WBN2Public Resource

From: Boyd, Desiree L [dlboyd@tva.gov]
Sent: Tuesday, July 09, 2013 1:27 PM
To: Hon, Andrew; Epperson, Dan; Quichocho, Jessie; Poole, Justin
Cc: Arent, Gordon; Hamill, Carol L; Boyd, Desiree L
Subject: TVA letter to NRC_07-09-13_2-PTI-074-02 & 2-PTI-068-15 transmittal to NRC
Attachments: 07-09-13_2-PTI-074-02 & 2-PTI-068-15 transmittal to NRC_Final.pdf

Please see attached TVA letter that was sent to the NRC today.

Thank You

Désireé L. Boyd
WBN Unit 2 Licensing
EQB 1-B (Trailer NP70)
dlboyd@tva.gov
423-365-8764

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July 9, 2013

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 Unit 2 Pre-op Test Instructions (PTIs) are enclosed:

PTI NUMBER	Rev.	TITLE
2-PTI-068-15	0	Pressurizer Pressure and Level Control
2-PTI-074-02	0	RHR HFT Heatup/Cooldown and Midloop

If you have any questions, please contact Nick Welch at (423) 365-7820.

Respectfully,

R. A. Hruby, Jr.

Raymond A. Hruby, Jr.
General Manager, Technical Services
Watts Bar Unit 2

Enclosures

cc (Enclosures):

U. S. Nuclear Regulatory Commission
Region II
Marquis One Tower
245 Peachtree Center Ave., NE Suite 1200
Atlanta, Georgia 30303-1257

NRC Resident Inspector Unit 2
Watts Bar Nuclear Plant
1260 Nuclear Plant Road
Spring City, Tennessee 37381

bcc (Enclosures):

Jessie Quichocho
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MS 08G9A
One White Flint North
11555 Rockville Pike
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Region II
Marquis One Tower
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WATTS BAR NUCLEAR PLANT
UNIT 2 PREOPERATIONAL TEST

TITLE: Pressurizer Pressure and Level Control

Instruction No: 2-PTI-068-15

Revision No: 0000

PREPARED BY: Nicholas C. Piplica / Nicholas C Piplica DATE: 03/25/13
PRINT NAME / SIGNATURE

REVIEWED BY: Bryan T. MacK / Bryan T. MacK DATE: 3/25/13
PRINT NAME / SIGNATURE

INSTRUCTION APPROVAL

JTG MEETING No: 2-13-012

JTG CHAIRMAN: Neil A Weber DATE: 6/13/13

APPROVED BY : Neil A Weber DATE: 6/13/13
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	12-13-13	ALL	Based on PTI-68-15 and PTI-68-15 supplement no. 1 as performed for Unit 1.

Table of Contents

Table of Contents (continued)

1.0 INTRODUCTION

1.1 Test Objectives

The purpose of this test is to verify the controls and operation of the Pressurizer (PZR) pressure and level control system at Hot Functional Test (HFT) conditions. The control logic for the PZR Power Operated Relief Valves (PORV), PZR PORV Block Valves, and Cold Overpressure Mitigation System (COMS) will be tested as a prerequisite to HFT conditions. The stroke times of the PORV and PORV Block Valves will be verified prior to and at HFT conditions.

Functionality of the PZR Pressure control system to control pressure transients and maintain pressure within operating range will be verified. The functionality of the PZR Level Control System to automatically control induced level and maintain system inventory within controller operating range will be verified. Lastly, the operational acceptability of the PZR Relief Tank (PRT) will be demonstrated.

1.2 Scope

This test procedure verifies operability of the PZR Pressure and Level Control System by the following scope:

A. Demonstration of the controls and interlocks for 2-FCV-68-333, PZR PORV Block Valve

B. Demonstration of the controls and interlocks for 2-FCV-68-332, PZR PORV Block Valve

C. Demonstration of the controls and interlocks for 2-PCV-68-340A, PZR PORV

D. Demonstration of the controls and interlocks for 2-PCV-68-334, PZR PORV

E. Demonstration of the controls, interlocks, and setpoints of COMS

F. Demonstration of the capability of the PZR Pressure Control System to automatically control induced pressure transients

G. Demonstration of the capability of the PZR Pressure Control System to maintain pressure within controller operating range

H. Demonstration of the stroke time of the PORVs and PORV Block Valves and the operational acceptability of the PRT

I. Demonstration of the capability of the PZR Level Control System to automatically control induced level transients

J. Demonstration of the capability of the PZR Level Control System to maintain system inventory within controller operating range.

2.0 REFERENCES

2.1 Performance References

A. SMP-9.0, Conduct of Test

B. 2-PTI-68-01, Hot Functional Test - Heatup & Cooldown (LATER)

C. 2-PTI-68-03, Pressurizer Heater and Spray Control

D. 2-SI-68-92, 18 Month Channel Calibration of PORV 2-PCV-68-340A Cold Overpressure Mitigation System Actuation Channel (LATER)

E. 2-SI-68-93, 18 Month Channel Calibration of PORV 2-PCV-68-334 Cold Overpressure Mitigation System Actuation Channel (LATER)

F. 2-TOP-68-02, RCS - HFT (LATER)

G. 2-TOP-62-02, CVCS - Startup Testing Operation (LATER)

2.2 Developmental References

A. Final Safety Analysis Report (FSAR), Amendment 109

1. Chapter 5, Section 5.2.2, Overpressurization Protection

2. Chapter 5, Section 5.5.10, Pressurizer

3. Chapter 5, Section 5.5.11, Pressurizer Relief Tank

4. Chapter 7, Section 7.2.1.1.2(3), Reactor Coolant System Pressurizer Pressure and Water Level Trips

5. Chapter 7, Section 7.7.1.5, Pressurizer Pressure Control

6. Chapter 7, Section 7.7.1.6, Pressurizer Water Level Control

7. Chapter 14, Table 14.2-1, Sheets 18 and 19 of 89, Chemical and Volume Control System Test Summary

8. Chapter 14, Table 14.2-1, Sheet 77, 78, and 79 of 89, Integrated Hot Functional Tests Test Summary

9. Chapter 14, Table 14.2-1, Sheet 88 of 89, Pressurizer Safety and Relief Valves Test Summary

2.2 Developmental References (continued)

B. Drawings

1. Electrical

a. 2-45W760-68-3, Rev. 3, Wiring Diagram Reactor Coolant System Schematic Diagrams

b. 2-45W760-68-4, Rev. 3, Wiring Diagram Reactor Coolant System Schematic Diagrams

c. 2-45W600-55-9, Rev. 2, Wiring Diagram Annunciator System Key Diagram Panel 4A

d. 2-45W600-55-13, Rev. 2, Wiring Diagram Annunciator System Key Diagram Panel 5A

e. 2-45W600-55-40, Rev. 2, Wiring Diagram Annunciator System Key Diagram

f. 2-45W600-57-7, Rev. 4, Wiring Diagram Separation & Misc Aux Relays Schematic Diagrams

g. 2-45W600-57-15, Rev. 1, Wiring Diagram Separation & Misc Aux Relays Schematic Diagrams

h. 2-45W600-57-14, Rev. 3, Wiring Diagram Separation & Misc Aux Relays Schematic Diagrams

i. 2-45W600-57-25, Rev. 3, Wiring Diagram Separation & Misc Aux Relays Schematic Diagrams

j. 2-45W760-68-5, Rev. 3, Wiring Diagram Reactor Coolant System Schematic Diagrams

k. 2-45W600-68-1, Rev. 5, Wiring Diagram Reactor Coolant System Schematic Diagrams

l. 2-45W600-62-1, Rev. 2, Wiring Diagrams Chemical & Volume Control Sys Schematic Diagrams

m. 2-45W600-62-5, Rev. 2, Wiring Diagrams Chemical & Volume Control Sys Schematic Diagrams

n. 2-45W600-62-2, Rev. 3, Wiring Diagrams Chemical & Volume Control Sys Schematic Diagrams

o. 2-47W610-62-2, Rev. 7, Electrical Control Diagram Chemical and Volume Control Sys

2.2 Developmental References (continued)

p. 2-47W610-68-5, Rev. 1, Electrical Control Diagram Reactor Coolant System

q. 2-47W610-68-6, Rev. 2, Electrical Control Diagram Reactor Coolant System

r. 2-47W610-68-4, Rev. 4, Electrical Control Diagram Reactor Coolant System

s. 2-47W610-68-5A, Rev. 1, Electrical Control Diagram Reactor Coolant System

t. 2-45B2766-6D, Rev. 0, Wiring Diagram 480V Reactor MOV BD 2A1-A Conn Diag - Compt 6D

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

v. 2-45B2768-5E, Rev. 0, Wiring Diagram 480V Reactor MOV BD 2B1-B Conn Diag - Compt 5E

w. 2-69247-08F802403-FD-2402-1, Rev. 0, Electrical - Loop 1 & 2 Hot and Cold Leg Temperature Validation, Conversion

x. 2-69247-08F802403-FD-2402-3, Rev. 0, Electrical Pressurizer PORV Interlocks

y. 2-69247-08F802403-FD-2403-1, Rev. 0, Electrical - Loop 3 & 4 Hot and Cold Leg Temperature Validation, Conversion

z. 2-69247-08F802403-FD-2403-3, Rev. 0, Electrical Pressurizer PORV Interlock

aa. 2-69247-08F802403-FD-2400-1, Rev. 0, Electrical Pressurizer Pressure Signal Validation

bb. 2-69247-08F802403-FD-2400-3, Rev. 0, Electrical - Pressurizer Pressure Signal Validation

cc. 2-69247-08F802403-FD-2401-1, Rev. 2, Electrical Pressurizer Pressure Control

dd. 2-69247-08F802403-FD-2401-3, Rev. 2, Electrical Pressurizer Pressure Controls

ee. 2-69247-08F802403-FD-2401-4, Rev. 4, Electrical - Pressurizer Pressure Master H/A Hand Station Interface Faceplate Layout

2.2 Developmental References (continued)

ff. 2-69247-08F802403-FD-2401-5, Rev. 0, Electrical Pressurizer Pressure Controls

gg. 2-69247-08F802403-FD-2401-6, Rev. 0, Electrical Pressurizer Pressure Controls

hh. 2-69247-08F802403-FD-2401-8, Rev. 0, Electrical - Pressurizer LP2 Spray Valve H/A Hand Station Interface

ii. 2-69247-08F802403-FD-2401-10,Rev. 0, Electrical - Pressurizer LP1 Spray Valve H/A Hand Station Interface

jj. 2-69247-08F802403-FD-2401-11, Rev. 0, Electrical - Pressurizer Pressure LP1 & LP2 Spray Valves Hand Station Interface Faceplate Layout

kk. 2-69247-08F802403-FD-2401-12, Rev. 0, Electrical - Pressurizer Pressure LP2 Spray Valve Hand Station Interface

ll. 2-69247-08F802403-FD-2404-1, Rev. 0, Electrical Pressurizer Level Signal Input/Validation

mm. 2-69247-08F802403-FD-2404-6, Rev. 0, Electrical Pressurizer Level Control To Charging Flow

nn. 2-69247-08F802403-FD-2605-1, Rev. 0, Electrical CVCS Charging Flow To Pressurizer

oo. 2-69247-08F802403-FD-2404-8, Rev. 0, Electrical - Pressurizer Level Control To Charging Flow H/A Hand Station Interface

pp. 2-69247-08F802403-FD-2404-9, Rev. 0, Electrical - Pressurizer Level Control To Charging Flow H/A Hand Station Interface Faceplate Layout

qq. 2-69247-08F802403-FD-2404-10, Rev. 1, Electrical Pressurizer Level Recorder Selection

rr. 2-69247-08F802403-FD-2608-1, Rev. 0, Electrical CVCS Letdown HX Temperature Outlet

ss. 2-69247-08F802403-FD-2608-5, Rev. 0, Electrical - CVCS Ltdn HX Temp Outlet Hand Station Interface Faceplate Layout

tt. 2-69247-08F802403-FD-2607-5, Rev. 0, Electrical - CVCS Letdown Heat Exchanger Hand Sta Interface Faceplate Layout

2.2 Developmental References (continued)

uu. 2-69247-08F802403-FD-2607-1, Rev. 0, Electrical - CVCS Letdown Heat Exchanger Pressure

vv. 2-45B655-5A, Rev. 0, Main Control Room Annunciator Inputs Window Box XA-55-5A

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

xx. 2-45B655-4A, Rev. 0, Main Control Room Annunciator Inputs Window Box XA-55-4A

yy. 2-45B655-4D, Rev. 0, Main Control Room Annunciator Inputs Window Box XA-55-4D

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

aaa. 2-45B655-E5A, Rev. 0, Electrical Annunciator Window Box XA-55-5A Engraving

bbb. 2-45B655-E6C, Rev. 0, Electrical Annunciator Window Box XA-55-6C Engraving

ccc. 2-45B655-E4A, Rev. 0, Electrical Annunciator Window Box XA-55-4A Engraving

ddd. 2-45B655-E4D, Rev. 0, Electrical Annunciator Window Box XA-55-4D Engraving

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

fff. 2-45W751-8, Rev. 3, Wiring Diagrams 480V Reac MOV BDS 2B1-B Single Line Sh-2

ggg. 2-45W751-3, Rev. 3, Wiring Diagrams 480V Reac MOV BD 2A1-A Single Line Sh-3

hhh. 1-45W703-3, Rev. 46, Wiring Diagrams 125V Vital Battery Board III Single Line -Sheet 3

iii. 1-45W703-4, Rev. 39, Wiring Diagrams 125V Vital Battery Board IV Single Line - Sheet 4

jjj. 2-45W706-3, Rev. 0, Wiring Diagrams 120V AC Vital Inst Pwr Bds 1-III & 2-III Connection Diagram - Sh 3

2.2 Developmental References (continued)

kkk. 2-45W706-4, Rev. 0, Wiring Diagram 120V Vital Inst Pwr Bds 1-IV & 2-IV Connection Diagrams

lll. 2-45N2638-3, Rev. 4, Wiring Diagrams Aux Control Board Panel 2-L-11A Connection Diagram Sh-3

mmm. 2-45N2639-3, Rev. E, Wiring Diagrams Aux Control Board Panel 2-L-11B Connection Diagram Sh-3

2. Logic/Control

   a. 2-47W611-68-1, Rev. 2, Electrical Logic Diagram Reactor Coolant System

   b. 2-47W611-68-2, Rev. 2, Electrical Logic Diagram Reactor Coolant System

   c. 2-47W611-68-3, Rev. 3, Electrical Logic Diagram Reactor Coolant System

   d. 2-54114-1-5655D87-11, Rev. 0 (ANT), DRA 52328-750, SSPS Functional Diagrams Pressurizer Pressure and Level Control

   e. 2-54114-1-5655D87-12, Rev. 0 (ANT), DRA 52338-751, SSPS Functional Diagrams Pressurizer Heater Control

3. Vendor Drawings

   a. none

4. Vendor Manuals

   a. VD-W351-0763, Pressurizer Instructions Tech Manual

C. Documents

1. WBN2-62-4001, Rev. 1, Chemical and Volume Control System

2. WBN2-68-4001, Rev. 2, Reactor Coolant System

3. 2-TSD-68-15, Rev. 1, Pressurizer Pressure and Level Control

4. 2-P-68-340, Rev. 0, NE Setpoint and Scaling Document Pressurizer Pressure

5. 2-P-68-334, Rev. 0, NE Setpoint and Scaling Document Pressurizer Pressure

2.2 Developmental References (continued)

6. 2-P-68-323, Rev. 0, NE Setpoint and Scaling Document Pressurizer Pressure
7. 2-P-68-322, Rev. 0, NE Setpoint and Scaling Document Pressurizer Pressure
8. 2-L-68-339, Rev. 0, NE Setpoint and Scaling Document Pressurizer Level
9. 2-L-68-335, Rev. 0, NE Setpoint and Scaling Document Pressurizer Level
10. 2-L-68-320, Rev. 0, NE Setpoint and Scaling Document Pressurizer Level
11. 2-LPP-68-340A, Rev. 0, Scaling and Setpoint Document Pressurizer Pressure Control (LATER)
12. 2-LPL-68-339A, Rev. 0, Scaling and Setpoint Document Pressurizer Level Control (LATER)
13. 2-LPP-68-336C, Rev. 0, Scaling and Setpoint Document Pressurizer Pressure (Narrow Range) (LATER)
14. 2-LPP-68-337C, Rev. 0, Scaling and Setpoint Document Pressurizer Pressure (Narrow Range) (LATER)
15. 2-LPL-68-325C, Rev. 0, Scaling and Setpoint Document Pressurizer Narrow Range Level (LATER)
16. 2-LPL-68-326C, Rev. 0, Scaling and Setpoint Document Pressurizer Narrow Range Level (LATER)

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. In addition, follow TI-300 when working around electrical equipment.

B. Steps may be repeated if all components cannot be tested in a step. However, if the test has been exited, prerequisite steps must be re-verified and a Chronological Test Log (CTL) entry made.

C. Discrepancies between component ID tags and the description in a procedure/instruction do not require a Test Deficiency Notice (TDN) in accordance with SMP-14.0, if the UNIDs match, exclusive of place-keeping zeros and train designators (e.g. 2-HS-31-468 vs. 2-HS-031-0468) and the noun description is sufficient to identify the component. If the component label needs to be changed, a Tag Request Form (TR Card) should be processed in accordance with TI-12.14. Make an entry in the CTL and continue testing.

D. All wires removed/lifted from a terminal shall be identified and taped or covered with an insulator to prevent personnel or equipment hazard and possible spurious initiations. The wires should be grouped together and labeled with the work implementing document number that required them to be lifted if left unattended.

E. All open problems are to be tracked by a corrective action document and entered on the appropriate system punchlist.

F. Problems identified during the test shall be annotated on the 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 radiological areas.

H. Ensure there are no adverse effects to the operation of Unit 1 structures, systems, or components.

I. The Pressurizer precautions and limitations in the Technical Specifications and the Pressurizer Technical Manual must be observed.

J. Prior to each plant heatup, verification that the pressurizer safety valves are not gagged should be made.

K. Continuous flow should be maintained in the pressurizer spray lines to protect the lines from thermal shock and help maintain uniform water chemistry in the pressurizer. Low temperature alarms are provided to indicate insufficient bypass flow.

3.0 PRECAUTIONS AND LIMITATIONS (continued)

L. Spray flow normally should not be initiated if the temperature difference between the pressurizer and the spray fluid is greater than about 100°F although higher ΔT's are acceptable for a few number of cycles in the life of the plant. Auxiliary spray flow from the charging pump should be initiated slowly.

M. Prior to each plant heatup, verification that the PRT rupture disk is in place should be made.

N. If the PRT water temperature alarm is activated, the contents of the tank should be cooled by spraying with reactor makeup water. The alarm could indicate leakage or lifting of a relief valve and the cause should be determined.

O. The level in the PRT should be maintained in the normal operating range between the high and low alarm setpoints.

P. When maintenance inside the PRT is required, it shall first be purged with air. The gas in the tank shall then be sampled to ensure personnel safety.

Q. A nitrogen gas blanket should be maintained in the PRT to exclude air and prevent the formation of an explosive hydrogen-oxygen mixture.

R. The gases in the PRT tank must be sampled routinely. The oxygen concentration must be maintained less than 5% by volume and the hydrogen concentration less than 4%.

S. The plant conditions required for each Subsection are as follows:

1. Subsections 6.1 through 6.5 - Tested prior to pressurizing the Reactor Coolant System (RCS) as a prerequisite to 2-PTI-68-01 (Hot Functional Test (HFT)).

2. Subsection 6.6 through 6.10 - HFT conditions equivalent to no-load temperature, pressure, and inventory conditions.

T. Avoid placing backup heater banks A-A and B-B on when the pressurizer level is less than 17% of level span. This is to avoid damaging the heaters when they are uncovered. The pressurizer heaters are uncovered at approximately 14% of level span. The pressurizer backup heaters can be manually turned ON at any pressurizer level; however, once the backup heater handswitches are released to the center A-P AUTO position, the backup heaters will trip OFF on low pressurizer level.

U. Do not exceed a pressurizer pressure of 2400 psig to avoid challenging the Pressurizer Code Safety Valve setpoint of 2485 psig.

V. Do not exceed the Pressurizer heatup rate of 100 °F per hour or the Pressurizer cooldown rate of 200 °F per hour.

3.0 PRECAUTIONS AND LIMITATIONS (continued)

W. Be prepared to stop the Reactor Coolant Pumps (RCP) if the Reactor Coolant Pressure falls below 1300 psig (saturation pressure at 557 °F plus 200 psi of subcooled margin) to ensure adequate RCP Net Positive Suction Head.

X. Ensure all unnecessary personnel are evacuated from the lower containment for the performance of Subsections 6.6 through 6.10.

Y. The operator may operate the pressurizer pressure control system in MANUAL as deemed necessary by the Shift Manager or Test Director.

Z. The operator may operate the pressurizer level control system in MANUAL as deemed necessary by the Shift Manager or Test Director.

AA. The initial test temperature should be as close as possible to the no-load value of 557 °F for Subsections 6.6 - 6.10. Once temperature is established for a test activity, it should not vary more than ±5 °F.

BB. System water chemistry is within system specifiable parameters especially for fluids supplied from external sources.

Date _____

4.0 PREREQUISITE ACTIONS

4.1 Preliminary Actions

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

ENSURE they will NOT adversely affect the test performance and results. _____

[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] **ENSURE** outstanding Design Change Notices (DCN's), Engineering Document Construction Releases (EDCR's) or Temporary Modifications (T-Mods) do NOT adversely impact testing, **AND**

ATTACH documentation of DCN's, EDCR's and T-Mods's that were reviewed to the data package. _____

[6] **ENSURE** required Component Testing has been completed prior to start of test. _____

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

[8] **ENSURE** communications are available for Main Control Room, Auxiliary Control Room, Auxiliary Instrumentation Room, 480 Reactor MOV Boards Room, and at the Pressurizer Vessel in Containment. _____

Date _____

4.1 Preliminary Actions (continued)

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

Subsection 6.6 _____

Subsection 6.7 _____

Subsection 6.8 _____

Subsection 6.9 _____

Subsection 6.10 _____

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

A. 2-XA-55-6F/149C (Subsection 6.1) _____

B. 2-XA-55-6F/150C (Subsection 6.2) _____

C. 2-XA-55-5A/90D (Subsection 6.3) _____

D. 2-XA-55-6F/148B (Subsection 6.3) _____

E. 2-XA-55-L10/301A (Subsection 6.3) _____

F. 2-XA-55-5A/91D (Subsection 6.4) _____

G. 2-XA-55-6F/148C (Subsection 6.4) _____

H. 2-XA-55-5A/90A (Subsection 6.6) _____

I. 2-XA-55-6C/124B (Subsection 6.6) _____

J. 2-XA-55-6C/124C (Subsection 6.6) _____

K. 2-XA-55-6C/124D (Subsection 6.6) _____

L. 2-XA-55-5A/90B (Subsection 6.6) _____

M. 2-XA-55-L10/301B (Subsection 6.6) _____

N. 2-XA-55-4A/69A (Subsection 6.6) _____

Date _____

4.1 Preliminary Actions (continued)

O. 2-XA-55-4A/70D (Subsection 6.6) _____

P. 2-XA-55-4A/69B (Subsection 6.6) _____

Q. 2-XA-55-5A/89A (Subsection 6.8) _____

R. 2-XA-55-5A/88D (Subsection 6.8) _____

S. 2-XA-55-5A/88C (Subsection 6.8) _____

T. 2-XA-55-5A/88B (Subsection 6.8) _____

U. 2-XA-55-5A/91A (Subsection 6.8) _____

V. 2-XA-55-5A/92B (Subsection 6.10) _____

W. 2-XA-55-5A/92A (Subsection 6.10) _____

X. 2-XA-55-6C/124A (Subsection 6.10) _____

Y. 2-XA-55-5A/92C (Subsection 6.10) _____

Date _____

4.1 Preliminary Actions (continued)

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

A. FD2038, PZR RELIEF ISO POS _____

B. FD2039, PZR RELIEF ISO POS _____

C. PD2000, PZR RELIEF VALVE POS _____

D. PD2001, PZR RELIEF VALVE POS _____

E. P0480A, PZR 1 PRESSURE _____

F. P0481A, PZR 2 PRESSURE _____

G. P0482A, PZR 3 PRESSURE _____

H. P0483A, PZR 4 PRESSURE _____

I. L0480A, PZR 1 LEVEL _____

J. L0481A, PZR 2 LEVEL _____

K. L0482A, PZR 3 LEVEL _____

L. 2PC0680340E _____

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

[13] **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. _____

[14] **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. _____

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

Date _____

4.1 Preliminary Actions (continued)

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

VERIFY NO conditions exist that will impact test performance. _____

[17] **ENSURE** a Foxboro I/A system engineer or qualified individual is available for all performance sections. _____

[18] **ENSURE** Surveillance Instruction 2-SI-68-92 has been submitted to JTG for concurrence that it adequately satisfies the requirements of this procedure. _____

[19] **ENSURE** surveillance Instruction 2-SI-68-93 has been submitted to JTG for concurrence that it adequately satisfies the requirements of this procedure. _____

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

[1] **ENSURE** Jumpers (Sections 6.1, 6.2, 6.3, and 6.4) are available. _____

[2] **ENSURE** the following Measuring and Test Equipment (M&TE) or equivalent is available and within their calibration due dates, if applicable, **AND**

RECORD the M&TE data on Appendix D, Measuring and Test equipment (M&TE) Log.

- Two Digital Stopwatches, accuracy $\pm$ 0.1 sec (Recommend Micronta) (Subsections 6.1, 6.2, and 6.8) _____
- Two Recorders (3 channel), accuracy $\pm$ 0.1 sec (Subsection 6.8) _____

Date _____

4.3 Field Preparations

4.3.1 Field Preparations for Subsections 6.6 through 6.10

[1] **ENSURE** the plant is at the 557 °F plateau in accordance with 2-PTI-68-01, Hot Functional Test (HFT).

Section 6.6 _____

Section 6.7 _____

Section 6.8 _____

Section 6.9 _____

Section 6.10 _____

[2] **ENSURE** 2-TANK-68-PRT, Pressurizer Relief Tank, is in the normal operating conditions per TOP-68-02, RCS - HFT.

Section 6.6 _____

Section 6.7 _____

Section 6.8 _____

Section 6.9 _____

Section 6.10 _____

[3] **ENSURE** all four RCPs are operating.

Section 6.6 _____

Section 6.7 _____

Section 6.8 _____

Section 6.9 _____

Section 6.10 _____

Date _____

4.3.1 Field Preparations for Subsections 6.6 through 6.10 (continued)

[4] **ENSURE** the pressurizer heater controls have been tested per 2-PTI-68-03, Pressurizer Heater and Spray Control.

Section 6.6 _____

Section 6.7 _____

Section 6.8 _____

Section 6.9 _____

Section 6.10 _____

[5] **ENSURE** the following systems are available to support this test:

A. System 68 - PRT, PORV Discharge Line, Pressurizer Heaters and Sprays, and RCPs

Section 6.6 _____

Section 6.7 _____

Section 6.8 _____

Section 6.9 _____

Section 6.10 _____

B. Foxboro I/A - Pressurizer Level and Pressure Controls, Auxiliary Pressurizer Level and Pressure Controls

Section 6.6 _____

Section 6.7 _____

Section 6.8 _____

Section 6.9 _____

Section 6.10 _____

Date _____

4.3.1 Field Preparations for Subsections 6.6 through 6.10 (continued)

C. System 99 - Eagle 21 for Reactor Trip and Process Signals

Section 6.6 _____

Section 6.7 _____

Section 6.8 _____

Section 6.9 _____

Section 6.10 _____

D. System 62 - Chemical and Volume Control System (CVCS) - Normal Letdown, Normal Charging, and Excessive Letdown

Section 6.6 _____

Section 6.7 _____

Section 6.8 _____

Section 6.9 _____

Section 6.10 _____

[6] **ENSURE** breaker lineup in Table 1.

Section 6.6 _____

Section 6.7 _____

Section 6.8 _____

Section 6.9 _____

Section 6.10 _____

4.3.2 Field Preparations for Subsection 6.1 (Block Valve for PORV 340A)

[1] **ENSURE** breaker 2-BKR-68-333, PRESSURIZER RELIEF (2-FCV-68-333), at 2-MCC-213-A1, 480V Reactor Motor Operated Valve (MOV) Board 2A1-A, compartment 6D, is OPEN. _____

Date _____

4.3.2 Field Preparations for Subsection 6.1 (Block Valve for PORV 340A) (continued)

[2] **ENSURE** Fuse Lineup listed in Table 2, for Subsection 6.1 fuses, is performed. _____

[3] **ENSURE** handswitch 2-HS-68-333C, on 480V Reactor MOV Board 2A1-A, compartment 6D, is in the NORMAL position. _____

[4] **ENSURE** handswitch 2-XS-68-333, on 480V Reactor MOV Board 2A1-A, compartment 6D, is in the NORMAL position. _____

[5] **CLOSE** breaker 2-BKR-68-333, PRESSURIZER RELIEF (2-FCV-68-333), at 2-MCC-213-A1, 480V Reactor MOV Board 2A1-A, compartment 6D. _____

4.3.3 Field Preparations for Subsection 6.2 (Block Valve for PORV 334)

[1] **ENSURE** breaker 2-BKR-68-332, PRESSURIZER RELIEF (2-FCV-68-332), at 2-MCC-213-B1, 480V Reactor MOV Board 2B1-B, compartment 5E, is OPEN. _____

[2] **ENSURE** Fuse Lineup listed in Table 2, for Subsection 6.2 fuses, is performed. _____

[3] **ENSURE** handswitch 2-HS-68-332C, on 480V Reactor MOV Board 2B1-B, compartment 5E, is in the NORMAL position. _____

[4] **ENSURE** handswitch 2-XS-68-332-B, on 480V Reactor MOV Board 2B1-B, compartment 5E, is in the NORMAL position. _____

[5] **CLOSE** breaker 2-BKR-68-332, PRESSURIZER RELIEF (2-FCV-68-332), at 2-MCC-213-B1, 480V Reactor MOV Board 2B1-B, compartment 5E. _____

4.3.4 Field Preparations for Subsection 6.3 (PORV 340A)

[1] **ENSURE** the following breakers located on 0-BD-236-3/4, 125V VITAL BATTERY BOARD III, Panel 4, are OPEN:

A. 2-BKR-236-3/310 _____

B. 2-BKR-236-3/311 _____

[2] **ENSURE** fuse lineup listed in Table 2, for Subsection 6.3 fuses, is performed. _____

Date _____

4.3.4 Field Preparations for Subsection 6.3 (PORV 340A) (continued)

[3] **ENSURE** handswitch 2-HS-68-340AA, PZR PORV 340A, on 2-M-5, is in the CLOSE position. _____

[4] **ENSURE** handswitch 2-HS-68-340AD, COPS BLOCK/ARM FOR PORV 340A, at 2-M-5, is in the BLOCK position. _____

[5] **ENSURE** handswitch 2-HS-68-340AC, PZR PORV, at 2-L-10, is in the CLOSED position. _____

[6] **ENSURE** handswitch 2-XS-68-340C, PZR PORV 2-PCV-68-340A, at 2-L-11A, is in the NOR position. _____

[7] **CLOSE** the following breakers located on 0-BD-236-3/4, 125V VITAL BATTERY BOARD III, Panel 4:

A. 2-BKR-236-3/310 _____

B. 2-BKR-236-3/311 _____

4.3.5 Field Preparations for Subsection 6.4 (PORV 334)

[1] **ENSURE** the following breakers located on 0-BD-236-4/4, 125V VITAL BATTERY BOARD IV, Panel 4, are OPEN:

A. 2-BKR-236-4/310 _____

B. 2-BKR-236-4/311 _____

[2] **ENSURE** fuse lineup listed in Table 2, for Subsection 6.4 fuses, is performed. _____

[3] **ENSURE** handswitch 2-HS-68-334A, PZR PORV 334, on 2-M-5, is in the CLOSE position. _____

[4] **ENSURE** handswitch 2-HS-68-334D, COPS BLOCK/ARM FOR PORV 334, at 2-M-5, is in the BLOCK position. _____

[5] **ENSURE** handswitch 2-HS-68-334C, PZR PORV, at 2-L-10, is in the CLOSED position. _____

[6] **ENSURE** handswitch 2-XS-68-334C, PZR PORV 2-PCV-68-334, at 2-L-11B, is in the NORMAL position. _____

Date _____

4.3.5 Field Preparations for Subsection 6.4 (PORV 334) (continued)

[7] **CLOSE** the following breakers located on 0-BD-236-4/4, 125V VITAL BATTERY BOARD IV, Panel 4:

A. 2-BKR-236-4/310 _____

B. 2-BKR-236-4/311 _____

4.3.6 Field Preparations for Subsection 6.5 (COMS)

None

4.3.7 Field Preparations for Subsection 6.6 (Pressurizer Pressure Functional Test)

[1] **VERIFY** that Relief Valves 2-RFV-68-563, -564, and -565, PRESSURIZER SAFETY VALVE, are not gagged. _____

4.3.8 Field Preparations for Subsection 6.7 (Pressurizer Pressure Control Test)

[1] **ENSURE** switch lineup in Appendix E. _____

[2] **PREPARE** the following computer points at an ICS workstation for the recording of transient data:

P0480A, 2-PT-68-340 _____

P0481A, 2-PT-68-334 _____

P0482A, 2-PT-68-323 _____

P0483A, 2-PT-68-322 _____

Date _____

4.3.8 Field Preparations for Subsection 6.7 (Pressurizer Pressure Control Test) (continued)

[3] **ENSURE** the following components of System 62, CVCS, are available during this test section:

A. Auto Reactor Makeup - To automatically add CVCS inventory if Volume Control Tank (VCT) level drops below 13%. _____

B. Auto Divert to Hold Up Tank - To automatically discharge CVCS inventory if VCT level rises to 63%. _____

C. Auto Transfer to Refueling Water Storage Tank (RWST) - To automatically add CVCS inventory if VCT level drops below 7%. _____

4.3.9 Field Preparations for Subsection 6.8 (PORV Leakage and Stroke Test)

[1] **ENSURE** all personnel are evacuated from both the lower containment and the pressurizer compartment. _____

[2] **NOTIFY** Test Director of 2-PTI-999-01, Piping Vibration Test, of this performance test section. _____

[3] **NOTIFY** Test Director of 2-TI-85.012, Dynamic Test of Motor Operated Valves Providing PORV and RCP Seal Return Isolation, of this performance test section. _____

[4] **ENSURE** the following sub-systems of System 62, CVCS, are available during this test section:

A. Auto Reactor Makeup - To automatically add CVCS inventory if VCT level drops below 13%. _____

B. Auto Divert to Hold Up Tank - To automatically discharge CVCS inventory if VCT level rises to 63%. _____

C. Auto Transfer to RWST - To automatically add CVCS inventory if VCT level drops below 7%. _____

Date _____

4.3.9 Field Preparations for Subsection 6.8 (PORV Leakage and Stroke Test) (continued)

[5] **INSTALL** Test Recorder #1 (at least 3 channel) to RECORD 2-PCV-68-340A, PRESSURIZER PORV, stroke time, as follows:

[5.1] **CONNECT** Channel 1 to Terminal Board 2-2F, Point 1-RBCP1 (+) and Terminal Board 2-2E, Point 10-RBC6 (-) in 2-L-11A. (PORV Actuation Signal). _____

_____
CV

[5.2] **CONNECT** Channel 2 to Terminal Board 2-2F, Points 3-RBC2 (+) and 11-RBCN1 (-) in 2-L-11A. (PORV FULL CLOSED) _____

_____
CV

[5.3] **CONNECT** Channel 3 to Terminal Board 2-2F, Points 5-RBC12 (+) and 11-RBCN1 (-) in 2-L-11A. (PORV FULL OPEN) _____

_____
CV

Date _____

4.3.9 Field Preparations for Subsection 6.8 (PORV Leakage and Stroke Test) (continued)

[6] **INSTALL** Test Recorder #2 (at least 3 channel) to RECORD 2-PCV-68-334, PRESSURIZER PORV, stroke time, as follows:

[6.1] **CONNECT** Channel 1 to Terminal Board 1-2D, Point 1-RBDP1 (+) and Terminal Board 1-2C, Point 10-RBD6 (-) in 2-L-11B. (PORV Actuation Signal). _____

_____
CV

[6.2] **CONNECT** Channel 2 to Terminal Board 1-2D, Points 3-RBD2 (+) and 11-RBDN1 (-) in 2-L-11B. (PORV FULL CLOSED) _____

_____
CV

[6.3] **CONNECT** Channel 3 to Terminal Board 1-2D, Points 5-RBD12 (+) and 11-RBDN1 (-) in 2-L-11B. (PORV FULL OPEN) _____

_____
CV

[7] **ENSURE** 2-XX-68-363, PZR VALVES ACOUSTIC MONITOR, at 0-M-25, is AVAILABLE, **AND**

POWERED by the following indicators:

A. All four power voltage lights LIT _____

B. ALARM light NOT LIT. _____

4.3.10 Field Preparations for Subsection 6.9 (Pressurizer Level Control Test)

[1] **PREPARE** the following computer points at an ICS workstation for the recording of pressurizer level transient data:

L0480A, 2-LT-68-339 _____

L0481A, 2-LT-68-335 _____

L0482A, 2-LT-68-320 _____

Date _____

4.3.10 Field Preparations for Subsection 6.9 (Pressurizer Level Control Test) (continued)

[2] **ENSURE** the following sub-systems of System 62, CVCS, are available during this test section:

A. Auto Reactor Makeup - To automatically add CVCS inventory if VCT level drops below 13%. _____

B. Auto Divert to Hold Up Tank - To automatically discharge CVCS inventory if VCT level rises to 63%. _____

C. Auto Transfer to RWST - To automatically add CVCS inventory if VCT level drops below 7%. _____

4.3.11 Field Preparations for Subsection 6.10 (Pressurizer Level Functional Test)

[1] **ENSURE** the following sub-systems of System 62, CVCS, are available during this test section:

A. Auto Reactor Makeup - To automatically add CVCS inventory if VCT level drops below 13%. _____

B. Auto Divert to Hold Up Tank - To automatically discharge CVCS inventory if VCT level rises to 63%. _____

C. Auto Transfer to RWST - To automatically add CVCS inventory if VCT level drops below 7%. _____

4.4 Approvals and Notifications

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

_____ _____

Preoperational Startup Manager Signature | Date

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

_____ _____

U2 US/SRO/SM Signature | Date

5.0 ACCEPTANCE CRITERIA

[1] 2-FCV-68-332, PZR PORV Block Valve

A. Can be opened and closed by 2-HS-68-332A, located in the MCR and by 2-HS-68-332C located on 2-MCC-213-B1, 480V Reactor MOV Board 2B1-B. (Steps 6.2[5]A, 6.2[10]A, 6.2[17]A, 6.2[22]B)

B. Valve will stroke open/closed within 20 seconds. (Steps 6.8[62] and 6.8[82])

C. Valve will operate with the thermal overload protective device bypass in effect. (Step 6.2[38])

D. Valve will be inoperable with the thermal overload protective device reset. (Step 6.2[35])

E. All applicable indicating lights, annunciators, and status monitoring inputs are functioning correctly. (Step 6.2[45])

[2] 2-FCV-68-333, PZR PORV Block Valve

A. Can be opened and closed by 2-HS-68-333A, located in the MCR and by 2-HS-68-333C located on 2-MCC-213-A1, 480V Reactor MOV Board 2A1-A. (Steps 6.1[5]A, 6.1[10]A, 6.1[17]A, and 6.1[22]B)

B. Valve will stroke open/closed within 20 seconds. (Steps 6.8[24] and 6.8[44])

C. Valve will operate with the thermal overload protective device bypass in effect. (Step 6.1[38]

D. Valve will be inoperable with the thermal overload protective device reset. (Step 6.1[35])

E. All applicable indicating lights, annunciators, and status monitoring inputs are functioning correctly. (Step 6.1[45])

5.0 ACCEPTANCE CRITERIA (continued)

[3] 2-PCV-68-334, PZR PORV Train B

A. Can be opened and closed by 2-HS-68-334A in the MCR and 2-HS-68-334C located in the Auxiliary Control Room. (Steps 6.4[2]A, 6.4[3]A, 6.4[33]A, and 6.4[34]A)

B. Opens when 2-HS-68-334D is in the ARM position and there is output from 2-PS-68-68G/H. (Step 6.4[22]B)

C. Will not open if 2-HS-68-334D is in the BLOCK position and there is an output from 2-PS-68-68G/H. (Step 6.4[21])

D. Opens within 2 seconds. (Step 6.8[61])

E. Closes within 5.0 seconds. (Step 6.8[83])

F. No detectable leakage at operating conditions. (Steps 6.8[88]A and 6.8[88]C)

G. All applicable indicating lights, annunciators, and status monitoring inputs are functioning correctly. (Step 6.4[41])

[4] 2-PCV-68-340A, PZR PORV Train A

A. Can be opened and closed by 2-HS-68-340AA in the MCR and 2-HS-68-340AC located in the Auxiliary Control Room. (Steps 6.3[2]A, 6.3[3]A, 6.3[33]A, and 6.3[34]A)

B. Opens when 2-HS-68-340AD is in the ARM position and there is output from 2-PS-68-66G/H. (Step 6.3[22]B)

C. Will not open if 2-HS-340AD is in the BLOCK position and there is an output from 2-PS-68-66G/H. (Step 6.3[21])

D. Opens within 2 seconds. (Step 6.8[23])

E. Closes within 5.0 seconds. (Step 6.8[45])

F. No detectable leakage at operating conditions. (Steps 6.8[50]A and 6.8[50]C)

G. All applicable indicating lights, annunciators, and status monitoring inputs are functioning correctly. (Step 6.3[45])

[5] The COMS is armed/blocked with 2-HS-68-340AD and 2-HS-68-334D, located in the MCR. (Steps 6.3[21], 6.3[22]B, 6.4[21], and 6.4[22]B)

5.0 ACCEPTANCE CRITERIA (continued)

[6] Verify the COMS temperature vs. pressure setpoints (Steps 6.5[2] and 6.5[3])

Temperature (°F)	2-PCV-68-334 Setpoint (psig)	2-PCV-68-340A Setpoint (psig)
60	435	395
120	435	395
130	500	460
170	500	460
195	735	670
250	735	670
300	735	670
350	735	670
450	2335	2335

[7] Pressurizer pressure control, indication and protection function as designed:

A. Pressurizer heaters, sprays, and PORVs function properly. (Steps 6.6[30.1]A, 6.6[30.2]A, 6.6[30.2]B, 6.6[40]A, 6.6[40]B, and 6.6[58]A)

B. Pressurizer pressure Indications 2-PI-68-340, 2-PI-68-334, 2-PI-68-323, and 2-PI-68-322 to agree within 15 psig of each other. (Steps 6.6[22], 6.6[43], 6.6[69], and 6.6[80])

C. Protection logic and Alarms function properly. (Steps 6.6[39]A, 6.6[41]E, 6.6[61]E, 6.6[61]J, and 6.6[67]D)

[8] The pressurizer pressure control system automatically controls pressurizer pressure following an induced pressure transient as demonstrated by:

A. The pressurizer pressure control system automatically controls pressurizer pressure with decreasing oscillations to 2292 psig $\pm$ 10 psig. (Step 6.7[20])

B. The pressurizer pressure control system automatically controls pressurizer pressure with decreasing oscillations to 2236 psig $\pm$ 10 psig. (Step 6.7[26])

[9] The PRT quenches a steam discharge from the PORVs and maintains temperature less than or equal to 200 °F and pressure less than or equal to 50 psig. (Steps 6.8[41], 6.8[42], 6.8[79], and 6.8[80])

5.0 ACCEPTANCE CRITERIA (continued)

[10] The pressurizer level control system automatically controls pressurizer level following an induced pressure transient as demonstrated by:

A. The pressurizer level control system automatically controls pressurizer level with decreasing oscillations to 30% ± 1% of level span. (Step 6.9[15])

B. The pressurizer level control system automatically controls pressurizer level with decreasing oscillations to 25% ± 1% of level span. (Step 6.9[21])

[11] Pressurizer level control, indication, and protection functions operate as designed:

A. Normal letdown is isolated and heaters are de-energized on low pressurizer level setpoint. (Steps 6.10[50.1]F, 6.10[50.1]G, 6.10[50.1]H, 6.10[50.1]I, 6.10[50.1]K, 6.10[74]F, 6.10[74]G, 6.10[74]H, 6.10[74]I, and 6.10[74]J)

B. Pressurizer level indications 2-LI-68-339, 2-LI-68-335, and 2-LI-68-320 to agree within 4% of each other. (Steps 6.10[13], 6.10[18], 6.10[25], 6.10[98], and 6.10[109])

C. Protection logic and Alarms function properly. (Steps 6.10[16]A, 6.10[21]A, 6.10[23]D, and 6.10[42]A)

Date _____

6.0 PERFORMANCE

NOTES

1) Sections 6.1 through 6.5 shall be performed first and can be performed in any order.
2) Sections 6.6 through 6.10 shall be performed in order.
3) The Pressurizer Pressure and Level Control and Protection Setpoints are listed in Figure 1, Figure 2, and Table 3.

