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

February 10, 2011

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop: OWFN P1-35
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-003B-06	0	ATWS Mitigation System Actuation Circuitry (AMSAC) Test
2-PTI-067-02-A	0	ERCW System Flow Balance -Train A

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

Respectfully,

Marie Gillman
Acting Watts Bar Unit 2 Vice President

D030
NRR

cc (Enclosures):

U. S. Nuclear Regulatory Commission
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WATTS BAR NUCLEAR PLANT
UNIT 2 PREOPERATIONAL TEST

TITLE: ATWS Mitigation System Actuation Circuitry (AMSAC) Test

Instruction No: 2-PTI-003B-06

Revision No: 0000

PREPARED BY: Regina Ballard Regina Ballard DATE: 2/3/2011
PRINT NAME / SIGNATURE

REVIEWED BY: A. Blake Lowe A Blake Lowe DATE: 2/3/2011
PRINT NAME / SIGNATURE

INSTRUCTION APPROVAL

JTG MEETING No: 2-11-003

JTG CHAIRMAN: _____ DATE: 2/3/11

APPROVED BY : _____ DATE: 2/3/11
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	2/3/11	ALL	INITIAL ISSUE

Table of Contents

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1.0 INTRODUCTION

1.1 Test Objectives

Demonstrate the capability of the Anticipated Transient without SCRAM Mitigation System Actuation Circuitry (AMSAC) to respond properly to simulated initiation signals.

1.2 Scope

This test demonstrates the capability of AMSAC to respond appropriately to an Anticipated Transient without SCRAM (ATWS) event.

A. Conditions indicative on an ATWS event:

1. 3 out of 4 Steam Generators are at low-low level (12%)
2. Turbine load is at or above 40%.

B. AMSAC's response:

1. Automatically start the Auxiliary Feedwater (AFW) System
2. Initiate a turbine trip
3. Initiate alarms.

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2.0 REFERENCES

2.1 Performance References

A. SMP-9.0, Conduct of Test

2.2 Developmental References

A. Final Safety Analysis Report (FSAR)

1. FSAR-Amendment 102

   a. Table 14.2-1 Sheet 84 of 89, Anticipated Transient Without Scram Mitigation System Actuation Circuitry Test Summary

   b. Section 7.7.1.12, Anticipated Transient Without Scram Mitigation Actuation Circuitry (AMSAC) (Reference 13)

B. Drawings

1. Flow Diagrams

   None

2. Electrical

   a. 2-45W600-3-15, Rev 0, Wiring Diagram, Main & Auxiliary Feedwater Schematic, CCD
   DRA 52408-015, Rev 0

   b. 2-45W600-47-2, Rev 2, Wiring Diagram, Turbo-Generator Auxiliaries Schematic Diagrams, CCD

   c. 2-45W600-57-26, Rev 0, Wiring Diagram, Separation & Misc Aux Relays Schematic Diagrams, CCD
   DRA 52343-217, Rev 0

   d. 45N707-2, Rev 5, Wiring Diagram, 120V AC Preferred Power Board 2 Connection Diagram Sheet 2, AD
   DRA 52408-023, Rev 0

   e. 45N2635-80, Rev 30, Wiring Diagrams, Local Instrument Panels Connection Diagram - SH. 80, AD
   DRA 52408-003, Rev 0

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2.2 Developmental References (continued)

f. 45N2635-84, Rev 4, Wiring Diagrams, Local Instrument Panels 2-L-381 Connection Diagrams, AD
DRA 52408-007, Rev 0
DRA 52408-008, Rev 0

g. 45W2642-1, Rev 17, Wiring Diagrams, Unit Control Board Panel 2-M-3 Connection Diagrams Sheet 1, AD
DRA 52360-06, Rev 2
DRA 52378-22, Rev 0

h. 45W2642-3, Rev 17, Wiring Diagrams, Unit Control Board Panel 2-M-3 Connection Diagrams Sheet -3, AD
DRA 52408-004, Rev 0

i. 2-45W2656-3, Rev 0, Wiring Diagrams, Unit Control Board Panel 2-M-21 Connection Diagrams Sheet 3, CCD
DRA 52408-001, Rev 0

j. 2-45W2656-6, Rev 0, Wiring Diagrams Unit Control Board Panel 2-M-21 Connection Diagram Sheet 6, CCD
DRA 52408-002, Rev 0

k. 45N2685-3, Rev 4, Wiring Diagrams, Turbo -Gen Aux Relay Panel 2-R-70 Connection Diagram Sh 3, AD
DRA 52408-013, Rev 0

l. 45N2689-4, Rev 18, Wiring Diagrams, Separation Aux Relay PNL 2-R-74 Connection Diagrams Sh 4, AD
DRA 52408-012, Rev 0

m. 45N2692 -4, Rev 17, Wiring Diagrams, Separation Aux Relay PNL 2-R-77 Connection Diagram Sh 4, AD
DRA 52408-011, Rev 0

n. 2-45W2696-1, Rev 0, Wiring Diagram, AMSAC PNL 2-R-178, Connection Diagrams [ANT],
DRA 52408-006, Rev 0

o. 2-45W2696-1A, Rev 0, Wiring Diagram, AMSAC PNL 2-R-178, Connection Diagrams [Later],
DRA 52408-005, Rev 0

p. 2-45W2697-23-1, Rev 0, Integrated Computer System DAQ. Panel 2-R-133 Connection Diagram
DRA 52408-059, Rev 0

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2.2 Developmental References (continued)

q. 2-45B655-4A, Rev 0, Main Control Room Annunciator Inputs Window Box XA-55-4A, CCD
DRA 52408-009, Rev 0

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

s. 2-45B655-4C, Rev 0, Main Control Room Annunciator Inputs Window Box XA-55-4C, CCD
DRA 52408-010, Rev 0

t. 2-45B655-E4C, Rev 0, Electrical Annunciator Window Box XA-55-4C Engraving, CCD

u. 2-47A615-0 (Page 25 of 30), Rev 1, WBN 2-47A615 Series Computer Termination and I/O list
DRA 52408-058, Rev 0

3. Mechanical

a. 2-47W600-151, Rev 0, Electrical Instruments and Controls, CCD
DRA 52408-016, Rev 1

4. Logic/Control

a. 2-47W610-1-3A, Rev 0, Electrical Control Diagram, Main Steam System, CCD
DRA 52408-019, Rev 0

b. 2-47W610-3 3, Rev 2, Electrical Control Diagram, Auxiliary Feedwater System

c. 2-47W610-3-6, Rev 1, Electrical Control Diagram Main & Aux Feedwater System, CCD
DRA 52408-018, Rev 0

d. 2-47W610-47-2, Rev 1, Electrical Control Diagram, Turbo -Generator Cont Sys
DRA 52408-020, Rev 0

e. 2-47W611-3-3, Rev 1, Electrical Logic Diagram, Auxiliary Feedwater System, CCD
DRA 52408-021, Rev 0

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2.2 Developmental References (continued)

f. 2-47W611-3-4, Rev 1, Electrical Logic Diagram, Auxiliary Feedwater System, CCD
DRA 52408-022, Rev 0

g. 2-47W611-3-7, Rev 0, Electrical Logic Diagram, Auxiliary Feedwater System [ANT]
DRA 52408-25, Rev 0

5. Vendor Drawings

a. 71992-1, Rev E, Rev AMSAC Panel Outline, Dimensional

b. 71995-1, Rev C, AMSAC Panel General Arrangement

c. 72032-1, Rev D, AMSAC Panel Schematic Diagram

d. 71994-1, Rev F, AMSAC Panel Wiring Diagram Sh-1

e. 71994-2, Rev F, AMSAC Panel Wiring Diagram Sh-2

f. 71994-3, Rev F, AMSAC Panel Wiring Diagram Sh-3

6. Vendor Manuals

a. WBN-VTD-M422-0020, Vendor Technical Manual for Moore Industries Direct Current Alarm Instruction Manual, Rev 0

7. Documents

a. 2-IMI-3.005, 18 Month Calibration of Anticipated Transient Without Scram Mitigation System Actuation Circuitry (AMSAC) [Later]

b. SSD-1-L-3-172, Steam Generator 3 Turbine Driven AFW Level Control, Rev 7

To be verified against SSD-2-L-3-172, Steam Generator 3 Turbine Driven AFW Level Control [Later] in Appendix A.

c. SSD-1-L-3-173, Steam Generator 2 Turbine Driven AFW Level Control, Rev 7

To be verified against SSD-2-L-3-173, Steam Generator 2 Turbine Driven AFW Level Control [Later] in Appendix A.

d. SSD-1-L-3-174, Steam Generator 1 Turbine Driven AFW Level Control, Rev 7

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2.2 Developmental References (continued)

To be verified against SSD-2-L-3-174, Steam Generator 1 Turbine Driven AFW Level Control [Later] in Appendix A.

e. SSD-1-L-3-175, Steam Generator 4 Turbine Driven AFW Level Control, Rev 7

To be verified against SSD-2-L-3-175, Steam Generator 4 Turbine Driven AFW Level Control [Later] in Appendix A.

f. SSD-1-P-1-314, High Pressure Turbine Impulse Chamber Pressure, Rev 2

To be verified against SSD-2-L-1-314, High Pressure Turbine Impulse Chamber Pressure [Later] in Appendix A.

g. SSD-1-P-1-315, High Pressure Turbine Impulse Chamber Pressure, Rev 2

To be verified against SSD-2-L-1-315,.High Pressure Turbine Impulse Chamber Pressure [Later] in Appendix A.

h. 2-TSD-03B-6, Test Scoping Document for AMSAC, Rev 0

i. EDCR 52408A

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3.0 PRECAUTIONS AND LIMITATIONS

A. Standard precautions shall be followed for working around energized electrical equipment in accordance with TVA Safety Manual Procedure 1021.

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

C. Component tags and labels may differ slightly (abbreviations, punctuation, letter case, etc.) from the description given in this test. If this situation occurs, it shall not be considered a test deficiency or procedure deviation. It shall be documented in the CTL and reconciled by way of a plant labeling request or drawing discrepancy or single-line date typo change in the procedure as appropriate.

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

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

F. Problems identified during the test shall be annotated on the Chronological Test Log (CTL) from SMP-9.0 including a description of the problem, the procedure step when/where the problem was identified, corrective action steps taken to resolve the problem, and the number of the corrective action document, if one was required.

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

H. Disconnected sense lines (and any other open lines) are to be kept covered during the performance of this Instruction to prevent the introduction of foreign material.

I. Ensure no adverse impact to the operation of Unit 1 Structures, Systems or Components.

J. Whenever a wire is lifted and left unattended, there must be a nonconductive tag attached to it identifying the work instruction and an entry must be made to the Configuration Control Log for Wire Lifts, Appendix D.

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4.0 PREREQUISITE ACTIONS

NOTE

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

4.1 Preliminary Actions

[1] **EVALUATE** open items 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** special environmental conditions are available for testing if required. _____

[6] **ENSURE** outstanding Design Change Notices (DCN's), Engineering Document Construction Release (EDCR's) or Temporary Alterations (TA's) do NOT adversely impact testing, **AND**

ATTACH documentation of DCN's, EDCR's and TA's that were reviewed to the data package. _____

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4.1 Preliminary Actions (continued)

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

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

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

A. 2-XA-55-4A/66-F, AMSAC NOT ARMED _____

B. 2-XA-55-4C/71-E, AMSAC ACTUATED. _____

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

A. UD4001, AMSAC ARMED (ARMED) _____

B. UD4002, AMSAC TRIPPED (NOT TRI) _____

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

[14] **ENSURE** a review of outstanding Clearances has been coordinated with U2 Operations for impact to the test performance, **AND**

RECORD in Appendix B, Temporary Condition Log if required. _____

[15] **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. _____

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4.1 Preliminary Actions (continued)

[16] **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. _____

[17] **VERIFY** Measuring and Test Equipment (M&TE) calibration due dates will support the completion of this test performance. _____

NOTE

AMSAC EQUIPMENT PANEL, 2-R-178, is located in the Control Building Auxiliary Instrument Room at C4 El.708.0'.

[18] **ENSURE** component tests identified on the Component Test Matrix Report have been completed to calibrate and response time test the following instrument loops. _____

[19] **ENSURE** component tests identified on the Component Test Matrix Report have been completed to calibrate and response time test the following instrument loops, **AND**

RECORD each Steam Generator Turbine Driven Auxiliary Feedwater Level Control instrument loop's response time below. _____

Instrument Loop	Response Time (sec) Time Delay Relay Output to 2-R-178 Terminals
2-LPL-3-172E	
2-LPL-3-173E	
2-LPL-3-174E	
2-LPL-3-175E	

[20] **VERIFY** 2-IMI-3.005, 18 Month Calibration of Anticipated Transient Without Scram Mitigation System Actuation Circuitry (AMSAC), has been performed. _____

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

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4.1 Preliminary Actions (continued)

[22] **REVIEW** preventative maintenance for system/components covered by this test, **AND**

VERIFY no conditions exist that will impact test performance. _____

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

[1] **ENSURE** the following are available.

- Jumpers/test leads as required. _____

[2] **VERIFY** 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. _____

- One twelve channel stripchart recorder with scalable channels and graphical channel display to measure 0 to 20 mAdc (± 0.20 mAdc), and contact change, or equivalent. _____
- Six digital multimeters, Keithley 197, Fluke 8600A or equivalent.
  - Four with 50 mAdc minimum range, accuracy ±0.032 mAdc. _____
  - Two with 20 Vdc minimum range, accuracy ±0.024 Vdc. _____
- Four Current Sources, 4-20 mAdc minimum range, no required accuracy. _____
- Two Transmitter Simulators with step change capability, 4-20 mAdc minimum range, no required accuracy.
- Stopwatch, 400 second minimum range, accuracy of ±0.5 seconds. _____

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4.3 Field Preparations

[1] **ENSURE** 2-BKR-238-1/21, AMSAC PANEL 2-R-178 Breaker at 2-BD-238-1 (Col. C7P, El. 692.0') is in the ON position. _____

_____
CV

[2] **ENSURE** 2-BKR-275-R133A, Circuit Breaker A (CB A) inside Panel 2-R-178 lower left side, is in the ON position. _____

_____
CV

[3] **ENSURE** 2-BKR-275-R133B, Circuit Breaker B (CB B) inside Panel 2-R-178 lower left side, is in the ON position. _____

_____
CV

NOTE

When pushbuttons are pressed in this procedure, they are to be pressed momentarily unless the procedure specifically requires the pushbutton to be pressed while verifications are performed.

[4] **PRESS** 2-HS-3-264A, AMSAC TEST/BLK/OPERATE pushbutton on 2-M-3, to the AMSAC TEST/BLOCK position, **AND**

VERIFY the Amber Light, AMSAC TEST/BLOCK, is ON _____

[5] **LIFT** and **LABEL** the following leads to prevent a Turbine trip and Auxiliary Feedwater pump start.

A. AMSAC Turbine Trip

Black wire (TTPP) from Cable 2M3606 from Terminal Block TB4, Terminal Point 3 in 2 -R -178, AMSAC EQUIPMENT PANEL. _____

_____
CV

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4.3 Field Preparations (continued)

B. AMSAC Turbine Driven Auxiliary Feedwater (TDAFW) Pump 2A-S and Motor Driven Auxiliary Feedwater (MDAFW) Pump 2A-A Start

BLACK wire (ATT1) from Cable 2M3605 from Terminal Block TB4 Terminal Point 5 in 2-R-178, AMSAC EQUIPMENT PANEL. _____

_____
CV

C. AMSAC TDAFW Pump 2A-S and MDAFW Pump 2B-B Start

BLACK wire (TTCS1) from Cable 2M3607 from Terminal Block TB4 Terminal Point 7 in 2-R-178, AMSAC EQUIPMENT PANEL. _____

_____
CV

[6] **SET** channels 10, 11, and 12 on a 12 Channel Recorder to record contact change (event marks). _____

[7] **CONNECT** channel 10 to Terminal Block TB4, Terminal Point 3 and 4 in 2-R-178, AMSAC EQUIPMENT PANEL, **AND**

LABEL this channel "Turb Trip." _____

_____
CV

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4.3 Field Preparations (continued)

[8] **CONNECT** channel 11 to Terminal Block TB4, Terminal Points 5 and 6 in 2-R-178, AMSAC EQUIPMENT PANEL, **AND**

LABEL this channel "AFW PMP 2A-S & 2A-A Start". _____

_____
CV

[9] **CONNECT** channel 12 to Terminal Block TB4, Terminal Points 7 and 8 in 2-R-178, AMSAC EQUIPMENT PANEL, **AND**

LABEL this channel "AFW PMP 2A-S & 2B-B Start". _____

_____
CV

[10] **NOTIFY** Unit 2 Operations that the following indicators will indicate zero when test equipment is connected.

A. 2-LI-3-174, T-D AFW PMP SG 1 LEVEL [2-M-3] _____

B. 2-LI-3-173, T-D AFW PMP SG 2 LEVEL [2-M-3] _____

C. 2-LI-3-172, T-D AFW PMP SG 3 LEVEL [2-M-3] _____

D. 2-LI-3-175, T-D AFW PMP SG 4 LEVEL [2-M-3] _____

[11] **LIFT** and **LABEL** the following leads to facilitate connection of simulated inputs to the AMSAC logic.

