/HI-HI" ALARMS **(Acc Crit 5.0[21])**. _____

[51] **VERIFY** Event Display Monitor reports, 113-D RHR PUMP B MECH SEAL HX TEMP HI (TIS-74-19), Alarm. _____

[52] **REMOVE** the jumper across terminals BB4 and BB5 in Panel 2-L-13. _____

_____
CV

[53] **ENSURE** Annunciator Window 113-D "RHR PUMP A/B MECH SEAL HX TEMP HI/HI-HI" is CLEAR. _____

[54] **VERIFY** Event Display Monitor reports, 113-D RHR PUMP B MECH SEAL HX TEMP HI (TIS-74-19), Normal. _____

[55] **PLACE** a jumper across terminals BB7 and BB8 in Panel 2-L-13 (TIS-74-19, HI-HI). _____

_____
CV

[56] **VERIFY** Annunciator Window 113-D "RHR PUMP A/B MECH SEAL HX TEMP HI/HI-HI" ALARMS **(Acc Crit 5.0[21])**. _____

[57] **VERIFY** Event Display Monitor reports, 113-D RHR PUMP B MECH SEAL HX TEMP HI-HI (TIS-74-19), Alarm. _____

Data Package: Page ____ of ____ **Date _____**

6.18 Miscellaneous Instrument Annunciators (continued)

[58] **REMOVE** the jumper across terminals BB7 and BB8 in Panel 2-L-13. _____

_____
CV

[59] **ENSURE** Annunciator Window 113-D "RHR PUMP A/B MECH SEAL HX TEMP HI/HI-HI" is CLEAR. _____

[60] **VERIFY** Event Display Monitor reports, 113-D RHR PUMP B MECH SEAL HX TEMP HI-HI (TIS-74-19), Normal. _____

Data Package: Page ____ of ____ **Date _____**

7.0 POST PERFORMANCE ACTIVITY

[1] **REMOVE** the jumper with a test switch across points 16 and 27 (wires 10D05 and 10D06) on rear panel of 10D on 480V REAC MOV BD 2A1-A.

_____

_____
CV

[2] **REMOVE** the jumper with a test switch across points 16 and 27 (wires 10D05 and 10D06) on rear panel of 10D on 480V REAC MOV BD 2B1-B.

_____

_____
CV

[3] **REMOVE** the temporary jumper from the lifted wire and TB112-2 in Panel 2-R-54 on the field side and reland the wire to TB112-1.

_____

_____
CV

[4] **REMOVE** the temporary jumper from the lifted wire and TB214-11 in Panel 2-R-55 on the field side and reland the wire to TB214-10.

_____

_____
CV

[5] **NOTIFY** the Unit 2 Supervisor (US/SRO) or Shift Manager (SM) or Designee (DS) of the test completion and System alignment.

_____ _____
U2 US/SRO/SM/DS Signature Date

[6] **NOTIFY** the Unit 1 Supervisor (US/SRO) or Shift Manager (SM) or Designee (DS)of the test completion and System alignment.

_____ _____
U1 US/SRO/SM/DS Signature Date

Data Package: Page ____ of ____ **Date _____**

7.0 POST PERFORMANCE ACTIVITY (continued)

[7] **ENSURE** participants who initialed or signed steps in the prerequisite and instruction sections, test logs, or data sheets enter their initials and signature on Appendix I, Signature Log. _____

[8] **VERIFY** that Post-test calibration of the M&TE used to record quantitative acceptance criteria has been satisfactorily performed and results **RECORDED** on SMP-9.0, Measuring and Test Equipment (M&TE) Log. _____

[9] **VERIFY** that Post-test calibration of permanent plant instruments used to record quantitative acceptance criteria has been satisfactorily performed and the results **RECORDED** on Appendix C, Permanent Plant Instrumentation Log. _____

Data Package: Page ____ of ____ **Date _____**

8.0 RECORDS

A. QA Records

The following documents are QA records and are handled in accordance with the approved with the approved Document Control Records Management (DCRM) Program.

Completed Test Package

B. Non-QA Records

None

Appendix A
(Page 1 of 2)

TEST PROCEDURES/INSTRUCTIONS REFERENCE REVIEW

Data Package: Page ____ of ____ **Date _____**

NOTES

1) Additional copies of this table may be made as necessary.
2) Initial and date indicates review has been completed for impact.

PROCEDURE/ INSTRUCTION	REVISION/CHANGES	**IMPACT** Yes/No	INITIAL AND DATE. (N/A for no change)
FSAR			
FSAR SECTIONS 6.2 AND 6.3			
FSAR Section 14.2			
2-SOI-74.01			
2-TSD-030A-1			
2-TSD-074-1			
2-F-74-12			
2-F-74-24			

Appendix A
(Page 2 of 2)

TEST PROCEDURES/INSTRUCTIONS REFERENCE REVIEW

Data Package: Page ____ of ____ **Date _____**

PROCEDURE/ INSTRUCTION	REVISION/CHANGES	**IMPACT** Yes/No	INITIAL AND DATE. (N/A for no change)

Reviewed By: _____/_____

Appendix B
(Page 1 of 1)

TEMPORARY CONDITION LOG

Data Package: Page ____ of ____ **Date _____**

NOTE

These steps will be N/A'd if NO temporary condition existed. Additional copies of this table may be made as necessary.

ITEM NUMBER	TEMPORARY CONDITION DESCRIPTION	PERFORMED		RETURNED TO NORMAL	
		Step Number	Perf. By/Date 2nd By/Date	Step Number	Returned By/Date 2nd By/Date

Appendix C
(Page 1 of 1)

PERMANENT PLANT INSTRUMENTATION LOG

Data Package: Page ____ of ____ **Date _____**

INSTRUMENT OR INSTRUMENT LOOP NO.	CAL DUE DATE	FILLED AND VENTED[1]	PLACED IN SERVICE[1]	USED FOR QUANTITATIVE ACC CRIT		POST-TEST CAL DATE[2]	POST-TEST CALIBRATION ACCEPTANCE INITIAL/DATE
		INITIAL/DATE	INITIAL/DATE	YES	NO		
2-FI-74-12							
2-FI-74-24							
2-EI-74-5A							
2-EI-74-5B							
2-EI-74-17A							
2-EI-74-17B							

1 This data to be entered during test conduct.

2 May be identified as N/A if instrument was not used to verify/record quantitative acceptance criteria data

Appendix D
(Page 1 of 4)

VALVE LINEUP

Data Package: Page ____ of ____ **Date _____**

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
Auxiliary Bldg el. 676					
RHR PUMP 2A-A SUCTION	A10V/676 Pmp Rm 2A	OPEN	2-FCV-74-3		CV
Auxiliary Bldg el. 676					
RHR PUMP 2B-B SUCTION	A10U/676 Pmp Rm 2B	CLOSED	2-FCV-74-21		CV
Auxiliary Bldg el. 676					
RHR PUMP 2A-A MINIMUM FLOW VALVE	A11V/676 Pipechase	CLOSED	2-FCV-74-12		CV
RHR PUMP 2B-B MINIMUM FLOW VALVE	A11U/676 Pipechase	CLOSED	2-FCV-74-24		CV
Auxiliary Bldg el. 692					
RWST TO RHR SUCTION	A11U/692 Pipe Chase	CLOSED	2-FCV-63-1		CV
CONTAINMENT SUMP TO RHR PUMP 2A-A ISOL	A12V/692 Pipe Chase (RHR Sump Vlv Rm)	CLOSED	2-FCV-63-72		CV

Appendix D
(Page 2 of 4)

VALVE LINEUP

Data Package: Page ____ of ____ **Date _____**

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
CONTAINMENT SUMP TO RHR PUMP 2B-B ISOL	A12V/692 Pipe Chase (RHR Sump Vlv Rm)	CLOSED	2-FCV-63-73		CV
2-FCV-63-72 BONNET PRESS EQUALIZING VALVE	A12V/692 Pipe Chase (RHR Sump Vlv Rm)	CLOSED	2-ISV-63-72		CV
2-FCV-63-73 BONNET PRESS EQUALIZING VALVE	A12V/692 Pipe Chase (RHR Sump Vlv Rm)	CLOSED	2-ISV-63-73		CV
Auxiliary Bldg el. 713					
RHR HX 2B-B OUTLET TO SIP 2B-B SUCT ISOL	A11V/713 BIT Rm	CLOSED	2-FCV-63-11		CV
RHR TO HOT LEG 1 & 3 INJECTION ISOLATION	A11W/713 BIT Rm	CLOSED	2-FCV-63-172		CV
RHR PMP 2A-A TO CHG PMP & SIP 2A-A SUCT ISOL	A11W/713 BIT Rm	CLOSED	2-FCV-63-8		CV
RHR TO COLD LEG 2 & 3 INJECTION ISOLATION	A11W/713 BIT Rm	CLOSED	2-FCV-63-93		CV
RHR TO COLD LEG 1 & 4 INJECTION ISOLATION	A11W/713 BIT Rm	CLOSED	2-FCV-63-94		CV

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VALVE LINEUP

Data Package: Page ____ of ____ **Date _____**

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
Auxiliary Bldg el. 713					
RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL	A9V/713 Hx Rm 2B	CLOSED	2-FCV-74-28		CV
RHR HEAT EXCHANGER 2B OUTLET CROSSTIE	A9V/728 Hx Rm 2B	CLOSED	2-FCV-74-35		CV
RHR RWST RETURN	A9V/728 Hx Rm 2B	CLOSED	2-HCV-74-34		CV
RHR HEAT EXCHANGER 2B MANUAL BYPASS	A9V/713 Hx Rm 2B	CLOSED	2-HCV-74-37		CV
Auxiliary Bldg el. 713					
RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL	A9W/713 Hx Rm 2A	CLOSED	2-FCV-74-16		CV
RHR HEAT EXCHANGER A/B BYPASS FLOW CONTROL	A9W/728 Hx Rm 2A	CLOSED	2-FCV-74-32		CV
RHR HEAT EXCHANGER 2A OUTLET CROSSTIE	A9W/728 Hx Rm 2A	CLOSED	2-FCV-74-33		CV
RHR HEAT EXCHANGER 2A MANUAL BYPASS	A9W/713 Hx Rm 2A	CLOSED	2-HCV-74-36		CV

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VALVE LINEUP

Data Package: Page ____ of ____ **Date _____**

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
Containment					
LOOP 4 HOT LEG TO RHR SUCTION	706-AZ345 Inside Polar Crane Wall	CLOSED	2-FCV-74-1		CV
LOOP 4 HOT LEG TO RHR SUCTION	716-AZ301 #4 Accum Rm	CLOSED	2-FCV-74-2		CV
2-FCV-74-2 BYPASS RHR SUCTION	716-AZ304 #4 Accum Rm	CLOSED	2-FCV-74-8		CV
2-FCV-74-1 BYPASS RHR SUCTION	706-AZ345 Inside Polar Crane Wall	CLOSED	2-FCV-74-9		CV

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VALVE LOGIC ELECTRICAL CHECKLIST

Data Package: Page ____ of ____ **Date _____**

COMPONENT	SECTION	DESCRIPTION	LOCATION	POSITION	INITIALS/DATE
2-BKR-235-0001/44-D	6.3	SSPS B CH I INPUT RELAYS PNL 2-R-49	120V AC VIT BD 2-I BKR 44	ON	
2-BKR-235-0003/30-F	6.3, 6.4	SEPARATION AUX RELAY PANELS 2-R-73/2-R-74	120V AC VIT BD 2-III BKR 30	ON	
2-BKR-235-0003/40-F	6.5	AUX RELAY RACK SSPS AUX RELAYS	120V AC VIT BD 2-III BKR 40	ON	
2-BKR-235-0004/39-G	6.4, 6.6	SEPARATION AUX RELAY PANELS 2-R-77-/2-R-78	120V AC VIT BD 2-IV BKR 39	ON	
2-BKR-235-0001/32-D	6.11	SEPARATION AUX RELAY PANELS 2-R-73/1-R-74	120V AC VITAL INST PWR BD 2-I BKR 32	ON	
2-BKR-235-0002/32-E	6.12	SEPARATION AUX RELAY PANELS 2-R-77/1-R-78	120V AC VITAL INST PWR BD 2-II BKR 32	ON	
2-FU-275-R073/N11	6.3, 6.4	RHR ISOL VLV SEP RELAY	2-R-73 in the Aux Instrument Room	INSTALLED	
2-FU-275-R073/N12	6.3, 6.4	RHR ISOL VLV SEP RELAY	2-R-73 in the Aux Instrument Room	INSTALLED	

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VALVE LOGIC ELECTRICAL CHECKLIST

Data Package: Page ____ of ____ **Date _____**

COMPONENT	SECTION	DESCRIPTION	LOCATION	POSITION	INITIALS/DATE
2-FU-275-R074/K19-A	6.3	RHR SYS MID LOOP ANN RELAY	2-R-74 in the Aux Instrument Room	INSTALLED	
2-FU-275-R074/K20-A	6.3	RHR SYS MID LOOP ANN RELAY	2-R-74 in the Aux Instrument Room	INSTALLED	
2-FU-275-R074/K21-A	6.5	RHR SYS MID LOOP ANN RELAY	2-R-74 in the Aux Instrument Room	INSTALLED	
2-FU-275-R074/K22-A	6.5	RHR SYS MID LOOP ANN RELAY	2-R-74 in the Aux Instrument Room	INSTALLED	
2-FU-275-R074/K23-A	6.5	RHR SYS MID LOOP ANN RELAY	2-R-74 in the Aux Instrument Room	INSTALLED	
2-FU-275-R074/K24-A	6.5	RHR SYS MID LOOP ANN RELAY	2-R-74 in the Aux Instrument Room	INSTALLED	
2-FU-275-R074/L1	6.3	RHR SYS ISOL VLV SEP RELAY	2-R-74 in the Aux Instrument Room	INSTALLED	
2-FU-275-R074/L2	6.3	RHR SYS ISOL VLV SEP RELAY	2-R-74 in the Aux Instrument Room	INSTALLED	

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VALVE LOGIC ELECTRICAL CHECKLIST

Data Package: Page ____ of ____ **Date _____**

COMPONENT	SECTION	DESCRIPTION	LOCATION	POSITION	INITIALS/DATE
2-FU-275-R077/L1	6.4	RHR ISOL VLV FCV-74-2 SEP RELAY	2-R-77 in the Aux Instrument Room	INSTALLED	
2-FU-275-R077/L19-B	6.4	RHR SYS MID LOOP ANN RELAY	2-R-77 in the Aux Instrument Room	INSTALLED	
2-FU-275-R077/L2	6.4	RHR ISOL VLV FCV-74-2 SEP RELAY	2-R-77 in the Aux Instrument Room	INSTALLED	
2-FU-275-R077/L20-B	6.4	RHR SYS MID LOOP ANN RELAY	2-R-77 in the Aux Instrument Room	INSTALLED	
2-FU-275-R077/L21-B	6.6	RHR SYS MID LOOP ANN RELAY	2-R-77 in the Aux Instrument Room	INSTALLED	
2-FU-275-R077/L22-B	6.6	RHR SYS MID LOOP ANN RELAY	2-R-77 in the Aux Instrument Room	INSTALLED	
2-FU-275-R077/L23-B	6.6	RHR SYS MID LOOP ANN RELAY	2-R-77 in the Aux Instrument Room	INSTALLED	
2-FU-275-R077/L24-B	6.6	RHR SYS MID LOOP ANN RELAY	2-R-77 in the Aux Instrument Room	INSTALLED	

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VALVE LOGIC ELECTRICAL CHECKLIST

Data Package: Page ____ of ____ **Date _____**

COMPONENT	SECTION	DESCRIPTION	LOCATION	POSITION	INITIALS/DATE
2-FU-214-A017/31A	6.1	RHR PUMP 2A-A INLET FCV	480V C&A VENT BD 2A1-A	INSTALLED	
2-FU-214-A017/31N	6.1	RHR PUMP 2A-A INLET FCV	480V C&A VENT BD 2A1-A	INSTALLED	
2-BKR-74-3-A	6.1	RHR PMP 2A-A INLET (2-FCV-74-3); BKR 7D	480V C&A VENT BD 2A1-A, COMPT 7D	CLOSED	
2-FU-214-B017/31A	6.2	RHR PUMP 2B-B INLET FLOW CONTROL VALVE	480V C&A VENT BD 2B1-B	INSTALLED	
2-FU-214-B017/31N	6.2	RHR PUMP 2B-B INLET FLOW CONTROL VALVE	480V C&A VENT BD 2B1-B	INSTALLED	
2-BKR-74-21	6.2	RHR PUMP WB SUCTION (2-FCV-74-21)	480V C&A VENT BD 2B1-B, COMPT 7D	CLOSED	
2-FU-213-A026/31	6.5	RHR SYS ISOLATION BYPASS VLV	480V REACTOR MOV BD 2A1-A	INSTALLED	
2-FU-213-A026/32	6.5	RHR SYS ISOLATION BYPASS VLV	480V REACTOR MOV BD 2A1-A	INSTALLED	

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VALVE LOGIC ELECTRICAL CHECKLIST

Data Package: Page ____ of ____ **Date _____**

COMPONENT	SECTION	DESCRIPTION	LOCATION	POSITION	INITIALS/DATE
2-FU-213-A110/1A	6.3, 6.4	RWST TO RHR PUMP FCV	480V REACTOR MOV BD 2A1-A	INSTALLED	
2-FU-213-A110/1N	6.3, 6.4	RWST TO RHR PUMP FCV	480V REACTOR MOV BD 2A1-A	INSTALLED	
2-FU-213-A110/31A	6.3	RHR SYS ISLN	480V REACTOR MOV BD 2A1-A	INSTALLED	
2-FU-213-A110/31N	6.3	RHR SYS ISLN	480V REACTOR MOV BD 2A1-A	INSTALLED	
2-FU-213-A110/32	6.3	RHR SYS ISLN	480V REACTOR MOV BD 2A1-A	INSTALLED	
2-FU-213-A111/11A	6.1	RHR HEX A TO CVCS CHARGING PUMP	480V REACTOR MOV BD 2A1-A	INSTALLED	
2-FU-213-A111/11N	6.1	RHR HEX A TO CVCS CHARGING PUMP	480V REACTOR MOV BD 2A1-A	INSTALLED	
2-FU-213-A112/11A	6.1, 6.3	CNTMT SUMP TO RHR PUMP A-A	480V REACTOR MOV BD 2A1-A	INSTALLED	

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VALVE LOGIC ELECTRICAL CHECKLIST

Data Package: Page ____ of ____ **Date _____**

COMPONENT	SECTION	DESCRIPTION	LOCATION	POSITION	INITIALS/DATE
2-FU-213-A112/11N	6.1, 6.3	CNTMT SUMP TO RHR PUMP A-A	480V REACTOR MOV BD 2A1-A	INSTALLED	
2-FU-213-A114/31A	6.7	RHR PUMP 2A-A MINIMUM FLOW VALVE	480V REACTOR MOV BD 2A1-A	INSTALLED	
2-FU-213-A114/31N	6.7	RHR PUMP 2A-A MINIMUM FLOW VALVE	480V REACTOR MOV BD 2A1-A	INSTALLED	
2-FU-213-A114/41A	6.9	RHR HEX BY-PASS VALVE	480V REACTOR MOV BD 2A1-A	INSTALLED	
2-FU-213-A114/41N	6.9	RHR HEX BY-PASS VALVE	480V REACTOR MOV BD 2A1-A	INSTALLED	
2-FU-213-B015/21	6.6	RHR SYSTEM ISOLATION BYPASS VALVE	480V REACTOR MOV BD 2B1-B	INSTALLED	
2-FU-213-B015/22	6.6	RHR SYSTEM ISOLATION BYPASS VALVE	480V REACTOR MOV BD 2B1-B	INSTALLED	
2-FU-213-B110/31A	6.4	RHR SYS ISLN	480V REACTOR MOV BD 2B1-B	INSTALLED	

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VALVE LOGIC ELECTRICAL CHECKLIST

Data Package: Page ____ of ____ **Date _____**

COMPONENT	SECTION	DESCRIPTION	LOCATION	POSITION	INITIALS/DATE
2-FU-213-B110/31N	6.4	RHR SYS ISLN	480V REACTOR MOV BD 2B1-B	INSTALLED	
2-FU-213-B110/32	6.4	RHR SYS ISLN	480V REACTOR MOV BD 2B1-B	INSTALLED	
2-FU-213-B111/11A	6.2	RHR HEX B SIS PUMP	480V REACTOR MOV BD 2B1-B	INSTALLED	
2-FU-213-B111/11N	6.2	RHR HEX B SIS PUMP	480V REACTOR MOV BD 2B1-B	INSTALLED	
2-FU-213-B112/31A	6.2, 6.4	CNTMT SUMP TO RHR PUMP B-B	480V REACTOR MOV BD 2B1-B	INSTALLED	
2-FU-213-B112/31N	6.2, 6.4	CNTMT SUMP TO RHR PUMP B-B	480V REACTOR MOV BD 2B1-B	INSTALLED	
2-FU-213-B115/11A	6.8	RHR PUMP 2B-B MINIMUM FLOW VALVE	480V REACTOR MOV BD 2B1-B	INSTALLED	
2-FU-213-B115/11N	6.8	RHR PUMP 2B-B MINIMUM FLOW VALVE	480V REACTOR MOV BD 2B1-B	INSTALLED	

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VALVE LOGIC ELECTRICAL CHECKLIST

Data Package: Page ____ of ____ **Date _____**

COMPONENT	SECTION	DESCRIPTION	LOCATION	POSITION	INITIALS/DATE
2-FU-213-B115/31A	6.10	RHR HEX 2B BYPASS VALVE	480V REACTOR MOV BD 2B1-B	INSTALLED	
2-FU-213-B115/31N	6.10	RHR HEX 2B BYPASS VALVE	480V REACTOR MOV BD 2B1-B	INSTALLED	
2-BKR-63-1-B/A	6.3, 6.4	RWST TO RHR SUCT (2-FCV-63-1)	480V RX MOV BD 2A1-A COMPT 10A	CLOSED	
2-BKR-74-1-A	6.3	480V REAC MOV BD 2A1-A BKR 10D (TO BKR 5B RHR SYSTEM ISOLATION, 2-FCV-74-1-A)	480V RX MOV BD 2A1-A COMPT 10D	CLOSED	
2-BKR-63-8-A	6.1	RHRP 2A TO CHG PMP/SIP 2A SUCT (2-FCV-63-8)	480V RX MOV BD 2A1-A COMPT 11B	CLOSED	
2-BKR-63-72-A	6.1, 6.3	CNTMT SMP TO RHRP 2A ISOL (2-FCV-63-72)	480V RX MOV BD 2A1-A COMPT 12B	CLOSED	
2-BKR-74-12	6.7	RHR PMP 2A-A MIN FLOW VLV; 2-FCV-74-12-A	480V RX MOV BD 2A1-A COMPT 14D	CLOSED	
2-BKR-74-33	6.9	480V REAC MOV BD 2A1-A BKR 14E RHR HX 2A BPSS (2-FCV-74-33-A)	480V RX MOV BD 2A1-A COMPT 14E	CLOSED	

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VALVE LOGIC ELECTRICAL CHECKLIST

Data Package: Page ____ of ____ **Date _____**

COMPONENT	SECTION	DESCRIPTION	LOCATION	POSITION	INITIALS/DATE
2-BKR-63-1-A/A	6.3, 6.4	RWST TO RHR SUCT (2-FCV-63-1)	480V RX MOV BD 2A1-A COMPT 2E1	CLOSED	
2-BKR-74-1-A	6.3	480V REAC MOV BD 2A1-A BKR 5B RHR SYSTEM ISOLATION (2-FCV-74-1-A)	480V RX MOV BD 2A1-A COMPT 5B	CLOSED	
2-BKR-74-8-A	6.5	2-FCV-74-2 BYPASS RHR SUCTION (2-FCV-74-8-A)	480V RX MOV BD 2A2-A COMPT 5C	CLOSED	
2-BKR-74-2-B	6.4	LOOP 4 HOT LEG TO RHR SUCTION (2-FCV-74-2)	480V RX MOV BD 2B1-B COMPT 10D	CLOSED	
2-BKR-63-11-A	6.2	RHR HX 2B OUTLET TO SIP 2B SUCT (2-FCV-63-11)	480V RX MOV BD 2B1-B COMPT 11B	CLOSED	
2-BKR-63-73-B	6.2, 6.4	CNTMT SMP TO RHRP 2B ISOL (2-FCV-63-73)	480V RX MOV BD 2B1-B COMPT 12D	CLOSED	
2-BKR-74-9-B	6.6	2-FCV-74-1 BYPASS RHR SUCTION (2-FCV-74-9)	480V RX MOV BD 2B1-B COMPT 5C	CLOSED	
2-BKR-74-24	6.8	RHR PMP 2B-B MIN FLOW (2-FCV-74-24)	480V RX MOV BD 2B1-B, COMPT 15B	CLOSED	

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VALVE LOGIC ELECTRICAL CHECKLIST

Data Package: Page ____ of ____ **Date _____**

COMPONENT	SECTION	DESCRIPTION	LOCATION	POSITION	INITIALS/DATE
2-BKR-74-35	6.10	RHR HX 2B OUTLET XTIE (2-FCV-74-35)	480V RX MOV BD 2B1-B, COMPT 15D	CLOSED	
2-BKR-74-2	6.4	LOOP 4 HOT LEG TO RHR SUCTION (2-FCV-74-2)	480V RX MOV BD 2B1-B, COMPT 5B	CLOSED	

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PUMP LOGIC ELECTRICAL CHECKLIST

Data Package: Page ____ of ____ **Date _____**

COMPONENT	SECTION	DESCRIPTION	LOCATION	POSITION	INITIALS/DATE
2-BKR-235-0002/06-D	6.15	AUX RELAY RACK 2-R-76 BUS B	120V AC VIT BD 2-II BKR 6	ON	
2-BKR-235-0002/09-D	6.15	AUX RELAY RACK B BUS TO PNL 2-R-75	120V AC VIT BD 2-II BKR 9	ON	
2-BKR-235-0001/11-D	6.14	AUX RELAY RACK A BUS TO PNL 2-R-75	120V AC VIT BD 2-I BKR 11	ON	
2-BKR-235-0001/07-D	6.14	AUX RELAY RACK 2-R-76 BUS A	120V AC VIT BD 2-I BKR 7	ON	
2-FU-275-R075/I23	6.15	PNL M-1 THUR M-6 MOTOR OVERLOAD ANNUNCIATION SEPARATION RELAY	2-R-75 in the Aux Instrument Room	INSTALLED	
2-FU-275-R075/I24	6.15	PNL M-1 THUR M-6 MOTOR OVERLOAD ANNUNCIATION SEPARATION RELAY	2-R-75 in the Aux Instrument Room	INSTALLED	
2-FU-275-R075/I5	6.14	PNL M-1 THUR M-6 MOTOR OVERLOAD ANNUNCIATION SEPARATION RELAY	2-R-75 in the Aux Instrument Room	INSTALLED	
2-FU-275-R075/I6	6.14	PNL M-1 THUR M-6 MOTOR OVERLOAD ANNUNCIATION SEPARATION RELAY	2-R-75 in the Aux Instrument Room	INSTALLED	
2-FU-275-R076/I11	6.14	PANELS 2-M-1 THRU 2-M-6 MOTOR TRIPOUT ANNUNCIATION SEPARATION RELAY	2-R-76 in the Aux Instrument Room	INSTALLED	
2-FU-275-R076/I12	6.14	PANELS 2-M-1 THRU 2-M-6 MOTOR TRIPOUT ANNUNCIATION SEPARATION RELAY	2-R-76 in the Aux Instrument Room	INSTALLED	
2-FU-275-R076/I15	6.15	PANELS 2-M-1 THRU 2-M-6 MOTOR TRIPOUT ANNUNCIATION SEPARATION RELAY	2-R-76 in the Aux Instrument Room	INSTALLED	

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PUMP LOGIC ELECTRICAL CHECKLIST

Data Package: Page ____ of ____ **Date _____**

COMPONENT	SECTION	DESCRIPTION	LOCATION	POSITION	INITIALS/DATE
2-FU-275-R076/I16	6.15	PANELS 2-M-1 THRU 2-M-6 MOTOR TRIPOUT ANNUNCIATION SEPARATION RELAY	2-R-76 in the Aux Instrument Room	INSTALLED	
2-FU-214-A019/1-A	6.14	RESIDUAL HEAT REMOVAL PUMP 2A-A COOLER FAN 2-MTR-30-175-A	480V C&A VENT BD 2A1-A	INSTALLED	
2-FU-214-B019/1-A	6.15	RESIDUAL HEAT REMOVAL PUMP 2B-B ROOM COOLER FAN 2-MTR-30-176-B	480V C&A VENT BD 2B1-B	INSTALLED	
2-BKR-30-175-A	6.14	RHR PUMP 2A-A RM COOLER (2-PMCL-30-175)	480V CONT & AUX BLDG VENT BD 2A1-A breaker 9A	OPEN	
2-BKR-30-176-B	6.15	RHR PUMP 2B-B RM COOLER (2-PMCL-30-176)	480V CONT & AUX BLDG VENT BD 2B1-B breaker 9A	OPEN	
2-BKR-74-10	6.14	6.9KV SD BD 2A-A BKR 14 RHR PMP 2A-A	6.9KV SD BD 2A-A Compt. 14 breaker	OPEN AND RACKED DOWN	
2-FU-211-A014/1A	6.14	RHR PUMP 2A-A AUXILIARY TRIP	6.9KV SD BD 2A-A Compt. 14 breaker	INSTALLED	
2-FU-211-A014/1N	6.14	RHR PUMP 2A-A NORMAL TRIP	6.9KV SD BD 2A-A Compt. 14 breaker	INSTALLED	
2-FU-211-A014/2A	6.14	RHR PUMP 2A-A AUXILIARY CLOSE	6.9KV SD BD 2A-A Compt. 14 breaker	INSTALLED	
2-FU-211-A014/2N	6.14	RHR PUMP 2A-A NORMAL CLOSE	6.9KV SD BD 2A-A Compt. 14 breaker	INSTALLED	
2-FU-211-A014/3A	6.14	RHR PUMP 2A-A AUXILIARY ELEVATING CIRCUIT	6.9KV SD BD 2A-A Compt. 14 breaker	INSTALLED	

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PUMP LOGIC ELECTRICAL CHECKLIST

Data Package: Page ____ of ____ **Date _____**

COMPONENT	SECTION	DESCRIPTION	LOCATION	POSITION	INITIALS/DATE
2-FU-211-A014/3N	6.14	RHR PUMP 2A-A NORMAL ELEVATING CIRCUIT	6.9KV SD BD 2A-A Compt. 14 breaker	INSTALLED	
2-BKR-74-20	6.15	6.9KV SD BD 2B-B BKR 14 RHR PMP 2B-B	6.9KV SD BD 2B-B Compt. 14	OPEN AND RACKED DOWN	
2-FU-211-B014/1A	6.15	RHR PUMP 2B-B AUXILIARY TRIP	6.9KV SD BD 2B-B Compt. 14	INSTALLED	
2-FU-211-B014/1N	6.15	RHR PUMP 2B-B NORMAL TRIP	6.9KV SD BD 2B-B Compt. 14	INSTALLED	
2-FU-211-B014/2A	6.15	RHR PUMP 2B-B AUXILIARY CLOSE	6.9KV SD BD 2B-B Compt. 14	INSTALLED	
2-FU-211-B014/2N	6.15	RHR PUMP 2B-B NORMAL CLOSE	6.9KV SD BD 2B-B Compt. 14	INSTALLED	
2-FU-211-B014/3A	6.15	RHR PUMP 2B-B AUXILIARY ELEVATING CIRCUIT	6.9KV SD BD 2B-B Compt. 14	INSTALLED	
2-FU-211-B014/3N	6.15	RHR PUMP 2B-B NORMAL ELEVATING CIRCUIT	6.9KV SD BD 2B-B Compt. 14	INSTALLED	

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MINIFLOW VALVE CHECKLIST

Data Package: Page ____ of ____ **Date _____**

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
Auxiliary Bldg el. 676					
RHR PUMP 2A-A SUCTION DRAIN	A10V/676 Pmp Rm 2A	CLOSED	2-DRV-74-508		CV
RHR PUMP 2A-A DISCHARGE DRAIN	A10V/676 Pmp Rm 2A	CLOSED	2-DRV-74-516		CV
RHR PUMP 2A-A SUCTION	A10V/676 Pmp Rm 2A	OPEN	2-FCV-74-3		CV
RHR PUMP 2A-A DISCHARGE FLUSH	A10V/676 Pmp Rm 2A	CLOSED	2-FLV-74-512		CV
RHR PUMP 2A-A DISCHARGE ISOLATION	A10V/676 Pmp Rm 2A	OPEN	2-ISV-74-520		CV
2-PI-74-4 ROOT	A10V/676 Pmp Rm 2A	OPEN	2-RTV-74-100A		CV
2-PI-74-6 ROOT	A10V/676 Pmp Rm 2A	OPEN	2-RTV-74-101A		CV
2-PT-74-13 ROOT	A10V/676 Pmp Rm 2A	OPEN	2-RTV-74-104A		CV
RHR PMP 2A-A SEAL CAVITY VENT	A10V/676 Pmp Rm 2A	CLOSED	2-VTV-74-10		CV
Auxiliary Bldg el. 676					

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MINIFLOW VALVE CHECKLIST

Data Package: Page ____ of ____ **Date _____**

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
RHR PUMP 2B-B SUCTION DRAIN	A10U/676 Pmp Rm 2B	CLOSED	2-DRV-74-509		CV
RHR PUMP 2B-B DISCHARGE DRAIN	A10U/676 Pmp Rm 2B	CLOSED	2-DRV-74-517		CV
RHR PUMP 2B-B SUCTION	A10U/676 Pmp Rm 2B	OPEN	2-FCV-74-21		CV
RHR PUMP 2B-B DISCHARGE FLUSH	A10U/676 Pmp Rm 2B	CLOSED	2-FLV-74-513		CV
RHR PUMP 2B-B DISCHARGE ISOLATION	A10U/676 Pmp Rm 2B	OPEN	2-ISV-74-521		CV
2-PI-74-22 ROOT	A10U/676 Pmp Rm 2B	OPEN	2-RTV-74-107A		CV
2-PI-74-18 ROOT	A10U/676 Pmp Rm 2B	OPEN	2-RTV-74-108A		CV
2-PT-74-26 ROOT	A10U/676 Pmp Rm 2B	OPEN	2-RTV-74-111A		CV
RHR PMP 2B-B SEAL CAVITY VENT	A10U/676 Pmp Rm 2B	CLOSED	2-VTV-74-20		CV
Auxiliary Bldg el. 676					
RHR PUMP 2A-A MINIMUM FLOW VALVE	A11V/676 Pipechase	CLOSED	2-FCV-74-12		CV