6.1 2-FCV-68-333, PZR PORV Block Valve, Logic Checks

NOTES

1) 2-FCV-68-333, PZR PORV Block Valve, is located at the top of the pressurizer vessel inside the pressurizer dog house.
2) 2-MCC-213-A1, 480V Reactor MOV Board, 2A1-A will be called out as 480V RX MOV BD 2A1-A

[1] **VERIFY** prerequisites listed in Section 4.0 for Subsection 6.1 have been completed. _____

[2] **ENSURE** 2-FCV-68-333 is CLOSED by the following indications:

A. Indicating lights at handswitch 2-HS-68-333A, BLOCK VLV FOR PORV 340A, at 2-M-5 _____

B. 2-FCV-68-333 CLOSED locally. _____

NOTE

The following two steps require visual confirmation of indicating lights on the main control panel during valve stroking. The stroke time for 2-FCV-68-333, PRESSURIZER PORV BLOCK VALVE, is less than or equal 20 seconds.

[3] **PLACE** handswitch 2-HS-68-333A, BLOCK VLV FOR PORV 340A, at 2-M-5, to OPEN, **AND**

RELEASE 2-HS-68-333A to the center position. _____

[4] **VERIFY** the Green and Red Lights, at 2-HS-68-333A, on 2-M-5, are LIT while 2-FCV-68-333 is stroking. _____

Date _____

6.1 2-FCV-68-333, PZR PORV Block Valve, Logic Checks (continued)

[5] **VERIFY** 2-FCV-68-333, PRESSURIZER PORV BLOCK VALVE, is OPEN by:

A. 2-FCV-68-333 is OPEN locally **(Acc Crit 5.0[2]A)** _____

B. Red light at 2-HS-68-333A, 2-M-5, is LIT. _____

C. Green light at 2-HS-68-333A, 2-M-5, is NOT LIT. _____

D. Red VALVE OPEN light at 480V RX MOV BD 2A1-A, compartment 6D, is LIT. _____

E. Green VALVE CLOSED light at 480V RX MOV BD 2A1-A, compartment 6D, is NOT LIT. _____

F. Integrated Computer System (ICS) point FD2038, PZR RELIEF ISO POS, is OPEN. _____

[6] **PLACE** 2-HS-68-333C at 480V RX MOV BD 2A1-A, compartment 6D, to CLOSE, **AND**

VERIFY 2-FCV-68-333, PRESSURIZER PORV BLOCK VALVE, remains OPEN by indicating lights at 2-M-5. _____

[7] **PLACE** 2-HS-68-333C at 480V RX MOV BD 2A1-A, compartment 6D, to NORMAL. _____

NOTE

The following step requires visual confirmation of indicating lights on the main control panel during valve stroking. The stroke time for 2-FCV-68-333, PRESSURIZER PORV BLOCK VALVE, is less than or equal to 20 seconds.

[8] **PLACE** 2-HS-68-333A, BLOCK VLV FOR PORV 340A, to CLOSE, **AND**

RELEASE 2-HS-68-333A to the center position. _____

[9] **VERIFY** the Green and Red Light, at 2-HS-68-333A, on 2-M-5, are LIT while 2-FCV-68-333 is stroking. _____

Date _____

6.1 2-FCV-68-333, PZR PORV Block Valve, Logic Checks (continued)

[10] **VERIFY** 2-FCV-68-333, PRESSURIZER PORV BLOCK VALVE, is CLOSED by:

A. 2-FCV-68-333 is CLOSED locally. **(Acc Crit 5.0[2]A)** _____

B. Red light at 2-HS-68-333A, 2-M-5, is NOT LIT. _____

C. Green light at 2-HS-68-333A, 2-M-5, is LIT. _____

D. Red VALVE OPEN light at 480V RX MOV BD 2A1-A, compartment 6D, is NOT LIT. _____

E. Green VALVE CLOSED light at 480V RX MOV BD 2A1-A, compartment 6D, is LIT. _____

F. ICS point FD2038, PZR RELIEF ISO POS, is NOT OPE. _____

[11] **PLACE** 2-HS-68-333C at 480V RX MOV BD 2A1-A, compartment 6D, to OPEN, **AND**

VERIFY 2-FCV-68-333, PRESSURIZER PORV BLOCK VALVE, remains CLOSED by indicating lights at 2-M-5. _____

[12] **PLACE** 2-HS-68-333C at 480V RX MOV BD 2A1-A, compartment 6D, to NORMAL. _____

[13] **PLACE** handswitch 2-XS-68-333 at 480V RX MOV BD 2A1-A, compartment 6D, to AUX, **AND**

VERIFY the following:

A. Green VALVE CLOSED light at 480V RX MOV BD 2A1-A, compartment 6D, is LIT. _____

B. Red VALVE OPEN light at 480V RX MOV BD 2A1-A, compartment 6D, is NOT LIT. _____

C. Green light at 2-HS-68-333A, on 2-M-5, is NOT LIT. _____

D. Red light at 2-HS-68-333A, on 2-M-5, is NOT LIT. _____

E. 2-XA-55-6F/149C, 480V RX MOV BD 2A1-A/2A2-A, at 2-M-6, ALARMS. _____

Date _____

6.1 2-FCV-68-333, PZR PORV Block Valve, Logic Checks (continued)

[14] **PLACE** 2-HS-68-333A, BLOCK VLV FOR PORV 340A, at 2-M-5, to OPEN, **AND**

RELEASE to the center position. _____

[15] **VERIFY** 2-FCV-68-333 does NOT OPEN by indicating lights on 480V RX MOV BD 2A1-A, compartment 6D. _____

NOTE

The following step requires visual confirmation of indicating lights on the main control panel during valve stroking. The stroke time for 2-FCV-68-333, PRESSURIZER PORV BLOCK VALVE, is less than or equal to 20 seconds.

[16] **PLACE** 2-HS-68-333C at 480V RX MOV BD 2A1-A, compartment 6D, to OPEN, **AND**

VERIFY the Green and Red Lights at 480V RX MOV BD 2A1-A, compartment 6D, are LIT while 2-FCV-68-333 is stroking. _____

[17] **VERIFY** 2-FCV-68-333, PRESSURIZER PORV BLOCK VALVE, is OPEN by:

A. Red VALVE OPEN light at 480V RX MOV BD 2A1-A, compartment 6D, is LIT. **(Acc Crit 5.0[2]A)** _____

B. Green VALVE CLOSED light at 480V RX MOV BD 2A1-A, compartment 6D, is NOT LIT. _____

[18] **PLACE** 2-HS-68-333C at 480V RX MOV BD 2A1-A, compartment 6D, to NORMAL. _____

[19] **PLACE** handswitch 2-HS-68-333A, BLOCK VLV FOR PORV 340A, at 2-M-5, to CLOSE, **AND**

RELEASE to the center position. _____

[20] **VERIFY** 2-FCV-68-333 does NOT CLOSE by indicating lights at 480V RX MOV BD 2A1-A, compartment 6D. _____

Date _____

6.1 2-FCV-68-333, PZR PORV Block Valve, Logic Checks (continued)

NOTE

The following step requires visual confirmation of indicating lights on the main control panel during valve stroking. The stroke time for 2-FCV-68-333, PRESSURIZER PORV BLOCK VALVE, is less than or equal to 20 seconds.

[21] **PLACE** 2-HS-68-333C, at 480V RX MOV BD 2A1-A, compartment 6D, to CLOSE, **AND**

VERIFY the Green and Red Lights at 480V RX MOV BD 2A1-A, compartment 6D, are LIT while 2-FCV-68-333 is stroking. _____

[22] **VERIFY** 2-FCV-68-333, PRESSURIZER PORV BLOCK VALVE, is CLOSED by:

A. Red VALVE OPEN light at 480V RX MOV BD 2A1-A, compartment 6D, is NOT LIT. _____

B. Green VALVE CLOSED light at 480V RX MOV BD 2A1-A, compartment 6D, is LIT. **(Acc Crit 5.0[2]A)** _____

[23] **PLACE** 2-HS-68-333C, at 480V RX MOV BD 2A1-A, compartment 6D, to NORMAL. _____

[24] **PLACE** 2-XS-68-333, at 480V RX MOV BD 2A1-A, compartment 6D, to NORMAL, **AND**

VERIFY the 2-XA-55-6F/149C, 480V RX MOV BD 2A1-A/2A2-A, at 2-M-6, CLEARS. _____

Date _____

6.1 2-FCV-68-333, PZR PORV Block Valve, Logic Checks (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 Close directions. 2-FCV-68-333 stroke time is 20 seconds or less.
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.

[25] **PLACE** handswitch 2-HS-68-333A, BLOCK VLV FOR PORV 340A, at 2-M-5, to OPEN, **AND**

RELEASE to the center position. _____

[26] **RECORD** the following:

A. Remote opening time using indicating lights at 2-HS-68-333A, BLOCK VLV FOR PORV 340A, 2-M-5. _____

_____ seconds

M&TE _____ Cal Due Date _____

B. Local opening time at 2-FCV-68-333, PRESSURIZER PORV BLOCK VALVE. _____

_____ seconds

M&TE _____ Cal Due Date _____

[27] **VERIFY** the remote and local opening times are ≤ 20 seconds. _____

Date _____

6.1 2-FCV-68-333, PZR PORV Block Valve, Logic Checks (continued)

[28] **PLACE** Handswitch 2-HS-68-333A, BLOCK VLV FOR PORV 340A, at 2-M-5, to CLOSE, **AND**

RELEASE to the center position. _____

[29] **RECORD** the following:

A. Remote closing time using indicating lights at 2-HS-68-333A, BLOCK VLV FOR PORV 340A, 2-M-5. _____

_____ seconds

M&TE _____ Cal Due Date _____

B. Local closing time at 2-FCV-68-333, PRESSURIZER PORV BLOCK VALVE. _____

_____ seconds

M&TE _____ Cal Due Date _____

[30] **VERIFY** the remote and local closing times are ≤ 20 seconds. _____

[31] **OPEN** Breaker 2-BKR-68-333, PRESSURIZER RELIEF (2-FCV-68-333), at 480V RX MOV BD 2A1-A, compartment 6D. _____

NOTE

The following step manually trips the Thermal Overload circuit to allow testing of the Thermal Overload Bypass circuit.

[32] **MANUALLY TRIP** the thermal overload for 2-BKR-68-333, PRESSURIZER RELIEF (2-FCV-68-333), at 480V RX MOV BD 2A1-A, compartment 6D. _____

[33] **CLOSE** Breaker 2-BKR-68-333, PRESSURIZER RELIEF (2-FCV-68-333), at 480V RX MOV BD 2A1-A, compartment 6D. _____

Date _____

6.1 2-FCV-68-333, PZR PORV Block Valve, Logic Checks (continued)

[34] **PLACE** handswitch 2-HS-68-333A, BLOCK VLV FOR PORV 340A, at 2-M-5, to OPEN, **AND**

RELEASE to the center position. _____

[35] **VERIFY** 2-FCV-68-333 does NOT OPEN by indicating lights at 2-M-5. **(Acc Crit 5.0[2]D)** _____

NOTE

The following step connects the Thermal Overload Bypass circuit.

[36] **PLACE** a jumper across Terminal Points 6D4 and 6DY in the rear of 480V RX MOV BD 2A1-A, compartment 6D. _____

_____
CV

[37] **PLACE** handswitch 2-HS-68-333A, BLOCK VLV FOR PORV 340A, at 2-M-5, to OPEN, **AND**

RELEASE to the center position. _____

[38] **VERIFY** 2-FCV-68-333 OPENS by indicating lights at 2-M-5. **(Acc Crit 5.0[2]C)** _____

[39] **REMOVE** jumper across Terminal Points 6D4 and 6DY in the rear of 480V MOV BD 2A1-A, compartment 6D. _____

_____
CV

[40] **OPEN** Breaker 2-BKR-68-333, PRESSURIZER RELIEF (2-FCV-68-333), at 480V RX MOV BD 2A1-A, compartment 6D. _____

[41] **RESET** the thermal overload for 2-BKR-68-333, PRESSURIZER RELIEF (2-FCV-68-333), at 480V RX MOV BD 2A1-A, compartment 6D. _____

[42] **CLOSE** Breaker 2-BKR-68-333, PRESSURIZER RELIEF (2-FCV-68-333), at 480V RX MOV BD 2A1-A, compartment 6D. _____

Date _____

6.1 2-FCV-68-333, PZR PORV Block Valve, Logic Checks (continued)

[43] **PLACE** handswitch 2-HS-68-333A, BLOCK VLV FOR PORV 340A, at 2-M-5, to CLOSE, **AND**

RELEASE to the center position. _____

[44] **VERIFY** 2-FCV-68-333 CLOSES by indicating lights at 2-HS-68-333A, BLOCK VLV FOR PORV 340A, on 2-M-5. _____

[45] **VERIFY** all applicable indicating lights, annunciators, and status monitoring inputs are functioning correctly for 2-FCV-68-333, PRESSURIZER PORV BLOCK VALVE, by successful completion of this Subsection. **(Acc. Crit 5.0[2]E)** _____

Date _____

6.2 2-FCV-68-332, PZR PORV Block Valve, Logic Checks

NOTES

1) 2-FCV-68-332, PZR PORV Block Valve, is located at the top of the pressurizer vessel inside the pressurizer dog house.
2) 2-MCC-213-B1, 480V Reactor MOV Board, 2B1-B, will be called out as 480V RX MOV BD 2B1-B.

[1] **VERIFY** prerequisites listed in Section 4.0 for Subsection 6.2 have been completed. _____

[2] **ENSURE** 2-FCV-68-332 is CLOSED by the following indications:

A. Indicating lights at handswitch 2-HS-68-332A, BLOCK VLV FOR PORV 334, at 2-M-5 _____

B. 2-FCV-68-332 CLOSED locally. _____

NOTE

The following step requires visual confirmation of indicating lights on the main control panel during valve stroking. The stroke time for 2-FCV-68-332, PRESSURIZER PORV BLOCK VALVE, is less than or equal to 20 seconds.

[3] **PLACE** handswitch 2-HS-68-332A, BLOCK VLV FOR PORV 334, at 2-M-5, to OPEN, **AND**

RELEASE 2-HS-68-332A to the center position. _____

[4] **VERIFY** the Green and Red Lights, at 2-HS-68-332A, on 2-M-5, are LIT while 2-FCV-68-332 is stroking. _____

Date _____

6.2 2-FCV-68-332, PZR PORV Block Valve, Logic Checks (continued)

[5] **VERIFY** 2-FCV-68-332, PRESSURIZER PORV BLOCK VALVE, is OPEN by:

A. 2-FCV-68-332 is OPEN locally. **(Acc Crit 5.0[1]A)** _____

B. Red light at 2-HS-68-332A, 2-M-5, is LIT. _____

C. Green light at 2-HS-68-332A, 2-M-5, is NOT LIT. _____

D. Red VALVE OPEN light at 480V RX MOV BD 2B1-B, compartment 5E, is LIT. _____

E. Green VALVE CLOSED light at 480V RX MOV BD 2B1-B, compartment 5E, is NOT LIT. _____

F. Integrated Computer System (ICS) point FD2039, PZR RELIEF ISO POS, is OPEN. _____

[6] **PLACE** 2-HS-68-332C at 480V RX MOV BD 2B1-B, compartment 5E, to CLOSE, **AND**

VERIFY 2-FCV-68-332, PRESSURIZER PORV BLOCK VALVE, remains OPEN by indicating lights at 2-M-5. _____

[7] **PLACE** 2-HS-68-332C at 480V RX MOV BD 2B1-B, compartment 5E, to NORMAL. _____

NOTE

The following step requires visual confirmation of indicating lights on the main control panel during valve stroking. The stroke time for 2-FCV-68-332, PRESSURIZER PORV BLOCK VALVE, is less than or equal to 20 seconds.

[8] **PLACE** 2-HS-68-332A, BLOCK VLV FOR PORV 334, to CLOSE, **AND**

RELEASE 2-HS-68-332A to the center position. _____

[9] **VERIFY** the Green and Red Light, at 2-HS-68-332A, on 2-M-5, are LIT while 2-FCV-68-332 is stroking. _____

Date _____

6.2 2-FCV-68-332, PZR PORV Block Valve, Logic Checks (continued)

[10] **VERIFY** 2-FCV-68-332, PRESSURIZER PORV BLOCK VALVE, is CLOSED by:

A. 2-FCV-68-332 is CLOSED locally. **(Acc Crit 5.0[1]A)** _____

B. Red light at 2-HS-68-332A, 2-M-5, is NOT LIT. _____

C. Green light at 2-HS-68-332A, 2-M-5, is LIT. _____

D. Red VALVE OPEN light at 480V RX MOV BD 2B1-B, compartment 5E, is NOT LIT. _____

E. Green VALVE CLOSED light at 480V RX MOV BD 2B1-B, compartment 5E, is LIT. _____

F. ICS point FD2039, PZR RELIEF ISO POS, is NOT OPE. _____

[11] **PLACE** 2-HS-68-332C at 480V RX MOV BD 2B1-B, compartment 5E, to OPEN, **AND**

VERIFY 2-FCV-68-332, PRESSURIZER PORV BLOCK VALVE, remains CLOSED by indicating lights at 2-M-5. _____

[12] **PLACE** 2-HS-68-332C at 480V RX MOV BD 2B1-B, compartment 5E, to NORMAL. _____

Date _____

6.2 2-FCV-68-332, PZR PORV Block Valve, Logic Checks (continued)

[13] **PLACE** handswitch 2-XS-68-332-B at 480V RX MOV BD 2B1-B, compartment 5E, to AUX, **AND**

VERIFY the following:

A. Green VALVE CLOSED light at 480V RX MOV BD 2B1-B, compartment 5E, is LIT. _____

B. Red VALVE OPEN light at 480V RX MOV BD 2B1-B, compartment 5E, is NOT LIT. _____

C. Green light at 2-HS-68-332A, on 2-M-5, is NOT LIT. _____

D. Red light at 2-HS-68-332A, on 2-M-5, is NOT LIT. _____

E. 2-XA-55-6F/150C, 480V RX MOV BD 2B1-B/2B2-B, at 2-M-6, ALARMS. _____

[14] **PLACE** 2-HS-68-332A, BLOCK VLV FOR PORV 334, at 2-M-5, to OPEN, **AND**

RELEASE to the center position. _____

[15] **VERIFY** 2-FCV-68-332 does NOT OPEN by indicating lights on 480V RX MOV BD 2B1-B, compartment 5E. _____

NOTE

The following step requires visual confirmation of indicating lights on the main control panel during valve stroking. The stroke time for 2-FCV-68-332, PRESSURIZER PORV BLOCK VALVE, is less than or equal to 20 seconds.

[16] **PLACE** 2-HS-68-332C at 480V RX MOV BD 2B1-B, compartment 5E, to OPEN, **AND**

VERIFY the Green and Red Lights at 480V RX MOV BD 2B1-B, compartment 5E, are LIT while 2-FCV-68-332 is stroking. _____

Date _____

6.2 2-FCV-68-332, PZR PORV Block Valve, Logic Checks (continued)

[17] **VERIFY** 2-FCV-68-332, PRESSURIZER PORV BLOCK VALVE, is OPEN by:

A. Red VALVE OPEN light at 480V RX MOV BD 2B1-B, compartment 5E, is LIT. **(Acc Crit 5.0[1]A)** _____

B. Green VALVE CLOSED light at 480V RX MOV BD 2B1-B, compartment 5E, is NOT LIT. _____

[18] **PLACE** 2-HS-68-332C at 480V RX MOV BD 2B1-B, compartment 5E, to NORMAL. _____

[19] **PLACE** handswitch 2-HS-68-332A, BLOCK VLV FOR PORV 334, at 2-M-5, to CLOSE, **AND**

RELEASE to the center position. _____

[20] **VERIFY** 2-FCV-68-332 does NOT CLOSE by indicating lights at 480V RX MOV BD 2B1-B, compartment 5E. _____

NOTE

The following step requires visual confirmation of indicating lights on the main control panel during valve stroking. The stroke time for 2-FCV-68-332, PRESSURIZER PORV BLOCK VALVE, is less than or equal to 20 seconds.

[21] **PLACE** 2-HS-68-332C, at 480V RX MOV BD 2B1-B, compartment 5E, to CLOSE, **AND**

VERIFY the Green and Red Lights at 480V RX MOV BD 2B1-B, compartment 5E, are LIT while 2-FCV-68-332 is stroking. _____

[22] **VERIFY** 2-FCV-68-332, PRESSURIZER PORV BLOCK VALVE, is CLOSED by:

A. Red VALVE OPEN light at 480V RX MOV BD 2B1-B, compartment 5E, is NOT LIT. _____

B. Green VALVE CLOSED light at 480V RX MOV BD 2B1-B, compartment 5E, is LIT. **(Acc Crit 5.0[1]A)** _____

[23] **PLACE** 2-HS-68-332C, at 480V RX MOV BD 2B1-B, compartment 5E, to NORMAL. _____

Date _____

6.2 2-FCV-68-332, PZR PORV Block Valve, Logic Checks (continued)

[24] **PLACE** 2-XS-68-332-B, at 480V RX MOV BD 2B1-B, compartment 5E, to NORMAL, **AND**

VERIFY the 2-XA-55-6F/150C, 480V RX MOV BD 2B1-B/2B2-B, at 2-M-6, CLEARS. _____

NOTES

1) The following steps require valve stroke timing locally at the valve and remotely at the Control switch in both the Open and Close directions. 2-FCV-68-332 stroke time is 20 seconds or less.
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.

[25] **PLACE** handswitch 2-HS-68-332A, BLOCK VLV FOR PORV 334, at 2-M-5, to OPEN, **AND**

RELEASE to the center position. _____

[26] **RECORD** the following:

A. Remote opening time using indicating lights at 2-HS-68-332A, BLOCK VLV FOR PORV 334, 2-M-5. _____

_____ seconds

M&TE _____ Cal Due Date _____

B. Local opening time at 2-FCV-68-332, PRESSURIZER PORV BLOCK VALVE. _____

_____ seconds

M&TE _____ Cal Due Date _____

[27] **VERIFY** the remote and local opening times are ≤ 20 seconds. _____

Date _____

6.2 2-FCV-68-332, PZR PORV Block Valve, Logic Checks (continued)

[28] **PLACE** Handswitch 2-HS-68-332A, BLOCK VLV FOR PORV 334, at 2-M-5, to CLOSE, **AND**

RELEASE to the center position. _____

[29] **RECORD** the following

A. Remote closing time using indicating lights at 2-HS-68-332A, BLOCK VLV FOR PORV 334, 2-M-5. _____

_____ seconds

M&TE _____ Cal Due Date _____

B. Local closing time at 2-FCV-68-332, PRESSURIZER PORV BLOCK VALVE. _____

_____ seconds

M&TE _____ Cal Due Date _____

[30] **VERIFY** the remote and local closing times are ≤ 20 seconds. _____

[31] **OPEN** Breaker 2-BKR-68-332, PRESSURIZER RELIEF (2-FCV-68-332), at 480V RX MOV BD 2B1-B, compartment 5E. _____

NOTE

The following step manually trips the Thermal Overload circuit to allow testing of the Thermal Overload Bypass circuit.

[32] **MANUALLY TRIP** the thermal overload for 2-BKR-68-332, PRESSURIZER RELIEF (2-FCV-68-332), at 480V RX MOV BD 2B1-B, compartment 5E. _____

[33] **CLOSE** Breaker 2-BKR-68-332, PRESSURIZER RELIEF (2-FCV-68-332), at 480V RX MOV BD 2B1-B, compartment 5E. _____

Date _____

6.2 2-FCV-68-332, PZR PORV Block Valve, Logic Checks (continued)

[34] **PLACE** handswitch 2-HS-68-332A, BLOCK VLV FOR PORV 334, at 2-M-5, to OPEN, **AND**

RELEASE to the center position. _____

[35] **VERIFY** 2-FCV-68-332 does NOT OPEN by indicating lights at 2-M-5. **(Acc Crit 5.0[1]D)** _____

NOTE

The following step connects the Thermal Overload Bypass circuit.

[36] **PLACE** a jumper across Terminal Points 5E4 and 5EY in the rear of 480V RX MOV BD 2B1-B, compartment 5E. _____

_____
CV

[37] **PLACE** handswitch 2-HS-68-332A, BLOCK VLV FOR PORV 334, at 2-M-5, to OPEN, **AND**

RELEASE to the center position. _____

[38] **VERIFY** 2-FCV-68-332 OPENS by indicating lights at 2-M-5 **(Acc Crit 5.0[1]C)**. _____

[39] **REMOVE** jumper across Terminal Points 5E4 and 5EY in the rear of 480V RX MOV BD 2B1-B, compartment 5E. _____

_____
CV

[40] **OPEN** Breaker 2-BKR-68-332, PRESSURIZER RELIEF (2-FCV-68-332), at 480V RX MOV BD 2B1-B, compartment 5E. _____

[41] **RESET** the thermal overload for 2-BKR-68-332, PRESSURIZER RELIEF (2-FCV-68-332), at 480V RX MOV BD 2B1-B, compartment 5E. _____

[42] **CLOSE** Breaker 2-BKR-68-332, PRESSURIZER RELIEF (2-FCV-68-332), at 480V RX MOV BD 2B1-B, compartment 5E. _____

Date _____

6.2 2-FCV-68-332, PZR PORV Block Valve, Logic Checks (continued)

[43] **PLACE** handswitch 2-HS-68-332A, BLOCK VLV FOR PORV 334, at 2-M-5, to CLOSE, **AND**

RELEASE to the center position. _____

[44] **VERIFY** 2-FCV-68-332 CLOSES by indicating lights at 2-HS-68-332A, BLOCK VLV FOR PORV 334, on 2-M-5. _____

[45] **VERIFY** all applicable indicating lights, annunciators, and status monitoring inputs are functioning correctly for 2-FCV-68-332, PRESSURIZER PORV BLOCK VALVE, by successful completion of this Subsection. **(Acc. Crit 5.0[1]E)** _____

Date _____

6.3 2-PCV-68-340A, PZR PORV, Logic Checks

NOTE

2-PCV-68-340A, PZR PORV, is located at the top of the pressurizer vessel inside the pressurizer dog house.

[1] **VERIFY** prerequisites listed in Section 4.0 for Subsection 6.3 have been completed. _____

[2] **PLACE** handswitch 2-HS-68-340AA, PZR PORV 340A, at 2-M-5, to OPEN, **AND**

VERIFY the following:

A. 2-PCV-68-340A, PRESSURIZER PORV, OPENS locally. **(Acc Crit 5.0[4]A)** _____

B. Red light on 2-HS-68-340AA, PZR PORV 340A, at 2-M-5, is LIT. _____

C. Green light on 2-HS-68-340AA, PZR PORV 340A, at 2-M-5, is NOT LIT. _____

D. Red light on 2-HS-68-340AC, PZR PORV, at 2-L-10, is NOT LIT. _____

E. Green light on 2-HS-68-340AC, PZR PORV, at 2-L-10, is NOT LIT. _____

F. ICS point PD2000, PZR RELIEF VALVE POS, is OPEN. _____

Date _____

6.3 2-PCV-68-340A, PZR PORV, Logic Checks (continued)

[3] **PLACE** handswitch 2-HS-68-340AA, PZR PORV 340A, at 2-M-5, to CLOSE, **AND**

VERIFY the following:

A. 2-PCV-68-340A, PRESSURIZER PORV, CLOSES locally. **(Acc Crit 5.0[4]A)** _____

B. Red light on 2-HS-68-340AA, PZR PORV 340A, at 2-M-5, is NOT LIT. _____

C. Green light on 2-HS-68-340AA, PZR PORV 340A, at 2-M-5, is LIT. _____

D. Red light on 2-HS-68-340AC, PZR PORV, at 2-L-10, is NOT LIT. _____

E. Green light on 2-HS-68-340AC, PZR PORV, at 2-L-10, is NOT LIT. _____

F. ICS point PD2000, PZR RELIEF VALVE POS, is NOT OPE. _____

[4] **PLACE** handswitch 2-HS-68-340AC, PRZ PORV, at 2-L-10, to OPEN, **AND**

VERIFY 2-PCV-68-340A does NOT OPEN by indicating lights at 2-HS-68-340AA, PZR PORV 340A, on 2-M-5. _____

[5] **PLACE** handswitch 2-HS-68-340AC, PZR PORV, at 2-L-10, to P AUTO. _____

NOTE

The following step simulates a high pressure signal from loop 2-LPP-68-336C.

[6] **PLACE** a jumper across Terminal Block 106 Points 8 (wire RBC1) and 9 (wire RBC4), at 2-L-11A, **AND**

VERIFY 2-PCV-68-340A does NOT OPEN by indicating lights at 2-M-5. _____

_____
CV

Date _____

6.3 2-PCV-68-340A, PZR PORV, Logic Checks (continued)

[7] **REMOVE** jumper across Terminal Block 106 Points 8 (wire RBC1) and 9 (wire RBC4), at 2-L-11A. _____

_____
CV

[8] **PLACE** handswitch 2-HS-68-340AC, PZR PORV, at 2-L-10, to CLOSE. _____

NOTE

Foxboro I/A workstations will be used to perform the follow steps. Ensure Foxboro I/A System Engineer or a qualified individual is available for this portion of the test.

[9] **PLACE** W212CP:W2PZRA:2PS0680340H to MANUAL in FoxSelect using a Foxboro I/A workstation. _____

[10] **ENSURE** W212CP:W2PZRA:2PS0680340H is 0 (LOW) in FoxSelect using a Foxboro I/A workstation. _____

[11] **PLACE** W213CP:W2PRZB:2PS0680322B to MANUAL in FoxSelect using a Foxboro I/A workstation. _____

[12] **ENSURE** W213CP:W2PRZB:2PS0680322B is 0 (LOW) in FoxSelect using a Foxboro I/A workstation. _____

[13] **PLACE** W213CP:W2PZRB:2PS0680066G to MANUAL in FoxSelect using a Foxboro I/A workstation. _____

[14] **ENSURE** W213CP:W2PZRB:2PS0680066G is 0 (LOW) in FoxSelect using a Foxboro I/A workstation. _____

[15] **PLACE** W212CP:W2PRZA:2PS0680340H to 1 (HIGH) in FoxSelect using a Foxboro I/A workstation. _____

[16] **VERIFY** 2-PCV-68-340A, PRESSURIZER PORV, does NOT OPEN by indicating lights at 2-HS-68-340AA, PZR PORV 340A, on 2-M-5. _____

[17] **PLACE** W213CP:W2PZRB:2PS0680322B to 1 (HIGH) in FoxSelect using a Foxboro I/A workstation. _____

[18] **VERIFY** 2-PCV-68-340A does NOT OPEN by indicating lights at 2-M-5. _____

Date _____

6.3 2-PCV-68-340A, PZR PORV, Logic Checks (continued)

[19] **PLACE** handswitch 2-HS-68-340AA, PZR PORV 340A, at 2-M-5, to the P AUTO position, **AND**

VERIFY 2-PCV-68-340A, PZR PORV, OPENS by indicating lights on 2-HS-68-340AA, PZR PORV 340A, on 2-M-5. _____

[20] **PLACE** W212CP:W2PZRA:2PS0680340H to 0 (LOW) in FoxSelect using a Foxboro I/A workstation, **AND**

VERIFY 2-PCV-68-340A, PZR PORV, CLOSES by indicating lights at 2-HS-68-340AA, PZR PORV 340A, on 2-M-5. _____

[21] **PLACE** W213CP:W2PZRB:2PS0680066G to 1 (HIGH) in FoxSelect using a Foxboro I/A workstation, **AND**

VERIFY 2-PCV-68-340A, PZR PORV, does NOT OPEN by indicating lights at 2-HS-68-340AA, PZR PORV 340A, on 2-M-5. **(Acc Crit 5.0[4]C and 5.0[5])** _____

[22] **PLACE** handswitch 2-HS-68-340AD, COPS BLOCK/ARM FOR PORV 340A, at 2-M-5, to the ARM position, **AND**

VERIFY the following:

A. White light at 2-HS-68-340AD is LIT. _____

B. 2-PCV-68-340A, PZR PORV, OPENS by indicating lights at 2-HS-68-340AA, PZR PORV 340A, on 2-M-5. **(Acc Crit 5.0[4]B and 5.0[5])** _____

C. 2-XA-55-5A/90D, COPS PORV-340A ACTUATE (PS-68-66G/H), ALARMS. _____

[23] **PLACE** W213CP:W2PZRB:2PS0680066G to 0 (LOW) in FoxSelect using a Foxboro I/A workstation, **AND**

VERIFY the following:

A. 2-PCV-68-340A, PZR PORV, CLOSES by indicating lights at 2-HS-68-340AA, PZR PORV 340A, on 2-M-5. _____

B. 2-XA-55-5A/90D, COPS PORV-340A ACTUATE (PS-68-66G/H), CLEARS. _____

Date _____

6.3 2-PCV-68-340A, PZR PORV, Logic Checks (continued)

[24] **PLACE** handswitch 2-XS-68-340C, PZR PORV 2-PCV-68-340A, at 2-L-11A, to the AUX position, **AND**

VERIFY the following:

A. 2-XA-55-6F/148B, ACR PNL 2-L-11A, at 2-M-6, ALARMS. _____

B. White light at 2-HS-68-340AD, COPS BLOCK/ARM for PORV, at 2-M-5, is NOT LIT. _____

[25] **PLACE** handswitch 2-XS-68-340C, PZR PORV 2-PCV-68-340A, at 2-L-11A, to the NORMAL position, **AND**

VERIFY the following:

A. 2-XA-55-6F/148B, ACR PNL 2-L-11A, at 2-M-6, CLEARS. _____

B. White light at 2-HS-68-340AD, COPS BLOCK/ARM for PORV, at 2-M-5, is LIT. _____

[26] **PLACE** handswitch 2-HS-68-340AD, COPS BLOCK/ARM FOR PORV 340A, at 2-M-5, to the BLOCK position, **AND**

VERIFY white light at 2-HS-68-340AD, COPS BLOCK/ARM for PORV, is NOT LIT. _____

[27] **PLACE** handswitch 2-HS-68-340AA, PZR PORV 340A, at 2-M-5, to the CLOSED Position. _____

[28] **PLACE** W213CP:W2PZRB:2PS0680322B to AUTOMATIC in FoxSelect using a Foxboro I/A workstation. _____

[29] **PLACE** W212CP:W2PZRA:2PS0680340H to AUTOMATIC in FoxSelect using a Foxboro I/A workstation. _____

[30] **PLACE** W213CP:W2PZRB:2PS0680066G to AUTOMATIC in FoxSelect using a Foxboro I/A workstation. _____

Date _____

6.3 2-PCV-68-340A, PZR PORV, Logic Checks (continued)

[31] **PLACE** handswitch 2-XS-68-340C, PZR PORV 2-PCV-68-340A, at 2-L-11A to AUX, **AND**

VERIFY the following:

A. Red light at 2-HS-68-340AA, PZR PORV 340A, at 2-M-5, is NOT LIT. _____

B. Green light at 2-HS-68-340AA, PZR PORV 340A, at 2-M-5, is NOT LIT. _____

C. Red light at 2-HS-68-340AC, PZR PORV, at 2-L-10, is NOT LIT. _____

D. Green light at 2-HS-68-340AC, PZR PORV, at 2-L-10, is LIT. _____

[32] **PLACE** handswitch 2-HS-68-340AC, PZR PORV, at 2-L-10, to the P AUTO position, **AND**

VERIFY 2-PCV-68-340A remains CLOSED by the indicating lights at 2-HS-68-340AC, PZR PORV, on 2-L-10. _____

[33] **PLACE** handswitch 2-HS-68-340AC, PZR PORV, at 2-L-10, to the OPEN position, **AND**

VERIFY the following:

A. 2-PCV-68-340A, PZR PORV, is OPEN locally. **(Acc Crit 5.0[4]A)** _____

B. Red light at 2-HS-68-340AA, PZR PORV 340A, at 2-M-5, is NOT LIT. _____

C. Green light at 2-HS-68-340AA, PZR PORV 340A, at 2-M-5, is NOT LIT. _____

D. Red light at 2-HS-68-340AC, PZR PORV, at 2-L-10, is LIT. _____

E. Green light at 2-HS-68-340AC, PZR PORV, at 2-L-10, is NOT LIT. _____

Date _____

6.3 2-PCV-68-340A, PZR PORV, Logic Checks (continued)

[34] **PLACE** handswitch 2-HS-68-340AC, PRZ PORV, at 2-L-10, to the CLOSED position, **AND**

VERIFY the following:

A. 2-PCV-68-340A, PRESSURIZER PORV, is CLOSED locally. **(Acc Crit 5.0[4]A)** _____

B. Red light at 2-HS-68-340AA, PZR PORV 340A, at 2-M-5, is NOT LIT. _____

C. Green light at 2-HS-68-340AA, PZR PORV 340A, at 2-M-5, is NOT LIT. _____

D. Red light at 2-HS-68-340AC, PZR PORV, at 2-L-10, is NOT LIT. _____

E. Green light at 2-HS-68-340AC, PZR PORV, at 2-L-10, is LIT. _____

[35] **PLACE** handswitch 2-HS-68-340AC, PZR PORV, at 2-L-10, to the P AUTO position. _____

[36] **PLACE** W214CP:W2ACR1MISC68:2PS0680336CB to MANUAL in FoxSelect using a Foxboro I/A workstation. _____

[37] **PLACE** W214CP:W2ACR1MISC68:2PS0680336CB to 1 (HIGH) in FoxSelect using a Foxboro I/A workstation, **AND**

VERIFY 2-PCV-68-340A, PRESSURIZER PORV, OPENS by indicating lights at handswitch 2-HS-68-340AC, PZR PORV, on 2-L-10. _____

[38] **PLACE** W214CP:W2ACR1MISC68:2PS0680336CB to 0 (LOW) in FoxSelect using a Foxboro I/A workstation, **AND**

VERIFY 2-PCV-68-340A, PRESSURIZER PORV, CLOSES by indicating lights at handswitch 2-HS-68-340AC, PZR PORV, on 2-L-10. _____

[39] **PLACE** W214CP:W2ACR1MISC68:2PS0680336CB to AUTOMATIC in FoxSelect using a Foxboro I/A workstation. _____

[40] **PLACE** W214CP:W2ACR1MISC68:2PS0680336CA to MANUAL in FoxSelect using a Foxboro I/A workstation. _____

Date _____

6.3 2-PCV-68-340A, PZR PORV, Logic Checks (continued)

[41] **PLACE** W214CP:W2ACR1MISC68:2PS0680336CA to 1 (HIGH) in FoxSelect using a Foxboro I/A workstation, **AND**

VERIFY 2-XA-55-L10/301A, PRZR PRESS HI, at 2-L-10, is in ALARM. _____

[42] **PLACE** W214CP:W2ACR1MISC68:2PS0680336CA to 0 (LOW) in FoxSelect using a Foxboro I/A workstation, **AND**

VERIFY 2-XA-55-L10/301A, PRZR PRESS HI, at 2-L-10, is CLEAR. _____

[43] **PLACE** W214CP:W2ACR1MISC68:2PS0680336CA to AUTOMATIC in FoxSelect using a Foxboro I/A workstation. _____

[44] **PLACE** handswitch 2-XS-68-340C, PZR PORV 2-PCV-68-340A, at 2-L-11A, to the NOR position. _____

[45] **VERIFY** all applicable indicating lights, annunciators, and status monitoring inputs are functioning correctly for 2-PCV-68-340A, PZR PORV, by successful completion of this Subsection. **(Acc. Crit 5.0[4]G)** _____

Date _____

6.4 2-PCV-68-334, PRZ PORV, Logic Checks

NOTE

2-PCV-68-334, PZR PORV, is located at the top of the pressurizer vessel inside the pressurizer dog house.