A. Steam Generator 1 Level, 2-LM-3-174E, STM GEN #1 FLOW MOD

White wire (B1806) from Cable 2PM5575 from Terminal Block TB1, Terminal Point 8 in 2-R-178, AMSAC EQUIPMENT PANEL. _____

_____
CV

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4.3 Field Preparations (continued)

B. Steam Generator 2 Level, 2-LM-3-173E, STM GEN #2 FLOW MOD

White wire (B1906) from Cable 2PM5576 from Terminal Block TB1, Terminal Point 14 in 2-R-178, AMSAC EQUIPMENT PANEL. _____

_____
CV

C. Steam Generator 3 Level, 2-LM-3-172E, STM GEN #3 FLOW MOD

White wire (A1706) from Cable 2PM5577 from Terminal Block TB1, Terminal Point 17 in 2-R-178, AMSAC EQUIPMENT PANEL. _____

_____
CV

D. Steam Generator 4 Level, 2-LM-3-175E, STM GEN #4 FLOW MOD

White wire (A1606) from Cable 2PM5578 from Terminal Block TB1, Terminal Point 20 in 2-R-178, AMSAC EQUIPMENT PANEL. _____

_____
CV

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4.3 Field Preparations (continued)

E. Turbine Inlet Pressure, 2-PT-1-314, HP TURBINE IMPULSE CHAMBER PRESS

White wire (TCP02) from Cable 2PM5579 from Terminal Block TB1, Terminal Point 2 in 2-R-178, AMSAC EQUIPMENT PANEL. _____

_____
CV

F. Turbine Inlet Pressure, 2-PT-1-315, HP TURBINE IMPULSE CHAMBER PRESS

White wire (TCP04) from Cable 2PM5580 from Terminal Block TB1, Terminal Point 5 in 2-R-178, AMSAC EQUIPMENT PANEL. _____

_____
CV

[12] **SET** recorder channel 1 on the 12 channel record for a minimum range of 4 to 20 mAdc, **AND**

LABEL channel 1 with "2-PS-1-314". _____

[13] **CONNECT** a Transmitter Simulator and DMM (set to mAdc scale) and Channel 1 on the 12 channel recorder in series with terminal block TB1, terminals 1 and 2 in 2-R-178, AMSAC EQUIPMENT PANEL, **AND**

LABEL the Transmitter Simulator with "2-PS-1-314". _____

_____
CV

[14] **SET** recorder channel 2 on the 12 channel recorder for a minimum range of 4 to 20 mAdc, **AND**

LABEL channel 2 with "2-PS-1-315". _____

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4.3 Field Preparations (continued)

[15] **CONNECT** a Transmitter Simulator and DMM (set to mAdc scale) and Channel 2 on the 12 channel recorder in series with terminal block TB1, terminals 4 and 5 in 2-R-178, AMSAC EQUIPMENT PANEL, **AND**

LABEL the Transmitter Simulator with "2-PS-1-315". _____

_____
CV

[16] **SET** recorder channel 3 on the 12 channel recorder for a minimum range of 4 to 20 mAdc, **AND**

LABEL channel 3 with "2-LS-3-172E". _____

[17] **CONNECT** a Current Source and DMM (set to mAdc scale) and Channel 3 on the 12 channel recorder in series with terminal block TB1, terminals 16 and 17 in 2-R-178, AMSAC EQUIPMENT PANEL, **AND**

LABEL the Current Source with "2-LS-3-172E". _____

_____
CV

[18] **SET** recorder channel 4 on the 12 channel recorder for a minimum range of 4 to 20 mAdc, **AND**

LABEL channel 4 with "2-LS-3-173E". _____

[19] **CONNECT** a Current Source and DMM (set to mAdc scale) and Channel 4 on the 12 channel recorder in series with terminal block TB1, terminals 13 and 14 in 2-R-178, AMSAC EQUIPMENT PANEL, **AND**

LABEL the Current Source with "2-LS-3-173E". _____

_____
CV

[20] **SET** recorder channel 5 on the 12 channel recorder for a minimum range of 4 to 20 mAdc, **AND**

LABEL channel 5 with "2-LS-3-174E". _____

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4.3 Field Preparations (continued)

[21] **CONNECT** a Current Source and DMM (set to mAdc scale) and Channel 5 on the 12 channel recorder in series with terminal block TB1, terminals 7 and 8 in 2-R-178, AMSAC EQUIPMENT PANEL, **AND**

LABEL the Current Source with "2-LS-3-174E". _____

_____
CV

[22] **SET** recorder channel 6 on the 12 channel recorder for a minimum range of 4 to 20 mAdc, **AND**

LABEL channel 6 with "2-LS-3-175E". _____

[23] **CONNECT** a Current Source and DMM (set to mAdc scale) and Channel 6 on the 12 channel recorder in series with terminal block TB1, terminals 19 and 20 in 2-R-178, AMSAC EQUIPMENT PANEL, **AND**

LABEL the Current Source with "2-LS-3-175E". _____

_____
CV

[24] **SET** recorder channel 7 on the 12 channel recorder to record contact change, **AND**

LABEL channel 7 with "2-RLY-3-62A". _____

[25] **CONNECT** test leads between the recorder Channel 7 and relay U (2-RLY-003-62A, TIME DELAY PICKUP RELAY at 2-R-178, AMSAC EQUIPMENT PANEL), Terminals 2 and 6. _____

_____
CV

[26] **SET** recorder channel 8 on the 12 channel recorder to record contact change, **AND**

LABEL channel 8 with "2-RLY-3-62B". _____

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4.3 Field Preparations (continued)

[27] **CONNECT** test leads between the recorder Channel 8 and relay V (2-RLY-003-62B, TIME DELAY DROPOUT RELAY at 2-R-178, AMSAC EQUIPMENT PANEL), Terminals 4 and 6. _____

_____
CV

[28] **ENSURE** that each of the switches, located in 2-R-178, AMSAC EQUIPMENT PANEL, are in the "AUTO" position.

A. 2-HS-3-174E, SG 1 LEVEL SWITCH TRIP, in AUTO. _____

B. 2-HS-3-173E, SG 2 LEVEL SWITCH TRIP, in AUTO.

C. 2-HS-3-172E, SG 3 LEVEL SWITCH TRIP, in AUTO. _____

D. 2-HS-3-175E, SG 4 LEVEL SWITCH TRIP, in AUTO. _____

[29] **ADJUST** the current sources for SG Narrow range level inputs as specified below, **AND**

VERIFY the trip indicating lights on each of the level switches in 2-R-178, AMSAC EQUIPMENT PANEL, listed below are NOT lit. _____

Simulator	Simulated Input (mAdc)
2-LS-3-172E	6.6 ± 0.16 mAdc
2-LS-3-173E	6.6 ± 0.16 mAdc
2-LS-3-174E	6.6 ± 0.16 mAdc
2-LS-3-175E	6.6 ± 0.16 mAdc

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4.3 Field Preparations (continued)

[30] **ADJUST** the current sources for the Turbine Inlet pressure inputs as specified below, **AND**

VERIFY the trip indicating lights on each of the associated pressure switches in 2-R-178, AMSAC TEST PANEL, are LIT. _____

Simulator	Simulated Input (mAdc)
2-PS-1-314	10.00 ± 0.16 mAdc
2-PS-1-315	10.00 ± 0.16 mAdc

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

4.4 Approvals and Notifications

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

Preoperational Startup Manager Signature	Date

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

U2 US/SRO/SM Signature	Date

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

5.0 ACCEPTANCE CRITERIA

[1] Anticipated Transient Without Scram Mitigation System Actuation Circuitry (AMSAC) responds properly to simulated initiation signals:

A. When AMSAC is armed and Steam Generator level coincidence logic is obtained, a Main Turbine trip signal and an Auxiliary Feedwater pump start signal are generated (Steps 6.0[21], 6.0[35], 6.0[43], 6.0[51]).

B. 2-HS-3-264A, AMSAC TEST/BLK/OPERATE pushbutton on 2-M-3, can block an AMSAC output signal (Steps 6.0[25]).

C. With AMSAC armed at greater than or equal to 40% simulated power, the AMSAC Steam Generator low-low level logic setpoint is 12% (9.95-14.05 %) of the narrow range level [5.92 mAdc (5.59-6.25 mAdc)] (Steps 6.0[5], 6.0[11], 6.0[18], 6.0[32], 6.0[40], 6.0[48]).

D. The AMSAC logic and output relay actuation response (Turbine trip and Auxiliary Feedwater pump start signals) time is less than or equal to 1.0 seconds (Steps 6.0[20], 6.0[34], 6.0[42], 6.0[50]).

E. The overall AMSAC actuation time delay for initiation of turbine trip is less than or equal to 30 seconds (Steps 6.0[22], 6.0[36], 6.0[44], 6.0[52]).

F. AMSAC status lights, annunciators, and computer points respond as designed (Steps 6.0[3], 6.0[7], 6.0[17], 6.0[23], 6.0[25], 6.0[26], 6.0[27], 6.0[28]).

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

6.0 PERFORMANCE

[1] **ENSURE** Precautions and Limitations in Section 3.0 have been reviewed. _____

[2] **ENSURE** Prerequisite Actions in Section 4.0 have been met. _____

NOTE

When pushbuttons are pressed in this instruction, they are to be pressed momentarily unless the instruction specifically requires the pushbutton to be pressed while verifications are performed.

[3] **PRESS** 2-HS-3-264A, AMSAC TEST/BLK/OPERATE pushbutton on 2-M-3, to the AMSAC OPERABLE position, **AND**

VERIFY the following: (**Acc Crit**)

A. 2-HS-3-264A AMSAC TEST/BLK/OPERATE Green Light, AMSAC BLOCK < 40%, is OFF. _____

B. 2-HS-3-264A AMSAC TEST/BLK/OPERATE Blue Light, ARMED 40%, is ON. _____

C. 2-HS-3-264A AMSAC TEST/BLK/OPERATE Amber Light, AMSAC TEST/BLOCK, is OFF. _____

D. 2-HS-3-264A AMSAC TEST/BLK/OPERATE Red Light, AMSAC OPERABLE, is ON. _____

E. 2-XA-55-4A/66-F, AMSAC NOT ARMED, is CLEAR. _____

F. Unit 2 Event Display Monitor indicates 66-F AMSAC NOT ARMED, is in NORMAL (Blue). _____

G. 2-XA-55-4C/71-E, AMSAC ACTUATED, is CLEAR. _____

H. Unit 2 Event Display Monitor indicates 71-E TT-AMSAC ACTUATED is in NORMAL (Blue). _____

I. ICS point UD4001 displays ARMED. _____

J. ICS point UD4002 displays NOT TRI. _____

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

6.0 PERFORMANCE (continued)

NOTE

The Inlet pressure bypass/permissive function and timing is measured, recorded and compared to acceptance criteria during performance of the following steps.

[4] **ENSURE** the recorder is operating properly and displaying the following minimum channels: _____

Recorder Channel	Channel Label
1	2-PS-1-314
2	2-PS-1-315
8	2-RLY-3-62B

[5] **SLOWLY DECREASE** the input to 2-PS-1-314, PRESSURE INTERLOCK SWITCH, while observing the switch indicating light, **AND**

RECORD the input value displayed on recorder channel 1 (2-PS-1-314) when the indicating light extinguishes, **AND**

VERIFY the recorded Inlet pressure trip point is between 9.13 to 9.79 mAdc (9.46 mAdc nominal).(**Acc Crit**) _____

_____ mAdc

[6] **DETERMINE** the time from when the recorder Channel 1 (2-PS-1-314) input tripped 2-PS-1-314, PRESSURE INTERLOCK SWITCH, indicating light and the time recorder Channel 8 indicated 2-RLY-3-62B, TIME DELAY DROPOUT RELAY, actuated, **AND**

RECORD the response time below, **AND**

VERIFY the recorded response time is between 288 to 432 seconds (360 seconds nominal). _____

_____ Sec

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

6.0 PERFORMANCE (continued)

[7] **VERIFY** the following: (**Acc Crit**)

A. 2-HS-3-264A AMSAC TEST/BLK/OPERATE Green Light, AMSAC BLOCK < 40%, is ON. _____

B. 2-HS-3-264A AMSAC TEST/BLK/OPERATE Blue Light, ARMED 40%, is OFF. _____

C. 2-HS-3-264A AMSAC TEST/BLK/OPERATE Amber Light, AMSAC TEST/BLOCK, is OFF. _____

D. 2-HS-3-264A AMSAC TEST/BLK/OPERATE Red Light, AMSAC OPERABLE, is ON. _____

E. 2-XA-55-4A/66-F AMSAC NOT ARMED is in ALARM. _____

F. Unit 2 Event Display Monitor indicates 66-F AMSAC NOT ARMED is in ALARM (Red). _____

G. ICS point UD4001 displays NOT ARM. _____

[8] **LABEL** the recorder chart "2-PS-1-314 Setpoint and 2-RLY-3-62B Time Delay" and save this chart for record. _____

[9] **ADJUST** Turbine Inlet pressure inputs as specified below, **AND**

VERIFY the trip indicating lights on each of the associated pressure switches in 2-R-178, AMSAC EQUIPMENT PANEL, are NOT LIT. _____

Simulator	Simulated Input (mAdc)
2-PS-1-314	10.00 ± 0.16 mAdc
2-PS-1-315	10.00 ± 0.16 mAdc

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

6.0 PERFORMANCE (continued)

[10] **ENSURE** the recorder is operating properly and displaying the following minimum channels: _____

Recorder Channel	Channel Label
1	2-PS-1-314
2	2-PS-1-315
8	2-RLY-3-62B

[11] **SLOWLY DECREASE** the input to 2-PS-1-315, PRESSURE INTERLOCK SWITCH, while observing the switch indicating light, **AND**

RECORD the input value displayed on recorder channel 2 (2-PS-1-315) when the indicating light extinguishes, **AND**

VERIFY the recorded Inlet pressure trip point is between 9.13 to 9.79 mAdc (9.46 mAdc nominal). **(Acc Crit)** _____

mAdc

[12] **DETERMINE** the time from when the recorder Channel 2 (2-PS-1-315) input tripped 2-PS-1-315, PRESSURE INTERLOCK SWITCH, indicating light and the time recorder Channel 8 indicated 2-RLY-3-62B, TIME DELAY DROPOUT RELAY, actuated, **AND**

RECORD the response time below, **AND**

VERIFY the recorded response time is between 288 to 432 seconds (360 seconds nominal). _____

Sec

[13] **LABEL** the recorder chart "2-PS-1-315 Setpoint and 2-RLY-3-62B Time Delay", **AND**

ATTACH to this PTI. _____

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

6.0 PERFORMANCE (continued)

[14] **ADJUST** Turbine Inlet pressure inputs as specified below, **AND**

VERIFY the trip indicating lights on each of the associated pressure switches in 2-R-178 are NOT LIT. _____

Simulator	Simulated Input (mAdc)
2-PS-1-314	10.00 ± 0.16 mAdc
2-PS-1-315	10.00 ± 0.16 mAdc

NOTE

The Steam Generator Low-Low Level AMSAC trip function and timing is measured, recorded and compared to acceptance criteria during performance of the following steps.

[15] **ENSURE** the recorder is operating properly and displaying the following minimum channels: _____

Recorder Channel	Channel Label	Required State
3	2-LS-3-172E	> 5.92 mAdc
4	2-LS-3-173E	> 5.92 mAdc
5	2-LS-3-174E	> 5.92 mAdc
6	2-LS-3-175E	> 5.92 mAdc
7	2-RLY-3-62A	Open Contact
10	Turb Trip	Open Contact
11	AFW PMP 2A-S & 2A-A Start	Open Contact
12	AFW PMP 2A-S & 2B-B Start	Open Contact

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

6.0 PERFORMANCE (continued)

[16] **ADJUST** the input to the following SG Level switches to the values specified below, **AND**

VERIFY the trip indicating lights for each are LIT. _____

Simulator	Simulated Input (mAdc)
2-LS-3-174E	5.2 ± 0.16 mAdc
2-LS-3-175E	5.2 ± 0.16 mAdc

[17] **VERIFY** the following: (**Acc Crit**)

A. 2-HS-3-264A AMSAC TEST/BLK/OPERATE Green Light, AMSAC BLOCK < 40%, is OFF. _____

B. 2-HS-3-264A AMSAC TEST/BLK/OPERATE Blue Light, ARMED 40%, is ON. _____

C. 2-HS-3-264A AMSAC TEST/BLK/OPERATE Amber Light, AMSAC TEST/BLOCK, is OFF. _____

D. 2-HS-3-264A AMSAC TEST/BLK/OPERATE Red Light, AMSAC OPERABLE, is ON. _____

E. 2-XA-55-4A/66-F AMSAC NOT ARMED is CLEAR.

F. Unit 2 Event Display Monitor indicates 66-F AMSAC NOT ARMED is in NORMAL (Blue). _____

G. 2-XA-55-4C/71-E, AMSAC ACTUATED is CLEAR.

H. Unit 2 Event Display Monitor indicates 71-E TT-AMSAC ACTUATED is in NORMAL (Blue). _____

I. ICS point UD4001 displays ARMED. _____

J. ICS point UD4002 displays NOT TRI. _____

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

6.0 PERFORMANCE (continued)

[18] **SLOWLY DECREASE** the input to 2-LS-3-172E, SG 3 LOW LOW LEVEL, while observing the switch indicating light, **AND**

RECORD the input value displayed on recorder channel 3 (2-LS-3-172E) when the indicating light extinguishes, **AND**

VERIFY the recorded SG Low-Low Level trip point is between 5.59 to 6.25 mAdc (5.92 mAdc nominal). (**Acc Crit**) _____

mAdc

[19] **DETERMINE** the time from when the recorder Channel 3 (2-LS-3-172E) input tripped 2-LS-3-172E, SG 3 LOW LOW LEVEL, indicating light and the time recorder Channel 7 indicated 2-RLY-3-62A, TIME DELAY PICKUP RELAY, actuated, **AND**

RECORD the response time below, **AND**

VERIFY the recorded response time is between 22.5 to 27.5 seconds (25 seconds nominal). _____

Sec

[20] **DETERMINE** the time from when the recorder Channel 7 (2-RLY-3-62A, TIME DELAY PICKUP RELAY) indicated the relay actuated and the time each AMSAC trip output listed below actuated, **AND**

RECORD the response time below, **AND**

VERIFY the recorded response time is less than 1 second. (**Acc Crit**) _____

Chan 10 Turb Trip	Sec
Chan 11 AFW PMP 2A-S & 2A-A Start	Sec
Chan 12 AFW PMP 2A-S & 2B-B Start	Sec

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

6.0 PERFORMANCE (continued)

[21] **DETERMINE** the time from when the recorder Channel 3 (2-LS-3-172E) input tripped 2-LS-3-172E, SG 3 LOW LOW LEVEL, indicating light and the time each AMSAC trip output listed below actuated, **AND**

RECORD the response time below. (**Acc Crit**) _____

Chan 10 Turb Trip	Sec
Chan 11 AFW PMP 2A-S & 2A-A Start	Sec
Chan 12 AFW PMP 2A-S & 2B-B Start	Sec

[22] **ADD** the 2-L-3-172 instrument loop response time recorded in 4.1[19] to the largest of the logic output response times recorded in 6.0[21], **AND**

RECORD the result below, **AND**

VERIFY the result is less than or equal to 30 seconds. (**Acc Crit**) _____

Total Channel Time _____ Sec

[23] **VERIFY** the following: (**Acc Crit**)