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(Page 3 of 10)

MINIFLOW VALVE CHECKLIST

Data Package: Page ____ of ____ **Date _____**

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
RHR PUMP 2B-B MINIMUM FLOW VALVE	A11U/676 Pipechase	CLOSED	2-FCV-74-24		CV
RWST TO RHR SUCTION TEST VENT	A11U/676 Pipe Chase	CLOSED & FLANGED	2-TV-63-501		CV
RWST TO RHR SUCTION TEST CONN	A11U/676 Pipe Chase	CLOSED & FLANGED	2-TV-63-503		CV
Auxiliary Bldg el. 692					
RWST TO RHR SUCTION	A11U/692 Pipe Chase	CLOSED	2-FCV-63-1		CV
CONTAINMENT SUMP TO RHR PUMP 2A-A ISOL	A12V/692 Pipe Chase (RHR Sump Vlv Rm)	CLOSED	2-FCV-63-72		CV
CONTAINMENT SUMP TO RHR PUMP 2B-B ISOL	A12V/692 Pipe Chase (RHR Sump Vlv Rm)	CLOSED	2-FCV-63-73		CV
2-FCV-63-72 BONNET PRESS EQUALIZING VALVE	A12V/692 Pipe Chase (RHR Sump Vlv Rm)	OPEN	2-ISV-63-72		CV

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(Page 4 of 10)

MINIFLOW VALVE CHECKLIST

Data Package: Page ____ of ____ **Date _____**

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
2-FCV-63-73 BONNET PRESS EQUALIZING VALVE	A12V/692 Pipe Chase (RHR Sump Vlv Rm)	OPEN	2-ISV-63-73		CV
2-FIS-74-12 ROOT	A11W/692 Pipechase	OPEN	2-RTV-74-102A		CV
2-FIS-74-12 ROOT	A11W/692 Pipechase	OPEN	2-RTV-74-103A		CV
2-FIS-74-24 ROOT	A11V/692 Pipechase	OPEN	2-RTV-74-109A		CV
2-FIS-74-24 ROOT	A11V/692 Pipechase	OPEN	2-RTV-74-110A		CV
RWST TO RHR SUCTION VENT	A11U/692 Pipe Chase	CLOSED & FLANGED	2-VTV-63-500		CV
Auxiliary Bldg el. 713					
RHR HX 2B-B OUTLET TO SIP 2B-B SUCT ISOL	A11V/713 BIT Rm	CLOSED	2-FCV-63-11		CV
RHR TO HOT LEG 1 & 3 INJECTION ISOLATION	A11W/713 BIT Rm	CLOSED	2-FCV-63-172		CV

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(Page 5 of 10)

MINIFLOW VALVE CHECKLIST

Data Package: Page ____ of ____ **Date _____**

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
RHR PMP 2A-A TO CHG PMP & SIP 2A-A SUCT ISOL	A11W/713 BIT Rm	CLOSED	2-FCV-63-8		CV
RHR TO COLD LEG 2 & 3 INJECTION ISOLATION	A11W/713 BIT Rm	CLOSED	2-FCV-63-93		CV
RHR TO COLD LEG 1 & 4 INJECTION ISOLATION	A11W/713 BIT Rm	CLOSED	2-FCV-63-94		CV
RHR PUMP 2A-A DISCHARGE SAMPLE	A11W/713 BIT Rm	OPEN	2-SMV-74-522		CV
RHR PUMP 2B-B DISCHARGE SAMPLE	A11V/713 BIT Rm	OPEN	2-SMV-74-523		CV
RHR PUMP 2A-A MINIFLOW SAMPLE	A11W/713 BIT Rm	OPEN	2-SMV-74-532		CV
RHR PUMP 2B-B MINIFLOW SAMPLE	A11V/713 BIT Rm	OPEN	2-SMV-74-533		CV
Auxiliary Bldg el. 713					
RHR HEAT EXCHANGER 2B DRAIN	A9V/713 Hx Rm 2B	CLOSED	2-DRV-74-519		CV
RHR HEAT EXCHANGER 2B INLET DRAIN	A9V/713 Hx Rm 2B	CLOSED	2-DRV-74-526		CV

Appendix G
(Page 6 of 10)

MINIFLOW VALVE CHECKLIST

Data Package: Page ____ of ____ **Date _____**

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
RHR HEAT EXCHANGER 2B OUTLET FLOW CONTROL	A9V/713 Hx Rm 2B	OPEN	2-FCV-74-28		CV
RHR HEAT EXCHANGER 2B OUTLET CROSSTIE	A9V/728 Hx Rm 2B	CLOSED	2-FCV-74-35		CV
RHR RWST RETURN	A9V/728 Hx Rm 2B	CLOSED	2-HCV-74-34		CV
RHR HEAT EXCHANGER 2B MANUAL BYPASS	A9V/713 Hx Rm 2B	CLOSED	2-HCV-74-37		CV
CONTROL AIR ISOLATION VALVE TO 2-FCV-74-28	A9V/713 Hx Rm 2B	OPEN	2-ISV-32-3089		CV
RHR HEAT EXCHANGER 2B DRAIN AUX CONN	A9V/713 Hx Rm 2B	CLOSED	2-ISV-74-518		CV
RHR HEAT EXCHANGER 2B INLET ISOLATION	A9U/713 Hx Rm 2B	OPEN	2-ISV-74-525		CV
RHR HEAT EXCHANGER 2B INLET DRAIN AUX CONN	A9V/713 Hx Rm 2B	CLOSED	2-ISV-74-527		CV

Appendix G
(Page 7 of 10)

MINIFLOW VALVE CHECKLIST

Data Package: Page ____ of ____ **Date _____**

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
RHR HX 2B OUTLET TO CVCS	A9V/713 Hx Rm 2B	CLOSED	2-SPV-74-531		CV
RHR HEAT EXCHANGER 2B DISCHARGE VENT	A9V/728 Hx Rm 2B	CLOSED	2-VTV-74-536		CV
Auxiliary Bldg el. 713					
RHR HEAT EXCHANGER 2A INLET DRAIN	A9W/713 Hx Rm 2A	CLOSED	2-DRV-74-502		CV
RHR HEAT EXCHANGER 2A DRAIN	A9W/713 Hx Rm 2A	CLOSED	2-DRV-74-507		CV
RHR HEAT EXCHANGER DISCHARGE HDR DRAIN	A9W/728 Hx Rm 2A	CLOSED	2-DRV-74-537		CV
RHR FLOOD MODE DRAIN	A9W/728 Hx Rm 2A	CLOSED	2-DRV-74-540		CV
RHR HEAT EXCHANGER 2A OUTLET FLOW CONTROL	A9W/713 Hx Rm 2A	OPEN	2-FCV-74-16		CV
RHR HEAT EXCHANGER A/B BYPASS FLOW CONTROL	A9W/728 Hx Rm 2A	CLOSED	2-FCV-74-32		CV

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(Page 8 of 10)

MINIFLOW VALVE CHECKLIST

Data Package: Page ____ of ____ **Date _____**

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
RHR HEAT EXCHANGER 2A OUTLET CROSSTIE	A9W/728 Hx Rm 2A	CLOSED	2-FCV-74-33		CV
RHR HEAT EXCHANGER 2A MANUAL BYPASS	A9W/713 Hx Rm 2A	CLOSED	2-HCV-74-36		CV
CONTROL AIR ISOLATION VALVE TO 2-FCV-74-32	A9W/713 Hx Rm 2A	OPEN	2-ISV-32-3135		CV
CONTROL AIR ISOLATION VALVE TO 2-FCV-74-16	A9W/713 Hx Rm 2A	OPEN	2-ISV-32-3136		CV
RHR HEAT EXCHANGER 2A INLET AUXILIARY DRAIN	A9W/713 Hx Rm 2A	CLOSED	2-ISV-74-501		CV
RHR HEAT EXCHANGER 2A AUXILIARY DRAIN	A9W/713 Hx Rm 2A	CLOSED	2-ISV-74-506		CV
RHR HEAT EXCHANGER 2A INLET ISOLATION	A9W/713 Hx Rm 2A	OPEN	2-ISV-74-524		CV
RHR HX 2A OUTLET TO CVCS	A9W/713 Hx Rm 2A	CLOSED	2-SPV-74-530		CV

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(Page 9 of 10)

MINIFLOW VALVE CHECKLIST

Data Package: Page ____ of ____ **Date _____**

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
RHR HIGH POINT VENT	A10W/733 Hx Rm 2A	CLOSED	2-VTV-74-41		CV
RHR HIGH POINT VENT	A10W/733 Hx Rm 2A	CLOSED	2-VTV-74-42		CV
RHR HEAT EXCHANGER 2A DISCHARGE VENT	A9W/728 Hx Rm 2A	CLOSED	2-VTV-74-538		CV
RHR FLOOD MODE VENT	A9W/728 Hx Rm 2A	CLOSED	2-VTV-74-539		CV
Containment					
RHR SUCTION HDR DRAIN	702-AZ345 Inside Polar Crane Wall	CLOSED	2-DRV-74-500		CV
RHR SUCTION HDR VLV LOW POINT DRAIN	702-AZ315 Inside Polar Crane Wall	CLOSED	2-DRV-74-503		CV
RHR SUCTION HDR DRAIN	702-AZ345 Inside Polar Crane Wall	CLOSED	2-DRV-74-541		CV
RHR SUCTION HDR VLV LOW POINT DRAIN	702-AZ315 Inside Polar Crane Wall	CLOSED	2-DRV-74-542		CV
LOOP 4 HOT LEG TO RHR SUCTION	706-AZ345 Inside Polar Crane Wall	CLOSED	2-FCV-74-1		CV
LOOP 4 HOT LEG TO RHR SUCTION	716-AZ301 #4 Accum Rm	CLOSED	2-FCV-74-2		CV

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(Page 10 of 10)
MINIFLOW VALVE CHECKLIST

Data Package: Page ____ of ____ **Date _____**

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
2-FCV-74-2 BYPASS RHR SUCTION	716-AZ304 #4 Accum Rm	CLOSED	2-FCV-74-8		CV
2-FCV-74-1 BYPASS RHR SUCTION	706-AZ345 Inside Polar Crane Wall	CLOSED	2-FCV-74-9		CV
RHR PUMP SUCT RELIEF	719-AZ300 #4 Accum Rm	INSTALLED	2-RFV-74-505		
RHR SUCTION HEADER TEST VENT	716-AZ301 #4 Accum Rm	CLOSED	2-TV-74-504		CV
RHR SUCTION HEADER TEST VENT	716-AZ301 #4 Accum Rm	CLOSED	2-TV-74-543		CV

Appendix H
(Page 1 of 1)

PREOPERATIONAL/ACCEPTANCE TEST INSTRUCTION TEST PERSONNEL SIGNATURE LOG

Data Package: Page ____ of ____ **Date _____**

NOTE
Additional copies of this table may be made as necessary.

NAME (PRINT)	TITLE/ ORGANIZATION	SIGNATURE	INITIAL/DATE

Appendix I
(Page 1 of 1)

LOG OF INSTALLED INSULATING DEVICES

Data Package: Page ____ of ____ **Date _____**

NOTE

Additional copies of this table may be made as necessary.

LOCATION	TERMINAL	INSTALLATION WORK DOCUMENT	REMOVAL WORK DOCUMENT	COMMENTS

Appendix J
(Page 1 of 1)

CONFIGURATION CONTROL LOG FOR WIRE LIFTS

Data Package: Page ____ of ____ **Date _____**

CONFIGURATION CONTROL LOG FOR WIRE LIFTS	Sheet _____ of _____

NOTES
1. Any time wires are lifted and are left unattended, there must be a nonconductive tag attached to them identifying the work instruction that required the wire to be lifted.
2. Additional copies of this table may be made as necessary.

AFFECTED DEVICE	WIRING DATA		OTHER DATA AS APPROPRIATE	AS-FOUND VERIFICATION		AS-LEFT VERIFICATION		BEND RADIUS	INSULATION /JACKET
COMPONENT ID Terminal Block, Relay, etc	Wire Number	Terminal Number	Drawing, Location, Panel, Box, Color, etc.	1st Party Date	CV Date	1st Party Date	CV Date	Accept Yes/No	Accept Yes/No

WATTS BAR NUCLEAR PLANT

UNIT 2 STARTUP

TITLE: Liquid Waste Processing System

Instruction No: 2-PTI-077-01

Revision No: 0000

PREPARED BY: Kurt McCormack DATE 10/28/10

PRINT NAME/ SIGNATURE

REVIEWED BY: Emmett Camp DATE 10/28/10

PRINT NAME/ SIGNATURE

INSTRUCTION APPROVAL

JTG MEETING NO: 2-10-014

JTG CHAIRMAN: _____ DATE 11/6/12

APPROVED BY: _____ DATE 11/6/12

PREOPERATIONAL STARTUP MANAGER

TEST RESULTS APPROVAL

JTG MEETING NO: _____

JTG CHAIRMAN: _____ DATE _____

APPROVED BY: _____ DATE _____

PREOPERATIONAL STARTUP MANAGER

Revision Log

Revision or Change Number	Effective Date	Affected Page Numbers	Description of Revision/Change
0000	1/6/11	ALL	Initial issue based on Rev. 1 of 1-PTI-077-01

Table of Contents

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Table of Contents (continued)

Table of Contents (continued)

Data Package: Page ____ of ____ **Date _____**

1.0 INTRODUCTION

1.1 Test Objective

This Preoperational Test Instruction (PTI) will demonstrate the capability of the Liquid Waste Processing System to process liquid waste and transfer these wastes to their respective disposal points. It will also demonstrate the capability of associated containment isolation valves to properly respond to a Phase A containment isolation signal.

1.2 Scope

A. Containment Isolation Valves:

1. 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL.
2. 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL.
3. 2-FCV-77-9, RCDT PUMP DISCH VLV FLOW CONTROL.
4. 2-FCV-77-10, RCDT PUMP DISCH VALVE FLOW CONTROL.
5. 2-FCV-77-17, RCDT TO VENT GA FLOW CONTROL.
6. 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL.
7. 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL.

B. Reactor Coolant Drain Tank Components:

1. 2-LCV-77-415, RCDT DRAIN VALVE LEVEL CONTROL.
2. 2-FCV-77-3, RCDT DRAIN VLV FLOW CONTROL.
3. 2-PMP-77-4, REACTOR COOLANT DRAIN PMP 2A.
4. 2-PMP-77-6, REACTOR COOLANT DRAIN PMP 2B.

Data Package: Page ____ of ____ **Date _____**

1.2 Scope (continued)

C. Flow Paths

1. Refueling Canal to the Holdup Tank via Reactor Coolant Drain Tank.
2. Reactor Coolant Drain Tank to Tritiated Drain Collector Tank.
3. Reactor Coolant Drain Tank to Flood Mode Boration Makeup System.
4. Reactor Coolant Drain Tank to Refueling Water Storage Tank
5. Excess Letdown Heat Exchanger to Reactor Coolant Drain Tank.
6. Pressurizer Relief Tank to Reactor Coolant Drain Tank Pumps.

D. Main Control Room Alarms.

E. Waste Disposal Panel Alarms.

2.0 REFERENCES

2.1 Performance References

A. SMP-9.0, Conduct of Test

2.2 Developmental References

A. Final Safety Analysis Report Amendment 101

a. Section 6.2.1 CONTAINMENT FUNCTIONAL DESIGN

b. Section 6.2.4 CONTAINMENT ISOLATION SYSTEMS (Including Table 6.2.4-1)

c. Section 11.2 LIQUID WASTE SYSTEMS

d. Table 14.2-1 PREOPERATIONAL TESTS SUMMARIES

(1) (SHEET 28 of 89) LIQUID WASTE PROCESSING SYSTEM TEST SUMMARY

(2) (SHEET 83 OF 89) CONTAINMENT ISOLATION SYSTEM TEST SUMMARY

Data Package: Page ____ of ____ **Date _____**

2.2 Developmental References (continued)

B. Drawings

1. Flow Diagrams

a. 2-47W809-1, Rev 3, Flow Diagram Chemical & Volume Control System

b. 2-47W809-3, Anticipated, Flow Diagram Chemical & Volume Control System
DRA 53999-20

c. 2-47W809-7, Rev 2, Flow Diagram, Flood Mode Boration

d. 2-47W811-1, Rev 4, Flow Diagram, Safety Injection System

e. 2-47W812-1, Rev 3, Flow Diagram, Containment Spray System

f. 2-47W813-1, Rev 1, Flow Diagram Reactor Coolant System

g. 2-47W830-1, Rev 1, Flow Diagram Waste Disposal System

h. 2-47W830-6, Rev 2, Flow Diagram Waste Disposal System

i. 2-47W848-4, Rev 0, Flow Diagram Control Air

j. 2-47W848-5, Rev 1, Flow Diagram Control Air

k. 2-47W848-9, Rev 1, Flow Diagram Control Air

l. 2-47W855-1, Rev 0, Flow Diagram Fuel Pool Cooling and Cleaning System

2. Electrical

a. 2-45W600-55-41, ANT, Wiring Diagram Annunciator System Key Diagram
DRA 52384-26

b. 2-45W600-55-42, ANT, Wiring Diagram Annunciator System Key Diagram
DRA 52453-03

c. 2-45W600-57-14, Rev 0, Wiring Diagram Separation & Misc Aux Relays Schematic Diagrams

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2.2 Developmental References (continued)

d. 2-45W600-57-16, Rev 0, Wiring Diagram Separation & Misc Aux Relays Schematic Diagrams

e. 2-45W600-57-18, Rev 1, Wiring Diagram Separation & Misc Aux Relays Schematic Diagrams

f. 2-45W600-77-1, Rev 0, Wiring Diagram Waste Disposal System Schematic Diagrams
DRA 52453-148, 52339-049

g. 2-45W600-77-2, Rev 0, Wiring Diagram Waste Disposal System Schematic Diagrams
DRA 52453-149, 52453-151, 52453-152, 52453-153, 52453-154

h. 2-45W600-77-6, Rev 0, Wiring Diagram Waste Disposal System Schematic Diagrams

i. 2-45W755-1, Rev 1, Wiring Diagram, 480V Reactor BD 2A-A Single Line Sheet 1

j. 2-45W755-3, Rev 0, Wiring Diagram, 480V Reactor BD 2B-B Single Line Sheet 1

k. 2-45W760-77-4, Rev 0, Wiring Diagram Waste Disposal System Schematic Diagrams
DRA 53296-060, 53296-061

l. 45N1635-47, Rev 3, Wiring Diagram, Local Instrument Panels Connection Diagram Sheet 47

m. 2-45N2676-4, ANT, Wiring Diagrams Solid State Protection SYS Train A Connection Diagram SH-4

n. 2-45N2677-4, ANT, Wiring Diagrams Solid State Protection SYS Train B Connection Diagram SH-4
DRA 53712-005

o. 45N2630-74, Rev 3, Wiring Diagrams Misc. Valves Connection Diagram SH-74

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2.2 Developmental References (continued)

p. 45N2680-3, Rev 9, Wiring Diagrams NSSS Aux Relay Panel 2-R-54 Connection Diagrams

q. 45B2755-11D, Rev 6, 480V React. Vent BD 2A-A - Compartment 11D

r. 45B2756-11D, Rev 6, 480V React. Vent BD 2B-B - Compartment 11D

3. Mechanical

None

4. Logic/Control

a. 2-47W611-77-1, Rev 1, Logic Diagram Waste Disposal System

b. 2-47W610-77-4, Rev 2, Control Diagram Waste Disposal System DRA 52339-75

5. Vendor Drawings

a. 271C858-60, Rev 901, U1&U2 Liquid Panel Ann

b. 271C858-61, Rev 5, Waste Disposal System Liquid Panel

c. 271C858-62, Rev 1, Waste Disposal System Liquid Panel

d. 271C858-63, Rev 2, Waste Disposal System Liquid Panel

e. 271C858-65, Rev 901, Waste Disposal System Liquid Panel

Data Package: Page ____ of ____ **Date _____**

2.2 Developmental References (continued)

C. Documents

1. 2-TSD-77-1 Rev 0, Liquid Waste Processing System.
2. 2-TSD-88-5 Rev 1, Containment Isolation System
3. N3-77C-4001, Rev 10, Liquid Waste Processing System
4. WBN2-77C-4001, Rev 1, Liquid Waste Processing System
1. SSD-1-PI-77-5, Rev 1, Reactor Coolant Drain Tank 2A Discharge Pressure

   To be verified against SSD-2-PI-77-5, Reactor Coolant Drain Tank 2A Discharge Pressure [Later] in Appendix A.

5. SSD-1-PI-77-8, Rev 1, Reactor Coolant Drain Tank 2B Discharge Pressure

   To be verified against SSD-2-PI-77-8, Reactor Coolant Drain Tank 2B Discharge Pressure [Later] in Appendix A.

Data Package: Page ____ of ____ **Date _____**

3.0 PRECAUTIONS AND LIMITATIONS

A. Test should be coordinated with Unit 1 Operations to mitigate any adverse impact to Unit 1.

B. Standard precautions shall be forwarded for working around energized electrical equipment in accordance with TVA Safety Manual Procedure 1021.

C. 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.

D. Component tags and labels may differ slightly (abbreviations, punctuation, letter case, etc.) from the description given in this test. If this situation occurs, it shall NOT be considered a test deficiency or procedure deviation. It shall be documented in the CTL and reconciled by way of a plant labeling request or drawing discrepancy or single line date typo change in the procedure as appropriate.

E. 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.

F. All open problems are to be tracked by a corrective action document and entered on the appropriate system punchlist.

G. 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.

H. Observe all Radiation Protection (RP) requirements when working in or near contaminated areas.

I. Ensure there are no adverse effects to the operation of Unit 1 structures, systems, or components.

J. Test personnel will coordinate with Unit 1 Operations when manipulating Unit 1 equipment if required.

K. System water chemistry is within system specifiable parameters especially for fluids supplied from external sources.

Data Package: Page ____ of ____ **Date _____**

3.0 PRECAUTIONS AND LIMITATIONS (continued)

L. 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.

M. If the vibration is determined to be excessive the Test Engineer shall initiate a Test Deficiency Notice (TDN).

Data Package: Page ____ of ____ **Date _____**

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 in Watts Bar Integrated Task Equipment List (WITEL) **AND**

ENSURE that they will **NOT** adversely affect the test performance and results.

A. Subsection 6.1 _____

B. Subsection 6.2 _____

C. Subsection 6.3 _____

D. Subsection 6.4 _____

E. Subsection 6.5 _____

F. Subsection 6.6 _____

G. Subsection 6.7 _____

H. Subsection 6.8 _____

I. Subsection 6.9 _____

J. Subsection 6.10 _____

K. Subsection 6.11 _____

L. Subsection 6.12 _____

M. Subsection 6.13 _____

N. Subsection 6.14 _____

O. Subsection 6.15 _____

Data Package: Page ____ of ____ **Date _____**

4.1 Preliminary Actions (continued)

P. Subsection 6.16 _____

Q. Subsection 6.17 _____

[2] **ENSURE** changes to the references listed on Appendix A, have been reviewed, and determined **NOT** to adversely affect the test performance. _____

[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 including any change notices and as needed, each test person assisting in this test has the current revision including any change notices. _____

[5] **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. _____

[6] **ENSURE** outstanding Design Change Notices (DCN's), Engineering Design Change Requests (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.

A. Subsection 6.1 _____

B. Subsection 6.2 _____

C. Subsection 6.3 _____

D. Subsection 6.4 _____

E. Subsection 6.5 _____

Data Package: Page ____ of ____ **Date _____**

4.1 Preliminary Actions (continued)

F. Subsection 6.6 _____

G. Subsection 6.7 _____

H. Subsection 6.8 _____

I. Subsection 6.8 _____

J. Subsection 6.10 _____

K. Subsection 6.11 _____

L. Subsection 6.12 _____

M. Subsection 6.13 _____

N. Subsection 6.14 _____

O. Subsection 6.15 _____

P. Subsection 6.16 _____

Q. Subsection 6.17 _____

[8] **ENSURE** System cleanness as required for the performance of this test has been completed in accordance with SMP-7.0 for piping systems.

A. Subsection 6.12 _____

B. Subsection 6.13 _____

C. Subsection 6.14 _____

D. Subsection 6.15 _____

E. Subsection 6.16 _____

Data Package: Page ____ of ____ **Date _____**

4.1 Preliminary Actions (continued)

[9] **ENSURE** Piping supports required for testing are installed and adjusted.

A. Subsection 6.12 _____

B. Subsection 6.13 _____

C. Subsection 6.14 _____

D. Subsection 6.15 _____

E. Subsection 6.16 _____

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

[11] **ENSURE** communications are available for areas where testing is to be conducted. _____

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

A. Subsection 6.12 _____

B. Subsection 6.13 _____

C. Subsection 6.14 _____

D. Subsection 6.15 _____

E. Subsection 6.16 _____

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

A. 2-XA-55-6F/148-C _____

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

Data Package: Page ____ of ____ **Date _____**

4.1 Preliminary Actions (continued)

[15] **ENSURE** a review of outstanding Clearances has been coordinated with U2 Operations for impact to the test performance, **AND**

RECORD in Appendix B, Temporary Condition Log, if required _____

[16] **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. _____

[17] **VERIFY** Measuring and Test Equipment (M&TE) required for test performance has been (as required) filled, vented, placed into service and recorded on Measuring and Test Equipment (M&TE) Log.

A. Subsection 6.1 _____

B. Subsection 6.2 _____

C. Subsection 6.3 _____

D. Subsection 6.4 _____

E. Subsection 6.5 _____

F. Subsection 6.6 _____

G. Subsection 6.7 _____

H. Subsection 6.12 _____

I. Subsection 6.13 _____

[18] **VERIFY** Measuring and Test Equipment (M&TE) calibration due dates will support the completion of this test performance.

A. Subsection 6.1 _____

B. Subsection 6.2 _____

C. Subsection 6.3 _____

D. Subsection 6.4 _____

E. Subsection 6.5 _____

Data Package: Page ____ of ____ **Date _____**

4.1 Preliminary Actions (continued)

F. Subsection 6.6 _____

G. Subsection 6.7 _____

H. Subsection 6.12 _____

I. Subsection 6.13 _____

[19] **OBTAIN** a Caution order on the following handswitches:

A. 2-HS-77-4A, RCDT PUMP 2A
Caution Tag #_____ _____

B. 2-HS-77-6A, RCDT PUMP 2B
Caution Tag #_____ _____

C. 2-HS-77-4C, RCDT PUMP 2A
Caution Tag #_____ _____

D. 2-HS-77-6C, RCDT PUMP 2B
Caution Tag #_____ _____

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

Data Package: Page ____ of ____ **Date _____**

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

[1] **ENSURE** the following equipment is available: _____

- 17 test switches

[2] **ENSURE** the following M&TE or equivalent is available, within their calibration due dates, **AND**

RECORD the M&TE data in SMP-9.0, Measuring and Test Equipment (M&TE) Log _____

- 0-60 min. Stopwatch (2)
  (Subsections 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7)
- Ultrasonic Flow meter (± 2% of range)
  (Subsections 6.12, 6.13, 6.14, 6.15, 6.16)
- 0-200 psi Pressure Gauge (1) (Subsections 6.12, 6.13)

Data Package: Page ____ of ____ **Date _____**

4.3 Field Preparation

[1] **PERFORM** the Switch Lineups as follows:

A. Appendix D (Subsection 6.1) _____

B. Appendix E (Subsection 6.2) _____

C. Appendix F (Subsection 6.3) _____

D. Appendix G (Subsection 6.4) _____

E. Appendix H (Subsection 6.5) _____

F. Appendix I (Subsection 6.6) _____

G. Appendix J (Subsection 6.7) _____

H. Appendix K (Subsection 6.8) _____

I. Appendix L (Subsection 6.9) _____

J. Appendix M (Subsection 6.10) _____

K. Appendix N (Subsection 6.11) _____

L. Appendix O (Subsection 6.12) _____

M. Appendix P (Subsection 6.13) _____

N. Appendix Q (Subsection 6.14) _____

O. Appendix R (Subsection 6.15) _____

P. Appendix S (Subsection 6.16) _____

Data Package: Page ____ of ____ **Date _____**

4.3 Field Preparation (continued)

[2] **PERFORM** the Breaker Lineups as follows:

A. Appendix U (Subsection 6.12) _____

B. Appendix V (Subsection 6.13) _____

C. Appendix W (Subsection 6.14) _____

D. Appendix X (Subsection 6.15) _____

E. Appendix Y (Subsection 6.16) _____

[3] **PERFORM** the Valve Lineups as follows:

A. **ENSURE** 2-ISV-32-3517, CONTROL AIR ISOLATION VALVE TO 2-FCV-77-16 is OPEN (Subsection 6.1) _____

B. **ENSURE** 2-ISV-32-3539, CONTROL AIR ISOLATION VALVE TO 2-FCV-77-18 is OPEN (Subsection 6.2) _____

C. **ENSURE** 2-ISV-32-3540, CONTROL AIR ISOLATION VALVE TO 2-FCV-77-9 is OPEN (Subsection 6.3) _____

D. **ENSURE** 2-ISV-32-3175, CONTROL AIR ISOLATION VALVE TO 2-FCV-77-10 is OPEN (Subsection 6.4) _____

E. **ENSURE** 2-ISV-32-3183, CONTROL AIR ISOLATION VALVE TO 2-FCV-77-17 is OPEN (Subsection 6.5) _____

F. **ENSURE** 2-ISV-32-3187, CONTROL AIR ISOLATION VALVE TO 2-FCV-77-19 is OPEN (Subsection 6.6) _____

G. **ENSURE** 2-ISV-32-3174, CONTROL AIR ISOLATION VALVE TO 2-FCV-77-20 is OPEN (Subsection 6.7) _____

H. **ENSURE** 2-ISV-32-3526, CONTROL AIR ISOLATION VALVE TO 2-LCV-77-415 is OPEN (Subsection 6.8) _____

I. **ENSURE** 2-ISV-32-3527, CONTROL AIR ISOLATION VALVE TO 2-FCV-77-3 is OPEN (Subsection 6.9) _____

J. Appendix AA (Subsection 6.12) _____

K. Appendix BB (Subsection 6.13) _____

L. Appendix CC (Subsection 6.14) _____

Data Package: Page ____ of ____ **Date _____**

4.3 Field Preparation (continued)

M. Appendix DD (Subsection 6.15) _____

N. Appendix EE (Subsection 6.16) _____

[4] **INSTALL** Spool Piece 2-SPPC-84-111, WASTE DISPOSAL SUPPLY TO FLOOD MODE BORATION, in the Unit 2 RCDT pump discharge line to Tank 0-TANK-84-110, FLOOD MODE AUXILIARY BORATION MAKEUP TANK, 757/A5W (Subsection 6.15) **AND**

RECORD WO#_____ _____

[5] **VERIFY** The following systems are operational and have been placed in service to the extent necessary to perform this test:

A. System 32, Control Air System _____

B. System 62, Chemical and Volume Control System _____

C. System 55, Annunciator & Seq. Events Record System _____

D. System 63, Safety Injection System _____

E. System 68, Reactor Coolant System _____

F. System 72, Containment Spray System _____

G. System 81, Primary Makeup Water System _____

H. System 84, Flood Mode Boration System _____

I. System 99, Solid State Protection System _____

J. System 216, Fuel and Waste Handling Power _____

K. System 217, Chemical and Volume Control Power _____

L. System 232, Reactor Vent Power _____

M. System 237, 120V AC Instrument Power _____

N. System 238, 120V AC Preferred Power _____

Data Package: Page ____ of ____ **Date _____**

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 1 Supervisor's (US/SRO) or Shift Manager's (SM) authorization.

_____ _____
U2 US/SRO/SM Signature — Date

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

_____ _____
U1 US/SRO/SM Signature — Date

Data Package: Page ____ of ____ **Date _____**

5.0 ACCEPTANCE CRITERIA

[1] Automatic controls and interlocks function properly in response to normal simulated input signals.