[1] **VERIFY** prerequisites listed in Section 4.0 for Subsection 6.4 have been completed. _____

[2] **PLACE** handswitch 2-HS-68-334A, PZR PORV 334, at 2-M-5, to OPEN, **AND**

VERIFY the following:

A. 2-PCV-68-334, PRESSURIZER PORV, OPENS locally. **(Acc Crit 5.0[3]A)** _____

B. Red light on 2-HS-68-334A, PZR PORV 334, at 2-M-5, is LIT. _____

C. Green light on 2-HS-68-334A, PZR PORV 334, at 2-M-5, is NOT LIT. _____

D. Red light on 2-HS-68-334C, PZR PORV, at 2-L-10, is NOT LIT. _____

E. Green light on 2-HS-68-334C, PZR PORV, at 2-L-10, is NOT LIT. _____

F. ICS point PD2001, PZR RELIEF VALVE POS, is OPEN. _____

Date _____

6.4 2-PCV-68-334, PRZ PORV, Logic Checks (continued)

[3] **PLACE** handswitch 2-HS-68-334A, PZR PORV 334, at 2-M-5, to CLOSE, **AND**

VERIFY the following:

A. 2-PCV-68-334, PRESSURIZER PORV, CLOSES locally. **(Acc Crit 5.0[3]A)** _____

B. Red light on 2-HS-68-334A, PZR PORV 334, at 2-M-5, is NOT LIT. _____

C. Green light on 2-HS-68-334A, PZR PORV 334, at 2-M-5, is LIT. _____

D. Red light on 2-HS-68-334C, PZR PORV, at 2-L-10, is NOT LIT. _____

E. Green light on 2-HS-68-334C, PZR PORV, at 2-L-10, is NOT LIT. _____

F. ICS point PD2001, PZR RELIEF VALVE POS, is NOT OPE. _____

[4] **PLACE** handswitch 2-HS-68-334C, PRZ PORV, at 2-L-10, to OPEN, **AND**

VERIFY 2-PCV-68-334 does NOT OPEN by indicating lights at handswitch 2-HS-68-334A, PZR PORV 334, on 2-M-5. _____

[5] **PLACE** handswitch 2-HS-68-334C, PZR PORV, at 2-L-10, to P-AUTO. _____

NOTE

The following step simulates a high pressure signal from loop 2-LPP-68-337C.

[6] **PLACE** a jumper across Terminal Block 106 Points 8 (wire RBC1) and 9 (wire RBC4), at 2-L-11B, **AND**

VERIFY 2-PCV-68-334 does NOT OPEN by indicating lights at handswitch 2-HS-68-334A, PZR PORV 334, on 2-M-5. _____

_____
CV

Date _____

6.4 2-PCV-68-334, PRZ PORV, Logic Checks (continued)

[7] **REMOVE** jumper across Terminal Block 106 Points 8 (wire RBC1) and 9 (wire RBC4), at 2-L-11B. _____

_____
CV

[8] **PLACE** handswitch 2-HS-68-334C, PZR PORV, at 2-L-10, to CLOSE. _____

NOTE

Foxboro I/A workstations will be used to perform the follow steps. Ensure Foxboro I/A System Engineer or a qualified individual is available for this portion of the test.

[9] **PLACE** W213CP:W2PZRB:2PS0680334G to MANUAL in FoxSelect using a Foxboro I/A workstation. _____

[10] **ENSURE** W213CP:W2PZRB:2PS0680334G is 0 (LOW) in FoxSelect using a Foxboro I/A workstation. _____

[11] **PLACE** W212CP:W2PRZA:2PS0680323F to MANUAL in FoxSelect using a Foxboro I/A workstation. _____

[12] **ENSURE** W212CP:W2PRZA:2PS0680323F is 0 (LOW) in FoxSelect using a Foxboro I/A workstation. _____

[13] **PLACE** W212CP:W2PZRA:2PS0680068G to MANUAL in FoxSelect using a Foxboro I/A workstation. _____

[14] **ENSURE** W212CP:W2PZRA:2PS0680068G is 0 (LOW) in FoxSelect using a Foxboro I/A workstation. _____

[15] **PLACE** W213CP:W2PZRB:2PS0680334G to 1 (HIGH) in FoxSelect using a Foxboro I/A workstation. _____

[16] **VERIFY** 2-PCV-68-334, PRESSURIZER PORV, does NOT OPEN by indicating lights at 2-HS-68-334A, PZR PORV 334, on 2-M-5. _____

[17] **PLACE** W212CP:W2PZRA:2PS0680323F to 1 (HIGH) in FoxSelect using a Foxboro I/A workstation. _____

[18] **VERIFY** 2-PCV-68-334 does NOT OPEN by indicating lights at handswitch 2-HS-68-334A, PZR PORV 334, at 2-M-5. _____

Date _____

6.4 2-PCV-68-334, PRZ PORV, Logic Checks (continued)

[19] **PLACE** handswitch 2-HS-68-334A, PZR PORV 334, at 2-M-5, to the P AUTO position, **AND**

VERIFY 2-PCV-68-334, PZR PORV, OPENS by indicating lights at 2-HS-68-334A, PZR PORV 334, on 2-M-5. _____

[20] **PLACE** W213CP:W2PZRB:2PS0680334G to 0 (LOW) in FoxSelect using a Foxboro I/A workstation, **AND**

VERIFY 2-PCV-68-334, PZR PORV, CLOSES by indicating lights at 2-HS-68-334A, PZR PORV 334, on 2-M-5. _____

[21] **PLACE** W212CP:W2PZRA:2PS0680068G to 1 (HIGH) in FoxSelect using a Foxboro I/A workstation, **AND**

VERIFY 2-PCV-68-334, PZR PORV, does NOT OPEN by indicating lights at 2-HS-68-334A, PZR PORV 334, on 2-M-5. **(Acc Crit 5.0[3]C and 5.0[5])** _____

[22] **PLACE** handswitch 2-HS-68-334D, COPS BLOCK/ARM FOR PORV 334, at 2-M-5, to the ARM position, **AND**

VERIFY the following:

A. White light at 2-HS-68-334D is LIT. _____

B. 2-PCV-68-334, PZR PORV, OPENS by indicating lights at 2-HS-68-334A, PZR PORV 334, on 2-M-5. **(Acc Crit 5.0[3]B and 5.0[5])** _____

C. 2-XA-55-5A/91D, COPS PORV-334 ACTUATE, ALARMS. _____

[23] **PLACE** W212CP:W2PZRA:2PS0680068G to 0 (LOW) in FoxSelect using a Foxboro I/A workstation, **AND**

VERIFY the following:

A. 2-PCV-68-334, PZR PORV, CLOSES by indicating lights at 2-HS-68-334A, PZR PORV 334, on 2-M-5. _____

B. 2-XA-55-5A/91D, COPS PORV-334 ACTUATE, CLEARS. _____

Date _____

6.4 2-PCV-68-334, PRZ PORV, Logic Checks (continued)

[24] **PLACE** handswitch 2-XS-68-334C, PZR PORV 2-PCV-68-334, at 2-L-11B, to the AUX position, **AND**

VERIFY the following:

A. 2-XA-55-6F/148C, ACR PNL 2-L-11B, at 2-M-6, ALARMS. _____

B. White light at 2-HS-68-334D, COPS BLOCK/ARM for PORV 334, at 2-M-5, is NOT LIT. _____

[25] **PLACE** handswitch 2-XS-68-334C, PZR PORV 2-PCV-68-334, at 2-L-11B, to the NOR position, **AND**

VERIFY the following:

A. 2-XA-55-6F/148C, ACR PNL 2-L-11B, at 2-M-6, CLEARS. _____

B. White light at 2-HS-68-334D, COPS BLOCK/ARM for PORV 334, at 2-M-5, is LIT. _____

[26] **PLACE** handswitch 2-HS-68-334D, COPS BLOCK/ARM FOR PORV 334, to the BLOCK position, **AND**

VERIFY white light at 2-HS-68-334D, COPS BLOCK/ARM for PORV 334, is NOT LIT. _____

[27] **PLACE** handswitch 2-HS-68-334A, PZR PORV 334, at 2-M-5, to the CLOSED Position. _____

[28] **PLACE** W212CP:W2PZRA:2PS0680323F to AUTOMATIC in FoxSelect using a Foxboro I/A workstation. _____

[29] **PLACE** W213CP:W2PZRB:2PS0680334G to AUTOMATIC in FoxSelect using a Foxboro I/A workstation. _____

[30] **PLACE** W212CP:W2PZRA:2PS0680068G to AUTOMATIC in FoxSelect using a Foxboro I/A workstation. _____

Date _____

6.4 2-PCV-68-334, PRZ PORV, Logic Checks (continued)

[31] **PLACE** handswitch 2-XS-68-334C, PZR PORV 2-PCV-68-334, at 2-L-11B to AUX, **AND**

VERIFY the following:

A. Red light at 2-HS-68-334A, PZR PORV 334, at 2-M-5, is NOT LIT. _____

B. Green light at 2-HS-68-334A, PZR PORV 334, at 2-M-5, is NOT LIT. _____

C. Red light at 2-HS-68-334C, PZR PORV, at 2-L-10, is NOT LIT. _____

D. Green light at 2-HS-68-334C, PZR PORV, at 2-L-10, is LIT. _____

[32] **PLACE** handswitch 2-HS-68-334C, PZR PORV, at 2-L-10, to the P-AUTO position, **AND**

VERIFY 2-PCV-68-334 remains CLOSED by the indicating lights at 2-L-10. _____

[33] **PLACE** handswitch 2-HS-68-334C, PZR PORV, at 2-L-10, to the OPEN position, **AND**

VERIFY the following:

A. 2-PCV-68-334, PZR PORV, is OPEN locally. **(Acc Crit 5.0[3]A)** _____

B. Red light at 2-HS-68-334A, PZR PORV 334, at 2-M-5, is NOT LIT. _____

C. Green light at 2-HS-68-334A, PZR PORV 334, at 2-M-5, is NOT LIT. _____

D. Red light at 2-HS-68-334C, PZR PORV, at 2-L-10, is LIT. _____

E. Green light at 2-HS-68-340AC, PZR PORV, at 2-L-10, is NOT LIT. _____

Date _____

6.4 2-PCV-68-334, PRZ PORV, Logic Checks (continued)

[34] **PLACE** handswitch 2-HS-68-334C, PRZ PORV, at 2-L-10, to the CLOSED position, **AND**

VERIFY the following:

A. 2-PCV-68-334, PRESSURIZER PORV, is CLOSED locally. **(Acc Crit 5.0[3]A)** _____

B. Red light at 2-HS-68-334A, PZR PORV 334, at 2-M-5, is NOT LIT. _____

C. Green light at 2-HS-68-334A, PZR PORV 334, at 2-M-5, is NOT LIT. _____

D. Red light at 2-HS-68-334C, PZR PORV, at 2-L-10, is NOT LIT. _____

E. Green light at 2-HS-68-334C, PRZ PORV, at 2-L-10, is LIT. _____

[35] **PLACE** handswitch 2-HS-68-334C, PZR PORV, at 2-L-10, to the P-AUTO position. _____

[36] **PLACE** W215CP:W2ACR2MISC68:2PS0680337CA to MANUAL in FoxSelect using a Foxboro I/A workstation. _____

[37] **PLACE** W215CP:W2ACR2MISC68:2PS0680337CA to 1 (HIGH) in FoxSelect using a Foxboro I/A workstation, **AND**

VERIFY 2-PCV-68-334, PRESSURIZER PORV, OPENS by indicating lights at handswitch 2-HS-68-334C, PZR PORV, on 2-L-10. _____

[38] **PLACE** W215CP:W2ACR2MISC68:2PS0680337CA to 0 (LOW) in FoxSelect using a Foxboro I/A workstation, **AND**

VERIFY 2-PCV-68-334, PRESSURIZER PORV, CLOSES by indicating lights at handswitch 2-HS-68-334C, PZR PORV, on 2-L-10. _____

[39] **PLACE** W215CP:W2ACR2MISC68:2PS0680337CA to AUTOMATIC in FoxSelect using a Foxboro I/A workstation. _____

[40] **PLACE** handswitch 2-XS-68-334C, PZR PORV 2-PCV-68-334, at 2-L-11B, to the NOR position. _____

Date _____

6.4 2-PCV-68-334, PRZ PORV, Logic Checks (continued)

[41] **VERIFY** all applicable indicating lights, annunciators, and status monitoring inputs are functioning correctly for 2-PCV-68-334, PZR PORV, by successful completion of this Subsection. **(Acc. Crit 5.0[3]G)** _____

Date _____

6.5 Cold Overpressure Protection Functional Test

NOTE

The COMS portion of the PORV logic has been tested in Sections 6.3 and 6.4. The channel Surveillance Instructions will complete the remaining COMS functional testing.

[1] **ENSURE** prerequisites listed in Section 4.0 for Subsection 6.5 have been completed. _____

[2] **ENSURE** Surveillance Instruction, 2-SI-68-92, has been completed, **AND**

ATTACH the completed instruction to this procedure. **(Acc Crit 5.0[6])**

WO# _____ _____

[3] **ENSURE** Surveillance Instruction, 2-SI-68-93, has been completed, **AND**

ATTACH the completed instruction to this procedure. **(Acc Crit 5.0[6])**

WO# _____ _____

Date _____

6.6 Pressurizer Pressure Functional Test

CAUTION

Ensure all unnecessary personnel are evacuated from the lower containment for the performance of this Subsection.

[1] **ENSURE** prerequisites for Section 6.6 in Section 4.0 are completed. _____

CAUTIONS

1) Do NOT allow pressurizer level to go below 20% of level span for the purpose of this performance subsection.
2) Do NOT operate the pressurizer heaters when pressurizer level is less than 17% of level span. Operating the heaters below 17% of level span can damage the pressurizer heaters.

[2] **ENSURE** controller 2-PIC-68-340A, PZR PRESS MASTER CONTROL, at 2-M-4, is in MAN, **AND**

MANUALLY control pressurizer pressure to approximately 2235 psig, as indicated on recorder 2-PR-68-340, PZR PRESS - PSIG, on 2-M-5. _____

[3] **ENSURE** controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, on 2-M-5, is in MAN, **AND**

MANUALLY control pressurizer level to approximately 25% of level span, as indicated on recorder 2-LR-68-339, PZR LEVEL - %, on 2-M-5. _____

[4] **ENSURE** controller 2-PIC-68-340A, PZR PRESS MASTER CONTROL, at 2-M-4, setpoint is 67% (2236 psig). _____

[5] **PLACE** controller 2-PIC-68-340A, PZR PRESS MASTER CONTROL, at 2-M-4, is placed to AUTO. _____

[6] **PLACE** handswitch 2-HS-68-341F, CONTROL HEATERS D, at 2-M-4, to the ON position, **AND**

RELEASE to the P AUTO position. _____

[7] **ENSURE** controller 2-PIC-68-340B, LOOP 2 SPRAY CONTROL, at 2-M-5, is placed to AUTO. _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

[8] **ENSURE** controller 2-PIC-68-340D, LOOP 1 SPRAY CONTROL, 2-M-5, is placed to AUTO. _____

[9] **VERIFY** handswitch 2-HS-68-341H, BACKUP HEATERS C, at 2-M-4, is in the P AUTO position. _____

[10] **ENSURE** handswitch 2-HS-68-341D, BACKUP HEATERS B-B, at 2-M-4, is placed to A-P AUTO. _____

[11] **ENSURE** handswitch 2-HS-68-341A, BACKUP HEATERS A-A, at 2-M-4, is placed to A-P AUTO. _____

[12] **ENSURE** handswitch 2-HS-62-84, AUX SPRAY TO PZR, on 2-M-6, is in the CLOSE position. _____

[13] **ENSURE** handswitch 2-XS-62-84, AUX SPRAY FCV TO PZR, on 2-L-11A, is in the NOR position. _____

[14] **VERIFY** pressurizer pressure is controlled to approximately 2235 psig (2225-2245 psig) as indicated by recorder 2-PR-68-340, PZR PRESS - PSIG, on 2-M-5. _____

[15] **ENSURE** handswitch 2-HS-68-340AA, PZR PORV 340A, is placed in the P AUTO position. _____

[16] **ENSURE** handswitch 2-HS-68-334A, PZR PORV 334, PZR PORV 334, is placed in the P AUTO position. _____

[17] **VERIFY** the following:

A. Pressurizer heater group D is ON by indicating lights at handswitch 2-HS-68-341F, CONTROL HEATERS D, at 2-M-4. _____

B. Pressurizer heater group C is OFF by indicating lights at handswitch 2-HS-68-341H, BACKUP HEATERS C, at 2-M-4. _____

C. Pressurizer heater group B is OFF by indicating lights at handswitch 2-HS-68-341D, BACKUP HEATERS B-B, at 2-M-4. _____

D. Pressurizer heater group A is OFF by indicating lights at handswitch 2-HS-68-341A, BACKUP HEATERS A-A, at 2-M-4. _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

E. Loop 2 pressurizer spray valve is CLOSED by indicating lights at 2-XI-68-340B, PZR SPRAY LOOP 2, at 2-M-4. _____

F. Loop 1 pressurizer spray valve is CLOSED by indicating lights at 2-XI-68-340D, PZR SPRAY LOOP 1, at 2-M-4. _____

G. PORV 340A is CLOSED by indicating lights at 2-HS-68-340AA, PZR PORV 340A, at 2-M-5. _____

H. PORV 334 is CLOSED by indicating lights at 2-HS-68-334A, PZR PORV 334, at 2-M-5. _____

NOTE

If the PORV block valves are not already OPEN, watch for PORV leaks upon opening the PORV block valves.

[18] **PLACE** handswitch 2-HS-68-333A, BLOCK VLV FOR PORV 340A, at 2-M-5, is placed to OPEN, **AND**

RELEASE to the center position. _____

[19] **VERIFY** block valve for PORV 340A is OPEN by indicating lights at 2-HS-68-333A, BLOCK VLV FOR PORV 340A, on 2-M-4. _____

[20] **PLACE** handswitch 2-HS-68-332A, BLOCK VLV FOR PORV 334, at 2-M-5, is placed to OPEN, **AND**

RELEASE to the center position. _____

[21] **VERIFY** block valve for PORV 334 is OPEN by indicating lights at 2-HS-68-332A, BLOCK VLV FOR PORV 334, on 2-M-4. _____

[22] **RECORD** the steady state plant data for the 2235 psig pressure data point in Data Sheet 1, **AND**

VERIFY indications 2-PI-68-340A, 334, 323, and 322 are within 15 psig of each other. **(Acc Crit 5.0[7]B)** _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

[23] **VERIFY** the following:

A. 2-XA-55-5A/90A, PZR PRESS HI, on 2-M-5, is CLEAR. _____

B. 2-XX-55-6A/11, PZR PRESS HI RX TRIP PS-68-340A, on 2-M-6, is CLEAR _____

C. 2-XX-55-6A/31, PZR PRESS HI RX TRIP PS-68-334A, on 2-M-6, is CLEAR. _____

D. 2-XX-55-6A/51, PZR PRESS HI RX TRIP PS-68-323A, on 2-M-6, is CLEAR. _____

E. 2-XX-55-6A/71, PZR PRESS HI RX TRIP PS-68-322A, on 2-M-6, is CLEAR. _____

F. 2-XA-55-L10/301A, PZR PRESS HI, in 2-L-10, is CLEAR. _____

[24] **TREND** the following ICS Point 2PC0680340E, PZR VARIABLE HTR CNTL OUTPUT, on the plant computer in the MCR. _____

NOTE

The following step will turn off the two backup heater groups to allow the pressurizer heater trip interlock on low pressure to be disabled.

[25] **PERFORM** the following:

A. **ENSURE** handswitch 2-HS-68-341A, BACKUP HEATERS A-A, at 2-M-4, is placed to OFF, **AND**

VERIFY backup heater group A-A is OFF by indicating lights. _____

B. **ENSURE** handswitch 2-HS-68-341D, BACKUP HEATERS B-B, at 2-M-4, is placed to OFF, **AND**

VERIFY backup heater group B-B is OFF by indicating lights. _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

CAUTION

Follow standard precautions when working around energized electrical equipment in accordance with TVA Safety Manual Procedure 1021. In addition, follow TI-300 when working around electrical equipment.

NOTE

The following two steps defeat the pressurizer pressure trip relay signal to both the Backup Heater Groups A-A and B-B. This will allow the backup heater groups A-A and B-B to be turned ON and remain ON when pressure is above the low pressure backup heater setpoint of 2210 psig.

[26] **LIFT** and **TAPE** the wire on contact point 3 of relay PB455GXA, in 2-R-54, to defeat the pressurizer low pressure trip relay signal to the Backup Heater A-A. _____

_____
CV

[27] **LIFT** and **TAPE** the wire on contact point 3 of relay PB455GXB, in 2-R-55, to defeat the pressurizer low pressure trip relay signal to Backup Heater B-B. _____

_____
CV

[28] **PERFORM** the following:

A. **PLACE** handswitch 2-HS-68-341A, BACKUP HEATERS A-A, at 2-M-4, to A-P AUTO, **AND**

VERIFY backup heater group A-A is OFF by indicating lights. _____

B. **PLACE** handswitch 2-HS-68-341D, BACKUP HEATERS B-B, at 2-M-4, to A-P AUTO, **AND**

VERIFY backup heater group B-B is OFF by indicating lights. _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

NOTES

1) Pressurizer heatup is limited to 100 °F/hr and cooldown is limited to 200 °F/hr.
2) Backup heaters will be used to gradually increase pressurizer pressure. Limit the pressurizer pressure increase rate to 5 psi/min or less when approaching verification performance steps.
3) The following step will initiate a pressurizer pressure increase. As pressurizer pressure increases above the PZR PRESS MASTER controller's setpoint of 2235 psig, the proportional heaters will de-energize and the pressurizer spray valves will begin to open. An equilibrium condition should be established with all Backup heaters ON and the spray valves modulated to a percentage of full OPEN. Pressurizer pressure should reach a plateau.

[29] **INCREASE** pressurizer pressure by performing the following steps:

[29.1] **PLACE** handswitch 2-HS-68-341A, BACKUP HEATERS A-A, at 2-M-4, to the ON position, **AND**

RELEASE to the center A-P AUTO position. _____

[29.2] **VERIFY** BACKUP HEATERS A-A are ON by indicating lights at 2-HS-68-341A, BACKUP HEATERS A-A, on 2-M-4. _____

[29.3] **PLACE** handswitch 2-HS-68-341D, BACKUP HEATERS B-B, at 2-M-4, to the ON position, **AND**

RELEASE to the center A-P AUTO position. _____

[29.4] **VERIFY** BACKUP HEATERS B-B are ON by indicating lights at 2-HS-68-341D, BACKUP HEATERS B-B, on 2-M-4. _____

[29.5] **PLACE** handswitch 2-HS-68-341H, BACKUP HEATERS C, at 2-M-4, to the ON position, **AND**

RELEASE to the center P AUTO position. _____

[29.6] **VERIFY** BACKUP HEATERS C are ON by indicating lights at 2-HS-68-341H, BACKUP HEATERS C, on 2-M-4. _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

[29.7] **VERIFY** pressurizer pressure is INCREASING by recorder 2-PR-68-340, PZR PRESS, on 2-M-5. _____

NOTE

Pressurizer pressure will continue to increase. To limit the heatup rate, de-energize the backup heaters as necessary by placing backup heater handswitches to OFF and returning to A-P AUTO or P AUTO positions.

[30] **PERFORM** the following verification steps as pressurizer pressure increases to the equilibrium heater/spray condition:

[30.1] **WHEN** ICS point 2PC0680340E, PZR VARIABLE HTR CNTL OUTPUT, indicates 0% , **THEN**

A. **RECORD** the pressurizer pressure from recorder 2-PR-68-340, PRZ PRESS, on 2-M-5. **(Acc Crit 5.0[7]A)**

_____ psig (2250, 2235-2265) _____

B. **RECORD** the Ammeter indicator value 6.9kV Shutdown Board 2A-A, Panel 21, PZR CONTROL HTG GRP 2D.

_____ amps (0, 0-1) _____

[30.2] **WHEN** indications 2-XI-68-340B, PZR SPRAY LOOP 2 , and 2-XI-68-340D, PZR SPRAY LOOP 1, at 2-M-4, indicate the spray valves open, **THEN**

A. **RECORD** the pressurizer pressure corresponding to 2-XI-68-340B, PZR SPRAY LOOP 2, on 2-M-4, OPEN from recorder 2-PR-68-340, PZR PRESS, on 2-M-5. **(Acc Crit 5.0[7]A)**

_____ psig (2260, 2245-2275) _____

B. **RECORD** the pressurizer pressure corresponding to 2-XI-68-340D, PZR SPRAY LOOP 1, on 2-M-4, OPEN from recorder 2-PR-68-340, PZR PRESS, on 2-M-5. **(Acc Crit 5.0[7]A)**

_____ psig (2260, 2245-2275) _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

NOTE

The next step shall be performed with all backup heaters energized.

[31] **WHEN** an equilibrium heater/spray condition is reached and pressurizer pressure stops increasing, **THEN**

RECORD steady-state plant data for the equilibrium heater/spray condition in Data Sheet 1. _____

[32] **VERIFY** the following:

A. 2-XA-55-5A/90A, PZR PRESS HI, on 2-M-5, is CLEAR. _____

B. 2-XX-55-6A/11, PZR PRESS HI RX TRIP PS-68-340A, on 2-M-6, is CLEAR _____

C. 2-XX-55-6A/31, PZR PRESS HI RX TRIP PS-68-334A, on 2-M-6, is CLEAR. _____

D. 2-XX-55-6A/51, PZR PRESS HI RX TRIP PS-68-323A, on 2-M-6, is CLEAR. _____

E. 2-XX-55-6A/71, PZR PRESS HI RX TRIP PS-68-322A, on 2-M-6, is CLEAR. _____

F. 2-XA-55-L10/301A, PZR PRESS HI, in 2-L-10, is CLEAR. _____

WARNING

Do not exceed a Pressurizer Pressure of 2400 psig to minimize the possibility of inadvertently lifting the Pressurizer Safety Relief Valves.

NOTE

Closing 2-FCV-68-333 and 2-FCV-68-332, PRESSURIZER PORV BLOCK VALVES isolates 2-PCV-6-340A and 2-PCV-68-334, PRESSURIZER PORVs.

[33] **PLACE** handswitch 2-HS-68-333A, BLOCK VLV FOR PORV 340A, at 2-M-5, to CLOSE, **AND**

RELEASE to the center position. _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

[34] **VERIFY** the 2-FCV-68-333 CLOSES by indicating lights at 2-HS-68-333A, BLOCK VLV FOR PORV 340A, on 2-M-5. _____

[35] **PLACE** handswitch 2-HS-68-332A, BLOCK VLV for PORV 332A, at 2-M-5, to CLOSE, **AND**

RELEASE to the center position. _____

[36] **VERIFY** the 2-FCV-68-332 CLOSES by indicating lights at 2-HS-68-332A, BLOCK VLV FOR PORV 334, on 2-M-5. _____

[37] **PLACE** the following controllers to MAN (MANUAL).

A. 2-PIC-68-340B, LOOP 2 SPRAY CONTROL, at 2-M-4 _____

B. 2-PIC-68-340D, LOOP 1 SPRAY CONTROL, at 2-M-4 _____

NOTES

1) Pressurizer heatup is limited to 100 °F/hr and cooldown is limited to 200 °F/hr.
2) A reduction in pressurizer sprays will be used to gradually increase pressurizer pressure. Limit the pressurizer pressure increase rate to 5 psi/min or less when approaching verification performance steps.

[38] **GRADUALLY** increase pressurizer pressure by decreasing Loop 2 and Loop 1 Spray using controllers 2-PIC-68-340B, Loop 2 Spray Control, and 2-PIC-68-340D, Loop 1 Spray Control, on 2-M-4. _____

NOTE

Pressurizer Pressure will continue to increase. To limit the heatup rate, use the spray valves or de-energize the backup heaters.

[39] **PERFORM** the following when pressurizer pressure approaches approximately 2310 psig:

A. **VERIFY** 2-XA-55-5A/90A, PZR PRESS HI, on 2-M-5, is in ALARM, **AND**

RECORD Pressurizer Pressure from 2-PR-68-340, PZR PRESS - PSIG, on 2-M-5. **(Acc Crit 5.0[7]C)**

_____ (2310 psig, 2300-2320 psig) _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

B. **VERIFY** Unit 2 Events Display Legend shows 90-A PRZ PRESS HI, in ALARM. _____

C. **VERIFY** 2-XA-55-L10/301A, PZR PRESS HI, on 2-L-10, is in ALARM, **AND**

RECORD Pressurizer Pressure from 2-PR-68-340, PZR PRESS - PSIG, on 2-M-5.

_____ (2310 psig, 2300-2320 psig) _____

D. **VERIFY** the following:

- 2-XX-55-6A/11, PZR PRESS HI RX TRIP PS-68-340A, on 2-M-6, is CLEAR. _____
- 2-XX-55-6A/31, PZR PRESS HI RX TRIP PS-68-334A, on 2-M-6, is CLEAR. _____
- 2-XX-55-6A/51, PZR PRESS HI RX TRIP PS-68-323A, on 2-M-6, is CLEAR. _____
- 2-XX-55-6A/71, PZR PRESS HI RX TRIP PS-68-322A, on 2-M-6, is CLEAR. _____
- 2-XA-55-6C/124B, PZR LEVEL HI, on 2-M-6, is CLEAR. _____
- Unit 2 Events Display Legend shows 124-B PZR LEVEL HI, CLEAR. _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

NOTE

Pressurizer pressure will continue to increase. To limit the heatup rate, use the spray valves or de-energize the backup heaters.

[40] **PERFORM** the following when pressurizer pressure approaches 2335 psig:

A. **VERIFY** 2-PCV-68-340A, PRESSURIZER PORV, is OPEN by indicating lights at handswitch 2-HS-68-340AA, PZR PORV 340A, at 2-M-5, **AND**

RECORD the pressurizer pressure indicated on 2-PR-68-340, PZR PRESS - PSIG, at 2-M-5. **(Acc Crit 5.0[7]A)**

_____ (2335 psig, 2325-2345 psig) _____

B. **VERIFY** 2-PCV-68-334, PRESSURIZER PORV, is OPEN by indicating lights at handswitch 2-HS-68-334A, PZR PORV 334, at 2-M-5, **AND**

RECORD the pressurizer pressure indicated on 2-PR-68-340, PZR PRESS - PSIG, at 2-M-5. **(Acc Crit 5.0[7]A)**

_____ (2335 psig, 2325-2345 psig) _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

CAUTION

Do NOT exceed a pressurizer pressure of 2400 psig to minimize the possibility of inadvertently lifting the Pressurizer Safety Relief Valves.

NOTES

1) Pressurizer Pressure will continue to increase. To limit the heatup rate, use the spray valves or de-energize the backup heaters.
2) The first out annunciator panel 2-XA-55-4D will annunciate in the following step. Clearing the reactor first out annunciator can be performed using handswitch 2-XS-55-4D on 2-M-4, as necessary.

[41] **PERFORM** the following when pressurizer pressure reaches approximately 2385 psig:

A. **VERIFY** 2-XX-55-6A/11, PZR PRESS HI RX TRIP PS-68-340A, on 2-M-6, is in ALARM, **AND**

RECORD pressure indicated on 2-PI-68-340A, PZR PRESS, on 2-M-5.

_____ (2385 psig, 2375-2395 psig) _____

B. **VERIFY** 2-XX-55-6A/31, PZR PRESS HI RX TRIP PS-68-334A, on 2-M-6, is in ALARM, **AND**

RECORD pressurizer indication on 2-PI-68-334, PZR PRESS, on 2-M-5.

_____ (2385 psig, 2375-2395 psig) _____

C. **VERIFY** 2-XX-55-6A/51, PZR PRESS HI RX TRIP PS-68-323A, on 2-M-6, is in ALARM, **AND**

RECORD pressurizer indication on 2-PI-68-323, PZR PRESS, on 2-M-5.

_____ (2385 psig, 2375-2395 psig) _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

D. **VERIFY** 2-XX-55-6A/71, PZR PRESS HI RX TRIP PS-68-322A, on 2-M-6, is in ALARM, **AND**

RECORD pressurizer indication on 2-PI-68-322, PZR PRESS, on 2-M-5.

_____ (2385 psig, 2375-2395 psig) _____

E. **VERIFY** 2-XA-55-6C/124B, PZR PRESS HI, on 2-M-6, is in ALARM. **(Acc Crit 5.0[7]C)** _____

F. **VERIFY** Unit 2 Events Display Legend shows 124-B PZR PRESS HI, in ALARM. _____

G. **VERIFY** 2-XA-55-4D/77C, PZR PRESS HI, on 2-M-4, is in ALARM. _____

[42] **CONTROL** pressurizer pressure at approximately 2385 psig by manually adjusting the spray flow using controllers 2-PIC-68-340B, LOOP 2 SPRAY CONTROL, and 2-PIC-68-340D, LOOP 1 SPRAY CONTROL. _____

[43] **RECORD** steady-state plant data for the 2385 psig condition in Data Sheet 1, **AND**

VERIFY indications 2-PI-68-340A, 334, 332, and 322 are within 15 psig of each other. **(Acc Crit 5.0[7]B)** _____

[44] **ENSURE** a gradual DECREASE in pressurizer pressure by manually adjusting the spray flow using the 2-PIC-68-340B, LOOP 2 SPRAY CONTROL, and 2-PIC-68-340D, LOOP 1 SPRAY CONTROL. _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

NOTE

The first out annunciator panel 2-XA-55-4D will clear in the following step. Reset of the annunciator window will be performed below but can also be performed as necessary.

[45] **PERFORM** the following as pressurizer pressure decreases to approximately 2377 psig:

A. **VERIFY** 2-XX-55-6A/11, PZR PRESS HI RX TRIP PS-68-340A, on 2-M-6, CLEARS. _____

B. **VERIFY** 2-XX-55-6A/31, PZR PRESS HI RX TRIP PS-68-334A, on 2-M-6, CLEARS. _____

C. **VERIFY** 2-XX-55-6A/51, PZR PRESS HI RX TRIP PS-68-323A, on 2-M-6, CLEARS. _____

D. **VERIFY** 2-XX-55-6A/71, PZR PRESS HI RX TRIP PS-68-322A, on 2-M-6, CLEARS. _____

E. **VERIFY** 2-XA-55-6C/124B, PZR PRESS HI, on 2-M-6, CLEARS. _____

F. **VERIFY** Unit 2 Events Display Legend shows 124-B PZR PRESS HI, CLEAR. _____

[46] **PLACE** handswitch 2-XS-55-4D, ANNUNCIATOR RESET-ACK-TEST, on 2-M-5 to RESET, **AND**

RELEASE to the neutral position. _____

[47] **VERIFY** 2-XX-55-4D/77C, PZR PRESS HI, on 2-M-4, CLEARS. _____

[48] **PERFORM** the following as pressurizer pressure decreases to approximately 2315 psig:

A. **VERIFY** 2-PCV-68-340A, PRESSURIZER PORV, is CLOSED by indicating lights on 2-HS-68-340AA, PZR PORV 340A, at 2-M-5, **AND**

RECORD pressurizer pressure indication on 2-PR-68-340, PZR PRESS - PSIG, on 2-M-5.

_____ (2315 psig, 2300-2330 psig) _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

B. **VERIFY** 2-PCV-68-334, PRESSURIZER PORV, is CLOSED by indicating lights on 2-HS-68-334A, PZR PORV 334, at 2-M-5, **AND**

RECORD pressurizer pressure indication on 2-PR-68-340, PZR PRESS - PSIG, on 2-M-5.

_____ (2315 psig, 2300-2330 psig) _____

[49] **PERFORM** the following as pressurizer pressure decreases to approximately 2302 psig:

A. **VERIFY** 2-XA-55-5A/90A, PZR PRESS HI, on 2-M-5, is CLEAR, **AND**

RECORD Pressurizer Pressure from 2-PR-68-340, PZR PRESS - PSIG, on 2-M-5.

_____ (2302 psig, 2287-2317 psig) _____

B. **VERIFY** Unit 2 Events Display Legend shows 90-A PRZ PRESS HI, CLEAR. _____

C. **VERIFY** 2-XA-55-L10/301A, PZR PRESS HI, on 2-L-10, is CLEAR, **AND**

RECORD Pressurizer Pressure from 2-PI-68-336C, PZR PRESS, on 2-L-10.

_____ (2302 psig, 2292-2312 psig) _____

D. **PLACE** handswitch 2-HS-68-333A, BLOCK VLV FOR PORV 340A, at 2-M-5, to OPEN, **AND**

RELEASE to the center position. _____

E. **VERIFY** 2-FCV-68-333, PRESSURIZER PORV BLOCK VALVE, is OPEN by indicating lights at 2-HS-68-333A. _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

F. **PLACE** handswitch 2-HS-68-332A, BLOCK VLV FOR PORV 334, at 2-M-5, to OPEN, **AND**

RELEASE to the center position. _____

G. **VERIFY** 2-FCV-68-332, PRESSURIZER PORV BLOCK VALVE, is OPEN by indicating lights at 2-HS-68-332A. _____

NOTE

The following step will turn off the two backup heater groups to allow the pressurizer heater trip interlock on low pressure to be returned to normal. Continue to use the pressurizer heater group C and sprays to gradually decrease pressurizer pressure.

[50] **PERFORM** the following:

A. **ENSURE** handswitch 2-HS-68-341A, BACKUP HEATERS A-A, at 2-M-4, is placed to OFF, **AND**

VERIFY backup heater group A-A is OFF by indicating lights. _____

B. **ENSURE** handswitch 2-HS-68-341D, BACKUP HEATERS B-B, at 2-M-4, is placed to OFF, **AND**

VERIFY backup heater group B-B is OFF by indicating lights. _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

CAUTION

Follow standard precautions when working around energized electrical equipment in accordance with TVA Safety Manual Procedure 1021. In addition, follow TI-300 when working around electrical equipment.

NOTE

The following two steps connect the pressurizer pressure trip relay signal to both the Backup Heater Groups A-A and B-B. This will allow the testing of the low pressure backup heater setpoint of 2210 psig.

[51] **LAND** the lifted wire on contact point 3 of relay PB455GXA, in 2-R-54, to return the pressurizer low pressure trip relay signal to the Backup Heater A-A. _____

_____
CV

[52] **LAND** the lifted wire on contact point 3 of relay PB455GXB, in 2-R-55, to return the pressurizer low pressure trip relay signal to Backup Heater B-B. _____

_____
CV

[53] **PERFORM** the following:

A. **PLACE** handswitch 2-HS-68-341A, BACKUP HEATERS A-A, at 2-M-4, to A-P AUTO, **AND**

VERIFY backup heater group A-A is OFF by indicating lights. _____

B. **PLACE** handswitch 2-HS-68-341D, BACKUP HEATERS B-B, at 2-M-4, to A-P AUTO, **AND**

VERIFY backup heater group B-B is OFF by indicating lights. _____

[54] **PLACE** handswitch 2-HS-68-341H, BACKUP HEATERS C, on 2-M-4, to OFF, **AND**

RELEASE to P AUTO. _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

[55] **VERIFY** backup heater group C is OFF by indicating lights at 2-HS-68-341H, BACKUP HEATERS C, on 2-M-4. _____

[56] **VERIFY** the following:

A. 2-XA-55/90B, PZR PRESS LO-DEVN BACKUP HTRS ON, at 2-M-5, is CLEAR. _____

B. 2-XA-55-L10/301B, PZR PRESS LO, on 2-L-10, is CLEAR. _____

NOTE

PERFORM the following as pressurizer pressure decreases to approximately 2220 psig.

[57] **VERIFY** ICS Point 2PC0680340E, PZR VARIABLE HTR CNTL OUTPUT, is 100%, **AND**

RECORD pressurizer pressure indication on 2-PR-68-340, PZR PRESS - PSIG, on 2-M-5.

_____ (2220 psig, 2205-2235 psig) _____

[58] **PERFORM** the following as pressurizer pressure decreases to 2210 psig:

A. **VERIFY** Backup heater group A-A is ON by indicating lights at 2-HS-68-341A, BACKUP HEATERS A-A, at 2-M-4, **AND**

RECORD pressurizer pressure indication on 2-PR-68-340, PZR PRESS - PSIG, on 2-M-5. **(Acc Crit 5.0[7]A)**

_____ (2210 psig, 2195-2225 psig) _____

B. **VERIFY** Backup heater group B-B is ON by indicating lights at 2-HS-68-341D, BACKUP HEATERS B-B, at 2-M-4. _____

C. **VERIFY** Backup heater group C is ON by indicating lights at 2-HS-68-341H, BACKUP HEATERS C, at 2-M-4. _____

D. **VERIFY** 2-XA-55-5A/90B, PZR PRESS LO-DEVN BACKUP HTRS ON, on 2-M-5, ALARMS. _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

E. **VERIFY** 2-XA-55-L10/301B, PZR PRESS LO, on 2-L-10, ALARMS, **AND**

RECORD pressurizer pressure indication on 2-PI-68-337C, PZR PRESS, on 2-L-10.

_____ (2210 psig, 2200-2220 psig) _____

NOTES

1) Continue decreasing pressurizer pressure gradually using the backup heaters and spray valves.
2) Backup heater groups A-A and B-B can be de-energized to increase the pressure decrease rate.
3) Backup heater group C will continue to be energized and cannot be manually de-energized when less than the low pressure setpoint of 2210 psig.

[59] **VERIFY** the following:

A. 2-XX-55-6A/14, PZR PRESS HI >P11 PS-68-340B, on 2-M-6, is LIT. _____

B. 2-XX-55-6A/34, PZR PRESS HI >P11 PS-68-334B, on 2-M-6, is LIT. _____

C. 2-XX-55-6A/54, PZR PRESS HI >P11 PS-68-323B, on 2-M-6, is LIT. _____

D. 2-XX-55-6A/10, PZR PRESS LO RX TRIP PS-68-340E, on 2-M-6, is NOT LIT. _____

E. 2-XX-55-6A/30, PZR PRESS LO RX TRIP PS-68-334E, on 2-M-6, is NOT LIT. _____

F. 2-XX-55-6A/50, PZR PRESS LO RX TRIP PS-68-323E, on 2-M-6, is NOT LIT. _____

G. 2-XX-55-6A/70, PZR PRESS LO RX TRIP PS-68-322E, on 2-M-6, is NOT LIT. _____

H. 2-XA-55-6C/124C, PZR PRESS LO, on 2-M-6, is CLEAR. _____

I. 2-XA-55-4A/69A, P-11 PZR PRESS PZR/STM PRESS SI BLOCK PERMISSIVE, on 2-M-4, is CLEAR. _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

NOTE

The P-7 protection permissive (Blocks low pressure reactor trip when nuclear and turbine power less than 10%) should be ARMED (LIT) during this test. If the P-7 is UNARMED (NOT LIT), the performance of this test will not be impacted.