A. 2-HS-3-264A AMSAC TEST/BLK/OPERATE Green Light, AMSAC BLOCK < 40%, is OFF. _____

B. 2-HS-3-264A AMSAC TEST/BLK/OPERATE Blue Light, ARMED 40%, is ON. _____

C. 2-HS-3-264A AMSAC TEST/BLK/OPERATE Amber Light, AMSAC TEST/BLOCK, is OFF. _____

D. 2-HS-3-264A AMSAC TEST/BLK/OPERATE Red Light, AMSAC OPERABLE, is ON. _____

E. 2-XA-55-4A/66-F AMSAC NOT ARMED is CLEAR. _____

F. Unit 2 Event Display Monitor indicates 66-F AMSAC NOT ARMED is in NORMAL (Blue). _____

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

6.0 PERFORMANCE (continued)

G. 2-XA-55-4C/71-E, AMSAC ACTUATED is in ALARM. _____

H. Unit 2 Event Display Monitor indicates 71-E TT-AMSAC ACTUATED is in ALARM (Red). _____

I. ICS point UD4001 displays ARMED. _____

J. ICS point UD4002 displays TRIPPED. _____

[24] **LABEL** the recorder chart "2-LS-3-172E Setpoint, 2-RLY-3-62A and Total Channel Time Delay" and save this chart for the record. _____

[25] **PRESS** 2-HS-3-264A, AMSAC TEST/BLK/OPERATE pushbutton on 2-M-3, in the AMSAC TEST/BLOCK position, **AND**

VERIFY the following: (**Acc Crit**)

A. Green Light, AMSAC BLOCK < 40%, is OFF. _____

B. Blue Light, ARMED 40%, is ON. _____

C. Amber Light, AMSAC TEST/BLOCK, is ON. _____

D. Red Light, AMSAC OPERABLE, is OFF. _____

E. AMSAC trip outputs specified below reset (OPEN contact). _____

Recorder Channel	Channel Label	Required State
10	Turb Trip	OPEN Contact
11	AFW PMP 2A-S & 2A-A Start	OPEN Contact
12	AFW PMP 2A-S & 2B-B Start	OPEN Contact

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

6.0 PERFORMANCE (continued)

[26] **RESET** Annunciators 2-XA-55-4A and 2-XA-55-4C, **AND**

VERIFY the following: (**Acc Crit**)

A. 2-XA-55-4A/66-F, AMSAC NOT ARMED, is Clear. _____

B. Unit 2 Event Display Monitor indicates 66-F AMSAC NOT ARMED is in NORMAL (Blue). _____

C. 2-XA-55-4C/71-E, AMSAC ACTUATED is CLEAR. _____

D. Unit 2 Event Display Monitor indicates 71-E TT-AMSAC ACTUATED is in NORMAL (Blue). _____

E. ICS point UD4001 displays ARMED. _____

F. ICS point UD4002 displays NOT TRI. _____

[27] **PRESS** 2-HS-3-264A, AMSAC TEST/BLK/OPERATE, pushbutton on 2-M-3, in the AMSAC OPERABLE position, **AND**

VERIFY the following: (**Acc Crit**)

A. Green Light, AMSAC BLOCK < 40%, is OFF. _____

B. Blue Light, ARMED 40%, is ON. _____

C. Amber Light, AMSAC TEST/BLOCK, is OFF. _____

D. Red Light, AMSAC OPERABLE, is ON. _____

E. AMSAC trip outputs specified below are tripped (CLOSE contact). _____

Recorder Channel	Channel Label	Required State
10	Turb Trip	CLOSE Contact
11	AFW PMP 2A-S & 2A-A Start	CLOSE Contact
12	AFW PMP 2A-S & 2B-B Start	CLOSE Contact

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

6.0 PERFORMANCE (continued)

[28] **RESET** Annunciators 2-XA-55-4A and 2-XA-55-4C **AND,**

VERIFY the following: (**Acc Crit**)

A. 2-XA-55-4A/66-F, AMSAC NOT ARMED is CLEAR. _____

B. Unit 2 Event Display Monitor indicates 66-F AMSAC NOT ARMED is in NORMAL (Blue). _____

C. 2-XA-55-4C/71-E, AMSAC ACTUATED is in ALARM. _____

D. Unit 2 Event Display Monitor indicates 71-E-TT AMSAC ACTUATED is in ALARM (Red). _____

E. ICS Point UD4001 displays ARMED. _____

F. ICS Point UD4002 displays TRIPPED. _____

[29] **DECREASE** Turbine Inlet Pressure switch 2-PS-1-314, PRESSURE INTERLOCK SWITCH, input to 9.0 ± 0.16 mAdc, **AND**

VERIFY each of the AMSAC outputs specified below are reset (OPEN contact). _____

Recorder Channel	Channel Label	Required State
10	Turb Trip	OPEN Contact
11	AFW PMP 2A-S & 2A-A Start	OPEN Contact
12	AFW PMP 2A-S & 2B-B Start	OPEN Contact

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

6.0 PERFORMANCE (continued)

[30] **ADJUST** Turbine Inlet pressure switch and SG Low-Low Level switch inputs to the values specified below, **AND**

VERIFY the trip indicating lights on each of the switches is in the state specified. _____

Simulator	Simulated Input (mAdc)	Switch Trip Indication
2-PS-1-314	10.00 ± 0.16 mAdc	LIT
2-PS-1-315	10.00 ± 0.16 mAdc	LIT
2-LS-3-172E	5.2± 0.16 mAdc	LIT
2-LS-3-173E	6.6 ± 0.16 mAdc	NOT LIT
2-LS-3-174E	6.6 ± 0.16 mAdc	NOT LIT
2-LS-3-175E	5.2 ± 0.16 mAdc	LIT

[31] **ENSURE** the recorder is operating properly and displaying the following minimum channels: _____

Recorder Channel	Channel Label	Required State
3	2-LS-3-172E	< 5.92 mAdc
4	2-LS-3-173E	> 5.92 mAdc
5	2-LS-3-174E	> 5.92 mAdc
6	2-LS-3-175E	< 5.92 mAdc
7	2-RLY-3-62A	Open Contact
10	Turb Trip	Open Contact
11	AFW PMP 2A-S & 2A-A Start	Open Contact
12	AFW PMP 2A-S & 2B-B Start	Open Contact

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

6.0 PERFORMANCE (continued)

[32] **SLOWLY DECREASE** the input to 2-LS-3-173E, SG 2 LOW LOW LEVEL, while observing the switch indicating light, **AND**

RECORD the input value displayed on recorder channel 4 (2-LS-3-173E) when the indicating light extinguishes, **AND**

VERIFY the recorded SG Low-Low Level trip point is between 5.59 to 6.25 mAdc (5.92 mAdc nominal). (**Acc Crit**) _____

mAdc

[33] **DETERMINE** the time from when the recorder Channel 4 (2-LS-3-173E) input tripped 2-LS-3-173E, SG 2 LOW LOW LEVEL, indicating light and the time recorder Channel 7 indicated the time delay pick up relay, 2-RLY-3-62A, TIME DELAY PICKUP RELAY, actuated, **AND**

RECORD the response time below, **AND**

VERIFY the recorded response time is between 22.5 and 27.5 seconds (25 seconds nominal). _____

Sec

[34] **DETERMINE** the time from when the recorder Channel 7 (2-RLY-3-62A, TIME DELAY PICKUP RELAY) indicated the relay actuated and the time each AMSAC trip output listed below actuated, **AND**

RECORD the response time below, **AND**

VERIFY the recorded response time is less than 1 second. (**Acc Crit**) _____

Chan 10 Turb Trip	Sec
Chan 11 AFW PMP 2A-S & 2A-A Start	Sec
Chan 12 AFW PMP 2A-S & 2B-B Start	Sec

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

6.0 PERFORMANCE (continued)

[35] **DETERMINE** the time from when the recorder Channel 4 (2-LS-3-173E) input tripped 2-LS-3-173E, SG 2 LOW LOW LEVEL, indicating light and the time each AMSAC trip output listed below actuated, **AND**

RECORD the response time below. (**Acc Crit**) _____

Chan 10 Turb Trip	Sec
Chan 11 AFW PMP 2A-S & 2A-A Start	Sec
Chan 12 AFW PMP 2A-S & 2B-B Start	Sec

[36] **ADD** the 2-L-3-173 instrument loop response time recorded in 4.1[19] to the largest of the logic output response times recorded in 6.0[21], **AND**

RECORD the result below, **AND**

VERIFY the result is less than or equal to 30 seconds. (**Acc Crit**) _____

Total Channel Time	Sec

[37] **LABEL** the recorder chart "2-LS-3-173E Setpoint, 2-RLY-3-62A and Total Channel Time Delay" and save this chart for the record. _____

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

6.0 PERFORMANCE (continued)

[38] **ADJUST** Turbine Inlet pressure switch and SG Low-Low Level switch inputs to the values specified below, **AND**

VERIFY the trip indicating lights on each of the switches is in the state specified. _____

Simulator	Simulated Input (mAdc)	Switch Trip Indication
2-PS-1-314	10.00 ± 0.16 mAdc	LIT
2-PS-1-315	10.00 ± 0.16 mAdc	LIT
2-LS-3-172E	5.2 ± 0.16 mAdc	LIT
2-LS-3-173E	5.2 ± 0.16 mAdc	LIT
2-LS-3-174E	6.6 ± 0.16 mAdc	NOT LIT
2-LS-3-175E	6.6 ± 0.16 mAdc	NOT LIT

[39] **ENSURE** the recorder is operating properly and displaying the following minimum channels: _____

Recorder Channel	Channel Label	Required State
3	2-LS-3-172E	< 5.92 mAdc
4	2-LS-3-173E	< 5.92 mAdc
5	2-LS-3-174E	> 5.92 mAdc
6	2-LS-3-175E	> 5.92 mAdc
7	2-RLY-3-62A	Open Contact
10	Turb Trip	Open Contact
11	AFW PMP 2A-S & 2A-A Start	Open Contact
12	AFW PMP 2A-S & 2B-B Start	Open Contact

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

6.0 PERFORMANCE (continued)

[40] **SLOWLY DECREASE** the input to 2-LS-3-174E, SG 1 LOW LOW LEVEL, while observing the switch indicating light, **AND**

RECORD the input value displayed on recorder channel 5 (2-LS-3-174E) when the indicating light extinguishes, **AND**

VERIFY the recorded SG Low-Low Level trip point is between 5.59 to 6.25 mAdc (5.92 mAdc nominal). (**Acc Crit**) _____

mAdc

[41] **DETERMINE** the time from when the recorder Channel 5 (2-LS-3-174E) input tripped 2-LS-3-174E, SG 1 LOW LOW LEVEL, indicating light and the time recorder Channel 7 indicated 2-RLY-3-62A, TIME DELAY PICKUP RELAY, actuated, **AND**

RECORD the response time below, **AND**

VERIFY the recorded response time is between 22.5 to 27.5 seconds (25 seconds nominal). _____

Sec

[42] **DETERMINE** the time from when the recorder Channel 7 (2-RLY-3-62A, TIME DELAY PICKUP RELAY) indicated the relay actuated and the time each AMSAC trip output listed below actuated, **AND**

RECORD the response time below, **AND**

VERIFY the recorded response time is less than 1 second. (**Acc Crit**) _____

Chan 10 Turb Trip	Sec
Chan 11 AFW PMP 2A-S & 2A-A Start	Sec
Chan 12 AFW PMP 2A-S & 2B-B Start	Sec

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

6.0 PERFORMANCE (continued)

[43] **DETERMINE** the time from when the recorder Channel 5 (2-LS-3-174E) input tripped 2-LS-3-174E, SG 1 LOW LOW LEVEL, indicating light and the time each AMSAC trip output listed below actuated, **AND**

RECORD the response time below. (**Acc Crit**) _____

Chan 10 Turb Trip	Sec
Chan 11 AFW PMP 2A-S & 2A-A Start	Sec
Chan 12 AFW PMP 2A-S & 2B-B Start	Sec

[44] **ADD** the 2-L-3-174 instrument loop response time recorded in 4.1[19] to the largest of the logic output response times recorded in 6.0[43], **AND**

RECORD the result below, **AND**

VERIFY the result is less than or equal to 30 seconds. (**Acc Crit**) _____

Total Channel Time _____ Sec

[45] **LABEL** the recorder chart "2-LS-3-174E Setpoint, 2-RLY-3-62A and Total Channel Time Delay" and save this chart for the record. _____

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

6.0 PERFORMANCE (continued)

[46] **ADJUST** Turbine Inlet pressure switch and SG Low-Low Level switch inputs to the values specified below, **AND**

VERIFY the trip indicating lights on each of the switches is in the state specified. _____

Simulator	Simulated Input (mAdc)	Switch Trip Indication
2-PS-1-314	10.00 ± 0.16 mAdc	LIT
2-PS-1-315	10.00 ± 0.16 mAdc	LIT
2-LS-3-172E	6.6 ± 0.16 mAdc	NOT LIT
2-LS-3-173E	5.2 ± 0.16 mAdc	LIT
2-LS-3-174E	5.2 ± 0.16 mAdc	LIT
2-LS-3-175E	6.6 ± 0.16 mAdc	NOT LIT

[47] **ENSURE** the recorder is operating properly and displaying the following minimum channels: _____

Recorder Channel	Channel Label	Required State
3	2-LS-3-172E	> 5.92 mAdc
4	2-LS-3-173E	< 5.92 mAdc
5	2-LS-3-174E	< 5.92 mAdc
6	2-LS-3-175E	> 5.92 mAdc
7	2-RLY-3-62A	Open Contact
10	Turb Trip	Open Contact
11	AFW PMP 2A-S & 2A-A Start	Open Contact
12	AFW PMP 2A-S & 2B-B Start	Open Contact

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

6.0 PERFORMANCE (continued)

[48] **SLOWLY DECREASE** the input to 2-LS-3-175E, SG 4 LOW LOW LEVEL, while observing the switch indicating light, **AND**

RECORD the input value displayed on recorder channel 6 (2-LS-3-175E) when the indicating light extinguishes, **AND**

VERIFY the recorded SG Low-Low Level trip point is between 5.59 and 6.25 mAdc (5.92 mAdc nominal). (**Acc Crit**) _____

mAdc

[49] **DETERMINE** the time from when the recorder Channel 6 (2-LS-3-175E) input tripped 2-LS-3-175E, SG 4 LOW LOW LEVEL, indicating light and the time recorder Channel 7 indicated 2-RLY-3-62A, TIME DELAY PICKUP RELAY, actuated, **AND**

RECORD the response time below, **AND**

VERIFY the recorded response time is between 22.5 to 27.5 seconds (25 seconds nominal). _____

Sec

[50] **DETERMINE** the time from when the recorder Channel 7 (2-RLY-3-62A, TIME DELAY PICKUP RELAY) indicated the relay actuated and the time each AMSAC trip output listed below actuated, **AND**

RECORD the response time below, **AND**

VERIFY the recorded response time is less than 1 second. (**Acc Crit**) _____

Chan 10 Turb Trip	Sec
Chan 11 AFW PMP 2A-S & 2A-A Start	Sec
Chan 12 AFW PMP 2A-S & 2B-B Start	Sec

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

6.0 PERFORMANCE (continued)

[51] **DETERMINE** the time from when the recorder Channel 6 (2-LS-3-175E) input tripped 2-LS-3-175E, SG 4 LOW LOW LEVEL, indicating light and the time each AMSAC trip output listed below actuated, **AND**

RECORD the response time below. (**Acc Crit**) _____

Chan 10 Turb Trip	Sec
Chan 11 AFW PMP 2A-S & 2A-A Start	Sec
Chan 12 AFW PMP 2A-S & 2B-B Start	Sec

[52] **ADD** the 2-L-3-175 instrument loop response time recorded in 4.1[19] to the largest of the logic output response times recorded in 6.0[51], **AND**

RECORD the result below, **AND**

VERIFY the result is less than or equal to 30 seconds. (**Acc Crit**) _____

Total Channel Time _____ Sec

[53] **LABEL** the recorder chart "2-LS-3-175E Setpoint, 2-RLY-3-62A and Total Channel Time Delay" and save this chart for the record. _____

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

6.0 PERFORMANCE (continued)

NOTE

Additional logic and test switch functions are verified during performance of the following steps. Recordings to complete these steps do NOT need to be retained for the record.

[54] **ADJUST** Turbine Inlet pressure switch and SG Low-Low Level switch inputs to the values specified below, **AND**

VERIFY the trip indicating lights on each of the switches is in the state specified. _____

Simulator	Simulated Input (mAdc)	Switch Trip Indication
2-PS-1-314	10.00 ± 0.16 mAdc	LIT
2-PS-1-315	10.00 ± 0.16 mAdc	LIT
2-LS-3-172E	5.2 ± 0.16 mAdc	LIT
2-LS-3-173E	5.2 ± 0.16 mAdc	LIT
2-LS-3-174E	6.6 ± 0.16 mAdc	NOT LIT
2-LS-3-175E	6.6 ± 0.16 mAdc	NOT LIT

[55] **VERIFY** the AMSAC output indicated on recorder Channel 10 labeled "Turb Trip" is reset (OPEN contact). _____

[56] **PLACE** 2-HS-3-172E, SG 3 LEVEL SWITCH TRIP, located in 2-R-178, AMSAC EQUIPMENT PANEL, to the TRIP position, **AND**

VERIFY the AMSAC output indicated on recorder Channel 10 labeled "Turb Trip" is reset (OPEN contact). _____

[57] **PLACE** 2-HS-3-172E, SG 3 LEVEL SWITCH TRIP, located in 2-R-178, AMSAC EQUIPMENT PANEL, to the AUTO position. _____

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

6.0 PERFORMANCE (continued)

[58] **PLACE** 2-HS-3-173E, SG 2 LEVEL SWITCH TRIP, located in 2-R-178, AMSAC EQUIPMENT PANEL, to the TRIP position, **AND**

VERIFY the AMSAC output indicated on recorder Channel 10 labeled "Turb Trip" is reset (OPEN contact). _____

[59] **PLACE** 2-HS-3-173E, SG 2 LEVEL SWITCH TRIP, located in 2-R-178, AMSAC EQUIPMENT PANEL, to the AUTO position. _____

[60] **PLACE** 2-HS-3-174E, SG 1 LEVEL SWITCH TRIP, located in 2-R-178, AMSAC EQUIPMENT PANEL, to the TRIP position, **AND**

VERIFY the AMSAC output indicated on recorder Channel 10 labeled "Turb Trip" is tripped (CLOSED contact). _____

[61] **PLACE** 2-HS-3-174E, SG 1 LEVEL SWITCH TRIP, located in 2-R-178, AMSAC EQUIPMENT PANEL, to the AUTO position, **AND**

VERIFY the AMSAC output indicated on recorder Channel 10 labeled "Turb Trip" is reset (OPEN contact). _____

[62] **PLACE** 2-HS-3-175E, SG 4 LEVEL SWITCH TRIP, located in 2-R-178, AMSAC EQUIPMENT PANEL, to the TRIP position, **AND**

VERIFY the AMSAC output indicated on recorder Channel 10 labeled "Turb Trip" is tripped (CLOSED contact). _____

[63] **PLACE** 2-HS-3-175E, SG 4 LEVEL SWITCH TRIP, located in 2-R-178, AMSAC EQUIPMENT PANEL, to the AUTO position. _____