[2] The following valves can be operated from the Waste Disposal Panel:

A. 2-LCV-77-415 (Subsection 6.8)

B. 2-FCV-77-3 (Subsection 6.9)

[3] The following valves can be operated from the MCR. Indicating lights indicate the correct valve position in the MCR:

A. 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL (Subsection 6.1)

B. 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL (Subsection 6.2)

C. 2-FCV-77-9, RCDT PUMP DISCH VLV FLOW CONTROL (Subsection 6.3)

D. 2-FCV-77-10, RCDT PUMP DISCH VALVE FLOW CONTROL (Subsection 6.4)

E. 2-FCV-77-17, RCDT TO VENT GA FLOW CONTROL (Subsection 6.5)

F. 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL (Subsection 6.6)

G. 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL (Subsection 6.7)

[4] The following valves close on a simulated Phase A Containment Isolation signal:

A. 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL (Step 6.1[18]C)

B. 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL (Step 6.2[18]C)

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5.0 ACCEPTANCE CRITERIA (continued)

C. 2-FCV-77-9, RCDT PUMP DISCH VLV FLOW CONTROL (Step 6.3[18]C)

D. 2-FCV-77-10, RCDT PUMP DISCH VALVE FLOW CONTROL (Step 6.4[7]C)

E. 2-FCV-77-17, RCDT TO VENT GA FLOW CONTROL (Step 6.5[7]C)

F. 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL (Step 6.6[8]C)

G. 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL (Step 6.7[8]C)

[5] The following valves remain closed upon reset of a Phase A Containment Isolation signal:

A. 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL (Step 6.1[19]C)

B. 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL (Step 6.2[19]C)

C. 2-FCV-77-9, RCDT PUMP DISCH VLV FLOW CONTROL (Step 6.3[19]C)

D. 2-FCV-77-10, RCDT PUMP DISCH VALVE FLOW CONTROL (Step 6.4[8]C)

E. 2-FCV-77-17, RCDT TO VENT GA FLOW CONTROL (Step 6.5[8]C)

F. 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL (Step 6.6[9]C)

G. 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL (Step 6.7[9]C)

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5.0 ACCEPTANCE CRITERIA (continued)

[6] The Containment Isolation Status Panel Train A or B indicates that each of the following valves close upon receipt of a Phase A Containment Isolation Signal and remain closed upon signal reset:

A. 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL (Steps 6.1[18]A, 6.1[18]B, 6.1[19]A, 6.1[19]B)

B. 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL (Steps 6.2[18]A, 6.2[18]B, 6.2[19]A, 6.2[19]B)

C. 2-FCV-77-9, RCDT PUMP DISCH VLV FLOW CONTROL (Steps 6.3[18]A, 6.3[18]B, 6.3[19]A, 6.3[19]B)

D. 2-FCV-77-10, RCDT PUMP DISCH VALVE FLOW CONTROL (Steps 6.4[7]A, 6.4[7]B, 6.4[8]A, 6.4[8]B)

E. 2-FCV-77-17, RCDT TO VENT GA FLOW CONTROL (Steps 6.5[7]A, 6.5[7]B, 6.5[8]A, 6.5[8]B)

F. 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL (Steps 6.6[8]A, 6.6[8]B, 6.6[9]A, 6.6[9]B)

G. 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL (Steps 6.7[8]A, 6.7[8]B, 6.7[9]A, 6.7[9]B)

[7] The following valves close in $\leq$ 10 seconds:

A. 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL (Step 6.1[26.1], 6.1[26.2])

B. 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL (Step 6.2[26.1], 6.2[26.2])

C. 2-FCV-77-9, RCDT PUMP DISCH VLV FLOW CONTROL (Step 6.3[26.1], 6.3[26.2])

D. 2-FCV-77-10, RCDT PUMP DISCH VALVE FLOW CONTROL (Step 6.4[14.1], 6.4[14.2])

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5.0 ACCEPTANCE CRITERIA (continued)

E. 2-FCV-77-17, RCDT TO VENT GA FLOW CONTROL (Step 6.5[14.1], 6.5[14.2])

F. 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL (Step 6.6[16.1], 6.6[16.2])

G. 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL (Step 6.7[16.1], 6.7[16.2])

[8] The following valves fail in the closed position upon a loss of air:

A. 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL (Step 6.1[22.1])

B. 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL (Step 6.2[22.1])

C. 2-FCV-77-9, RCDT PUMP DISCH VLV FLOW CONTROL (Step 6.3[22.1])

D. 2-FCV-77-10, RCDT PUMP DISCH VALVE FLOW CONTROL (Step 6.4[11.1])

E. 2-FCV-77-17, RCDT TO VENT GA FLOW CONTROL (Step 6.5[11.1])

F. 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL (Step 6.6[12.1])

G. 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL (Step 6.7[12.1])

[9] 2-LCV-77-415, RCDT LEVEL CONTROL responds to RCDT level setpoints as follows:

A. Closes ≤ RCDT LOW Level setpoint (Step 6.8[10]).

B. Opens ≥ RCDT HI or HI-HI Level setpoints (Step 6.8[6], 6.8[8]).

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5.0 ACCEPTANCE CRITERIA (continued)

[10] Annunciation occurs on Panel 0-L-2 for the following:

A. ≥ HI and ≤ LOW Liquid LVL setpoint (Step 6.12[3], 6.12[15])

B. ≥ High Pressure setpoint (Step 6.14[27])

C. ≥ High Temperature setpoint (Step 6.10[56])

[11] Reactor Coolant Drain Tank Pumps can be operated from the waste disposal panel, local control station or applicable reactor vent board:

A. Reactor Coolant Drain Tank Pump 2A (Subsection 6.10)

B. Reactor Coolant Drain Tank Pump 2B (Subsection 6.11)

[12] Reactor Coolant Drain Tank Pump 2A starts on HI level signal when FCV-77-9 and FCV-77-10 are in full open position (Step 6.10[27])

[13] Reactor Coolant Drain Tank 2B starts with FCV-77-9 and FCV-77-10 in full open position under the following conditions:

A. FCV-68-310 in full open position (Step 6.11[32])

B. HI-HI level signal (Step 6.11[27])

[14] Pumps stop on low level signal:

A. Reactor Coolant Drain Tank 2A (Step 6.10[28])

B. Reactor Coolant Drain Tank 2B (Step 6.11[36])

[15] "Motor Locked Out" Annunciator on Waste Disposal Panel functions correctly (Steps 6.17[4], 6.17[8])

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5.0 ACCEPTANCE CRITERIA (continued)

[16] The following design flow rates are met:

A. Reactor Coolant Drain Tank Pump 2A flow rate is at least 50 GPM at 175 feet Total Dynamic Head (Steps 6.12[28.1], 6.12[28.2]).

B. Reactor Coolant Drain Tank Pump 2B flow rate is at least 150 GPM at 175 feet Total Dynamic Head (Steps 6.13[17.1], 6.13[17.2]).

[17] The system processes liquid waste from assigned collection points through system filters to designated discharge and storage locations:

A. Reactor Coolant Drain Tank Pumps

- 2-TANK-77-1, REACTOR COOLANT DRAIN TANK to 2-TANK-62-1B, HOLD-UP TANK B (Step 6.12[29])
- 2-TANK-77-1, REACTOR COOLANT DRAIN TANK To 0-TANK-77-2, TRITIATED DRAIN COLLECTOR TANK (Step 6.13[18])
- 2-TANK-77-1, REACTOR COOLANT DRAIN TANK to 2-TANK-63-46, REFUELING WATER STORAGE TANK (Step 6.14[20])
- 2-TANK-77-1, REACTOR COOLANT DRAIN TANK to 0-TANK 84-110, FLOOD MODE AUXILIARY BORATION MAKEUP TANK (Step 6.15[11])
- Refueling Canal to 2-TANK-63-46, REFUELING WATER STORAGE TANK (Steps 6.14[18], 6.14[20])
- CVCS Excess Letdown Heat Exchanger to 2-TANK-77-1, REACTOR COOLANT DRAIN TANK (Step 6.16[6.1])
- 2-TANK-68-PRT, PRESSURIZER RELIEF TANK to RCDT Pumps (Step 6.12[13])

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6.0 PERFORMANCE

NOTES

1) Stroke timing of valves will be measured from the handswitch actuation to GREEN light OFF upon opening and RED light OFF upon closing.

2) Unit 1 Annunciator Window 135F is a common Unit 2 alarm window and may not clear during this test. When acknowledged, an additional alarm input will cause the window to reflash. In such event the steady "acknowledged" light will be utilized to identify "no additional alarm occurring."

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6.1 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL, Functional Test

NOTES

1) This section will test 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL from its control stations and verify operability of all interlocks, indicating lights, and annunciators.
2) Reference drawing 2-45W600-77-2, valve location 716/AZ287

[1] **ENSURE** prerequisites listed in Section 4.0 for Subsection 6.1 have been completed. _____

[2] **PERFORM** the following prior to beginning this Subsection _____

[2.1] **LIFT** Wire WCG4 from Terminal Point 7 on Terminal Board TB 610 in Panel 2-R-51. _____ 1st _____ CV

NOTE

TS-1 will simulate a Phase A Containment Isolation Signal for 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL, when placed to the OFF position.

[2.2] **INSTALL** a jumper with test switch in the ON position, labeled TS-1, between Wire WCG4 and Terminal Point 8 on Terminal Board TB 610 in Panel 2-R-51. _____ 1st _____ CV

Data Package: Page ____ of ____ **Date _____**

6.1 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL, Functional Test (continued)

[3] **ENSURE** that 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL, is CLOSED:

A. Green Light ON at 2-HS-77-16A, RCDT TO GAS ANAL CIV-∅A IN CNTMT, on 2-M-15. _____

B. Red Light OFF at 2-HS-77-16A, RCDT TO GAS ANAL CIV-∅A IN CNTMT. _____

C. Green Light ON at Containment Isolation Status Panel (CISP) 2-XX-55-6F, Window 94, FCV-77-16. _____

D. Red Light OFF at CISP 2-XX-55-6F, Window 94, FCV-77-16. _____

E. By local verification at 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL, 716/AZ287. _____

[4] **PLACE** 2-HS-77-16A, RCDT TO GAS ANAL CIV-∅A IN CNTMT, in the OPEN position until 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL is FULLY OPEN **THEN**

RELEASE to the A AUTO position. _____

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6.1 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL, Functional Test (continued)

[5] **VERIFY** the following indications for 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL:

A. Green Light OFF at 2-HS-77-16A, RCDT TO GAS ANAL CIV-ØA IN CNTMT. _____

B. Red Light ON at 2-HS-77-16A, RCDT TO GAS ANAL CIV-ØA IN CNTMT. _____

C. Green Light OFF at CISP 2-XX-55-6F, Window 94, FCV-77-16. _____

D. Red Light ON at CISP 2-XX-55-6F, Window 94, FCV-77-16. _____

E. 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL OPEN (locally). _____

[6] **PLACE** 2-HS-77-16A, RCDT TO GAS ANAL CIV-ØA IN CNTMT, in the CLOSE position, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-16A, RCDT TO GAS ANAL CIV-ØA IN CNTMT. _____

B. Red Light OFF at 2-HS-77-16A, RCDT TO GAS ANAL CIV-ØA IN CNTMT. _____

C. Green Light ON at CISP 2-XX-55-6F. Window 94, FCV-77-16. _____

D. Red Light OFF at CISP 2-XX-55-6F, Window 94, FCV-77-16. _____

E. 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL CLOSED (locally). _____

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6.1 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL, Functional Test (continued)

[7] **VERIFY** the light status at 2-HS-77-16C, RCDT TO GAS ANALYZER FLOW CONTROL, on 2-L-10:

A. Green Light OFF _____

B. Red Light OFF _____

[8] **ENSURE** Annunciator Window 148-C, ACR PNL 2-L-11B, at 2-XA-55-6F is CLEAR. _____

Data Package: Page ____ of ____ **Date _____**

6.1 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL, Functional Test (continued)

[9] **PLACE** Transfer Switch 2-XS-77-16, RCDT TO GAS ANALYZER IN CNTMT, on 2-L-11B, to the AUX position, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-16C, RCDT TO GAS ANALYZER FLOW CONTROL. _____

B. Red Light OFF at 2-HS-77-16C, RCDT TO GAS ANALYZER FLOW CONTROL. _____

C. Green Light OFF at 2-HS-77-16A, RCDT TO GAS ANAL CIV-ØA IN CNTMT. _____

D. Red Light OFF at 2-HS-77-16A, RCDT TO GAS ANAL CIV-ØA IN CNTMT. _____

E. Green Light OFF at CISP 2-XX-55-6F, Window 94, FCV-77-16. _____

F. Red Light OFF at CISP 2-XX-55-6F, Window 94, FCV-77-16. _____

G. Annunciator Window 148-C, ACR PNL 2-L-11B, ALARMS. _____

[10] **HOLD** 2-HS-77-16A, RCDT TO GAS ANAL CIV-ØA IN CNTMT, in the OPEN position, **AND**

VERIFY:

A. Green Light ON at, 2-HS-77-16C, RCDT TO GAS ANALYZER FLOW CONTROL IN CNTMT. _____

B. Red Light OFF at 2-HS-77-16C, RCDT TO GAS ANALYZER FLOW CONTROL. _____

C. 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL CLOSED (locally). _____

[10.1] **RELEASE** 2-HS-77-16A, RCDT TO GAS ANAL CIV-ØA IN CNTMT, to the A AUTO position. _____

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6.1 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL, Functional Test (continued)

[11] **PLACE** 2-HS-77-16C, RCDT TO GAS ANALYZER FLOW CONTROL, to the OPEN position, **AND**

VERIFY:

A. Green Light OFF _____

B. Red Light ON _____

C. 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL OPEN (locally). _____

[12] **PLACE** 2-HS-77-16A, RCDT TO GAS ANAL CIV-ØA IN CNTMT, in the CLOSE position, **AND**

VERIFY on 2-L-10 that 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL remains OPEN. _____

[13] **PLACE** 2-HS-77-16C, RCDT TO GAS ANALYZER FLOW CONTROL, to the CLOSE position, **AND**

VERIFY:

A. Green Light ON _____

B. Red Light OFF _____

C. 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL CLOSED (locally). _____

[14] **PLACE** Transfer Switch 2-XS-77-16, RCDT TO GAS ANALYZER IN CNTMT, to the NOR position, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-16A, RCDT TO GAS ANAL CIV-ØA IN CNTMT. _____

B. Red Light OFF at 2-HS-77-16A, RCDT TO GAS ANAL CIV-ØA IN CNTMT. _____

C. Green Light ON at CISP 2-XX-55-6F, Window 94, FCV-77-16. _____

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6.1 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL, Functional Test (continued)

D. Red Light OFF at CISP 2-XX-55-6F, Window 94, FCV-77-16. _____

E. Green Light OFF at 2-HS-77-16C, RCDT TO GAS ANALYZER FLOW CONTROL. _____

F. Red Light OFF at 2-HS-77-16C, RCDT TO GAS ANALYZER FLOW CONTROL. _____

G. Annunciator Window 148-C, ACR PNL 2-L-11B, CLEARS. _____

[15] **PLACE** 2-HS-77-16C, RCDT TO GAS ANALYZER FLOW CONTROL, to the OPEN position, **AND**

VERIFY at 2-M-15 that 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL remains CLOSED. _____

[16] **PLACE** 2-HS-77-16A, RCDT TO GAS ANAL CIV-ØA IN CNTMT, in the OPEN position until 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL is FULLY OPEN, **THEN**

RELEASE 2-HS-77-16A, RCDT TO GAS ANAL CIV-ØA IN CNTMT to the A AUTO position. _____

[17] **PLACE** 2-HS-77-16C, RCDT TO GAS ANALYZER FLOW CONTROL, to the CLOSE position, **AND**

VERIFY at 2-M-15 that 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL remains OPEN. _____

Data Package: Page ____ of ____ **Date _____**

6.1 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL, Functional Test (continued)

NOTE

The following steps will verify that 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL closes on a Phase A Containment Isolation Signal.

[18] **PLACE** TS-1 at Terminal Board TB 610 in Panel 2-R-51 to the OFF position, **AND**

VERIFY

A. Green Light ON at CISP 2-XX-55-6F. Window 94, FCV-77-16 (**ACC CRIT**). _____

B. Red Light OFF at CISP 2-XX-55-6F, Window 94, FCV-77-16 (**ACC CRIT**). _____

C. 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL CLOSED (locally) (**ACC CRIT**). _____

[19] **PLACE** TS-1 at Terminal Board TB 610 in Panel 2-R-51 to the ON position, **AND**

VERIFY

A. Green Light ON at CISP 2-XX-55-6F. Window 94, FCV-77-16 (**ACC CRIT**). _____

B. Red Light OFF at CISP 2-XX-55-6F, Window 94, FCV-77-16 (**ACC CRIT**). _____

C. 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL CLOSED (locally) (**ACC CRIT**). _____

[20] **PLACE** 2-HS-77-16A, RCDT TO GAS ANAL CIV-ØA IN CNTMT, in the OPEN position until 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL is FULLY OPEN, **THEN**

RELEASE 2-HS-77-16A, RCDT TO GAS ANAL CIV-ØA IN CNTMT to the A AUTO position. _____

[21] **CLOSE** 2-ISV-32-3517, CONTROL AIR ISOLATION VALVE TO 2-FCV-77-16. _____

Data Package: Page ____ of ____ **Date _____**

6.1 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL, Functional Test (continued)

[22] **OPEN** petcock to vent control air at 2-PREG-77-16, CONTROL AIR PRESSURE REG FOR 2-FCV-77-16.

[22.1] **VERIFY** 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL CLOSES. (**ACC CRIT**) _____

[23] **CLOSE** petcock at 2-PREG-77-16, CONTROL AIR PRESSURE REG FOR 2-FCV-77-16. _____

[24] **OPEN** 2-ISV-32-3517, CONTROL AIR ISOLATION VALVE TO 2-FCV-77-16. _____

[24.1] **VERIFY** 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL OPENS. _____

Data Package: Page ____ of ____ **Date _____**

6.1 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL, Functional Test (continued)

NOTES

1) The following steps require valve stroke timing locally at the valve and remotely at the Control Switch in both the Open and Closed positions.
2) Local timing begins with the initiating signal and is concluded with the completion of valve stem movement. Remote timing begins with the initiating signal and is concluded with the position indication lights status change. Stroke time acceptance criteria will be based on the movement to the safety function final position of the valve.

[25] **PLACE** 2-HS-77-16A, RCDT TO GAS ANAL CIV-ØA IN CNTMT, in the OPEN position until 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL is FULLY OPEN, **THEN**

RELEASE 2-HS-77-16A, RCDT TO GAS ANAL CIV-ØA IN CNTMT to the A AUTO position. _____

[25.1] **RECORD** remote opening time at 2-HS-77-16A, RCDT TO GAS ANAL CIV-ØA IN CNTMT.

M&TE _____ Cal Due Date _____

_____ seconds

_____

[25.2] **RECORD** local opening time at 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL.

M&TE _____ Cal Due Date _____

_____ seconds

_____

[26] **PLACE** 2-HS-77-16A, RCDT TO GAS ANAL CIV-ØA IN CNTMT, in the CLOSE position. _____

Data Package: Page ____ of ____ **Date _____**

6.1 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL, Functional Test (continued)

[26.1] **RECORD** remote closing time at 2-HS-77-16A, RCDT TO GAS ANAL CIV-∅A IN CNTMT. (**ACC CRIT**)

M&TE _____ Cal Due Date _____

_____ seconds (≤ 10 seconds)

_____

[26.2] **RECORD** local closing time at 2-FCV-77-16, RCDT TO GAS ANALYZER FLOW CONTROL. (**ACC CRIT**)

M&TE _____ Cal Due Date _____

_____ seconds (≤ 10 seconds)

_____

[27] **REMOVE** the jumper with test switch, labeled TS-1, from Terminal Point 8 on Terminal Board TB 610 in Panel 2-R-51 and Wire WCG4.

_____
1st

_____
CV

[28] **LAND** Wire WCG4 at Terminal Point 7 on Terminal Board TB 610 in Panel 2-R-51.

_____
1st

_____
CV

Data Package: Page ____ of ____ **Date _____**

6.2 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL, Functional Test

NOTES

1) This section will test 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL from its control stations and verify operability of all interlocks, indicating lights, and annunciators.
2) Reference drawing 2-45W600-77-2, valve location 716/AZ281

[1] **VERIFY** prerequisites listed in section 4.0 for Subsection 6.2 have been completed. _____

[2] **PERFORM** the following prior to beginning this Subsection:

[2.1] **LIFT** Wire WCK4 from Terminal Point 1 on Terminal Board TB 610 in Panel 2-R-51. _____ 1st _____ CV

NOTE

TS-2 will simulate a Phase A Containment Isolation Signal for 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL, when placed to the OFF position.

[2.2] **INSTALL** a jumper with test switch in the ON position, labeled TS-2, between Wire WCK4 and Terminal Point 2 on Terminal Board TB 610 in Panel 2-R-51. _____ 1st _____ CV

Data Package: Page ____ of ____ **Date _____**

6.2 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL, Functional Test (continued)

[3] **ENSURE** the following indications for 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL:

A. Green Light ON at 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT, on 2-M-15. _____

B. Red Light OFF at 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT. _____

C. Green Light ON at Containment Isolation Status Panel (CISP) 2-XX-55-6F, Window 95, FCV-77-18. _____

D. Red Light OFF at CISP 2-XX-55-6F, Window 95, FCV-77-18. _____

E. By local verification at 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL, is CLOSED, 716/AZ281. _____

[4] **PLACE** 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT in the OPEN position until 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL, is FULLY OPEN, **THEN**

RELEASE 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT to the A AUTO position. _____

Data Package: Page ____ of ____ **Date _____**

6.2 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL, Functional Test (continued)

[5] **ENSURE** the following indications that 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL, is OPEN:

A. Green Light OFF at 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT. _____

B. Red Light ON at 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT. _____

C. Green Light OFF at CISP 2-XX-55-6F, Window 95, FCV-77-18. _____

D. Red Light ON at CISP 2-XX-55-6F, Window 95, FCV-77-18. _____

E. 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL OPEN (locally). _____

[6] **PLACE** 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT, in the CLOSE position, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT. _____

B. Red Light OFF at 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT. _____

C. Green Light ON at CISP 2-XX-55-6F, Window 95, FCV-77-18. _____

D. Red Light OFF at CISP 2-XX-55-6F, Window 95, FCV-77-18. _____

E. 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL CLOSES (locally). _____

[7] **VERIFY** the light status at 2-HS-77-18C, RCDT TO VENT HDR FLOW CONTROL, on 2-L-10:

A. Green Light OFF _____

B. Red Light OFF _____

Data Package: Page ____ of ____ **Date _____**

6.2 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL, Functional Test (continued)

[8] **ENSURE** Annunciator Window 148-C, ACR PNL 2-L-11B, at 2-XA-55-6F is CLEAR. _____

[9] **PLACE** Transfer Switch 2-XS-77-18, RCDT TO WDS VENT HDR, on 2-L-11B, to the AUX position, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-18C, RCDT TO VENT HDR FLOW CONTROL. _____

B. Red Light OFF at 2-HS-77-18C, RCDT TO VENT HDR FLOW CONTROL. _____

C. Green Light OFF at 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT. _____

D. Red Light OFF at 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT. _____

E. Green Light OFF at CISP 2-XX-55-6F, Window 95, FCV-77-18. _____

F. Red Light OFF at CISP 2-XX-55-6F, Window 95, FCV-77-18. _____

G. Annunciator Window 148-C, ACR PNL 2-L-11B, ALARMS. _____

Data Package: Page ____ of ____ **Date _____**

6.2 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL, Functional Test (continued)

[10] **HOLD** 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT, in the OPEN position, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-18C, RCDT TO VENT HDR FLOW CONTROL. _____

B. Red Light OFF at 2-HS-77-18C, RCDT TO VENT HDR FLOW CONTROL. _____

C. 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL CLOSED (locally). _____

[10.1] **RELEASE** 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT, to the A AUTO position. _____

[11] **PLACE** 2-HS-77-18C, RCDT TO VENT HDR FLOW CONTROL, to the OPEN position, **AND**

VERIFY:

A. Green Light OFF _____

B. Red Light ON _____

C. 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL OPEN (locally). _____

[12] **PLACE** 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT, in the CLOSE position, **AND**

VERIFY on 2-L-10 that 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL remains OPEN. _____

Data Package: Page ____ of ____ **Date _____**

6.2 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL, Functional Test (continued)

[13] **PLACE** 2-HS-77-18C, RCDT TO VENT HDR FLOW CONTROL. RCDT VENT TO WDS VENT HDR, to the CLOSE position, **AND**

VERIFY:

A. Green Light ON _____

B. Red Light OFF _____

C. 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL CLOSES (locally). _____

[14] **PLACE** Transfer Switch 2-XS-77-18, RCDT TO WDS VENT HDR, to the NOR position, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT. _____

B. Red Light OFF at 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT. _____

C. Green Light ON at CISP 2-XX-55-6F, Window 95, FCV-77-18. _____

D. Red Light OFF at CISP 2-XX-55-6F, Window 95, FCV-77-18. _____

E. Green Light OFF at 2-HS-77-18C, RCDT TO VENT HDR FLOW CONTROL. _____

F. Red Light OFF at 2-HS-77-18C, RCDT TO VENT HDR FLOW CONTROL. _____

G. Annunciator Window 148-C, ACR PNL 2-L-11B, CLEARS. _____

[15] **PLACE** 2-HS-77-18C, RCDT TO VENT HDR FLOW CONTROL, to the OPEN position, **AND**

VERIFY at 2-M-15 that 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL remains CLOSED. _____

Data Package: Page ____ of ____ **Date _____**

6.2 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL, Functional Test (continued)

[16] **PLACE** 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT, in the OPEN position until 2-FCV-77-18 is FULLY OPEN, **THEN**

RELEASE 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT to the A AUTO position. _____

[17] **PLACE** 2-HS-77-18C, RCDT TO VENT HDR FLOW CONTROL, to the CLOSE position, **AND**

VERIFY at 2-M-15 that 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL remains OPEN. _____

NOTE

The following steps will verify that 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL closes on a Phase A Containment Isolation Signal.

[18] **PLACE** TS-2 at Terminal Board TB 610 in Panel 2-R-51 to the OFF position, **AND**

VERIFY

A. Green Light ON at CISP 2-XX-55-6F. Window 95, FCV-77-18 (**ACC CRIT**). _____

B. Red Light OFF at CISP 2-XX-55-6F, Window 95, FCV-77-18 (**ACC CRIT**). _____

C. 2-FCV-77-18, RCDT TO RCDT TO VENT HDR FLOW CONTROL CLOSED (locally) (**ACC CRIT**). _____

Data Package: Page ____ of ____ **Date _____**

6.2 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL, Functional Test (continued)

[19] **PLACE** TS-2 at Terminal Board TB 610 in Panel 2-R-51 to the ON position, **AND**

VERIFY

A. Green Light ON at CISP 2-XX-55-6F. Window 95, FCV-77-18 (**ACC CRIT**). _____

B. Red Light OFF at CISP 2-XX-55-6F, Window 95, FCV-77-18 (**ACC CRIT**). _____

C. 2-FCV-77-18, RCDT TO RCDT TO VENT HDR FLOW CONTROL CLOSED (locally) (**ACC CRIT**). _____

[20] **PLACE** 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT, in the OPEN position until 2-FCV-77-18 is FULLY OPEN, **THEN**

RELEASE 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT to the A AUTO position. _____

[21] **CLOSE** 2-ISV-32-3539, CONTROL AIR ISOLATION VALVE TO 2-FCV-77-18. _____

[22] **OPEN** petcock to vent control air at 2-PREG-77-18, CONTROL AIR PRESSURE REG FOR 2-FCV-77-18 _____

[22.1] **VERIFY** 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL CLOSES (**ACC CRIT**). _____

[23] **CLOSE** petcock at 2-PREG-77-18, CONTROL AIR PRESSURE REG FOR 2-FCV-77-18. _____

[24] **OPEN** 2-ISV-32-3539, CONTROL AIR ISOLATION VALVE TO 2-FCV-77-18. _____

[24.1] **VERIFY** 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL OPENS. _____

Data Package: Page ____ of ____ **Date _____**

6.2 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL, Functional Test (continued)

NOTES

1) The following steps require valve stroke timing locally at the valve and remotely at the Control Switch in both the Open and Closed positions.
2) Local timing begins with the initiating signal and is concluded with the completion of valve stem movement. Remote timing begins with the initiating signal and is concluded with the position indication lights status change. Stroke time acceptance criteria will be based on the movement to the safety function final position of the valve.

[25] **PLACE** 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT, in the OPEN position until 2-FCV-77-18 is FULLY OPEN, **THEN**

RELEASE 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT to the A AUTO position. _____

[25.1] **RECORD** remote opening time at 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT.

M&TE _____ Cal Due Date _____

_____ seconds

_____

[25.2] **RECORD** local opening time at 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL.

M&TE _____ Cal Due Date _____

_____ seconds

_____

Data Package: Page ____ of ____ **Date _____**

6.2 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL, Functional Test (continued)

[26] **PLACE** 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT, in the CLOSE position. _____

[26.1] **RECORD** remote closing time at 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT. (**ACC CRIT**)

M&TE _____ Cal Due Date _____

_____ seconds (≤ 10 seconds)

_____

[26.2] **RECORD** local closing time at 2-FCV-77-18, RCDT TO VENT HDR FLOW CONTROL. (**ACC CRIT**)

M&TE _____ Cal Due Date _____

_____ seconds (≤ 10 seconds)

_____

[27] **REMOVE** the jumper with test switch, labeled TS-2, from Terminal Point 2 on Terminal Board TB 610 in Panel 2-R-51 and Wire WCK4.

_____ 1st

_____ CV

[28] **LAND** Wire WCK4 at Terminal Point 1 on Terminal Board TB 610 in Panel 2-R-51.

_____ 1st

_____ CV

Data Package: Page ____ of ____ **Date _____**

6.3 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL, Functional Test

NOTES

1) This section will test 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL from its control stations and verify operability of all interlocks, indicating lights, and annunciators.
2) Reference drawing 2-45W600-77-1, valve location 716/AZ278

[1] **VERIFY** prerequisites listed in Section 4.0 for subsection 6.3 have been completed. _____

[2] **PERFORM** the following prior to beginning this Subsection:

[2.1] **LIFT** Wire WCJ4 from Terminal Point 3 on Terminal Board TB 610 in Panel 2-R-51. _____ 1st _____ CV

NOTE

TS-3 will simulate a Phase A Containment Isolation Signal for 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL, when placed to the OFF position.

[2.2] **INSTALL** a jumper with test switch in the ON position, labeled TS-3, between Wire WCJ4 and Terminal Point 4 on Terminal Board TB 610 in Panel 2-R-51. _____ 1st _____ CV

Data Package: Page ____ of ____ **Date _____**

6.3 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL, Functional Test (continued)

[3] **ENSURE** that 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL, is CLOSED:

A. Green Light ON at 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, on 2-M-15. _____

B. Red Light OFF at 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT. _____

C. Green Light ON at Containment Isolation Status Panel (CISP) 2-XX-55-6F, Window 93, FCV-77-9. _____

D. Red Light OFF at CISP 2-XX-55-6F, Window 93, FCV-77-9. _____

E. By local verification at 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL, 716/AZ278. _____

[4] **PLACE** 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, in the OPEN position until 2-FCV-77-9 is FULLY OPEN, **THEN**

RELEASE 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT to the A AUTO position. _____

[5] **VERIFY** the following indications for 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL:

A. Green Light OFF at 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT. _____

B. Red Light ON at 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT. _____

C. Green Light OFF at CISP 2-XX-55-6F, Window 93, FCV-77-9. _____

D. Red Light ON at CISP 2-XX-55-6F, Window 93, FCV-77-9. _____

E. 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL OPEN (locally). _____

Data Package: Page ____ of ____ **Date _____**

6.3 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL, Functional Test (continued)

[6] **PLACE** 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, in the CLOSE position, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT. _____

B. Red Light OFF at 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT. _____

C. Green Light ON at CISP 2-XX-55-6F, Window 93, FCV-77-9. _____

D. Red Light OFF at CISP 2-XX-55-6F, Window 93, FCV-77-9. _____

E. 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL CLOSES (locally). _____

[7] **VERIFY** the light status at 2-HS-77-9C, RCDT PUMP DISCH VLV FLOW CONTROL, on 2-L-10:

A. Green Light OFF _____

B. Red Light OFF _____

[8] **ENSURE** Annunciator Window 148-C, ACR PNL 2-L-11B, at 2-XA-55-6F, is CLEAR. _____

[9] **PLACE** Transfer Switch 2-XS-77-9, RCDT PMPS DISCH TO TDCT IN CNTMT, on 2-L-11B to the AUX position, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-9C, RCDT PUMP DISCH VLV FLOW CONTROL, RCDT PMPS DISCH TO TDCT. _____

B. Red Light OFF at 2-HS-77-9C, RCDT PUMP DISCH VLV FLOW CONTROL. _____

C. Green Light OFF at 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT. _____

Data Package: Page ____ of ____ **Date _____**

6.3 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL, Functional Test (continued)

D. Red Light OFF at 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT. _____

E. Green Light OFF at CISP 2-XX-55-6F, Window 93, FCV-77-9. _____

F. Red Light OFF at CISP 2-XX-55-6F, Window 93, FCV-77-9. _____

G. Annunciator Window 148-C, ACR PNL 2-L-11B, ALARMS. _____

[10] **HOLD** 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, in the OPEN position, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-9C, RCDT PUMP DISCH VLV FLOW CONTROL, RCDT PMPS DISCH TO TDCT. _____

B. Red Light OFF at 2-HS-77-9C, RCDT PUMP DISCH VLV FLOW CONTROL. _____

C. 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL CLOSED (locally). _____

[10.1] **RELEASE** 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, to the A AUTO position. _____

[11] **PLACE** 2-HS-77-9C, RCDT PUMP DISCH VLV FLOW CONTROL, RCDT PMPS DISCH TO TDCT, to the OPEN position, **AND**

VERIFY:

A. Green Light OFF _____

B. Red Light ON _____

C. 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL OPEN (locally). _____

Data Package: Page ____ of ____ **Date _____**

6.3 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL, Functional Test (continued)

[12] **PLACE** 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, in the CLOSE position, **AND**

VERIFY on 2-L-10 that 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL remains OPEN. _____

[13] **PLACE** 2-HS-77-9C, RCDT PUMP DISCH VLV FLOW CONTROL, RCDT PMPS DISCH TO TDCT, to the CLOSE position, **AND**

VERIFY:

A. Green Light ON _____

B. Red Light OFF _____

C. 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL CLOSES (locally). _____

[14] **PLACE** Transfer Switch 2-XS-77-9, RCDT PMPS DISCH TO TDCT, to the NOR position, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT. _____

B. Red Light OFF at 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT. _____

C. Green Light ON at CISP 2-XX-55-6F, Window 93, FCV-77-9. _____

D. Red Light OFF at CISP 2-XX-55-6F, Window 93, FCV-77-9. _____

E. Green Light OFF at 2-HS-77-9C, RCDT PUMP DISCH VLV FLOW CONTROL, RCDT PMPS DISCHARGE TO TDCT. _____

F. Red Light OFF at 2-HS-77-9C, RCDT PUMP DISCH VLV FLOW CONTROL. _____

G. Annunciator Window 148-C, ACR PNL 2-L-11B, CLEARS. _____

Data Package: Page ____ of ____ **Date _____**

6.3 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL, Functional Test (continued)

[15] **PLACE** 2-HS-77-9C, RCDT PUMP DISCH VLV FLOW CONTROL, RCDT PMPS DISCHARGE TO TDCT, to the OPEN position, **AND**

VERIFY at 2-M-15 that 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL remains CLOSED. _____

[16] **PLACE** 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, in the OPEN position until 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL is FULLY OPEN, **THEN**

RELEASE 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT to the A AUTO position. _____

[17] **PLACE** 2-HS-77-9C, RCDT PUMP DISCH VLV FLOW CONTROL, RCDT PMP DISCHARGE TO TDCT, to the CLOSE position, **AND**

VERIFY at 2-M-15 that 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL remains OPEN. _____

NOTE

The following steps will verify that 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL closes on a Phase A Containment Isolation Signal.