[60] **RECORD** the status of 2-XA-55-4A/70D, P-7 LO POWER TRIPS BLOCKED.

_____ (LIT / NOT LIT) _____

NOTES

1) The Pressurizer Pressure Low Reactor Trip and the Manual Block SI Pressure Bistables are set to the same value. Be vigilant to capture the required data in the next step.
2) The first out annunciator panel 2-XA-55-4D may annunciate in the following step IF the P-7 protection permissive is unarmed. Clearing the reactor first out annunciator can be performed using handswitch 2-XS-55-4D on 2-M-4, as necessary.

[61] **PERFORM** the following as pressurizer pressure approaches 1970 psig:

A. **VERIFY** 2-XX-55-6A/10, PZR PRESS LO RX TRIP PS-68-340E, on 2-M-6, is LIT, **AND**

RECORD pressurizer pressure indication on 2-PI-68-340A, PZR PRESS, on 2-M-5.

_____ (1970 psig, 1960-1980 psig) _____

B. **VERIFY** 2-XX-55-6A/30, PZR PRESS LO RX TRIP PS-68-334E, on 2-M-6, is LIT, **AND**

RECORD pressurizer pressure indication on 2-PI-68-334, PZR PRESS, on 2-M-5.

_____ (1970 psig, 1960-1980 psig) _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

C. **VERIFY** 2-XX-55-6A/50, PZR PRESS LO RX TRIP PS-68-323E, on 2-M-6, is LIT, **AND**

RECORD pressurizer pressure indication on 2-PI-68-323, PZR PRESS, on 2-M-5.

_____ (1970 psig, 1960-1980 psig) _____

D. **VERIFY** 2-XX-55-6A/70, PZR PRESS LO RX TRIP PS-68-322E, on 2-M-6, is LIT, **AND**

RECORD pressurizer pressure indication on 2-PI-68-322, PZR PRESS, on 2-M-5.

_____ (1970 psig, 1960-1980 psig) _____

E. **VERIFY** 2-XA-55-6C/124C, PZR PRESS LO, on 2-M-6, ALARMS. **(Acc Crit 5.0[7]C)** _____

F. **VERIFY** Unit 2 Events Display shows 124-C PZR PRESS LO, in ALARM. _____

G. **VERIFY** 2-XX-55-6A/14, PZR PRESS HI >P11 PS-68-340B, on 2-M-6, is NOT LIT, **AND**

RECORD pressurizer pressure indication on 2-PI-68-340A, PZR PRESS, on 2-M-5.

_____ (1970 psig, 1960-1980 psig) _____

H. **VERIFY** 2-XX-55-6A/34, PZR PRESS HI >P11 PS-68-334B, on 2-M-6, is NOT LIT, **AND**

RECORD pressurizer pressure indication on 2-PI-68-334, PZR PRESS, on 2-M-5.

_____ (1970 psig, 1960-1980 psig) _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

I. **VERIFY** 2-XX-55-6A/54, PZR PRESS HI >P11 PS-68-323B, on 2-M-6, is NOT LIT, **AND**

RECORD pressurizer pressure indication on 2-PI-68-334, PZR PRESS, on 2-M-5.

_____ (1970 psig, 1960-1980 psig) _____

J. **VERIFY** 2-XA-55-4A/69A, P-11 PZR PRESS PZR/STM PRESS SI BLOCK PERMISSIVE, on 2-M-4, ALARMS. **(Acc Crit 5.0[7]C)** _____

[62] **CONTROL** pressurizer pressure at approximately 1945 psig (1940 - 1950 psig) using 2-PIC-68-340B, LOOP 2 SPRAY CONTROL, and 2-PIC-68-340D, LOOP 1 SPRAY CONTROL. _____

[63] **PLACE** handswitch 2-HS-63-136A, LO PZR PRESS SI BLOCK P-11, on 2-M-4, to BLOCK, **AND**

RELEASE to the normal position. _____

[64] **PLACE** handswitch 2-HS-63-136B, LO PZR PRESS SI BLOCK P-11, on 2-M-4, to BLOCK, **AND**

RELEASE to the normal position. _____

[65] **VERIFY** 2-XA-55-4A/69B, PZR PRESS SI BLOCKED, on 2-M-4, is in ALARM. _____

NOTES

1) Pressurizer heatup is limited to 100 °F/hr and cooldown is limited to 200 °F/hr.
2) An increase in pressurizer sprays will be used to gradually decrease pressurizer pressure. Limit the pressurizer pressure increase rate to 5 psi/min or less when approaching verification performance steps.

[66] **ENSURE** a GRADUAL decrease in pressurizer pressure by manually adjusting the spray flow using the 2-PIC-68-340B, LOOP 2 SPRAY CONTROL, and 2-PIC-68-340D, LOOP 1 SPRAY CONTROL. _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

[67] **PERFORM** the following as pressurizer pressure decreases to 1870 psig:

A. **VERIFY** 2-XX-55-6A/13, PZR PRESS LO SI PS-68-340D, on 2-M-6, ALARMS, **AND**

RECORD pressurizer pressure indication on 2-PI-68-340A, PZR PRESS, on 2-M-5.

_____ (1870 psig, 1860-1880 psig) _____

B. **VERIFY** 2-XX-55-6A/33, PZR PRESS LO SI PS-68-344D, on 2-M-6, ALARMS, **AND**

RECORD pressurizer pressure indication on 2-PI-68-334, PZR PRESS, on 2-M-5.

_____ (1870 psig, 1860-1880 psig) _____

C. **VERIFY** 2-XX-55-6A/53, PZR PRESS LO SI PS-68-323D, on 2-M-6, ALARMS, **AND**

RECORD pressurizer pressure indication on 2-PI-68-323, PZR PRESS, on 2-M-5.

_____ (1870 psig, 1860-1880 psig) _____

D. **VERIFY** 2-XA-55-6C/124D, PZR LO PRESS SI, on 2-M-6, ALARMS. **(Acc Crit 5.0[7]C)** _____

E. **VERIFY** Unit 2 Events Display Legend Shows 124-D PZR LO PRESS SI, in ALARM. _____

[68] **CONTROL** pressurizer pressure constant at approximately 1870 psig using 2-PIC-68-340B, LOOP 2 SPRAY CONTROL, and 2-PIC-68-340D, LOOP 1 SPRAY CONTROL. _____

[69] **RECORD** the steady state plant data for the 1870 psig pressure data point in Data Sheet 1, **AND**

VERIFY indicators 2-PI-68-340A, 334, 323, and 322 are within 15 psig of each other. **(Acc Crit 5.0[7]B)** _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

NOTE

Pressurizer heatup is limited to 100 °F/hr and cooldown is limited to 200 °F/hr.

[70] **PERFORM** the following:

A. **PLACE** handswitch 2-HS-68-341A, BACKUP HEATERS A-A, at 2-M-4, to ON, **AND**

RELEASE to A-P AUTO. _____

B. **VERIFY** backup heater group A-A is ON by indicating lights at 2-HS-68-341A, BACKUP HEATERS A-A, at 2-M-4. _____

C. **PLACE** handswitch 2-HS-68-341D, BACKUP HEATERS B-B, at 2-M-4, to ON, **AND**

RELEASE to A-P AUTO. _____

D. **VERIFY** backup heater group B-B is ON by indicating lights at 2-HS-68-341D, BACKUP HEATERS B-B, at 2-M-4. _____

NOTES

1) Pressurizer heatup is limited to 100 °F/hr and cooldown is limited to 200 °F/hr.
2) A combination of backup heaters and sprays can be used to gradually increase pressurizer pressure. Limit the pressurizer pressure increase rate to 5 psi/min or less when approaching verification performance steps.

[71] **ENSURE** a gradual increase in pressurizer pressure by manually adjusting the spray flow using the 2-PIC-68-340B, LOOP 2 SPRAY CONTROL, and 2-PIC-68-340D, LOOP 1 SPRAY CONTROL. _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

[72] **PERFORM** the following as pressurizer pressure reaches 1878 psig:

A. **VERIFY** 2-XX-55-6A/13, PZR PRESS LO SI PS-68-340D, on 2-M-6, is CLEAR, **AND**

RECORD pressurizer pressure indication on 2-PI-68-340A, PZR PRESS, on 2-M-5.

_____ (1878 psig, 1868-1888 psig) _____

B. **VERIFY** 2-XX-55-6A/33, PZR PRESS LO SI PS-68-344D, on 2-M-6, is CLEAR, **AND**

RECORD pressurizer pressure indication on 2-PI-68-334, PZR PRESS, on 2-M-5.

_____ (1878 psig, 1868-1888 psig) _____

C. **VERIFY** 2-XX-55-6A/53, PZR PRESS LO SI PS-68-323D, on 2-M-6, is CLEAR, **AND**

RECORD pressurizer pressure indication on 2-PI-68-323, PZR PRESS, on 2-M-5.

_____ (1878 psig, 1868-1888 psig) _____

D. **VERIFY** 2-XA-55-6C/124D, PZR LO PRESS SI, on 2-M-6, CLEARS. _____

E. **VERIFY** Unit 2 Events Display Legend Shows 124-D PZR LO PRESS SI, CLEAR. _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

NOTE

The first out annunciator panel 2-XA-55-4D may clear in the following step. Clearing the reactor first out annunciator can be performed using handswitch 2-XS-55-4D, as necessary.

[73] **PERFORM** the following as pressurizer pressure reaches 1978 psig.

A. **VERIFY** 2-XX-55-6A/14, PZR PRESS HI >P11 PS-68-340B, on 2-M-6, is LIT, **AND**

RECORD pressurizer pressure indication on 2-PI-68-340A, PZR PRESS, on 2-M-5.

_____ (1978 psig, 1968-1988 psig) _____

B. **VERIFY** 2-XX-55-6A/34, PZR PRESS HI >P11 PS-68-334B, on 2-M-6, is LIT, **AND**

RECORD pressurizer pressure indication on 2-PI-68-334, PZR PRESS, on 2-M-5.

_____ (1978 psig, 1968-1988 psig) _____

C. **VERIFY** 2-XX-55-6A/54, PZR PRESS HI >P11 PS-68-323B, on 2-M-6, is LIT, **AND**

RECORD pressurizer pressure indication on 2-PI-68-323, PZR PRESS, on 2-M-5.

_____ (1978 psig, 1960-1988 psig) _____

D. **VERIFY** 2-XX-55-6A/10, PZR PRESS LO RX TRIP PS-68-340E, on 2-M-6, is NOT LIT, **AND**

RECORD pressurizer pressure indication on 2-PI-68-340A, PZR PRESS, on 2-M-5.

_____ (1978 psig, 1968-1988 psig) _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

E. **VERIFY** 2-XX-55-6A/30, PZR PRESS LO RX TRIP PS-68-334E, on 2-M-6, is NOT LIT, **AND**

RECORD pressurizer pressure indication on 2-PI-68-334, PZR PRESS, on 2-M-5.

_____ (1978 psig, 1968-1988 psig) _____

F. **VERIFY** 2-XX-55-6A/50, PZR PRESS LO RX TRIP PS-68-323E, on 2-M-6, is NOT LIT, **AND**

RECORD pressurizer pressure indication on 2-PI-68-323, PZR PRESS, on 2-M-5.

_____ (1978 psig, 1960-1988 psig) _____

G. **VERIFY** 2-XX-55-6A/70, PZR PRESS LO RX TRIP PS-68-322E, on 2-M-6, is NOT LIT, **AND**

RECORD pressurizer pressure indication on 2-PI-68-322, PZR PRESS, on 2-M-5.

_____ (1978 psig, 1960-1988 psig) _____

H. **VERIFY** 2-XA-55-6C/124C, PZR PRESS LO, on 2-M-6, CLEARS. _____

I. **VERIFY** Unit 2 Events Display shows 124-C PZR PRESS LO, CLEAR. _____

[74] **PERFORM** the following as pressurizer pressure reaches 2218 psig:

A. **VERIFY** 2-XA-55-5A/90B, PZR PRESS LO-DEVN BACKUP HTRS ON, on 2-M-5, is CLEAR, **AND**

RECORD pressurizer pressure on recorder 2-PR-68-340, PZR PRESS - PSIG, at 2-M-5.

_____ (2218 psig, 2205-2233 psig) _____

B. **VERIFY** heater groups A-A are OFF by indicating lights at 2-HS-68-341A, BACKUP HEATERS A-A, at 2-M-4. _____

Date _____

6.6 Pressurizer Pressure Functional Test (continued)

C. **VERIFY** heater groups B-B are OFF by indicating lights at 2-HS-68-341D, BACKUP HEATERS B-B, at 2-M-4. _____

D. **VERIFY** heater groups C are ON by indicating lights at 2-HS-68-341H, BACKUP HEATERS C, at 2-M-4. _____

E. **VERIFY** heater groups D are ON by indicating lights at 2-HS-68-34F, CONTROL HEATERS D, at 2-M-4. _____

[75] **PLACE** handswitch 2-HS-68-341H, BACKUP HEATERS C, at 2-M-4, to the OFF position, **AND**

RELEASE to the P AUTO position. _____

[76] **ENSURE** the Loop 2 spray valve is CLOSED using controller 2-PIC-68-340B, LOOP 2 SPRAY CONTROL, at 2-M-4, **AND**

VERIFY on 2-XI-68-340B, PZR SPRAY LOOP 2, at 2-M-4, Green Light is ON. _____

[77] **ENSURE** the Loop 1 spray valve is CLOSED using controller 2-PIC-68-340D, LOOP 1 SPRAY CONTROL, 2-M-4, **AND**

VERIFY on 2-XI-68-340D, PZR SPRAY LOOP 1, at 2-M-4, Green Light is ON. _____

[78] **PLACE** the following controllers to AUTO:

A. 2-PIC-68-340B, LOOP 2 SPRAY CONTROL, at 2-M-4. _____

B. 2-PIC-68-340D, LOOP 1 SPRAY CONTROL, at 2-M-4. _____

[79] **VERIFY** pressurizer pressure is controlled to approximately 2235 psig as indicated on recorder 2-PR-68-340, PZR PRESS - PSIG, on 2-M-5. _____

[80] **RECORD** steady state data in Data Sheet 1 for Auto Control 2235 psig, **AND**

VERIFY indications 2-PI-68-68-340A, 334, 323, and 322 are within 15 psi of each other. **(Acc Crit 5.0[7]B)** _____

Date _____

6.7 Pressurizer Pressure Control Test

CAUTION

Ensure all unnecessary personnel are evacuated from the lower containment for the performance of this Subsection.

[1] **ENSURE** prerequisites listed in Section 4.0 for Subsection 6.7 have been completed. _____

[2] **ENSURE** controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, on 2-M-5, is in MAN, **AND**

MANUALLY CONTROL pressurizer level to approximately 25% of level span, as indicated on recorder 2-LR-68-339, PZR LEVEL - %, on 2-M-5. _____

[3] **ENSURE** controller 2-PIC-68-340A, PZR PRESS MASTER CONTROL, at 2-M-4, setpoint is 67% (2236 psig). _____

[4] **ENSURE** controller 2-PIC-68-340A, PZR PRESS MASTER CONTROL, at 2-M-4, is placed to AUTO, **AND**

VERIFY pressurizer pressure is AUTOMATICALLY controlled to approximately 2235 psig, as indicated on recorder 2-PR-68-340, PZR PRESS - PSIG, on 2-M-5. _____

[5] **PLACE** handswitch 2-HS-68-341F, CONTROL HEATERS D, at 2-M-4, to ON, **AND**

RELEASE to the P AUTO position. _____

[6] **ENSURE** controller 2-PIC-68-340B, LOOP 2 SPRAY CONTROL, at 2-M-5, is placed to AUTO. _____

[7] **ENSURE** controller 2-PIC-68-340D, LOOP 1 SPRAY CONTROL, 2-M-5, is placed to AUTO. _____

[8] **ENSURE** handswitch 2-HS-68-341H, BACKUP HEATERS C, at 2-M-4, is placed to P AUTO. _____

[9] **ENSURE** handswitch 2-HS-68-341D, BACKUP HEATERS B-B, at 2-M-4, is placed to A-P AUTO. _____

[10] **ENSURE** handswitch 2-HS-68-341A, BACKUP HEATERS A-A, at 2-M-4, is placed to A-P AUTO. _____

Date _____

6.7 Pressurizer Pressure Control Test (continued)

[11] **VERIFY** pressurizer pressure is controlled to approximately 2235 psig by the recorder 2-PR-68-340, PZR PRESS - PSIG, on 2-M-5. _____

[12] **ENSURE** handswitch 2-HS-68-340AA, PZR PORV 340A, is placed in the P AUTO position, **AND**

VERIFY 2-PCV-68-340A is CLOSED by indicating lights. _____

[13] **ENSURE** handswitch 2-HS-68-334A, PZR PORV 334, PZR PORV 334, is placed in the P AUTO position, **AND**

VERIFY 2-PCV-68-334 is CLOSED by indicating lights. _____

[14] **PLACE** handswitch 2-HS-68-333A, BLOCK VLV FOR PORV 340A, to the OPEN position, **AND**

RELEASE to the center position. _____

[15] **VERIFY** 2-FCV-68-333 is OPEN by indicating lights at 2-HS-68-333A, BLOCK VLV FOR PORV 340A, on 2-M-4. _____

[16] **PLACE** handswitch 2-HS-68-332A, BLOCK VLV FOR PORV 334, is placed in the OPEN position, **AND**

RELEASE to the center position. _____

[17] **VERIFY** 2-FCV-68-332 is OPEN by indicating lights at 2-HS-68-332A, BLOCK VLV FOR PORV 334, on 2-M-4. _____

NOTE

Automatic pressurizer pressure control to an induced pressure setpoint increase will be tested in the following steps. The pressurizer pressure setpoint increase should be as close to a step increase as possible.

[18] **RECORD** the current time.

Start Time _____ _____

[19] **INCREASE** the setpoint of controller 2-PIC-68-340A, PZR PRESS MASTER CONTROLLER, at 2-M-4, to 74% (2292 psig). _____

Date _____

6.7 Pressurizer Pressure Control Test (continued)

[20] **VERIFY** pressurizer pressure is controlled, on average, to 2292 psig (2282 - 2301 psig) with decreasing oscillations to within ±10 psig, as indicated on recorder 2-PR-68-340, PZR PRESS - PSIG, on 2-M-5. **(Acc Crit 5.0[8]A)** _____

[21] **RECORD** the current time.

End Time _____ _____

[22] **PRINT** the pressurizer pressure transient response captured on the ICS for the time interval recorded. **AND**

LABEL with 2-PTI-68-15, revision number, step number, date, and initial. _____

[23] **ATTACH** the transient plot to this instruction. _____

NOTE

Automatic pressurizer pressure control to an induced pressure setpoint decrease will be tested in the following steps. The pressurizer pressure setpoint increase should be as close to a step increase as possible.

[24] **RECORD** the current time.

Start Time _____ _____

[25] **DECREASE** the setpoint of controller 2-PIC-68-340A, PZR PRESS MASTER CONTROLLER, at 2-M-4, to 67% (2236 psig). _____

[26] **VERIFY** pressurizer pressure is controlled, on average, to 2236 psig (2226 - 2246 psig) with decreasing oscillations within ±10 psig, as indicated on recorder 2-PR-68-340, PZR PRESS - PSIG, on 2-M-5. **(Acc Crit 5.0[8]B)** _____

[27] **RECORD** the current time.

End Time _____ _____

[28] **PRINT** the pressurizer pressure transient response captured on the ICS for the time interval recorded. **AND**

LABEL with 2-PTI-68-15, revision number, step number, date, and initial. _____

Date _____

6.7 Pressurizer Pressure Control Test (continued)

[29] **ATTACH** the transient plot to this instruction. _____

Date _____

6.8 PORV Dynamic Testing and Leak Integrity

CAUTION

Ensure all unnecessary personnel are evacuated from the lower containment for the performance of this Subsection.

[1] **ENSURE** prerequisites listed in Section 4.0 for Subsection 6.8 have been completed. _____

[2] **ENSURE** controller 2-PIC-68-340A, PZR PRESS MASTER CONTROL, at 2-M-4, is in AUTO, **AND**

VERIFY pressurizer pressure is AUTOMATICALLY controlled to approximately 2235 psig, as indicated on recorder 2-PR-68-340, PZR PRESS - PSIG, on 2-M-5. _____

[3] **ENSURE** handswitch 2-HS-68-301A, PRT VENT TO WDS VENT HDR, at 2-M-5, is placed to CLOSED, **AND**

VERIFY 2-PCV-68-301 is CLOSED by indicating lights. _____

[4] **ENSURE** handswitch 2-HS-68-334A, PZR PORV 334, at 2-M-5, is placed to P AUTO, **AND**

VERIFY 2-PCV-68-334, PRESSURIZER PORV, is closed by indicating lights. _____

[5] **ENSURE** handswitch 2-HS-68-340AA, PZR PORV 340A, at 2-M-5, is placed to P AUTO, **AND**

VERIFY 2-PCV-68-340A, PRESSURIZER PORV, is closed by indicating lights. _____

[6] **ENSURE** handswitch 2-HS-68-332A, BLOCK VLV FOR PORV 334, at 2-M-5, is placed to OPEN, **AND**

RELEASED to the center position. _____

[7] **VERIFY** 2-FCV-68-332, PRESSURIZER PORV BLOCK VALVE, is OPEN by indicating lights at 2-HS-68-332A, BLOCK VLV FOR PORV 334, at 2-M-5. _____

[8] **ENSURE** handswitch 2-HS-68-333A, BLOCK VLV FOR PORV 340A, at 2-M-5, is placed to OPEN, **AND**

RELEASED to the center position. _____

Date _____

6.8 PORV Dynamic Testing and Leak Integrity (continued)

[9] **VERIFY** 2-FCV-68-333, PRESSURIZER PORV BLOCK VALVE, is OPEN by indicating lights at 2-HS-68-333A, BLOCK VLV FOR PORV 340A, at 2-M-5. _____

[10] **VERIFY** there is NO leakage through 2-PCV-68-340A, PRESSURIZER PORV, or 2-PCV-68-334, PRESSURIZER PORV, by the following indicators:

A. **VERIFY** 2-XA-55-5A/89A, PZR PORV LINE TEMP HI, on 2-M-5, is CLEAR. _____

B. **VERIFY** temperature indication on 2-TI-68-331, PORV 340A and 334 TAILPIPE TEMP, on 2-M-4, does not indicate a leaking PORV (> ambient temperature), **AND**

RECORD the temperature indication.

_____ °F _____

C. **VERIFY** 2-XA-55-5A/91A, PZR PORV/SAFETY OPEN, on 2-M-5, is CLEAR. _____

D. **VERIFY** 2-XI-68-340A, PORV, on 0-M-25, is NOT LIT. _____

E. **VERIFY** 2-XI-68-334, PORV, on 0-M-25, is NOT LIT. _____

[11] **ENSURE** pressure, temperature, and water level conditions of 2-TANK-68-PRT, PRESSURIZER RELIEF TANK, are in accordance with 2-TOP-68-02, RCS - HFT. _____

[12] **ENSURE** controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, on 2-M-5, is in MAN control, **AND**

ADJUST controller 2-HIC-92-93A valve demand to control pressurizer water level to approximately 50%. _____

[13] **VERIFY** the following:

A. 2-XA-55-5A/88D, PRT TEMP HI, on 2-M-5, is CLEAR. _____

B. 2-XA-55-5A/88C, PRT PRESS HI, on 2-M-5, is CLEAR. _____

C. 2-XA-55-5A/88B, PRT LEVEL HI/LO, on 2-M-5, is CLEAR. _____

Date _____

6.8 PORV Dynamic Testing and Leak Integrity (continued)

[14] **NOTIFY** Test Director for 2-PTI-999-01 that conditions have been established for vibrations testing. _____

[15] **NOTIFY** Test Director for 2-TI-85.012 that conditions have been established for MOV testing. _____

CAUTIONS

1) Opening 2-PCV-68-340A, PRESSURIZER PORV, will result in a pressurizer blowdown to the PRT. Be prepared to place 2-HS-68-333A, BLOCK VLV FOR PORV 340A, to the CLOSE position to close the 2-FCV-68-333A, PRESSURIZER PORV BLOCK VALVE, and limit the pressurizer pressure decrease and PRT pressure increase.
2) During pressurizer discharge, do NOT allow the pressurizer pressure to decrease less than 2015 psig or PRT pressure to exceed 50 psig.

NOTES

1) The remote opening time of 2-PCV-68-340A, PRESSURIZER PORV, will be measured using a data recorder.
2) The remote closing time of 2-FCV-68-333A, PRESSURIZER PORV BLOCK VALVE, will be measured using a stop watch.

[16] **START** Data Recorder #1. _____

[17] **PLACE** handswitch 2-HS-68-340AA, PZR PORV 340A, on 2-M-5, to the OPEN position, **AND**

VERIFY 2-PCV-68-340A, PRESSURIZER PORV, is OPEN by indicating lights. _____

[18] **VERIFY** the following:

A. 2-XA-55-5A/89A, PZR PORV LINE TEMP HI, on 2-M-5, ALARMS. _____

B. 2-XA-55-5A/91A, PZR PORV/SAFETY OPEN, on 2-M-5, ALARMS. _____

C. 2-XI-68-340A, PORV, on 0-M-25, is LIT. _____

Date _____

6.8 PORV Dynamic Testing and Leak Integrity (continued)

[19] **PLACE** handswitch 2-HS-68-333A, BLOCK VLV FOR PORV 340A, at 2-M-5, to CLOSE, **AND**

RECORD remote closing time using indicating lights on 2-HS-68-333A, BLOCK VLV FOR PORV 340A, at 2-M-5.

_____ seconds ($\leq$20 sec)

M&TE _____ Cal Due Date _____ _____

[20] **ENSURE** handswitch 2-HS-68-333A, BLOCK VLV FOR PORV 340A, at 2-M-5, is released to the center position. _____

[21] **STOP** Data Recorder #1. _____

[22] **RECORD** the remote opening time of 2-PCV-68-340A, PRESSURIZER PORV, from the data recorder.

_____ seconds ($\leq$ 2 sec)

M&TE _____ Cal Due Date _____ _____

[23] **VERIFY** the remote opening time of 2-PCV-68-340A, PRESSURIZER PORV, is less than or equal to 2 seconds. **(Acc Crit 5.0[4]D)** _____

[24] **VERIFY** the remote closing time of 2-FCV-68-333, PRESSURIZER PORV BLOCK VALVE, is less than or equal to 20 seconds. **(Acc Crit 5.0[2]B)** _____

[25] **WHEN** pressurizer pressure is greater than 2220 psig, as indicated by recorder 2-PR-68-340, PZR PRESS - PSIG, at 2-M-5, **THEN**

PLACE handswitch 2-HS-68-341H, BACKUP HEATERS C, at 2-M-4, to the OFF position, **AND**

RELEASE to P AUTO. _____

[26] **ENSURE** pressurizer pressure is automatically returned to approximately 2235 psig. _____

Date _____

6.8 PORV Dynamic Testing and Leak Integrity (continued)

[27] **ENSURE** pressurizer level is manually controlled to 50% using controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, at 2-M-5. _____

[28] **ENSURE** pressure, temperature, and water level conditions for 2-TANK-68-PRT, PRESSURIZER RELIEF TANK, are in accordance with 2-TOP-68-02, RCS - HFT. _____

[29] **VERIFY** the following:

A. 2-XA-55-5A/88D, PRT TEMP HI, on 2-M-5, is CLEAR. _____

B. 2-XA-55-5A/88C, PRT PRESS HI, on 2-M-5, is CLEAR. _____

C. 2-XA-55-5A/88B, PRT LEVEL HI/LO, on 2-M-5, is CLEAR. _____

D. 2-XA-55-5A/91A, PZR PORV/SAFETY OPEN, on 2-M-5, is CLEAR. _____

E. 2-XI-68-340A, PORV, on 0-M-25, is NOT LIT. _____

[30] **RECORD** steady state baseline pressurizer and PRT data in Data Sheet 2. _____

[31] **NOTIFY** Test Director for 2-PTI-999-01 that conditions have been established for vibrations testing. _____

[32] **NOTIFY** Test Director for 2-TI-85.012 that conditions have been established for MOV testing. _____

Date _____

6.8 PORV Dynamic Testing and Leak Integrity (continued)

CAUTIONS

1) Opening 2-FCV-68-333A, BLOCK VLV FOR PORV 340A, will result in a pressurizer blowdown to the PRT. Be prepared to place 2-HS-68-340AA, PRZ PORV 340A, to the CLOSE position to close the 2-PCV-68-340A, PRESSURIZER PORV, and limit the pressurizer pressure decrease and PRT pressure increase.
2) The secondary objective is to discharge the pressurizer steam equal to 110 percent of the volume above the full power pressurizer water level setpoint. The discharge time is approximately 1.5 minutes with one PORV and at the test conditions.
3) During pressurizer discharge, do NOT allow the pressurizer pressure to decrease less than 2015 psig or PRT pressure to exceed 50 psig.

NOTES

1) The remote opening time of 2-FCV-68-333, PRESSURIZER PORV BLOCK VALVE, will be measured using a stop watch.
2) The remote closing time of 2-PCV-68-340A, PRESSURIZER PORV, will be measured using a data recorder.

[33] **START** Data Recorder #1. _____

[34] **PLACE** handswitch 2-HS-68-333A, BLOCK VLV FOR PORV 340A, at 2-M-5, to OPEN, **AND**

RECORD remote opening time using indicating lights on 2-HS-68-333A, BLOCK VLV FOR PORV 340A, at 2-M-5. _____

_____ seconds (≤20 sec)

M&TE _____ Cal Due Date _____

[35] **WHEN** pressurizer pressure reaches 2035 psig as indicated by recorder 2-PR-68-340, PZR PRESS - PSIG, on 2-M-5, **THEN**

PLACE handswitch 2-HS-68-340AA, PZR PORV 340A, at 2-M-5, to CLOSE. _____

[36] **VERIFY** 2-PCV-68-340A is CLOSED by indicating lights at handswitch 2-HS-68-340AA, PZR PORV 340A, at 2-M-5. _____

[37] **STOP** data Recorder #1. _____

Date _____

6.8 PORV Dynamic Testing and Leak Integrity (continued)

[38] **VERIFY** the following:

A. 2-XA-55-5A/91A, PZR PORV/SAFETY OPEN, on 2-M-5, is CLEAR. _____

B. 2-XA-55-5A/89A, PZR PORV LINE TEMP HI, ALARMED. _____

C. 2-XA-55-5A/88C, PRT PRESS HI, on 2-M-5, ALARMED. _____

D. 2-XA-55-5A/88D, PRT TEMP HI, on 2-M-5, ALARMED. _____

[39] **RECORD** post discharge pressurizer and PRT data in Data Sheet 2. _____

[40] **RECORD** the following information.

A. PRT pressure as recorded in Data Sheet 2 for Step 6.8[39].

_____ psig _____

B. PRT temperature as recorded in Data Sheet 2 for Step 6.8[39].

_____ °F _____

[41] **VERIFY** PRT pressure is ≤ 50 psig. **(Acc Crit 5.0[9])** _____

[42] **VERIFY** PRT temperature is ≤ 200 °F. **(Acc Crit 5.0[9])** _____

[43] **RECORD** the remote closing time of 2-PCV-68-340A, PRESSURIZER PORV, from the data recorder. _____

_____ seconds (≤ 5 sec)

M&TE _____ Cal Due Date _____

[44] **VERIFY** the remote opening time of 2-FCV-68-333, PRESSURIZER PORV BLOCK VALVE, is less than 20 seconds. **(Acc Crit 5.0[2]B)** _____

[45] **VERIFY** the remote closing time of 2-PCV-68-340A, PRESSURIZER PORV, is less than or equal to 5 seconds. **(Acc Crit 5.0[4]E)** _____

Date _____

6.8 PORV Dynamic Testing and Leak Integrity (continued)

[46] **WHEN** pressurizer pressure is greater than 2220 psig, as indicated by recorder 2-PR-68-340, PZR PRESS - PSIG, at 2-M-5, **THEN**

PLACE handswitch 2-HS-68-341H, BACKUP HEATERS C, at 2-M-4, to the OFF position, **AND**

RELEASE to P AUTO. _____

[47] **ENSURE** pressurizer pressure is automatically returned to approximately 2235 psig. _____

[48] **ENSURE** pressurizer level is manually controlled to 50% using controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, at 2-M-5. _____

[49] **ENSURE** pressure, temperature, and water level conditions for 2-TANK-68-PRT, PRESSURIZER RELIEF TANK, are in accordance with 2-TOP-68-02, RCS - HFT. _____

[50] **VERIFY** there is NO leakage through 2-PCV-68-340A, PRESSURIZER PORV, by the following indicators:

A. **VERIFY** 2-XA-55-5A/89A, PZR PORV LINE TEMP HI, on 2-M-5, is CLEAR. **(Acc Crit 5.0[4]F)** _____

B. **VERIFY** temperature indication on 2-TI-68-331, PORV 340A and 334 TAILPIPE TEMP, on 2-M-4, does NOT indicate a leaking PORV (> ambient temperature), **AND**

RECORD the temperature indication.

_____ °F _____

C. **VERIFY** 2-XA-55-5A/91A, PZR PORV/SAFETY OPEN, on 2-M-5, is CLEAR. **(Acc Crit 5.0[4]F)** _____

D. **VERIFY** 2-XI-68-340A, PORV, on 0-M-25, is NOT LIT. _____

Date _____

6.8 PORV Dynamic Testing and Leak Integrity (continued)

[51] **VERIFY** the following:

A. 2-XA-55-5A/88D, PRT TEMP HI, on 2-M-5, is CLEAR. _____

B. 2-XA-55-5A/88C, PRT PRESS HI, on 2-M-5, is CLEAR. _____

C. 2-XA-55-5A/88B, PRT LEVEL HI/LO, on 2-M-5, is CLEAR. _____

[52] **NOTIFY** Test Director for 2-PTI-999-01 that conditions have been established for vibrations testing. _____

[53] **NOTIFY** Test Director for 2-TI-85.012 that conditions have been established for MOV testing. _____

CAUTIONS

1) Opening 2-PCV-68-334, PRESSURIZER PORV, will result in a pressurizer blowdown to the PRT. Be prepared to place 2-HS-68-332A, BLOCK VLV FOR PORV 334, to the CLOSE position to close the 2-FCV-68-332, PRESSURIZER PORV BLOCK VALVE, and limit the pressurizer pressure decrease and PRT pressure increase.
2) During pressurizer discharge, do NOT allow the pressurizer pressure to decrease less than 2015 psig or PRT pressure to exceed 50 psig.

NOTES

1) The remote opening time of 2-PCV-68-334, PRESSURIZER PORV, will be measured using a data recorder.
2) The remote closing time of 2-FCV-68-332, PRESSURIZER PORV BLOCK VALVE, will be measured using a stop watch.

[54] **START** the Data Recorder #2. _____

[55] **PLACE** handswitch 2-HS-68-334A, PZR PORV 334, on 2-M-5, to the OPEN position, **AND**

VERIFY 2-PCV-68-334, PRESSURIZER PORV, is OPEN by indicating lights. _____

Date _____

6.8 PORV Dynamic Testing and Leak Integrity (continued)

[56] **VERIFY** the following:

A. 2-XA-55-5A/89A, PZR PORV LINE TEMP HI, on 2-M-5, ALARMED. _____

B. 2-XA-55-5A/91A, PZR PORV/SAFETY OPEN, on 2-M-5, ALARMED. _____

C. 2-XI-68-334, PORV, on 0-M-25, is LIT. _____

[57] **PLACE** handswitch 2-HS-68-332A, BLOCK VLV FOR PORV 334, at 2-M-5, to CLOSE, **AND**

RECORD remote opening time using indicating lights on 2-HS-68-332A, BLOCK VLV FOR PORV 334, at 2-M-5. _____

_____ seconds (≤ 20 sec)

M&TE _____ Cal Due Date _____

[58] **ENSURE** handswitch 2-HS-68-332A, BLOCK VLV FOR PORV 334, at 2-M-5, is released to the center position. _____

[59] **STOP** Data Recorder #2. _____

[60] **RECORD** the remote opening time of 2-PCV-68-334, PRESSURIZER PORV, from the data recorder. _____

_____ seconds (≤ 2 sec)

M&TE _____ Cal Due Date _____

[61] **VERIFY** the remote opening time of 2-PCV-68-334, PRESSURIZER PORV, is less than or equal to 2 seconds. **(Acc Crit 5.0[3]D)** _____

[62] **VERIFY** the remote closing time of 2-FCV-68-332, PRESSURIZER PORV BLOCK VALVE, is less than or equal to 20 seconds. **(Acc Crit 5.0[1]B)** _____

Date _____

6.8 PORV Dynamic Testing and Leak Integrity (continued)

[63] **WHEN** pressurizer pressure is greater than 2220 psig, as indicated by recorder 2-PR-68-340, PZR PRESS - PSIG, at 2-M-5, **THEN**

PLACE handswitch 2-HS-68-341H, BACKUP HEATERS C, at 2-M-4, to the OFF position, **AND**

RELEASE to P AUTO. _____

[64] **ENSURE** pressurizer pressure is automatically returned to approximately 2235 psig. _____

[65] **ENSURE** pressurizer level is manually controlled to 50% using controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, at 2-M-5. _____

[66] **ENSURE** pressure, temperature, and water level conditions for 2-TANK-68-PRT, PRESSURIZER RELIEF TANK, are in accordance with 2-TOP-68-02, RCS - HFT. _____

[67] **VERIFY** the following:

A. 2-XA-55-5A/88D, PRT TEMP HI, on 2-M-5, is CLEAR. _____

B. 2-XA-55-5A/88C, PRT PRESS HI, on 2-M-5, is CLEAR. _____

C. 2-XA-55-5A/88B, PRT LEVEL HI/LO, on 2-M-5, is CLEAR. _____

D. 2-XA-55-5A/91A, PZR PORV/SAFETY OPEN, on 2-M-5, is CLEAR. _____

E. 2-XI-68-334, PORV, on 0-M-25, is NOT LIT. _____

[68] **RECORD** steady-state pressurizer and PRT data in Data Sheet 2. _____

[69] **NOTIFY** Test Director for 2-PTI-999-01 that conditions have been established for vibrations testing. _____

[70] **NOTIFY** Test Director for 2-TI-85.012 that conditions have been established for MOV testing. _____

Date _____

6.8 PORV Dynamic Testing and Leak Integrity (continued)

CAUTIONS

1) Opening 2-FCV-68-332A, BLOCK VLV FOR PORV 334, will result in a pressurizer blowdown to the PRT. Be prepared to place 2-HS-68-334A, PRZ PORV 334, to the CLOSE position to close the 2-PCV-68-334, PRESSURIZER PORV, and limit the pressurizer pressure decrease and PRT pressure increase.
2) The secondary objective is to discharge the pressurizer steam equal to 110 percent of the volume above the full power pressurizer water level setpoint. The discharge time is approximately 1.5 minutes with one PORV and at the test conditions.
3) During pressurizer discharge, do NOT allow the pressurizer pressure to decrease less than 2015 psig or PRT pressure to exceed 50 psig.

NOTES

1) The remote opening time of 2-FCV-68-332, PRESSURIZER PORV BLOCK VALVE, will be measured using a stop watch.
2) The remote closing time of 2-PCV-68-334, PRESSURIZER PORV, will be measured using a data recorder.

[71] **START** data recorder #2. _____

[72] **PLACE** handswitch 2-HS-68-332A, BLOCK VLV FOR PORV 334, at 2-M-5, to OPEN, **AND**

RECORD remote opening time using indicating lights on 2-HS-68-332A, BLOCK VLV FOR PORV 334, at 2-M-5. _____

_____ seconds (≤20 sec)

M&TE _____ Cal Due Date _____

[73] **WHEN** pressurizer pressure reaches 2035 psig as indicated by recorder 2-PR-68-340, PZR PRESS - PSIG, on 2-M-5, **THEN**

PLACE handswitch 2-HS-68-334A, PZR PORV 334, at 2-M-5, to CLOSE. _____

[74] **VERIFY** 2-PCV-68-334 is CLOSED by indicating lights at handswitch 2-HS-68-334A, PZR PORV 334, at 2-M-5. _____

[75] **STOP** data recorder #2. _____

Date _____

6.8 PORV Dynamic Testing and Leak Integrity (continued)

[76] **VERIFY** the following:

A. 2-XA-55-5A/91A, PZR PORV/SAFETY OPEN, on 2-M-5, is CLEAR. _____

B. 2-XA-55-5A/89A, PZR PORV LINE TEMP HI, ALARMED. _____

C. 2-XA-55-5A/88C, PRT PRESS HI, on 2-M-5, ALARMED. _____

D. 2-XA-55-5A/88D, PRT TEMP HI, on 2-M-5, ALARMED. _____

[77] **RECORD** pressurizer and PRT post-discharge data in Data Sheet 2. _____

[78] **RECORD** the following data.

A. PRT pressure recorded in Data Sheet 2 for Step 6.8[77].

_____ psig _____

B. PRT temperature recorded in Data Sheet 2 for Step 6.8[77].

_____ °F _____

[79] **VERIFY** PRT pressure is ≤ 50 psig. **(Acc Crit 5.0[9])** _____

[80] **VERIFY** PRT temperature is ≤ 200 °F. **(Acc Crit 5.0[9])** _____

[81] **RECORD** the remote closing time of 2-PCV-68-334, PRESSURIZER PORV, from the data recorder. _____

_____ seconds (≤ 5 sec)

M&TE _____ Cal Due Date _____

[82] **VERIFY** the remote opening time of 2-FCV-68-332, PRESSURIZER PORV BLOCK VALVE, is less than or equal to 20 seconds. **(Acc Crit 5.0[1]B)** _____

[83] **VERIFY** the remote closing time of 2-PCV-68-334, PRESSURIZER PORV, is less than or equal to 5 seconds. **(Acc Crit 5.0[3]E)** _____

Date _____

6.8 PORV Dynamic Testing and Leak Integrity (continued)

[84] **WHEN** pressurizer pressure is greater than 2220 psig, as indicated by recorder 2-PR-68-340, PZR PRESS - PSIG, at 2-M-5, **THEN**

PLACE handswitch 2-HS-68-341H, BACKUP HEATERS C, at 2-M-4, to the OFF position, **AND**

RELEASE to P AUTO. _____

[85] **ENSURE** pressurizer pressure is automatically returned to approximately 2235 psig. _____

[86] **ENSURE** pressurizer level is manually controlled to the no-load value of 25% using controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, at 2-M-5. _____

[87] **ENSURE** pressure, temperature, and water level conditions for 2-TANK-68-PRT, PRESSURIZER RELIEF TANK, are in accordance with 2-TOP-68-02, RCS - HFT. _____

[88] **VERIFY** there is NO leakage through 2-PCV-68-334, PRESSURIZER PORV, by the following indicators:

A. **VERIFY** 2-XA-55-5A/89A, PZR PORV LINE TEMP HI, on 2-M-5, is CLEAR. **(Acc Crit 5.0[3]F)** _____

B. **VERIFY** temperature indication on 2-TI-68-331, PORV 340A and 334 TAILPIPE TEMP, on 2-M-4, does not indicate a leaking PORV(> ambient temperature), **AND**

RECORD the temperature indication.