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

6.0 PERFORMANCE (continued)

[64] **ADJUST** the current source for Turbine Inlet pressure switch and SG Low-Low Level switch inputs to the values specified below, **AND**

VERIFY the trip indicating lights on each of the switches is in the state specified. _____

Simulator	Simulated Input (mAdc)	Switch Trip Indication
2-PS-1-314	10.00 ± 0.16 mAdc	LIT
2-PS-1-315	10.00 ± 0.16 mAdc	LIT
2-LS-3-172E	6.6 ± 0.16 mAdc	NOT LIT
2-LS-3-173E	6.6 ± 0.16 mAdc	NOT LIT
2-LS-3-174E	5.2 ± 0.16 mAdc	LIT
2-LS-3-175E	6.6 ± 0.16 mAdc	NOT LIT

[65] **VERIFY** the AMSAC output indicated on recorder Channel 10 labeled "Turb Trip" is reset (OPEN contact). _____

[66] **PLACE** 2-HS-3-172E, SG 3 LEVEL SWITCH TRIP, located in 2-R-178, AMSAC EQUIPMENT PANEL, to the TRIP position, **AND**

VERIFY the AMSAC output indicated on recorder Channel 10 labeled "Turb Trip" is reset (OPEN contact). _____

[67] **PLACE** 2-HS-3-173E, SG 2 LEVEL SWITCH TRIP, located in 2-R-178, AMSAC EQUIPMENT PANEL, to the TRIP position, **AND**

VERIFY the AMSAC output indicated on recorder Channel 10 labeled "Turb Trip" is tripped (CLOSED contact). _____

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

6.0 PERFORMANCE (continued)

[68] **PLACE** 2-HS-3-173E, SG 2 LEVEL SWITCH TRIP, located in 2-R-178, AMSAC EQUIPMENT PANEL, to the AUTO position, **AND**

VERIFY the AMSAC output indicated on recorder Channel 10 labeled "Turb Trip" is reset (OPEN contact). _____

[69] **PLACE** 2-HS-3-174E, SG 1 LEVEL SWITCH TRIP, located in 2-R-178, AMSAC EQUIPMENT PANEL, to the TRIP position, **AND**

VERIFY the AMSAC output indicated on recorder Channel 10 labeled "Turb Trip" is reset (OPEN contact). _____

[70] **PLACE** 2-HS-3-174E, SG 1 LEVEL SWITCH TRIP, located in 2-R-178, AMSAC EQUIPMENT PANEL, to the AUTO position. _____

[71] **PLACE** 2-HS-3-175E, SG 4 LEVEL SWITCH TRIP, located in 2-R-178, AMSAC EQUIPMENT PANEL, to the TRIP position, **AND**

VERIFY the AMSAC output indicated on recorder Channel 10 labeled "Turb Trip" is tripped (CLOSED contact). _____

[72] **PLACE** 2-HS-3-175E, SG 4 LEVEL SWITCH TRIP, located in 2-R-178, AMSAC EQUIPMENT PANEL, to the AUTO position, **AND**

VERIFY the AMSAC output indicated on recorder Channel 10 labeled "Turb Trip" is reset (OPEN contact). _____

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

7.0 POST-PERFORMANCE ACTIVITIES

[1] **NOTIFY** Unit 2 Operations that the following indicators will indicate zero when test equipment is disconnected.

A. 2-LI-3-172, T-D AFW PUMP SG 3 LEVEL [2-M-3] _____

B. 2-LI-3-173, T-D AFW PUMP SG 2 LEVEL [2-M-3] _____

C. 2-LI-3-174, T-D AFW PUMP SG 1 LEVEL [2-M-3] _____

D. 2-LI-3-175, T-D AFW PUMP SG 4 LEVEL [2-M-3] _____

[2] **PRESS** 2-HS-3-264A, AMSAC TEST/BLK/OPERATE pushbutton on 2-M-3, in the AMSAC TEST/BLOCK position. _____

[3] **REMOVE** transmitter simulator or current source, DMM and recorder leads from the 2-R-178, AMSAC EQUIPMENT PANEL, terminations specified below:

A. Terminal Block TB1, Terminal Points 1 and 2. _____

B. Terminal Block TB1, Terminal Points 4 and 5. _____

C. Terminal Block TB1, Terminal Points 7 and 8. _____

D. Terminal Block TB1, Terminal Points 13 and 14. _____

E. Terminal Block TB1, Terminal Points 16 and 17. _____

F. Terminal Block TB1, Terminal Points 19 and 20. _____

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

7.0 POST-PERFORMANCE ACTIVITIES (continued)

[4] **TERMINATE** the lifted leads from terminal block TB1 in 2-R-178 as specified below:

A. SG Level 2-LM-3-172E

White wire (A1706) from Cable 2PM5577 to Terminal Block TB1, Terminal Point 17 in 2-R-178, AMSAC EQUIPMENT PANEL. _____

_____
CV

B. SG Level 2-LM-3-173E

White wire (B1906) from Cable 2PM5576 to Terminal Block TB1, Terminal Point 14 in 2-R-178, AMSAC EQUIPMENT PANEL. _____

_____
CV

C. SG Level 2-LM-3-174E

White wire (B1806) from Cable 2PM5575 to Terminal Block TB1, Terminal Point 8 in 2-R-178, AMSAC EQUIPMENT PANEL. _____

_____
CV

D. SG Level 2-LM-3-175E

White wire (A1606) from Cable 2PM5578 to Terminal Block TB1, Terminal Point 20 in 2-R-178, AMSAC EQUIPMENT PANEL. _____

_____
CV

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

7.0 POST-PERFORMANCE ACTIVITIES (continued)

E. Turbine Inlet Pressure 2-PT-1-314

White wire (TCP02) from Cable 2PM5579 to Terminal Block TB1, Terminal Point 2 in 2-R-178, AMSAC EQUIPMENT PANEL. _____

_____
CV

F. Turbine Inlet Pressure 2-PT-1-315

White wire (TPC04) from Cable 2PM5580 to Terminal Block TB1, Terminal Point 5 in 2-R-178, AMSAC EQUIPMENT PANEL. _____

_____
CV

[5] **REMOVE** the test leads between recorder channels 7 and 8 from the 2-R-178, AMSAC EQUIPMENT PANEL, terminations specified below:

A. Relay U (2-RLY-003-62A, TIME DELAY PICKUP RELAY), Terminals 2 and 6. _____

_____
CV

B. Relay V (2-RLY-003-62B, TIME DELAY DROPOUT RELAY), Terminals 4 and 6. _____

_____
CV

[6] **REMOVE** the test leads between recorder channels 10, 11 and 12 from the 2-R-178, AMSAC EQUIPMENT PANEL, terminations specified below:

A. Terminal Block TB4, Terminal Points 3 and 4 _____

B. Terminal Block TB4, Terminal Points 5 and 6 _____

C. Terminal Block TB4, Terminal Points 7 and 8 _____

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

7.0 POST-PERFORMANCE ACTIVITIES (continued)

[7] **TERMINATE** the lifted leads from terminal block TB4 in 2-R-178, AMSAC EQUIPMENT PANEL, as specified below:

A. AMSAC Turbine Trip

Black wire (TTPP) from Cable 2M3606 to Terminal Block TB4, Terminal Point 3 in 2-R-178, AMSAC EQUIPMENT PANEL. _____

_____
CV

B. AMSAC AFW Pump 2A-S and 2A-A Start

BLACK wire (ATT1) from Cable 2M3605 to Terminal Block TB4 Terminal Point 5 in 2-R-178, AMSAC EQUIPMENT PANEL. _____

_____
CV

C. AMSAC AFW Pump 2A-S and 2B-B Start

BLACK wire (TTCS1) from Cable 2M3607 to Terminal Block TB4 Terminal Point 7 in 2-R-178, AMSAC EQUIPMENT PANEL. _____

_____
CV

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

7.0 POST-PERFORMANCE ACTIVITIES (continued)

[8] **ENSURE** that each of the switches, located in AMSAC panel, 2-R-178, AMSAC EQUIPMENT PANEL, are in the "AUTO" position.

A. 2-HS-3-172E, SG 3 LEVEL SWITCH TRIP, in AUTO. _____

_____
CV

B. 2-HS-3-173E, SG 2 LEVEL SWITCH TRIP, in AUTO. _____

_____
CV

C. 2-HS-3-174E, SG 1 LEVEL SWITCH TRIP, in AUTO. _____

_____
CV

D. 2-HS-3-175E, SG 4 LEVEL SWITCH TRIP, in AUTO. _____

_____
CV

CAUTION

Due to plant conditions that may be present, placing 2-HS-3-264A, AMSAC TEST/BLK/OPERATE pushbutton on 2-M-3, in the AMSAC OPERABLE position may result in AMSAC trip outputs to Turbine Trip and AFW Pump Start logic.

[9] **NOTIFY** Unit 2 Operations that testing in AMSAC panel 2-R-178, AMSAC EQUIPMENT PANEL, is complete, equipment configuration has been returned to normal and that 2-HS-3-264A, AMSAC TEST/BLK/OPERATE pushbutton on 2-M-3, may be returned to the position required by plant conditions. _____

[10] **NOTIFY** the Unit 2 US/SRO of the test completion and system alignment. _____

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

7.0 POST-PERFORMANCE ACTIVITIES (continued)

[11] **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. _____

_____
CV

[12] **VERIFY** that Post-test calibration of permanent plant instruments used to record quantitative acceptance criteria has been satisfactorily performed, **AND**

RECORD the results on Appendix C, Permanent Plant Instrumentation Log. _____

_____
CV

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

8.0 RECORDS

A. QA Records

Completed Test Package

B. Non-QA Records

None

Appendix A
(Page 1 of 1)

TEST PROCEDURES/INSTRUCTIONS REFERENCE REVIEW

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

NOTES

1) Additional copies of this table may be made as necessary.
2) Initial and date indicates review has been completed for impact.

PROCEDURE/ INSTRUCTION	REVISION/CHANGES	INITIAL AND DATE. (N/A for no change)
FSAR Section 7.7.1.12 Table 14.2-1 Sheet 84 of 89		
WBN-VTD-M422-0020		
2-IMI-3.005		
SSD-2-L-3-172 (Review against SSD-1-L-3-172)		
SSD-2-L-3-173 (Review against SSD-1-L-3-173)		
SSD-2-L-3-174 (Review against SSD-1-L-3-174)		
SSD-2-L-3-175 (Review against SSD-1-L-3-175)		
SSD-2-L-1-314 (Review against SSD-1-L-1-314)		
SSD-2-L-1-315 (Review against SSD-1-L-1-315)		
2-TSD-03B-6		
EDCR 52408A		

Appendix B
(Page 1 of 1)

TEMPORARY CONDITION LOG

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

NOTES

1) These steps will be N/A'd if no temporary condition existed
2) 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 1)

PERMANENT PLANT INSTRUMENTATION LOG

Data Package: Page ____ of ____ **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		

[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)
CONFIGURATION CONTROL LOG FOR WIRE LIFTS

CONFIGURATION CONTROL LOG FOR WIRE LIFTS					Sheet _____ of _____	
NOTES 1. Any time wires are lifted and are left unattended, there must be a nonconductive tag attached to them identifying the work instruction that required the wire to be lifted. 2. Additional copies of this table may be made as necessary.						
AFFECTED DEVICE	**WIRING DATA**		**OTHER DATA AS APPROPRIATE**	**AS-FOUND VERIFICATION**		**AS-LEFT VERIFICATION**	
COMPONENT ID **Terminal Block, Relay, etc.**	**Wire Number**	**Terminal Number**	**Drawing, Location, Panel, Box, Color, etc.**	**Initial** **Date**	**CV** **Date**	**Initial** **Date**	**CV** **Date**
Turbine Trip	2M3606	TB4	Black wire (TTPP) TB4 Point 3 in 2-R-178				
TDAFW Pump 2A-S and MDAFW Pump 2A-A Start	2M3605	TB4	Black wire (ATT1) TB4 Point 5 in 2-R-178				
TDAFW Pump 2A-S and MDAFW Pump 2B-B Start	2M3607	TB4	Black wire (TTCS1) TB4 point 7 in 2-R-178				
2-LM-3-174E	2PM5575	TB1	White wire (B1806) TB1 point 8 in 2-R-178				
2-LM-3-173E	2PM5576	TB1	White wire (B1906) TB1 point 14 in 2-R-178				

Appendix D
(Page 2 of 3)
CONFIGURATION CONTROL LOG FOR WIRE LIFTS

CONFIGURATION CONTROL LOG FOR WIRE LIFTS						Sheet _____ of _____	
NOTES 1. Any time wires are lifted and are left unattended, there must be a nonconductive tag attached to them identifying the work instruction that required the wire to be lifted. 2. Additional copies of this table may be made as necessary.							
AFFECTED DEVICE	**WIRING DATA**		**OTHER DATA AS APPROPRIATE**	**AS-FOUND VERIFICATION**		**AS-LEFT VERIFICATION**	
COMPONENT ID Terminal Block, Relay, etc.	**Wire Number**	**Terminal Number**	**Drawing, Location, Panel, Box, Color, etc.**	**Initial Date**	**CV Date**	**Accept Yes/No**	**CV Date**
2-LM-3-172E	2PM5577	TB1	White wire(A1706) TB1 point 17 to 2-R-178				
2-LM-3-175E	2PM5578	TB1	White wire (A1606) TB1 point 20 in 2-R-178				
2-PT-1-314	2PM5579	TB1	White wire (TCP02) TB1 point 2 in 2-R-178				
2-PT-1-315	2PM5580	TB1	White wire (TCP04) TB1 point 5 to 2-R-178				

Appendix D
(Page 3 of 3)
CONFIGURATION CONTROL LOG FOR WIRE LIFTS

CONFIGURATION CONTROL LOG FOR WIRE LIFTS						Sheet _____ of _____	
NOTES 1. Any time wires are lifted and are left unattended, there must be a nonconductive tag attached to them identifying the work instruction that required the wire to be lifted. 2. Additional copies of this table may be made as necessary.							
AFFECTED DEVICE	**WIRING DATA**		**OTHER DATA AS APPROPRIATE**	**AS-FOUND VERIFICATION**		**AS-LEFT VERIFICATION**	
COMPONENT ID **Terminal Block, Relay, etc.**	**Wire Number**	**Terminal Number**	**Drawing, Location, Panel, Box, Color, etc.**	**Initial** **Date**	**CV** **Date**	**Accept** **Yes/No**	**CV** **Date**

WATTS BAR NUCLEAR PLANT
UNIT 2 PREOPERATIONAL TEST

TITLE: ERCW SYSTEM FLOW BALANCE -TRAIN A

Instruction No: 2-PTI-067-02-A

Revision No: 0000

PREPARED BY: Jason Brown / _____ DATE: 2-3-11
PRINT NAME / SIGNATURE

REVIEWED BY: Craig Williams / _____ DATE: 2/3/11
PRINT NAME / SIGNATURE

INSTRUCTION APPROVAL

JTG MEETING No: 2-11-004

JTG CHAIRMAN: _____ DATE: 2/10/11

APPROVED BY : _____ DATE: 2/10/11
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
0	2/10/11	All	Initial Issue

Table of Contents

Table of Contents (continued)

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

1.0 INTRODUCTION

1.1 Test Objectives

The purpose of this test is to verify proper flow balancing of the Essential Raw Cooling Water System (ERCW), Train A, for combined Unit 1 and Unit 2 operation. ERCW components will be observed for any obvious excessive vibration during steady state flow conditions. The system boundary for this test includes the piping, instrumentation, valves and heat exchangers of both Unit 1 and Unit 2. Flow rates will primarily be monitored via electronic flow measurement devices, although use of dp gauges is permissible as determined by the applicable test engineer.

1.2 Scope

A. Ensure Two ERCW pumps on Train A provide design flow to all applicable components under the following conditions:

1. Unit 1 Normal Operating Mode, Unit 2 Normal Operating Mode
2. Unit 1 Cold Shutdown, Unit 2 LOCA RECIRC
3. Unit 1 LOCA RECIRC, Unit 2 Cold Shutdown
4. Unit 1 Hot Shutdown, Unit 2 Startup

B. CCS Heat Exchangers bypass anticavitation valves will be tested for reduction of system piping vibration.

2.0 REFERENCES

2.1 Performance References:

A. SMP-9.0, Conduct of Test

2.2 Developmental References:

A. Final Safety Analysis Report

1. FSAR - Amendment 102
   a. Section 9.2.1, Essential Raw Cooling Water
   b. Table 14.2-1, Sheets 4 and 5 of 89

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

2.2 Developmental References: (continued)

B. Drawings

1. Flow Drawings

a. 1-47W845-1 Rev 57, Series Mechanical Flow Diagram, Essential Raw Cooling Water

(1) 56341-001 Rev 0

(2) 56341-002 Rev 0

b. 1-47W845-2 Rev 76, Series Mechanical Flow Diagram, Essential Raw Cooling Water