[18] **PLACE** TS-3 at Terminal Board TB 610 in Panel 2-R-51 to the OFF position, **AND**

VERIFY

A. Green Light ON at CISP 2-XX-55-6F. Window 93, FCV-77-9 (**ACC CRIT**). _____

B. Red Light OFF at CISP 2-XX-55-6F, Window 93, FCV-77-9 (**ACC CRIT**). _____

C. 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL CLOSED (locally) (**ACC CRIT**). _____

Data Package: Page ____ of ____ **Date _____**

6.3 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL, Functional Test (continued)

[19] **PLACE** TS-3 at Terminal Board TB 610 in Panel 2-R-51 to the ON position, **AND**

VERIFY

A. Green Light ON at CISP 2-XX-55-6F. Window 93, FCV-77-9 (**ACC CRIT**). _____

B. Red Light OFF at CISP 2-XX-55-6F, Window 93, FCV-77-9 (**ACC CRIT**). _____

C. 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL CLOSED (locally) (**ACC CRIT**). _____

[20] **PLACE** 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, in the OPEN position until 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL is FULLY OPEN, **THEN**

RELEASE 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT to the A AUTO position. _____

[21] **CLOSE** 2-ISV-32-3540, CONTROL AIR ISOLATION VALVE TO 2-FCV-77-9. _____

[22] **OPEN** petcock to vent control air at 2-PREG-077-0009, CONTROL AIR PRESSURE REG FOR 2-FCV-077-0009. _____

[22.1] **VERIFY** 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL CLOSES (**ACC CRIT**). _____

[23] **CLOSE** petcock at 2-PREG-077-0009, CONTROL AIR PRESSURE REG FOR 2-FCV-077-0009. _____

[24] **OPEN** 2-ISV-32-3540, CONTROL AIR ISOLATION VALVE TO 2-FCV-77-9. _____

[24.1] **VERIFY** 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL OPENS. _____

Data Package: Page ____ of ____ **Date _____**

6.3 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL, Functional Test (continued)

NOTES

1) The following steps require valve stroke timing locally at the valve and remotely at the Control Switch in both the Open and Closed positions.
2) Local timing begins with the initiating signal and is concluded with the completion of valve stem movement. Remote timing begins with the initiating signal and is concluded with the position indication lights status change. Stroke time acceptance criteria will be based on the movement to the safety function final position of the valve.

[25] **PLACE** 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, in the OPEN position until 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL is FULLY OPEN, **THEN**

RELEASE 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT to the A AUTO position. _____

[25.1] **RECORD** remote opening time at 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT.

M&TE _____ Cal Due Date _____

_____ seconds

_____

[25.2] **RECORD** local opening time at 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL.

M&TE _____ Cal Due Date _____

_____ seconds

_____

[26] **PLACE** 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, in the CLOSE position. _____

Data Package: Page ____ of ____ **Date _____**

6.3 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL, Functional Test (continued)

[26.1] **RECORD** remote closing time at 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT. (**ACC CRIT**)

M&TE _____ Cal Due Date _____

_____ seconds (≤ 10 seconds)

_____

[26.2] **RECORD** local closing time at 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL. (**ACC CRIT**)

M&TE _____ Cal Due Date _____

_____ seconds (≤ 10 seconds)

_____

[27] **REMOVE** the jumper with test switch, labeled TS-3, from Terminal Point 4 on Terminal Board TB 610 in Panel 2-R-51 and Wire WCJ4.

_____ 1st

_____ CV

[28] **LAND** Wire WCJ4 at Terminal Point 3 on Terminal Board TB 610 in Panel 2-R-51.

_____ 1st

_____ CV

Data Package: Page ____ of ____ **Date _____**

6.4 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL, Functional Test

NOTES

1) This section will test 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL from its control stations and verify operability of all interlocks, indicating lights, and annunciators.
2) Reference drawing 2-45W600-77-2, valve location 713/A12W

[1] **VERIFY** prerequisites listed in Section 4.0 for Subsection 6.4 have been completed. _____

[2] **PERFORM** the following prior to beginning this Subsection:

[2.1] **LIFT** Wire WBN1 from Terminal Point 3 on Terminal Board TB 610 in Panel 2-R-48. _____ 1st _____ CV

NOTE

TS-4 will simulate a Phase A Containment Isolation Signal for 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL, when placed to the OFF position.

[2.2] **INSTALL** a jumper with test switch in the ON position, labeled TS-4, between Wire WBN1 and Terminal Point 4 on Terminal Board TB 610 in Panel 2-R-48. _____ 1st _____ CV

Data Package: Page ____ of ____ **Date _____**

6.4 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL, Functional Test (continued)

[3] **ENSURE** that 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL, is CLOSED:

A. Green Light ON at 2-HS-77-10A, RCDT PMPS TO TDCT CIV-ØA OUT CNTMT on 2-M-15. _____

B. Red Light OFF at 2-HS-77-10A, RCDT PMPS TO TDCT CIV-ØA OUT CNTMT. _____

C. Green Light ON at Containment Isolation Status Panel (CISP) 2-XX-55-6E, Window 93, FCV-77-10. _____

D. Red Light OFF at CISP 2-XX-55-6E, Window 93, FCV-77-10. _____

E. By local verification at 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL, 713/A12W. _____

[4] **PLACE** 2-HS-77-10A, RCDT PMPS TO TDCT CIV-ØA OUT CNTMT in the OPEN position, **AND**

VERIFY:

A. Green Light OFF at 2-HS-77-10A, RCDT PMPS TO TDCT CIV-ØA OUT CNTMT. _____

B. Red Light ON at 2-HS-77-10A, RCDT PMPS TO TDCT CIV-ØA OUT CNTMT. _____

C. Green Light OFF at CISP 2-XX-55-6E, Window 93, FCV-77-10. _____

D. Red Light ON at CISP 2-XX-55-6E, Window 93, FCV-77-10. _____

E. 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL OPEN (locally). _____

Data Package: Page ____ of ____ **Date _____**

6.4 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL, Functional Test (continued)

[5] **PLACE** 2-HS-77-10A, RCDT PMPS TO TDCT CIV-ØA OUT CNTMT in the CLOSE position, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-10A, RCDT PMPS TO TDCT CIV-ØA OUT CNTMT. _____

B. Red Light OFF at 2-HS-77-10A, RCDT PMPS TO TDCT CIV-ØA OUT CNTMT. _____

C. Green Light ON at CISP 2-XX-55-6E, Window 93, FCV-77-10. _____

D. Red Light OFF at CXSP 2-XX-55-6E, Window 93, FCV-77-10. _____

E. 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL CLOSES (locally). _____

[6] **PLACE** 2-HS-77-10A, RCDT PMPS TO TDCT CIV-ØA OUT CNTMT in the OPEN position. _____

[6.1] **VERIFY** 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL is OPEN. _____

NOTE

The following steps will verify that 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL closes on a Phase A Containment Isolation Signal.

[7] **PLACE** TS-4 at Terminal Board TB 610 in Panel 2-R-48 to the OFF position, **AND**

VERIFY

A. Green Light ON at CISP 2-XX-55-6E. Window 93, FCV-77-10 (**ACC CRIT**). _____

B. Red Light OFF at CISP 2-XX-55-6E, Window 93, FCV-77-10 (**ACC CRIT**). _____

C. 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL CLOSED (locally) (**ACC CRIT**). _____

Data Package: Page ____ of ____ **Date _____**

6.4 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL, Functional Test (continued)

[8] **PLACE** TS-4 at Terminal Board TB 610 in Panel 2-R-48 to the ON position, **AND**

VERIFY

A. Green Light ON at CISP 2-XX-55-6E. Window 93, FCV-77-10 (**ACC CRIT**). _____

B. Red Light OFF at CISP 2-XX-55-6E, Window 93, FCV-77-10 (**ACC CRIT**). _____

C. 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL CLOSED (locally) (**ACC CRIT**). _____

[9] **PLACE** 2-HS-77-10A, RCDT PMPS TO TDCT CIV-∅A OUT CNTMT in the OPEN position. _____

[9.1] **VERIFY** 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL is OPEN. _____

[10] **CLOSE** 2-ISV-32-3175, CONTROL AIR ISOLATION VALVE TO 2-FCV-77-10. _____

[11] **OPEN** petcock to vent control air at 2-PREG-77-10, CONTROL AIR PRESSURE REG FOR 2-FCV-77-10. _____

[11.1] **VERIFY** 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL CLOSES (**ACC CRIT**). _____

[12] **CLOSE** petcock at 2-PREG-77-10, CONTROL AIR PRESSURE REG FOR 2-FCV-77-10. _____

[13] **OPEN** 2-ISV-32-3175, CONTROL AIR ISOLATION VALVE TO 2-FCV-77-10. _____

[13.1] **VERIFY** 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL OPENS. _____

Data Package: Page ____ of ____ **Date _____**

6.4 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL, Functional Test (continued)

NOTES

1) The following steps require valve stroke timing locally at the valve and remotely at the Control Switch in both the Open and Closed positions.
2) Local timing begins with the initiating signal and is concluded with the completion of valve stem movement. Remote timing begins with the initiating signal and is concluded with the position indication lights status change. Stroke time acceptance criteria will be based on the movement to the safety function final position of the valve.

[14] **PLACE** 2-HS-77-10A, RCDT PMPS TO TDCT CIV-ØA OUT CNTMT in the CLOSE position. _____

[14.1] **RECORD** remote closing time at 2-HS-77-10A, RCDT PMPS TO TDCT CIV-ØA OUT CNTMT. (**ACC CRIT**)

M&TE _____ Cal Due Date _____

_____ seconds (≤ 10 seconds)

_____

[14.2] **RECORD** local closing time at 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL. (**ACC CRIT**)

M&TE _____ Cal Due Date _____

_____ seconds (≤ 10 seconds)

_____

Data Package: Page ____ of ____ **Date _____**

6.4 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL, Functional Test (continued)

[15] **PLACE** 2-HS-77-10A, RCDT PMPS TO TDCT CIV-ØA OUT CNTMT in the OPEN position until 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL is FULLY OPEN, **THEN**

RELEASE 2-HS-77-10A, RCDT PMPS TO TDCT CIV-ØA OUT CNTMT to the A-P AUTO position. _____

[15.1] **RECORD** remote opening time at 2-HS-77-10A, RCDT PMPS TO TDCT CIV-ØA OUT CNTMT.

M&TE _____ Cal Due Date _____

_____ seconds

_____

[15.2] **RECORD** local opening time at 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL.

M&TE _____ Cal Due Date _____

_____ seconds

_____

[16] **PLACE** 2-HS-77-10A, RCDT PMPS TO TDCT CIV-ØA OUT CNTMT in the CLOSE position, **AND**

VERIFY 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL is CLOSED. _____

[17] **REMOVE** the jumper with test switch, labeled TS-4, from Terminal Point 4 on Terminal Board TB 610 in Panel 2-R-48 and Wire WBN1.

_____ 1st

_____ CV

[18] **LAND** Wire WBN1 at Terminal Point 3 on Terminal Board TB 610 in Panel 2-R-48.

_____ 1st

_____ CV

Data Package: Page ____ of ____ **Date _____**

6.5 2-FCV-77-17, RCDT TO GAS ANALYZER FLOW CONTROL Functional Test

NOTES

1) This section will test 2-FCV-77-17, RCDT TO GAS ANALYZER FLOW CONTROL from its control stations and verify operability of all interlocks, indicating lights, and annunciators.
2) Reference drawing 2-45W600-77-2, valve location 713/A12W

[1] **VERIFY** prerequisites listed in Section 4.0 for Subsection 6.5 have been completed. _____

[2] **PERFORM** the following prior to beginning this Subsection:

[2.1] **LIFT** Wire WCH2 from Terminal Point 7 on Terminal Board TB 610 in Panel 2-R-48. _____ 1st _____ CV

NOTE

TS-5 will simulate a Phase A Containment Isolation Signal for 2-FCV-77-17, RCDT TO GAS ANALYZER FLOW CONTROL when placed to the OFF position.

[2.2] **INSTALL** a jumper with test switch in the ON position, labeled TS-5, between Wire WCH2 and Terminal Point 8 on Terminal Board TB 610 in Panel 2-R-48. _____ 1st _____ CV

Data Package: Page ____ of ____ **Date _____**

6.5 2-FCV-77-17, RCDT TO GAS ANALYZER FLOW CONTROL Functional Test (continued)

[3] **ENSURE** that 2-FCV-77-17, RCDT TO GAS ANALYZER FLOW CONTROL is CLOSED:

A. Green Light ON at 2-HS-77-17, RCDT TO GAS ANAL CIV-ØA OUT CNTMT, on 2-M-15. _____

B. Red Light OFF at 2-HS-77-17, RCDT TO GAS ANAL CIV-ØA OUT CNTMT. _____

C. Green Light ON at Containment Isolation Status Panel (CISP) 2-XX-55-6E, Window 94, FCV-77-17. _____

D. Red Light OFF at CISP 2-XX-55-6E, Window 94, FCV-77-17. _____

E. By local verification at 2-FCV-77-17, RCDT TO GAS ANALYZER FLOW CONTROL, 713/A12W. _____

[4] **PLACE** 2-HS-77-17, RCDT TO GAS ANAL CIV-ØA OUT CNTMT in the OPEN position, **AND**

VERIFY:

A. Green Light OFF at 2-HS-77-17, RCDT TO GAS ANAL CIV-ØA OUT CNTMT. _____

B. Red Light ON at 2-HS-77-17, RCDT TO GAS ANAL CIV-ØA OUT CNTMT. _____

C. Green Light OFF at CISP 2-XX-55-6E, Window 94, FCV-77-17. _____

D. Red Light ON at CISP 2-XX-55-6E, Window 94, FCV-77-17. _____

E. 2-FCV-77-17, RCDT TO GAS ANALYZER FLOW CONTROL OPEN (locally). _____

Data Package: Page ____ of ____ **Date _____**

6.5 2-FCV-77-17, RCDT TO GAS ANALYZER FLOW CONTROL Functional Test (continued)

[5] **PLACE** 2-HS-77-17, RCDT TO GAS ANAL CIV-ØA OUT CNTMT in the CLOSE position, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-17, RCDT TO GAS ANAL CIV-ØA OUT CNTMT. _____

B. Red Light OFF at 2-HS-77-17, RCDT TO GAS ANAL CIV-ØA OUT CNTMT. _____

C. Green Light ON at CISP 2-XX-55-6E, Window 94, FCV-77-17. _____

D. Red Light OFF at CISP 2-XX-55-6E, .Window 94, FCV-77-17. _____

E. 2-FCV-77-17, RCDT TO GAS ANALYZER FLOW CONTROL CLOSES (locally). _____

[6] **PLACE** 2-HS-77-17, RCDT TO GAS ANAL CIV-ØA OUT CNTMT in the OPEN position, **AND**

VERIFY 2-FCV-77-17, RCDT TO GAS ANALYZER FLOW CONTROL is OPEN. _____

NOTE

The following steps will verify that 2-FCV-77-17, RCDT TO GAS ANALYZER FLOW CONTROL closes on a Phase A Containment Isolation Signal.

[7] **PLACE** TS-5 at Terminal Board TB 610 in Panel 2-R-48 to the OFF position, **AND**

VERIFY

A. Green Light ON at CISP 2-XX-55-6E. Window 94, FCV-77-17 (**ACC CRIT**). _____

B. Red Light OFF at CISP 2-XX-55-6E, Window 94, FCV-77-17 (**ACC CRIT**). _____

C. 2-FCV-77-17, RCDT TO GAS ANALYZER FLOW CONTROL CLOSED (locally) (**ACC CRIT**). _____

Data Package: Page ____ of ____ **Date _____**

6.5 2-FCV-77-17, RCDT TO GAS ANALYZER FLOW CONTROL Functional Test (continued)

[8] **PLACE** TS-5 at Terminal Board TB 610 in Panel 2-R-48 to the ON position, **AND**

VERIFY

A. Green Light ON at CISP 2-XX-55-6E. Window 94, FCV-77-17 (**ACC CRIT**). _____

B. Red Light OFF at CISP 2-XX-55-6E, Window 94, FCV-77-17 (**ACC CRIT**). _____

C. 2-FCV-77-17, RCDT TO GAS ANALYZER FLOW CONTROL CLOSED (locally) (**ACC CRIT**). _____

[9] **PLACE** 2-HS-77-17, RCDT TO GAS ANAL CIV-∅A OUT CNTMT in the OPEN position, **AND**

VERIFY 2-FCV-77-17, RCDT TO GAS ANALYZER FLOW CONTROL is OPEN. _____

[10] **CLOSE** 2-ISV-32-3183, CONTROL AIR ISOLATION VALVE TO 2-FCV-77-17. _____

[11] **OPEN** petcock to vent control air at 2-PREG-77-17, CONTROL AIR PRESSURE REG FOR 2-FCV-77-17, RCDT TO GAS ANALYZER FLOW CONTROL _____

[11.1] **VERIFY** 2-FCV-77-17, RCDT TO GAS ANALYZER FLOW CONTROL CLOSES (**ACC CRIT**). _____

[12] **CLOSE** petcock at 2-PREG-77-17, CONTROL AIR PRESSURE REG FOR 2-FCV-77-17. _____

[13] **OPEN** 2-ISV-32-3183, CONTROL AIR ISOLATION VALVE TO 2-FCV-77-17. _____

[13.1] **VERIFY** 2-FCV-77-17, RCDT TO GAS ANALYZER FLOW CONTROL OPENS. _____

Data Package: Page ____ of ____ **Date _____**

6.5 2-FCV-77-17, RCDT TO GAS ANALYZER FLOW CONTROL Functional Test (continued)

NOTES

1) The following steps require valve stroke timing locally at the valve and remotely at the Control Switch in both the Open and Closed positions.
2) Local timing begins with the initiating signal and is concluded with the completion of valve stem movement. Remote timing begins with the initiating signal and is concluded with the position indication lights status change. Stroke time acceptance criteria will be based on the movement to the safety function final position of the valve.

[14] **PLACE** 2-HS-77-17, RCDT TO GAS ANAL CIV-ØA OUT CNTMT, in the CLOSE position. _____

[14.1] **RECORD** remote closing time at 2-HS-77-17, RCDT TO GAS ANAL CIV-ØA OUT CNTMT. (**ACC CRIT**)

M&TE _____ Cal Due Date _____

_____ seconds (≤ 10 seconds)

_____

[14.2] **RECORD** local closing time at 2-FCV-77-17, RCDT TO GAS ANALYZER FLOW CONTROL. (**ACC CRIT**)

M&TE _____ Cal Due Date _____

_____ seconds (≤ 10 seconds)

_____

Data Package: Page ____ of ____ **Date _____**

6.5 2-FCV-77-17, RCDT TO GAS ANALYZER FLOW CONTROL Functional Test (continued)

[15] **PLACE** 2-HS-77-17, RCDT TO GAS ANAL CIV-ØA OUT CNTMT in the OPEN position. _____

[15.1] **RECORD** remote opening time at 2-HS-77-17, RCDT TO GAS ANAL CIV-ØA OUT CNTMT.

M&TE _____ Cal Due Date _____

_____ seconds

_____

[15.2] **RECORD** local opening time at 2-FCV-77-17, RCDT TO GAS ANALYZER FLOW CONTROL.

M&TE _____ Cal Due Date _____

_____ seconds

_____

[16] **PLACE** 2-HS-77-17, RCDT TO GAS ANAL CIV-ØA OUT CNTMT in the CLOSE position, **AND**

VERIFY 2-FCV-77-17, RCDT TO GAS ANALYZER FLOW CONTROL is CLOSED. _____

[17] **REMOVE** the jumper with test switch, labeled TS-5, from Terminal Point 8 on Terminal Board TB 610 in Panel 2-R-48 and Wire WCH2.

_____ 1st

_____ CV

[18] **LAND** Wire WCH2 at Terminal Point 7 on Terminal Board TB 610 in Panel 2-R-48.

_____ 1st

_____ CV

Data Package: Page ____ of ____ **Date _____**

6.6 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL Functional Test

NOTES

1) This section will test 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL from its control stations and verify operability of all interlocks, indicating lights, and annunciators.
2) Reference drawing 2-45W600-77-2, valve location 713/A12W

[1] **VERIFY** prerequisites listed in Section 4.0 for Subsection 6.6 have been completed. _____

[2] **PERFORM** the following prior to beginning this Subsection:

[2.1] **LIFT** Wire WBS2 from Terminal Point 1 on Terminal Board TB 610 in Panel 2-R-48.

_____ 1st

_____ CV

NOTE

TS-6 will simulate a Phase A Containment Isolation Signal for 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL when placed to the OFF position.

[2.2] **INSTALL** a jumper with test switch in the ON position, labeled TS-6, between Wire WBS2 and Terminal Point 2 on Terminal Board TB 610 in Panel 2-R-48.

_____ 1st

_____ CV

Data Package: Page ____ of ____ **Date _____**

6.6 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL Functional Test (continued)

[3] **ENSURE** that 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL is CLOSED:

A. Green Light ON at 2-HS-77-19, RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT, on 2-M-15. _____

B. Red Light OFF at 2-HS-77-19, RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT. _____

C. Green Light ON at Containment Isolation Status Panel (CISP) 2-XX-55-6E, Window 95, FCV-77-19. _____

D. Red Light OFF at CISP 2-M-55-6E, Window 95, FCV-77-19. _____

E. By local verification at 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL, 713/A12W. _____

[4] **PLACE** 2-HS-77-19, RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT in the OPEN position until 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL is FULLY OPEN, **THEN**

RELEASE 2-HS-77-19, RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT to the A AUTO position. _____

Data Package: Page ____ of ____ **Date _____**

6.6 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL Functional Test (continued)

[5] **VERIFY** the following indications for 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL:

A. Green Light OFF at 2-HS-77-19, RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT. _____

B. Red Light ON at 2-HS-77-19, RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT. _____

C. Green Light OFF at CISP 2-XX-55-6E, Window 95, FCV-77-19. _____

D. Red Light ON at CISP 2-XX-55-6E, Window 95, FCV-77-19. _____

E. 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL OPEN (locally). _____

[6] **PLACE** 2-HS-77-19, RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT in the CLOSE position, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-19, RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT. _____

B. Red Light OFF at 2-HS-77-19, RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT. _____

C. Green Light ON at CISP 2-XX-55-6E, Window 95, FCV-77-19. _____

D. Red Light OFF at CISP 2-XX-55-6E, Window 95, FCV-77-19. _____

E. 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL OPEN CLOSES (locally). _____

Data Package: Page ____ of ____ **Date _____**

6.6 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL Functional Test (continued)

[7] **PLACE** 2-HS-77-19, RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT in the OPEN position until 2-FCV-077-0019-A RCDT TO VENT HDR FLOW CONTROL OPEN is FULLY OPEN, **THEN**

RELEASE 2-HS-77-19, RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT to the A AUTO position. _____

NOTE

The following steps will verify that 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL OPEN closes on a Phase A Containment Isolation Signal.

[8] **PLACE** TS-6 at Terminal Board TB 610 in Panel 2-R-48 to the OFF position, **AND**

VERIFY

A. Green Light ON at CISP 2-XX-55-6E. Window 95, FCV-77-19 (**ACC CRIT**). _____

B. Red Light OFF at CISP 2-XX-55-6E, Window 95, FCV-77-19 (**ACC CRIT**). _____

C. 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL CLOSED (locally) (**ACC CRIT**). _____

[9] **PLACE** TS-6 at Terminal Board TB 610 in Panel 2-R-48 to the ON position, **AND**

VERIFY

A. Green Light ON at CISP 2-XX-55-6E. Window 95, FCV-77-19 (**ACC CRIT**). _____

B. Red Light OFF at CISP 2-XX-55-6E, Window 95, FCV-77-19 (**ACC CRIT**). _____

C. 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL CLOSED (locally) (**ACC CRIT**). _____

Data Package: Page ____ of ____ **Date _____**

6.6 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL Functional Test (continued)

[10] **PLACE** 2-HS-77-19, RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT in the OPEN position until 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL is FULLY OPEN, **THEN**

RELEASE 2-HS-77-19, RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT to the A AUTO position. _____

[11] **CLOSE** 2-ISV-32-3187, CONTROL AIR ISOLATION VALVE TO 2-FCV-77-19. _____

[12] **OPEN** petcock to vent control air at 2-PREG-77-19, CONTROL AIR PRESSURE REG FOR 2-FCV-77-19 _____

[12.1] **VERIFY** 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL CLOSES (**ACC CRIT**). _____

[13] **CLOSE** petcock at 2-PREG-77-19, CONTROL AIR PRESSURE REG FOR 2-FCV-77-19. _____

[14] **OPEN** 2-ISV-32-3187, CONTROL AIR ISOLATION VALVE TO 2-FCV-77-19. _____

[14.1] **VERIFY** 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL OPENS. _____

Data Package: Page ____ of ____ **Date _____**

6.6 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL Functional Test (continued)

NOTES

1) The following steps require valve stroke timing locally at the valve and remotely at the Control Switch in bath the Open and Closed positions.
2) Local timing begins with the initiating signal and is concluded with the completion of valve stem movement. Remote timing begins with the initiating signal and is concluded with the position indication lights status change. Stroke time acceptance criteria will be based on the movement to the safety function final position of the valve.

[15] **PLACE** 2-HS-77-19, RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT, in the OPEN position until 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL is FULLY OPEN, **THEN**

RELEASE 2-HS-77-19, RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT to the A AUTO position. _____

[15.1] **RECORD** remote opening time at 2-HS-77-19, RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT.

M&TE _____ Cal Due Date _____

_____ seconds

_____

[15.2] **RECORD** local opening time at 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL.

M&TE _____ Cal Due Date _____

_____ seconds

_____

Data Package: Page ____ of ____ **Date _____**

6.6 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL Functional Test (continued)

[16] **PLACE** 2-HS-77-19, RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT, in the CLOSE position. _____

[16.1] **RECORD** remote closing time at 2-HS-77-19, RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT. (**ACC CRIT**)

M&TE _____ Cal Due Date _____

_____ seconds (≤ 10 seconds)

_____

[16.2] **RECORD** local closing time at 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL. (**ACC CRIT**)

M&TE _____ Cal Due Date _____

_____ seconds (≤ 10 seconds)

_____

[17] **REMOVE** the jumper with test switch, labeled TS-6, from Terminal Point 2 on Terminal Board TB 610 in Panel 2-R-48 and Wire WBS2.

_____ 1st

_____ CV

[18] **LAND** Wire WBS2 at Terminal Point 1 on Terminal Board TB 610 in Panel 2-R-48.

_____ 1st

_____ CV

Data Package: Page ____ of ____ **Date _____**

6.7 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL Functional Test

NOTES

1) This section will test 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL from its control stations and verify operability of all interlocks, indicating lights, and annunciators.
2) Reference drawing 2-45W600-77-2, valve location 713/A12W

[1] **VERIFY** prerequisites listed in section 4.0 for Subsection 6.7 have been completed. _____

[2] **PERFORM** the following prior to beginning this Subsection:

[2.1] **LIFT** Wire WBR2 from Terminal Point 1 on Terminal Board TB 611 in Panel 2-R-48. _____ 1st _____ CV

NOTE

TS-7 will simulate a Phase A Containment Isolation Signal for 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL when placed to the OFF position.

[2.2] **INSTALL** a jumper with test switch in the ON position, labeled TS-7, between Wire WBR2 and Terminal Point 2 on Terminal Board TB 611 in Panel 2-R-48. _____ 1st _____ CV

Data Package: Page ____ of ____ **Date _____**

6.7 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL Functional Test (continued)

[3] **ENSURE** that 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL is CLOSED:

A. Green Light ON at 2-HS-77-20, N2 TO RCDT CIV-ØA OUT CNTMT, on 2-M-15. _____

B. Red Light OFF at 2-HS-77-20, N2 TO RCDT CIV-ØA OUT CNTMT. _____

C. Green Light ON at Containment Isolation Status Panel (CISP) 2-XX-55-6E, Window 96, FCV-77-20. _____

D. Red Light OFF at CISP 2-XX-55-6E, Window 96, FCV-77-20. _____

E. By local verification at 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL, 713/A12W. _____

[4] **PLACE** 2-HS-77-20, N2 TO RCDT CIV-ØA OUT CNTMT in the OPEN position until 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL is FULLY OPEN, **THEN**

RELEASE 2-HS-77-20, N2 TO RCDT CIV-ØA OUT CNTMT to the A AUTO position. _____

[5] **VERIFY** the following indications for 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL:

A. Green Light OFF at 2-HS-77-20, N2 TO RCDT CIV-ØA OUT CNTMT. _____

B. Red Light ON at 2-HS-77-20, N2 TO RCDT CIV-ØA OUT CNTMT. _____

C. Green Light OFF at CISP 2-XX-55-6E, Window 96, FCV-77-20. _____

D. Red Light ON at CISP 2-XX-55-6E, Window 96, FCV-77-20. _____

E. 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL OPEN (locally). _____

Data Package: Page ____ of ____ **Date _____**

6.7 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL Functional Test (continued)

[6] **PLACE** 2-HS-77-20, N2 TO RCDT CIV-ØA OUT CNTMT, in the CLOSE position, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-20, N2 TO RCDT CIV-ØA OUT CNTMT. _____

B. Red Light OFF at 2-HS-77-20, N2 TO RCDT CIV-ØA OUT CNTMT. _____

C. Green Light ON at CISP 2-XX-55-6E, Window 96, FCV-77-20. _____

D. Red Light OFF at CISP 2-XX-55-6E, Window 96, FCV-77-20. _____

E. 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL CLOSES (locally). _____

[7] **PLACE** 2-HS-77-20, N2 TO RCDT CIV-ØA OUT CNTMT in the OPEN position until 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL is FULLY OPEN, **THEN**

RELEASE 2-HS-77-20, N2 TO RCDT CIV-ØA OUT CNTMT to the A AUTO position. _____

Data Package: Page ____ of ____ **Date _____**

6.7 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL Functional Test (continued)

NOTE

The following steps will verify that 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL closes on a Phase A Containment Isolation Signal.

[8] **PLACE** TS-7 at Terminal Board TB 611 in Panel 2-R-48 to the OFF position, **AND**

VERIFY

A. Green Light ON at CISP 2-XX-55-6E. Window 96, FCV-77-20 (**ACC CRIT**). _____

B. Red Light OFF at CISP 2-XX-55-6E, Window 96, FCV-77-20 (**ACC CRIT**). _____

C. 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL CLOSED (locally) (**ACC CRIT**). _____

[9] **PLACE** TS-7 at Terminal Board TB 611 in Panel 2-R-48 to the ON position, **AND**

VERIFY

A. Green Light ON at CISP 2-XX-55-6E. Window 96, FCV-77-20 (**ACC CRIT**). _____

B. Red Light OFF at CISP 2-XX-55-6E, Window 96, FCV-77-20 (**ACC CRIT**). _____

C. 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL CLOSED (locally) (**ACC CRIT**). _____

[10] **PLACE** 2-HS-77-20, N2 TO RCDT CIV-ØA OUT CNTMT in the OPEN position until 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL is FULLY OPEN, **THEN**

RELEASE 2-HS-77-20, N2 TO RCDT CIV-ØA OUT CNTMT to the A AUTO position. _____

[11] **CLOSE** 2-ISV-32-3174, CONTROL AIR ISOLATION VALVE TO 2-FCV-77-20. _____

Data Package: Page ____ of ____ **Date _____**

6.7 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL Functional Test (continued)

[12] **OPEN** petcock to vent control air at Pressure Regulator PREG-77-20, CONTROL AIR PRESSURE REG FOR 2-FCV-77-20. _____

[12.1] **VERIFY** 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL CLOSES (**ACC CRIT**). _____

[13] **CLOSE** petcock at Pressure Regulator PREG-77-20, CONTROL AIR PRESSURE REG FOR 2-FCV-77-20. _____

[14] **OPEN** 2-ISV-32-3174, CONTROL AIR ISOLATION VALVE TO 2-FCV-77-20. _____

[14.1] **VERIFY** 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL OPENS. _____

NOTES

1) The following steps require valve stroke timing locally at the valve and remotely at the Control Switch in both the Open and Closed positions.
2) Local timing begins with the initiating signal and is concluded with the completion of valve stem movement. Remote timing begins with the initiating signal and is concluded with the position indication lights status change. Stroke time acceptance criteria will be based on the movement to the safety function final position of the valve.

[15] **PLACE** 2-HS-77-20, N2 TO RCDT CIV-ØA OUT CNTMT in the OPEN position until 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL is FULLY OPEN, **THEN**

RELEASE 2-HS-77-20, N2 TO RCDT CIV-ØA OUT CNTMT to the A AUTO position. _____

[15.1] **RECORD** remote opening time at 2-HS-77-20, N2 TO RCDT CIV-ØA OUT CNTMT.

M&TE _____ Cal Due Date _____

_____ seconds

_____

Data Package: Page ____ of ____ **Date _____**

6.7 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL Functional Test (continued)

[15.2] **RECORD** local opening time at 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL.

M&TE _____ Cal Due Date _____

_____ seconds

_____

[16] **PLACE** 2-HS-77-20, N2 TO RCDT CIV-ØA OUT CNTMT, in the CLOSE position.

_____

[16.1] **RECORD** remote closing time at 2-HS-77-20, N2 TO RCDT CIV-ØA OUT CNTMT. (**ACC CRIT**)

M&TE _____ Cal Due Date _____

_____ seconds (≤ 10 seconds)

_____

[16.2] **RECORD** local closing time at 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL. (**ACC CRIT**)

M&TE _____ Cal Due Date _____

_____ seconds (≤ 10 seconds)

_____

[17] **REMOVE** the jumper with test switch, labeled TS-7, from Terminal Point 2 on Terminal Board TB 611 in Panel 2-R-48 and Wire WBR2.

_____ 1st

_____ CV

[18] **LAND** Wire WBR2 at Terminal Point 1 on Terminal Board TB 611 in Panel 2-R-48.

_____ 1st

_____ CV

Data Package: Page ____ of ____ **Date _____**

6.8 2-LCV-77-415, RCDT LEVEL CONTROL Functional Test

NOTES

1) This section will test 2-LCV-77-415, RCDT LEVEL CONTROL from its control station and verify operability of interlocks and indicating lights.
2) Reference drawing 2-45W600-77-6, valve location 702/AZ279
3) This subsection must be completed before starting subsection 6.10.
4) Subsections 6.3 and 6.4 must be complete before starting this subsection.

[1] **VERIFY** prerequisites listed in Section 4.0 for Subsection 6.8 have been completed. _____

[1.1] **ENSURE** 2-HS-77-4A, RCDT PUMP 2A is in the STOP position, **AND**

VERIFY:

A. Green Light ON _____

B. Red Light OFF _____

[1.2] **ENSURE** 2-HS-77-6A, RCDT PUMP 2B is in the STOP position, **AND**

VERIFY:

A. Green Light ON _____

B. Red Light OFF _____

[1.3] **ENSURE** 2-BKR-77-4-A, RCDT PUMP 2A (2-PMP-77-4) on 2-MCC-232-A-A, REACTOR VENT BOARD 2A-A, Compartment 11D (772/A10S) is in the ON position. _____

[1.4] **ENSURE** 2-BKR-77-6-B, RCDT PUMP 2B (2-PMP-77-6) on 2-MCC-232-B-B, REACTOR VENT BOARD 2B-B, Compartment 11D (772/A11S) is in the ON position. _____

Data Package: Page ____ of ____ **Date _____**

6.8 2-LCV-77-415, RCDT LEVEL CONTROL Functional Test (continued)

[2] **PERFORM** the following prior to beginning this Subsection:

NOTES

1) TS-8 will simulate Low Level in the RCDT for 2-LCV-77-415, RCDT LEVEL CONTROL, when placed in the OFF position.
2) TS-8 will be removed by step 6.10[49].