_____ °F _____

C. **VERIFY** 2-XA-55-5A/91A, PZR PORV/SAFETY OPEN, on 2-M-5, is CLEAR.**(Acc Crit 5.0[3]F)** _____

D. **VERIFY** 2-XI-68-334, PORV, on 0-M-25, is NOT LIT. _____

Date _____

6.8 PORV Dynamic Testing and Leak Integrity (continued)

[89] **VERIFY** the following:

A. 2-XA-55-5A/88D, PRT TEMP HI, on 2-M-5, is CLEAR. _____

B. 2-XA-55-5A/88C, PRT PRESS HI, on 2-M-5, is CLEAR. _____

C. 2-XA-55-5A/88B, PRT LEVEL HI/LO, on 2-M-5, is CLEAR. _____

[90] **RECORD** the steady state pressurizer and PRT data in Data Sheet 2. _____

[91] **DISCONNECT** Test Record #1 as follows:

[91.1] **DISCONNECT** Channel 1 from Terminal Board 1-2F, Point 2-RBCP1 (+) and Terminal Board 1-2E, Point 10-RBC6 (-) in 2-L-11A. (PORV Actuation Signal). _____

_____
CV

[91.2] **DISCONNECT** Channel 2 from Terminal Board 1-2F, Points 3-RBC2 (+) and 2-RBCN (-) in 2-L-11A. (PORV FULL CLOSED) _____

_____
CV

[91.3] **DISCONNECT** Channel 3 from Terminal Board 1-2F, Points 5-RBC12 (+) and 2-RBCN (-) in 2-L-11A. (PORV FULL OPEN) _____

_____
CV

Date _____

6.8 PORV Dynamic Testing and Leak Integrity (continued)

[92] **DISCONNECT** Test Recorder #2 as follows:

[92.1] **DISCONNECT** Channel 1 from Terminal Board 1-2F, Point 2-RBCP1 (+) and Terminal Board 1-2E, Point 10-RBC6 (-) in 2-L-11A. (PORV Actuation Signal). _____

_____
CV

[92.2] **DISCONCONNECT** Channel 2 from Terminal Board 1-2F, Points 3-RBC2 (+) and 2-RBCN (-) in 2-L-11A. (PORV FULL CLOSED) _____

_____
CV

[92.3] **CONNECT** Channel 3 from Terminal Board 1-2F, Points 5-RBC12 (+) and 2-RBCN (-) in 2-L-11A. (PORV FULL OPEN) _____

_____
CV

Date _____

6.9 Pressurizer Level Control Test

CAUTION

Ensure all unnecessary personnel are evacuated from the lower containment for the performance of this Subsection.

[1] **ENSURE** prerequisites listed in Section 4.0 for Subsection 6.9 have been completed. _____

[2] **ENSURE** controller 2-PIC-68-340A, PZR PRESS MASTER CONTROL, at 2-M-4, is placed in AUTO, **AND**

VERIFY pressurizer pressure is AUTOMATICALLY controlled to approximately 2235 psig, as indicated on recorder 2-PR-68-340, PZR PRESS - PSIG, on 2-M-5. _____

[3] **ENSURE** controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, on 2-M-5, is in MAN, **AND**

MANUALLY control pressurizer level to approximately 25% of level span, as indicated on recorder 2-LR-68-339, PZR LEVEL - %, on 2-M-5. _____

[4] **ENSURE** controller 2-LIC-68-339, CHARG FLOW/PZR LEVEL CONTROL, on 2-M-4, is in MAN. _____

[5] **RECORD** AUCT TAVG indication on recorder 2-TR-68-2B, TREF & AUCT TAVG - °F, on 2-M-5.

_____ °F _____

[6] **RECORD** PROGRAM LEVEL indication on recorder 2-LR-68-339, PZR LEVEL - %, on 2-M-5.

_____ % _____

[7] **VERIFY** recorded PROGRAM LEVEL corresponds to the recorded AUCT TAVG (557 °F - 588.2 °F, 25% - 60%). _____

[8] **PLACE** W213CP:W2PZRLVL:B80_CH to MANUAL using a Foxboro workstation. _____

[9] **PLACE** W213CP:W2PZRLVL:B80_CH to 25% level span. _____

[10] **PLACE** controller 2-LIC-68-339, CHARG FLOW/PZR LEVEL CONTROL, on 2-M-4, to AUTO. _____

Date _____

6.9 Pressurizer Level Control Test (continued)

[11] **PLACE** controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, at 2-M-5, to AUTO. _____

[12] **VERIFY** pressurizer level is controlled to approximately 25% level span. _____

NOTE

Automatic pressurizer level control to an induced pressurizer level setpoint increase will be tested in the following steps.

[13] **RECORD** the current time:

Start Time _____ _____

[14] **ADJUST** W213CP:W2PZRLVL:B80_CH to 30% level span using a Foxboro I/A workstation. _____

[15] **VERIFY** by 2-LR-68-339, PZR LEVEL - %, on 2-M-5, that pressurizer level is controlled to 30% level span with decreasing oscillations within ±1% of level span. **(Acc Crit 5.0[10]A)** _____

[16] **RECORD** the current time:

End Time _____ _____

[17] **PRINT** the pressurizer level transient response captured on the ICS for the time interval recorded, **AND**

LABEL with 2-PTI-68-15, revision number, step number, date, and initial. _____

[18] **ATTACH** the transient plot to this instruction. _____

Date _____

6.9 Pressurizer Level Control Test (continued)

NOTE

Automatic pressurizer level control to an induced pressurizer level setpoint decrease will be tested in the following steps.

[19] **RECORD** the current time.

Start Time _____ _____

[20] **ADJUST** W213CP:W2PZRLVL:B80_CH to 25% using a Foxboro I/A workstation. _____

[21] **VERIFY** by 2-LR-68-339, PZR LEVEL - %, on 2-M-5, that pressurizer level is controlled to 25% level span with decreasing oscillations within ± 1% of level span. **(Acc Crit 5.0[10]B)** _____

[22] **RECORD** the current time.

Start Time _____ _____

[23] **PRINT** the pressurizer level transient response from the ICS for the time interval recorded, **AND**

LABEL with 2-PTI-68-15, revision number, step number, date, and initial. _____

[24] **ATTACH** the transient plot to this instruction. _____

[25] **PLACE** W213CP:W2PZRLVL:B80_CH to AUTOMATIC using a Foxboro I/A workstation. _____

Date _____

6.10 Pressurizer Level Functional Test

CAUTION

Ensure all unnecessary personnel are evacuated from the lower containment for the performance of this Subsection.

[1] **ENSURE** prerequisites listed in Section 4.0 for Subsection 6.10 have been completed. _____

NOTE

The operator may take manual control of pressurizer pressure, as necessary, via controller 2-PIC-68-340A, PZR PRESS MASTER CONTROL, on 2-M-4, unless otherwise noted.

[2] **ENSURE** controller 2-PIC-68-340A, PZR PRESS MASTER CONTROL, at 2-M-4, is placed in AUTO, **AND**

VERIFY pressurizer pressure is AUTOMATICALLY controlled to approximately 2235 psig, as indicated on 2-PR-68-340, PRZ PRES - PSIG, on 2-M-5. _____

NOTE

The minimum letdown orifice flow for this subsection shall be 45 GPM. A letdown orifice combination of 75 GPM or more is recommended to provide accelerated level control.

[3] **ENSURE** normal letdown orifices OPEN are greater than or equal to 45 GPM by handswitch indications on 2-M-6. _____

[4] **ENSURE** controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, on 2-M-5, is placed to MAN, **AND**

MANUALLY CONTROL pressurizer level to approximately 25% as indicated on 2-LR-68-339, PZR LEVEL - %, at 2-M-5. _____

[5] **ENSURE** controller 2-LIC-68-339, CHARG FLOW/PZR LEVEL CONTROL, at 2-M-4, is placed to MAN. _____

[6] **ENSURE** controller 2-PIC-68-340B, LOOP 2 SPRAY CONTROL, at 2-M-4, is placed to AUTO. _____

[7] **ENSURE** controller 2-PIC-68-340D, LOOP 1 SPRAY CONTROL, 2-M-4, is placed to AUTO. _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

[8] **PLACE** handswitch 2-HS-68-341F, CONTROL HEATERS D, at 2-M-4, to the ON position, **AND**

RELEASE to the P AUTO position. _____

[9] **VERIFY** handswitch 2-HS-68-341H, BACKUP HEATERS C, at 2-M-4, is in the P AUTO position. _____

[10] **ENSURE** handswitch 2-HS-68-341D, BACKUP HEATERS B-B, at 2-M-4, is placed to A-P AUTO. _____

[11] **ENSURE** handswitch 2-HS-68-341A, BACKUP HEATERS A-A, at 2-M-4, is placed to A-P AUTO. _____

NOTE

Reactor coolant system high auctioneered temperature should be maintained at +0 °F,-5 °F throughout this entire subsection to maintain the pressurizer program level setpoint at 25% level span.

[12] **ENSURE** the auctioneered high Tavg, as indicated by 2-TR-68-2B, TREF & AUCT TAVG - °F, on 2-M-5, is 557 °F (+0,-5 °F) by adjusting the setpoint on 2-PIC-1-33, STM DUMP PRESS CONTROL, on 2-M-4. _____

[13] **RECORD** pressurizer level steady state data in Data Sheet 3, **AND**

VERIFY indications 2-LI-68-339, 2-LI-68-335, and 2-LI-68-320 are within 4% of each other. **(Acc Crit 5.0[11]B)** _____

[14] **VERIFY** the following:

A. 2-XA-55-5A/92B, PZR LEVEL HI-DEVN, on 2-M-5, is CLEAR. _____

B. Unit 2 Events Display Legend shows 92-B PZR LEVEL HI-DEVN, as Return to Normal. _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

CAUTIONS

1) Do NOT reduce pressurizer water level below 17% of level span without the pressurizer heaters all OFF. Uncovering the pressurizer heaters in an energized state will cause heater damage.
2) Do NOT allow the pressurizer vessel to be placed in a water solid condition.

NOTES

1) Pressurizer water level will be gradually increased to reach various pressurizer water level setpoints. Pressurizer water level will be increased to a maximum level of 100% of span.
2) Pressurizer water level will also be reduced to reach various pressurizer water level setpoints. Pressurizer water level will be reduced to 0% of span.
3) A pressurizer level increase rate of 0.5-1.0 %/min is recommended when approaching verification steps.

[15] **ESTABLISH** a gradual INCREASE in pressurizer level using controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, on 2-M-5. _____

NOTE

PERFORM the following Step as pressurizer level approaches 30% level span.

[16] **WHEN** 2-XA-55-5A/92B, PZR LEVEL HI-DEVN, on 2-M-5, ALARMS, **THEN**

A. **RECORD** the pressurizer level indication on 2-LR-68-339, PRZ LEVEL - %, on 2-M-5. **(Acc Crit 5.0[11]C)**

_____ % (30%, 28-32%) _____

B. **RECORD** the % DEVIATION on controller 2-LIC-68-339, CHARG FLOW/PZR LEVEL CONTROL, on 2-M-4.

_____ % (5%, 3-7%) _____

C. **RECORD** 2-LR-68-339A, PZR LEVEL, on 2-M-4.

_____ % (30%, 28-32%) _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

D. **RECORD** 2-LR-68-335A, PZR LEVEL, on 2-M-4.

_____ % (30%, 28-32%) _____

E. **RECORD** 2-LR-68-320, PZR LEVEL, on 2-M-4.

_____ % (30%, 28-32%) _____

F. **VERIFY** Unit 2 Events Display Legend shows 92-B PZR LEVEL HI-DEVN, in ALARM. _____

[17] **MAINTAIN** pressurizer level increase using 2-HIC-68-93A, CHARGING FLOW PZR LEVEL CONTROL, on 2-M-6, **AND**

CONTROL pressurizer level at 60% as indicated by 2-LR-68-339, PZR LEVEL - %, on 2-M-5. _____

[18] **RECORD** pressurizer data for 60% of level span in Data Sheet 3, **AND**

VERIFY indications 2-LI-68-339A, 2-LI-68-335A, and 2-LI-68-320 are within 4% of each other. **(Acc Crit 5.0[11]B)**. _____

[19] **VERIFY** 2-XA-55-5A/92A, PZR LEVEL HI/LO, at 2-M-5, is CLEAR. _____

[20] **ESTABLISH** a gradual INCREASE in pressurizer level using 2-HIC-68-93A, CHARGING FLOW PZR LEVEL CONTROL, on 2-M-6. _____

NOTE

PERFORM the following step as pressurizer level approaches 70% level span.

[21] **WHEN** 2-XA-55-5A/92A, PZR LEVEL HI/LO, at 2-M-5, ALARMS, **THEN**

A. **RECORD** pressurizer level indication on 2-LR-68-339, PZR LEVEL - %, on 2-M-5. **(Acc Crit 5.0[11]C)**

_____ % (70%, 68-72%) _____

B. **RECORD** 2-LI-68-339A, PZR LEVEL, on 2-M-4.

_____ % (70%, 68-72%) _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

C. **RECORD** 2-LI-68-335A, PZR LEVEL, on 2-M-4.

_____ % (70%, 68-72%) _____

D. **RECORD** 2-LI-68-320, PZR LEVEL, on 2-M-4.

_____ % (70%, 68-72%) _____

E. **VERIFY** Unit 2 Events Display Legend shows 92A PZR LEVEL HI/LO**,** in ALARM. _____

[22] **VERIFY** the following:

A. 2-XX-55-6A/9, PZR LEVEL HI LS-68-339, on 2-M-6, is CLEAR. _____

B. 2-XX-55-6A/29, PZR LEVEL HI LS-68-335A, on 2-M-6, is CLEAR. _____

C. 2-XX-55-6A/49, PZR LEVEL HI LS-68-320A, on 2-M-6, is CLEAR. _____

D. 2-XA-55-6C/124A, PZR LEVEL HI, on 2-M-6, is CLEAR. _____

E. 2-XX-55-L10/302A, PZR LEVEL HI, on 2-L-10, is CLEAR. _____

F. Unit 2 Events Display Legend shows 124-A PZR LEVEL HI, CLEAR. _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

NOTES

1) The P-7 protection permissive (Blocks low pressure reactor trip when nuclear and turbine power less than 10%) should be ARMED (LIT) during this test. If the P-7 is UNARMED (NOT LIT), the performance of this test will not be impacted.
2) The first out annunciator panel 2-XA-55-4D may annunciate in the following step IF the P-7 protection permissive is UNARMED (NOT LIT). Clearing the reactor first out annunciator can be performed using handswitch 2-XS-55-4D on 2-M-4, as necessary.

[23] **PERFORM** the following when pressurizer level approaches approximately 92% of level span:

A. **VERIFY** 2-XX-55-6A/9, PZR LEVEL HI LS-68-339, on 2-M-6, is in ALARM, **AND**

RECORD pressurizer level indication on 2-LI-68-339A, PZR LEVEL, on 2-M-4.

_____ 92%, 90-94% _____

B. **VERIFY** 2-XX-55-6A/29, PZR LEVEL HI LS-68-335A, on 2-M-6, is in ALARM, **AND**

RECORD pressurizer level indication on 2-LI-68-335A, PZR LEVEL, on 2-M-4.

_____ 92%, 90-94% _____

C. **VERIFY** 2-XX-55-6A/49, PZR LEVEL HI LS-68-320A, on 2-M-6, is in ALARM, **AND**

RECORD pressurizer level indication on 2-LI-68-320, PZR LEVEL, on 2-M-4.

_____ 92%, 90-94% _____

D. **VERIFY** 2-XA-55-6C/124A, PZR LEVEL HI, on 2-M-6, is ALARMED. **(Acc Crit 5.0[11]C)** _____

E. **VERIFY** Unit 2 Events Display Legend shows 124A PZR LEVEL HI, in ALARM. _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

F. **VERIFY** 2-XA-55-L10/302A, PZR LEVEL HI, is ALARMED, **AND**

RECORD pressurizer level indication on 2-LI-68-326C, PZR LEVEL, on 2-L-10.

_____ 92%, 90-94% _____

CAUTION

Expedite the performance of the next step to prevent the pressurizer from going water solid.

NOTES

1) PERFORM the following step as pressurizer level approaches 100% of level span.
2) Level Indicator 2-LI-68-321, PZR-COLD CAL LEVEL, on 2-M-4, can be used to monitor pressurizer level in addition to the normal pressurizer level indications.

[24] **ADJUST** controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, at 2-M-5, to MAINTAIN pressurizer level at or slightly below 100% of level span (99-100%). _____

[25] **RECORD** pressurizer data for 100% of level span on Data Sheet 3, **AND**

VERIFY indications 2-LI-68-339A, 2-LI-68-335A, and 2-LI-68-320 are within 4% of each other. **(Acc Crit 5.0[11]B)**. _____

[26] **ESTABLISH** a gradual DECREASE in pressurizer level using 2-HIC-68-93A, CHARGING FLOW PZR LEVEL CONTROL, on 2-M-5. _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

NOTE

The first out annunciator panel 2-XA-55-4D may clear in the following step. Clearing the reactor first out annunciator can be performed using handswitch 2-XS-55-4D, as necessary.

[27] **PERFORM** the following when pressurizer level approaches approximately 91% of level span:

A. **VERIFY** 2-XX-55-6A/9, PZR LEVEL HI LS-68-339, on 2-M-6, is CLEAR, **AND**

RECORD pressurizer level indication on 2-LI-68-339A, PZR LEVEL, on 2-M-4.

_____ 91%, 89-93% _____

B. **VERIFY** 2-XX-55-6A/29, PZR LEVEL HI LS-68-335A, on 2-M-6, is CLEAR, **AND**

RECORD pressurizer level indication on 2-LI-68-335A, PZRL LEVEL, on 2-M-4.

_____ 91%, 89-93% _____

C. **VERIFY** 2-XX-55-6A/49, PZR LEVEL HI LS-68-320A, on 2-M-6, is CLEAR, **AND**

RECORD pressurizer level indication on 2-LI-68-320, PZR LEVEL, on 2-M-4.

_____ 91%, 89-93% _____

D. **VERIFY** 2-XA-55-6C/124A, PZR LEVEL HI, on 2-M-6, is CLEAR. _____

E. **VERIFY** Unit 2 Events Display Legend shows 124-A PZR LEVEL HI, CLEAR. _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

F. **VERIFY** 2-XA-55-L10/302A, PZR LEVEL HI, on 2-L-10, is CLEAR, **AND**

RECORD pressurizer level indication on 2-LI-68-326C, PZR LEVEL, on 2-L-10.

_____ 91%, 89-93% _____

NOTE

PERFORM the following as pressurizer level approaches 69% level span.

[28] **WHEN** 2-XA-55-5A/92A, PZR LEVEL HI/LO, at 2-M-5, CLEARS, **THEN**

A. **RECORD** pressurizer level indication on 2-LR-68-339, PZR LEVEL - %, on 2-M-5.

_____ % (69%, 67-71%) _____

B. **RECORD** 2-LI-68-339A, PZR LEVEL, on 2-M-4.

_____ % (69%, 67-71%) _____

C. **RECORD** 2-LI-68-335A, PZR LEVEL, on 2-M-4.

_____ % (69%, 67-71%) _____

D. **RECORD** 2-LI-68-320, PZR LEVEL, on 2-M-4.

_____ % (69%, 67-71%) _____

E. **VERIFY** Unit 2 Events Display Legend shows 92A PZR LEVEL HI/LO**,** is CLEAR. _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

NOTE

PERFORM the following as pressurizer level approaches 29% level span.

[29] **WHEN** 2-XA-55-5A/92B, PZR LEVEL HI DEVN, on 2-M-5, CLEARS, **THEN**

A. **RECORD** the pressurizer level indication on 2-LR-68-339, PRZ LEVEL - %, on 2-M-5.

_____ % (29%, 27-31%) _____

B. **RECORD** the % DEVIATION in level on controller 2-LIC-68-339, CHARG FLOW/PZR LEVEL CONTROL, on 2-M-4.

_____ % (4%, 2-6%) _____

C. **RECORD** 2-LI-68-339A, PZR LEVEL, on 2-M-4.

_____ % (29%, 27-31%) _____

D. **RECORD** 2-LI-68-335A, PZR LEVEL, on 2-M-4.

_____ % (29%, 27-31%) _____

E. **RECORD** 2-LI-68-320, PZR LEVEL, on 2-M-4.

_____ % (29%, 27-31%) _____

F. **VERIFY** Unit 2 Events Display Legend shows 92-B PZR LEVEL HI-DEVN, is CLEAR. _____

NOTE

PERFORM the following as pressurizer level reaches 25% level span

[30] **MAINTAIN** pressurizer level at 25% of span using controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, on 2-M-5. _____

[31] **ESTABLISH** excess letdown in accordance with 2-TOP-62-02, CVCS - Startup Testing Operations. _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

[32] **ENSURE** pressurizer level is maintained, with excess letdown established, at approximately 25% of span, using controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, on 2-M-5. _____

NOTE

The following step will turn off the two backup heater groups to allow the pressurizer heater trip interlock on low pressure to be disabled.

[33] **PERFORM** the following:

A. **ENSURE** handswitch 2-HS-68-341A, BACKUP HEATERS A-A, at 2-M-4, is placed to OFF, **AND**

VERIFY backup heater group A-A is OFF by indicating lights. _____

B. **ENSURE** handswitch 2-HS-68-341D, BACKUP HEATERS B-B, at 2-M-4, is placed to OFF, **AND**

VERIFY backup heater group B-B is OFF by indicating lights. _____

CAUTION

Follow standard precautions when working around energized electrical equipment in accordance with TVA Safety Manual Procedure 1021. In addition, follow TI-300 when working around electrical equipment.

NOTE

The following two steps defeat the pressurizer pressure trip relay signal to both the Backup Heater Groups A-A and B-B. This will allow the backup heater groups A-A and B-B to be turned on and remain ON when pressure is above the low pressure backup heater setpoint of 2210 psig.

[34] **LIFT** and **TAPE** the wire on contact point 3 of relay PB455GXA, in 2-R-54, to defeat the pressurizer low pressure trip relay signal to the Backup Heater A-A. _____

_____
CV

Date _____

6.10 Pressurizer Level Functional Test (continued)

[35] **LIFT** and **TAPE** the wire on contact point 3 of relay PB455GXB, in 2-R-55, to defeat the pressurizer low pressure trip relay signal to Backup Heater B-B. _____

_____
CV

[36] **PERFORM** the following:

A. **PLACE** handswitch 2-HS-68-341A, BACKUP HEATERS A-A, at 2-M-4, to A-P AUTO, **AND**

VERIFY backup heater group A-A is OFF by indicating lights. _____

B. **PLACE** handswitch 2-HS-68-341D, BACKUP HEATERS B-B, at 2-M-4, to A-P AUTO, **AND**

VERIFY backup heater group B-B is OFF by indicating lights. _____

[37] **ENSURE** the following switches on 2-M-6 are placed to P AUTO:

A. 2-HS-62-69A, RCS LETDOWN FRM LOOP 3 IN CNTMT _____

B. 2-HS-62-70A, RCS LETDOWN FRM LOOP 3 IN CNTMT _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

[38] **ENSURE** the following handswitches on 2-M-6 are placed to A-P AUTO:

A. 2-HS-62-72A, LETDOWN ORIFICE A 45 GPM CIV-∅A _____

B. 2-HS-62-73A, LETDOWN ORIFICE B 75 GPM CIV-∅A _____

C. 2-HS-62-74A, LETDOWN ORIFICE C 75 GPM CIV-∅A _____

[39] **RECORD** letdown valve positions by the indicating lights at the following handswitches:

A. 2-HS-62-72A, LETDOWN ORIFICE A 45 GPM CIV-∅A

_____ Open/Closed _____

B. 2-HS-62-73A, LETDOWN ORIFICE B 75 GPM CIV-∅A

_____ Open/Closed _____

C. 2-HS-62-74A, LETDOWN ORIFICE C 75 GPM CIV-∅A

_____ Open/Closed _____

D. 2-HS-62-76, LETDOWN ORIFICE 5 GPM CIV-∅A

_____ Open/Closed _____

[40] **VERIFY** 2-XA-55-5A/92A, PZR LEVEL HI/LO, on 2-M-5 is CLEAR. _____

[41] **ESTABLISH** a gradual DECREASE in pressurizer level using controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, on 2-M-5. _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

NOTE

PERFORM the following as pressurizer level approaches 20% level span

[42] **WHEN** 2-XA-55-5A/92A, PZR LEVEL HI/LO, on 2-M-5, ALARMS, **THEN**

A. **RECORD** the pressurizer level indication on 2-LR-68-339, PRZ LEVEL - %, on 2-M-5. **(Acc Crit 5.0[11]C)**

_____ % (20%, 18-22%) _____

B. **RECORD** the % DEVIATION in level on controller 2-LIC-68-339, CHARG FLOW/PZR LEVEL CONTROL, on 2-M-4.

_____ % (-5%, -3 to -7%) _____

C. **RECORD** 2-LI-68-339A, PZR LEVEL, on 2-M-4.

_____ % (20%, 18-22%) _____

D. **RECORD** 2-LI-68-335A, PZR LEVEL, on 2-M-4.

_____ % (20%, 18-22%) _____

E. **RECORD** 2-LI-68-320, PZR LEVEL, on 2-M-4.

_____ % (20%, 18-22%) _____

F. **VERIFY** Unit 2 Events Display Legend shows 92-A PZR LEVEL HI/LO, in ALARM. _____

[43] **CONTROL** pressurizer level constant at 20% using controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, on 2-M-5. _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

CAUTIONS

1) Pressurizer level will be decreased to the heater cutout setpoint of 17% level span. All groups of heaters should be automatically turned off.
2) Pressurizer heaters must not be operated if the water level is below the 17% level span. The pressurizer heaters will damage if operated while pressurizer heaters are uncovered.
3) Closely monitor pressurizer pressure and heater indicating lights at control handswitches to ensure pressurizer heaters remain off while pressurizer level is decreased to the 0% span.
4) Pressurizer level will isolate normal letdown at the 17% level span setpoint. Since a significant change in charging and letdown flow will occur, reactor coolant pump seal injection flow should be checked and adjusted if necessary.

NOTE

Automatic isolation of normal letdown will result in an increase in pressurizer level. Charging flow should be reduced to maintain pressurizer level as close to constant as possible.

[44] **VERIFY** the following:

A. 2-XA-55-5A/92C, PZR LEVEL LO-HTRS OFF & LTDN CLOSED, on 2-M-5, is CLEAR. _____

B. Unit 2 Events Display Legend Shows 92-C PZR LEVEL LO-HTRS OFF & LTDN CLOSED, CLEAR. _____

C. 2-XA-55-L10/302B, PZR LEVEL LO, on 2-L-10, is CLEAR. _____

[45] **RECORD** the setpoint on controller 2-HIC-62-78A, LETDOWN HX OUTLET TEMP TCV-70-192 CONTROL, on 2-M-6.

_____ % _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

NOTES

1) Bistable 2-LS-68-335E will be placed to manual in Foxboro I/A to temporarily disable the letdown isolation signal for 2-FCV-62-69, CVCS LETDOWN ISOLATION, and the A, B, and C letdown flow orifices. Bistable 2-LS-68-339D (17% level span for heater cutout and letdown isolation) will be operating as designed and will be tested.
2) Foxboro I/A workstation will be used in the following performance steps. Ensure a Foxboro I/A System Engineer or qualified individual is available for this portion of the test.

[46] **PLACE** W212CP:W2PZRLVLA:2LS0680335E to MANUAL using a Foxboro I/A workstation. _____

[47] **ENSURE** W212CP:W2PZRLVLA:2LS0680335E is low (0) using a Foxboro I/A workstation. _____

NOTE

The low pressurizer level heater cutout and let down isolation setpoints will be tested. The pressurizer pressure will be increased above nominal setpoint to allow for heat loss after the pressurizer heaters are cutout from the pressurizer level setpoint.

[48] **PERFORM** the following steps to increase pressurizer pressure:

[48.1] **PLACE** handswitch 2-HS-68-341A, BACKUP HEATERS A-A, on 2-M-4, to ON, **AND**

RELEASE to A-P AUTO. _____

[48.2] **VERIFY** Backup Heaters A-A are ON by indicating lights at 2-HS-68-341A, BACKUP HEATERS A-A, on 2-M-4. _____

[48.3] **PLACE** handswitch 2-HS-68-341D, BACKUP HEATERS A-A, on 2-M-4, to ON, **AND**

RELEASE TO A-P AUTO. _____

[48.4] **VERIFY** Backup Heaters B-B are ON by indicating lights at 2-HS-68-341D, BACKUP HEATERS B-B, on 2-M-4. _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

[48.5] **PLACE** handswitch 2-HS-68-341H, BACKUP HEATERS C, on 2-M-4, is placed ON, **AND**

RELEASE to P AUTO. _____

[48.6] **VERIFY** Backup Heaters C are ON by indicating lights at 2-HS-68-341H, BACKUP HEATERS C, on 2-M-4. _____

[48.7] **PLACE** handswitch 2-HS-68-341F, CONROL HEATERS D, on 2-M-4, to ON, **AND**

RELEASE to P AUTO. _____

[48.8] **VERIFY** Control Heaters D are ON by indicating lights at handswitch 2-HS-68-341F, CONTROL HEATERS D, on 2-M-4. _____

[49] **WHEN** pressurizer pressure is greater than or equal to approximately 2250 psig, as indicated by 2-PR-68-340, PZR PRESS - PSIG, on 2-M-5, **THEN**

ESTABLISH a gradual DECREASE in pressurizer level using controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, on 2-M-5. _____

NOTES

1) After normal letdown is isolated, excess letdown will provide 20-35 GPM of flow. Pressurizer level may increase due to the charging and letdown flow imbalance and may clear the hysteresis setpoint of the low level heater cutout and letdown isolation bistable . This will not result in a failure of the performance steps.
2) Expedite the performance of the next step.

[50] **PERFORM** the following as pressurizer level approaches 17% level span:

[50.1] **WHEN** 2-XA-55-5A/92C, PZR LEVEL LO-HTRS OFF & LTDN CLOSED, on 2-M-5, ALARMS, **THEN**

A. **RECORD** the pressurizer level indication on 2-LR-68-339, PRZ LEVEL - %, on 2-M-5.

_____ % (17%, 15-19%) _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

B. **RECORD** 2-LI-68-339A, PZR LEVEL, on 2-M-4.

_____ % (17%, 15-19%) _____

C. **RECORD** 2-LI-68-335A, PZR LEVEL, on 2-M-4.

_____ % (17%, 15-19%) _____

D. **RECORD** 2-LI-68-320, PZR LEVEL, on 2-M-4.

_____ % (17%, 15-19%) _____

E. **VERIFY** Unit 2 Events Display Legend shows 92-C PZR LEVEL LO-HTRS OFF & LTDN CLOSED, in ALARM. _____

F. **VERIFY** Backup Heaters A-A are OFF by indicating lights at handswitch 2-HS-68-341A, BACKUP HEATERS A-A, on 2-M-4. **(Acc. Crit. 5.0[11]A)** _____

G. **VERIFY** Backup Heaters B-B are OFF by indicating lights at handswitch 2-HS-68-341D, BACKUP HEATERS B-B, on 2-M-4. **(Acc. Crit. 5.0[11]A)** _____

H. **VERIFY** Backup Heaters C are OFF by indicating lights at handswitch 2-HS-68-341H, BACKUP HEATERS C, on 2-M-4. **(Acc. Crit. 5.0[11]A)** _____

I. **VERIFY** Control Heaters D are OFF by indicating lights at handswitch 2-HS-68-341F, CONTROL HEATERS D, on 2-M-4. **(Acc. Crit. 5.0[11]A)** _____

J. **VERIFY** letdown isolation valve 2-FCV-62-69 is OPEN by indicating lights at 2-HS-62-69A, RCS LETDOWN FRM LOOP 3 IN CNTMT, on 2-M-6. _____

K. **VERIFY** letdown isolation valve 2-FCV-62-70 is CLOSED by indicating lights at 2-HS-62-70A, RCS LETDOWN FRM LOOP 3 IN CNTMT, on 2-M-6. **(Acc. Crit. 5.0[11]A)** _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

L. **RECORD** letdown valve positions by the indicating lights at the following handswitches:

- 2-HS-62-72A, LETDOWN ORIFICE A 45 GPM CIV-∅A

  _____ Open/Closed _____

- 2-HS-62-73A, LETDOWN ORIFICE B 75 GPM CIV-∅A

  _____ Open/Closed _____

- 2-HS-62-74A, LETDOWN ORIFICE C 75 GPM CIV-∅A

  _____ Open/Closed _____

- 2-HS-62-76, LETDOWN ORIFICE 5 GPM CIV-∅A

  _____ Open/Closed _____

M. **VERIFY** letdown valve(s) OPEN in performance step 6.10[39] are CLOSED as indicated in performance step 6.10[50.1]L. _____

[50.2] **WHEN** 2-XA-55-L10/302B, PZR LEVEL LO, on 2-L-10, ALARMS, **THEN**

RECORD pressurizer level indication 2-LI-68-325C, PZR LEVEL, on 2-L-10.

_____ % (17%, 15-19%) _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

NOTE

To establish normal letdown flow, control must be transferred to the auxiliary control for isolation valves and letdown orifices.

[51] **PLACE** handswitch 2-XS-62-70, RCS LETDOWN CIV FROM LOOP 3, on 2-L-11A, to the AUX position, **AND**

VERIFY 2-XA-55-6F/148B, ACR PNL 2-L-11A, on 2-M-6 is LIT. _____

[52] **PLACE** handswitch 2-HS-62-70C, RCS LETDOWN ISOL FROM LOOP 3 CIV-∅A, on 2-L-10 to the OPEN position, **AND**

VERIFY by indicating lights the valve is OPEN. _____

[53] **PLACE** controller 2-HIC-62-78A, LETDOWN HX OUTLET TEMP TVC-70-192 CONTROL, at 2-M-6, to MAN, **AND**

ADJUST controller output to 20-25% open. _____

NOTE

In the following step, determine the controller output based on the orifice OPEN in Step 6.10[39].

[54] **PLACE** controller 2-HIC-62-81A, LETDOWN PRESS CONTROL, at 2-M-6, to MAN, **AND**

ADJUST controller output to 20-25% open IF using the 45 gpm orifice, **OR** _____

ADJUST controller output to 40-50% open IF using a 75 gpm orifice. _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

CAUTION

It may be necessary in the next step to adjust 2-PCV-62-81, CVCS LETDOWN HX PRESS CNTRL, using controller 2-HIC-62-81A, LETDOWN PRESS CONTROL, to maintain letdown pressure less than 600 psig. This prevents 2-RFV-62-662, CVCS LETDOWN HEADER RELIEF, from OPENING.

[55] **PLACE** handswitch 2-HS-62-76, LETDOWN ORIFICE 5 GPM CIV-∅A, at 2-M-6, to OPEN, **AND**

RELEASE to A AUTO. _____

[56] **VERIFY** 5 gpm letdown orifice is OPEN by indicating lights at 2-HS-62-76, LETDOWN ORIFICE 5 GPM CIV-∅A, on 2-M-6. _____

[57] **PLACE** the following handswitches on 2-L-11A to the AUX position:

A. 2-XS-62-72, LETDOWN ORIFICE A 45 GPM. _____

B. 2-XS-62-73, LETDOWN ORIFICE B 75 GPM _____

C. 2-XS-62-74, LETDOWN ORIFICE C 75 GPM _____

[58] **WHEN** letdown pressure and temperature stabilize, as indicated on 2-PI-62-81C, LP LETDOWN PRESSURE, and 2-TI-62-80C, LETDOWN HX OUTLET TEMP, on 2-L-10, **THEN**

PLACE handswitch, on 2-L-10, for the OPEN valve recorded in Step 6.10[39], to OPEN, **AND**

VERIFY by indicating lights the valve is OPEN. _____

[59] **PLACE** handswitch 2-HS-62-76, LETDOWN ORIFICE 5 GPM CIV-∅A, on 2-M-6, to CLOSE, **AND**

RELEASE to A AUTO. _____

[60] **VERIFY** 2-FCV-62-76 is closed by indicating lights at 2-HS-62-76, LETDOWN ORIFICE 5 GPM CIV-∅A, on 2-M-6. _____

[61] **ENSURE** setpoint on controller 2-HIC-62-81A, LETDOWN PRESS CONTROL, at 2-M-6, is 54% (325 psig). _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

[62] **ADJUST** controller 2-HIC-62-81A, LETDOWN PRESS CONTROL, at 2-M-6, to maintain pressure at 325 psig, **AND**

PLACE controller 2-HIC-62-81A, LETDOWN PRESS CONTROL, at 2-M-6, to AUTO. _____

[63] **ENSURE** controller 2-HIC-62-78A, LETDOWN HX OUTLET TEMP TCV-70-192 CONTROL, at 2-M-6, is set at the setpoint recorded in Step 6.10[45], **AND**

PLACE controller 2-HIC-62-81A, LETDOWN HX OUTLET TEMP TCV-70-192 CONTROL, to AUTO. _____

[64] **ADJUST** charging flow using controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, on 2-M-5, to maintain pressurizer level at or above 20%, as indicated on 2-LR-68-339, PZR LEVEL - %, on 2-M-5. _____

[65] **PLACE** handswitch 2-XS-62-70, RCS LETDOWN CIV FROM LOOP 3, on 2-L-11A, to NOR position, **AND**

VERIFY 2-XA-55-6F/148B, ACR PNL 2--L-11A, on 2-M-6, is NOT LIT. _____

[66] **PLACE** the following handswitches on 2-L-11A to the NOR position:

A. 2-XS-62-72, LETDOWN ORIFICE A 45 GPM. _____

B. 2-XS-62-73, LETDOWN ORIFICE B 75 GPM _____

C. 2-XS-62-74, LETDOWN ORIFICE C 75 GPM _____

NOTE

The following step returns the letdown orifice switch to the normal configuration and does NOT close the orifice valve due to the transfer switch positions in the previous step.

[67] **PLACE** handswitch, on 2-L-10, for the OPEN valve recorded in Step 6.10[39], to CLOSED. _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

NOTES

1) Bistable 2-LS-68-339D will be placed to manual in Foxboro I/A to temporarily disable the letdown isolation signal for 2-FCV-62-70, CVCS LETDOWN ISOLATION, and the A, B, and C letdown flow orifices. Bistable 2-LS-68-335E (17% level span for heater cutout and letdown isolation) will be operating as designed and will be tested.
2) Foxboro I/A workstation will be used in the following performance steps. Ensure a Foxboro I/A System Engineer or qualified individual is available for this portion of the test.

[68] **PLACE** W212CP:W2PZRLVLA:2LS0680335E to AUTO using a Foxboro I/A workstation. _____

[69] **PLACE** W213CP:W2PZRLVL:2LS0680339D to MANUAL using a Foxboro I/A workstation. _____

[70] **ENSURE** W213CP:W2PZRLVL:2LS0680339D is low (0) using a Foxboro I/A workstation. _____

[71] **VERIFY** the following:

A. 2-XA-55-5A/92C, PZR LEVEL LO-HTRS OFF & LTDN CLOSED, on 2-M-5, is CLEAR. _____

B. Unit 2 Events Display Legend Shows 92-C PZR LEVEL LO-HTRS OFF & LTDN CLOSED, CLEAR. _____

NOTE

The low pressurizer level heater cutout and let down isolation setpoints will be tested. The pressurizer pressure will be increased above nominal setpoint to allow for heat loss once the pressurizer heaters are cutout from the pressurizer level setpoint.

[72] **PERFORM** the following steps to increase pressurizer pressure:

[72.1] **PLACE** handswitch 2-HS-68-341A, BACKUP HEATERS A-A, on 2-M-4, to ON, **AND**

RELEASE to A-P AUTO. _____

[72.2] **VERIFY** Backup Heaters A-A are ON by indicating lights at 2-HS-68-341A, BACKUP HEATERS A-A, on 2-M-4. _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

[72.3] **PLACE** handswitch 2-HS-68-341D, BACKUP HEATERS A-A, on 2-M-4, to ON, **AND**

RELEASE TO A-P AUTO. _____

[72.4] **VERIFY** Backup Heaters B-B are ON by indicating lights at 2-HS-68-341D, BACKUP HEATERS B-B, on 2-M-4. _____

[72.5] **ENSURE** handswitch 2-HS-68-341H, BACKUP HEATERS C, on 2-M-4, is placed ON, **AND**

RELEASE to P AUTO. _____

[72.6] **PLACE** handswitch 2-HS-68-341H, BACKUP HEATERS C, on 2-M-4, to ON, **AND**

RELEASE to P AUTO. _____

[72.7] **VERIFY** Backup Heaters C are ON by indicating lights at 2-HS-68-341H, CONTROL HEATERS D, on 2-M-4. _____

[72.8] **VERIFY** Control Heaters D are on by indicating lights at handswitch 2-HS-68-341F, CONTROL HEATERS D, on 2-M-4. _____

NOTE

A pressurizer level increase rate of 0.5-1.0 %/min is recommended when approaching verification steps.

[73] **WHEN** pressurizer pressure is greater than or equal to approximately 2250 psig, as indicated by 2-PR-68-340, PZR PRESS - PSIG, on 2-M-5, **THEN**

ESTABLISH a gradual DECREASE in pressurizer level using controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, on 2-M-5. _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

NOTES

1) After normal letdown is isolated, excess letdown will provide 20-35 GPM of flow. Pressurizer level may increase due to the charging and letdown flow imbalance and may clear the hysteresis setpoint of the low level heater cutout and letdown isolation bistable. This will not result in a failure of the performance steps.
2) Expedite the performance of the next step.
3) PERFORM the following step as pressurizer level approaches 17% level span.