(1) 53427-1 Rev 0

(2) 53687-1 Rev 0

(3) 55992-40 Rev 0

(4) 55992-41 Rev 0

(5) 55992-42 Rev 0

(6) 55992-43 Rev 0

(7) 53545-02-25 Rev 0

(8) 53545-02-26 Rev 0

c. 2-47W845-2 Rev 0, Series Mechanical Flow Diagram, Essential Raw Cooling Water

(1) 52796-195 Rev 0

d. 1-47W845-3 Rev 25, Series Mechanical Flow Diagram, Essential Raw Cooling Water

e. 2-47W845-3 Rev 1, Series Mechanical Flow Diagram, Essential Raw Cooling Water

(1) 52796-001 Rev 0

(2) 52796-002 Rev 2

(3) 53817-008 Rev 0

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

2.2 Developmental References: (continued)

(4) 53817-018 Rev 0

(5) 53817-020 Rev 0

(6) 54903-002 Rev 0

(7) 54903-011Rev 0

(8) 54903-014Rev 0

(9) 53545-01-032 Rev 1

(10) 53545-01-033 Rev 0

f. 1-47W845-4 Rev 32, Series Mechanical Flow Diagram, Essential Raw Cooling Water

g. 2-47W845-4 Rev 0, Series Mechanical Flow Diagram, Essential Raw Cooling Water

h. 1-47W845-5 Rev 38, Series Mechanical Flow Diagram, Essential Raw Cooling Water

i. 2-47W845-5 Rev 1, Series Mechanical Flow Diagram, Essential Raw Cooling Water

j. 1-47W845-7 Rev 16, Series Mechanical Flow Diagram, Essential Raw Cooling Water

k. 2-47W845-7 Rev 0, Series Mechanical Flow Diagram, Essential Raw Cooling Water

(1) 52764-003 Rev 0

(2) 52764-006 Rev 0

(3) 52764-008 Rev 0

(4) 52764-010 Rev 0

(5) 52764-012 Rev 0

(6) 52764-013 Rev 0

(7) 52764-014 Rev 0

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

2.2 Developmental References: (continued)

(8) 52764-015 Rev 0

(9) 53817-006 Rev 0

(10) 53817-012 Rev 0

(11) 53986-041 Rev 0

(12) 53986-043 Rev 0

(13) 53986-045 Rev 0

(14) 54923-351 Rev 0

l. 2-47W848-5 Rev 1, Mechanical Flow Diagram Control Air

(1) 53276-304 Rev 0

m. 1-47W848-9 Rev 13, Mechanical Flow Diagram Control Air

n. 2-47W848-9 Rev 1, Mechanical Flow Diagram Conrol Air

(1) 53276-306 Rev 0

(2) 53764-39 Rev 0

(3) 53340-001 Rev 0

(4) 53917-57 Rev 0

2. Electrical

a. 1-47W610-67-1 Rev 27, Electrical Control Diagram, ERCW System

b. 1-47W610-67-1A Rev 16, Electrical Control Diagram, ERCW System

(1) 52376-01-001 Rev 0

(2) 52376-01-002 Rev 0

(3) 52376-01-003 Rev 0

(4) 52376-04-004 Rev 0

(5) 53111-03-021 Rev 0

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

2.2 Developmental References: (continued)

c. 1-47W610-67-2 Rev 17, Electrical Control Diagram, ERCW System

d. 2-47W610-67-2 Rev 1, Electrical Control Diagram, ERCW System

(1) 52796-003 Rev 0

(2) 52796-004 Rev 0

(3) 53649-103 Rev 0

(4) 53649-104 Rev 0

(5) 53746-100 Rev 0

(6) 53746-101 Rev 0

(7) 53746-102 Rev 0

(8) 53746-103 Rev 0

(9) 53746-108 Rev 0

(10) 53746-109 Rev 0

(11) 53746-113 Rev 0

(12) 53746-116 Rev 0

(13) 53986-001 Rev 0

(14) 53986-002 Rev 0

(15) 54039-041 Rev 0

(16) 54039-042 Rev 0

(17) 54039-043 Rev 0

(18) 54039-044 Rev 0

(19) 54039-061 Rev 0

(20) 54039-062 Rev 0

(21) 54039-069 Rev 0

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2.2 Developmental References: (continued)

(22) 53630-008 Rev 1

(23) 53630-010 Rev 1

(24) 53630-011 Rev 1

(25) 54850-025 Rev 0

(26) 54850-026 Rev 0

(27) 54850-029 Rev 0

(28) 54850-030 Rev 0

(29) 54850-031 Rev 0

e. 1-47W610-67-2A Electrical Control Diagram, ERCW System

(1) 55802-003 Rev 0

(2) 55802-004 Rev 0

f. 1-47W610-67-3 Rev 13, Electrical Control Diagram, ERCW System

g. 2-47W610-67-3 Rev 3, Electrical Control Diagram, ERCW System

(1) 53817-031 Rev 0

(2) 53545-01-055 Rev 0

(3) 54039-051 Rev 0

(4) 54039-052 Rev 0

(5) 54039-055 Rev 1

(6) 54039-056 Rev 1

(7) 54039-058 Rev 1

(8) 54039-060 Rev 0

(9) 53643-009 Rev 0

(10) 53643-010 Rev 0

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2.2 Developmental References: (continued)

(11) 54039-051 Rev 0

(12) 54039-059 Rev 0

(13) 52378-474 Rev 0

(14) 54903-314 Rev 0

(15) 54903-315 Rev 0

h. 1-47W610-67-3A, Electrical Control Diagram, ERCW System

(1) 53545-01-050 Rev 0

(2) 53545-01-052 Rev 0

i. 1-47W610-67-4 Rev 17, Electrical Control Diagram, ERCW System

j. 2-47W610-67-4 Rev 0,Electrical Control Diagram, ERCW System

(1) 54039-070 Rev 0

k. 2-45W751-1Rev 1, Electrical Power Supplies, RMOV 2A1-A

(1) 53287-155 Rev 0

(2) 53421-219 Rev 0

(3) 53421-311 Rev 0

(4) 54851-133 Rev 0

(5) 54852-108 Rev 0

l. 2-45W751-2 Rev 0, Electrical Power Supply, RMOV 2A1-A

(1) 53036-2 Rev 0

(2) 53287-156 Rev 0

(3) 53352-10 Rev 0

(4) 53421-220 Rev 0

(5) 53421-313 Rev 0

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

2.2 Developmental References: (continued)

(6) 54850-147 Rev 0

(7) 54850-148Rev 0

(8) 54851-134 Rev 0

(9) 54870-108 Rev 0

(10) 54870-109 Rev 0

m. 2-45W751-3 Rev 1, Electrical Power Supplies, RMOV 2A1-A

(1) 53948-51 Rev 0

(2) 55707-201 Rev 0

(3) 52639-2 Rev 1

(4) 52639-110 Rev 0

(5) 53287-157 Rev 0

(6) 53554-3 Rev 0

(7) 53554-4 Rev 0

(8) 54255-34 Rev 0

(9) 54655-21 Rev 0

(10) 54851-135 Rev 0

(11) 54851-136 Rev 0

(12) 54852-109 Rev 0

(13) 54852-110 Rev 0

n. 2-45W751-4 Rev 0, Electrical Power Supplies, RMOV 2A2-A

(1) 53270-10 Rev 1

(2) 53817-75 Rev 0

(3) 53986-9 Rev 0

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

2.2 Developmental References: (continued)

(4) 52639-3 Rev 1

(5) 53288-81 Rev 1

(6) 54850-175 Rev 0

(7) 54850-202 Rev 0

(8) 54852-111 Rev 0

(9) 54903-248 Rev 0

o. 2-45W751-5 Rev 0, Electrical Power Supplies, RMOV 2A2-A

(1) 53746-52 Rev 0

(2) 53817-71 Rev 0

(3) 53817-72 Rev 0

(4) 53986-10 Rev 0

(5) 53288-82 Rev 1

(6) 54850-176 Rev 0

(7) 54850-177 Rev 0

(8) 54850-211 Rev 0

p. 2-45W751-6 Rev 0, Electrical Power Supplies, RMOV 2A2-A

(1) 53288-83 Rev 1

(2) 53343-7 Rev 0

(3) 53537-312 Rev 0

(4) 53580-340 Rev 0

(5) 54655-22 Rev 0

(6) 54850-203 Rev 0

q. 2-45W751-7 Rev 1, Electrical Power Supplies, RMOV 2B1-B

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

2.2 Developmental References: (continued)

(1) 53292-92 Rev 1

(2) 53421-221 Rev 0

(3) 53421-312 Rev 0

(4) 54850-150 Rev 0

(5) 54851-139 Rev 0

(6) 54870-112 Rev 0

r. 2-45W751-8 Rev 1, Electrical Power Supplies, RMOV 2B1-B

(1) 53036-1 Rev 0

(2) 53292-93 Rev 1

(3) 53421-222 Rev 0

(4) 54655-20 Rev 0

(5) 54850-151 Rev 0

(6) 54850-152 Rev 0

(7) 54851-140 Rev 0

(8) 54852-112 Rev 0

(9) 54870-110 Rev 0

(10) 54870-111 Rev 0

(11) 55337-21 Rev 0

(12) 55337-23 Rev 0

s. 2-45W751-9 Rev 0, Electrical Power Supplies, RMOV 2B1-B

(1) 55707-202 Rev 0

(2) 52639-4 Rev 1

(3) 52639-111 Rev 0

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

2.2 Developmental References: (continued)

(4) 53292-94 Rev 1

(5) 54255-21 Rev 0

(6) 54255-31 Rev 0

(7) 54851-141 Rev 0

(8) 54851-142 Rev 0

t. 2-45W751-10 Rev 2, Electrical Power Supplies, RMOV 2B-2B

(1) 53270-9 Rev 1

(2) 53817-73 Rev 0

(3) 53817-76 Rev 0

(4) 53986-11 Rev 0

(5) 53293-70 Rev 0

(6) 53554-1 Rev 0

(7) 53554-2 Rev 0

(8) 54850-178 Rev 0

(9) 54850-212

(10) 54852-113 Rev 0

u. 2-45W751-11 Rev 0, Electrical Power Supplies, RMOV 2B2-B

(1) 53746-53 Rev 0

(2) 53817-74 Rev 0

(3) 53986-12 Rev 0

(4) 53293-69 Rev 0

(5) 53293-71 Rev 0

(6) 53293-157

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

2.2 Developmental References: (continued)

(7) 54655-23 Rev 0

(8) 54850-179 Rev 0

(9) 54903-249 Rev 0

v. 2-45W751-12 Rev 0, Electrical Power Supplies, RMOV 2B2-B

(1) 53269-5 Rev 0

(2) 53269-6 Rev 0

(3) 53293-72 Rev 0

(4) 53537-313 Rev 0

(5) 53537-314 Rev 0

(6) 54850-204 Rev 0

w. 2-45W751-13 Rev 0, Electrical Power Supplies, RMOV 2A1-A

(1) 53287-158 Rev 0

(2) 54255-12 Rev 1

(3) 54850-149 Rev 1

(4) 54851-137 Rev 0

(5) 54870-139 Rev 0

x. 2-45W751-14 Rev 0, Electrical Power Supplies, RMOV 2B1-B

(1) 53292-95 Rev 1

(2) 54255-7 Rev 1

(3) 54850-153 Rev 0

(4) 54851-143 Rev 0

(5) 54870-138 Rev 0

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

2.2 Developmental References: (continued)

C. Documents

1. N3-67-4002 System Description for Essential Raw Cooling Water System, Rev 0 (thru DCN S-30288-A)
2. 2-TSD-067, Essential Raw Cooling Water System, Rev 0
3. SOI-67.1, Essential Raw Cooling Water System Operating Instruction, Draft Rev 0000
4. GOI-7, Rev 0038, Generic Equipment Operating Guilelines
5. VTD-M359-003 Rev 0, Valve Technical Manual for Metrex Model FTVA-400-WAT 4" 2 War Refrigerant Pressure Activated Condenser Cooling Water Control Valve.
6. 1-SOI-30.05, Auxiliary Building HVAC Systems, Rev 0050
7. 0-PI-OPS-17.0, 18 Month Locked Valve Verification Rev 0044

3.0 PRECAUTIONS AND LIMITATIONS

A. This PTI should be performed with U-1 WBN in Modes 5, 6 (or no mode core unloaded) and no fuel loaded in U-2 Reactor. Appropriate risk management must be performed to allow testing on protected equipment.

B. Standard precautions shall be followed for working around energized electrical equipment in accordance with TVA Safety Manual Procedure 1021.

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

D. 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.

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

3.0 PRECAUTIONS AND LIMITATIONS (continued)

E. Component tags and labels may differ slightly (abbreviations, punctuation, letter case, etc.) from the description given in this test. If this situation occurs, it shall not be considered a test deficiency or procedure deviation. It shall be documented in the CTL and reconciled by way of a plant labeling request or drawing discrepancy or single-line, date & initial change in the procedure as appropriate.

F. To maintain the operating pressures in the Header to within design limits during low flow conditions DO NOT exceed 133 psig at 0-PI-67-17, ERCW HEADER B PRESS, or 0-PI-67-18, ERCW HEADER A PRESS.

G. Equipment shall be operated in accordance with applicable instructions.

H. The following motor operating and starting limitations for the Essential Raw Cooling Water Pumps should NOT be exceeded:

1. Motor cold-two starts in succession.

2. Motor at operating temperature-one start.

I. Prior to any additional starts for either case above, either:

1. Allow motor to cool for 20 minutes while running at normal or no load.

2. Allow motor to cool for 45 minutes while standing idle before each additional restart.

J. In most cases it will be preferable to allow the motor to run for 20 minutes cooling cycle so that it will be available for any immediate restart.

K. ERCW Motor bearing temperatures should NOT exceed 122°F above ambient.

L. ERCW Pump upper bearing vibration should NOT exceed 3 mils displacement.

M. Plug Valves used for throttling flow in the ERCW System should NOT be throttled more than 80%.

N. The Upper Flow Values on the flow balance data sheets are based on Engineering's recommended maximum flows. The Engineering values were provided for operating purposes and may be exceeded (i.e., error corrections could result in higher than indicated flows) if this does NOT result in excessive vibration.

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

3.0 PRECAUTIONS AND LIMITATIONS (continued)

O. Flow rates will primarily be monitored via electronic flow measurement devices, although use of dp gauges is permissible as determined by the applicable test engineer.

P. Ensure that the pressure rating for all test equipment is greater than the maximum possible system pressure it will encounter during testing.

Q. TI-31.08, Flow Balancing Valves Setpoint Positions, must be revised after performance of 2-PTI-067-2-A and 2-PTI-067-2-B.

R. If flow is to be isolated to a component for any reason in this instruction, notify the Unit SRO(s) to consider any applicable LCOs.

S. The Test Director should inform the Unit Operators of current plant conditions when test is to be stopped for longer than a shift with plant equipment not in normal configuration.

T. To satisfy the retest requirements for post-work test of multiple ERCW System work orders, system components will be monitored for leakage during performance of the flow balance. Any observed leakage will be rectified through initiation of work requests.

U. All open problems (including non Tech Spec testing acceptance criteria) are to be tracked by a corrective action document and entered on the appropriate system punchlist.

V. 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.

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

X. Manual continous backwash flow >450 gpm is to be maintained for duration of test activities (all modes).

Y. Operations musts be aware that Station Air Compressors will be cooled by Train A ERCW during the flow balance. Tempatures must be monitored and steps taken to restore Control Air cooling in event of a Loss of Control Air.

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

4.0 PREREQUISITE ACTIONS

NOTE

1) The following prerequisites apply to all sections of the test unless specified otherwise.

2) Preliminary action steps may be performed in any order with Test Directors approval.

3) Re-Testing of applicable sections should be performed on clean copies of the tested segment with time and date of retest noted and documented on retest pages and in CTL.

4.1 Preliminary Actions

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

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

ATTACH to this PTI for use during the performance of this PTI. _____

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

[4] **VERIFY** current revisions and change paper for referenced drawings has been reviewed and determined NOT to adversely affect the test performance, **AND**

ATTACH documentation of current drawing revision numbers and change paper that were reviewed to the data package. _____

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

4.1 Preliminary Actions (continued)

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

ENSURE that respective punch list items will **NOT** adversely affect the test performance. _____

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

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

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

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

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

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

NOTE

Substitution of electronic or ultra-sonic flow measurement devices is acceptable provided the accuracy range is equal to or exceeds range specified, and calibration status is current.

[11] **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 in SMP-9.0. _____

[12] **VERIFY** Measuring and Test Equipment (M&TE) calibration due dates will support the completion of this test performance. _____

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

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

4.1 Preliminary Actions (continued)

[14] **OBTAIN** Operations approval to perform Electrical Switch alignment (Appendix D).

_____
SM/Unit SRO

NOTE

Electrically operated valves may be manually opened/closed if the electrical component is unavailable during testing.

[15] **OBTAIN** Operations approval to perform valve alignments (CHECKLIST 1 & 2), and Electrical Breaker alignment (CHECKLIST 3).

_____
SM/Unit SRO

[16] **VERIFY** the Plant Computer is available and the computer points for the ERCW pump bearings are active and the description and status for each computer point has been verified. _____

[17] **VERIFY** the following systems are operational and have been placed in service to the extent necessary to perform this test: _____

A. System 032, Control Air, Provides control air to all AOVs _____

B. System 211, 6.9KV Shutdown Power System _____

C. System 213, Reactor Motor Operated Valve Power System _____

D. System 214, 480V Control and Auxiliary Vent Power System _____

E. System 215, Diesel Auxiliary Power System _____

F. System 237, 120VAC Instrument Power System _____

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

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

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

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

4.1 Preliminary Actions (continued)

[21] **ENSURE** Operations has all essential loads aligned to the B-Train such as EBR chiller, MCR chiller, SDBR chiller, SFPCC B-Train is in service and is cooled by CCS HTX C. _____

[22] **ENSURE** RHR B-Train is in service if required. _____

[23] **ENSURE** B-Train ECCS room and area coolers , B-Train EGTS , ABGTS, penetration room and pipe chase coolers are protected. _____

[24] **REQUEST** operations to backwash traveling screens and strainers and

ESTABLISH a continual backwash flow of ≥ 450 gpm (manual). _____

4.2 Special Tools, M&TE, Parts, and Supplies.

NOTES

1) Substitution of electronic or ultra-sonic flow measurement devices (EFD) is acceptable provided the accuracy range is equal to or exceeds range specified, and calibration status is current.
2) If electronic flow measurement devices (EFD) are used, applicable steps in Section 4.3 related to other devices (such as dp gauges) may be N/A'd. Actual use of other flow measurement devices will be appropriately documented along with required calibration data

1. 0-50 in. WC Differential Pressure Gauge (±1%) (4 gauges ERCW Pumps)
2. 19 ea 0-200 psig Pressure Gauge (±1% accuracy)
3. Ultrasonic Flowmeters (±3%). (Upstream of 1-FCV-67-478, ERCW SUP TO CCS A HX)
4. Ultrasonic Flowmeters (±3%) Various components as specified in Appendix E, Data Sheet 1.