[2.1] **INSTALL** a jumper with test switch in the ON position, labeled TS-8, between Terminal Point 7 and Terminal Point 8 of 2-LS-77-1E, REACT. COOLANT DR TK PUMPS OFF & VLV CLOSES, (Aux Relay 2-LY-1003D) in Panel 0-L-2.

_____ 1st

_____ CV

NOTES

1) TS-9 will simulate Hi Level in the RCDT for 2-LCV-77-415, RCDT LEVEL CONTROL when placed in the ON position.
2) TS-9 will be removed by step 6.10[50].

[2.2] **INSTALL** a jumper with test switch in the OFF position, labeled TS-9, between Terminal Point 7 and Terminal Point 8 of 2-LS-77-1D/B, REACT COOLANT DR TANK PUMP A ON, (Aux Relay 2-LY-1003B) in Panel 0-L-2.

_____ 1st

_____ CV

Data Package: Page ____ of ____ **Date _____**

6.8 2-LCV-77-415, RCDT LEVEL CONTROL Functional Test (continued)

NOTES

1) TS-10 will simulate Low Level in the RCDT for 2-LCV-77-415, RCDT LEVEL CONTROL when placed in the OFF position.
2) TS-10 will be removed by step 6.11[57].

[2.3] **INSTALL** a jumper with test switch in the ON position, labeled TS-10, between Terminal Point 9 and Terminal Point 10 of 2-LS-77-1E, REACT. COOLANT DR TK PUMPS OFF & VLV CLOSES, (Aux Relay 2-LY-1003D) in Panel 0-L-2.

_____ 1st

_____ CV

NOTES

1) TS-11 will simulate HI-HI Level in the RCDT for 2-LCV-77-415, RCDT LEVEL CONTROL when placed in the ON position.
2) TS-11 will be removed by step 6.11[58].

[2.4] **INSTALL** a jumper with test switch in the OFF position, labeled TS-11, between Terminal Point 7 and Terminal Point 8 of 2-LS-77-1D/B, REACT COOLANT DR TANK PUMP A ON, (Aux Relay 2-LY-1003B) in Panel 0-L-2.

_____ 1st

_____ CV

[2.5] **ENSURE** the Reactor Coolant Drain Tank is drained to approximately 0% as indicated on 2-LI-77-1, RCDT LEVEL, Panel 0-L-2. _____

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6.8 2-LCV-77-415, RCDT LEVEL CONTROL Functional Test (continued)

[3] **ENSURE** that 2-LCV-77-415, RCDT LEVEL CONTROL is CLOSED:

A. Green Light ON at 2-HS-77-415, RCDT LEVEL CNTL on panel 0-L-2. _____

B. Red Light OFF at 2-HS-77-415, RCDT LEVEL CNTL. _____

C. By local verification at 2-LCV-77-415, RCDT LEVEL CONTROL, 702/AZ269. _____

[4] **PLACE and HOLD** 2-HS-77-415, RCDT LEVEL CNTL, to the OPEN position, **AND**

VERIFY:

A. Green Light OFF at 2-HS-77-415, RCDT LEVEL CNTL. _____

B. Red Light ON at 2-HS-77-415, RCDT LEVEL CNTL. _____

C. 2-LCV-77-415, RCDT LEVEL CONTROL OPEN (locally). _____

[5] **RELEASE** 2-HS-77-415, RCDT LEVEL CNTL, to the AUTO position, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-415, RCDT LEVEL CNTL. _____

B. Red Light OFF at 2-HS-77-415, RCDT LEVEL CNTL. _____

C. 2-LCV-77-415, RCDT LEVEL CONTROL CLOSED (locally). _____

Data Package: Page ____ of ____ **Date _____**

6.8 2-LCV-77-415, RCDT LEVEL CONTROL Functional Test (continued)

NOTE

The following steps will verify that 2-LCV-77-415, RCDT LEVEL CONTROL will open on HI or HI-HI level in the RCDT and close on Low level in the RCDT.

[6] **PLACE** TS-9, at 2-LS-077-1D/B, REACT COOLANT DR TANK PUMP A ON in Panel 0-L-2, to the ON position to simulate a HI level in the RCDT, **AND**

VERIFY that 2-LCV-77-415, RCDT LEVEL CONTROL OPENS (**ACC CRIT**). _____

[7] **PLACE** TS-9, at 2-LS-077-1D/B, REACT COOLANT DR TANK PUMP A ON in Panel 0-L-2, to the OFF position to simulate a Normal level in the RCDT, **AND**

VERIFY that 2-LCV-77-415, RCDT LEVEL CONTROL CLOSES. _____

[8] **PLACE** TS-11, at 2-LS-077-1B/D, REACT COOLANT DR TANK PUMP B ON in Panel 0-L-2, to the ON position to simulate a HI-HI level in the RCDT, **AND**

VERIFY that 2-LCV-77-415, RCDT LEVEL CONTROL OPENS (**ACC CRIT**). _____

[9] **PLACE** TS-11, at 2-LS-077-1B/D, REACT COOLANT DR TANK PUMP B ON in Panel 0-L-2, to the OFF position to simulate a Normal level in the RCDT, **AND**

VERIFY that 2-LCV-77-415, RCDT LEVEL CONTROL CLOSES. _____

[10] **PLACE** TS-8, at 2-LS-077-1E, REACT COOLANT DR TK PUMPS OFF & VLV CLOSES in Panel 0-L-2, to the OFF position to simulate a Low level in the RCDT, **AND**

VERIFY that 2-LCV-77-415, RCDT LEVEL CONTROL remains CLOSED (**ACC CRIT**). _____

Data Package: Page ____ of ____ **Date _____**

6.8 2-LCV-77-415, RCDT LEVEL CONTROL Functional Test (continued)

[11] **PLACE** TS-8, at 2-LS-077-1E, REACT COOLANT DR TK PUMPS OFF & VLV CLOSES in Panel 0-L-2, to the ON position to simulate a Normal level in the RCDT, **AND**

VERIFY that 2-LCV-77-415, RCDT LEVEL CONTROL remains CLOSED. _____

[12] **PLACE** TS-10, at 2-LS-077-1E, REACT COOLANT DR TK PUMPS OFF & VLV CLOSES in Panel 0-L-2, to the OFF position to simulate a Low level in the RCDT, **AND**

VERIFY that 2-LCV-77-415, RCDT LEVEL CONTROL remains CLOSED. _____

[13] **PLACE** TS-10, at 2-LS-077-1E, REACT COOLANT DR TK PUMPS OFF & VLV CLOSES in Panel 0-L-2, to the ON position to simulate a Normal level in the RCDT, **AND**

VERIFY that 2-LCV-77-415, RCDT LEVEL CONTROL remains CLOSED. _____

[14] **CLOSE** 2-ISV-32-3526, CONTROL AIR ISOLATION VALVE TO 2-LCV-77-415. _____

[15] **OPEN** petcock to vent control air at 2-PREG-77-415, CONTROL AIR PRESSURE REG FOR 2-LCV-77-415, **AND**

VERIFY 2-LCV-77-415, RCDT LEVEL CONTROL OPENS. _____

[16] **CLOSE** petcock at 2-PREG-77-415, CONTROL AIR PRESSURE REG FOR 2-LCV-77-415. _____

[17] **OPEN** 2-ISV-32-3526, CONTROL AIR ISOLATION VALVE TO 2-LCV-77-415, **AND**

VERIFY 2-LCV-77-415, RCDT LEVEL CONTROL CLOSES. _____

Data Package: Page ____ of ____ **Date _____**

6.9 2-FCV-77-3, RCDT TO RB FLR/EQ DRN SUMP Functional Test

NOTES

1) This section will test 2-FCV-77-3, RCDT TO RB FLR/EQ DRN SUMP from its control station and verify operability of indicating lights.
2) Reference drawing 2-45W600-77-1, valve location 702/AZ274

[1] **VERIFY** prerequisites listed in Section 4.0 for Subsection 6.9 have been completed. _____

[2] **ENSURE** that 2-FCV-77-3, RCDT TO RB FLR/EQ DRN SUMP, is CLOSED:

A. Green Light ON at 2-HS-77-3, RCDT TO RB FLR/EQDRN SUMP FLOW CNTL, on Panel 0-L-2. _____

B. Red Light OFF at 2-HS-77-3, RCDT TO RB FLR/EQDRN SUMP FLOW CNTL. _____

C. By local verification at 2-FCV-77-3, RCDT TO RB FLR/EQ DRN SUMP, 702/AZ274. _____

[3] **PLACE** 2-HS-77-3, RCDT TO RB FLR/EQDRN SUMP FLOW CNTL, to the OPEN position, **AND**

VERIFY:

A. Green Light OFF at 2-HS-77-3, RCDT TO RB FLR/EQDRN SUMP FLOW CNTL. _____

B. Red Light ON at 2-HS-77-3, RCDT TO RB FLR/EQDRN SUMP FLOW CNTL. _____

C. 2-FCV-77-3, RCDT TO RB FLR/EQ DRN SUMP OPEN (locally). _____

Data Package: Page ____ of ____ **Date _____**

6.9 2-FCV-77-3, RCDT TO RB FLR/EQ DRN SUMP Functional Test (continued)

[4] **PLACE** 2-HS-77-3, RCDT TO RB FLR/EQDRN SUMP FLOW CNTL, to the CLOSE position, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-3, RCDT TO RB FLR/EQDRN SUMP FLOW CNTL. _____

B. Red Light OFF at 2-HS-77-3, RCDT TO RB FLR/EQDRN SUMP FLOW CNTL. _____

C. 2-FCV-77-3, RCDT TO RB FLR/EQ DRN SUMP CLOSED (locally). _____

[5] **PLACE** 2-HS-77-3, RCDT TO RB FLR/EQDRN SUMP FLOW CNTL, to the OPEN position, **AND**

VERIFY 2-FCV-77-3, RCDT TO RB FLR/EQ DRN SUMP is OPEN. _____

[6] **CLOSE** 2-ISV-032-3527, CONTROL AIR ISOLATION VALVE TO 2-FCV-77-3. _____

[7] **OPEN** petcock to vent control air at 2-PREG-77-3, CONTROL AIR PRESSURE REG FOR 2-FCV-77-3 _____

[7.1] **VERIFY** 2-FCV-77-3, RCDT TO RB FLR/EQ DRN SUMP CLOSES. _____

[8] **CLOSE** petcock at 2-PREG-77-3, CONTROL AIR PRESSURE REG FOR 2-FCV-77-3. _____

[9] **OPEN** 2-ISV-32-3527, CONTROL AIR ISOLATION VALVE TO 2-FCV-77-3 _____

[9.1] **VERIFY** 2-FCV-77-3, RCDT TO RB FLR/EQ DRN SUMP OPENS. _____

[10] **PLACE** 2-HS-77-3, RCDT TO RB FLR/EQDRN SUMP FLOW CNTL, to the CLOSE position, **AND**

VERIFY 2-FCV-77-3, RCDT TO RB FLR/EQ DRN SUMP CLOSES. _____

Data Package: Page ____ of ____ **Date _____**

6.10 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A Logic Test

NOTES

1) This section will test 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A from its control stations and verify operability of all interlocks, indicating lights, and annunciators.
2) Reference drawing 2-45W760-77-4, valve location 702/AZ275
3) Subsection 6.8 must be performed prior to this subsection due to installation of TS-8 and TS-9.

[1] **VERIFY** prerequisites listed in section 4.0 for Subsection 6.10 have been completed. _____

WARNING

Arc Flash PPE per TI-300 will be required for steps 6.10[2.1] through 6.10[2.7].

[2] **PERFORM** the following prior to beginning this Subsection:

[2.1] **VERIFY/PLACE** 2-BKR-77-4-A, RCDT PUMP 2A (2-PMP-77-4), 2-MCC-232-A-A, Compartment. 11D, 772/A10S, to the OFF position. _____

[2.2] **PULL** 2-MCC-232-A-A, Compartment. 11D. _____ 1st _____ CV

[2.3] **ENSURE** locking tabs engage to prevent bucket from re-engaging. _____

[2.4] **PERFORM** live-dead-live check on load. _____

[2.5] **REMOVE** the Thermal Overloads (3) for 2-BKR-77-4-A, RCDT PUMP 2A (2-PMP-77-4). _____ 1st _____ CV

Data Package: Page ____ of ____ **Date _____**

6.10 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A Logic Test (continued)

[2.6] **REINSTALL** 2-MCC-232-A-A, Compartment. 11D. _____ 1st _____ CV

[2.7] **PLACE** 2-BKR-77-4-A, RCDT PUMP 2A (2-PMP-77-4) to the ON position. _____

NOTE

TS-15 will simulate a Low Level in the RCDT for 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A, when placed in the OFF position.

[2.8] **INSTALL** a jumper with test switch in the ON position, labeled TS-15, between Terminal Point 3 and Terminal Point 4 of 2-LS-77-1E, REACT. COOLANT DR TK PUMPS OFF & VLV CLOSES, (Aux Relay 2-LY-1003D) in Panel 0-L-2. _____ 1st _____ CV

[2.9] **ENSURE** the Reactor Coolant Drain Tank is drained to approximately 0% as indicated on 2-LI-77-1, REACT COOLANT DR TK LEVEL INDICATOR, Panel 0-L-2. _____

[3] **PLACE** 2-HS-77-4A, RCDT PUMP 2A at Panel 0-L-2, to the NORMAL position. _____

[4] **VERIFY** the light status at 2-HS-77-4A, RCDT PUMP 2A:

A. Green Light ON _____

B. Red Light OFF _____

[5] **PLACE** 2-HS-77-4A, RCDT PUMP 2A to the START position, **AND**

VERIFY:

A. Green Light ON _____

B. Red Light OFF _____

Data Package: Page ____ of ____ **Date _____**

6.10 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A Logic Test (continued)

[6] **PLACE** 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, on 2-M-15, in the OPEN position, **AND**

VERIFY 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL, is OPEN. _____

[7] **PLACE** 2-HS-77-4A, RCDT PUMP 2A to the START position, **AND**

VERIFY:

A. Green Light ON _____

B. Red Light OFF _____

[8] **PLACE** 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, in the CLOSE position, **AND**

VERIFY 2-FCV-77-9 RCDT PUMP DISCHARGE FLOW CONTROL is CLOSED. _____

[9] **PLACE** 2-HS-77-10A, RCDT PMPS TO TDCT CIV-ØA OUT CNTMT on 2-M-15, in the OPEN position, **AND**

VERIFY 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL, is OPEN. _____

[10] **PLACE** 2-HS-77-4A, RCDT PUMP 2A to the START position, **AND**

VERIFY:

A. Green Light ON _____

B. Red Light OFF _____

[11] **PLACE** 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, in the OPEN position, **AND**

VERIFY 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL is OPEN. _____

Data Package: Page ____ of ____ **Date _____**

6.10 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A Logic Test (continued)

[12] **PLACE** 2-HS-77-4A, RCDT PUMP 2A to the START position, **AND**

VERIFY:

A. Green Light OFF _____

B. Red Light ON _____

[13] **PLACE** 2-HS-77-4A, RCDT PUMP 2A to the STOP position, **AND**

VERIFY:

A. Green Light ON _____

B. Red Light OFF _____

[14] **PLACE** 2-HS-77-4A, RCDT PUMP 2A to the START position, **AND**

VERIFY:

A. Green Light OFF _____

B. Red Light ON _____

[15] **PLACE** TS-15, at 2-LS-77-1E in Panel 0-L-2, to the OFF position to simulate Low level in the RCDT, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-4A, RCDT PUMP 2A. _____

B. Red Light OFF at 2-HS-77-4A, RCDT PUMP 2A. _____

[16] **PLACE** TS-15, at 2-LS-77-1E, REACT. COOLANT DR TK PUMPS OFF & VLV CLOSES in Panel 0-L-2, to the ON position to simulate Normal level in the RCDT. _____

Data Package: Page ____ of ____ **Date _____**

6.10 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A Logic Test (continued)

[17] **PLACE** 2-HS-77-4A, RCDT PUMP 2A to the START position, **AND**

VERIFY:

A. Green Light OFF _____

B. Red -Light ON _____

[18] **PLACE** 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, in the CLOSE position, **AND**

VERIFY 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL is CLOSED. _____

[19] **VERIFY** light status at 2-HS-77-4A, RCDT PUMP 2A:

A. Green Light ON _____

B. Red Light OFF _____

[20] **PLACE** 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, in the OPEN position, **AND**

VERIFY 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL is OPEN. _____

[21] **PLACE** 2-HS-77-4A, RCDT PUMP 2A to the START position, **AND**

VERIFY:

A. Green Light OFF _____

B. Red Light ON _____

[22] **PLACE** 2-HS-77-10A, RCDT PMPS TO TDCT CIV-ØA OUT CNTMT in the CLOSE position, **AND**

VERIFY 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL is CLOSED. _____

Data Package: Page ____ of ____ **Date _____**

6.10 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A Logic Test (continued)

[23] **VERIFY** light status at 2-HS-77-4A, RCDT PUMP 2A:

A. Green Light ON _____

B. Red Light OFF _____

[24] **PLACE** 2-HS-77-10A, RCDT PMPS TO TDCT CIV-ØA OUT CNTMT in the OPEN position, **AND**

VERIFY 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL is OPEN. _____

NOTE

The following steps verify that 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A will automatically start on RCDT HI level signal with 2-FCV-77-9 and 2-FCV-77-10 both in full open position.

[25] **PULL OUT** 2-HS-77-4A, RCDT PUMP 2A to the P-AUTO position, **AND**

VERIFY:

A. Green Light ON _____

B. Red Light OFF _____

[26] **PLACE** TS-9, at 2-LS-77-1D/B, REACT COOLANT DR TANK PUMP A ON in Panel 0-L-2, to the ON position to simulate Hi level in the RCDT. _____

[27] **VERIFY** the light status at 2-HS-77-4A, RCDT PUMP 2A (**Acc Crit**):

A. Green Light OFF _____

B. Red Light ON _____

Data Package: Page ____ of ____ **Date _____**

6.10 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A Logic Test (continued)

NOTE

The following step verifies that 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A will automatically stop on receipt of RCDT low level signal.

[28] **PLACE** TS-8, at 2-LS-77-1E, REACT. COOLANT DR TK PUMPS OFF & VLV CLOSES in Panel 0-L-2, to the OFF position to simulate a Low level in the RCDT, **AND**

VERIFY (Acc Crit):

A. Green Light ON at 2-HS-77-4A, RCDT PUMP 2A. _____

B. Red Light OFF at 2-HS-77-4A, RCDT PUMP 2A. _____

[29] **PLACE** TS-8, at Level switch 2-LS-77-1E, REACT COOLANT DR TK PUMPS OFF & VLV CLOSES in Panel 0-L-2, to the ON position to simulate a Normal level in the RCDT, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-4A, RCDT PUMP 2A. REACT COOLANT DR TK PUMP A. _____

B. Red Light OFF at and switch 2-HS-77-4A, RCDT PUMP 2A. _____

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6.10 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A Logic Test (continued)

[30] **PRESS** 2-HS-77-4B, RCDT PUMP 2A START Pushbutton 702/AZ270, **AND**

VERIFY:

A. Green Light OFF at 2-HS-77-4A, RCDT PUMP 2A. _____

B. Red Light ON at 2-HS-77-4A, RCDT PUMP 2A. _____

[30.1] **RELEASE** the 2-HS-77-4B, RCDT PUMP 2A START pushbutton _____

[31] **PLACE** 2-HS-77-4C, RCDT PUMP 2A, at 2-BKR-77-4-A, RCDT PUMP 2A (2-PMP-77-4), 2-MCC-232-AA, Compartment 11D, 772/A10S, to the STOP position, **AND**

VERIFY:

A. Green Light OFF at 2-HS-77-4A, RCDT PUMP 2A. _____

B. Red Light ON at 2-HS-77-4A, RCDT PUMP 2A. _____

[32] **PRESS** 2-HS-77-4B, RCDT PUMP 2A STOP Pushbutton, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-4A, RCDT PUMP 2A. _____

B. Red Light OFF at 2-HS-77-4A, RCDT PUMP 2A. _____

[32.1] **RELEASE** the 2-HS-77-4B, RCDT PUMP 2A STOP pushbutton. _____

[33] **PLACE** 2-HS-77-4C, RCDT PUMP 2A, to the START position, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-4A, RCDT PUMP 2A. _____

B. Red Light OFF at 2-HS-77-4A, RCDT PUMP 2A. _____

Data Package: Page ____ of ____ **Date _____**

6.10 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A Logic Test (continued)

NOTE

In the following steps, the Red and Green Lights at 2-HS-77-4A, RCDT PUMP 2A will be de-energized. The Red Light at 2-BKR-77-4-A, RCDT PUMP 2A (2-PMP-77-4), will not energize with the thermal overloads removed. Status of 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A logic circuit will be verified by visual observation of the motor contactor at 2-BKR-77-4-A, RCDT PUMP 2A (2-PMP-77-4).

[34] **PLACE** Transfer Switch 2-XS-77-4, RCDT PUMP A, at 2-BKR-77-4-A, RCDT PUMP 2A (2-PMP-77-4), 2-MCC-232-AA, Compartment. 11D, 772/A10S, to the AUX position, **AND**

VERIFY:

A. Green Light OFF at 2-HS-77-4A, RCDT PUMP 2A. _____

B. Red Light OFF at 2-HS-77-4A, RCDT PUMP 2A. _____

C. By visual observation, motor contactor at 2-BKR-77-4-A, RCDT PUMP 2A (2-PMP-77-4) is ENERGIZED. _____

[35] **PLACE** 2-HS-77-4C, RCDT PUMP 2A, at 2-BKR-77-4-A, RCDT PUMP 2A (2-PMP-77-4), to the STOP position, **AND**

VERIFY by visual observation that the motor contactor is DE-ENERGIZED. _____

[36] **PLACE** 2-HS-77-4A, RCDT PUMP 2A to the START position, **AND**

VERIFY by visual observation that the motor contactor remains DE-ENERGIZED. _____

[37] **PRESS and HOLD** 2-HS-77-4B, RCDT PUMP 2A START Pushbutton, **AND**

VERIFY by visual observation that the motor contactor is ENERGIZED. _____

Data Package: Page ____ of ____ **Date _____**

6.10 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A Logic Test (continued)

[38] **PLACE** 2-HS-77-4A, RCDT PUMP 2A to the STOP position, **AND**

VERIFY by visual observation that the motor contactor remains ENERGIZED. _____

[39] **PRESS** 2-HS-77-4B, RCDT PUMP 2A STOP Pushbutton, **AND**

VERIFY by visual observation that the motor contactor is DE-ENERGIZED. _____

[39.1] **RELEASE** the 2-HS-77-4B, RCDT PUMP 2A STOP pushbutton. _____

[40] **PLACE** Transfer Switch 2-XS-77-4, RCDT PUMP A, to the NORMAL position, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-4A, RCDT PUMP 2A. _____

B. Red Light OFF at 2-HS-77-4A, RCDT PUMP 2A. _____

[41] **PLACE** 2-HS-77-4A, RCDT PUMP 2A to the STOP/PULL-TO-LOCK position. _____

WARNING

Arc Flash PPE per TI-300 will be required for steps 6.10[42] through 6.10[48].

[42] **PLACE** 2-BKR-77-4-A, RCDT PUMP 2A (2-PMP-77-4), 2-MCC-232-A-A, Compartment. 11D, 772/A10S, to the OFF position. _____

[43] **PULL** 2-MCC-232-A-A, Compartment. 11D. _____ 1st

_____ CV

[44] **ENSURE** locking tabs engage to prevent bucket from re-engaging. _____

Data Package: Page ____ of ____ **Date _____**

6.10 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A Logic Test (continued)

[45] **PERFORM** live-dead-live check on load. _____

[46] **INSTALL** the Thermal Overloads (3) for 2-BKR-77-4-A, RCDT PUMP 2A (2-PMP-77-4). _____ 1st _____ CV

[47] **REINSTALL** 2-MCC-232-A-A, Compartment. 11D. _____ 1st _____ CV

[48] **PLACE** 2-BKR-77-4-A, RCDT PUMP 2A (2-PMP-77-4) to the ON position. _____

[49] **REMOVE** the jumper with test switch, labeled TS-8, from Terminal Point 7 and Terminal Point 8 of 2-LS-077-1E, REACT. COOLANT DR TK PUMPS OFF & VLV CLOSES, in Panel 0-L-2. _____ 1st _____ CV

[50] **REMOVE** the jumper with test switch, labeled TS-9, from Terminal Point 7 and Terminal Point 8 of 2-LS-077-1D/B, REACT COOLANT DR TANK PUMP A ON, in Panel 0-L-2. _____ 1st _____ CV

[51] **REMOVE** the jumper with test switch, labeled TS-15, between Terminal Point 3 and Terminal Point 4 of 2-LS-077-1E, REACT. COOLANT DR TK PUMPS OFF & VLV CLOSES, in Panel 0-L-2. _____ 1st _____ CV

Data Package: Page ____ of ____ **Date _____**

6.10 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A Logic Test (continued)

[52] **PLACE** 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, in the CLOSE position, **AND**

VERIFY 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL is CLOSED. _____

[53] **PLACE** 2-HS-77-10A, RCDT PMPS TO TDCT CIV-ØA OUT CNTMT in the CLOSE position, **AND**

VERIFY 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL is CLOSED. _____

NOTE

The following steps verify the function of Annunciator XA/1098, Window 13, REACTOR COOLANT DRAIN TNK HI TEMP.

[54] **VERIFY** Annunciator, XA/1098, Window 13, REACTOR COOLANT DRAIN TNK HI TEMP, is CLEAR. _____

[55] **RECORD** the as-found setting of 2-TS-77-21, RCDT TEMP HI TEMP ALARM SWITCH, at 0-L-2.

As-Found Setting _____ °F

_____

[56] **ADJUST** 2-TS-77-21, RCDT TEMP HI TEMP ALARM SWITCH until Annunciator XA/1098, Window 13, REACTOR COOLANT DRAIN TNK HI TEMP, ALARMS (**ACC CRIT**). _____

[57] **RETURN** 2-TS-77-21, RCDT TEMP HI TEMP ALARM SWITCH to the as-found setting recorded in step 6.10[55].

As-Left Setting _____ °F

_____

[58] **VERIFY** Annunciator XA/1098, Window 13, REACTOR COOLANT DRAIN TNK HI TEMP, CLEARS. _____

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6.11 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B Logic Test

NOTES

1) This section will test 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B from its control stations and verify operability of all interlocks, indicating lights, and annunciators.
2) Reference drawing 2-45W760-77-4, valve location 702/AZ275
3) Subsection 6.8 must be performed prior to this subsection due to installation of TS-10 and TS-11.

[1] **VERIFY** prerequisites listed in Section 4.0 for Subsection 6.11 have been completed. _____

WARNING

Arc Flash PPE per TI-300 will be required for steps 6.11[2.1] through 6.11[2.7].

[2] **PERFORM** the following prior to beginning this Subsection:

[2.1] **VERIFY/PLACE** 2-BKR-77-6-B, RCDT PUMP 2B (2-PMP-77-6), 2-MCC-232-B-B, Compartment. 11D, 772/A10S, to the OFF position. _____

[2.2] **PULL** 2-MCC-232-B-B, Compartment. 11D. _____ 1st _____ CV

[2.3] **ENSURE** locking tabs engage to prevent bucket from re-engaging. _____

[2.4] **PERFORM** live-dead-live check on load. _____

[2.5] **REMOVE** the Thermal Overloads (3) for 2-BKR-77-6-B, RCDT PUMP 2B (2-PMP-77-6). _____ 1st _____ CV

Data Package: Page ____ of ____ **Date _____**

6.11 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B Logic Test (continued)

[2.6] **REINSTALL** 2-MCC-232-B-B, Compartment. 11D. _____ 1st _____ CV

[2.7] **PLACE** 2-BKR-77-6-B, RCDT PUMP 2B (2-PMP-77-6) to the ON position. _____

NOTE

TS-16 will simulate a Low Level in the RCDT for 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B, when placed in the OFF position.

[2.8] **INSTALL** a jumper with test switch in the ON position, labeled TS-16, between Terminal Point 1 and Terminal Point 2 of 2-LS-77-1E, REACT. COOLANT DR TK PUMPS OFF & VLV CLOSES, (Aux Relay 2-LY-1003D) in Panel 0-L-2. _____ 1st _____ CV

[2.9] **ENSURE** the Reactor Coolant Drain Tank is drained to approximately 0% indicated on 2-LI-77-1, RCDT LEVEL, Panel 0-L-2. _____

[3] **PLACE** 2-HS-77-6A, RCDT PUMP 2B, at Panel 0-L-2, to the NORMAL position. _____

[4] **VERIFY** the light status at 2-HS-77-6A, RCDT PUMP 2B:

A. Green Light ON _____

B. Red Light OFF _____

[5] **PLACE** 2-HS-77-6A, RCDT PUMP 2B, to the START position, **AND**

VERIFY:

A. Green Light ON _____

B. Red Light OFF _____

Data Package: Page ____ of ____ **Date _____**

6.11 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B Logic Test (continued)

[6] **PLACE** 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, on 2-M-15, in the OPEN position, **AND**

VERIFY 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL, is OPEN. _____

[7] **PLACE** 2-HS-77-6A, RCDT PUMP 2B, to the START position, **AND**

VERIFY:

A. Green Light ON _____

B. Red Light OFF _____

[8] **PLACE** 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, in the CLOSE position, **AND**

VERIFY 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL is CLOSED. _____

[9] **PLACE** 2-HS-77-10A, RCDT PMPS TO TDCT CIV-ØA OUT CNTMT on 2-M-15, in the OPEN position, **AND**

VERIFY 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL, is OPEN. _____

[10] **PLACE** 2-HS-77-6A, RCDT PUMP 2B, to the START position, **AND**

VERIFY:

A. Green Light ON _____

B. Red Light OFF _____

[11] **PLACE** 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, in the OPEN position, **AND**

VERIFY 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL is OPEN. _____

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6.11 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B Logic Test (continued)

[12] **PLACE** 2-HS-77-6A, RCDT PUMP 2B, to the START position, **AND**

VERIFY:

A. Green Light OFF _____

B. Red Light ON _____

[13] **PLACE** 2-HS-77-6A, RCDT PUMP 2B, to the STOP position, **AND**

VERIFY:

A. Green Light ON _____

B. Red Light OFF _____

[14] **PLACE** 2-HS-77-6A, RCDT PUMP 2B, to the START position, **AND**

VERIFY:

A. Green Light OFF _____

B. Red Light ON _____

[15] **PLACE** TS-16, at 2-LS-77-1E, REACT. COOLANT DR TK PUMPS OFF & VLV CLOSES in Panel 0-L-2, to the OFF position to simulate Low level in the RCDT, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-6A, RCDT PUMP 2B _____

B. Red Light OFF at 2-HS-77-6A, RCDT PUMP 2B _____

[16] **PLACE** TS-16, at 2-LS-77-1E, REACT. COOLANT DR TK PUMPS OFF & VLV CLOSES in Panel 0-L-2, to the ON position to simulate a Normal level in the RCDT. _____

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6.11 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B Logic Test (continued)

[17] **PLACE** 2-HS-77-6A, RCDT PUMP 2B, to the START position, **AND**

VERIFY:

A. Green Light OFF _____

B. Red Light ON _____

[18] **PLACE** 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, in the CLOSE position, **AND**

VERIFY 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL is CLOSED. _____

[19] **VERIFY** light status at 2-HS-77-6A, RCDT PUMP 2B:

A. Green Light ON _____

B. Red Light OFF _____

[20] **PLACE** 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, in the OPEN position, **AND**

VERIFY 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL is OPEN. _____

[21] **PLACE** 2-HS-77-6A, RCDT PUMP 2B, to the START position, **AND**

VERIFY:

A. Green Light OFF _____

B. Red Light ON _____

[22] **PLACE** 2-HS-77-10A, RCDT PMPS TO TDCT CIV-ØA OUT CNTMT in the CLOSE position, **AND**

VERIFY 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL is CLOSED. _____

Data Package: Page ____ of ____ **Date _____**

6.11 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B Logic Test (continued)

[23] **VERIFY** light status at 2-HS-77-6A, RCDT PUMP 2B:

A. Green Light ON _____

B. Red Light OFF _____

[24] **PLACE** 2-HS-77-10A, RCDT PMPS TO TDCT CIV-∅A OUT CNTMT in the OPEN position, **AND**

VERIFY 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL is OPEN. _____

NOTE

The following steps verify that 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B will automatically start on RCDT HI-HI level signal with 2-FCV-77-9 and 2-FCV-77-10 both in full open position.

[25] **PULL OUT** 2-HS-77-6A, RCDT PUMP 2B, to the "P-AUTO" position, **AND**

VERIFY:

A. Green Light ON _____

B. Red Light OFF _____

[26] **PLACE** TS-11, at 2-LS-77-1B/D, REACT COOLANT DR TANK PUMP B ON in Panel 0-L-2, to the ON position to simulate a Hi-Hi level in the RCDT. _____

[27] **VERIFY** the light status at 2-HS-77-6A, RCDT PUMP 2B (**Acc Crit**):

A. Green Light OFF _____

B. Red Light ON _____

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6.11 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B Logic Test (continued)

[28] **PLACE** TS-11, at 2-LS-77-1B/D, REACT COOLANT DR TANK PUMP B ON in Panel 0-L-2, to the OFF position to simulate a Normal level in the RCDT, **AND**

VERIFY:

A. Green Light OFF at 2-HS-77-6A, RCDT PUMP 2B _____

B. Red Light ON at 2-HS-77-6A, RCDT PUMP 2B _____

[29] **PLACE** 2-HS-77-6A, RCDT PUMP 2B, to the STOP position, **AND**

VERIFY:

A. Green Light ON _____

B. Red Light OFF _____

[30] **PULL OUT** 2-HS-77-6A, RCDT PUMP 2B, to the "P-AUTO" position, **AND**

VERIFY:

A. Green Light ON _____

B. Red Light OFF _____

NOTE

The following steps verify that 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B will automatically start when 2-FCV-68-310 is fully opened with 2-FCV-77-9 and 2-FCV-77-10 both in full open position.