[74] **WHEN** 2-XA-55-5A/92C, PZR LEVEL LO-HTRS OFF & LTDN CLOSED, on 2-M-5, ALARMS, **THEN**

A. **RECORD** the pressurizer level indication on 2-LR-68-339, PRZ LEVEL - %, on 2-M-5.

_____ % (17%, 15-19%) _____

B. **RECORD** 2-LI-68-339A, PZR LEVEL, on 2-M-4.

_____ % (17%, 15-19%) _____

C. **RECORD** 2-LI-68-335A, PZR LEVEL, on 2-M-4.

_____ % (17%, 15-19%) _____

D. **RECORD** 2-LI-68-320, PZR LEVEL, on 2-M-4.

_____ % (17%, 15-19%) _____

E. **VERIFY** Unit 2 Events Display Legend shows 92-C PZR LEVEL LO-HTRS OFF & LTDN CLOSED, in ALARM. _____

F. **VERIFY** Backup Heaters A-A are OFF by indicating lights at handswitch 2-HS-68-341A, BACKUP HEATERS A-A, on 2-M-4. **(Acc. Crit. 5.0[11]A)** _____

G. **VERIFY** Backup Heaters B-B are OFF by indicating lights at handswitch 2-HS-68-341D, BACKUP HEATERS B-B, on 2-M-4. **(Acc. Crit. 5.0[11]A)** _____

H. **VERIFY** Backup Heaters C are OFF by indicating lights at handswitch 2-HS-68-341H, BACKUP HEATERS C, on 2-M-4. **(Acc. Crit. 5.0[11]A)** _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

I. **VERIFY** Control Heaters D are OFF by indicating lights at handswitch 2-HS-68-341F, CONTROL HEATERS D, on 2-M-4. **(Acc. Crit. 5.0[11]A)** _____

J. **VERIFY** letdown isolation valve 2-FCV-62-69 is CLOSED by indicating lights at 2-HS-62-69A, RCS LETDOWN FRM LOOP 3 IN CNTMT, on 2-M-6. **(Acc. Crit. 5.0[11]A)** _____

K. **VERIFY** letdown isolation valve 2-FCV-62-70 is OPEN by indicating lights at 2-HS-62-70A, RCS LETDOWN FRM LOOP 3 IN CNTMT, on 2-M-6. _____

L. **RECORD** letdown valve positions by the indicating lights at the following handswitches:

- 2-HS-62-72A, LETDOWN ORIFICE A 45 GPM CIV-∅A

  _____ Open/Close _____

- 2-HS-62-73A, LETDOWN ORIFICE B 75 GPM CIV-∅A

  _____ Open/Close _____

- 2-HS-62-74A, LETDOWN ORIFICE C 75 GPM CIV-∅A

  _____ Open/Close _____

- 2-HS-62-76, LETDOWN ORIFICE 5 GPM CIV-∅A

  _____ Open/Close _____

M. **VERIFY** letdown valve(s) OPEN in performance step 6.10[39] are CLOSED as indicated in performance step 6.10[74]L. _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

NOTE

To establish normal letdown flow, control must be transferred to the auxiliary control for isolation valves and letdown orifices.

[75] **PLACE** handswitch 2-XS-62-69, RCS LETDOWN CIV FROM LOOP 3, on 2-L-11A, to AUX position, **AND**

VERIFY 2-XA-55-6F/148B, ACR PNL 2-L-11A, on 2-M-6 is LIT. _____

[76] **PLACE** handswitch 2-HS-62-69C, RCS LETDOWN ISOL FROM LOOP 3 CIV-∅A, on 2-L-10, to the OPEN position, **AND**

VERIFY by indicating lights the valve is OPEN. _____

[77] **PLACE** controller 2-HIC-62-78A, LETDOWN HX OUTLET TEMP TVC-70-192 CONTROL, at 2-M-6, to MAN, **AND**

ADJUST controller output to 20-25% open. _____

NOTE

In the following step, determine the controller output based on the orifice OPEN in Step 6.10[39].

[78] **PLACE** controller 2-HIC-62-81A, LETDOWN PRESS CONTROL, at 2-M-6, to MAN, **AND**

ADJUST controller output to 20-25% open, IF using the 45 gpm orifice, **OR** _____

ADJUST controller output to 40-50% open, IF using a 75 gpm orifice. _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

CAUTION

It may be necessary in the next step to adjust 2-PCV-62-81, CVCS LETDOWN HX PRESS CNTRL, using controller 2-HIC-62-81A, LETDOWN PRESS CONTROL, to maintain letdown pressure less than 600 psig. This prevents 2-RFV-62-662, CVCS LETDOWN HEADER RELIEF, from OPENING.

[79] **PLACE** handswitch 2-HS-62-76, LETDOWN ORIFICE 5 GPM CIV-∅A, at 2-M-6, to OPEN, **AND**

RELEASE to A AUTO. _____

[80] **VERIFY** 5 gpm letdown orifice is OPEN by indicating lights at 2-HS-62-76, LETDOWN ORIFICE 5 GPM CIV-∅A, on 2-M-6. _____

[81] **PLACE** the following handswitches on 2-L-11A to the AUX position:

A. 2-XS-62-72, LETDOWN ORIFICE A 45 GPM. _____

B. 2-XS-62-73, LETDOWN ORIFICE B 75 GPM _____

C. 2-XS-62-74, LETDOWN ORIFICE C 75 GPM _____

[82] **WHEN** letdown pressure and temperature stabilize, as indicated on 2-PI-62-81C, LP LETDOWN PRESSURE, and 2-TI-62-80C, LETDOWN HX OUTLET TEMP, on 2-L-10, **THEN**

PLACE handswitch, on 2-L-10, for the OPEN valve recorded in Step 6.10[39], to OPEN, **AND**

VERIFY by indicating lights the valve is OPEN. _____

[83] **PLACE** handswitch 2-HS-62-76, LETDOWN ORIFICE 5 GPM CIV-∅A, on 2-M-6, to CLOSE, **AND**

RELEASE to A AUTO. _____

[84] **VERIFY** 2-FCV-62-76 is closed by indicating lights at 2-HS-62-76, LETDOWN ORIFICE 5 GPM CIV-∅A, on 2-M-6. _____

[85] **ENSURE** setpoint on controller 2-HIC-62-81A, LETDOWN PRESS CONTROL, at 2-M-6, is 54% (325 psig). _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

[86] **ADJUST** controller 2-HIC-62-81A, LETDOWN PRESS CONTROL, at 2-M-6, to maintain pressure at 325 psig, **AND**

PLACE controller 2-HIC-62-81A, LETDOWN PRESS CONTROL, at 2-M-6, to AUTO. _____

[87] **ENSURE** controller 2-HIC-62-78A, LETDOWN HX OUTLET TEMP TCV-70-192 CONTROL, at 2-M-6, is set at the setpoint recorded in Step 6.10[45], **AND**

PLACE controller 2-HIC-62-81A, LETDOWN HX OUTLET TEMP TCV-70-192 CONTROL, to AUTO. _____

[88] **ADJUST** charging flow using controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, on 2-M-5, to maintain pressurizer level at or above 20%, as indicated on 2-LR-68-339, PZR LEVEL - %, on 2-M-5. _____

[89] **REMOVE** Excess Letdown by performing 2-TOP-62-02, CVCS - Startup Testing Operation. _____

[90] **ADJUST** charging flow using controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, on 2-M-5, to maintain pressurizer level at approximately 20%, as indicated on 2-LR-68-339, PZR LEVEL - %, on 2-M-5. _____

NOTE

The next two steps will block 2-FCV-62-69 and 2-FCV-62-70, CVCS Letdown Isolation. This will allow the pressurizer water level to be reduced without causing isolation of normal letdown.

[91] **ENSURE** the following handswitches at 2-L-10 are placed to the OPEN position:

A. 2-HS-62-69C, RCS LETDOWN ISOL FROM LOOP 3 CIV-∅A. _____

B. 2-HS-62-70C, RCS LETDOWN ISOL FROM LOOP 3 CIV-∅A _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

[92] **ENSURE** the following handswitches at 2-L-11A are placed to the AUX position.

A. 2-XS-62-70, RCS LETDOWN CIV FROM LOOP 3 _____

B. 2-XS-62-69, RCS LETDOWN CIV FROM LOOP 3 _____

[93] **ENSURE** W213CP:W2PZRLVL:2LS0680339D to AUTO using a Foxboro I/A workstation. _____

NOTE

Pressurizer pressure can be increased if necessary, prior to decreasing pressurizer level below the 17% heater cutout setpoint. Charging flow can be adjusted as necessary to maintain pressurizer water level at 20%.

[94] **INCREASE** pressurizer pressure to 2250 psig using the following steps:

[94.1] **PLACE** handswitch 2-HS-68-341A, BACKUP HEATERS A-A, on 2-M-4, to ON, **AND**

RELEASE to A-P AUTO. _____

[94.2] **PLACE** handswitch 2-HS-68-341D, BACKUP HEATERS B-B, on 2-M-4, to ON, **AND**

RELEASE to A-P AUTO. _____

[94.3] **WHEN** pressurizer pressure reaches approximately 2250 psig, as indicated by 2-PR-68-340, PZR PRESS - PSIG, on 2-M-5, **THEN**

PERFORM the following:

[94.3.1] **PLACE** handswitch 2-HS-68-341A, BACKUP HEATERS A-A, on 2-M-4, to OFF, **AND**

RETURN to A-P AUTO. _____

[94.3.2] **PLACE** handswitch 2-HS-68-341D, BACKUP HEATERS B-B, on 2-M-4, to OFF, **AND**

RETURN TO A-P AUTO. _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

[95] **ENSURE** all pressurizer heaters are OFF by indicating lights at the following handswitches on 2-M-4.

A. 2-HS-68-341A, BACKUP HEATERS A-A _____

B. 2-HS-68-341D, BACKUP HEATERS B-B _____

C. 2-HS-68-341H, BACKUP HEATERS C _____

D. 2-HS-68-341F, CONTROL HEATERS D _____

[96] **ESTABLISH** a gradual DECREASE in pressurizer level using controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, on 2-M-5. _____

NOTE

Level Indicator 2-LI-68-321, PZR-COLD CAL LEVEL, on 2-M-4, can be used to monitor pressurizer level in addition to the normal pressurizer level indications.

[97] **WHEN** pressurizer level approaches 0% of level span as indicated by 2-LR-68-339, PZR LEVEL - %, on 2-M-5, **THEN**

ADJUST controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, at 2-M-5, to MAINTAIN pressurizer level at or just above 0% of level span (0-0.5%). _____

[98] **RECORD** the 0% pressurizer level baseline data on Data Sheet 3, **AND**

VERIFY indications 2-LI-68-339A, 2-LI-68-335A, and 2-LI-68-320 are within 4% of each other. **(Acc Crit 5.0[11]B)**. _____

NOTE

A pressurizer level increase rate of 0.5-1.0 %/min is recommended when approaching verification steps.

[99] **ESTABLISH** a gradual INCREASE in pressurizer level using 2-HIC-68-93A, CHARGING FLOW PZR LEVEL CONTROL, on 2-M-5. _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

[100] **PERFORM** the following as pressurizer level approaches 18% of level span:

[100.1] **WHEN** 2-XA-55-5A/92C, PZR LEVEL LO-HTRS OFF & LTDN CLOSED, on 2-M-5, CLEARS, **THEN**

A. **RECORD** the pressurizer level indication on 2-LR-68-339, PRZ LEVEL - %, on 2-M-5.

_____ % (18%, 16-20%) _____

B. **RECORD** 2-LI-68-339A, PZR LEVEL, on 2-M-4.

_____ % (18%, 16-20%) _____

C. **RECORD** 2-LI-68-335A, PZR LEVEL, on 2-M-4.

_____ % (18%, 16-20%) _____

D. **RECORD** 2-LI-68-320, PZR LEVEL, on 2-M-4.

_____ % (18%, 16-20%) _____

E. **VERIFY** Unit 2 Events Display Legend shows 92-C PZR LEVEL LO-HTRS OFF & LTDN CLOSED, is CLEAR. _____

[100.2] **WHEN** 2-XA-55-L10/302B, PZR LEVEL LO, on 2-L-10, is CLEAR, **THEN**

RECORD the pressurizer level indication on 2-LI-68-325C, PZR LEVEL, on 2-L-10.

_____ % (18%, 16-20%) _____

[101] **PLACE** the following handswitches to ON, on 2-M-4, **AND**

RELEASE to A-P AUTO:

A. 2-HS-68-341A, BACKUP HEATERS A-A _____

B. 2-HS-68-341D, BACKUP HEATERS B-B _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

[102] **VERIFY** Backup Heaters A-A and B-B are ON by indicating lights at the following handswitches on 2-M-4:

A. 2-HS-68-341A, BACKUP HEATERS A-A _____

B. 2-HS-68-341D, BACKUP HEATERS B-B _____

[103] **PLACE** the following handswitches to OFF, on 2-M-4:

A. 2-HS-68-341A, BACKUP HEATERS A-A _____

B. 2-HS-68-341D, BACKUP HEATERS B-B _____

[104] **PLACE** the following handswitches to ON, on 2-M-4, **AND**

RELEASE to P AUTO:

A. 2-HS-68-341H, BACKUP HEATERS C _____

B. 2-HS-68-341F, CONTROL HEATERS D _____

[105] **VERIFY** Backup Heaters C and Control Heaters D are ON by indicating lights at the following handswitches on 2-M-4:

A. 2-HS-68-341H, BACKUP HEATERS C _____

B. 2-HS-68-341F, CONTROL HEATERS D _____

[106] **PLACE** handswitch 2-HS-68-341H, BACKUP HEATERS C, on 2-M-4, to OFF, **AND**

RELEASE to P AUTO. _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

NOTE

PERFORM the following step as pressurizer level approaches 20% of span.

[107] **WHEN** 2-XA-55-5A/92A, PZR LEVEL HI/LO, on 2-M-5, CLEARS, **THEN**

A. **RECORD** the pressurizer level indication on 2-LR-68-339, PRZ LEVEL - %, on 2-M-5.

_____ % (21%, 19-23%) _____

B. **RECORD** the % DEVIATION in level on controller 2-LIC-68-339, CHARG FLOW/PZR LEVEL CONTROL, on 2-M-4.

_____ % (-4%, -2 to -6%) _____

C. **RECORD** 2-LI-68-339A, PZR LEVEL, on 2-M-4.

_____ % (21%, 19-23%) _____

D. **RECORD** 2-LI-68-335A, PZR LEVEL, on 2-M-4.

_____ % (21%, 19-23%) _____

E. **RECORD** 2-LI-68-320, PZR LEVEL, on 2-M-4.

_____ % (21%, 19-23%) _____

F. **VERIFY** Unit 2 Events Display Legend shows 92-A PZR LEVEL HI/LO, is CLEAR. _____

NOTE

PERFORM the following step as pressurizer level approaches 25% of level span.

[108] **ADJUST** controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, at 2-M-5, to MAINTAIN pressurizer level at 25% of level span (23-27%). _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

[109] **RECORD** the 25% pressurizer level baseline data on Data Sheet 3, **AND**

VERIFY indications 2-LI-68-339, 2-LI-68-335, and 2-LI-68-320 are within 4% of each other. **(Acc Crit 5.0[11]B)**. _____

[110] **ENSURE** the following handswitches at 2-L-11A are placed to the NOR position.

A. 2-XS-62-70, RCS LETDOWN CIV FROM LOOP 3 _____

B. 2-XS-62-69, RCS LETDOWN CIV FROM LOOP 3 _____

[111] **VERIFY** 2-XA-55-6F/148B, ACR PNL 2-L-11A, on 2-M-6 is NOT LIT. _____

[112] **ENSURE** the following handswitches at 2-L-10 are placed to the CLOSE position:

A. 2-HS-62-69C, RCS LETDOWN ISOL FROM LOOP 3 CIV-∅A. _____

B. 2-HS-62-70C, RCS LETDOWN ISOL FROM LOOP 3 CIV-∅A _____

[113] **PLACE** the following handswitches on 2-L-11A to the NOR position:

A. 2-XS-62-72, LETDOWN ORIFICE A 45 GPM. _____

B. 2-XS-62-73, LETDOWN ORIFICE B 75 GPM _____

C. 2-XS-62-74, LETDOWN ORIFICE C 75 GPM _____

Date _____

6.10 Pressurizer Level Functional Test (continued)

NOTE

The following step will turn off the two backup heater groups to allow the pressurizer heater trip interlock on low pressure to be returned to normal.

[114] **PERFORM** the following:

A. **ENSURE** handswitch 2-HS-68-341A, BACKUP HEATERS A-A, at 2-M-4, is placed to OFF, **AND**

VERIFY backup heater group A-A is OFF by indicating lights. _____

B. **ENSURE** handswitch 2-HS-68-341D, BACKUP HEATERS B-B, at 2-M-4, is placed to OFF, **AND**

VERIFY backup heater group B-B is OFF by indicating lights. _____

CAUTION

Follow standard precautions when working around energized electrical equipment in accordance with TVA Safety Manual Procedure 1021. In addition, follow TI-300 when working around electrical equipment.

[115] **LAND** the lifted wire on contact point 3 of relay PB455GXA, in 2-R-54, to return the pressurizer low pressure trip relay signal to the Backup Heater A-A. _____

_____
CV

[116] **LAND** the lifted wire on contact point 3 of relay PB455GXB, in 2-R-55, to return the pressurizer low pressure trip relay signal to Backup Heater B-B. _____

_____
CV

Date _____

6.10 Pressurizer Level Functional Test (continued)

[117] **PERFORM** the following:

A. **PLACE** handswitch 2-HS-68-341A, BACKUP HEATERS A-A, at 2-M-4, to A-P AUTO, **AND**

VERIFY backup heater group A-A is OFF by indicating lights. _____

B. **PLACE** handswitch 2-HS-68-341D, BACKUP HEATERS B-B, at 2-M-4, to A-P AUTO, **AND**

VERIFY backup heater group B-B is OFF by indicating lights. _____

[118] **PLACE** controller 2-LIC-68-339, CHARG FLOW/PZR LEVEL CONTROL, on 2-M-5, to AUTO. _____

[119] **PLACE** controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, at 2-M-5, to AUTO. _____

[120] **VERIFY** pressurizer level is controlled to approximately 25% of level span as indicated on 2-LR-68-339, PZR LEVEL - %, on 2-M-5. _____

Date _____

7.0 POST PERFORMANCE ACTIVITY

[1] **ENSURE** controller 2-PIC-68-340A, PZR PRESS MASTER CONTROL, at 2-M-4, setpoint is 67% (2236 psig). _____

[2] **ENSURE** controller 2-PIC-68-340A, PZR PRESS MASTER CONTROL, on 2-M-4, is in AUTO. _____

[3] **ENSURE** controller 2-PIC-68-340B, LOOP 2 SPRAY CONTROL, on 2-M-4, is in AUTO. _____

[4] **ENSURE** controller 2-PIC-68-340D, LOOP 1 SPRAY CONTOL, on 2-M-4, is in AUTO. _____

[5] **PLACE** handswitch 2-HS-68-341F, CONTROL HEATERS D, at 2-M-4, to the ON position, **AND**

RELEASE to the P AUTO position. _____

[6] **ENSURE** controller 2-PIC-68-340B, LOOP 2 SPRAY CONTROL, at 2-M-4, is placed to AUTO. _____

[7] **ENSURE** controller 2-PIC-68-340D, LOOP 1 SPRAY CONTROL, 2-M-4, is placed to AUTO. _____

[8] **VERIFY** handswitch 2-HS-68-341H, BACKUP HEATERS C, at 2-M-4, is in the P AUTO position. _____

[9] **ENSURE** handswitch 2-HS-68-341D, BACKUP HEATERS B-B, at 2-M-4, is placed to A-P AUTO. _____

[10] **ENSURE** handswitch 2-HS-68-341A, BACKUP HEATERS A-A, at 2-M-4, is placed to A-P AUTO. _____

[11] **VERIFY** pressurizer pressure is controlled to approximately 2235 psig as indicated by recorder 2-PR-68-340, PZR PRESS - PSIG, on 2-M-5. _____

[12] **ENSURE** handswitch 2-HS-68-340AA, PZR PORV 340A, on 2-M-5, is placed in the P AUTO position. _____

[13] **ENSURE** handswitch 2-HS-68-334A, PZR PORV 334, 2-M-5, is placed in the P AUTO position. _____

[14] **ENSURE** block valve for PORV 340A is OPEN by indicating lights at 2-HS-68-333A, BLOCK VLV FOR PORV 340A, on 2-M-5. _____

Date _____

7.0 POST PERFORMANCE ACTIVITY (continued)

[15] **ENSURE** block valve for PORV 334 is OPEN by indicating lights at 2-HS-68-332A, BLOCK VLV FOR PORV 334, on 2-M-5. _____

[16] **ENSURE** handswitch 2-HS-68-340AD, COPS BLOCK/ARM FOR PORV 340A, on 2-M-5, is in BLOCK. _____

[17] **ENSURE** handswitch 2-HS-68-334D, COPS BLOCK/ARM FOR PORV 334, on 2-M-5, is in BLOCK. _____

[18] **ENSURE** controller 2-LIC-68-339, CHARG FLOW/PZR LEVEL CONTROL, on 2-M-4, is in AUTO. _____

[19] **ENSURE** controller 2-HIC-62-93A, CHARGING FLOW PZR LEVEL CONTROL, at 2-M-5, is in AUTO. _____

[20] **VERIFY** pressurizer level is controlled to approximately 25% of level span as indicated on 2-LR-68-339, PZR LEVEL - %, on 2-M-5. _____

[21] **ENSURE** handswitch 2-HS-62-76, LETDOWN ORIFICE 5 GPM CIV-∅A, on 2-M-6, is in A AUTO. _____

[22] **ENSURE** handswitch 2-HS-62-72A, LETDOWN ORIFICE A 45 GPM CIV-∅A, on 2-M-6, is in A-P AUTO. _____

[23] **ENSURE** handswitch 2-HS-62-73A, LETDOWN ORIFICE B 75 GPM CIV-∅A, on 2-M-6, is in A-P AUTO. _____

[24] **ENSURE** handswitch 2-HS-62-74A, LETDOWN ORIFICE C 75 GPM CIV-∅A, on 2-M-6, is in A-P AUTO. _____

[25] **ENSURE** handswitch 2-HS-62-69A, RCS LETDOWN FRM LOOP 3 IN CNTMT, on 2-M-6, is in P AUTO. _____

[26] **ENSURE** handswitch 2-HS-62-70A, RCS LETDOWN FRM LOOP 3 IN CNTMT, on 2-M-6, is in P AUTO. _____

Date _____

7.0 POST PERFORMANCE ACTIVITY (continued)

[27] **ENSURE** the following handswitches on 2-L-11A are in the NOR position:

A. 2-XS-62-70, RCS LETDOWN CIV FROM LOOP 3 _____

B. 2-XS-62-69, RCS LETDOWN CIV FROM LOOP 3 _____

C. 2-XS-62-72, LETDOWN ORIFICE A 45 GPM _____

D. 2-XS-62-73, LETDOWN ORIFICE B 75 GPM _____

E. 2-XS-62-74, LETDOWN ORIFICE C 75 GPM _____

[28] **ENSURE** the following handswitches on 2-L-10 are in the CLOSE position:

A. 2-HS-62-69C, RCS LETDOWN ISOL FROM LOOP 3 CIV-∅A _____

B. 2-HS-62-70C, RCS LETDOWN ISOL FROM LOOP 3 CIV-∅A _____

C. 2-HS-62-72C, LETDOWN ORIFICE A 45 GPM _____

D. 2-HS-62-73C, LETDOWN ORIFICE B 75 GPM _____

E. 2-HS-62-74C, LETDOWN ORIFICE C 75 GPM _____

[29] **ENSURE** 2-XS-62-334C, PZR PORV 2-PCV-68-334, on 2-L-11B, is in the NOR position. _____

[30] **ENSURE** 2-XS-62-340C, PZR PORV 2-PCV-68-340A, on 2-L-11A, is in the NOR position. _____

[31] **ENSURE** the following handswitches on 2-L-10 are in the CLOSE position:

A. 2-HS-68-334C, PZR PORV _____

B. 2-HS-68-340AC, PZR PORV _____

[32] **ENSURE** handswitch 2-XS-68-341A, PZR HTR BACKUP HTR A-A, on 6.9KV Shutdown Board 2A-A, Panel 20, is in the NOR position. _____

Date _____

7.0 POST PERFORMANCE ACTIVITY (continued)

[33] **ENSURE** handswitch 2-XS-68-341D, PZR HTR BACKUP HTR B-B, on 2-BD-211-B, 6.9KV Shutdown Board 2B-B, Panel 20, is in the NOR position. _____

[34] **ENSURE** handswitch 2-XS-68-341H, PZR HTR BACKUP HTR C, on 2-BD-211-B, 6.9KV Shutdown Board 2B-B, Panel 21, is in the NOR position. _____

[35] **ENSURE** handswitch 2-XS-68-341F, PZR HTR CONT HTR, on 2-BD-211-A, 6.9KV Shutdown Board 2A-A, Panel 21, is in the NOR position. _____

[36] **ENSURE** handswitch 2-HS-68-341AC, RCS PZR HTR BACKUP HTR A-A, on 6.9KV Shutdown Board 2A-A, Panel 20, is in the AUTO position. _____

[37] **ENSURE** handswitch 2-HS-68-341DC, RCS PZR HTR BACKUP HTR B-B, on 2-BD-211-B, 6.9KV Shutdown Board 2B-B, is in the AUTO position. _____

8.0 RECORDS

A. QA Records

Completed Test Package (PTI)

B. Non-QA

None

Appendix A
(Page 1 of 2)

TEST PROCEDURES/INSTRUCTIONS REFERENCE REVIEW

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 109, Table 14.2-1 Sheets 18 and 19 of 89 Sheet 77, 78, and 79 of 89 Sheet 88 of 89			
FSAR 109, Section 5.2.2 Section 5.5.10 Section 5.5.11 Section 7.2.1.1.2(3) Section 7.7.1.5 Section 7.7.1.6			
WBN2-62-4001, Rev. 1			
WBN2-68-4001. Rev. 2			
2-TSD-68-15, Rev. 0			
2-P-68-340, Rev. 0			
2-P-68-334, Rev. 0			
2-P-68-323, Rev. 0			
2-P-68-322, Rev. 0			
2-L-68-339, Rev. 0			
2-L-68-335, Rev. 0			

Appendix A
(Page 2 of 2)

TEST PROCEDURES/INSTRUCTIONS REFERENCE REVIEW

Date _____

PROCEDURE/ INSTRUCTION	REVISION/CHANGES	IMPACT Yes/No	INITIAL AND DATE. (N/A for no change)
2-L-68-320, Rev. 0			
2-LPP-68-340A, Rev. 0 Draft			
2-LPL-68-339A, Rev. 0 Draft			
2-LPP-68-336C, Rev. 0 Draft			
2-LPP-68-337C, Rev. 0 Draft			
2-LPL-68-325C, Rev. 0 Draft			
2-LPL-68-326C, Rev. 0 Draft			

Appendix B
(Page 1 of 1)

TEMPORARY CONDITION LOG

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.	Performed By/Date CV By/Date	Step No.	Returned By/Date CV By/Date

Appendix C
(Page 1 of 4)

PERMANENT PLANT INSTRUMENTATION LOG

Date _____

INSTRUMENT OR INSTRUMENT LOOP #	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[2] INITIAL/DATE
		INIT/DATE	INIT/DATE	YES	NO		
2-P-68-340							
2-P-68-334							
2-P-68-323							
2-P-68-322							
2-L-68-339							
2-L-68-335							
2-L-68-320							
2-LPP-68-340A							
2-LPL-68-339A							
2-LPP-68-336C							

[1] These items may be initialed and dated by personnel performing the task. Instrumentation not required to be filled and vented may be identified as Not Applicable. (N/A)

[2] May be identified as Not Applicable (N/A) if instrument was not used to verify/record quantitative acceptance criteria data.

Appendix C
(Page 2 of 4)

PERMANENT PLANT INSTRUMENTATION LOG

Date _____

INSTRUMENT OR INSTRUMENT LOOP #	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[2] INITIAL/DATE
		INIT/DATE	INIT/DATE	YES	NO		
2-LPP-68-337C							
2-LPL-68-325C							
2-LPL-68-326C							
2-PI-68-342A							
2-TI-68-318							
2-TI-68-317							
2-TI-68-316							
2-TI-68-2E							
2-TI-68-25E							
2-TI-68-44E							

[1] These items may be initialed and dated by personnel performing the task. Instrumentation not required to be filled and vented may be identified as Not Applicable. (N/A)

[2] May be identified as Not Applicable (N/A) if instrument was not used to verify/record quantitative acceptance criteria data.

Appendix C
(Page 3 of 4)

PERMANENT PLANT INSTRUMENTATION LOG

Date _____

INSTRUMENT OR INSTRUMENT LOOP #	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[2] INITIAL/DATE
		INIT/DATE	INIT/DATE	YES	NO		
2-TI-68-67E							
2-TI-68-330							
2-TI-68-329							
2-TI-68-328							
2-TI-68-331							
2-LI-68-321							
2-TI-68-319							
2-TI-68-324							
2-LI-68-300							
2-PI-68-301							

[1] These items may be initialed and dated by personnel performing the task. Instrumentation not required to be filled and vented may be identified as Not Applicable. (N/A)

[2] May be identified as Not Applicable (N/A) if instrument was not used to verify/record quantitative acceptance criteria data.

Appendix C
(Page 4 of 4)

PERMANENT PLANT INSTRUMENTATION LOG

Date _____

INSTRUMENT OR INSTRUMENT LOOP #	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[2] INITIAL/DATE
		INIT/DATE	INIT/DATE	YES	NO		
2-TI-68-309							
2-TR-68-2B							

[1] These items may be initialed and dated by personnel performing the task. Instrumentation not required to be filled and vented may be identified as Not Applicable. (N/A)

[2] May be identified as Not Applicable (N/A) if instrument was not used to verify/record quantitative acceptance criteria data.

Appendix D
(Page 1 of 1)

MEASURING AND TEST EQUIPMENT LOG

Date _____

M&TE ID #	DESCRIPTION RANGE / ACCURACY	CAL DUE DATE	*FILLED & VENTED INIT/DATE	*PLACED IN-SERVICE INIT/DATE	USED FOR QUANTITATIVE ACCEPT. CRIT. YES	 NO	**POST-TEST CAL DATE	**POST-TEST CAL ACCEPT INIT/DATE

* This item may be signed by person performing the task. This may be N/A'd if M&TE is not required to be filled and vented or placed in service.

** May be identified as not applicable (N/A) if M&TE was not used to verify/record quantitative acceptance criteria.

Appendix E
(Page 1 of 2)

SWITCH LINEUP

Date _____

1.0 Aux Switch Lineup

[1] **ENSURE** the following handswitches on 2-L-11A are in the NOR position:

A. 2-XS-62-70, RCS LETDOWN CIV FROM LOOP 3 _____

B. 2-XS-62-69, RCS LETDOWN CIV FROM LOOP 3 _____

C. 2-XS-62-72, LETDOWN ORIFICE A 45 GPM _____

D. 2-XS-62-73, LETDOWN ORIFICE B 75 GPM _____

E. 2-XS-62-74, LETDOWN ORIFICE C 75 GPM _____

[2] **ENSURE** the following handswitches on 2-L-10 are in the CLOSE position:

A. 2-HS-62-69C, RCS LETDOWN ISOL FROM LOOP 3 CIV-∅A _____

B. 2-HS-62-70C, RCS LETDOWN ISOL FROM LOOP 3 CIV-∅A _____

C. 2-HS-62-72C, LETDOWN ORIFICE A 45 GPM _____

D. 2-HS-62-73C, LETDOWN ORIFICE B 75 GPM _____

E. 2-HS-62-74C, LETDOWN ORIFICE C 75 GPM _____

[3] **ENSURE** 2-XS-62-334C, PZR PORV 2-PCV-68-334, on 2-L-11B, is in the NOR position. _____

[4] **ENSURE** 2-XS-62-340C, PZR PORV 2-PCV-68-340A, on 2-L-11A, is in the NOR position. _____

[5] **ENSURE** the following handswitches on 2-L-10 are in the CLOSE position:

A. 2-HS-68-334C, PZR PORV _____

B. 2-HS-68-340AC, PZR PORV _____

Appendix E
(Page 2 of 2)

SWITCH LINEUP

Date _____

1.0 Aux Switch Lineup (continued)

[6] **ENSURE** handswitch 2-XS-68-341A, PZR HTR BACKUP HTR A-A, on 6.9KV Shutdown Board 2A-A, Panel 20, is in the NOR position. _____

[7] **ENSURE** handswitch 2-XS-68-341D, PZR HTR BACKUP HTR B-B, on 2-BD-211-B, 6.9KV Shutdown Board 2B-B, Panel 20, is in the NOR position. _____

[8] **ENSURE** handswitch 2-XS-68-341H, PZR HTR BACKUP HTR C, on 2-BD-211-B, 6.9KV Shutdown Board 2B-B, Panel 21, is in the NOR position. _____

[9] **ENSURE** handswitch 2-XS-68-341F, PZR HTR CONT HTR, on 2-BD-211-A, 6.9KV Shutdown Board 2A-A, Panel 21, is in the NOR position. _____

[10] **ENSURE** handswitch 2-HS-68-341AC, RCS PZR HTR BACKUP HTR A-A, on 6.9KV Shutdown Board 2A-A, Panel 20, is in the AUTO position. _____

[11] **ENSURE** handswitch 2-HS-68-341DC, RCS PZR HTR BACKUP HTR B-B, on 2-BD-211-B, 6.9KV Shutdown Board 2B-B, is in the AUTO position. _____

Table 1
(Page 1 of 2)

Breaker Lineup

Date _____

Breaker Identification	Breaker Nomenclature	Breaker Location	Test Position	Performer	Verifier
2-BKR-68-333	Pressurizer Relief (2-FCV-68-333)	2-MCC-213-A1, 480V Reactor MOV Board 2A1-A, Compartment 6D	ON		
2-BKR-68-332	Pressurizer Relief (2-FCV-68-332)	2-MCC-213-B1, 480V Reactor MOV Board 2B1-B, Compartment 5E	ON		
0-BKR-236-3/310	PORV 340A Unit 2 Fuse Assembly Column A	0-BD-236-3/4 125V VITAL BATTERY BOARD III Panel 4	ON		
0-BKR-236-3/311	PORV 340A Unit 2 Fuse Assembly Column B	0-BD-236-3/4 125V VITAL BATTERY BOARD III Panel 4	ON		
0-BKR-236-4/310	PORV (2-PCV-68-334) Unit 2 Fuse Assembly Column A	0-BD-236-4/4 125V VITAL BATTERY BOARD IV Panel 4	ON		

Table 1
(Page 2 of 2)

Breaker Lineup

Date _____

Breaker Identification	Breaker Nomenclature	Breaker Location	Test Position	Performer	Verifier
0-BKR-236-4/311	PORV (2-PCV-68-334) Unit 2 fuse Assembly Column B	0-BD-236-4/4 125V VITAL BATTERY BOARD IV Panel 4	ON		
2-BKR-235-3/31	PORV 340 (2-L-11A)	120V AC VITAL INSTRUMENT POWER BOARD 2-III, Breaker 31, Panel 2-L-11A	ON		
2-BKR-235-4/40	PORV 334 (2-L-11B)	120V AC VITAL INSTRUMENT POWER BOARD 2-IV, Breaker 40, Panel 2-L-11B	ON		

Table 2
(Page 1 of 3)
Fuse Lineup

Date _____

NOTES

1) The number of fuses, that are associated with the fuse identification, are listed.

Fuse Identification	Fuse Nomenclature	Fuse Location	Test Position	Performer	Verifier
2-FU-213-A16/32 (3)[1] Subsection 6.1	PEN, FCV-68-333	2-MCC-213-A1, 480V Reactor MOV Board 2A1-A, Compartment 6D	Installed		
2-FU-213-A16/31N (2)[1] Subsection 6.1	Nor, FCV-68-333	2-MCC-213-A1, 480V Reactor MOV Board 2A1-A, Compartment 6D	Installed		
2-FU-213-A/31A (2)[1] Subsection 6.1	Aux, FCV-68-333	2-MCC-213-A1, 480V Reactor MOV Board 2A1-A, Compartment 6D	Installed		
2-FU-213-B15/42 (3)[1] Subsection 6.2	Pen, FCV-68-332	2-MCC-213-B1, 480V Reactor MOV Board 2B1-B, Compartment 5E	Installed		

Table 2
(Page 2 of 3)
Fuse Lineup

Date _____

Fuse Identification	Fuse Nomenclature	Fuse Location	Test Position	Performer	Verifier
2-FU-213-B15/41N (2)[1] Subsection 6.2	Nor, FCV-68-332	2-MCC-213-B1, 480V Reactor MOV Board 2B1-B, Compartment 5E	Installed		
2-FU-213-B15/41A (2)[1] Subsection 6.2	Aux, FCV-68-332	2-MCC-213-B1, 480V Reactor MOV Board 2B1-B, Compartment 5E	Installed		
0-FU-236-3/A11 Subsection 6.3	Pressurizer Power Relief Valve (340A)	0-BD-236-3-F, 125V VITAL BATTERY BOARD III, Panel 4	Installed		
0-FU-236-3/B11 Subsection 6.3	Pressurizer Power Relief Valve (340A)	0-BD-236-3-F, 125V VITAL BATTERY BOARD III, Panel 4	Installed		
0-FU-236-4/A5 Subsection 6.4	Pressurizer Power Relief Valve (334)	0-BD-236-4-G, 125V VITAL BATTERY BOARD IV, Panel 4	Installed		
0-FU-236-4/B5 Subsection 6.4	Pressurizer Power Relief Valve (334)	0-BD-236-4-G, 125V VITAL BATTERY BOARD IV, Panel 4	Installed		

Table 2
(Page 3 of 3)
Fuse Lineup

Date _____

Fuse Identification	Fuse Nomenclature	Fuse Location	Test Position	Performer	Verifier
2-FU-278-L11A/A1 Subsection 6.3	Position Fuse	Panel 2-L-11A	Installed		
2-FU-278-L11B/K1 Subsection 6.4	Position Fuse	Panel 2-L-11B	Installed		
2-FU-278-L11A/J17 Subsection 6.3	Pressurizer Pressure Aux Relay	Panel 2-L-11A	Installed		
2-FU-278-L11A/J18 Subsection 6.3	Pressurizer Pressure Aux Relay	Panel 2-L-11A	Installed		
2-FU-278-L11B/J17 Subsection 6.4	Pressurizer Pressure Aux Relay	Panel 2-L-11A	Installed		
2-FU-278-L11B/J18 Subsection 6.4	Pressurizer Pressure Aux Relay	Panel 2-L-11A	Installed		

Table 3
(Page 1 of 4)

Pressurizer Pressure and Level Control and Protection Setpoints

Component(s)	Function	Setpoint	Reset
2-RFV-68-563 2-RFV-68-564 2-RFV-68-565	Pressurizer Safety Valve Lift Setpoint	2485 psig	N/A
2-PS-68-340A 2-PS-68-334A 2-PS-68-323A 2-PS-68-322A	Pressurizer Pressure High Trip	2385 psig	2377 psig
2-PS-68-334G	High Pressurizer Pressure PORV 334	2335 psig	2315 psig
2-PS-68-323F	High Pressurizer Pressure Interlock 334	2335 psig	2315 psig
2-PS-68-340H	Compensated High Pressurizer Pressure PORV 340A	100 psi	80 psi
2-PS-68-322B	High Pressurizer Pressurizer Interlock 340A	2335 psig	2315 psig
2-PS-68-336CB	High Pressurizer Pressure PORV 340A (Auxiliary Control Room)	2335 psig	2315 psig

Table 3
(Page 2 of 4)

Pressurizer Pressure and Level Control and Protection Setpoints

Component(s)	Function	Setpoint	Reset
2-PS-68-337CA	High Pressurizer Pressure PORV 334 (Auxiliary Control Room)	2335 psig	2314 psig
2-PS-68-334F	Compensated High Pressurizer Pressure Alarm	75 psi	67 psi
2-PS-68-336CA	High Pressurizer Alarm (Auxiliary Control Room)	2310 psig	2302 psig
2-PS-68-336CD	High Pressurizer Auxiliary Spray (Aux Control Room)	2310 psig	2302 psig
2-PCV-68-340B 2-PCV-68-340D	Compensated Pressurizer Pressure - Pressurizer Sprays Full Open	75 psi	N/A
2-PCV-68-340B 2-PCV-68-340D	Compensated Pressurizer Pressure - Pressurizer Sprays Full Closed	25 psi	N/A
2-PC-68-340E	Compensated Pressurizer Pressure - Proportional Heaters Full Off	15 psi	N/A
2-PC-68-340E	Compensated Pressurizer Pressure - Proportional Heaters Full On	-15 psi	N/A
2-PS-68-337CB	Low Pressurizer Pressure Backup Heaters On (Auxiliary Control Room)	2210 psig	2218 psig

Table 3
(Page 3 of 4)

Pressurizer Pressure and Level Control and Protection Setpoints

Component(s)	Function	Setpoint	Reset
2-PS-68-340G	Compensated Low Pressurizer Pressure Backup Heaters On	-25 psig	-17 psig
2-PS-68-340E 2-PS-68-334E 2-PS-68-323E 2-PS-68-322E	Low Pressurizer Pressure Reactor Trip	1970 psig	1978 psig
2-PS-68-340B 2-PS-68-334B 2-PS-68-323B	P-11 Permissive - Block Safety Injection	1970 psig	1978 psig
2-PS-68-340E 2-PS-68-334E 2-PS-68-323E	Low Pressurizer Pressure - Safety Injection	1870 psig	1878 psig
2-LS-68-339A 2-LS-68-335A 2-LS-68-320A	High Pressurizer Level Reactor Trip	92%	91%

Table 3
(Page 4 of 4)

Pressurizer Pressure and Level Control and Protection Setpoints

Component(s)	Function	Setpoint	Reset
2-LS-68-326CA	High Pressurizer Level Backup Heaters On (Auxiliary Control Room)	92%	91%
2-LS-68-326CB	High Pressurizer Level Alarm (Auxiliary Control Room)	92%	91%
2-LS-68-335D	High Pressurizer Level Alarm	70%	69%
2-LS-68-339E	High Pressurizer Level Deviation Alarm	5%	4%
N/A	Pressurizer Level Program at Full Power	80%	N/A
N/A	Pressurizer Level Program at No-Load	25%	N/A
2-LS-68-339F	Low Pressurizer Level Deviation Alarm	-5%	-4%
2-LS-68-339D 2-LS-68-335E	Low Pressurizer Level Heater Cutout and Letdown Isolation	17%	18%
2-LS-325CA	Low Pressurizer Level Alarm (Auxiliary Control Room)	17%	18%
2-LS-325CB	Low Pressurizer Level Backup Heater Cutout (Auxiliary Control Room)	17%	18%