4.3 Field Preparations

[1] **VERIFY** Design Change Notices (DCNs) for Type 1 Supports are implemented or temporary supports installed as needed for U-2 System 67 testing are issued. _____

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

4.3 Field Preparations (continued)

[2] **VERIFY** remaining supports required for U-2 System 67 testing are in place or an equivalent engineering approved temporary support is installed. _____

[3] **VERIFY** spring cans identified for U-2 System 67 testing are installed, unpinned, and on scale with no visual indication of damage, loose parts or interferences. _____

[4] **VERIFY** snubbers identified for U-2 System 67 testing are installed with no visual indication of damage, loose parts or interferences. _____

[5] **RECORD** work order used to install EFDs for components as listed in Appendix H for common train items. _____

WO# _____

[6] **RECORD** work order used to install EFDs for components listed in Appendix E for Train A. _____

WO# _____

[7] **VERIFY** that the listed Air Isolation Valves have been CLOSED and the air BLED OFF to the following Control Valves and Control Valves are FULL OPEN (Section 6.1): _____

Air Isol. Valve	CLOSED	Control Valve	OPEN
1-ISV-32-3609	☐	1-TCV-67-84 LWR CONT VENT CLR 1A	☐
1-ISV-32-3610	☐	1-TCV-67-85 CRDM CLR 1A	☐
1-ISV-32-3611	☐	1-TCV-67-86 RCP MTR CLR 1-1	☐
1-ISV-32-3561	☐	1-TCV-67-92 LWR CONT VENT CLR 1C	☐
1-ISV-32-3560	☐	1-TCV-67-93 CRDM CLR 1C	☐
1-ISV-32-3559	☐	1-TCV-67-94 RCP MTR CLR 1-3	☐
1-ISV-32-3158	☐	1-TCV-67-129 UPR CONT VENT CLR 1A	☐
1-ISV-32-3157	☐	1-TCV-67-132 UPR CONT VENT CLR 1C	☐
1-ISV-32-3282	☐	1-FCV-67-213 SF PIT & TB BSTR PMP SPACE CLR	☐
1-ISV-32-3083	☐	1-FCV-67-162 CCS & AF PMPS SPACE CLR	☐
1-ISV-32-2984	☐	1-FCV-67-176 SI PMP RM CLR 1A	☐

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

4.3 Field Preparations (continued)

Air Isol. Valve	CLOSED	Control Valve	OPEN
1-ISV-32-3018	☐	1-FCV-67-184 CS PMP RM CLR 1A	☐
1-ISV-32-2955	☐	1-FCV-67-346 PEN RM CLR 1A1	☐
1-ISV-32-3146	☐	1-FCV-67-350 PEN RM CLR 1A2	☐
1-ISV-32-3294	☐	1-FCV-67-354 PEN RM CLR 1A3	☐
1-ISV-32-2961	☐	1-FCV-67-342 PIPE CHASE CLR 1A	☐
2-ISV-32-3409	☐	2-FCV-67-336 EMER GAS TRTMT RM CLR	☐
2-ISV-32-3030	☐	2-FCV-67-217 BA XFER PMPS & AF PMPS SP CLR	☐
2-ISV-32-3322	☐	2-FCV-67-354 PEN RM CLR 2A3	☐
2-ISV-32-3609	☐	2-TCV-67-84 LWR CONT VENT CLR 2A	☐
2-ISV-32-3610	☐	2-TCV-67-85 CRDM CLR 2A	☐
2-ISV-32-3611	☐	2-TCV-67-86 RCP MTR CLR 2-1	☐
2-ISV-32-3561	☐	2-TCV-67-92 LWR CONT VENT CLR 2C	☐
2-ISV-32-3560	☐	2-TCV-67-93 CRDM CLR 2C	☐
2-ISV-32-3559	☐	2-TCV-67-94 RCP MTR CLR 2-3	☐
2-ISV-32-3117	☐	2-TCV-67-129 UPR CONT VENT CLR 2A	☐
2-ISV-32-3118	☐	2-TCV-67-132 UPR CONT VENT CLR 2C	☐

NOTE

The following valves are in 0-PI-OPS-17.0 program and will have to be locked when not in use.

[8] **VERIFY** that the listed Air Isolation Valves have been CLOSED and the air BLED OFF to the following Control Valves and Control Valves are FULL OPEN (Section 6.1): _____

Air Isol. Valve	CLOSED	Control Valve	OPEN	Signature
2-ISV-32-2963	☐	2-FCV-67-346 PEN RM CLR 2A1	☐	
2-ISV-32-3166	☐	2-FCV-67-350 PEN RM CLR 2A2	☐	
2-ISV-32-3804	☐	2-FCV-67-342 PIPE CHASE CLR 2A	☐	

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

4.3 Field Preparations (continued)

_____

[9] **VERIFY** that Work Orders have been prepared to support the following activities:

A. Nitrogen supply connection to 1-TCV-67-115, INSTR RM WATER CLR 1A SUPPLY CONTROL VLV, capillary tubing with 200 psig regulator. _____

WO# _____

B. Nitrogen supply connection to 2-TCV-67-115, INSTR RM WATER CLR 2A SUPPLY CONTROL VLV, capillary tubing with 200 psig regulator. _____

WO# _____

C. Adjust the limit switches for Component Cooling System Heat Exchanger flow control valves 1-FCV-67-146, COMPONENT CLG HTX A DISCH CONTROL VLV. _____

WO# _____

D. Adjust the limit switches for Component Cooling System Heat Exchanger flow control valves 2-FCV-67-146, COMPONENT CLG HTX B DISCH CONTROL VLV. _____

WO# _____

[10] **ENSURE** the station air compressors are RUNNING or available to receive flow to the intercoolers.

_____

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

4.3 Field Preparations (continued)

NOTE

When completing the steps to install M&TE differential pressure gauges or electronic flow devices (EFD), the word INSTALL is understood to mean attach and place in service. That is, attach gauge/device, open the root/isolation valve, and vent as necessary to place the gauge/device in service.

[11] **ENSURE** test EFDs, pressure gauges or ΔP devices are installed at the following locations:

A. **INSTALL** EFDs at or near FEs as listed in Appendix E & Data Sheet 1. _____

B. **INSTALL** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 1-VTV-67-534A, CS HEAT EXCHANGER 1A ERCW SUP HEADER VENT. _____

_____
CV

M&TE _____ Cal Due Date _____

C. **INSTALL** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 2-VTV-67-534A, CS HEAT EXCHANGER 2A ERCW SUP HEADER VENT. _____

_____
CV

M&TE _____ Cal Due Date _____

D. **INSTALL** a 0-200 psig pressure gauge, +1.0% accuracy, at the upstream side of 1-FE-67-61, ERCW SUP HEADER 1A FLOW. _____

_____
CV

M&TE _____ Cal Due Date _____

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

4.3 Field Preparations (continued)

E. **INSTALL** a 0-200 psig pressure gauge, +1.0% accuracy, at the downstream side of 1-FE-67-61, ERCW SUP HEADER 1A FLOW. _____

_____
CV

M&TE _____ Cal Due Date _____

F. **INSTALL** a 0-200 psig pressure gauge, +1.0% accuracy, at the upstream side of 2-FE-67-61, ERCW SUP HEADER 2A FLOW. _____

_____
CV

M&TE _____ Cal Due Date _____

G. **INSTALL** a 0-200 psig pressure gauge, +1.0% accuracy, at the downstream side of 2-FE-67-61, ERCW SUP HEADER 2A FLOW. _____

_____
CV

M&TE _____ Cal Due Date _____

H. **INSTALL** a 0-200 psig pressure gauge, +1.0% accuracy, at the inlet side of 1-DRV-67-547, ERCW CCS HX A DRAIN. _____

_____
CV

M&TE _____ Cal Due Date _____

I. **INSTALL** a 0-200 psig pressure gaug, +1.0% accuracy, at the inlet side of 2-DRV-67-547, ERCW CCS HX B DRAIN. _____

_____
CV

M&TE _____ Cal Due Date _____

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

4.3 Field Preparations (continued)

J. **INSTALL** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 0-TV-67-621A, MCR WTR CHILLER A-A ERCW SUP TEST CONN. _____

_____ CV

M&TE _____ Cal Due Date _____

K. **INSTALL** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 1-TV-67-690A, UPPER COMPARTMENT VENT CLR 1A ERCW SUP HDR TEST VENT. _____

_____ CV

M&TE _____ Cal Due Date _____

L. **INSTALL** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 2-TV-67-690A, UPPER COMPARTMENT VENT CLR 2A ERCW SUP HDR TEST VENT. _____

_____ CV

M&TE _____ Cal Due Date _____

M. **INSTALL** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 0-VTV-67-616A, ELEC BD RM A/C COND A ERCW SUP TEST VENT CONN. _____

_____ CV

M&TE _____ Cal Due Date _____

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

4.3 Field Preparations (continued)

N. **INSTALL** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 0-67-820A for 0-PT-67-29, ERCW PUMP A-A DISCH PRESS, mounted at the same elevation as 0-PI-67-29B. _____

_____
CV

M&TE _____ Cal Due Date _____

O. **INSTALL** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 0-67-819A for 0-PT-67-33, ERCW PUMP B-A DISCH PRESS, mounted at the same elevation as 0-PI-67-33B. _____

_____
CV

M&TE _____ Cal Due Date _____

P. **INSTALL** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 0-67-817A for 0-PT-67-37, ERCW PUMP C-A DISCH PRESS, mounted at the same elevation as 0-PI-67-37B. _____

_____
CV

M&TE _____ Cal Due Date _____

Q. **INSTALL** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 0-67-816A for 0-PT-67-41, ERCW PUMP D-A DISCH PRESS, mounted at the same elevation as 0-PI-67-41B. _____

_____
CV

M&TE _____ Cal Due Date _____

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

4.3 Field Preparations (continued)

R. **INSTALL** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 1-PI-67-9B, ERCW STRAINER 1A-A OUT PRESS. _____

_____
CV

M&TE _____ Cal Due Date _____

S. **INSTALL** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 2-PI-67-9B, ERCW STRAINER 2A-A OUT PRESS. _____

_____
CV

M&TE _____ Cal Due Date _____

T. **INSTALL** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 0-PI-67-17, ERCW HEADER B PRESS. _____

_____
CV

M&TE _____ Cal Due Date _____

U. **INSTALL** a 0-200"H_2O differential pressure test gauge/device, +1.0% accuracy, at test connections for 2-FT-67-222, CCS HEAT EXCHANGER B ERCW SUP FLOW. _____

_____
CV

M&TE _____ Cal Due Date _____

V. **INSTALL** a EFD downstream of "TEE" on 2A header and upstream of 1-FCV-67-478, ERCW CCS HX A SUP, and label it EFD-1. _____

_____
CV

M&TE _____ Cal Due Date _____

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

4.3 Field Preparations (continued)

NOTE

The intent of the next step is to allow indication of the ΔP across the discharge valves of the Train A ERCW pumps. Pumps not used may be N/A'd.

[12] **INSTALL** a 0-50 psid differential pressure gauge/device, ±1.0% accuracy, between the listed ERCW Pump Discharge pressure transmitters and 0-PT-67-18, ERCW HEADER A PRESS:

A. 0-PT-67-29, ERCW PUMP A-A DISCH PRESS _____

_____
CV

M&TE _____ Cal Due Date _____

B. 0-PT-67-33, ERCW PUMP B-A DISCH PRESS _____

_____
CV

M&TE _____ Cal Due Date _____

C. 0-PT-67-37, ERCW PUMP C-A DISCH PRESS _____

_____
CV

M&TE _____ Cal Due Date _____

D. 0-PT-67-41, ERCW PUMP D-A DISCH PRESS _____

_____
CV

M&TE _____ Cal Due Date _____

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

4.4 Approvals and Notifications

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

_____ _____
Preoperational Startup Manager Date

[2] **OBTAIN** the Unit 1 & Unit 2 Shift Supervisor's (US/SRO) or Shift Manager's (SM) authorization.

_____ _____
U-1 US/SRO/SM Signature Date

_____ _____
U-2 US/SRO/SM Signature Date

5.0 ACCEPTANCE CRITERIA

A. Two pumps on Train A meet the acceptance criteria specified on listed data sheets for flow to all applicable components under the following conditions:

1. Unit 1 and Unit 2 are flow balanced in Normal Operating Mode configurations. (Normal - Normal).

2. All system components are maintained at acceptable flows with Unit 1 in Cold Shutdown and Unit 2 in LOCA RECIRC.

3. All system components are maintained at acceptable flows with Unit 1 in LOCA RECIRC and Unit 2 in Cold Shutdown.

4. All system components are flow balanced in with Unit 1 in Hot Shutdown and Unit 2 in Startup.

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

5.0 ACCEPTANCE CRITERIA (continued)

B. CCS HX Throttle Valve Adjustment CCS Heat Exchanger Flows as controlled by the 4-position Outlet Valves are adjusted as follows:

Valve No.	A Position	B Position
1-FCV-67-146 (CCS HX A)	>4400 GPM	>5650 GPM
2-FCV-67-146 (CCS HX B	>5850 GPM	>4400 GPM

C. CCS Heat Exchanger Anticavitation Valves 1-FCV-67-143 and 2-FCV-67-143 are manually adjusted to pass >3330 gpm (nominal).

D. Component applicability and status during each test sequence are shown on 2-TSD-67-2, Rev 0000, Tables 4 and 6.

E. Individual component flow rates are specified in 2-TSD-67, Rev 0000 12 and 13 (attached), for their respective test sequence.

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

5.0 ACCEPTANCE CRITERIA (continued)

TABLE 4
(SHEET 1 OF 1)
TRAIN 1A COMPONENT LINEUP

	Normal Site Conditions			Design Basis Accident Conditions		
EQUIPMENT	PWR GEN	HOT SHUTDOWN	STARTUP	LOCA-RECIRC	COLD SHUTDOWN	NOTES
ELEC BD RM A/C A	X	X	X	X	X	
MAIN CONT RM A/C A	X	X	X	X	X	
SHUTDOWN BD RM A/C A	X	X	X	X	X	
AUX CONT AIR CPRSR A	X	X	X	X	X	
CSS HX 1A	-	-	-	X	-	
RCP MTR CLR 1-1, 1-3	X	@	X	-	&	Note 1
STA AIR CPRSR A, B, C	X	X	X	@	@	Note 2, 3
STA AIR CPRSR D	X	X	X	X	X	Note 3
DG 1A, 2A	@	@	@	X	X	Note 4
AFW/CCS PUMP SP CLR 1A	#	#	#	%	%	
CSS PMP RM CLR 1A	-	-	-	%	&	
CVCS CCP RM CLR 1A	#	#	#	%	%	
RB INST RM WTR CHLR 1A	#	#	#	&	%	
PEN RM CLR 1A1, 1A2, 1A3	#	#	#	%	%	
PIPE CHASE CLR 1A	#	#	#	%	%	
RHR PMP RM CLR 1A	#	#	#	%	%	
SFPCS/TBBP SP CLR 1A	#	#	#	%	%	
SIS PMP RM CLR 1A	-	-	-	%	&	
ERCW STRAINER BACKWASH 1A-A	#	#	#	X	X	Note 5
CRDM CLR 1A, 1C	X	X	X	-	&	
LCV CLR 1A, 1C	X	X	X	-	%	
UCV CLR 1A, 1C	X	X	X	-	&	

KEY
X Regular Use
- Not in Use, flow need not be isolated except CSS HX is in layup, no acceptance criteria
Intermittent Use (Thermostatically or Δp controlled or on timers)
@ Not in regular use. See referenced note(s).
% ERCW valve fails open under DBA conditions, minimum ERCW flows need to be satisfied.
& ERCW valve fails open under DBA conditions, minimum ERCW flows do not need to be met for this mode.

NOTES:
1. One reactor coolant pump (RCP) operates during hot shutdown (Reference 1.1.U, Section 6.13). Each RCP Motor Cooler should be flow balanced separately under the hot shutdown mode balancing.

2. Station air compressors receive flow from either 1A or 1B header, or from both headers. Station Air Compressors A, B and C do not operate during accident modes involving a loss of offsite power. Flow to the intercoolers/cylinders is isolated by a solenoid when the compressor motor is deenergized. Although not required, flow may continue to the compressors and aftercoolers. (Reference 1.1.U, Section 6.11).

3. The Station Air Compressors can be individually flow balanced during power generation, hot shutdown or startup mode balancing. For the remaining modes individual compressor flow balancing is not required. Total flow to all compressors can be simulated during balancing for remaining modes.

4. Plant Technical Specifications require the diesel generators be tested on a periodic basis. The flow balance should include flow to one diesel generator during the flow balancing for the power generation, hot shutdown and startup modes.

5. Following proper setting of the ERCW strainer/backwash valves, it is not necessary to verify flowrate during system testing.

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

5.0 ACCEPTANCE CRITERIA (continued)

Unit 2

TABLE 6
(Sheet 1 of 1)
TRAIN 2A COMPONENT LINEUP

	Normal Site Conditions			Design Basis Accident Conditions		
EQUIPMENT	PWR GEN	HOT SHUTDOWN	STARTUP	LOCA-RECIRC	COLD SHUTDOWN	NOTES
CCS HX B	X	X	X	X	X	
CCS HX A	X	X	X	X	X	
CSS HX 2A	-	-	-	X	-	
RCP MTR CLR 2-1, 2-3	X	@	X	-	&	Note 1
DG 1B, 2B	-	-	-	-	-	
AFW/BAT PUMP SP CLR 2A	#	#	#	%	%	
CSS PMP RM CLR 2A	-	-	-	%	&	
CVCS CCP RM CLR 2A	#	#	#	%	%	
EGTS RM CLR 2A	#	#	-	%	%	
RB INST RM WTR CHLR 2A	#	#	#	&	%	
PEN RM CLR 2A1, 2A2, 2A3	#	#	#	%	%	
PIPE CHASE CLR 2A	#	#	#	%	%	
RHR PMP RM CLR 2A	#	#	#	%	%	
SIS PMP RM CLR 2A	-	-	-	%	&	
ERCW STRAINER BACKWASH 2A-A	#	#	#	X	X	Note 2
CRDM CLR 2A, 2C	X	X	X	-	&	
LCV CLR 2A, 2C	X	X	X	-	%	
UCV CLR 2A, 2C	X	X	X	-	&	

KEY
X Regular Use
- Not in Use, flow need not be isolated except CSS HX is in layup, no acceptance criteria
Intermittent Use (Thermostatically or Δp controlled or on timers)
@ Not in regular use. See referenced note.
% ERCW valve fails open under DBA conditions, minimum ERCW flows need to be satisfied.
& ERCW valve fails open under DBA conditions, minimum ERCW flows do not need to be met for this mode.

NOTES:

1. One reactor coolant pump (RCP) operates during hot shutdown (Reference 1.1.U, Section 6.13). Each RCP Motor Cooler should be flow balanced separately under the hot shutdown mode balancing.

2. Following proper setting of the ERCW strainer/backwash valves, it is not necessary to verify flowrate during system testing.