[31] **PLACE** 2-HS-68-310A, PRT DRAIN TO RCDT, at 2-M-5, to the OPEN position, **AND**

VERIFY 2-FCV-68-310, PRESSURIZER RELIEF TANK TO RCDT is OPEN. _____

Data Package: Page ____ of ____ **Date _____**

6.11 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B Logic Test (continued)

[32] **VERIFY** the light status at 2-HS-77-6A, RCDT PUMP 2B (**Acc Crit**):

A. Green Light OFF _____

B. Red Light ON _____

[33] **PLACE** 2-HS-68-310A, PRT DRAIN TO RCDT, at 2-M-5, to the CLOSE position, **AND**

VERIFY 2-FCV-68-310, PRESSURIZER RELIEF TANK TO RCDT is CLOSED. _____

[34] **VERIFY** the light status at 2-HS-77-6A, RCDT PUMP 2B:

A. Green Light ON _____

B. Red Light OFF _____

[35] **PLACE** 2-HS-77-6A, RCDT PUMP 2B, to the START position, **AND**

VERIFY:

A. Green Light OFF _____

B. Red Light ON _____

Data Package: Page ____ of ____ **Date _____**

6.11 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B Logic Test (continued)

NOTE

The following step verifies that 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B will automatically stop on receipt of RCDT low level signal.

[36] **PLACE** TS-10, at 2-LS-77-1E, REACT. COOLANT DR TK PUMPS OFF & VLV CLOSES in Panel 0-L-2, to the OFF position to simulate a Low level in the RCDT, **AND**

VERIFY (Acc Crit):

A. Green Light ON at 2-HS-77-6A, RCDT PUMP 2B _____

B. Red Light OFF at 2-HS-77-6A, RCDT PUMP 2B _____

[37] **PLACE** TS-10, at 2-LS-77-1E, REACT. COOLANT DR TK PUMPS OFF & VLV CLOSES in Panel 0-L-2, to the ON position to simulate a Normal level in the RCDT, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-6A, RCDT PUMP 2B _____

B. Red Light OFF at 2-HS-77-6A, RCDT PUMP 2B _____

[38] **PRESS and HOLD** 2-HS-77-6B, RCDT PUMP 2B START Pushbutton 702/AZ275, **AND**

VERIFY:

A. Green Light OFF at 2-HS-77-6A, RCDT PUMP 2B _____

B. Red Light ON at 2-HS-77-6A, RCDT PUMP 2B _____

Data Package: Page ____ of ____ **Date _____**

6.11 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B Logic Test (continued)

[39] **PLACE** 2-HS-77-6C, RCDT PUMP 2B at 2-BKR-77-6-B, RCDT PUMP 2B (2-PMP-77-6), 2-MCC-232-BB, Compartment 11D, 772/A10S, to the STOP position, **AND**

VERIFY:

A. Green Light OFF at 2-HS-77-6A, RCDT PUMP 2B _____

B. Red Light ON at 2-HS-77-6A, RCDT PUMP 2B _____

[40] **PRESS** 2-HS-77-6B, RCDT PUMP 2B, STOP Pushbutton, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-6A, RCDT PUMP 2B _____

B. Red Light OFF at 2-HS-77-6A, RCDT PUMP 2B _____

[40.1] **RELEASE** the 2-HS-77-6B, RCDT PUMP 2B, START pushbutton.

[41] **PLACE** 2-HS-77-6C, RCDT PUMP 2B, to the START position, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-6A, RCDT PUMP 2B _____

B. Red Light OFF at 2-HS-77-6A, RCDT PUMP 2B _____

Data Package: Page ____ of ____ **Date _____**

6.11 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B Logic Test (continued)

NOTE

In the following steps, the Red and Green Lights at 2-HS-77-6A, RCDT PUMP 2B, will be de-energized. The Red Light at 2-BKR-77-6-B, RCDT PUMP 2B (2-PMP-77-6), RCDT PUMP 2B (2-PMP-77-6), will not energize with the thermal overloads removed. Status of 2-PMP-77-6 logic circuit will be verified by visual observation of the motor contactor at 2-BKR-77-6-B, RCDT PUMP 2B (2-PMP-77-6).

[42] **PLACE** Transfer Switch 2-XS-77-6, RCDT PUMP 2B at 2-BKR-77-6-B, RCDT PUMP 2B (2-PMP-77-6), 2-MCC-232-BB, Compartment 11D, 772/A10S, to the AUX position, **AND**

VERIFY:

A. Green Light OFF at 2-HS-77-6A, RCDT PUMP 2B _____

B. Red Light OFF at 2-HS-77-6A, RCDT PUMP 2B _____

C. By visual observation, motor contactor at 2-BKR-77-6-B, RCDT PUMP 2B (2-PMP-77-6), is ENERGIZED. _____

[43] **PLACE** 2-HS-77-6C, RCDT PUMP 2B, to the STOP position, **AND**

VERIFY by visual observation that the motor contactor is DE-ENERGIZED. _____

[44] **PLACE** 2-HS-77-6A, RCDT PUMP 2B, to the START position, **AND**

VERIFY by visual observation that the motor contactor remains DE-ENERGIZED. _____

[45] **PRESS and HOLD** 2-HS-77-6B, RCDT PUMP 2B, START Pushbutton, **AND**

VERIFY by visual observation that the motor contactor is ENERGIZED. _____

Data Package: Page ____ of ____ **Date _____**

6.11 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B Logic Test (continued)

[46] **PLACE** 2-HS-77-6A, RCDT PUMP 2B, to the STOP position, **AND**

VERIFY by visual observation that the motor contactor remains ENERGIZED. _____

[47] **PRESS** 2-HS-77-6B, RCDT PUMP 2B, STOP Pushbutton, **AND**

VERIFY by visual observation that the motor contactor is DE-ENERGIZED. _____

[47.1] **RELEASE** the 2-HS-77-6B, RCDT PUMP 2B, STOP pushbutton. _____

[48] **PLACE** Transfer Switch 2-XS-77-6, RCDT PUMP 2B, to the NORMAL position, **AND**

VERIFY:

A. Green Light ON at 2-HS-77-6A, RCDT PUMP 2B. _____

B. Red Light OFF at 2-HS-77-6A, RCDT PUMP 2B. _____

[49] **PLACE** 2-HS-77-6A, RCDT PUMP 2B, to the STOP/PULL-TO-LOCK position. _____

WARNING

Arc Flash PPE per TI-300 will be required for steps 6.11[50] through 6.11[56].

[50] **PLACE** 2-BKR-77-6-B, RCDT PUMP 2B (2-PMP-77-6), 2-MCC-232-B-B, Compartment. 11D, 772/A10S, to the OFF position. _____

[51] **PULL** 2-MCC-232-B-B, Compartment. 11D. _____

[52] **ENSURE** locking tabs engage to prevent bucket from re-engaging. _____

[53] **PERFORM** live-dead-live check on load. _____

Data Package: Page ____ of ____ **Date _____**

6.11 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B Logic Test (continued)

[54] **REMOVE** the Thermal Overloads (3) for 2-BKR-77-6-B, RCDT PUMP 2B (2-PMP-77-6). _____

[55] **REINSTALL** 2-MCC-232-B-B, Compartment. 11D. _____

[56] **PLACE** 2-BKR-77-6-B, RCDT PUMP 2B (2-PMP-77-6) to the ON position. _____

[57] **REMOVE** the jumper with Test Switch, labeled TS-10, from Terminal Point 9 and Terminal Point 10 of 2-LS-77-1E, REACT. COOLANT DR TK PUMPS OFF & VLV CLOSES, in Panel 0-L-2.

_____ 1st

_____ CV

[58] **REMOVE** the jumper with Test Switch, labeled TS-11, from Terminal Point 7 and Terminal point 8 of 2-LS-77-1B/D, REACT COOLANT DR TANK PUMP B ON, in Panel 0-L-2.

_____ 1st

_____ CV

[59] **REMOVE** the jumper with Test Switch, labeled TS-16, between Terminal Point 1 and Terminal point 2 of 2-LS-77-1E, REACT. COOLANT DR TK PUMPS OFF & VLV CLOSES, in Panel 0-L-2.

_____ 1st

_____ CV

[60] **PLACE** 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, in the CLOSE position, **AND**

VERIFY 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL is CLOSED. _____

[61] **PLACE** 2-HS-77-10A, RCDT PMPS TO TDCT CIV-ØA OUT CNTMT in the CLOSE position, **AND**

VERIFY 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL is CLOSED. _____

Data Package: Page ____ of ____ **Date _____**

6.12 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A, Operation

NOTE

Subsection 6.10 must be performed prior to this subsection.

[1] **VERIFY** prerequisites listed in Section 4.0 for subsection 6.12 have been completed. _____

[2] **PERFORM** the following prior to beginning this Subsection:

[2.1] **LIFT** Wire RCD2 from Terminal Point 11 on Terminal Board L7 in Panel 0-L-2. _____ 1st _____ CV

NOTE

TS-17 will simulate a Normal Level in the RCDT for 2-LCV-77-415, RCDT LEVEL CONTROL, when placed in the ON position and will simulate a Hi Level when placed in the OFF position.

[2.2] **INSTALL** a jumper with test switch in the ON position, labeled TS-17, between Wire RCD2 and Terminal Point 10 on Terminal Board L7 in Panel 0-L-2. _____ 1st _____ CV

[2.3] **ENSURE** Pressurizer Relief Tank (PRT) level is ≥ 50% as indicated on 2-LI-68-300, PRT LEVEL, 2-M-4. _____

[2.4] **ENSURE** the Liquid Radwaste System is in service. _____

[2.5] **ENSURE** the Waste Gas Vent Header is in service. _____

[2.6] **ENSURE** measures are in place to dispose of water from Reactor Building Floor & Equipment Drain Sump. _____

[2.7] **ENSURE** the Reactor Coolant Drain Tank is drained to approximately 0% as indicated on 2-LI-77-1, REACT. COOLANT DR TK LEVEL INDICATOR, Panel 0-L-2. _____

Data Package: Page ____ of ____ **Date _____**

6.12 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A, Operation (continued)

[2.8] **INSTALL** an ultrasonic flowmeter (0-100 GPM range) on the vertical run of three inch pipe prior to 2-ISV-62-949, HOLDUP TANK B WDS RCDT INLET ISOL, 713/A10S.

M&TE_____ Cal Due Date_____ _____

[2.9] **INSTALL** M&TE Pressure Gauge downstream of 2-TV-77-527, RCDT PUMP 2A SUCT TEST VENT. _____

[3] **VERIFY** Annunciator Window 11, REACTOR COOLANT DRAIN TANK HI-HI LEVEL LO-LO LEVEL UNIT 2, at XA/1098, Panel 0-L-2, is in ALARM (**ACC CRIT**). _____

[4] **PLACE** TS-17, at Terminal Board L7 in Panel 0-L-2, to the OFF position, to simulate a Hi level in the RCDT. _____

[5] **PLACE** 2-HS-77-415, RCDT LEVEL CNTL, to the OPEN position, **AND**

VERIFY 2-LCV-77-415, RCDT LEVEL CONTROL OPENS. _____

NOTES

1) During the performance of this subsection, Primary Makeup Water (PMW) will be added to 2-TANK-77-1, REACTOR COOLANT DRAIN TANK, from 2-TANK-68-PRT, PRESSURIZER RELIEF TANK.
2) Mark step 6.12[6] N/A if no additional PMW is needed throughout the performance of this subsections.

[6] **IF** 2-TANK-68-PRT, PRESSURIZER RELIEF TANK level falls below 20% during the performance of this subsection, **THEN**

PLACE 2-HS-68-303A, PRI WATER TO PRT to OPEN until level of 2-TANK-68-PRT, PRESSURIZER RELIEF TANK rises to at least 50% level indicated on 2-LI-68-300, PRT LEVEL, **THEN**

PLACE 2-HS-68-303A, PRI WATER TO PRT to CLOSE. _____

Data Package: Page ____ of ____ **Date _____**

6.12 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A, Operation (continued)

[7] **PLACE** 2-HS-68-310A, PRT DRAIN TO RCDT, at 2-M-5, to the OPEN position, **AND**

VERIFY 2-FCV-68-310, PRESSURIZER RELIEF TANK TO RCDT is OPEN. _____

[8] **VERIFY** Annunciator Window 11, REACTOR COOLANT DRAIN TANK HI-HI LEVEL LO-LO LEVEL UNIT 2, CLEARS. _____

[9] **PLACE** 2-HS-68-310A, PRT DRAIN TO RCDT, to the CLOSE position, **AND**

VERIFY 2-FCV-68-310, PRESSURIZER RELIEF TANK TO RCDT is CLOSED. _____

NOTE

The following step will drain water from 2-TANK-77-1, REACTOR COOLANT DRAIN TANK to the Reactor Building Floor & Equipment Drain Sump.

[10] **PLACE** 2-HS-77-3, RCDT TO RB FLR/EQDRN SUMP FLOW CNTL, on Panel 0-L-2, to the OPEN position, **AND**

VERIFY 2-FCV-77-3, RCDT TO RB FLR/EQ DRN SUMP is OPEN. _____

[10.1] **VERIFY** Annunciator Window 11, REACTOR COOLANT DRAIN TANK HI-HI LEVEL LO-LO LEVEL UNIT 2, ALARMS. _____

[11] **PLACE** 2-HS-77-3, RCDT TO RB FLR/EQDRN SUMP FLOW CNTL, to the CLOSE position, **AND**

VERIFY 2-FCV-77-3, RCDT TO RB FLR/EQ DRN SUMP is CLOSED. _____

[12] **PLACE** 2-HS-68-310A, PRT DRAIN TO RCDT, to the OPEN position, **AND**

VERIFY 2-FCV-68-310, PRESSURIZER RELIEF TANK TO RCDT is OPEN. _____

Data Package: Page ____ of ____ **Date _____**

6.12 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A, Operation (continued)

[13] **VERIFY** Annunciator Window 11, REACTOR COOLANT DRAIN TANK HI-HI LEVEL LO-LO LEVEL UNIT 2, CLEARS (**ACC CRIT**). _____

[14] **CONTINUE** to fill 2-TANK-77-1, REACTOR COOLANT DRAIN TANK with water from 2-TANK-68-PRT, PRESSURIZER RELIEF TANK. _____

[15] **VERIFY** Annunciator Window 11, REACTOR COOLANT DRAIN TANK HI-HI LEVEL LO-LO LEVEL UNIT 2, ALARMS (**ACC CRIT**). _____

[16] **PLACE** 2-HS-68-310A, PRT DRAIN TO RCDT, to the CLOSE position, **AND**

VERIFY 2-FCV-68-310, PRESSURIZER RELIEF TANK TO RCDT is CLOSED. _____

NOTE

The following step will drain water from 2-TANK-77-1, REACTOR COOLANT DRAIN TANK to the Reactor Building Floor & Equipment Drain Sump.

[17] **PLACE** 2-HS-77-3, RCDT TO RB FLR/EQDRN SUMP FLOW CNTL, to the OPEN position, **AND**

VERIFY 2-FCV-77-3, RCDT TO RB FLR/EQ DRN SUMP is OPEN. _____

[17.1] **VERIFY** Annunciator Window 11, REACTOR COOLANT DRAIN TANK HI-HI LEVEL LO-LO LEVEL UNIT 2, CLEARS. _____

[18] **PLACE** 2-HS-77-3, RCDT TO RB FLR/EQDRN SUMP FLOW CNTL, to the CLOSE position, **AND**

VERIFY 2-FCV-77-3, RCDT TO RB FLR/EQ DRN SUMP is CLOSED. _____

Data Package: Page ____ of ____ **Date _____**

6.12 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A, Operation (continued)

[19] **RECORD** level in 2-TANK-77-1, REACTOR COOLANT DRAIN TANK from Level Indicator 2-LI-77-1, REACT. COOLANT DR TK LEVEL INDICATOR, on Panel 0-L-2.

2-LI-77-1 _____ %

_____

[20] **PLACE** 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, on 2-M-15, in the OPEN position until 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL, is FULLY OPEN, **THEN**

RELEASE 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT to the A AUTO position. _____

[21] **PLACE** 2-HS-77-10A, RCDT PMPS TO TDCT CIV-ØA OUT CNTMT on 2-M-15, in the OPEN position, **AND**

VERIFY 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL, is OPEN. _____

NOTE

The following steps align the discharge of the Reactor Coolant Drain Tank pumps to 2-TANK-62-1B, HOLDUP TANK B.

[22] **ENSURE** adequate capacity (≤ 90% level) in 2-TANK-62-1B, HOLDUP TANK B, **AND**

RECORD level from Level Indicating Switch 2-LIS-62-146, HOLDUP TANK B LEVEL ALARM, on Panel 0-L-2.

2-LIS-62-146 _____ %

_____

Data Package: Page ____ of ____ **Date _____**

6.12 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A, Operation (continued)

[23] **ENSURE** the following valves are OPEN:

A. 2-ISV-62-949, HOLDUP TANK B WDS RCDT INLET ISOL, 713/A10S. _____

B. 2-ISV-62-951, HOLDUP TANK B HDR INLET ISOL, 713/A9S. _____

C. 2-TV-77-527, RCDT PUMP 2A SUCT TEST VENT _____

NOTES

1) The following steps will verify flow paths from the PRT to the RCDT pump suction and from the RCDT pump discharge to Holdup Tank B.
2) During the performance of Steps 6.12[24] through 6.12[30], visual observation of transient and steady state vibrations is required.

[24] **PLACE** 2-HS-77-4A, RCDT PUMP 2A to the START position, **AND**

VERIFY 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A STARTS. _____

[25] **PLACE** 2-HS-68-310A, PRT DRAIN TO RCDT, to the OPEN position, **AND**

VERIFY 2-FCV-68-310, PRESSURIZER RELIEF TANK TO RCDT is OPEN. _____

[26] **RECORD** flow from M&TE installed upstream of 2-ISV-62-949, HOLDUP TANK B WDS RCDT INLET ISOL:

M&TE _____ Cal Due Date _____

_____ GPM

_____

[27] **RECORD** the following:

A. M&TE Pressure Gauge (Suction): _____ psig. _____

B. 2-PI-77-5 (Discharge): _____ psig. _____

Data Package: Page ____ of ____ **Date _____**

6.12 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A, Operation (continued)

[28] **COMPLETE** Data Sheet 1 _____

[28.1] **VERIFY** Adjusted flowrate from Data Sheet 1 for RCDT Pump 2A is greater than or equal to 50 GPM. (**ACC CRIT**) _____

[28.2] **VERIFY** Adjusted TDH from Data Sheet 1 for RCDT Pump 2A is greater than or equal to 175 feet. (**ACC CRIT**) _____

NOTE

The following step verifies the flow path from the Reactor Coolant Drain Tank to CVCS Holdup Tank 1B.

[29] **VERIFY** 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A, discharges effluent to 2-TANK-62-1B, HOLDUP TANK B by flow indication at M&TE flowmeter.(**ACC CRIT**) _____

[30] **PLACE** 2-HS-77-4A, RCDT PUMP 2A to the STOP position, **AND**

VERIFY 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A STOPS. _____

[31] **REMOVE** the ultrasonic flowmeter. _____ 1st _____ CV

[32] **REMOVE** the M&TE Pressure Gauge. _____ 1st _____ CV

[33] **REMOVE** the jumper with test switch labeled TS-17, from Terminal Point 10 on Terminal Board L7 in Panel 0-L-2 and Wire RCD2. _____ 1st _____ CV

Data Package: Page ____ of ____ **Date _____**

6.12 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A, Operation (continued)

[34] **LAND** Wire RCD2 on Terminal Point 11 on Terminal Board L7 in Panel 0-L-2.

_____ 1st

_____ CV

[35] **PLACE** 2-HS-77-4A, RCDT PUMP 2A, REACT COOLANT DR TK PUMP A, to the STOP/PULL-TO-LOCK position. _____

[36] **VERIFY** no excessive vibration of the piping system and components associated with the performance of this subsection was observed. _____

Data Package: Page ____ of ____ **Date _____**

6.13 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B, Operation

NOTE

Subsection 6.11 must be performed prior to this Subsection.

[1] **VERIFY** prerequisites listed in Section 4.0 for Subsection 6.13 have been completed. _____

[2] **PERFORM** the following prior to beginning this Subsection:

[2.1] **ENSURE** Pressurizer Relief Tank (PRT) level is ≥ 50% as indicated on 2-LI-68-300, PRT LEVEL, 2-M-4. _____

[2.2] **ENSURE** the Liquid Radwaste System is in service. _____

[2.3] **ENSURE** the Waste Gas Vent Header is in service. _____

[2.4] **INSTALL** M&TE Pressure Gauge downstream of 2-TV-77-526, RCDT PUMP 2B SUCT TEST VENT. _____

[3] **INSTALL** an ultrasonic flowmeter (0-200 GPM range) on the horizontal run of three inch pipe downstream of 2-IDV-77-523, RCDT DISCH TO TDCT ISOL, 713/A12V.

M&TE _____ Cal Due Date _____

_____

[4] **VERIFY** Annunciator Window 11, REACTOR COOLANT DRAIN TANK HI-HI LEVEL LO-LO LEVEL UNIT 2. at XA/1098, Panel 0-L-2, is CLEAR. _____

Data Package: Page ____ of ____ **Date _____**

6.13 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B, Operation (continued)

[5] **RECORD** level in 2-TANK-77-1, REACTOR COOLANT DRAIN TANK, from Level Indicator 2-LI-77-1, REACT. COOLANT DR TK LEVEL INDICATOR, on Panel 0-L-2.

2-LI-77-1 _____ %

_____

NOTE

The following steps align the discharge of the Reactor Coolant Drain Tank pumps to Tank 0-TANK-77-2, TRITIATED DRAIN COLLECTOR TANK.

[6] **PLACE** 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, on 2-M-15, in the OPEN position until 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL, is FULLY OPEN, **THEN**

RELEASE 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT to the A AUTO position. _____

[7] **PLACE** 2-HS-77-10A, RCDT PMPS TO TDCT CIV-ØA OUT CNTMT on 2-M-15, in the OPEN position, **AND**

VERIFY 2-FCV-77-10, RCDT PUMP DISCHARGE FLOW CONTROL, is OPEN. _____

[8] **ENSURE** adequate capacity in Tank (≤ 90% level) 0-TANK-77-2, TRITIATED DRAIN COLLECTOR TANK, **AND**

RECORD level from Level Indicating Switch 0-LIS-77-31A/B, TRITIATED DR COLL TK HI LEVEL ALARM SW, on Panel 0-L-2.

0-LIS-77-31A/B _____ %

_____

[9] **OPEN** 2-IDV-77-523, RCDT DISCH TO TDCT ISOL, 713/A12V. _____

Data Package: Page ____ of ____ **Date _____**

6.13 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B, Operation (continued)

[10] **PLACE** 2-HS-77-415, RCDT LEVEL CNTL, to the OPEN position **AND**

VERIFY 2-LCV-77-415, RCDT LEVEL CONTROL OPENS. _____

NOTES

1) During the performance of Subsection 6.13, Primary Makeup Water (PMW) will be supplied to the Reactor Coolant Drain Tank pump suction from 2-TANK-68-PRT, PRESSURIZER RELIEF TANK.
2) Mark step 6.13[11] N/A if no additional PMW is needed throughout the performance of this subsections.
3) The following steps will verify the flow path from the RCDT pump discharge to the Tritiated Drain Collector Tank.

[11] **IF** 2-TANK-68-PRT, PRESSURIZER RELIEF TANK level falls below 20% during the performance of this subsection, **THEN**

PLACE 2-HS-68-303A, PRI WATER TO PRT to OPEN until level of 2-TANK-68-PRT, PRESSURIZER RELIEF TANK rises to at least 50% level indicated on 2-LI-68-300, PRT LEVEL, **THEN**

PLACE 2-HS-68-303A, PRI WATER TO PRT to CLOSE. _____

[12] **CLOSE** 2-ISV-77-908, RB SUMP PUMP DISCH HDR TO TDCT ISOL, 713/A11W. _____

[13] **PLACE** 2-HS-68-310A, PRT DRAIN TO RCDT, at 2-M-5, to the OPEN position, **AND**

VERIFY 2-FCV-68-310, PRESSURIZER RELIEF TANK TO RCDT is OPEN. _____

Data Package: Page ____ of ____ **Date _____**

6.13 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B, Operation (continued)

NOTE

During the performance of Steps 6.13[14] through 6.13[21] visual observation of transient and steady state vibrations is required.

[14] **PLACE** 2-HS-77-6A, RCDT PUMP 2B, to the START position, **AND**

VERIFY 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B STARTS. _____

[15] **RECORD** flow from M&TE installed downstream of 2-IDV-77-523, RCDT DISCH TO TDCT ISOL.

Flow _____ GPM

_____

[16] **RECORD** the following:

A. M&TE Pressure Gauge (Suction): _____ psig. _____

B. 2-PI-77-8 (Discharge): _____ psig. _____

[17] **COMPLETE** Data Sheet 2 _____

[17.1] **VERIFY** Adjusted flowrate from Data Sheet 2 for RCDT Pump 2B is greater than or equal to 150 GPM. (**ACC CRIT**) _____

[17.2] **VERIFY** Adjusted TDH from Data Sheet 2 for RCDT Pump 2B is greater than or equal to 175 feet. (**ACC CRIT**) _____

NOTE

The following step verifies the flow path from the Reactor Coolant Drain Tank to the Tritiated Drain Collector Tank.

[18] **VERIFY** 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B discharges effluent to 0-TANK-77-2, TRITIATED DRAIN COLLECTOR TANK by flow indicated at M&TE flowmeter. (**ACC CRIT**) _____

Data Package: Page ____ of ____ **Date _____**

6.13 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B, Operation (continued)

NOTE

Steps 6.13[19] through 6.13[20] confirm that when two RCDT pumps are running in parallel and one pump trips, the driving head of the operating pump slamming the tripped pump's check valve shut does not create significant fluid transients.

[19] **PLACE** 2-HS-77-4A, RCDT PUMP 2A to the START position and VERIFY 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A STARTS _____

[19.1] **CONTINUE** to run 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A for approximately 1 minute. _____

[20] **PLACE** 2-HS-77-4A, RCDT PUMP 2A to the STOP position and VERIFY 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A STOPS. _____

[21] **PLACE** 2-HS-77-6A, RCDT PUMP 2B, to the STOP position, **AND**

VERIFY 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B STOPS. _____

[22] **PLACE** 2-HS-77-4A, RCDT PUMP 2A, to the STOP/PULL-TO-LOCK position. _____

[23] **PLACE** 2-HS-77-6A, RCDT PUMP 2B, to the STOP/PULL-TO-LOCK position. _____

[24] **PLACE** 2-HS-68-310A, PRT DRAIN TO RCDT, to the CLOSE position, **AND**

VERIFY 2-FCV-68-310, PRESSURIZER RELIEF TANK TO RCDT is CLOSED. _____

[25] **CLOSE** 2-IDV-77-523, RCDT DISCH TO TDCT ISOL. _____

[26] **REMOVE** the ultrasonic flowmeter installed on the horizontal run of three inch pipe downstream of 2-IDV-77-523, RCDT DISCH TO TDCT ISOL _____

1st

_____

CV

Data Package: Page ____ of ____ **Date _____**

6.13 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B, Operation (continued)

[27] **REMOVE** the M&TE Pressure Gauge. _____ 1st _____ CV

[28] **OPEN** 2-ISV-62-949, HOLDUP TANK B WDS RCDT INLET ISOL, 713/A8S. _____

[29] **VERIFY OPEN** 2-ISV-62-951, HOLDUP TANK B HDR INLET ISOL, 713/A8S. _____

[30] **VERIFY** no excessive vibration of the piping system and components associated with the performance of this subsection was observed. _____

Data Package: Page ____ of ____ **Date _____**

6.14 Refueling Canal to Refueling Water Storage Tank Via Reactor Coolant Drain Tank Flow Path Verification

NOTE

The discharge of the Reactor Coolant Drain Tank Pumps is initially lined up to the CVCS Holdup Tanks in Subsection 6.13.

[1] **VERIFY** prerequisites listed in Section 4.0 for Subsection 6.14 have been completed. _____

[2] **PERFORM** the following prior to beginning this Subsection:

[2.1] **VERIFY** at least 12" of water is present in the Unit 2 Refueling Canal for transfer to the Holdup Tank B via the Reactor Coolant Drain Tank. _____

[2.2] **ENSURE** the Waste Gas Vent Header is in service. _____

[2.3] **ENSURE** the Nitrogen Supply Header is in service. _____

[3] **INSTALL** an ultrasonic flowmeter (0-200 GPM range) on the vertical run of four inch pipe upstream of 2-DRV-77-501, REFUELING CANAL DR SO. _____

[4] **INSTALL** an ultrasonic flowmeter (0-200 GPM range) on the horizontal run of three inch pipe upstream of 2-ISV-72-500, SPENT FUEL PURI CONN. _____

[5] **VERIFY** Annunciator Window 11, REACTOR COOLANT DRAIN TANK HI-HI LEVEL LO-LO LEVEL UNIT 2, at XA/1098 Panel 0-L-2, is CLEAR. _____

[6] **RECORD** level in 2-TANK-77-1, REACTOR COOLANT DRAIN TANK, from Level Indicator 2-LI-77-1, REACT COOL DR TK LVL IND, on Panel 0-L-2.

2-LI-77-1 _____ %

_____

Data Package: Page ____ of ____ **Date _____**

6.14 Refueling Canal to Refueling Water Storage Tank Via Reactor Coolant Drain Tank Flow Path Verification (continued)

[7] **PLACE** 2-HS-68-310A, PRT DRAIN TO RCDT, at 2-M-5, to the OPEN position, **AND**

VERIFY 2-FCV-68-310, PRESSURIZER RELIEF TANK TO RCDT is OPEN. _____

CAUTION

Do not allow the Reactor Coolant Drain Tank pressure to exceed 6 psi or RCP seal damage may occur.

[8] **PLACE** 2-HS-68-310A, PRT DRAIN TO RCDT, to the CLOSE position when level in the Reactor Coolant Drain Tank (RCDT) increases to approximately 90%, **AND**

VERIFY 2-FCV-68-310, PRESSURIZER RELIEF TANK TO RCDT is CLOSED. _____

[8.1] **RECORD** level from 2-LI-77-1, REACT. COOLANT DR TK LEVEL INDICATOR:

2-LI-77-1 _____ %

_____

[9] **PLACE** 2-HS-77-19, RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT, at 2-M-15, to the CLOSE position, **AND**

VERIFY 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL is CLOSED. _____

[10] **PLACE** 2-HS-77-20, N2 TO RCDT CIV-ØA OUT CNTMT, at 2-M-15, to the OPEN position until 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL is FULLY OPEN, **THEN**

RELEASE 2-HS-77-20, N2 TO RCDT CIV-ØA OUT CNTMT to the A AUTO position. _____

Data Package: Page ____ of ____ **Date _____**

6.14 Refueling Canal to Refueling Water Storage Tank Via Reactor Coolant Drain Tank Flow Path Verification (continued)

CAUTION

Excessive draining rate could create a negative Pressure in the RCDT causing the tank to collapse.

A. **PLACE** 2-HS-77-4A, RCDT PUMP 2A on Panel 0-L-2, to the PULL-P-AUTO position, **AND**

VERIFY 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A STARTS._____

[10.1] **MONITOR** 2-PT-77-2, REACT COOLANT DR TK PRESSURE XMTR to **ENSURE** RCDT pressure **REMAINS** positive. _____

[10.2] **IF** RCDT pressure becomes negative, **THEN**

PLACE 2-HS-77-4A, RCDT PUMP 2A on Panel 0-L-2, to the STOP position, **AND**

VERIFY 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A STOPS. _____

[11] **VERIFY** 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A STOPS on low level cutoff, **AND**

RECORD RCDT level from 2-LI-77-1, REACT. COOLANT DR TK LEVEL INDICATOR:

2-LI-77-1 _____ % _____

[12] **PLACE** 2-HS-77-20, N2 TO RCDT CIV-ØA OUT CNTMT, to the CLOSE position, **AND**

VERIFY 2-FCV-77-20, RCDT N2 SUPPLY FLOW CONTROL is CLOSED. _____

[13] **ENSURE** 2-HS-77-16A, RCDT TO GAS ANAL CIV-ØA IN CNTMT, at 2-M-15, is in the CLOSE position. _____

[14] **PLACE** 2-HS-77-6A, RCDT PUMP 2B, to the PULL-P AUTO position. _____

Data Package: Page ____ of ____ **Date _____**

6.14 Refueling Canal to Refueling Water Storage Tank Via Reactor Coolant Drain Tank Flow Path Verification (continued)

[15] **OPEN** 2-DRV-77-501, REFUELING CANAL DR SO, 702/AZ270. _____

[16] **OPEN** 2-IDV-77-502, REFUEL CANAL DR ISOL, 702/AZ270. _____

NOTE

The following step aligns the discharge of the Reactor Coolant Drain Tank pumps to 2-TANK-63-46, REFUELING WATER STORAGE TANK.

[17] **OPEN** 2-IDV-77-521, RCDT DISCH HEADER TO RWST. _____

[18] **RECORD** flow from M&TE installed upstream of 2-DRV-77-501, REFUELING CANAL DR SO (**ACC CRIT**).

Flow _____ GPM _____

NOTE

During the performance of Steps 6.14[19] through 6.14[22], visual observation of transient and steady state vibrations is required.

[19] **VERIFY** 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A STARTS as RCDT level INCREASES as indicated on Level Indicator 2-LI-77-1, REACT. COOLANT DR TK LEVEL INDICATOR. _____

[20] **RECORD** flow from M&TE installed upstream of 2-ISV-72-500, SPENT FUEL PURI CONN (**ACC CRIT**).

Flow _____ GPM _____

Data Package: Page ____ of ____ **Date _____**

6.14 Refueling Canal to Refueling Water Storage Tank Via Reactor Coolant Drain Tank Flow Path Verification (continued)

[21] **CLOSE** the following valves:

A. 2-DRV-77-501, REFUELING CANAL DR SO _____

B. 2-IDV-77-502, REFUEL CANAL DR ISOL _____

[22] **VERIFY** the following when the RCDT is drained:

A. 2-PMP-77-4, REACTOR COOLANT DRAIN TANK PUMP 2A STOPS. _____

B. 2-PMP-77-6, REACTOR COOLANT DRAIN TANK PUMP 2B STOPS. _____

[23] **RECORD** RCDT level from Level Indicator 2-LI-77-1, REACT. COOLANT DR TK LEVEL INDICATOR:

2-LI-77-1 _____ %

_____

[24] **PLACE** 2-HS-77-19, RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT, in the OPEN position until 2-FCV-77-19, RCDT TO VENT HDR FLOW CONTROL is FULLY OPEN, **THEN**

RELEASE 2-HS-77-19, RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT to the A AUTO position. _____

NOTE

The following steps verify the function of Annunciator XA/1098, Window 12, REACTOR COOLANT DRAIN TK HI PRESS.