Figure 1
(Page 1 of 1)

Pressurizer Pressure Setpoints

Figure not to scale

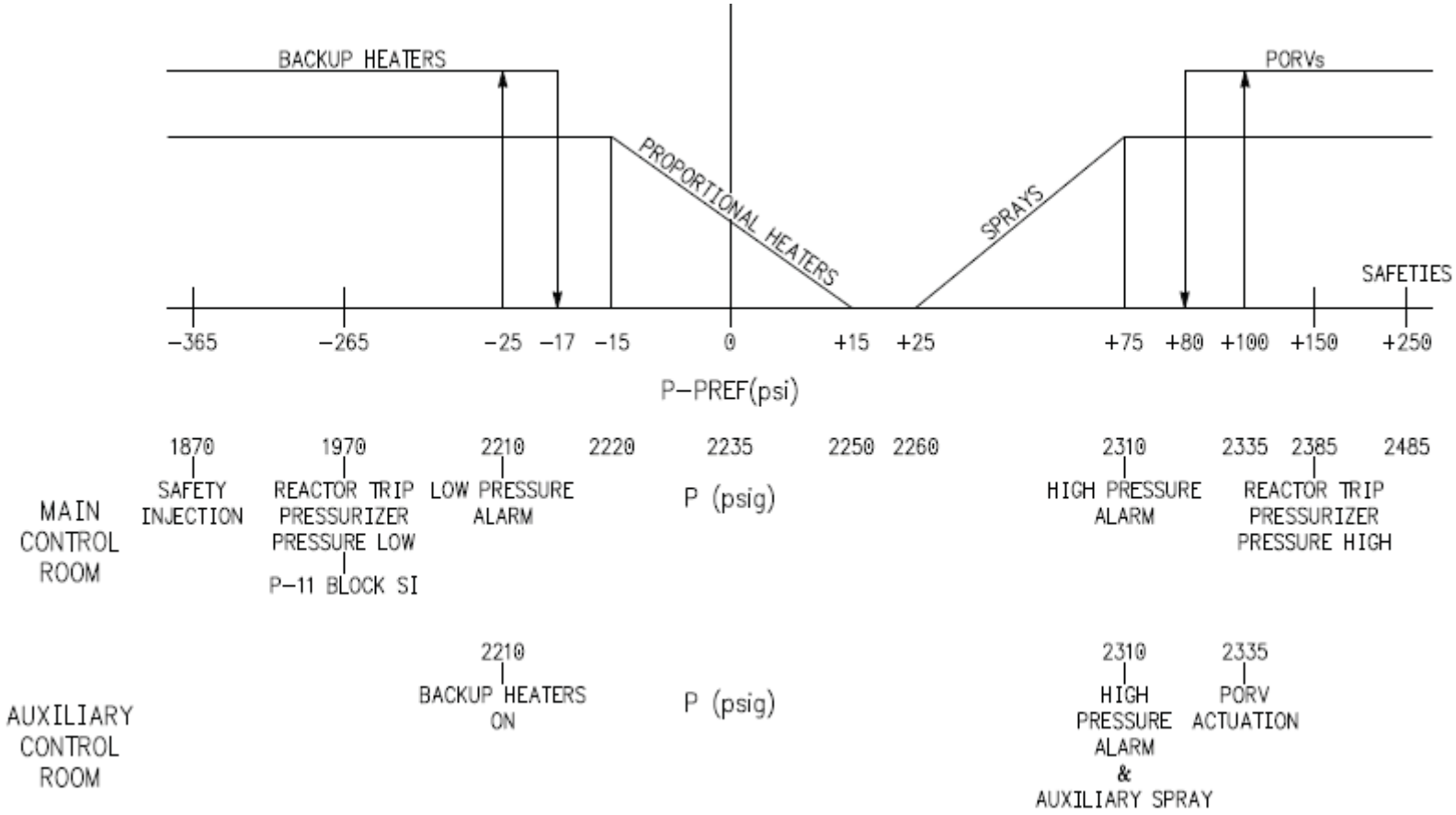
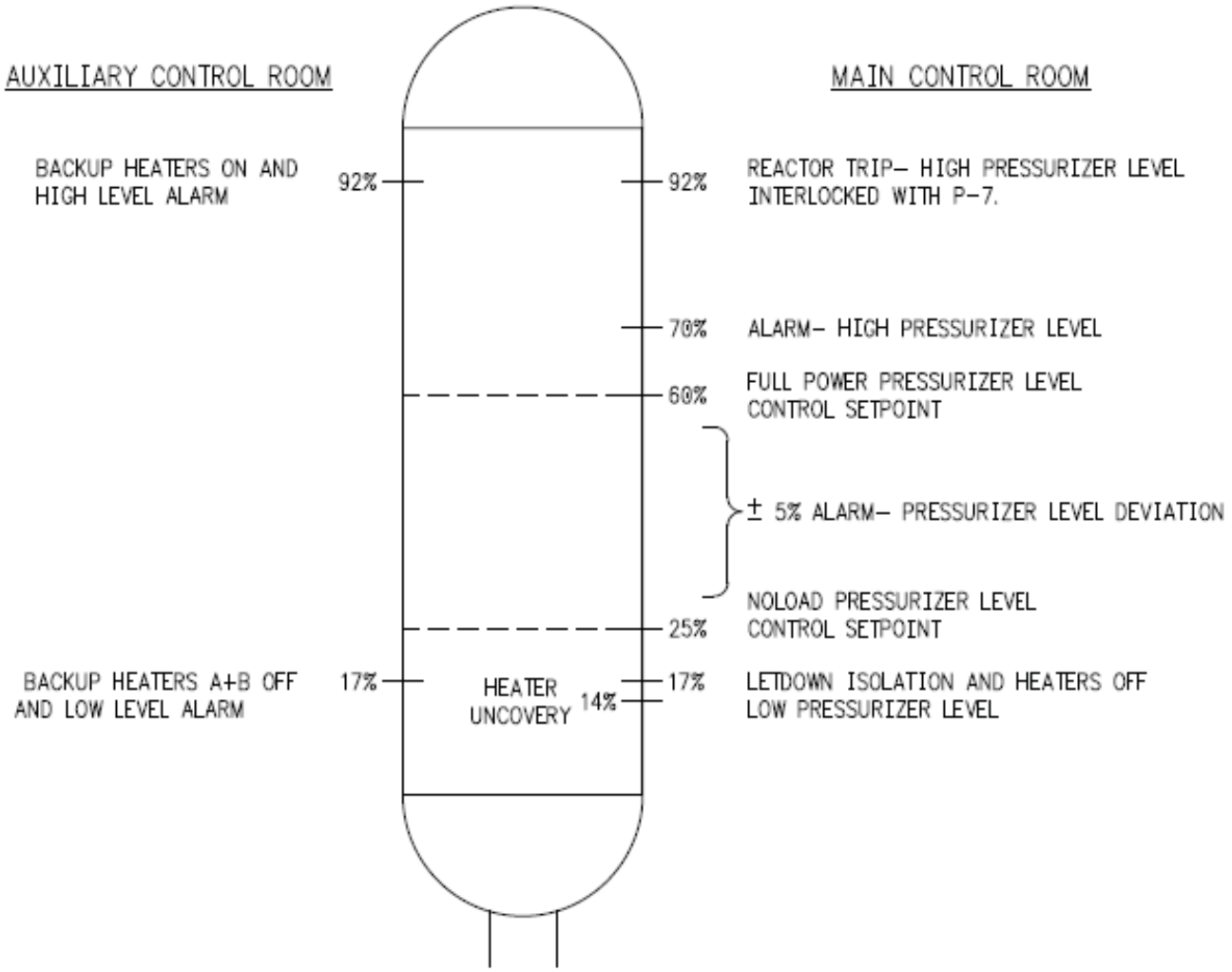


Figure 2
(Page 1 of 1)

Pressurizer Level Setpoints

Figure not to scale.



Data Sheet 1
(Page 1 of 5)

Pressurizer Pressure Steady-State Data

Date _____

Instrument (Location)	Instrument Description	Auto Control at 2235 psig (Step 6.6[22])	Equilibrium Heater/Spray Condition (Step 6.6[31])	Rxt Trip on High Pressure 2385 psig (Step 6.6[43])	SI on Low Pressure of 1870 psig (Step 6.6[69])	Auto Control at 2235 psig (Step 6.6[80])
2-PI-68-342A (2-M-5)	PZR-COLD CAL PRESS	PSIG	PSIG	PSIG	PSIG	PSIG
2-PI-68-340A (2-M-5)	PZR PRESS	PSIG	PSIG	PSIG	PSIG	PSIG
2-PI-68-334 (2-M-5)	PZR PRESS	PSIG	PSIG	PSIG	PSIG	PSIG
2-PI-68-323 (2-M-5)	PZR PRESS	PSIG	PSIG	PSIG	PSIG	PSIG
2-PI-68-322 (2-M-5)	PZR PRESS	PSIG	PSIG	PSIG	PSIG	PSIG
2-TI-68-318 (2-M-5)	PZR SURGE LINE TEMP	DEG F	DEG F	DEG F	DEG F	DEG F

Data Sheet 1
(Page 2 of 5)

Pressurizer Pressure Steady-State Data

Date _____

Instrument (Location)	Instrument Description	Auto Control at 2235 psig (Step 6.6[22])	Equilibrium Heater/Spray Condition (Step 6.6[31])	Rxt Trip on High Pressure 2385 psig (Step 6.6[43])	SI on Low Pressure of 1870 psig (Step 6.6[69])	Auto Control at 2235 psig (Step 6.6[80])
2-TI-68-317 (2-M-5)	LOOP 1 SPRAY TEMP	DEG F	DEG F	DEG F	DEG F	DEG F
2-TI-68-316 (2-M-5)	LOOP 2 SPRAY TEMP	DEG F	DEG F	DEG F	DEG F	DEG F
2-PR-68-340 (2-M-5)	PZR PRESS	PSIG	PSIG	PSIG	PSIG	PSIG
2-LR-68-339 (2-M-5)	PZR LEVEL	%	%	%	%	%
2-TI-68-2E (2-M-5)	LOOP 1 TAVG	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-TI-68-25E (2-M-5)	LOOP 2 TAVG	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F

Data Sheet 1
(Page 3 of 5)

Pressurizer Pressure Steady-State Data

Date _____

Instrument (Location)	Instrument Description	Auto Control at 2235 psig (Step 6.6[22])	Equilibrium Heater/Spray Condition (Step 6.6[31])	Rxt Trip on High Pressure 2385 psig (Step 6.6[43])	SI on Low Pressure of 1870 psig (Step 6.6[69])	Auto Control at 2235 psig (Step 6.6[80])
2-TI-68-44E (2-M-5)	LOOP 3 TAVG	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-TI-68-67E (2-M-5)	LOOP 4 TAVG	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-TI-68-330 (2-M-4)	SAFETY 68-563 TAILPIPE TEMP	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-TI-68-329 (2-M-4)	SAFETY 68-564 TAILPIPE TEMP	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-TI-68-328 (2-M-4)	SAFETY 68-565 TAILPIPE TEMP	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-TI-68-331 (2-M-4)	PORV 340A & 334 TAILPIPE TEMP	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F

Data Sheet 1
(Page 4 of 5)

Pressurizer Pressure Steady-State Data

Date _____

Instrument (Location)	Instrument Description	Auto Control at 2235 psig (Step 6.6[22])	Equilibrium Heater/Spray Condition (Step 6.6[31])	Rxt Trip on High Pressure 2385 psig (Step 6.6[43])	SI on Low Pressure of 1870 psig (Step 6.6[69])	Auto Control at 2235 psig (Step 6.6[80])
2-LI-68-339A (2-M-4)	PZR LEVEL	%	%	%	%	%
2-LI-68-335A (2-M-4)	PZR LEVEL	%	%	%	%	%
2-LI-68-320 (2-M-4)	PZR LEVEL	%	%	%	%	%
2-LI-68-321 (2-M-4)	PZR-COLD CAL LEVEL	%	%	%	%	%
2-TI-68-319 (2-M-4)	PZR LIQUID TEMP	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-TI-68-324 (2-M-4)	PZR VAPOR TEMP	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F

Data Sheet 1
(Page 5 of 5)

Pressurizer Pressure Steady-State Data

Date _____

Instrument (Location)	Instrument Description	Auto Control at 2235 psig (Step 6.6[22])	Equilibrium Heater/Spray Condition (Step 6.6[31])	Rxt Trip on High Pressure 2385 psig (Step 6.6[43])	SI on Low Pressure of 1870 psig (Step 6.6[69])	Auto Control at 2235 psig (Step 6.6[80])
2-PIC-68-340B (2-M-4)	LOOP 2 SPRAY CONTROL	NA	OUTPUT %	NA	NA	NA
2-PIC-68-340D (2-M-4)	LOOP 1 SPRAY CONTROL	NA	OUTPUT %	NA	NA	NA
2-PI-68-336C (2-L-10)	RCS PZR PRESS	PSIG	PSIG	PSIG	PSIG	PSIG
2-PI-68-337C (2-L-10)	RCS PZR PRESS	PSIG	PSIG	PSIG	PSIG	PSIG
2-LI-68-326C (2-L-10)	PZR LEVEL	%	%	%	%	%
2-LI-68-325C (2-L-10)	PZR LEVEL	%	%	%	%	%

Data Sheet 2
(Page 1 of 5)

PORV Dynamic Testing Data

Date _____

Instrument (Location)	Instrument Description	Pre-Test 50% Level (Step 6.8[30])	Post-Discharge (Step 6.8[39])	Pre-Test 50% Level (Step 6.8[68])	Post-Discharge (Step 6.8[77])	Post Test (Step 6.8[90])
2-PI-68-342A (2-M-5)	PZR-COLD CAL PRESS	PSIG	PSIG	PSIG	PSIG	PSIG
2-PI-68-340A (2-M-5)	PZR PRESS	PSIG	PSIG	PSIG	PSIG	PSIG
2-PI-68-334 (2-M-5)	PZR PRESS	PSIG	PSIG	PSIG	PSIG	PSIG
2-PI-68-323 (2-M-5)	PZR PRESS	PSIG	PSIG	PSIG	PSIG	PSIG
2-PI-68-322 (2-M-5)	PZR PRESS	PSIG	PSIG	PSIG	PSIG	PSIG
2-TI-68-318 (2-M-5)	PZR SURGE LINE TEMP	DEG F	DEG F	DEG F	DEG F	DEG F
2-TI-68-317 (2-M-5)	LOOP 1 SPRAY TEMP	DEG F	DEG F	DEG F	DEG F	DEG F

Data Sheet 2
(Page 2 of 5)

PORV Dynamic Testing Data

Date _____

Instrument (Location)	Instrument Description	Pre-Test 50% Level (Step 6.8[30])	Post-Discharge (Step 6.8[39])	Pre-Test 50% Level (Step 6.8[68])	Post-Discharge (Step 6.8[77])	Post Test (Step 6.8[90])
2-TI-68-316 (2-M-5)	LOOP 2 SPRAY TEMP	DEG F	DEG F	DEG F	DEG F	DEG F
2-PR-68-340 (2-M-5)	PZR PRESS	PSIG	PSIG	PSIG	PSIG	PSIG
2-LR-68-339 (2-M-5)	PZR LEVEL	%	%	%	%	%
2-TI-68-2E (2-M-5)	LOOP 1 TAVG	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-TI-68-25E (2-M-5)	LOOP 2 TAVG	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-TI-68-44E (2-M-5)	LOOP 3 TAVG	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-TI-68-67E (2-M-5)	LOOP 4 TAVG	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F

Data Sheet 2
(Page 3 of 5)

PORV Dynamic Testing Data

Date _____

Instrument (Location)	Instrument Description	Pre-Test 50% Level (Step 6.8[30])	Post-Discharge (Step 6.8[39])	Pre-Test 50% Level (Step 6.8[68])	Post-Discharge (Step 6.8[77])	Post Test (Step 6.8[90])
2-TI-68-330 (2-M-4)	SAFETY 68-563 TAILPIPE TEMP	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-TI-68-329 (2-M-4)	SAFETY 68-564 TAILPIPE TEMP	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-TI-68-328 (2-M-4)	SAFETY 68-565 TAILPIPE TEMP	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-TI-68-331 (2-M-4)	PORV 340A & 334 TAILPIPE TEMP	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-LI-68-339A (2-M-4)	PZR LEVEL	%	%	%	%	%
2-LI-68-335A (2-M-4)	PZR LEVEL	%	%	%	%	%
2-LI-68-320 (2-M-4)	PZR LEVEL	%	%	%	%	%

Data Sheet 2
(Page 4 of 5)

PORV Dynamic Testing Data

Date _____

Instrument (Location)	Instrument Description	Pre-Test 50% Level (Step 6.8[30])	Post-Discharge (Step 6.8[39])	Pre-Test 50% Level (Step 6.8[68])	Post-Discharge (Step 6.8[77])	Post Test (Step 6.8[90])
2-LI-68-321 (2-M-4)	PZR-COLD CAL LEVEL	%	%	%	%	%
2-TI-68-319 (2-M-4)	PZR LIQUID TEMP	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-TI-68-324 (2-M-4)	PZR VAPOR TEMP	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-LI-68-300 (2-M-4)	PRT LEVEL	%	%	%	%	%
2-PI-68-301 (2-M-4)	PRT PRESS	PSIG	PSIG	PSIG	PSIG	PSIG
2-TI-68-309 (2-M-4)	PRT TEMP	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F

Data Sheet 2
(Page 5 of 5)

PORV Dynamic Testing Data

Date _____

Instrument (Location)	Instrument Description	Pre-Test 50% Level (Step 6.8[30])	Post-Discharge (Step 6.8[39])	Pre-Test 50% Level (Step 6.8[68])	Post-Discharge (Step 6.8[77])	Post Test (Step 6.8[90])
2-LI-68-312C (2-L-10)	PRT LEVEL	%	%	%	%	%
2-PI-68-311C (2-L-10)	PRT PRESS	PSIG	PSIG	PSIG	PSIG	PSIG

Data Sheet 3
(Page 1 of 5)

Pressurizer Level Functional Test Data

Date _____

Instrument (Location)	Instrument Description	Baseline Data 25% Level (Step 6.10[13])	60% Level (Step 6.10[18])	100% Level (Step 6.10[25])	0% Level (Step 6.10[98])	Post Test 25% Level (Step 6.10[109]
2-PI-68-342A (2-M-5)	PZR-COLD CAL PRESS	PSIG	PSIG	PSIG	PSIG	PSIG
2-PI-68-340A (2-M-5)	PZR PRESS	PSIG	PSIG	PSIG	PSIG	PSIG
2-PI-68-334 (2-M-5)	PZR PRESS	PSIG	PSIG	PSIG	PSIG	PSIG
2-PI-68-323 (2-M-5)	PZR PRESS	PSIG	PSIG	PSIG	PSIG	PSIG
2-PI-68-322 (2-M-5)	PZR PRESS	PSIG	PSIG	PSIG	PSIG	PSIG
2-TI-68-318 (2-M-5)	PZR SURGE LINE TEMP	DEG F	DEG F	DEG F	DEG F	DEG F
2-TI-68-317 (2-M-5)	LOOP 1 SPRAY TEMP	DEG F	DEG F	DEG F	DEG F	DEG F

Data Sheet 3
(Page 2 of 5)

Pressurizer Level Functional Test Data

Date _____

Instrument (Location)	Instrument Description	Baseline Data 25% Level (Step 6.10[13])	60% Level (Step 6.10[18])	100% Level (Step 6.10[25])	0% Level (Step 6.10[98])	Post Test 25% Level (Step 6.10[109]
2-TI-68-316 (2-M-5)	LOOP 2 SPRAY TEMP	DEG F	DEG F	DEG F	DEG F	DEG F
2-PR-68-340 (2-M-5)	PZR PRESS	PSIG	PSIG	PSIG	PSIG	PSIG
2-LR-68-339 (2-M-5)	PZR LEVEL	%	%	%	%	%
2-TI-68-2E (2-M-5)	LOOP 1 TAVG	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-TI-68-25E (2-M-5)	LOOP 2 TAVG	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-TI-68-44E (2-M-5)	LOOP 3 TAVG	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-TI-68-67E (2-M-5)	LOOP 4 TAVG	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F

Data Sheet 3
(Page 3 of 5)

Pressurizer Level Functional Test Data

Date _____

Instrument (Location)	Instrument Description	Baseline Data 25% Level (Step 6.10[13])	60% Level (Step 6.10[18])	100% Level (Step 6.10[25])	0% Level (Step 6.10[98])	Post Test 25% Level (Step 6.10[109]
2-TI-68-330 (2-M-4)	SAFETY 68-563 TAILPIPE TEMP	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-TI-68-329 (2-M-4)	SAFETY 68-564 TAILPIPE TEMP	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-TI-68-328 (2-M-4)	SAFETY 68-565 TAILPIPE TEMP	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-TI-68-331 (2-M-4)	PORV 340A & 334 TAILPIPE TEMP	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-LI-68-339A (2-M-4)	PZR LEVEL	%	%	%	%	%
2-LI-68-335A (2-M-4)	PZR LEVEL	%	%	%	%	%
2-LI-68-320 (2-M-4)	PZR LEVEL	%	%	%	%	%

Data Sheet 3
(Page 4 of 5)

Pressurizer Level Functional Test Data

Date _____

Instrument (Location)	Instrument Description	Baseline Data 25% Level (Step 6.10[13])	60% Level (Step 6.10[18])	100% Level (Step 6.10[25])	0% Level (Step 6.10[98])	Post Test 25% Level (Step 6.10[109]
2-LI-68-321 (2-M-4)	PZR-COLD CAL LEVEL	%	%	%	%	%
2-TI-68-319 (2-M-4)	PZR LIQUID TEMP	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-TI-68-324 (2-M-4)	PZR VAPOR TEMP	DEGS F	DEGS F	DEGS F	DEGS F	DEGS F
2-PI-68-336C (2-L-10)	RCS PZR PRESS	PSIG	NA	PSIG	PSIG	PSIG
2-PI-68-337C (2-L-10)	RCS PZR PRESS	PSIG	NA	PSIG	PSIG	PSIG
2-LI-68-326C (2-L-10)	PZR LEVEL	%	%	%	%	%

Data Sheet 3
(Page 5 of 5)

Pressurizer Level Functional Test Data

Date _____

Instrument (Location)	Instrument Description	Baseline Data 25% Level (Step 6.10[13])	60% Level (Step 6.10[18])	100% Level (Step 6.10[25])	0% Level (Step 6.10[98])	Post Test 25% Level (Step 6.10[109]
2-LI-68-325C (2-L-10)	PZR LEVEL	%	%	%	%	%

WATTS BAR NUCLEAR PLANT
UNIT 2 PREOPERATIONAL TEST

TITLE: RHR HFT Heatup/Cooldown and Midloop

Instruction No: 2-PTI-074-02

Revision No: 0

PREPARED BY: Chris Boudreaux / Chris Boudreaux DATE: 6/13/13
PRINT NAME / SIGNATURE

REVIEWED BY: Bill BRYANT / Bill Bryant DATE: 6/13/13
PRINT NAME / SIGNATURE

INSTRUCTION APPROVAL

JTG MEETING No: 2-13-011

JTG CHAIRMAN: Nick A Welch DATE: 6/13/13

APPROVED BY : Nick A Welch DATE: 6/13/13
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	6-13-13	All	Initial Issue - Unit 2 PTI developed from Unit 1 PTI-074-02, Revision 1 and Supplement to Revision 1.

Table of Contents

Table of Contents (continued)

Date _____

1.0 INTRODUCTION

1.1 TEST OBJECTIVES

Demonstrate the operability of the Residual Heat Removal (RHR) System and its capability to provide recirculation flows required to remove heat from the Reactor Coolant System (RCS).

1.2 SCOPE

A. Demonstrate the ability to moderate heat up and to cool down the RCS using the Residual Heat Removal (RHR) system in various configurations during Hot Functional Testing (HFT).

B. Demonstrate RHR system operation in RCS midloop condition.

C. This instruction is intended to be performed on the heat up and cool down sides of HFT.

Date _____

2.0 REFERENCES

2.1 Performance References

A. SMP-9.0, Conduct of Test

B. GOI-7, Generic Equipment Operating Guidelines

C. 2-TOP-068-06, Plant Cool down (later)

D. 2-TOP-062-02, CVCS, Ltdn & Chg (later)

E. 2-TOP-074-01, RHR (later)

F. 2-TOP-074-02, RHR (later)

G. 2-TOP-068-02, RCS (later)

2.2 Developmental References

A. Unit 2 Final Safety Analysis Report Amendment 109

1. Table 14.2-1 Sheet 17 of 89 Residual Heat Removal System Test Summary

2. Section 5.5.7, Residual Heat Removal System

B. Drawings

1. Flow Diagrams

a. 2-47W810-1, Rev 10, Residual Heat Removal System

b. 2-47W811-1, Rev 19, Safety Injection System

c. 2-47W809-1, Rev 13, Chemical and Volume Control System

d. 2-47W812-1, Rev 14, Containment Spray System

2. Electrical

a. 45N1632-19, Rev 0, Wiring Diagrams Miscellaneous Control Connection Diagrams

Date _____

2.2 Developmental References (continued)

b. 2-45W600-74, Rev 1, Wiring Diagrams Residual Heat Removal System Schematic Diagrams

3. Logic/Control

a. 2-47W610-68-4, Rev 5. Electrical Control Diagram Reactor Coolant System

b. 2-47W610-68-5, Rev 2, Electrical Control Diagram Reactor Coolant System

c. 2-47W610-68-7, Rev 4, Electrical Control Diagram Reactor Coolant System

d. 2-47W610-74-1, Rev 7, Electrical Control Diagram Residual Heat Removal System

4. Mechanical

a. 47W432-1H, Rev 0, Residual Heat Removal System Piping

b. 2-47W432-209, Rev 0, Problem N3-74-04A 074 - Discharge from RHR Pumps to SCV Penetrations

5. Vendor Manuals

a. TVAW-03-MLMS-01, MLMS Technical Manual and MLMS Software User's Manual

C. Documents

1. 2-TSD-74-2, Rev 1, Residual Heat Removal System-Heat-up and Plant Cool-down/MidLoop Operations from HFT

2. WBN2-74-4001, Rev 5, Residual Heat Removal System

3. WBN2-62-4001, Rev 1, Chemical and Volume Control System

4. WBT-D-2988, Rev 0, Watts Bar Unit 2 Precautions, Limitations, and Setpoints

5. SSD 2-L-68-399A (later)

6. SSD 2-L-68-399B (later)

7. 2-PTI-068-01, HFT Heat Up Cooldown (later)

Date _____

2.2 Developmental References (continued)

8. Attachment to WAT-D-8252 RIMS# T33 931215 809 RHR Flowrate Reduction During Midloop Operation

9. 2-PTI-999-01, Operational Vibration Testing, (later)

Date _____

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 reverified and a Chronological Test Log (CTL) entry made.

C. Discrepancies between component ID tags and the description in a procedure/instruction do not require a Test Deficiency Notice, TDN, in accordance with SMP-14.0, if the UNIDs match, exclusive of place-keeping zeros and train designators (e.g. 2-HS-31-468 vs. 2-HS-031-0468) and the noun description is sufficient to identify the component. If the component label needs to be changed, a Tag Request Form (TR Card) should be processed in accordance with TI-12.14. Make an entry in the CTL and continue testing.

D. All wires removed/lifted from a terminal shall be identified and taped or covered with an insulator to prevent personnel or equipment hazard and possible spurious initiations. The wires should be grouped together and labeled with the work implementing document number that required them to be lifted if left unattended.

E. All open problems are to be tracked by a corrective action document and entered on the appropriate system punchlist.

F. Problems identified during the test shall be annotated on the Chronological Test Log 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 radiological areas.

H. Ensure there are no adverse effects to the operation of Unit 1 structures, systems, or components.

I. Test personnel will coordinate with Unit 1 Operations when manipulating Unit 1 equipment if required.

Date _____

3.0 PRECAUTIONS AND LIMITATIONS (continued)

J. 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.

K. If the vibration is determined to be excessive the Test Engineer shall initiate a Test Deficiency Notice (TDN).

L. When inserting fuses with actuators, ensure the actuating rod is oriented correctly to provide for proper alarm initiation and visual indication.

M. During RHR cool down, one RHR loop operation should be initiated when heat load allows to minimize the results of a loss of suction incident.

N. The RHR System should NOT be placed in service until RCS pressure is less than 370 psig and RCS temperature is less than 350°F.

O. RHR operation at temperatures less than 235°F ensures Refueling Water Storage Tank (RWST) static head will maintain RHR suction pressure above saturation. In the event injection flow is required, with temperature greater than 235°F, voiding and subsequent RHR Pump damage may occur.

P. If operating RHR above 235°F, then the following limitations apply:

1. RHR system heatup and cooldown rate should NOT exceed 50°F per hour and must NOT exceed 100°F per hour (except for the initial transient when tying RHR onto hot RCS).

2. If a running RHR pump trips, or is shutdown without cooling to less than 235°F as indicated on RHR Heat Exchanger inlet recorder, then both pumps handswitches must be placed in Pull-To-Lock, and remain in Pull-To-Lock while pumps are shutdown to preclude exceeding cooldown limits if inadvertently started.

3. RHR hot leg suction line must be cooled to less than 235°F before placing RHR System in ECCS Standby Mode.

Q. When RCS level is below the Pressurizer (Pzr), the RHR System should be in one-loop operation.

R. When the RHR pump(s) are in operation, the RHR Pump room cooler should be checked for cooling water flow and cooler fan operation.

S. RHR pump casing must be vented before initial scheduled pump start and subsequent starts when RHR system temperature has changed.

Date _____

3.0 PRECAUTIONS AND LIMITATIONS (continued)

T. RHR system must be vented after passive cooldown from hot conditions (≥235°F) if RHR system was isolated from any makeup during the cooldown.

U. Both RHR Pumps should NOT be operated together on miniflow with both letdown isolation valves (2-SPV-74-530 (-531), RHR HX 2A (2B) OUTLET TO CVCS) and/or both HX bypasses OPEN (2-HCV-74-36 (-37), RHR HEAT EXCHANGER A (B) MANUAL BYPASS). This will help prevent pump-to-pump head interaction and possible pump damage.

V. System pressures should be kept well below relief valve setpoints due to industry experience of valves opening below setpoints and not reseating. (2-RFV-74-505, RHR PUMP SUCTION HDR RELIEF, is set at 450 psi; 2-RFV-63-626 and 627, RHR TO COLD LEG 2 & 3 (1 & 4) INJ LINE RELIEF, are set at 600 psi.)

W. During cool down, at least one Reactor Coolant Pump (RCP) shall be operated to ensure the temperature difference between the loops does not exceed 25°F.

X. 2-FCV-74-1, 2, LOOP 4 HOT LEG TO RHR SUCTION, will NOT auto close on high RCS pressure (ALARM ONLY). The operator must manually close the valves.

Y. In order to prevent inadvertent diversion of hot water to the RWST or introduction of hot water into the ECCS pump suction piping, which could cause steam voids, the following valves SHALL NOT be opened while on RHR shutdown cooling with RCS temperature greater than 235°F: 2-HCV-74-34, 2-FCV-63-8 and 11, 2-FCV-63-6 and 7.

Z. Do NOT throttle Component Cooling System (CCS) flow to the RHR Heat Exchangers (HXs) in an attempt to control cool down rates. Such action can cause overheating of the CCS side of the HX.

AA. At least one reactor coolant pump (RCP) should be kept running when allowed by the RCP operating requirements to maintain some flow throughout the RCS, precluding the formation of any cold water pockets.

BB. Component Cooling Water supply temperature is allowed to approach 110°F for a maximum of four hours, during initial RHR System operations for plant cool down operations.

Date _____

3.0 PRECAUTIONS AND LIMITATIONS (continued)

CC. Reduced inventory (Midloop) operations:

1. RCS temperature (RHR inlet) must be less than or equal to 140°F for entry into midloop operation.

2. Level should be greater than 6” above centerline of RCS loop piping for one RHR pump operation, limited to two-loop injection.

3. Running RHR pump should be stopped BEFORE starting Standby RHR pump.

4. If RHR pump cavitates, RHR flow must be reduced (normal just over 2000 gpm). Continued cavitation necessitates securing the RHR pump.

5. Operating band for the RHR Pump Suction during midloop operation is between Elevations 718' 6" and 719' 0”.

6. While in a Reduced Inventory/Mid-Loop condition, continuous indication of RCS level shall be provided by at least two level instruments.

7. The two level instruments used shall agree to within 2 inches

8. If RCS level is indeterminate (disagreement of more than 2 inches among indicators, uncontrolled changes, etc.), then stop any further level changes and attend the situation. Stop the RHR Pump if necessary.

DD. GOI-7 should used throughout the procedure for generic operating guidelines. It includes valves, motors, pumps, breakers, ultrasonic flowmeters, Foxboro controllers, and other general information.

Date _____

4.0 PREREQUISITE ACTIONS

NOTE
Preliminary action steps may be performed in any order with Test Directors approval.

4.1 Preliminary Actions

[1] **EVALUATE** open items in Watts Bar Integrated Task Equipment List (WITEL), and

ENSURE they will **NOT** adversely affect the test performance and results. _____

[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] **ENSURE** outstanding Design Change Notices (DCN's), Engineering Document Construction Releases (EDCR's) or Temporary Modifications (T-Mods's) do **NOT** adversely impact testing, and

ATTACH documentation of DCN's, EDCR's and T-Mods's that were reviewed to the data package. _____

[6] **ENSURE** required Component Testing has been completed prior to start of test. _____

Date _____

4.1 Preliminary Actions (continued)

[7] **VERIFY** System cleanness as required for the performance of this test has been completed in accordance with SMP-7.0 for piping systems. _____

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

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

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

[11] **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. _____

[12] **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. _____

[13] **ENSURE** the system has been cleaned, hydrostatically tested, and flushed. _____

[14] **ENSURE** system filled and vented in accordance with 2-TOP-074-01. _____

[15] **REVIEW** preventive maintenance for system/components covered by this test, and

VERIFY no conditions exist that will impact test performance. _____

Date _____

4.1 Preliminary Actions (continued)

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

A. 2-XA-55-1B-14-D _____

B. 2-XA-55-1B-14-E _____

C. 2-XA-55-6A-113-B _____

D. 2-XA-55-6A-113-C _____

E. 2-XA-55-6C-126-F _____

F. 2-XA-55-6D-131-F _____

G. 2-XA-55-6F-149-C _____

H. 2-XA-55-6F-150-C _____

NOTE

Selecting 'Points' from the top menu of the ICS screen, then 'By Plant System', then 074, will show all the computer points for Step 4.1[17]

[17] **ENSURE** all Integrated Computer System (ICS) points are in scan for the RHR System, and

IDENTIFY those points **NOT** able to be placed in scan in the CTL **AND** any compensatory actions required. _____

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

[19] **VERIFY** the RWST is filled with primary grade water and is available for the test. _____

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

Date _____

4.1 Preliminary Actions (continued)

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

[22] **VERIFY** CCS Flow rate to RHR Heat Exchanger is 5000 to 6250 gpm at the following components:

A. 2-HTX-74-30, RHR Heat Exchanger 2A

2-FI-70-158 _____ gpm _____

B. 2-HTX-74-31, RHR Heat Exchanger 2B

2-FI-70-155 _____ gpm _____

[23] **VERIFY** RHR system components are aligned to support testing per 2-TOP-074-02, Residual Heat Removal System. _____

[24] **ENSURE** the appropriate personnel have been notified and are available to support the test. _____

[25] **VERIFY** Measuring and Test Equipment (M&TE) required for test performance has been (as required) filled, vented, place in service and recorded on Measuring and Test Equipment Log.

Subsection 6.1 - 6.4 _____

Subsection 6.5 _____

[26] **VERIFY** Measuring and Test Equipment (M&TE) calibration due dates will support the completion of this test performance.

Subsection 6.1 - 6.4 _____

Subsection 6.5 _____

[27] **VERIFY** RCS Temperature is greater than 340°F but less than 350°F per 2-PTI-068-01. Hot Functional Test (HFT). (Section 6.3, 6.4) _____

[28] **VERIFY** RCS pressure is less than 370 psig but greater than 325 psig per 2-TOP-068-06, Plant Cooldown. (Section 6.3, 6.4) _____

[29] **VERIFY** RHR room coolers are aligned to support RHR system testing. (Sections 6.1 - 6.5) _____

Date _____

4.1 Preliminary Actions (continued)

[30] **ENSURE** there are two independent water level indicators available for midloop operation. (Section 6.5) _____

[31] **VERIFY** PZR level is between 30 and 50 percent as indicated on 2-LI-68-321, PZR LEVEL COLD CAL, 2-M-4. (Section 6.5) _____

[32] **SETUP** administrative controls to ensure no other actions are taken that may perturb RCS water level prior to midloop operation. (Section 6.5) _____

[33] **VERIFY** Operations crew(s) performing this PTI have received mid-loop/reduced inventory training. (Section 6.5) _____

[34] **VERIFY** RCS temperature less than 140°F. (Section 6.5) _____

[35] **VERIFY/PLACE** Chemical and Volume Control System (CVCS) in service per 2-TOP-062-02, CVCS Letdown and Charging to extent necessary to support RCS drain down. (Section 6.5) _____

[36] **VERIFY** one holdup tank is less than 15% full. (Section 6.5) _____

Date _____

4.2 Special Tools, M&TE, Parts, and Supplies

[1] **ENSURE** the following M&TE or equivalent is available and within their calibration due dates, and

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

- (2) Flow meters, Ultrasonic (±3%) _____
- Mansell Level Monitoring System, MLMS, is available. (Section 6.5) _____

4.3 Field Preparations

[1] **REMOVE** insulation required to support the installation of the ultrasonic flow measuring devices on the RHR A & B Heat Exchanger bypass lines. (See Appendices K & L)

WO_____ _____

NOTE

Ultrasonics should be placed in a way to ensure there are 10 pipe diameters (80 inches) upstream and 5 pipe diameters (40 inches) downstream from valves, tees, or other components that may cause turbulent flow.

[2] **INSTALL** ULTRASONIC Flow measuring devices at the locations specified on Appendices K & L. The locations are labeled as follows:

- 2-FE-RHR-A (Section 6.1, 6.3) _____
- 2-FE-RHR-B (Section 6.2, 6.4) _____

[3] **INITIATE** 2-TOP-068-02 for Mansell Level Monitor System Installation and Removal of temporary connection manifolds to support Mansell Level Monitoring System (MLMS) to be installed after RCS pressure reduction below 85 psig. _____

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 2 Supervisor's (US/SRO) or Shift Manager's (SM) authorization.

U2 US/SRO/SM Signature	Date

Date _____

5.0 ACCEPTANCE CRITERIA

NOTES

1) During Heatup Operation, Flow to RCS will include letdown through the RHRS to the Chemical and Volume Control System (CVCS).
2) RHRS/RCS Temperature and Pressure will be recorded whenever RHR System is in service. This may be as part of 2-TOP-074-02.

[1] Demonstrate during heatup of the RCS that the RHR System is capable of delivering at least 2500 gpm (total) to two RCS loops (RHR HTX outlet crossties 2-FCV-74-33 & 35 closed), one pump operating at a time, and letdown flow to the CVCS through the RHR System can be maintained. (Step 6.1[5] & 6.2[5])

[2] Demonstrate RHR Operation during Plant Cool Down that the RHR system is capable of delivering at least 2500 GPM (total) to two RCS loops (RHR HX outlet crossties 2-FCV-74-33 & 35 closed), one pump operating at a time. (Step 6.3[5] & 6.4[5])

[3] Demonstrate RHR Operation During Midloop Conditions

A. For 2-PMP-74-10, RHR PMP 2A-A, is capable of injecting a minimum of 2000 gpm/pump to two RCS cold legs without: (Step 6.5[18])

- Operates without loss of pump suction when midloop level is established at 718' 6" (718' 6" to 719' 0"). (Step 6.5[23])
- 2-PMP-74-10, RHR PMP 2A-A, operates without excessive pump cavitation/noise. (Step 6.5[23])
- 2-PMP-74-10, RHR PMP 2A-A, operates without excessive vibration at the flow control valves or flow check valves. (Step 6.5[23])

Date _____

5.0 ACCEPTANCE CRITERIA (continued)

B. For 2-PMP-74-20, RHR PMP 2B.-B, is capable of injecting a minimum of 2000 gpm/pump to two RCS cold legs without: (Step 6.5[26])

- Operates without loss of pump suction when midloop level is established at 718’ 6" (718' 6" to 719' 0"). (Step 6.5[31])
- 2-PMP-74-20, RHR PMP 2B-B, operates without excessive cavitation/noise (Step 6.5[31])
- 2-PMP-74-20, RHR PMP 2B-B, operates without excessive vibration at the flow control valves or flow check valves. (Step 6.5[31])

Date _____

6.0 PERFORMANCE

NOTES

1) Sections 6.1 and 6.2 are to be performed during the heatup portion of 2-PTI-068-01. The remaining sections are to be performed following Hot Functional Testing during cooldown.
2) Sections 6.1 or 6.2 can be performed in either order. Section 6.3 or 6.4 can be performed in either order after completion of Sections 6.1 and 6.2. Sections 6.5 must be performed in numerical order after completion of Sections 6.1 Thru 6.4.
3) Letdown flow from RHR to CVCS may be adjusted as necessary during the test.
4) Appendix M shall be used for minimum and maximum RHR pump flow rates.

6.1 A Train RHR Heatup During Hot Functional Testing

[1] **VERIFY** prerequisites listed in Section 4.0 for Section 6.1 have been completed. _____

[2] **ENSURE** the following:

A. RHR Train A in service in accordance with 2-TOP-074-02 to Loops 2 and 3. _____

B. 2-FCV-74-33 and 35 are CLOSED. _____

C. 2-FI-63-91B indicating $\geq$ 2,500 gpm flow to loops 2 & 3. _____

D. Letdown flow from RHR to the CVCS system in service. _____

[3] **MONITOR** RHR Pump Room A Cooler in service with operating fan and cooler ERCW flow. _____

Date _____

6.1 A Train RHR Heatup During Hot Functional Testing (continued)

NOTE

The following steps should NOT be performed until the 2-HTX-74-30, RHR HEAT EXCHANGER 2A, temperature has stabilized to less than 2°F heat up in a 10 minute period.