Data Package: Page ____ of ____ Date _____

5.0 ACCEPTANCE CRITERIA (continued)

TABLE 12
(Sheet 1 of 2)

COMPONENT	FUNCTION	CRITERIA (gpm)	RECOMMENDED MAXIMUM FLOW (NOTES 4 & 7)	DESIGN BASIS Reference Section 1.1	NOTES
ELEC BD RM A/C	FLOW	≥ 370 gpm	490	F, TABLE 9.6	NOTES 5, 9
MAIN CONT RM A/C	FLOW	≥ 293 gpm	460	F, TABLE 9.6	NOTES 6, 9
SHUTDOWN BD RM A/C	FLOW	≥ 560 gpm	560	G, SECT 3.2.3.D.1	NOTE 3, 9
AUX CONTROL AIR CPRSR	FLOW	≥ 3.5 gpm	Note 8	EE	
CCS HX	FLOW	varies gpm	26,500	E, SECT 3.2.2	NOTE 1 and TSD Table 13
CSS HX	FLOW	≥ 5200 gpm	11,500	K, TABLE 9.5	
RCP MTR CLR	FLOW	≥ 110 gpm	220	J, TABLE 13	
STA AIR CPRSR A-C	FLOW	≥ 28.9 gpm (each)	32*** (each)	I, TABLE 3	NOTE 2, 9
STA AIR CPRSR D	FLOW	≥ 96.3 gpm	100***	I, TABLE 3	NOTE 2, 9
DIESEL GENERATOR HX	FLOW	≥ 650 gpm (x2)	1,200 (x2)	L, SECT 3.2.3(a)	
AFW/BAT PUMP SP CLR	FLOW	≥ 60 gpm	360	G, SECT 3.2.3.C.1	
AFW/CCS PUMP SP CLR	FLOW	≥ 102 gpm	670	FF	
CSS PUMP RM CLR	FLOW	≥ 28 gpm	190	FF	
CVCS CCP RM CLR	FLOW	≥ 25 gpm	28*	G, SECT 3.2.3.C.1	
CVCS RCP RM CLR	FLOW	≥ 12 gpm	14*	G, SECT 3.2.3.C.1	
EGTS RM CLR	FLOW	≥ 10 gpm	11*	G, SECT 3.2.3.C.1	
PEN RM CLR 1	FLOW	≥ 12 gpm	14*	G, SECT 3.2.3.C.1	
PEN RM CLR 2	FLOW	≥ 11 gpm	13*	G, SECT 3.2.3.C.1	
PEN RM CLR 3	FLOW	≥ 12 gpm	14*	G, SECT 3.2.3.C.1	
PIPE CHASE CLR	FLOW	≥ 15 gpm	17*	G, SECT 3.2.3.C.1	
RHR PUMP RM CLR	FLOW	≥ 19 gpm	21*	G, SECT 3.2.3.C.1	
SFPCS/TBBP SP CLR	FLOW	≥ 29 gpm	170	G, SECT 3.2.3.C.1	
SIS PUMP RM CLR	FLOW	≥ 22 gpm	25*	G, SECT 3.2.3.C.1	
RB INST RM WTR CHLR	FLOW	≥ 30 gpm	200	H, SECT 3.2.1.I	
CRDM CLR	FLOW	≥ 124 gpm	390	H, SECT 3.2.1.G	
LCV CLR	FLOW	≥ 306 gpm	1060	H, SECT 3.2.1.E	
UCV CLR	FLOW	≥ 23 gpm	26**	H, SECT 3.2.1.F	

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

5.0 ACCEPTANCE CRITERIA (continued)

Unit 2

TABLE 12
(Sheet 2 of 2)

COMPONENT	FUNCTION	CRITERIA (gpm)	RECOMMENDED MAXIMUM FLOW (NOTE 4)	DESIGN BASIS Reference Section 1.1	NOTES
ERCW STRAINER (BACKWASH)	FLOW	≥ 450 GPM for continuous (manual) backwash.		Y	

(*) During testing/balancing, it is allowed to adjust flow to 60 gpm. This will not result in excessive tube-side velocities (Reference 1.1.OO and 1.1.GG).

(**) During testing/balancing, it is allowed to adjust flow up to 100 gpm (Ref. 1.1.Z).

(***) During testing/balancing, it is allowed to adjust flow in common header to 280 gpm (Ref. 1.1.GG).

Notes:

1. Actual flow depends on the positions of the 4-position valves 1-FCV-67-146-A, 2-FCV-67-146-A , 0-FCV-67-152-B and the associated bypass valves. The values for intermediate positions "A" and "B" should be set as shown in Table 13 (Reference 1.1.U).

2. Reference 1.1. I specifies ERCW flows for Station Air Compressors A through D as follows:

Equipment	Intercooler Flow (gpm)	Aftercooler Flow (gpm)	Oilcooler Flow (gpm)	Total ERCW Flow (gpm)
Compressor A-C	16.5	12.4		28.9
Compressor D	42.7	33.7	19.9	96.3

3. Reference 1.1.GG specifies a maximum flow that matches the design flow rate. Reference 1.1.HH documents the evaluation and resolution of exceeding the maximum recommended flow by 134 gpm (or 185 gpm assuming worst case instrument error) through Shutdown Boardroom A/C Water Chiller A and 126 gpm (or 177 gpm assuming worst case instrument error) on Shutdown Boardroom A/C Water Chiller B during Unit 1 preoperational testing. Therefore, during the flow balance, the maximum flow should be limited such that:
   a. The minimum flow is met (or exceeded) for all test cases; and,
   b. The maximum flow is minimized, while still meeting the minimum flow; and,
   c. The maximum flow does not exceed the worst case flows evaluated and accepted during Unit 1 preoperational testing.

4. Upper flow limit is provided for testing and operating purposes. During testing, the test engineer shall take precautions to limit excessive vibrations if approaching/exceeding the flow limits (Reference 1.3.A).

5. Actual flow is measured by fully opening valves 0-TCV-67-1050-A and 0-TCV-67-1052-B respectively for each Train.

6. Actual flow is measured by fully opening valves 0-TCV-67-1051-A and 0-TCV-67-1053-B respectively for each Train.

7. See Reference 1.1.D.

8. Valves 1-ISV-67-683 and 2-THV-67-683 can be throttled to give a maximum flow of 185 gpm, thru the Auxiliary Air Compressors. Actual flow when compressors are in operation will be controlled to 3.5 gpm by 0-TCV-67-1222A, -1222B, -1224A and -1224B.

9. During the performance of Unit 1 ERCW Flow Balance Test PTI-67-02, the maximum recommended flows were exceeded on these components. This is due to the fact that during the flow balance test, the control valves are placed in the full open position and the flow is adjusted by an associated manual throttle valve to ensure adequate flow is available in all operating modes which results in high flows in some modes. During actual operation, the control valve will modulate the flow to provide only the cooling water flow required by the component in service, which will be less than the maximum recommended flow. This excessive flow was deemed acceptable per Reference 1.1.HH.

Data Package: Page ____ of ____ Date ________

5.0 ACCEPTANCE CRITERIA (continued)

TABLE 13
(Sheet 1 of 1)

CCS HX CONTROL VALVE SETTING AND REQUIRED FLOWRATES, GPM

				CCS HX C 0-FCV-67-152-B		CCS HX A 1-FCV-67-146-A		CCS HX B 2-FCV-67-146-A	
TEST	U1/U2	TRAIN	POWER	FLOW	POSITION	FLOW	POSITION	FLOW	POSITION
1	NORMAL PWR/	A	OFFSITE	>6000*	CLOSED USE BYPASS*	>3330	CLOSED USE BYPASS	>3330	CLOSED USE BYPASS
	NORMAL PWR	B	OFFSITE	>6000	CLOSED USE BYPASS	N/A	N/A	N/A	N/A
2	COLD SHUTDOWN/	A	LOOP	>6000*	CLOSED USE BYPASS*	>5650	B	>4400	B
	LOCA-RECIRC	B	LOOP	>7125	A	N/A	N/A	N/A	N/A
3	LOCA-RECIRC/	A	LOOP	>6000*	CLOSED USE BYPASS*	>4400	A	>5850	A
	COLD SHUTDOWN	B	LOOP	>8800	B	N/A	N/A	N/A	N/A
4**	HOT SHUTDOWN/	A	OFFSITE	>6000*	CLOSED USE BYPASS*	>6650	B + USE BYPASS**	>5850	B + USE BYPASS**
	STARTUP	B	OFFSITE	>6000	CLOSED USE BYPASS	>6650	B + USE BYPASS***	>5850***	B + USE BYPASS***

* A flow of greater than 6000 gpm through the CCS Heat Exchanger C bypass (valve 0-FCV-67-144) is required only to ensure minimum flows to Train A components are satisfied

** To achieve adequate flow to CCS HX A and CCS HX B during HOT SHUTDOWN/STARTUP it may be necessary to use a combination of valves 1-FCV-67-146 and 1-FCV-67-143 for CCS HX A and 2-FCV-67-146 and 2-FCV-67-143 for CCS HX B. Valves 1-FCV-67-146 and 2-FCV-67-146 should be set in their "B" position. Then valves 1-FCV-67-143 and 2-FCV-67-143 will be throttled to achieve adequate flow, if necessary.

*** During Train B Testing for Test 4 (Hot Shutdown/Startup), valves 1-FCV-67-146-A and 2-FCV-67-146-A and their associated bypass valves need to be in the same position established during the Train A Testing for Test 4.

Design Basis: Calculations EPM-JN-010890 and EPM-JFL-120285.

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

6.0 PERFORMANCE

6.1 Prerequisites

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

[2] **OPEN** 1-TCV-67-158 by ROTATING the local Metrex valve bypass stem counter-clockwise (when viewed looking down at the Bypass Stem) until it seats against the Hydraulic Bypass Body.(A-A SHTDN BD RM A/C TEMP CONTROL). _____

CAUTION

DO NOT over pressurize 1-TCV-67-115 during the next step. MAXIMUM pressure is 200 psig.

[3] **OPEN** 1-TCV-67-115, INSTR RM WATER CLR 1A ERCW SUP TEMP CNTL, using a temporary regulated Nitrogen supply (0-200 psig). _____

[4] **OPEN** 2-TCV-67-115, INSTR RM WATER CLR 2A ERCW SUP TEMP CNTL, using a temporary regulated Nitrogen supply (0-200 psig). _____

[5] **OPEN** 0-TCV-67-1050, AUTO WATER REGULATING VALVE EBR CHILLER A-A, by turning the manual flushing screw at the top of the actuator fully clockwise. _____

[6] **OPEN** 0-TCV-67-1051, AUTO WATER REGULATING VALVE MCR CHILLER A-A, by turning the manual flushing screw at the top of the actuator fully clockwise. _____

[7] **ENSURE** the following:

A. 0-FCV-67-205, STA AIR COMPR ERCW SUP HDR 1A ISOL is OPEN. _____

B. 0-FCV-67-208, STA AIR COMPR ERCW SUP HDR 1B ISOL, is CLOSED. _____

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

6.1 Prerequisites (continued)

NOTE

The following steps 6.1[8] through 6.1[11] verify/start two ERCW pumps to support the flow balance. Due to the pump power selector switch options, the allowable pump combinations are A-A **OR** B-A, **AND** C-A **OR** D-A. The selector switches are positioned, then the applicable pumps are started, with the unselected pump steps N/A'd.

[8] **VERIFY/PLACE** 0-XS-67-285, ERCW PMPS A-A/B-A DG POWER SEL, at 0-M-27A, to either the A-A **OR** B-A position, **AND**

CIRCLE position below:

Handswitch position (PUMP A-A **OR** PUMP B-A): _____

[9] **VERIFY/START** either ERCW Pump A-A **OR** B-A, enter N/A for the non-applicable step:

A. **PLACE** Handswitch 0-HS-67-28A, ERCW PUMP A-A, at 0-M-27A, to START, **AND**

VERIFY by light indication that pump ERCW PUMP A-A STARTS. _____

B. **PLACE** Handswitch 0-HS-67-32A, ERCW PUMP B-A, at 0-M-27A, to START, **AND**

VERIFY by light indication that pump ERCW PUMP B-A STARTS. _____

[10] **VERIFY/PLACE** 0-XS-67-286, ERCW PMPS C-A/D-A DG POWER SEL, at 0-M-27A, to either the PUMP C-A **OR** PUMP D-A position **AND**

CIRCLE position below:

Handswitch position (PUMP C-A **OR** PUMP D-A): _____

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

6.1 Prerequisites (continued)

[11] **VERIFY/START** either ERCW PUMP C-A **OR** D-A, enter N/A for the non-applicable step:

A. **PLACE** Handswitch 0-HS-67-36A, ERCW PMP C-A, at 0-M-27A, to START, **AND**

VERIFY by light indication that pump ERCW PMP C-A STARTS. _____

B. **PLACE** Handswitch 0-HS-67-40A, ERCW PMP D-A, at 0-M-27A, to START, **AND**

VERIFY by light indication that pump ERCW PMP D-A STARTS. _____

[12] **ENSURE** 1-HS-67-66A, DG 1A-A NORM SUP, on 0-M-27A, is in the CLOSED position by light indication. _____

[13] **ENSURE** 2-HS-67-66A, DG 2A-A NORM SUP, on 0-M-27A, is in the OPEN position by light indication. _____

[14] **PLACE** Station and Control Air compressors A, B & C in Manual (Hand), **AND**

ENSURE running unloaded ("D" in normal service operation). _____

[15] **ENSURE** the Auxiliary Air Compressors A control switch is placed in MANUAL. _____

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

6.2 UNIT 1 NORMAL PWR - UNIT 2 NORMAL ALIGNMENT

6.2.1 ERCW FLOW TESTING CCS HTX A

Testing includes Anticavitation Test, CCS Heat Exchanger A Discharge Valve Setting, and Flow Balance in Normal Mode

NOTE

The Normal Mode flow balance is done solely to put the system in a configuration for setting of the Component Cooling Heat Exchanger discharge valve limit switches.

[1] **PERFORM** Normal Operation Mode flow alignment in accordance with CHECKLIST 1 & 2 has been performed. _____

[2] **PERFORM** Normal Operation Mode flow balance in accordance with Appendix I and Data Sheet 1, **AND**

VERIFY flows are equal to or greater than the minimum required flows. _____

[3] **VERIFY** that the flow through 1-FCV-67-143, CCS HX A OUTLET ERCW FLOW CNTL BYP, on Data Sheet 1 is >3330 gpm. _____

NOTE

The following steps 6.2.1[4] through 6.2.1[23] set Valve 1-FCV-67-146, COMPONENT CLG HTX A DISCH CONTROL VLV, limit switches for "A "and "B" positions.

[4] **PLACE** Handswitch 1-HS-67-146A, CCS HX A ALT DISCH TO HDR B, on 0-M-27A, to the POS A **AND**

VERIFY by light indication that Valve 1-FCV-67-146 OPENS to the POS A. _____

[5] **PLACE** Handswitch 1-HS-67-143A, CCS HX A DISCH TO HDR B, on 0-M-27A, to CLOSE **AND**

VERIFY by light indication that Valve 1-FCV-67-143 CLOSES. _____

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

6.2.1 ERCW FLOW TESTING CCS HTX A (continued)

[6] **PLACE** Handswitch 1-HS-67-146A, CCS HX A ALT DISCH TO HDR B, on 0-M-27A, to the POS OPEN **AND**

VERIFY by light indication that Valve 1-FCV-67-146 OPENS. _____

[7] **OPEN** breaker 1-BKR-67-146-A at Compt 11A on 480V REACTOR MOV BD 1A2-A for Valve 1-FCV-67-146, COMPONENT CLG HTX A DISCH CONTROL VLV. _____

NOTE

All references to Electronic Flow Device (EFD-1) are for the electronic /ultra-sonic device installed upstream of 1-FCV-67-478, CCS HX A ERCW ISOL, installed in Step 4.3[11]V.

[8] **RECORD** on Data Sheet 7 the M&TE numbers for the ΔP gauge (or other flow device) at 2-FE-67-222, COMPONENT COOLING HTX B SUP FLOW, and EF device EFD-1. _____

M&TE _____ Cal Due Date _____

CAUTION

To maintain the operating pressures in the header to within design limits, DO NOT exceed 133 psig at 0-PT-67-18, ERCW HEADER A PRESS. If necessary, 2-FCV-67-143 may be opened to provide greater flow through B CCS HTX to reduce pressure.

NOTES

1) Keep track of the number of turns from Full Open that Valve 1-FCV-67-146 is throttled for the various flow rates; this information is required for the >5650, and >4400 gpm data points.
2) IF electronic/ultra-sonic flow devices are used, enter actual flow in respective column of data sheet. (ΔP column may be N/A'd if actual flow is measured)

[9] **MANUALLY ADJUST** 1-FCV-67-146, COMPONENT CLG HTX A DISCH CONTROL VLV, to obtain a flow rate of >5650 (5650-5900) gpm, **AND**

RECORD ΔP at 2-FE-67-222 ("H_2O) on Data Sheet 8 in Column 2 and the EFD-1 flow rate (gpm) in Column 6. _____

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

6.2.1 ERCW FLOW TESTING CCS HTX A (continued)

[10] **RECORD** the number of valve turns from FULL OPEN for the "B" Limit Switch position below: _____

Valve Turns From Full Open _____

2-FE-67-222 ΔP in "H_2O _____

EFD-1 (gpm) _____

[11] **MANUALLY ADJUST** 1-FCV-67-146, COMPONENT CLG HTX A DISCH CONTROL VLV, to obtain a flow rate of >4400 (4400-4800) gpm, **AND**

RECORD the 2-FE-67-222 ΔP on Data Sheet 8 in Column 2 and the EFD-1 flow rate (gpm) in Column 6. _____

[12] **RECORD** the number of valve turns from FULL OPEN for the "A" Limit Switch position. _____

Valve Turns From Full Open _____

2-FE-67-222 ΔP in "H_2O _____

EFD-1 (gpm) _____

NOTE

Steps 6.2.1[13] through 6.2.1[22] will test the CCS HX A anticavitation bypass Valve 1-FCV-67-143

[13] **PLACE** Handswitch 1-HS-67-143A, CCS HTX A BYPASS FLOW CNTL, on 0-M-27A, to OPEN **AND**

VERIFY by light indication that valve 1-FCV-67-143 OPENS. _____

[14] **OPEN** breaker 1-BKR-67-143-A for 1-FCV-67-143 at 480V REACTOR MOV BD 1A2-A, C/ 15A. _____

[15] **CLOSE** breaker 1-BKR-67-146-A at Compt 11A on 480V REACTOR MOV BD 1A2-A for Valve 1-FCV-67-146, CCS HTX A ALT DISCH TO HDR B. _____

[16] **PLACE** Handswitch 1-HS-67-146A, CCS HX A ALT DISCH TO HDR B, on 0-M-27A, to CLOSE. _____

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

6.2.1 ERCW FLOW TESTING CCS HTX A (continued)

[17] **VERIFY** by light indication that Valve 1-FCV-67-146, CCS HX A ALT DISCH TO HDR B, CLOSES. _____

NOTE

Actual flow may be entered in step below, **IF** electronic flow devices have been previously installed.

[18] **RECORD** CCS A HX flow as indicated by EFD-1, **AND**

RECORD ΔP from 2-FT-67-222 CCS HX B ERCW below: _____ 1st

_____ CV

M&TE _____ Cal Due Date

EFD FLOW _____ GPM

M&TE _____ Cal Due Date _____

FLOW ΔP = _____ in. H_2O

$K (\Delta P)^{1/2}$ = 852 $(\Delta P)^{1/2}$ = _____ GPM

CAUTION

To maintain the operating pressures in the header to within design limits, do NOT exceed 133 psig at 0-PT-67-18, ERCW HEADER A PRESS. If necessary, adjust 2-FCV-67-143 as indicated to increase flow and reduce pressure.