[25] **VERIFY** Annunciator XA/1098, Window 12, REACTOR COOLANT DRAIN TNK HI PRESS, is CLEAR. _____

[26] **RECORD** the as-found setting of 2-PS-77-2, REACT COOLANT DR TK HI PRESSURE, at 0-L-2.

As-Found Setting _____

_____

Data Package: Page ____ of ____ **Date _____**

6.14 Refueling Canal to Refueling Water Storage Tank Via Reactor Coolant Drain Tank Flow Path Verification (continued)

[27] **ADJUST** 2-PS-77-2, REACTOR COOLANT DRAIN TNK HI PRESSURE, setting until Annunciator XA/1098, Window 12, REACTOR COOLANT DRAIN TK HI PRESS, ALARMS (**ACC CRIT**). _____

[28] **RETURN** 2-PS-77-2, REACT COOLANT DRAIN TNK HI PRESSURE, setting to the as-found setting.

As-Left Setting _____

_____

[29] **VERIFY** Annunciator Window XA/1098, Window 12, REACTOR COOLANT DRAIN TK HI PRESS, CLEARS. _____

[30] **REMOVE** ultrasonic flowmeter installed on horizontal run of three inch pipe upstream of 2-ISV-72-500, SPENT FUEL PURI CONN.

_____ 1st

_____ CV

[31] **REMOVE** ultrasonic flowmeter installed on vertical run of four inch pipe upstream of 2-DRV-77-501, REFUELING CANAL DR SO.

_____ 1st

_____ CV

[32] **CLOSE** 2-IDV-77-521, RCDT DISCH HEADER TO RWST. _____

[33] **VERIFY** no excessive vibration of the piping system and components associated with the performance of the subsection was observed. _____

Data Package: Page ____ of ____ **Date _____**

6.15 Reactor Coolant Drain Tank Pump Discharge to Flood Mode Boration Makeup System Flow Path Verification

[1] **ENSURE** prerequisites listed in Section 4.0 for Subsection 6.15 have been completed. _____

[2] **ENSURE** Annunciator Window 11, REACTOR COOLANT DRAIN TANK HI-HI LEVEL LO-LO LEVEL UNIT 2, at XA/1098, Panel 0-L-2, is clear. _____

[3] **RECORD** RCDT level from Level Indicator 2-LI-77-1, REACT. COOLANT DR TK LEVEL INDICATOR:

2-LI-77-1 _____% _____

NOTE

The following steps align the discharge of the Reactor Coolant Drain Tank pumps to Tank 0-TANK-84-110, FLOOD MODE AUXILIARY BORATION MAKEUP TANK.

[4] **PLACE** 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT, on 2-M-15, in the OPEN position until 2-FCV-77-9, RCDT PUMP DISCHARGE FLOW CONTROL, is FULLY OPEN, **THEN**

RELEASE 2-HS-77-9A, RCDT PMPS TO TDCT CIV-ØA IN CNTMT to the A-AUTO position. _____

[5] **ENSURE** adequate capacity (≤20%) in Tank 0-TANK-84-110, FLOOD MODE AUXILIARY BORATION MAKEUP TANK and RECORD level from Level Indicator 0-LI-84-1, FLOOD MODE AUX BORATION MAKEUP TANK LEVEL, on Panel 0-L-354, 760/A5V.

0-LI-84-1 _____ % _____

[6] **OPEN** 2-ISV-84-530, RCDT PMPS DISCH ISOL TO FLOOD MODE AUX BORATION, 713/A12W. _____

[7] **PLACE** 2-HS-77-415, RCDT LEVEL CNTL, to the OPEN position, **AND**

VERIFY 2-LCV-77-415, RCDT LEVEL CONTROL OPENS. _____

Data Package: Page ____ of ____ **Date _____**

6.15 Reactor Coolant Drain Tank Pump Discharge to Flood Mode Boration Makeup System Flow Path Verification (continued)

NOTES

1) During the performance of Subsection 6.15, Primary Makeup Water (PMW) will be supplied to the Reactor Coolant Drain Tank pump suction from 2-TANK-068-PRT, PRESSURIZER RELIEF TANK.
2) Mark step 6.15[8] N/A if no additional PMW is needed throughout the performance of this subsections.

[8] **IF** Additional PMW needs be added to 2-TANK-68-PRT, PRESSURIZER RELIEF TANK during the performance of this subsection, **THEN**

PLACE 2-HS-68-303A, PRI WATER TO PRT to OPEN until level of 2-TANK-68-PRT, PRESSURIZER RELIEF TANK rises to an acceptable level indicated on 2-LI-68-300, PRT LEVEL, **THEN**

PLACE 2-HS-68-303A, PRI WATER TO PRT to CLOSE. _____

[9] **PLACE** 2-HS-68-310A, RCS FLOW CNTL PRT TO WDS RCDT, at 2-M-5, to the OPEN position, **AND**

VERIFY 2-FCV-68-310, PRESSURIZER RELIEF TANK TO RCDT, is OPEN. _____

NOTE

During the performance of Steps 6.15[10] through 6.15[12], visual observation of transient and steady-state vibrations is required.

[10] **PLACE** 2-HS-77-4A, REACT COOLANT DR TK PUMP 2A, to the START position, **AND**

VERIFY 2-PMP-77-4, RCDT PUMP 2A STARTS. _____

[11] **VERIFY** an INCREASE in level in TANK 0-84-110, FLOOD MODE AUXILIARY BORATION MAKEUP TANK on Level Indicator 0-LI-84-1, FLOOD MODE AUX BORATION MAKEUP TANK LEVEL (**ACC CRIT**).

0-LI-84-1 _____ % _____

Data Package: Page ____ of ____ **Date _____**

6.15 Reactor Coolant Drain Tank Pump Discharge to Flood Mode Boration Makeup System Flow Path Verification (continued)

[12] **PLACE** 2-HS-77-4A, REACT COOLANT DR TK PUMP 2A, to the STOP position, **AND**

VERIFY 2-PMP-77-4, RCDT PUMP 2A STOPS. _____

[13] **PLACE** 2-HS-68-310A, RCS FLOW CNTL PRT TO WDS RCDT, to the CLOSE position, **AND**

VERIFY 2-FCV-68-310 is CLOSED. _____

[14] **CLOSE** 2-ISV-84-530, RCDT PMPS DISCH ISOL TO FLOOD MODE AUX BORATION. _____

[15] **PLACE** 2-HS-77-415, RCDT LEVEL CNTL, to the CLOSE position, **AND**

VERIFY 2-LCV-77-415, RCDT LEVEL CONTROL CLOSES. _____

[16] **RECORD** RCDT level from Level Indicator 2-LI-77-1, REACT. COOLANT DR TK LEVEL INDICATOR:

2-LI-77-1 _____% _____

[17] **CLOSE** Valve 0-VTV-84-534, FLOOD MODE AUX BORATION MAKEUP TANK VENT, 757/A5V. _____

[18] **REMOVE** Spool Piece 2-SPPC-84-111, WASTE DISPOSAL SUPPLY TO FLOOD MODE BORATION, in the Unit 2 RCDT pump discharge line to Tank 0-TANK-84-110, FLOOD MODE AUXILIARY BORATION MAKEUP TANK, 757/A5W, **AND**

RECORD WO#_____ _____

[19] **VERIFY** no excessive vibration of the piping system and components associated with the performance of this subsection was observed. _____

Data Package: Page ____ of ____ **Date _____**

6.16 CVCS Excess Letdown Heat Exchanger to Reactor Coolant Drain Tank Flow Path Verification

[1] **VERIFY** prerequisites listed in Section 4.0 for Subsection 6.16 have been completed. _____

[2] **PERFORM** the following prior to beginning this Subsection:

[2.1] **ENSURE** Reactor Coolant System is in service. _____

[2.2] **ENSURE** the Waste Gas Vent Header is in service. _____

[2.3] **ENSURE** the Nitrogen Supply Header is in service. _____

[3] **VERIFY** Annunciator Window 11, REACTOR COOLANT DRAIN TANK HI-HI LEVEL LO-LO LEVEL UNIT 2, at XA/1098 Panel 0-L-2, is CLEAR. _____

[4] **RECORD** level in 2-TANK-77-1, REACTOR COOLANT DRAIN TANK, from Level Indicator 2-LI-77-1, REACT COOL DR TK LVL IND, on Panel 0-L-2.

2-LI-77-1 _____ %

_____

[5] **PLACE** 2-HS-62-59A, EXCESS LTDN DIVERT, at 2-M-5, to the DIV position, **AND**

VERIFY 2-FCV-62-59, CVCS EXCESS LETDOWN DIVERT FLOW CNTL is DIVERTING flow to RCDT. _____

[6] **PLACE** 2-HS-62-59A, EXCESS LTDN DIVERT, to the NOR position when level in the Reactor Coolant Drain Tank (RCDT) increases to approximately 80%, **AND**

VERIFY 2-FCV-62-59, CVCS EXCESS LETDOWN DIVERT FLOW CNTL is DIVERTING flow to SEAL RET. _____

Data Package: Page ____ of ____ **Date _____**

6.16 CVCS Excess Letdown Heat Exchanger to Reactor Coolant Drain Tank Flow Path Verification (continued)

[6.1] **RECORD** level from 2-LI-77-1, REACT. COOLANT DR TK LEVEL INDICATOR, **AND**

VERIFY that level has increased from when it was recorded in Step 6.16[4] (**ACC CRIT**).

2-LI-77-1 _____ % _____

[7] **VERIFY** no excessive vibration of the piping system and components associated with the performance of the subsection was observed. _____

Data Package: Page ____ of ____ **Date _____**

6.17 Alarms

[1] **ENSURE** the following switches on Panel 0-L-2 are NOT in the "STOP/PULL-TO-LOCK" position:

A. 2-HS-77-4A, RCDT PUMP 2A. _____

B. 2-HS-77-6A, RCDT PUMP 2B. _____

[2] **VERIFY** Annunciator Window 4, MOTOR LOCKED OUT, at XA/1098 Panel 0-L-2, is CLEAR. _____

[3] **PLACE** 2-HS-77-4A, RCDT PUMP 2A ON-OFF, in the "STOP/PULL-TO-LOCK" position. _____

[4] **VERIFY** Annunciator Window 4, MOTOR LOCKED OUT, at XA/1098 Panel 0-L-2, ALARMS (**Acc Crit**). _____

[5] **PLACE** 2-HS-77-4A, RCDT PUMP 2A, REACT COOLANT DR TR PUMP A ON-OFF, in the "IN-MANUAL" position. _____

[6] **VERIFY** Annunciator Window 4, MOTOR LOCKED OUT, at XA/1098, Panel 0-L-2, is CLEAR. _____

[7] **PLACE** 2-HS-77-6A, RCDT PUMP 2B, in the "STOP/PULL-TO-LOCK" position. _____

[8] **VERIFY** Annunciator Window 4, MOTOR LOCKED OUT, at XA/1098 Panel 0-L-2, ALARMS (**Acc Crit**). _____

[9] **PLACE** 2-HS-77-6A, RCDT PUMP 2B, in the "IN-MANUAL" position. _____

[10] **VERIFY** Annunciator Window 4, MOTOR LOCKED OUT, at XA/1098, Panel 0-L-2, is CLEAR. _____

Data Package: Page ____ of ____ **Date _____**

7.0 POST PERFORMANCE ACTIVITIES

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] **RELEASE** Caution orders on the following handswitches:

A. 2-HS-77-4A, RCDT PUMP 2A
Caution Tag #_____ _____

B. 2-HS-77-6A, RCDT PUMP 2B
Caution Tag #_____ _____

C. 2-HS-77-4C, RCDT PUMP 2A
Caution Tag #_____ _____

D. 2-HS-77-6C, RCDT PUMP 2B
Caution Tag #_____ _____

[2] **VERIFY** that Appendix U, FINAL SWITCH LINEUP, has been completed.

_____ 1st

_____ IV

[3] **VERIFY** that Appendix AA, FINAL ELECTRICAL BREAKER LINEUP, has been completed.

_____ 1st

_____ IV

[4] **VERIFY** that Appendix GG, FINAL VALVE LINEUP, has been completed.

_____ 1st

_____ IV

[5] **VERIFY** that Post test calibration of the M&TE used to record quantitative acceptance criteria has been satisfactorily performed **AND**

RECORD the results on Measuring and Test Equipment (M&TE) Log. _____

Data Package: Page ____ of ____ **Date _____**

7.0 POST PERFORMANCE ACTIVITIES (continued)

[6] **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. _____

[7] **NOTIFY** the Unit 2 US/SRO of the test completion and System alignment. _____

[8] **NOTIFY** the Unit 1 US/SRO of the test completion and System alignment. _____

Data Package: Page ____ of ____ **Date _____**

8.0 RECORDS

A. QA Records

Completed Test Package

B. Non-QA Records

None

Appendix A
(Page 1 of 2)

TEST PROCEDURES/INSTRUCTIONS REFERENCE REVIEW

Data Package: Page ____ of ____ **Date _____**

NOTES

1) Additional copies of this table may be made as necessary.
2) Initial and date indicates review has been completed for impact

PROCEDURE/ INSTRUCTION	REVISION/ CHANGES	IMPACT Yes/No	INITIAL AND DATE (N/A for no change)
FSAR AMENDMENT 101 SECTION 6.2.1			
FSAR AMENDMENT 101 SECTION 6.2.4 (Including Table 6.2.4-1)			
FSAR AMENDMENT 101 SECTION 11.2			
FSAR AMENDMENT 101 TABLE 14.2-1 SHEET 28 OF 89			
FSAR AMENDMENT 101 TABLE 14.2-1 SHEET 83 of 89			
SMP-4.0			
SMP-6.0			
SMP-7.0			
SMP-8.0			
SMP-9.0			
N3-77C-4001			
WBN2-77C-4001			

Appendix A
(Page 2 of 2)

TEST PROCEDURES/INSTRUCTIONS REFERENCE REVIEW

Data Package: Page ____ of ____ **Date _____**

PROCEDURE/ INSTRUCTION	REVISION/ CHANGES	IMPACT Yes/No	INITIAL AND DATE (N/A for no change)
2-TSD-77-1 Rev 0, Liquid Waste Processing System			
2-TSD-88-5 Rev 1, Containment Isolation System			
SSD-2-PI-77-5 (Review against SSD-1-PI-77-5)			
SSD-2-PI-77-8 (Review against SSD-1-PI-77-8)			

Appendix B
(Page 1 of 1)

TEMPORARY CONDITION LOG

Data Package: Page ____ of ____ **Date _____**

NOTE

These steps will be N/A'd if no temporary condition existed. Additional copies of this table may be made as necessary.

ITEM No.	TEMPORARY CONDITION DESCRIPTION	PERFORMED		RETURNED TO NORMAL	
		Step No.	Perf. By/Date CV By/Date	Step No.	Returned By/Date CV By/Date

Appendix C
(Page 1 of 1)

PERMANENT PLANT INSTRUMENTATION LOG

Data Package: Page ____ of ____ **Date _____**

INSTRUMENT OR INSTRUMENT LOOP NO.	CAL DUE DATE	FILLED AND VENTED[1]	PLACED IN SERVICE[1]	USED FOR QUANTITATIVE ACC CRIT		POST-TEST CAL DATE[2]	POST-TEST CALIBRATION ACCEPTABLE INITIAL/DATE[2]
		INITIAL/DATE	INITIAL/DATE	YES	NO		
Subsections 6.12 and 6.13							
2-LPL-77-1							
2-LPL-62-146							
2-PI-77-5							
2-PI-77-8							
Subsection 6.14							
2-LPL-77-2							

1 These items may be initialed and dated by personnel performing the task. Instruments not required to be filled and vented may be identified as Not Applicable (NA).

2 May be identified as Not Applicable (NA) if instrument was not used to verify/record quantitative acceptance criteria data.

Appendix D
(Page 1 of 1)

SWITCH LINEUP - SUBSECTION 6.1

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-HS-77-16A	2-M-15	RCDT TO GAS ANAL CIV-∅A IN CNTMT	CLOSE	
2-XS-77-16	2-L-11B	RCDT TO GAS ANALYZER IN CNTMT	NOR	
2-HS-77-16C	2-L-10	RCDT TO GAS ANALYZER IN CNTMT	CLOSE	

Appendix E
(Page 1 of 1)

SWITCH LINEUP - SUBSECTION 6.2

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-HS-77-18A	2-M-15	RCDT TO WDS VENT HDR CIV-∅A IN CNTMT	CLOSE	
2-XS-77-18	2-L-11B	RCDT TO WDS VENT HDR IN CNTMT	NOR	
2-HS-77-18C	2-L-10	RCDT TO WDS VENT HDR IN CNTMT	CLOSE	

Appendix F
(Page 1 of 1)

SWITCH LINEUP - SUBSECTION 6.3

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-HS-77-9A	2-M-15	RCDT PMPS TO TDCT CIV-∅A IN CNTMT	CLOSE	
2-XS-77-9	2-L-11B	RCDT PMPS TO TDCT IN CNTMT	NOR	
2-HS-77-9C	2-L-10	RCDT PMPS TO TDCT IN CNTMT	CLOSE	

Appendix G
(Page 1 of 1)

SWITCH LINEUP - SUBSECTION 6.4

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-HS-77-10A	2-M-15	RCDT PMPS TO TDCT CIV-ØA OUT CNTMT	CLOSE	

Appendix H
(Page 1 of 1)

SWITCH LINEUP - SUBSECTION 6.5

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-HS-77-17	2-M-15	RCDT TO GAS ANAL CIV-∅A OUT CNTMT	CLOSE	

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SWITCH LINEUP - SUBSECTION 6.6

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-HS-77-19	2-M-15	RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT	CLOSE	

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SWITCH LINEUP - SUBSECTION 6.7

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-HS-77-20	2-M-15	N2 TO RCDT CIV-ØA OUT CNTMT	CLOSE	

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SWITCH LINEUP - SUBSECTION 6.8

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-HS-77-415	0-L-2	RCDT LEVEL CNTL	AUTO (AFTER CLOSE)	
2-XS-77-4	2-MCC-232-A-A COMPT. 11D 772/A10S	RCDT PUMP 2A	NORMAL	
2-XS-77-6	2-MCC-232-B-B COMPT. 11D 772/A10S	RCDT PUMP 2B	NORMAL	

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SWITCH LINEUP - SUBSECTION 6.9

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-HS-77-3	0-L-2	RCDT TO RB FLR/EQDRN SUMP FLOW CNTL	CLOSE	

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SWITCH LINEUP - SUBSECTION 6.10

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-HS-77-4A	0-L-2	RCDT PUMP 2A	STOP/ PULL-TO-LOCK	
2-HS-77-9A	2-M-15	RCDT PMPS TO TDCT CIV-ØA IN CNTMT	CLOSE	
2-HS-77-10A	2-M-15	RCDT PMPS TO TDCT CIV-ØA OUT CNTMT	CLOSE	
2-XS-77-9	2-L-11B	RCDT PMPS DISCH TO TDCT IN CNTMT	NOR	
2-XS-77-4	2-MCC-232-A-A COMPT. 11D 772/A10S	RCDT PUMP 2A	NORMAL	
2-HS-77-4C	2-MCC-232-A-A COMPT. 11D 772/A10S	RCDT PUMP 2A	NOR (AFTER STOP)	
2-HS-77-6A	0-L-2	RCDT PUMP 2B	STOP/ PULL-TO-LOCK	

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SWITCH LINEUP - SUBSECTION 6.11

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-HS-77-6A	0-L-2	RCDT PUMP 2B	STOP/ PULL-TO-LOCK	
2-HS-77-9A	2-M-15	RCDT PMPS TO TDCT CIV-ØA IN CNTMT	CLOSE	
2-HS-77-10A	2-M-15	RCDT PMPS TO TDCT CIV-ØA OUT CNTMT	CLOSE	
2-XS-77-9	2-L-11B	RCDT PMPS TO TDCT IN CNTMT	NOR	
2-HS-68-310A	2-M-5	PRT TO WDS RCDT	CLOSE	
2-XS-68-310	2-L-11A	PRT TO WDS RCDT	NOR	
2-HS-77-6C	2-MCC-232-B-B COMPT. 11D 772/A10S	RCDT PUMP 2B	NOR (AFTER STOP)	
2-XS-77-6	2-MCC-232-B-B COMPT. 11D 772/A10S	RCDT PUMP 2B	NORMAL	

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SWITCH LINEUP - SUBSECTION 6.12

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-HS-77-4A	0-L-2	RCDT PUMP 2A	STOP/ PULL-TO-LOCK	
2-HS-77-6A	0-L-2	RCDT PUMP 2B	STOP/ PULL-TO-LOCK	
2-HS-77-415	0-L-2	RCDT LEVEL CNTL	AUTO (AFTER CLOSE)	
2-HS-77-3	0-L-2	RCDT TO RB FLR/EQDRN SUMP FLOW CNTL	CLOSE	
2-HS-77-16A	2-M-15	RCDT TO GAS ANAL CIV-ØA IN CNTMT	CLOSE	
2-HS-77-18A	2-M-15	RCDT TO WDS VENT HDR CIV-ØA IN CNTMT	A AUTO (AFTER CLOSE)	
2-HS-77-9A	2-M-15	RCDT PMPS TO TDCT CIV-ØA IN CNTMT	CLOSE	
2-HS-77-10A	2-M-15	RCDT PMPS TO TDCT CIV-ØA OUT CNTMT	CLOSE	
2-FCV-77-17	2-M-15	RCDT TO GAS ANAL CIV-ØA OUT CNTMT	CLOSE	
2-HS-77-19	2-M-15	RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT	A AUTO (AFTER OPEN)	

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SWITCH LINEUP - SUBSECTION 6.12

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-HS-77-20	2-M-15	N2 TO RCDT CIV-ØA OUT CNTMT	CLOSE	
2-HS-68-310A	2-M-5	PRT TO WDS RCDT	CLOSE	
2-XS-68-310	2-L-11A	PRT TO WDS RCDT	NOR	
2-XS-77-16	2-L-11B	RCDT TO GAS ANALYZER IN CNTMT	NOR	
2-XS-77-18	2-L-11B	RCDT VENT TO WDS VENT HDR	NOR	
2-XS-77-9	2-L-11B	RCDT PUMP DISCH VLV	NOR	
2-XS-77-4	2-MCC-232-A-A COMPT 11D 772/A10S	RCDT PUMP 2A	NORMAL	
2-XS-77-6	2-MCC-232-B-B COMPT 11D 772/A10S	RCDT PUMP 2B	NORMAL	

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SWITCH LINEUP - SUBSECTION 6.13

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-HS-77-4A	0-L-2	RCDT PUMP 2A	STOP/ PULL-TO-LOCK	
2-HS-77-6A	0-L-2	RCDT PUMP 2B	STOP/ PULL-TO-LOCK	
2-HS-77-415	0-L-2	RCDT LEVEL CNTL	AUTO (AFTER CLOSE)	
2-HS-77-3	0-L-2	RCDT TO RB FLR/EQDRN SUMP FLOW CNTL	CLOSE	
2-HS-77-16A	2-M-15	RCDT TO GAS ANAL CIV-ØA IN CNTMT	CLOSE	
2-HS-77-18A	2-M-15	RCDT TO WDS VENT HDR CIV-ØA IN CNTMT	A AUTO (AFTER CLOSE)	
2-HS-77-9A	2-M-15	RCDT PMPS TO TDCT CIV-ØA IN CNTMT	CLOSE	
2-HS-77-10A	2-M-15	RCDT PMPS TO TDCT CIV-ØA OUT CNTMT	CLOSE	
2-FCV-77-17	2-M-15	RCDT TO GAS ANAL CIV-ØA OUT CNTMT	CLOSE	
2-HS-77-19	2-M-15	RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT	A AUTO (AFTER OPEN)	

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(Page 2 of 2)

SWITCH LINEUP - SUBSECTION 6.13

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-HS-77-20	2-M-15	N2 TO RCDT CIV-ØA OUT CNTMT	CLOSE	
2-HS-68-310A	2-M-5	PRT TO WDS RCDT	CLOSE	
2-XS-68-310	2-L-11A	PRT TO WDS RCDT	NOR	
2-XS-77-16	2-L-11B	RCDT TO GAS ANALYZER IN CNTMT	NOR	
2-XS-77-18	2-L-11B	RCDT VENT TO WDS VENT HDR	NOR	
2-XS-77-9	2-L-11B	RCDT PUMP DISCH VLV	NOR	
2-XS-77-4	2-MCC-232-A-A COMPT 11D 772/A10S	RCDT PUMP 2A	NORMAL	
2-XS-77-6	2-MCC-232-B-B COMPT 11D 772/A10S	RCDT PUMP 2B	NORMAL	

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SWITCH LINEUP - SUBSECTION 6.14

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-HS-77-4A	0-L-2	RCDT PUMP 2A	STOP/ PULL-TO-LOCK	
2-HS-77-6A	0-L-2	RCDT PUMP 2B	STOP/ PULL-TO-LOCK	
2-HS-77-415	0-L-2	RCDT LEVEL CNTL	AUTO (AFTER CLOSE)	
2-HS-77-3	0-L-2	RCDT TO RB FLR/EQDRN SUMP FLOW CNTL	CLOSE	
2-HS-77-16A	2-M-15	RCDT TO GAS ANAL CIV-ØA IN CNTMT	CLOSE	
2-HS-77-18A	2-M-15	RCDT TO WDS VENT HDR CIV-ØA IN CNTMT	A AUTO (AFTER OPEN)	
2-HS-77-9A	2-M-15	RCDT PMPS TO TDCT CIV-ØA IN CNTMT	A AUTO (AFTER OPEN)	
2-HS-77-10A	2-M-15	RCDT PMPS TO TDCT CIV-ØA OUT CNTMT	A AUTO (AFTER OPEN)	
2-HS-77-17	2-M-15	RCDT TO GAS ANAL CIV-ØA OUT CNTMT	CLOSE	

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SWITCH LINEUP - SUBSECTION 6.14

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-HS-77-19	2-M-15	RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT	A AUTO (AFTER OPEN)	
2-HS-77-20	2-M-15	N2 TO RCDT CIV-ØA OUT CNTMT	CLOSE	
2-HS-68-310A	2-M-5	PRT TO WDS RCDT	CLOSE	
2-HS-63-3A	2-M-6	SI PMPS RECIRC HDR TO RWST	CLOSED	
2-XS-68-310	2-L-11A	PRT TO WDS RCDT	NOR	
2-XS-77-16	2-L-11B	RCDT TO GAS ANALYZER IN CNTMT	NOR	
2-XS-77-18	2-L-11B	RCDT VENT TO WDS VENT HDR	NOR	
2-XS-77-9	2-L-11B	RCDT PUMP DISCH VLV	NOR	
2-XS-77-4	2-MCC-232-A-A COMPT 11D 772/A10S	RCDT PUMP 2A	NORMAL	

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SWITCH LINEUP - SUBSECTION 6.14

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-XS-77-6	2-MCC-232-B-B COMPT 11D 772/A10S	RCDT PUMP 2B	NORMAL	

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SWITCH LINEUP - SUBSECTION 6.15

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-HS-77-4A	0-L-2	RCDT PUMP 2A	STOP/ PULL-TO-LOCK	
2-HS-77-6A	0-L-2	RCDT PUMP 2B	STOP/ PULL-TO-LOCK	
2-HS-77-415	0-L-2	RCDT LEVEL CNTL	AUTO (AFTER CLOSE)	
2-HS-77-3	0-L-2	RCDT TO RB FLR/EQDRN SUMP FLOW CNTL	CLOSE	
2-HS-77-16A	2-M-15	RCDT TO GAS ANAL CIV-ØA IN CNTMT	CLOSE	
2-HS-77-18A	2-M-15	RCDT TO WDS VENT HDR CIV-ØA IN CNTMT	A AUTO (AFTER OPEN)	
2-HS-77-9A	2-M-15	RCDT PMPS TO TDCT CIV-ØA IN CNTMT	CLOSE	
2-HS-77-10A	2-M-15	RCDT PMPS TO TDCT CIV-ØA OUT CNTMT	CLOSE	
2-HS-77-17	2-M-15	RCDT TO GAS ANAL CIV-ØA OUT CNTMT	CLOSE	
2-HS-77-19	2-M-15	RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT	A AUTO (AFTER OPEN)	

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(Page 2 of 2)

SWITCH LINEUP - SUBSECTION 6.15

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-HS-77-20	2-M-15	N2 TO RCDT CIV-ØA OUT CNTMT	CLOSE	
2-HS-68-310A	2-M-5	PRT TO WDS RCDT	CLOSE	
2-XS-68-310	2-L-11A	PRT TO WDS RCDT	NOR	
2-XS-77-16	2-L-11B	RCDT TO GAS ANALYZER IN CNTMT	NOR	
2-XS-77-18	2-L-11B	RCDT VENT TO WDS VENT HDR	NOR	
2-XS-77-9	2-L-11B	RCDT PUMP DISCH VLV	NOR	
2-XS-77-4	2-MCC-232-A-A COMPT 11D 772/A10S	RCDT PUMP 2A	NORMAL	
2-XS-77-6	2-MCC-232-B-B COMPT 11D 772/A10S	RCDT PUMP 2B	NORMAL	

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SWITCH LINEUP - SUBSECTION 6.16

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-HS-77-4A	0-L-2	RCDT PUMP 2A	STOP/ PULL-TO-LOCK	
2-HS-77-6A	0-L-2	RCDT PUMP 2B	STOP/ PULL-TO-LOCK	
2-HS-77-415	0-L-2	RCDT LEVEL CNTL	AUTO (AFTER OPEN)	
2-HS-77-3	0-L-2	RCDT TO RB FLR/EQDRN SUMP FLOW CNTL	CLOSE	
2-HS-62-54A	2-M-5	EXCESS LTDN ISOL	OPEN	
2-HS-62-55A	2-M-5	EXCESS LTDN	OPEN	
2-HS-62-59A	2-M-5	EXCESS LTDN DIVERT	NORM	
2-HIC-62-56A	2-M-5	EXCESS LTDN FLOW CONTROL	OPEN	
2-HS-77-16A	2-M-15	RCDT TO GAS ANAL CIV-ØA IN CNTMT	CLOSE	
2-HS-77-18A	2-M-15	RCDT TO WDS VENT HDR CIV-ØA IN CNTMT	A AUTO (AFTER OPEN)	

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SWITCH LINEUP - SUBSECTION 6.16

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-HS-77-9A	2-M-15	RCDT PMPS TO TDCT CIV-ØA IN CNTMT	A AUTO (AFTER OPEN)	
2-HS-77-10A	2-M-15	RCDT PMPS TO TDCT CIV-ØA OUT CNTMT	A AUTO (AFTER OPEN)	
2-HS-77-17	2-M-15	RCDT TO GAS ANAL CIV-ØA OUT CNTMT	CLOSE	
2-HS-77-19	2-M-15	RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT	A AUTO (AFTER OPEN)	
2-HS-77-20	2-M-15	N2 TO RCDT CIV-ØA OUT CNTMT	CLOSE	
2-XS-77-16	2-L-11B	RCDT TO GAS ANALYZER IN CNTMT	NOR	
2-XS-77-18	2-L-11B	RCDT VENT TO WDS VENT HDR	NOR	
2-XS-77-9	2-L-11B	RCDT PUMP DISCH VLV	NOR	
2-XS-77-4	2-MCC-232-A-A COMPT 11D 772/A10S	RCDT PUMP 2A	NORMAL	

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SWITCH LINEUP - SUBSECTION 6.16

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-XS-77-6	2-MCC-232-B-B COMPT 11D 772/A10S	RCDT PUMP 2B	NORMAL	

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FINAL SWITCH LINEUP

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE	INDEPENDENT VERIFICATION INITIAL/DATE
2-HS-77-4A	0-L-2	RCDT PUMP 2A	PULL/AUTO		
2-HS-77-6A	0-L-2	RCDT PUMP 2B	PULL/AUTO		
2-HS-77-415	0-L-2	RCDT LEVEL CNTL	AUTO (AFTER OPEN)		
2-HS-77-3	0-L-2	RCDT TO RB FLR/EQDRN SUMP FLOW CNTL	CLOSE		
2-HS-62-54A	2-M-5	EXCESS LTDN ISOL	OPEN		
2-HS-62-55A	2-M-5	EXCESS LTDN	OPEN		
2-HS-62-59A	2-M-5	EXCESS LTDN DIVERT	NORM		
2-HIC-62-56A	2-M-5	EXCESS LTDN FLOW CONTROL	OPEN		
2-HS-77-16A	2-M-15	RCDT TO GAS ANAL CIV-ØA IN CNTMT	OPEN		
2-HS-77-18A	2-M-15	RCDT TO WDS VENT HDR CIV-ØA IN CNTMT	A AUTO (AFTER OPEN)		

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FINAL SWITCH LINEUP

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE	INDEPENDENT VERIFICATION INITIAL/DATE
2-HS-77-9A	2-M-15	RCDT PMPS TO TDCT CIV-ØA IN CNTMT	A AUTO (AFTER OPEN)		
2-HS-77-10A	2-M-15	RCDT PMPS TO TDCT CIV-ØA OUT CNTMT	A AUTO (AFTER OPEN)		
2-HS-77-17	2-M-15	RCDT TO GAS ANAL CIV-ØA OUT CNTMT	OPEN		
2-HS-77-19	2-M-15	RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT	A AUTO (AFTER OPEN)		
2-HS-77-20	2-M-15	N2 TO RCDT CIV-ØA OUT CNTMT	CLOSE		
2-XS-77-16	2-L-11B	RCDT TO GAS ANALYZER IN CNTMT	NOR		
2-XS-77-18	2-L-11B	RCDT VENT TO WDS VENT HDR	NOR		
2-XS-77-9	2-L-11B	RCDT PUMP DISCH VLV	NOR		

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FINAL SWITCH LINEUP

Data Package: Page ____ of ____ **Date _____**

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE	INDEPENDENT VERIFICATION INITIAL/DATE
2-XS-77-4	2-MCC-232-A-A COMPT 11D 772/A10S	RCDT PUMP 2A	NORMAL		
2-XS-77-6	2-MCC-232-B-B COMPT 11D 772/A10S	RCDT PUMP 2B	NORMAL		

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ELECTRICAL BREAKER LINEUP - SUBSECTION 6.12