[4] **RECORD** the following:

A. RCS Temperature 2-TR-68-65 _____°F _____

B. Time _____ HRS _____

NOTE

Steps 6.1[5] and 6.1[7] are to be performed concurrently.

[5] **ADJUST** 2-HIC-74-32A, RHR HXS BYPASS FLOW CONTROL and 2-HIC-74-16A, RHR HX A FLOW CONTROL, at 2-M-6, as required to maintain less than or equal to 50°F/HR RCS heat up rate **AND** greater than 2,500 gpm flowrate for one hour. (**Acc Crit 5.0[1]**) _____

[6] **ENSURE** no excessive noises or vibration on A Train FCVs and check valves _____

[7] **COMPLETE** Appendix D, RHR A Train Heatup Performance Data. _____

[8] **RECORD** the following after one hour:

A. RCS Temperature 2-TR-68-65 _____°F _____

B. Time _____ HRS _____

[9] **REVIEW** the data from Appendix D, and

VERIFY heatup has occurred. _____

Date _____

6.2 B Train RHR Heatup During Hot Functional Testing

[1] **VERIFY** prerequisites listed in Section 4.0 for Section 6.2 have been completed. _____

[2] **ENSURE** the following:

A. RHR Train B in service in accordance with 2-TOP-074-02 to Loops 1 and 4. _____

B. 2-FCV-74-33 and 34 are CLOSED. _____

C. 2-FI-63-92B indicating ≥ 2,500 gpm flow to loops 1 & 4. _____

D. Letdown flow from RHR to the CVCS system in service. _____

[3] **MONITOR** RHR Pump Room B Cooler in service with operating fan and cooler ERCW flow. _____

NOTE

The following steps should NOT be performed until the 2-HTX-74-30, RHR HEAT EXCHANGER 2A, temperature has stabilized to less than 2°F heat up in a 10 minute period.

[4] **RECORD** the following:

A. RCS Temperature 2-TR-68-65 _____°F

_____

B. Time _____ HRS _____

Date _____

6.2 B Train RHR Heatup During Hot Functional Testing (continued)

NOTE

Steps 6.2[5] and 6.2[7] are to be performed concurrently.

[5] **ADJUST** 2-HIC-74-32A, RHR HXS BYPASS FLOW CONTROL and 2-HIC-74-28A, RHR HX B FLOW CONTROL, at 2-M-6, as required to maintain less than or equal to 50°F/HR RCS heat up rate **AND** greater than 2,500 gpm flowrate for one hour. (**Acc Crit 5.0[1]**) _____

[6] **ENSURE** no excessive noises or vibration on B Train FCVs and check valves _____

[7] **COMPLETE** Appendix E, RHR B Train Heat Up Performance Data. _____

[8] **RECORD** the following:

A. RCS Temperature 2-TR-68-65 _____°F

_____

B. Time _____ HRS _____

[9] **REVIEW** the data from Appendix E and

VERIFY heat up has occurred. _____

Date _____

NOTES

1) Section 6.3 or 6.4 can be performed in either order after completion of Sections 6.1 and 6.2. Sections 6.5 must be performed in numerical order after completion of Sections 6.1 thru 6.4.
2) Letdown flow from RHR to CVCS may be adjusted as necessary during the test.

6.3 A Train RHR Cooldown Following Hot Functional Testing

[1] **VERIFY** prerequisites listed in Section 4.0 for Section 6.3 have been completed. _____

[2] **ENSURE** Train A RHR is in service in accordance with 2-TOP-074-02 for cooldown with RHR letdown in service. _____

[3] **MONITOR** RHR Pump Room A Cooler in service with operating fan and cooler ERCW flow. _____

NOTE

The following steps should NOT be performed until the 2-HTX-74-30, RHR HEAT EXCHANGER 2A, temperature has stabilized to less than 2°F heat up in a 10 minute period.

[4] **RECORD** the following:

A. RCS Temperature 2-TR-68-65 _____°F

_____

B. Time _____ HRS _____

NOTE

Steps 6.3[5] and 6.3[7] are to be performed concurrently.

[5] **ADJUST** 2-HIC-74-32A, RHR HXS BYPASS FLOW CONTROL and 2-HIC-74-16A, RHR HX A FLOW CONTROL, at 2-M-6, as required to maintain less than or equal to 50°F/HR RCS cool down rate **AND** greater than 2,500 gpm flowrate for one hour. (**Acc Crit 5.0[2]**) _____

Date _____

6.3 A Train RHR Cooldown Following Hot Functional Testing (continued)

[6] **ENSURE** no excessive noises or vibration on A Train FCVs and check valves _____

[7] **COMPLETE** Appendix F, RHR A Train Cool Down Performance Data. _____

[8] **RECORD** the following:

A. RCS Temperature 2-TR-68-65 _____°F

_____

B. Time _____ HRS _____

[9] **REVIEW** the data from Appendix F, and

VERIFY cool down has occurred. _____

Date _____

6.4 B Train RHR Cooldown Following Hot Functional Testing

[1] **VERIFY** prerequisites listed in Section 4.0 for Section 6.4 have been completed. _____

[2] **ENSURE** Train B RHR is in service in accordance with 2-TOP-074-02 for cooldown with RHR letdown in service. _____

[3] **MONITOR** RHR Pump Room B Cooler in service with operating fan and cooler ERCW flow. _____

NOTE

The following steps should NOT be performed until the 2-HTX-74-31, RHR HEAT EXCHANGER 2B, temperature has stabilized to less than 2°F heat up in a 10 minute period.

[4] **RECORD** the following:

A. RCS Temperature 2-TR-68-65 _____°F

_____

B. Time _____ HRS _____

NOTE

Steps 6.4[5] and 6.4[7] are to be performed concurrently.

[5] **ADJUST** 2-HIC-74-32A, RHR HXS BYPASS FLOW CONTROL and 2-HIC-74-28A, RHR HX B FLOW CONTROL, at 2-M-6, as required to maintain less than or equal to 50°F/HR RCS cool down rate **AND** greater than 2,500 gpm flowrate for one hour. (**Acc Crit 5.0[2]**). _____

[6] **ENSURE NO** excessive noises or vibration on B Train FCVs and check valves. _____

[7] **COMPLETE** Appendix G, RHR B Train Cool Down Performance Data. _____

Date _____

6.4 B Train RHR Cooldown Following Hot Functional Testing (continued)

[8] **RECORD** the following:

A. RCS Temperature 2-TR-68-65 _____°F

_____

B. Time _____ HRS _____

[9] **REVIEW** the data from Appendix G and

VERIFY cool down has occurred. _____

Date _____

6.5 RHR Midloop Operation

NOTES

1) This section should be performed with the head removed. The suggested time frame would be during/after Open Vessel Testing and before Hot Functional Testing.
2) During the performance of this Section, piping vibration data will be collected. The Piping Vibration Test Engineer (TE) is responsible for performance of piping vibration activities in accordance with 2-PTI-999-01 and shall make an entry in the Chronological Test Log.
3) When pulling suction from the vessel, the flow path should use 2-FCV-074-08 and 2-FCV-074-09 to provide the most limiting scenario.

[1] **VERIFY** prerequisites listed in Section 4.0 for Section 6.5 have been completed. _____

[2] **VERIFY** Annunciator Window 126-F, RCS MID-LOOP LEVEL HI/LO, located at Panel 2-XA-55-6C is CLEAR. _____

[3] **VERIFY/PLACE** RHR A Train in service in accordance with 2-TOP-074-02, RHR with discharge lined up to RCS loops 2 and 3, 2-FCV-63-93 RHR TO CL 2 & 3, OPEN. _____

[4] **PERFORM** 2-TOP 068-02, Reactor Coolant System, Draining the RCS. _____

[5] **WHEN** PZR level reaches approximately 25% during the drain down, as indicated on 2-LI-68-321, PZR-COLD CAL, 2-M-4, **THEN**

VERIFY decreasing level on 2-LI-68-399B, RCS WR LEVEL on 2-M-6. _____

[6] **COMPLETE** Appendix H, Verification of RCS Instrument Overlap, for RCS Level Instruments 2-LI-68-321, PZR-COLD CAL, and 2-LI-68-399B, RCS WR LEVEL as RCS level is being reduced. _____

Date _____

6.5 RHR Midloop Operation (continued)

NOTE

Annunciator Window 126-F, RCS MID-LOOP LEVEL HI/LO, at Panel 2-XA-55-6C is disabled above EL 722'.

[7] **VERIFY** the following at approximately 722' 0" (721'4" to 722'8") on 2-LI-68-399B RCS WR LEVEL and

RECORD the level:

Mansell Ch I _____ feet _____

Mansell Ch II _____ feet _____

2-LI-68-399B _____ feet _____ inches _____

A. 2-LG-68-399A, RCS LEVEL GAGE, located in Reactor Building EL 716, AZ 75, indicates 722' 0" (721' 11" to 722'1").

2-LG-68-399A _____ feet _____ inches _____

B. Annunciator Window 126-F, RCS MID-LOOP LEVEL HI/LO, at Panel 2-XA-55-6C in ALARM. _____

C. Unit 2 Alarm Events Display Screen indicates 126-F RCS NR MID-LOOP LEVEL HI (LS-68-399A2) is in ALARM. _____

[8] **STOP** RCS Drain down in accordance with 2-TOP-068-02, Reactor Coolant System when either channel of Mansell indicates elevation 721' or less. _____

[9] **INCREASE** RCS level per 2-TOP-068-02, Reactor Coolant System, Fill and Vent Section (721' 4" to 722' 8") and

VERIFY the following:

A. Annunciator Window 126-F, RCS MID-LOOP LEVEL HI/LO, at Panel 2-XA-55-6C is CLEAR. _____

B. Unit 2 Alarm Events Display Screen indicates 126-F RCS NR MID-LOOP LEVEL HI (LS-68-399A2) is CLEAR. _____

Date _____

6.5 RHR Midloop Operation (continued)

NOTE

126-F RCS NR MIDLOOP LEVEL HI (LS-68-399A2) will return to an ALARM condition when drain down operations reduce RCS level below approximately 722' 0".

[10] **CONTINUE** Drain down of the Reactor Vessel in accordance with 2-TOP-068-02, Reactor Coolant System, Drain Down Section. _____

[11] **VERIFY** the following at approximately 719' 5" (719' 4" to 719' 6") on 2-LI-68-399A RCS NR LEVEL and

RECORD the level:

Mansell Ch I _____ feet _____

Mansell Ch II _____ feet _____

2-LI-68-399A _____ feet _____ inches _____

A. Annunciator Window 126-F, RCS MID-LOOP LEVEL HI/LO, at Panel 2-XA-55-6C is CLEAR. _____

B. 2-LG-68-399A, RCS LEVEL GAGE, located in Reactor Building EL 716, AZ 75, indicates approximately 719' 5" (719' 4" to 719' 6").

2-LG-68-399A _____ feet _____ inches _____

[12] **WHEN** 2-LI-68-399A RCS NR LEVEL, at 2-M-6, indicates 718' 6” (718' 5. to 718’ 7”), **THEN**

STOP the RCS Drain down. _____

[13] **VERIFY** the following:

A. Annunciator Window 126-F, RCS MID-LOOP LEVEL HI/LO, at Panel 2-XA-55-6C in ALARM. _____

B. Unit 2 Alarm Events Display Screen indicates 126-F RCS NR MID-LOOP LEVEL LO (LS-68-399A1) is in ALARM. _____

Date _____

6.5 RHR Midloop Operation (continued)

[14] **RECORD** the level:

Mansell Ch I _____ feet _____

Mansell Ch II _____ feet _____

2-LI-68-399A _____ feet _____ inches _____

CAUTION

The in-service RHR Pump should be carefully monitored for signs of cavitation. If excessive cavitation is observed, the RHR Pump must be secured.

[15] **ENSURE** RCS level is between 718' 6" and 719' 0" by using 2-TOP-068-02, Reactor Coolant System, Fill and Vent Section. _____

[16] **VERIFY** the following:

A. Annunciator Window 126-F, RCS MID-LOOP LEVEL HI/LO, at Panel 2-XA-55-6C is CLEAR. _____

B. Unit 2 Alarm Events Display Screen indicates 126-F RCS NR MID-LOOP LEVEL HI (LS-68-399A2) is CLEAR. _____

[17] **RECORD** the levels at the following locations:

A. Mansell Level Monitor

Mansell Ch I _____ feet _____

Mansell Ch II _____ feet _____

B. 2-LI-68-399A, RCS NR LEVEL

2-LI-68-399A _____ feet _____ inches _____

C. 2-LG-68-399A. RCS LEVEL GAGE

2-LG-68-399A _____ feet _____ inches _____

[18] **ADJUST** 2-HIC-74-32A, RHR HXS BYPASS FLOW CONTROL, and 2-HIC-74-16A. RHR HX A FLOW CONTROL, as required to maintain a 2000 (2000-2500) gpm system flow rate. (**Acc Crit 5.0[3]A**) _____

Date _____

6.5 RHR Midloop Operation (continued)

[19] **ENSURE** the TE has test equipment and personnel in place to support vibration testing. _____

[20] **NOTIFY** TE responsible for 2-PTI-999-01 that conditions have been established for steady state vibration for RHR A TRAIN components. _____

NOTE

Steps 6.5[21] and 6.5[22] shall be completed concurrently.

[21] **PERFORM** vibration testing in accordance with 2-PTI-999-01. _____ TE

[22] **COMPLETE** Appendix I, RHR A Midloop Pump Operation. _____

[23] **REVIEW** the data from Appendix I, RHR A PUMP MIDLOOP OPERATION, and

VERIFY the following:

A. Pump operates without loss of pump suction. (**Acc Crit 5.0[3]A**) _____

B. Pump operates without excessive cavitation/noise. (**Acc Crit 5.0[3]A**) _____

C. Pump operates without excessive vibration at the flow control valves or flow check valves. (**Acc Crit 5.0[3]A**) _____

[24] **PLACE** 2-HS-74-10A, RHR PMP A (ECCS), 2-M-6, to STOP, and

VERIFY the following:

A. Green light ON _____

B. Red light OFF _____

Date _____

6.5 RHR Midloop Operation (continued)

CAUTION

The in-service RHR Pump should be carefully monitored for signs of cavitation. If excessive cavitation is observed, the RHR Pump must be secured.

[25] **PLACE** RHR B Pump in service in accordance with 2-TOP-074-02, RHR Pump Operation during Midloop Operation. _____

[26] **ADJUST** 2-HIC-74-32A, RHR HXS BYPASS FLOW CONTROL, and 2-HIC-74-28A, RHR HX B FLOW CONTROL, as required to maintain a 2000 (2000-2500) gpm system flow rate. (**Acc Crit 5.0[3]B**) _____

[27] **ENSURE** the TE has test equipment and personnel in place to support vibration testing. _____

[28] **NOTIFY** TE responsible for 2-PTI-999-01 that conditions have been established for steady state vibration for RHR B TRAIN components. _____

NOTE

Steps 6.5[29] and 6.5[30] shall be completed concurrently.

[29] **PERFORM** vibration testing in accordance with 2-PTI-999-01. _____ TE

[30] **COMPLETE** Appendix J, RHR B Midloop Pump Operation. _____

Date _____

6.5 RHR Midloop Operation (continued)

[31] **REVIEW** the data from Appendix J, RHR B PUMP MIDLOOP OPERATION, and,

VERIFY the following:

A. Pump operates without loss of pump suction. (**Acc Crit 5.0[3]B**) _____

B. Pump operates without excessive cavitation/noise. (**Acc Crit 5.0[3]B**) _____

C. Pump operates without excessive vibration at the flow control valves or flow check valves. (**Acc Crit 5.0[3]B**) _____

[32] **PLACE** Hand Switch 2-HS-74-20A, RHR PMP B (ECCS), 2-M-6, to STOP position, and

VERIFY the following:

A. Green Light ON _____

B. Red Light OFF _____

[33] **ALIGN** RHR to normal alignment per 2-TOP-074-02. _____

Date _____

7.0 POST-PERFORMANCE ACTIVITIES

[1] **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. _____

[2] **VERIFY** 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. _____

[3] **REMOVE/VERIFY** the ultrasonic flow meters. _____

[4] **REPLACE** insulation removed for ultrasonic flow meters.

WO#_____ _____

[5] **NOTIFY** the Unit 2 US/SRO of the test completion and System alignment. _____

Date _____

8.0 RECORDS

A. QA Records

Complete Test Package

B. Non-QA Records

None

Appendix A
(Page 1 of 1)

Test Procedures/Instructions Reference Review

Date _____

NOTE

Additional copies of this table may be made as necessary.

PROCEDURE/ INSTRUCTION	REVISION/CHANGES	INITIAL AND DATE. (N/A for no change)
TVAW-03-MLMS-01		
WBN2-62-4001		
FSAR, Section 5.5.7,Section 6.5 Table 14.2-1 Sheet 17 of 89		
WBN2-74-4001		
WAT-D-90-8252 RIMS #T33 931215 809		
2-TSD-74-2		
SSD 2-L-68-399A		
SSD 2-L-68-399B		
2-PTI-068-01		
2-PTI-999-01		
WBT-D-2988		

Appendix B
(Page 1 of 1)

Temporary Conditions Log

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.	Performed By/Date CV By/Date	Step No.	Returned By/Date CV By/Date
			/ /		/ /
			/ /		/ /
			/ /		/ /
			/ /		/ /
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			/ /		/ /
			/ /		/ /

Appendix C
(Page 1 of 3)

Permanent Plant Instrumentation Log

Date _____

INSTRUMENT OR INSTRUMENT LOOP #	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[2] INITIAL/DATE
		INIT/DATE	INIT/DATE	YES	NO		
2-T-68-65							
2-P-68-63							
2-LPF-63-91A							
2-LPF-63-91B							
2-LPF-63-92A							
2-LPF-63-92B							
2-LPF-70-151							
2-LPF-70-158							
2-LPT-70-155							
2-LPF-70-155							
2-LPF-70-152							

Appendix C
(Page 2 of 3)

Permanent Plant Instrumentation Log

Date _____

INSTRUMENT OR INSTRUMENT LOOP #	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[2] INITIAL/DATE
		INIT/DATE	INIT/DATE	YES	NO		
2-LPT-70-154							
2-LG-68-399	N/A				X	N/A	N/A
2-L-68-399A							
2-L-68-399B							
2-T-74-14							
2-T-74-29							
2-T-74-25							
2-T-74-39							
2-L-68-321							
1-LPT-70-161							

Appendix C
(Page 3 of 3)

Permanent Plant Instrumentation Log

Date _____

INSTRUMENT OR INSTRUMENT LOOP #	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[2] INITIAL/DATE
		INIT/DATE	INIT/DATE	YES	NO		
2-LPT-70-161							
0-LPT-70-162							
2-PI-74-4							
2-PI-74-22							
2-LPP-74-13							
2-LPP-74-26							

[1] These items may be initialed and dated by personnel performing the task. Instrumentation not required to be filled and vented may be identified as Not Applicable. (N/A)

[2] May be identified as Not Applicable (N/A) if instrument was not used to verify/record quantitative acceptance criteria data.

Appendix D
(Page 1 of 3)

RHR A Train Heatup Performance Data

Date _____

TIME	TOTAL RHR FLOW 2-FI-63-91 (2-M-6)	RHR BYPASS FLOW 2-FE-RHR-A (LOCAL)	RHR HX A TEMP INLET 2-TR-74-14 (RED) (2-M-6)	RHR HX A TEMP OUTLET 2-TR-74-14 (GREEN) (2-M-6)	INITIALS/DATE
START					/
5 MIN					/
10 MIN					/
15 MIN					/
20 MIN					/
25 MIN					/
30 MIN					/
35 MIN					/
40 MIN					/
45 MIN					/
50 MIN					/
55 MIN					/
60 MIN					/

2-FE-RHR-A M&TE _____ Cal Due Date _____

Appendix D
(Page 2 of 3)

RHR A Train Heatup Performance Data

Date _____

TIME	CCS FLOW 2-FI-70-158 (0-M-27B)	CCS TEMP IN(1) 0-TI-70-162, 1-TI-70-161, 2-TI-70-161 (0-M-27B)	CCS TEMP OUT 2-TI-70-157 (0-M-27B)	INITIALS/DATE
START				/
5 MIN				/
10 MIN				/
15 MIN				/
20 MIN				/
25 MIN				/
30 MIN				/
35 MIN				/
40 MIN				/
45 MIN				/
50 MIN				/
55 MIN				/
60 MIN				/

(1) Select the CCS Inlet Temperature dependent on CCS Status.

Appendix D
(Page 3 of 3)

RHR A Train Heatup Performance Data

Date _____

RHR HEAT EXCHANGER flow can be determined using the following method:

TOTAL RHR FLOW 2-FI-63-91B - RHR BYPASS FLOW 2-FE-RHR-A = RHR HEAT EXCHANGER FLOW

TIME	TOTAL RHR FLOW 2-FI-63-91B	MINUS	RHR BYPASS FLOW 2-FE-RHR-A	EQUAL	A RHR HEAT EXCHANGER FLOW
START		-		=	
5 MIN		-		=	
10 MIN		-		=	
15 MIN		-		=	
20 MIN		-		=	
25 MIN		-		=	
30 MIN		-		=	
35 MIN		-		=	
40 MIN		-		=	
45 MIN		-		=	
50 MIN		-		=	
55 MIN		-		=	
60 MIN		-		=	

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

Appendix E
(Page 1 of 3)

RHR B Train Heatup Performance Data

Date _____

TIME	TOTAL RHR FLOW 2-FI-63-92 (2-M-6)	RHR BYPASS FLOW 2-FE-RHR-B (LOCAL)	RHR HX TEMP IN 2-TR-74-25 (RED) (2-M-6)	RHR HX TEMP OUT 2-TR-74-25 (GREEN) (2-M-6)	INITIALS/DATE
START					/
5 MIN					/
10 MIN					/
15 MIN					/
20 MIN					/
25 MIN					/
30 MIN					/
35 MIN					/
40 MIN					/
45 MIN					/
50 MIN					/
55 MIN					/
60 MIN					/

2-FE-RHR-B M&TE _____ Cal Due Date _____

Appendix E
(Page 2 of 3)

RHR B Train Heatup Performance Data

Date _____

TIME	CCS FLOW 2-FI-70-155 (0-M-27B)	CCS TEMP IN(1) 0-TI-70-162, 1-TI-70-161, 2-TI-70-161 (0-M-27B)	CCS TEMP OUT 2-TI-70-154 (0-M-27B)	INITIALS/DATE
START				/
5 MIN				/
10 MIN				/
15 MIN				/
20 MIN				/
25 MIN				/
30 MIN				/
35 MIN				/
40 MIN				/
45 MIN				/
50 MIN				/
55 MIN				/
60 MIN				/

(1) Select the CCS Inlet Temperature dependent on CCS Status.

Appendix E
(Page 3 of 3)

RHR B Train Heatup Performance Data

Date _____

RHR HEAT EXCHANGER flow can be determined using the following method:

TOTAL RHR FLOW 2-FI-63-92B - RHR BYPASS FLOW 2-FE-RHR-B = RHR HEAT EXCHANGER FLOW

TIME	TOTAL RHR FLOW 2-FI-63-92B	MINUS	RHR BYPASS FLOW 2-FE-RHR-B	EQUAL	A RHR HEAT EXCHANGER FLOW
START		-		=	
5 MIN		-		=	
10 MIN		-		=	
15 MIN		-		=	
20 MIN		-		=	
25 MIN		-		=	
30 MIN		-		=	
35 MIN		-		=	
40 MIN		-		=	
45 MIN		-		=	
50 MIN		-		=	
55 MIN		-		=	
60 MIN		-		=	

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

Appendix F
(Page 1 of 3)

RHR A Train Cooldown Performance Data

Date _____

TIME	TOTAL RHR FLOW 2-FI-63-91 (2-M-6)	RHR BYPASS FLOW 2-FE-RHR-A (LOCAL)	RHR HX A TEMP INLET 2-TR-74-14 (RED) (2-M-6)	RHR HX A TEMP OUTLET 2-TR-74-14 (GREEN) (2-M-6)	INITIALS/DATE
START					/
5 MIN					/
10 MIN					/
15 MIN					/
20 MIN					/
25 MIN					/
30 MIN					/
35 MIN					/
40 MIN					/
45 MIN					/
50 MIN					/
55 MIN					/
60 MIN					/

2-FE-RHR-A M&TE _____ Cal Due Date _____

Appendix F
(Page 2 of 3)

RHR A Train Cooldown Performance Data

Date _____

TIME	CCS FLOW 2-FI-70-158 (0-M-27B)	CCS TEMP IN(1) 0-TI-70-162, 1-TI-70-161, 2-TI-70-161 (0-M-27B)	CCS TEMP OUT 2-TI-70-157 (0-M-27B)	INITIALS/DATE
START				/
5 MIN				/
10 MIN				/
15 MIN				/
20 MIN				/
25 MIN				/
30 MIN				/
35 MIN				/
40 MIN				/
45 MIN				/
50 MIN				/
55 MIN				/
60 MIN				/

(1) Select the CCS Inlet Temperature dependent on CCS Status.

Appendix F
(Page 3 of 3)
RHR A Train Cooldown Performance Data

Date _____

RHR HEAT EXCHANGER flow can be determined using the following method:

TOTAL RHR FLOW 2-FI-63-91B - RHR BYPASS FLOW 2-FE-RHR-A = RHR HEAT EXCHANGER FLOW

TIME	TOTAL RHR FLOW 2-FI-63-91B	MINUS	RHR BYPASS FLOW 2-FE-RHR-A	EQUAL	A RHR HEAT EXCHANGER FLOW
START		-		=	
5 MIN		-		=	
10 MIN		-		=	
15 MIN		-		=	
20 MIN		-		=	
25 MIN		-		=	
30 MIN		-		=	
35 MIN		-		=	
40 MIN		-		=	
45 MIN		-		=	
50 MIN		-		=	
55 MIN		-		=	
60 MIN		-		=	

Calculations Performed By _____ _____
Initials Date

Calculations Verified By _____ _____
Initials Date

Appendix G
(Page 1 of 3)

RHR B Train Cooldown Performance Data

Date _____

TIME	TOTAL RHR FLOW 2-FI-63-92 (2-M-6)	RHR BYPASS FLOW 2-FE-RHR-B (LOCAL)	RHR HX TEMP IN 2-TR-74-25 (RED) (2-M-6)	RHR HX TEMP OUT 2-TR-74-25 (GREEN) (2-M-6)	INITIALS/DATE
START					/
5 MIN					/
10 MIN					/
15 MIN					/
20 MIN					/
25 MIN					/
30 MIN					/
35 MIN					/
40 MIN					/
45 MIN					/
50 MIN					/
55 MIN					/
60 MIN					/

2-FE-RHR-B M&TE _____ Cal Due Date _____

Appendix G
(Page 2 of 3)

RHR B Train Cooldown Performance Data

Date _____

TIME	CCS FLOW 2-FI-70-155 (0-M-27B)	CCS TEMP IN(1) 0-TI-70-162, 1-TI-70-161, 2-TI-70-161 (0-M-27B)	CCS TEMP OUT 2-TI-70-154 (0-M-27B)	INITIALS/DATE
START				/
5 MIN				/
10 MIN				/
15 MIN				/
20 MIN				/
25 MIN				/
30 MIN				/
35 MIN				/
40 MIN				/
45 MIN				/
50 MIN				/
55 MIN				/
60 MIN				/

(1) Select the CCS Inlet Temperature dependent on CCS Status.

Appendix G
(Page 3 of 3)
RHR B Train Cooldown Performance Data

Date _____

RHR HEAT EXCHANGER flow can be determined using the following method:

TOTAL RHR FLOW 2-FI-63-92B - RHR BYPASS FLOW 2-FE-RHR-B = RHR HEAT EXCHANGER FLOW

TIME	TOTAL RHR FLOW 2-FI-63-92B	MINUS	RHR BYPASS FLOW 2-FE-RHR-B	EQUAL	A RHR HEAT EXCHANGER FLOW
START		-		=	
5 MIN		-		=	
10 MIN		-		=	
15 MIN		-		=	
20 MIN		-		=	
25 MIN		-		=	
30 MIN		-		=	
35 MIN		-		=	
40 MIN		-		=	
45 MIN		-		=	
50 MIN		-		=	
55 MIN		-		=	
60 MIN		-		=	

Calculations Performed By _____ Initials _____ Date

Calculations Verified By _____ Initials _____ Date

Appendix H
(Page 1 of 2)

Verification Of RCS Instrument Overlap

Date _____

NOTES

1) Each change in 2-LI-68-321, PZR COLD CAL LEVEL of 1% is equal to approximately 5” on 2-LI-68-399B, RCS WR LEVEL.
2) RCS level shall be provided by at least two level instruments.
3) 2-LI-68-399B and Mansell (all inservice channels) shall agree to within 2 inches

WHEN 2-LI-68-321, PZR-COLD CAL, level indicates the percent readings in the table**, THEN**

RECORD level indication for in-service Mansell channels and 2-LI-68-399B, RCS WR LEVEL, in feet and inches**.**

(Step 6.5[6])

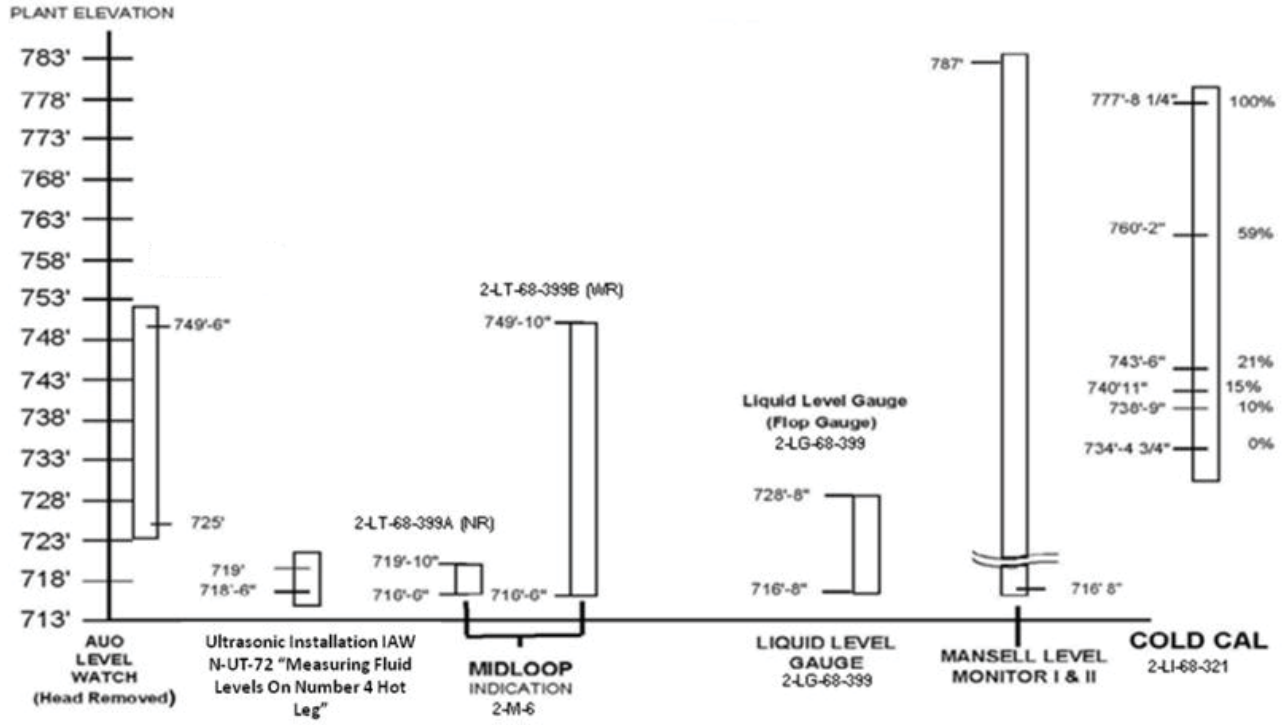
2-LI-68-321 (2-M-4) PZR COLD CAL LEVEL INSTRUMENT	2-LI-68-399B (2-M-6) RCS WIDE RANGE LEVEL INSTRUMENT		MANSELL LEVEL INDICATION[1]				INITIALS/DATE
			CH I		CH II		
25%	ft	in	ft	in	ft	in	/
20%	ft	in	ft	in	ft	in	/
15%	ft	in	ft	in	ft	in	/
10%	ft	in	ft	in	ft	in	/
5%	ft	in	ft	in	ft	in	/
0%	ft	in	ft	in	ft	in	/

(1) N/A if not able to place in service.

Appendix H
(Page 2 of 2)

Verification Of RCS Instrument Overlap

Date _____



Appendix I
(Page 1 of 1)

RHR A Midloop Pump Operation

Date _____

SUCTION PRESSURE 2-PI-74-4 (2-LI-12)	DISCHARGE PRESSURE 2-PI-74-13 (2-M-6)	FLOW RATE 2-FI-63-91A (2-M-6)	EXCESSIVE CAVITATION		EXCESSIVE NOISE		TIME	INITIALS/ DATE
			YES	NO	YES	NO		
							START	
							5 MIN	
							10 MIN	
							15 MIN	
							20 MIN	
							25 MIN	
							30 MIN	
							35 MIN	
							40 MIN	
							45 MIN	
							50 MIN	
							55 MIN	
							60 MIN	

VERIFY the following conditions do **NOT** exist during RHR MIDLOOP pump operation:

- Excessive Cavitation during MIDLOOP operation. _____
- Excessive Noise during MIDLOOP operation. _____
- Loss of RHR Pump suction. _____

Appendix J
(Page 1 of 1)

RHR B Midloop Pump Operation

Date _____

SUCTION PRESSURE 2-PI-74-22 (2-LI-13)	DISCHARGE PRESSURE 2-PI-74-26 (2-M-6)	FLOW RATE 2-FI-63-92A (2-M-6)	EXCESSIVE CAVITATION		EXCESSIVE NOISE		TIME	INITIALS/ DATE
			YES	NO	YES	NO		
							START	
							5 MIN	
							10 MIN	
							15 MIN	
							20 MIN	
							25 MIN	
							30 MIN	
							35 MIN	
							40 MIN	
							45 MIN	
							50 MIN	
							55 MIN	
							60 MIN	

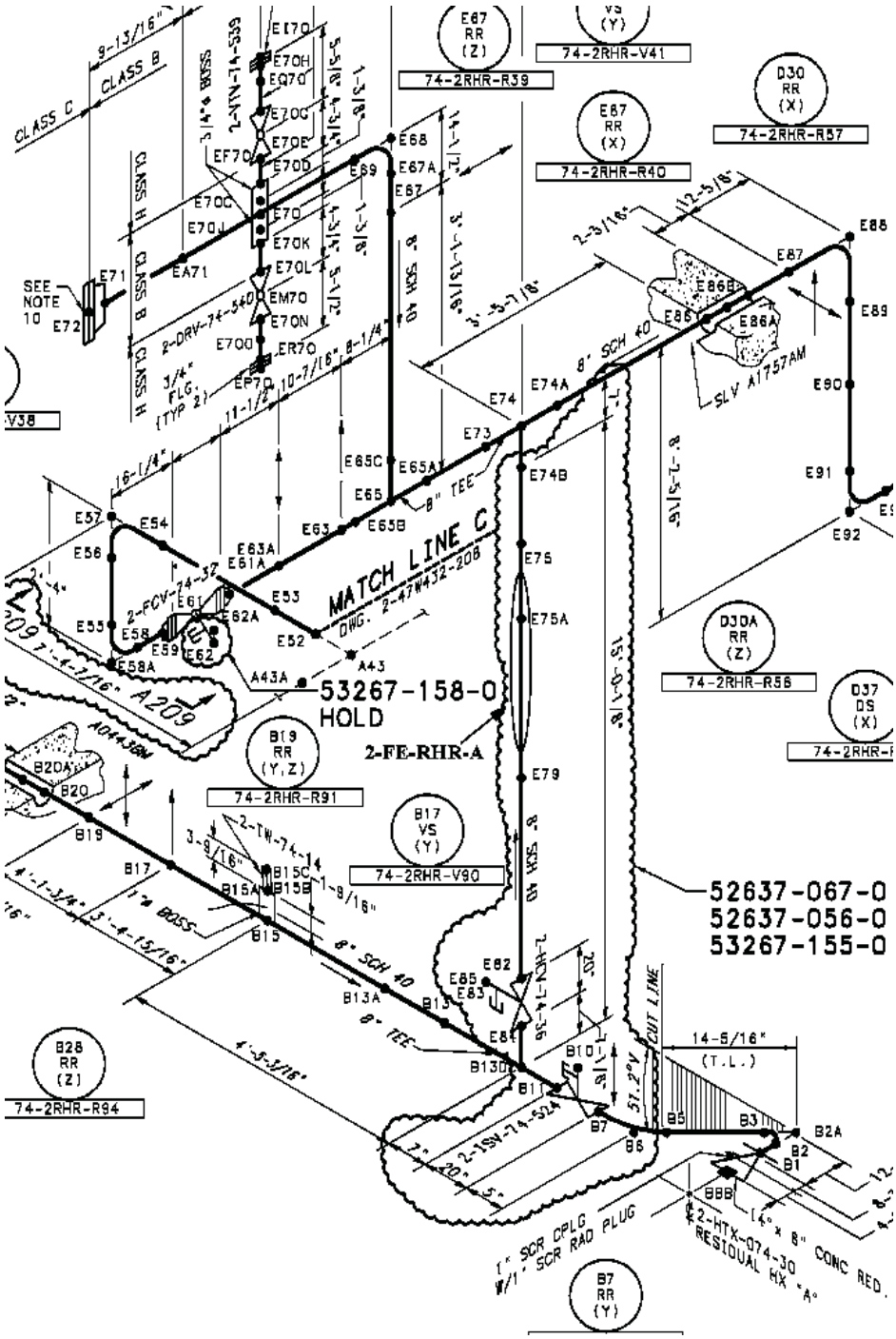
VERIFY the following conditions do **NOT** exist during RHR MIDLOOP pump operation:

- Excessive Cavitation during MIDLOOP operation. _____
- Excessive Noise during MIDLOOP operation. _____
- Loss of RHR Pump suction. _____

Appendix K
(Page 1 of 1)

RHR Heat Exchanger A Ultrasonic Flow Measurement Installation Detail

Date _____

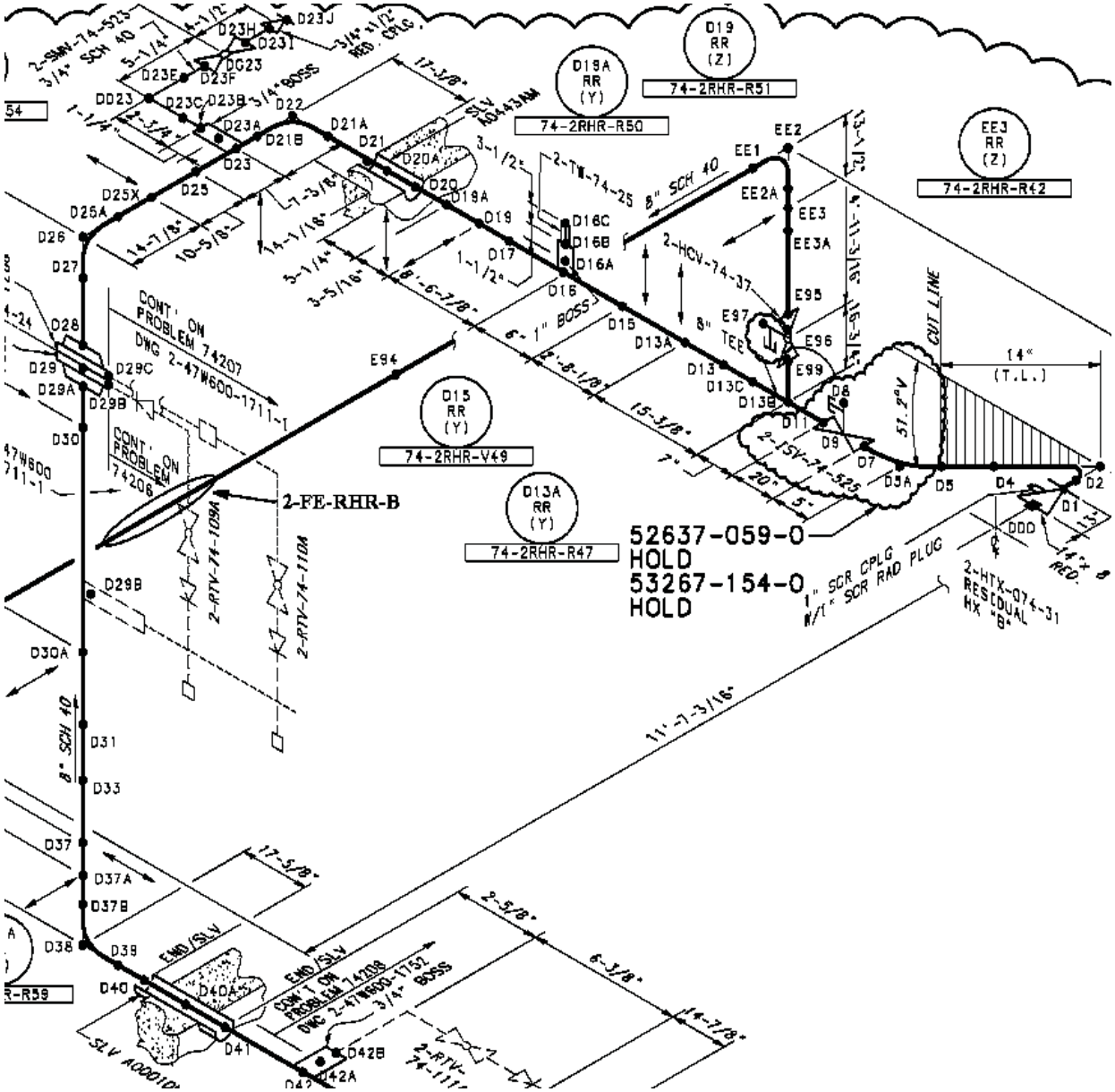


NOTE: Mount Transducers to flow device to the 8 inch pipe 40 inches from welded connection of valve.

Appendix L
(Page 1 of 1)

RHR Heat Exchanger B Ultrasonic Flow Measurement Installation Detail

Date _____



NOTE: Mount Transducers to flow device to the 8 inch pipe 40 inches from welded connection of valve.

Appendix M
(Page 1 of 1)

RHR Pump Operating Flow Limits

Date _____