Data Package: Page ____ of ____ **Date _____**

BREAKER IDENTIFICATION	BREAKER DESCRIPTION	BREAKER LOCATION	POSITION	VERIFIED BY INITIAL/DATE
2-BKR-77-4-A	RCDT PUMP 2A (2-PMP-77-4)	2-MCC-232-A-A COMPT 11D 772/A10S	ON	
2-BKR-77-6-B	RCDT PUMP 2B (2-PMP-77-6)	2-MCC-232-B-B COMPT 11D 772/A10S	ON	

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ELECTRICAL BREAKER LINEUP - SUBSECTION 6.13

Data Package: Page ____ of ____ **Date _____**

BREAKER IDENTIFICATION	BREAKER DESCRIPTION	BREAKER LOCATION	POSITION	VERIFIED BY INITIAL/DATE
2-BKR-77-4-A	RCDT PUMP 2A (2-PMP-77-4)	2-MCC-232-A-A COMPT 11D 772/A10S	ON	
2-BKR-77-6-B	RCDT PUMP 2B (2-PMP-77-6)	2-MCC-232-B-B COMPT 11D 772/A10S	ON	

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ELECTRICAL BREAKER LINEUP - SUBSECTION 6.14

Data Package: Page ____ of ____ **Date _____**

BREAKER IDENTIFICATION	BREAKER DESCRIPTION	BREAKER LOCATION	POSITION	VERIFIED BY INITIAL/DATE
2-BKR-77-4-A	RCDT PUMP 2A (2-PMP-77-4)	2-MCC-232-A-A COMPT 11D 772/A10S	ON	
2-BKR-77-6-B	RCDT PUMP 2B (2-PMP-77-6)	2-MCC-232-B-B COMPT 11D 772/A10S	ON	

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ELECTRICAL BREAKER LINEUP - SUBSECTION 6.15

Data Package: Page ____ of ____ **Date _____**

BREAKER IDENTIFICATION	BREAKER DESCRIPTION	BREAKER LOCATION	POSITION	VERIFIED BY INITIAL/DATE
2-BKR-77-4-A	RCDT PUMP 2A (2-PMP-77-4)	2-MCC-232-A-A COMPT 11D 772/A10S	ON	
2-BKR-77-6-B	RCDT PUMP 2B (2-PMP-77-6)	2-MCC-232-B-B COMPT 11D 772/A10S	ON	

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ELECTRICAL BREAKER LINEUP - SUBSECTION 6.16

Data Package: Page ____ of ____ **Date _____**

BREAKER IDENTIFICATION	BREAKER DESCRIPTION	BREAKER LOCATION	POSITION	VERIFIED BY INITIAL/DATE
2-BKR-77-4-A	RCDT PUMP 2A (2-PMP-77-4)	2-MCC-232-A-A COMPT 11D 772/A10S	ON	
2-BKR-77-6-B	RCDT PUMP 2B (2-PMP-77-6)	2-MCC-232-B-B COMPT 11D 772/A10S	ON	

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FINAL ELECTRICAL BREAKER LINEUP

Data Package: Page ____ of ____ **Date _____**

BREAKER IDENTIFICATION	BREAKER DESCRIPTION	BREAKER LOCATION	POSITION	VERIFIED BY INITIAL/DATE	INDEPENDENT VERIFICATION INITIAL/DATE
2-BKR-77-4-A	RCDT PUMP 2A (2-PMP-77-4)	2-MCC-232-A-A COMPT 11D 772/A10S	ON		
2-BKR-77-6-B	RCDT PUMP 2B (2-PMP-77-6)	2-MCC-232-B-B COMPT 11D 772/A10S	ON		

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VALVE LINEUP - SUBSECTION 6.12

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE
2-ISV-77-510	RCDT GAS ANALYZER ISOL	713/A12W	OPEN	
2-TV-77-509	RCDT GAS ANALYZER HDR TEST VENT	713/A11W	CLOSED	
2-TV-77-507	RCDT GAS ANALYZER HDR TEST VENT	716/AZ286	CLOSED	
2-ISV-77-508	RCDT GAS ANALYZER HDR ISOL	716/AZ286	OPEN	
2-ISV-77-592	RCDT VENT HEADER TEST	713/A11W	CLOSED	
2-ISV-77-593	RCDT VENT HEADER ISOL	713/A11W	OPEN	
2-TV-77-481	RCDT N2 TEST VENT	713/A12W	CLOSED	
2-TV-77-506	RCDT N2 SUPPLY TEST VENT	713/A11W	CLOSED	
2-TV-77-504	RCDT VENT HEADER TEST VENT	716/AZ281	CLOSED	
2-ISV-77-591	RCDT VENT HEADER ISOL	716/AZ281	OPEN	
2-ISV-77-503	RCDT VENT HEADER ISOL	716/AZ281	OPEN	

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VALVE LINEUP - SUBSECTION 6.12

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE
2-RTV-77-310A	2-LT-77-1/2-PT-77-2 ROOT	702/AZ285	OPEN	
2-RTV-77-311A	2-LT-77-1/2-PT-77-2 ROOT	702/AZ285	OPEN	
2-DRV-77-501	REFUELING CANAL DRAIN	702/AZ270	CLOSED	
2-IDV-77-502	REFUELING CANAL DRAIN ISOL	702/AZ270	CLOSED	
2-ISV-77-514A	RCDT PUMP 2A IN ISOL	702/AZ270	OPEN	
2-TV-77-527	RCDT PUMP 2A SUCT TEST VENT	702/AZ277	CLOSED	
2-DRV-77-515B	RCDT PUMP 2B CASING DRAIN	702/AZ270	CLOSED	
2-RTV-77-302A	2-PI-77-5 ROOT	702/AZ250	OPEN	
2-ISV-77-517A	RCDT PUMP 2A OUT ISOL	702/AZ270	OPEN	
2-ISV-77-514B	RCDT PUMP 2B IN ISOL	702/AZ270	OPEN	

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VALVE LINEUP - SUBSECTION 6.12

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE
2-TV-77-526	RCDT PUMP 2B SUCT TEST VENT	702/AZ276	CLOSED	
2-DRV-77-515A	RCDT PUMP 2A CASING DRAIN	702/AZ275	CLOSED	
2-RTV-77-300A	2-PI-77-8 ROOT	702/AZ277	OPEN	
2-ISV-77-517B	RCDT PUMP 2B OUT ISOL	702/AZ270	OPEN	
2-ISV-77-518	RCDT PUMP DISCH TO SUP FLOOD MODE	716/AZ277	CLOSED	
2-TV-77-519	RCDT PMP DISCH HDR TEST VENT	716/AZ277	CLOSED	
2-TV-77-520	RCDT PMP DISCH HDR TEST VENT	713/A11W	CLOSED	
2-TV-77-1127	RCDT DISCHARGE HDR TEST VENT	713/A11W	CLOSED	
2-IDV-77-521	RCDT DISCH HEADER TO RWST	713/A11V	CLOSED	
2-IDV-77-523	RCDT DISCH TO TDCT ISOL	713/A11V	CLOSED	

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VALVE LINEUP - SUBSECTION 6.12

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE
2-ISV-84-530	RCDT PMPS DISCH ISOL TO FLOOD MODE AUX BORATIO	713/A11W	CLOSED	

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VALVE LINEUP - SUBSECTION 6.13

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE
2-ISV-77-510	RCDT GAS ANALYZER ISOL	713/A12W	OPEN	
2-TV-77-509	RCDT GAS ANALYZER HDR TEST VENT	713/A11W	CLOSED	
2-TV-77-507	RCDT GAS ANALYZER HDR TEST VENT	716/AZ286	CLOSED	
2-ISV-77-508	RCDT GAS ANALYZER HDR ISOL	716/AZ286	OPEN	
2-ISV-77-592	RCDT VENT HEADER TEST	713/A11W	CLOSED	
2-ISV-77-593	RCDT VENT HEADER ISOL	713/A11W	OPEN	
2-TV-77-481	RCDT N2 TEST VENT	713/A12W	CLOSED	
2-TV-77-506	RCDT N2 SUPPLY TEST VENT	713/A11W	CLOSED	
2-TV-77-504	RCDT VENT HEADER TEST VENT	716/AZ281	CLOSED	
2-ISV-77-591	RCDT VENT HEADER ISOL	716/AZ281	OPEN	
2-ISV-77-503	RCDT VENT HEADER ISOL	716/AZ281	OPEN	

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VALVE LINEUP - SUBSECTION 6.13

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE
2-RTV-77-310A	2-LT-77-1/2-PT-77-2 ROOT	702/AZ285	OPEN	
2-RTV-77-311A	2-LT-77-1/2-PT-77-2 ROOT	702/AZ285	OPEN	
2-DRV-77-501	REFUELING CANAL DRAIN	702/AZ270	CLOSED	
2-IDV-77-502	REFUELING CANAL DRAIN ISOL	702/AZ270	CLOSED	
2-ISV-77-514A	RCDT PUMP 2A IN ISOL	702/AZ270	OPEN	
2-TV-77-527	RCDT PUMP 2A SUCT TEST VENT	702/AZ277	CLOSED	
2-DRV-77-515B	RCDT PUMP 2B CASING DRAIN	702/AZ270	CLOSED	
2-RTV-77-302A	2-PI-77-5 ROOT	702/AZ250	OPEN	
2-ISV-77-517A	RCDT PUMP 2A OUT ISOL	702/AZ270	OPEN	
2-ISV-77-514B	RCDT PUMP 2B IN ISOL	702/AZ270	OPEN	

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VALVE LINEUP - SUBSECTION 6.13

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE
2-TV-77-526	RCDT PUMP 2B SUCT TEST VENT	702/AZ276	CLOSED	
2-DRV-77-515A	RCDT PUMP 2A CASING DRAIN	702/AZ275	CLOSED	
2-RTV-77-300A	2-PI-77-8 ROOT	702/AZ277	OPEN	
2-ISV-77-517B	RCDT PUMP 2B OUT ISOL	702/AZ270	OPEN	
2-ISV-77-518	RCDT PUMP DISCH TO SUP FLOOD MODE	716/AZ277	CLOSED	
2-TV-77-519	RCDT PMP DISCH HDR TEST VENT	716/AZ277	CLOSED	
2-TV-77-520	RCDT PMP DISCH HDR TEST VENT	713/A11W	CLOSED	
2-TV-77-1127	RCDT DISCHARGE HDR TEST VENT	713/A11W	CLOSED	
2-IDV-77-521	RCDT DISCH HEADER TO RWST	713/A11V	CLOSED	
2-IDV-77-523	RCDT DISCH TO TDCT ISOL	713/A11V	CLOSED	

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VALVE LINEUP - SUBSECTION 6.13

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE
2-ISV-84-530	RCDT PMPS DISCH ISOL TO FLOOD MODE AUX BORATIO	713/A11W	CLOSED	
2-ISV-62-949	HOLDUP TANK A WDS RCDT INLET ISOL	713/A8S	CLOSED	

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VALVE LINEUP - SUBSECTION 6.14

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE
2-ISV-77-510	RCDT GAS ANALYZER ISOL	713/A12W	OPEN	
2-TV-77-509	RCDT GAS ANALYZER HDR TEST VENT	713/A11W	CLOSED	
2-TV-77-507	RCDT GAS ANALYZER HDR TEST VENT	716/AZ286	CLOSED	
2-ISV-77-508	RCDT GAS ANALYZER HDR ISOL	716/AZ286	OPEN	
2-ISV-77-592	RCDT VENT HEADER TEST	713/A11W	CLOSED	
2-ISV-77-593	RCDT VENT HEADER ISOL	713/A11W	OPEN	
2-TV-77-481	RCDT N2 TEST VENT	713/A12W	CLOSED	
2-TV-77-506	RCDT N2 SUPPLY TEST VENT	713/A11W	CLOSED	
2-TV-77-504	RCDT VENT HEADER TEST VENT	716/AZ281	CLOSED	
2-ISV-77-591	RCDT VENT HEADER ISOL	716/AZ281	OPEN	
2-ISV-77-503	RCDT VENT HEADER ISOL	716/AZ281	OPEN	

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VALVE LINEUP - SUBSECTION 6.14

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE
2-RTV-77-310A	2-LT-77-1/2-PT-77-2 ROOT	702/AZ285	OPEN	
2-RTV-77-311A	2-LT-77-1/2-PT-77-2 ROOT	702/AZ285	OPEN	
2-DRV-77-501	REFUELING CANAL DRAIN	702/AZ270	CLOSED	
2-IDV-77-502	REFUELING CANAL DRAIN ISOL	702/AZ270	CLOSED	
2-ISV-77-514A	RCDT PUMP 2A IN ISOL	702/AZ270	OPEN	
2-TV-77-527	RCDT PUMP 2A SUCT TEST VENT	702/AZ277	CLOSED	
2-DRV-77-515B	RCDT PUMP 2B CASING DRAIN	702/AZ270	CLOSED	
2-RTV-77-302A	2-PI-77-5 ROOT	702/AZ250	OPEN	
2-ISV-77-517A	RCDT PUMP 2A OUT ISOL	702/AZ270	OPEN	
2-ISV-77-514B	RCDT PUMP 2B IN ISOL	702/AZ270	OPEN	

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VALVE LINEUP - SUBSECTION 6.14

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE
2-TV-77-526	RCDT PUMP 2B SUCT TEST VENT	702/AZ276	CLOSED	
2-DRV-77-515A	RCDT PUMP 2A CASING DRAIN	702/AZ275	CLOSED	
2-RTV-77-300A	2-PI-77-8 ROOT	702/AZ277	OPEN	
2-ISV-77-517B	RCDT PUMP 2B OUT ISOL	702/AZ270	OPEN	
2-ISV-78-559	UNIT 2 REFLG CAVITY RETURN HDR ISOL	702/AZ270	CLOSED	
2-ISV-77-518	RCDT PUMP DISCH TO SUP FLOOD MODE	716/AZ277	CLOSED	
2-TV-77-519	RCDT PMP DISCH HDR TEST VENT	716/AZ277	CLOSED	
2-TV-77-520	RCDT PMP DISCH HDR TEST VENT	713/A11W	CLOSED	
2-TV-77-1127	RCDT DISCHARGE HDR TEST VENT	713/A11W	CLOSED	
2-IDV-77-521	RCDT DISCH HEADER TO RWST	713/A11V	CLOSED	

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VALVE LINEUP - SUBSECTION 6.14

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE
2-IDV-77-523	RCDT DISCH TO TDCT ISOL	713/A11V	CLOSED	
2-ISV-84-530	RCDT PMPS DISCH ISOL TO FLOOD MODE AUX BORATIO	713/A11W	CLOSED	
2-ISV-62-949	HOLDUP TANK A WDS RCDT INLET ISOL	713/A10S	CLOSED	
2-ISV-62-951	HOLDUP TANK B HDR INLET ISOL	713/A9S	CLOSED	
2-ISV-72-500	SPENT FUEL PURI CONN	692/A13U	OPEN	
2-ISV-72-501	BORIC ACID BLEND CONN	713/A12U	CLOSED	
2-ISV-72-502	TEST LINE ISO	713/A12U	CLOSED	
2-ISV-78-567	REFLG WTR PURIF PMP TO RWST ISOL	692/A12W	CLOSED	
2-RTV-63-349A	2-FI-63-2 ROOT	692/A12U	CLOSED	

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VALVE LINEUP - SUBSECTION 6.14

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE
2-RTV-63-350A	2-FI-63-2 ROOT	692/A12U	CLOSED	

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VALVE LINEUP - SUBSECTION 6.15

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE
2-ISV-77-510	RCDT GAS ANALYZER ISOL	713/A12W	OPEN	
2-TV-77-509	RCDT GAS ANALYZER HDR TEST VENT	713/A11W	CLOSED	
2-TV-77-507	RCDT GAS ANALYZER HDR TEST VENT	716/AZ286	CLOSED	
2-ISV-77-508	RCDT GAS ANALYZER HDR ISOL	716/AZ286	OPEN	
2-ISV-77-592	RCDT VENT HEADER TEST	713/A11W	CLOSED	
2-ISV-77-593	RCDT VENT HEADER ISOL	713/A11W	OPEN	
2-TV-77-481	RCDT N2 TEST VENT	713/A12W	CLOSED	
2-TV-77-506	RCDT N2 SUPPLY TEST VENT	713/A11W	CLOSED	
2-TV-77-504	RCDT VENT HEADER TEST VENT	716/AZ281	CLOSED	
2-ISV-77-591	RCDT VENT HEADER ISOL	716/AZ281	OPEN	
2-ISV-77-503	RCDT VENT HEADER ISOL	716/AZ281	OPEN	

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VALVE LINEUP - SUBSECTION 6.15

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE
2-RTV-77-310A	2-LT-77-1/2-PT-77-2 ROOT	702/AZ285	OPEN	
2-RTV-77-311A	2-LT-77-1/2-PT-77-2 ROOT	702/AZ285	OPEN	
2-DRV-77-501	REFUELING CANAL DRAIN	702/AZ270	CLOSED	
2-IDV-77-502	REFUELING CANAL DRAIN ISOL	702/AZ270	CLOSED	
2-ISV-77-514A	RCDT PUMP 2A IN ISOL	702/AZ270	OPEN	
2-TV-77-527	RCDT PUMP 2A SUCT TEST VENT	702/AZ277	CLOSED	
2-DRV-77-515B	RCDT PUMP 2B CASING DRAIN	702/AZ270	CLOSED	
2-RTV-77-302A	2-PI-77-5 ROOT	702/AZ250	OPEN	
2-ISV-77-517A	RCDT PUMP 2A OUT ISOL	702/AZ270	OPEN	
2-ISV-77-514B	RCDT PUMP 2B IN ISOL	702/AZ270	OPEN	

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VALVE LINEUP - SUBSECTION 6.15

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE
2-TV-77-526	RCDT PUMP 2B SUCT TEST VENT	702/AZ276	CLOSED	
2-DRV-77-515A	RCDT PUMP 2A CASING DRAIN	702/AZ275	CLOSED	
2-RTV-77-300A	2-PI-77-8 ROOT	702/AZ277	OPEN	
2-ISV-77-517B	RCDT PUMP 2B OUT ISOL	702/AZ270	OPEN	
2-ISV-77-518	RCDT PUMP DISCH TO SUP FLOOD MODE	716/AZ277	CLOSED	
2-TV-77-519	RCDT PMP DISCH HDR TEST VENT	716/AZ277	CLOSED	
2-TV-77-520	RCDT PMP DISCH HDR TEST VENT	713/A11W	CLOSED	
2-TV-77-1127	RCDT DISCHARGE HDR TEST VENT	713/A11W	CLOSED	
2-IDV-77-521	RCDT DISCH HEADER TO RWST	713/A11V	CLOSED	
2-IDV-77-523	RCDT DISCH TO TDCT ISOL	713/A11V	CLOSED	

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VALVE LINEUP - SUBSECTION 6.15

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE
2-ISV-84-530	RCDT PMPS DISCH ISOL TO FLOOD MODE AUX BORATION	713/A11W	CLOSED	
2-ISV-62-949	HOLDUP TANK A WDS RCDT INLET ISOL	713/A10S	CLOSED	
1-ISV-84-530	RCDT PMPS DISCH ISOL TO FLOOD MODE AUX BORATION	713/A5W	CLOSED	
2-ISV-84-528	FLOOD MODE AUX BORATION MAKEUP TANK U2 ISOL	757/A5V	OPEN	
0-VTV-84-534	FLOOD MODE AUX BORATION MAKEUP TANK U2 ISOL	757/A5V	OPEN	
0-RTV-84-58A	0-LI-84-1 ROOT	757/A5V	CLOSED	
0-DRV-84-535	FLOOD MODE AUX BORATION MAKEUP TANK DRAIN	757/A5V	CLOSED	

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VALVE LINEUP - SUBSECTION 6.15

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE
0-SMV-84-527	FLOOD MODE AUX BORATION LOCAL SAMPLE	757/A5V	CLOSED	
0-ISV-84-525	FLOOD MODE AUX CHG BSTR PMP A SUCTION ISOLATION	757/A5V	CLOSED	
0-ISV-84-526	FLOOD MODE AUX CHG BSTR PMP B SUCTION ISOLATION	757/A5V	CLOSED	

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VALVE LINEUP - SUBSECTION 6.16

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE
2-ISV-77-510	RCDT GAS ANALYZER ISOL	713/A12W	OPEN	
2-TV-77-509	RCDT GAS ANALYZER HDR TEST VENT	713/A11W	CLOSED	
2-TV-77-507	RCDT GAS ANALYZER HDR TEST VENT	716/AZ286	CLOSED	
2-ISV-77-508	RCDT GAS ANALYZER HDR ISOL	716/AZ286	OPEN	
2-ISV-77-592	RCDT VENT HEADER TEST	713/A11W	CLOSED	
2-ISV-77-593	RCDT VENT HEADER ISOL	713/A11W	OPEN	
2-TV-77-481	RCDT N2 TEST VENT	713/A12W	CLOSED	
2-TV-77-506	RCDT N2 SUPPLY TEST VENT	713/A11W	CLOSED	
2-TV-77-504	RCDT VENT HEADER TEST VENT	716/AZ281	CLOSED	
2-ISV-77-591	RCDT VENT HEADER ISOL	716/AZ281	OPEN	
2-ISV-77-503	RCDT VENT HEADER ISOL	716/AZ281	OPEN	

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VALVE LINEUP - SUBSECTION 6.16

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE
2-RTV-77-310A	2-LT-77-1/2-PT-77-2 ROOT	702/AZ285	OPEN	
2-RTV-77-311A	2-LT-77-1/2-PT-77-2 ROOT	702/AZ285	OPEN	
2-DRV-77-501	REFUELING CANAL DRAIN	702/AZ270	CLOSED	
2-IDV-77-502	REFUELING CANAL DRAIN ISOL	702/AZ270	CLOSED	
2-ISV-77-514A	RCDT PUMP 2A IN ISOL	702/AZ270	OPEN	
2-TV-77-527	RCDT PUMP 2A SUCT TEST VENT	702/AZ277	CLOSED	
2-DRV-77-515B	RCDT PUMP 2B CASING DRAIN	702/AZ270	CLOSED	
2-RTV-77-302A	2-PI-77-5 ROOT	702/AZ250	OPEN	
2-ISV-77-517A	RCDT PUMP 2A OUT ISOL	702/AZ270	OPEN	
2-ISV-77-514B	RCDT PUMP 2B IN ISOL	702/AZ270	OPEN	

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VALVE LINEUP - SUBSECTION 6.16

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE
2-TV-77-526	RCDT PUMP 2B SUCT TEST VENT	702/AZ276	CLOSED	
2-DRV-77-515A	RCDT PUMP 2A CASING DRAIN	702/AZ275	CLOSED	
2-RTV-77-300A	2-PI-77-8 ROOT	702/AZ277	OPEN	
2-ISV-77-517B	RCDT PUMP 2B OUT ISOL	702/AZ270	OPEN	
2-ISV-77-518	RCDT PUMP DISCH TO SUP FLOOD MODE	716/AZ277	CLOSED	
2-TV-77-519	RCDT PMP DISCH HDR TEST VENT	716/AZ277	CLOSED	
2-TV-77-520	RCDT PMP DISCH HDR TEST VENT	713/A11W	CLOSED	
2-TV-77-1127	RCDT DISCHARGE HDR TEST VENT	713/A11W	CLOSED	
2-IDV-77-521	RCDT DISCH HEADER TO RWST	713/A11V	CLOSED	
2-IDV-77-523	RCDT DISCH TO TDCT ISOL	713/A11V	CLOSED	

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VALVE LINEUP - SUBSECTION 6.16

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE
2-ISV-84-530	RCDT PMPS DISCH ISOL TO FLOOD MODE AUX BORATION	713/A11W	CLOSED	
2-ISV-62-949	HOLDUP TANK A WDS RCDT INLET ISOL	713/A10S	OPEN	
2-ISV-62-951	HOLDUP TANK B HDR INLET ISOL	713/A9S	OPEN	
2-ISV-68-579	RCS LOOP 3 EXCESS LETDOWN ISOL	720/AZ232	OPEN	
2-DRV-62-701	CVCS EXCESS LTDN HEADER DRAIN	702/AZ180	CLOSED	
2-DRV-62-705	CVCS EXCESS LTDN HEADER DRAIN	716/AZ130	CLOSED	
2-DRV-62-655	CVCS EXCESS LTDN HX TUBE DRAIN	716/AZ120	CLOSED	
2-VTV-62-654	CVCS EXCESS LTDN HX TUBE VENT	716/AZ120	CLOSED	
2-ISV-62-656	CVCS EXCESS LTDN BORON ANAL ISOL	716/AZ120	CLOSED	

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VALVE LINEUP - SUBSECTION 6.16

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE
2-RTV-62-332A	2-PT-62-57 ROOT	702/AZ115	OPEN	

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FINAL VALVE LINEUP

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE	INDEPENDENT VERIFICATION INITIAL/DATE
2-ISV-77-510	RCDT GAS ANALYZER ISOL	713/A12W	OPEN		
2-TV-77-509	RCDT GAS ANALYZER HDR TEST VENT	713/A11W	CLOSED		
2-TV-77-507	RCDT GAS ANALYZER HDR TEST VENT	716/AZ286	CLOSED		
2-ISV-77-508	RCDT GAS ANALYZER HDR ISOL	716/AZ286	OPEN		
2-ISV-77-592	RCDT VENT HEADER TEST	713/A11W	CLOSED		
2-ISV-77-593	RCDT VENT HEADER ISOL	713/A11W	OPEN		
2-TV-77-481	RCDT N2 TEST VENT	713/A12W	CLOSED		
2-TV-77-506	RCDT N2 SUPPLY TEST VENT	713/A11W	CLOSED		
2-TV-77-504	RCDT VENT HEADER TEST VENT	716/AZ281	CLOSED		

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FINAL VALVE LINEUP

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE	INDEPENDENT VERIFICATION INITIAL/DATE
2-ISV-77-591	RCDT VENT HEADER ISOL	716/AZ281	OPEN		
2-ISV-77-503	RCDT VENT HEADER ISOL	716/AZ281	OPEN		
2-RTV-77-310A	2-LT-77-1/2-PT-77-2 ROOT	702/AZ285	OPEN		
2-RTV-77-311A	2-LT-77-1/2-PT-77-2 ROOT	702/AZ285	OPEN		
2-DRV-77-501	REFUELING CANAL DRAIN	702/AZ270	CLOSED		
2-IDV-77-502	REFUELING CANAL DRAIN ISOL	702/AZ270	CLOSED		
2-ISV-77-514A	RCDT PUMP 2A IN ISOL	702/AZ270	OPEN		
2-TV-77-527	RCDT PUMP 2A SUCT TEST VENT	702/AZ277	CLOSED		
2-DRV-77-515B	RCDT PUMP 2B CASING DRAIN	702/AZ270	CLOSED		

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FINAL VALVE LINEUP

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE	INDEPENDENT VERIFICATION INITIAL/DATE
2-RTV-77-302A	2-PI-77-5 ROOT	702/AZ250	OPEN		
2-ISV-77-517A	RCDT PUMP 2A OUT ISOL	702/AZ270	OPEN		
2-ISV-77-514B	RCDT PUMP 2B IN ISOL	702/AZ270	OPEN		
2-TV-77-526	RCDT PUMP 2B SUCT TEST VENT	702/AZ276	CLOSED		
2-DRV-77-515A	RCDT PUMP 2A CASING DRAIN	702/AZ275	CLOSED		
2-RTV-77-300A	2-PI-77-8 ROOT	702/AZ277	OPEN		
2-ISV-77-517B	RCDT PUMP 2B OUT ISOL	702/AZ270	OPEN		
2-ISV-77-518	RCDT PUMP DISCH TO SUP FLOOD MODE	716/AZ277	CLOSED		

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FINAL VALVE LINEUP

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE	INDEPENDENT VERIFICATION INITIAL/DATE
2-TV-77-519	RCDT PMP DISCH HDR TEST VENT	716/AZ277	CLOSED		
2-TV-77-520	RCDT PMP DISCH HDR TEST VENT	713/A11W	CLOSED		
2-TV-77-1127	RCDT DISCHARGE HDR TEST VENT	713/A11W	CLOSED		
2-IDV-77-521	RCDT DISCH HEADER TO RWST	713/A11V	CLOSED		
2-IDV-77-523	RCDT DISCH TO TDCT ISOL	713/A11V	CLOSED		
2-ISV-84-530	RCDT PMPS DISCH ISOL TO FLOOD MODE AUX BORATION	713/A11W	CLOSED		
2-ISV-62-949	HOLDUP TANK A WDS RCDT INLET ISOL	713/A10S	OPEN		

Appendix FF
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FINAL VALVE LINEUP

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE	INDEPENDENT VERIFICATION INITIAL/DATE
2-ISV-62-951	HOLDUP TANK B HDR INLET ISOL	713/A9S	OPEN		
2-ISV-68-579	RCS LOOP 3 EXCESS LETDOWN ISOL	720/AZ232	OPEN		
2-DRV-62-701	CVCS EXCESS LTDN HEADER DRAIN	702/AZ180	CLOSED		
2-DRV-62-705	CVCS EXCESS LTDN HEADER DRAIN	716/AZ130	CLOSED		
2-DRV-62-655	CVCS EXCESS LTDN HX TUBE DRAIN	716/AZ120	CLOSED		
2-VTV-62-654	CVCS EXCESS LTDN HX TUBE VENT	716/AZ120	CLOSED		

Appendix FF
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FINAL VALVE LINEUP

Data Package: Page ____ of ____ **Date _____**

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	POSITION	VERFIED BY INITIAL/DATE	INDEPENDENT VERIFICATION INITIAL/DATE
2-ISV-62-656	CVCS EXCESS LTDN BORON ANAL ISOL	716/AZ120	CLOSED		
2-RTV-62-332A	2-PT-62-57 ROOT	702/AZ115	OPEN		

Data Sheet 1
(Page 1 of 2)

REACTOR COOLANT DRAIN TANK PUMP 2A

Data Package: Page ____ of ____ **Date _____**

$$TDH = \left(P_D - P_S\right)\frac{LB}{IN^2} \times \frac{144\ \frac{IN^2}{FT^2}}{62.4\ \frac{LB}{FT^3}}$$

[1] **RECORD** the following data:

A. Step 6.12[26] _____

_____ GPM

_____ Flowmeter Minimum

_____ Flowmeter Maximum

_____ Flowmeter Accuracy
(Percentage of Range)

B. Step 6.12[27]A _____

_____ psig (suction)

_____Pressure Gauge Accuracy
(From M&TE Checkout Sheet)

C. Step 6.12[27]B _____

_____ psig (discharge)

_____Pressure Gauge Accuracy
(From SSD-2-PI-77-5)

Data Sheet 1
(Page 2 of 2)

REACTOR COOLANT DRAIN TANK PUMP 2A

Data Package: Page ____ of ____ **Date _____**

[2] **CALCULATE** the following:

$$TDH = \left(\underline{\qquad} - \underline{\qquad} \right) \times 2.31 = \underline{\qquad} \text{ ft}$$

(Discharge Press. − Suction Press.)

$$\text{Accuracy}_{TDH} = \left(\underline{\qquad} + \underline{\qquad} \right) \times 2.31$$

(Accuracy$_{2\text{-PI-77-5}}$ + Accuracy$_{M\&TE}$)

$\text{Accuracy}_{TDH} = \underline{\qquad}$ ft

$\text{AdjustedTDH} = TDH - \text{Accuracy}_{TDH}$

$\text{AdjustedTDH} = \underline{\qquad}$ ft

Adjusted TDH must be ≥175 ft (**ACC CRIT**)

$\text{Accuracy}_{FLOWMETER} = \text{Range} \times \text{Accuracy}_{PERCENT}$

$$\text{Accuracy}_{FLOWMETER} = \left(\underline{\qquad} - \underline{\qquad} \right) \times \left(\underline{\qquad} \right)$$

(Maximum − Minimum) × (Accuracy$_{PERCENT}$)

$\text{Accuracy}_{FLOWMETER} = \underline{\qquad}$ GPM

$$\text{AdjustedFlow} = \underline{\qquad} - \underline{\qquad}$$

Flow$_{MEASURED}$ − Accuracy$_{FLOWMETER}$

$\text{AdjustedFlow} = \underline{\qquad}$ GPM

Adjusted Flow must be ≥50 GPM (**ACC CRIT**)

Calculations Performed By: _____

Calculations Verified By: _____

Data Sheet 2
(Page 1 of 2)

REACTOR COOLANT DRAIN TANK PUMP 2B

$$TDH = \left(P_D - P_S\right)\frac{LB}{IN^2} \times \frac{144\ \frac{IN^2}{FT^2}}{62.4\ \frac{LB}{FT^3}}$$

[3] **RECORD** the following data:

A. Step 6.13[15] _____

_____ GPM

_____ Flowmeter Minimum

_____ Flowmeter Maximum

_____ Flowmeter Accuracy
(Percentage of Range)

B. Step 6.13[16]A _____

_____ psig (suction)

_____Pressure Gauge Accuracy
(From M&TE Checkout Sheet)

C. Step 6.13[16]B _____

_____ psig (discharge)

_____Pressure Gauge Accuracy
(From SSD-2-PI-77-8)

Data Sheet 2
(Page 2 of 2)

REACTOR COOLANT DRAIN TANK PUMP 2B

[4] **CALCULATE** the following:

$$TDH = \left(\underline{\qquad} - \underline{\qquad} \right) \times 2.31 = \underline{\qquad} \text{ ft}$$

(Discharge Press. − Suction Press.)

$$\text{Accuracy}_{TDH} = \left(\underline{\qquad} + \underline{\qquad} \right) \times 2.31$$

(Accuracy$_{2\text{-PI-77-8}}$ + Accuracy$_{M\&TE}$)

$\text{Accuracy}_{TDH} = \underline{\qquad}$ ft

$\text{AdjustedTDH} = TDH - \text{Accuracy}_{TDH}$

$\text{AdjustedTDH} = \underline{\qquad}$ ft

Adjusted TDH must be ≥175 ft (**ACC CRIT**)

$\text{Accuracy}_{FLOWMETER} = \text{Range} \times \text{Accuracy}_{PERCENT}$

$$\text{Accuracy}_{FLOWMETER} = \left(\underline{\qquad} - \underline{\qquad} \right) \times \left(\underline{\qquad} \right)$$

(Maximum − Minimum) × (Accuracy$_{PERCENT}$)

$\text{Accuracy}_{FLOWMETER} = \underline{\qquad}$ GPM

$$\text{AdjustedFlow} = \underline{\qquad} - \underline{\qquad}$$

Flow$_{MEASURED}$ − Accuracy$_{FLOWMETER}$

$\text{AdjustedFlow} = \underline{\qquad}$ GPM

Adjusted Flow must be ≥150 GPM (**ACC CRIT**)

Calculations Performed By: _____

Calculations Verified By: _____