[19] **MANUALLY CYCLE** 1-FCV-67-143 from full OPEN down to a flow rate of >3330 (3330-3630) gpm on EFD-1 and back to full open while monitoring bypass piping for steady state and transient vibrations. _____

[20] **NOTE and RECORD** flow which exhibits the <u>most severe</u> vibration characteristics, **AND**

RECORD EFD-1 flow through CCS A HX _____ gpm. _____ 1st

_____ CV

[21] **CLOSE** breaker 1-BKR-67-143-A for 1-FCV-67-143 at 480V REACTOR MOV BD 1A2-A, C/ 15A. _____

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

6.2.1 ERCW FLOW TESTING CCS HTX A (continued)

[22] **ADJUST** Handswitch 1-HS-67-143A, CCS HX A DISCH TO HDR B, on 0-M-27A, to obtain a flow rate of >3330 (3330-3630) gpm. _____

[23] **INITIATE** the Work Order to adjust the limit switches for 1-FCV-67-146, CCS HX A OUT CNTL, for the POS A and B, positions. _____

[24] **AFTER** HOLD ORDER is REMOVED**, THEN**

PLACE Handswitch 1-HS-67-146A, CCS HX A ALT DISCH TO HDR B, on 0-M-27A, to the POS A **AND**

VERIFY by light indication that Valve 1-FCV-67-146 OPENS to the POS A. _____

[25] **PLACE** Handswitch 1-HS-67-143A, CCS HX A DISCH TO HDR B, on 0-M-27A, to CLOSE **AND**

VERIFY by light indication that Valve 1-FCV-67-143 CLOSES. _____

[26] **RECORD** 1-FCV-67-146 EFD-1 flow rate in POS A _____ gpm. _____

[27] **PLACE** Handswitch 1-HS-67-146A, CCS HX A ALT DISCH TO HDR B, on 0-M-27A, to the POS B **AND**

VERIFY by light indication that Valve 1-FCV-67-146 OPENS to the POS B and

RECORD EFD-1 flow rate _____ gpm. _____

[28] **PLACE** Handswitch 1-HS-67-146A, CCS HX A ALT DISCH TO HDR B, on 0-M-27A, to the POS OPEN

VERIFY by light indication that Valve 1-FCV-67-146 OPENS **AND**

RECORD EDF-1 flow rate _____ gpm. _____

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

6.2.1 ERCW FLOW TESTING CCS HTX A (continued)

[29] **PLACE** Handswitch 1-HS-67-146A, CCS HX A ALT DISCH TO HDR B, on 0-M-27A, to the POS B

VERIFY by light indication that Valve 1-FCV-67-146 CLOSES to the POS B, **AND**

RECORD EFD-1 flow rate _____ gpm. (>5650 gpm) (**ACC CRIT**) _____

[30] **PLACE** Handswitch 1-HS-67-146A, CCS HX A ALT DISCH TO HDR B, on 0-M-27A, to the POS A

VERIFY by light indication that Valve 1-FCV-67-146 CLOSES to the POS A, **AND**

RECORD EFD-1 flow rate _____ gpm. (>4400 gpm) (**ACC CRIT**) _____

[31] **PLACE** Handswitch 1-HS-67-143A, CCS HTX A BYPASS FLOW CNTL, on 0-M-27A, to OPEN **AND**

[32] **PLACE** Handswitch 1-HS-67-146A, CCS HX A ALT DISCH TO HDR B, on 0-M-27A, to the POS CLOSE **AND**

VERIFY by light indication that Valve 1-FCV-67-146 CLOSES. _____

[33] **VERIFY** by light indication that Valve 1-FCV-67-143 OPENS with a flow rate >3330 gpm. **ACC CRIT** _____

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

6.2.2 ERCW TESTING CCS HTX B

Testing includes Anticavitation Test, CCS Heat Exchanger B Discharge Valve Setting, and Flow Balance in Normal Mode

[1] **ENSURE** Normal Operation Mode flow alignment in accordance with CHECKLIST 1 & 2 has been performed. _____

[2] **PERFORM** Normal Operation Mode flow balance in accordance with Appendix I and Data Sheet 1, **AND**

VERIFY flows are equal to or greater than the minimum required flows. _____

[3] **VERIFY** that the flow through 2-FCV-67-143, CCS HX B OUTLET ERCW FLOW CNTL BYP, on Data Sheet 1 is >3330 gpm. _____

NOTE

The following steps 6.2.2[4] through 6.2.2[23] set Valve 2-FCV-67-146, COMPONENT CLG HTX B DISCH CONTROL VLV, limit switches for "A "and "B" positions.

[4] **PLACE** Handswitch 2-HS-67-146A, CCS HX B ALT DISCH TO HDR A, on 0-M-27A, to the POS A **AND**

VERIFY by light indication that Valve 2-FCV-67-146 OPENS to the POS A. _____

[5] **PLACE** Handswitch 2-HS-67-143A, CCS HX B DISCH TO HDR A, on 0-M-27A, to CLOSE **AND**

VERIFY by light indication that Valve 2-FCV-67-143 CLOSES. _____

[6] **PLACE** Handswitch 2-HS-67-146A, CCS HX B ALT DISCH TO HDR A, on 0-M-27A, to the POS OPEN **AND**

VERIFY by light indication that Valve 2-FCV-67-146 OPENS. _____

[7] **OPEN** breaker 2-BKR-67-146-A at Compt 11A on 480V REACTOR MOV BD 2A2-A for Valve 2-FCV-67-146, COMPONENT CLG HTX B DISCH CONTROL VLV. _____

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

6.2.2 ERCW TESTING CCS HTX B (continued)

NOTE

All references to EDF-1 are for the test flow device installed downstream of "TEE" on 2A header and upstream of 1-FCV-67-478, ERCW CCS HX A SUP in Step 4.3[11]V.

[8] **RECORD** on Data Sheet 9 the M&TE numbers for the ΔP gauge/device at 2-FE-67-222, CCS HEAT EXCHANGER B ERCW SUP FLOW, and EFD-1. _____

CAUTION

To maintain the operating pressures in the header to within design limits, DO NOT exceed 133 psig at 0-PT-67-18, ERCW HEADER A PRESS. If necessary, 1-FCV-67-143 may be adjusted to increase flow to lower pressure.

NOTES

1) Keep track of the number of turns from Full Open that Valve 2-FCV-67-146 is throttled for the various data points; this information is required for the >5850, and >4400 gpm data points.
2) IF electronic/ultrasonic flow devices are used, enter actual flow in respective column of data sheet. CCS B HX flow rate will be 2-FT-67-222 flow minus EFD-1.

[9] **MANUALLY ADJUST** 2-FCV-67-146, COMPONENT CLG HTX B DISCH CONTROL VLV, to obtain a flow rate of >5650 (5650-5900) gpm at 2-FT-67-222, CCS HEAT EXCHANGER B ERCW SUP FLOW, **AND**

RECORD this ΔP on Data Sheet 9 in Column 2 and the EFD-1 in Column 6. _____

[10] **RECORD** the number of valve turns from FULL OPEN for the "B" Limit Switch position below: _____

Valve Turns From Full Open _____

ΔP in "H_2O _____

EFD-1 (gpm) (CCS A HX) _____

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

6.2.2 ERCW TESTING CCS HTX B (continued)

[11] **MANUALLY ADJUST** 2-FCV-67-146, COMPONENT CLG HTX B DISCH CONTROL VLV, to obtain a flow rate of >4400 (4400-4800) gpm at 2-FT-67-222, CCS HEAT EXCHANGER B ERCW SUP FLOW, **AND**

RECORD the ΔP on Data Sheet 9 in Column 2 and the EFD-1 in Column 6. _____

[12] **RECORD** the number of valve turns from FULL OPEN for the "A" Limit Switch position below: _____

Valve Turns From Full Open _____

ΔP in "H_2O _____

EFD-1 (gpm) (CCS A HX) _____

NOTES

1) Steps 6.2.2[13] through 6.2.2[20] will test the CCS HX B anticavitation bypass Valve 2-FCV-67-143
2) Actual flow may be entered if electronic flow device is used.

[13] **PLACE** Handswitch 2-HS-67-143A, CCS HTX B BYPASS FLOW CNTL, on 0-M-27A, to OPEN **AND**

VERIFY by light indication that valve 2-FCV-67-143 OPENS. _____

[14] **OPEN** breaker 1-BKR-67-143-A for 2-FCV-67-143 at 480V REACTOR MOV BD 2A2-A, C/ 15A. _____

[15] **CLOSE/VERIFY CLOSED** breaker 2-BKR-67-146-A at Compt 11A on 480V REACTOR MOV BD 2A2-A for Valve 2-FCV-67-146, COMPONENT CLG HTX B DISCH CONTROL VLV. _____

[16] **PLACE** Handswitch 2-HS-67-146A, CCS HX B ALT DISCH TO HDR A, on 0-M-27A, to CLOSE. _____

[17] **VERIFY** by light indication that Valve 2-FCV-67-146, CCS HX B DISCH TO HDR A, CLOSES. _____

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

6.2.2 ERCW TESTING CCS HTX B (continued)

[18] **RECORD** flow rate as indicated on 2-FT-67-222, CCS HEAT EXCHANGER B ERCW SUP, **THEN**

SUBTRACT EFD-1 to obtain flow through CCS HTX B as follows:

_____ 1st

_____ CV

2-FT-67-222 flow _____gpm (-) EFD-1 flow _____gpm = _____ gpm	CCS B HX

CAUTION

To maintain the operating pressures in the header to within design limits, do NOT exceed 133 psig at 0-PT-67-18, ERCW HEADER A PRESS. If necessary, 1-FCV-67-143 may be adjusted to raise flow and lower pressure.

[19] **MANUALLY CYCLE** 2-FCV-67-143 from full OPEN down to a flow rate of >3330 (3330-3630) on 2-FT-67-222, CCS HEAT EXCHANGER B ERCW SUP FLOW, and back to full open while monitoring bypass piping for steady state and transient vibrations. _____

[20] **ESTABLISH** flow which exhibits the worst case vibration characteristics, **AND**

RECORD flow rate as indicated on 2-FT-67-222, CCS HEAT EXCHANGER B ERCW SUP, **THEN**

DEDUCT EFD-1 to obtain flow through CCS HTX B as follows:

_____ 1st

_____ CV

2-FT-67-222 flow _____gpm (-) EFD-1 flow _____gpm = _____ gpm	CCS B HX

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

6.2.2 ERCW TESTING CCS HTX B (continued)

[21] **CLOSE** breaker 1-BKR-67-143-A for 2-FCV-67-143 at 480V REACTOR MOV BD 2A2-A, C/ 15A. _____

[22] **PLACE** Handswitch 2-HS-67-143A, CCS HX A DISCH TO HDR B, on 0-M-27A, to OPEN **AND**

VERIFY by light indication that Valve 2-FCV-67-143 OPENS. _____

[23] **INITIATE** the Work Order to adjust the limit switches for 2-FCV-67-146, CCS HX B OUT CNTL, for the POS A and POS B positions. _____

[24] **AFTER** Hold Order is REMOVED, **THEN**

PLACE Handswitch 2-HS-67-146A, CCS HX B ALT DISCH TO HDR A, on 0-M-27A, to the POS A **AND**

VERIFY by light indication that Valve 2-FCV-67-146 OPENS to the POS A. _____

[25] **PLACE** Handswitch 2-HS-67-143A, CCS HX A DISCH TO HDR B, on 0-M-27A, to CLOSE **AND**

VERIFY by light indication that Valve 2-FCV-67-143 CLOSES. _____

[26] **RECORD** flow rate as indicated on 2-FT-67-222, CCS HEAT EXCHANGER B ERCW SUP, **THEN**

DEDUCT EFD-1 to obtain flow through CCS HTX B as follows: _____ 1st

_____ CV

2-FT-67-222 flow _____gpm (-) EFD-1 flow _____gpm = _____ gpm CCS B HX

[27] **CONFIRM** flow is >5850gpm. **ACC CRIT** _____

[28] **PLACE** Handswitch 2-HS-67-146A, CCS HX B ALT DISCH TO HDR A, on 0-M-27A, to the POS B **AND**

VERIFY by light indication that Valve 2-FCV-67-146 OPENS to the POS B. _____

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

6.2.2 ERCW TESTING CCS HTX B (continued)

[29] **RECORD** flow rate as indicated on 2-FT-67-222, CCS HEAT EXCHANGER B ERCW SUP, **THEN**

DEDUCT EFD-1 to obtain flow through CCS HTX B as follows: _____ 1st

_____ CV

2-FT-67-222 flow _____gpm (-) EFD-1 flow _____gpm = _____ gpm CCS B HX

[30] **CONFIRM** flow is >4400gpm. **ACC CRIT** _____

[31] **PLACE** Handswitch 2-HS-67-146A, CCS HX B ALT DISCH TO HDR A, on 0-M-27A, to the POS OPEN **AND**

VERIFY by light indication that Valve 2-FCV-67-146 OPENS. _____

[32] **RECORD** flow rate as indicated on 2-FT-67-222, CCS HEAT EXCHANGER B ERCW SUP, **THEN**

DEDUCT EFD-1 to obtain flow through CCS HTX B as follows: _____ 1st

_____ CV

2-FT-67-222 flow _____gpm (-) EFD-1 flow _____gpm = _____ gpm CCS B HX

[33] **PLACE** Handswitch 2-HS-67-146A, CCS HX B ALT DISCH TO HDR A, on 0-M-27A, to the POS B **AND**

VERIFY by light indication that Valve 2-FCV-67-146 CLOSES to the POS B. _____

[34] **RECORD** flow rate as indicated on 2-FT-67-222, CCS HEAT EXCHANGER B ERCW SUP, **THEN**

DEDUCT EFD-1 to obtain flow through CCS HTX B as follows: _____ 1st

_____ CV

2-FT-67-222 flow _____gpm (-) EFD-1 flow _____gpm = _____ gpm CCS B HX

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

6.2.2 ERCW TESTING CCS HTX B (continued)

[35] **PLACE** Handswitch 2-HS-67-146A, CCS HX B ALT DISCH TO HDR A, on 0-M-27A, to the POS A **AND**

VERIFY by light indication that Valve 2-FCV-67-146 CLOSES to the POS A. _____

[36] **RECORD** flow rate as indicated on 2-FT-67-222, CCS HEAT EXCHANGER B ERCW SUP, **THEN**

DEDUCT EFD-1 to obtain flow through CCS HTX B as follows: _____ 1st

_____ CV

2-FT-67-222 flow _____gpm (-) EFD-1 flow _____gpm = _____ gpm	CCS B HX

[37] **PLACE** Handswitch 2-HS-67-143A, CCS HTX B BYPASS FLOW CNTL, on 0-M-27A, to OPEN **AND**

VERIFY by light indication that Valve 2-FCV-67-143 OPENS. _____

[38] **PLACE** Handswitch 2-HS-67-146A, CCS HX B ALT DISCH TO HDR A, on 0-M-27A, to the POS CLOSE **AND**

VERIFY by light indication that Valve 2-FCV-67-146 CLOSES. _____

[39] **PERFORM** flow balance in accordance with Appendix I **AND**

RECORD data on Data Sheet 2 _____

[40] **RECORD** applicable pressure data on Data Sheet 1. _____

[41] **PERFORM** the calculations as indicated on Data Sheet 9. _____

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

6.3 UNIT 1 COLD SHUTDOWN, UNIT 2 LOCA-RECIRC

[1] **VERIFY** prerequisites listed in Section 4.0 and Section 6.1 for Section 6.3 have been completed. _____

[2] **VERIFY** applicable flows are equal to or greater than the minimum required flows as specified in Data Sheet 1. _____

[3] **PLACE** Handswitch 2-HS-67-83A, LWR CNTMT A CLRS SUP CIV-ØB, on 0-M-27A, to CLOSE **AND**

VERIFY by light indication that Valve 2-FCV-67-83 CLOSES. _____

[4] **PLACE** Handswitch 2-HS-67-91A, LWR CNTMT C CLRS SUP CIV-ØB, on 0-M-27A, to CLOSE **AND**

VERIFY by light indication that Valve 2-FCV-67-91 CLOSES. _____

[5] **PLACE** Handswitch 2-HS-67-130A, UPR CNTMT CLR A SUP CIV-ØB, on 0-M-27A, to CLOSE **AND**

VERIFY by light indication that Valve 2-FCV-67-130 CLOSES. _____

[6] **PLACE** Handswitch 2-HS-67-133A, UPR CNTMT CLR C SUP CIV-ØB, on 0-M-27A, to CLOSE **AND**

VERIFY by light indication that Valve 2-FCV-67-133 CLOSES. _____

[7] **PLACE** Handswitch 2-HS-67-125A, CNTMT SPRAY HX 2A INLET, on 0-M-27A, to OPEN **AND**

VERIFY by light indication that Valve 2-FCV-67-125 OPENS. _____

[8] **PLACE** Handswitch 2-HS-67-126A, CNTMT SPRAY HTX 2A DISCH VLV, on 0-M-27A, to OPEN **AND**

VERIFY by light indication that Valve 2-FCV-67-126 OPENS. _____

[9] **VERIFY** flow through 2A SI pump room cooler. _____

[10] **VERIFY** flow through 2A CS pump room cooler. _____

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

6.3 UNIT 1 COLD SHUTDOWN, UNIT 2 LOCA-RECIRC (continued)

[11] **PLACE** Handswitch 1-HS-67-66A, DG 1A-A NORM SUP, on 0-M-27A, to OPEN **AND**

VERIFY by light indication that Valve 1-FCV-67-66 OPENS. _____

[12] **PLACE** Handswitch 2-HS-67-66A, DG 2A-A NORM SUP, on 0-M-27A, to OPEN **AND**

VERIFY by light indication that Valve 2-FCV-67-66 OPENS. _____

[13] **PLACE** Handswitch 1-HS-67-146A, CCS HX A ALT DISCH TO HDR B, on 0-M-27A, to the POS A **AND**

VERIFY by light indication that Valve 1-FCV-67-146 OPENS to the "A" position. _____

[14] **PLACE** Handswitch 1-HS-67-143A, CCS HTX A BYPASS FLOW CNTL, on 0-M-27A, to CLOSE **AND**

VERIFY by light indication that Valve 1-FCV-67-143 CLOSES. _____

[15] **PLACE** Handswitch 1-HS-67-146A, CCS HX A ALT DISCH TO HDR B, on 0-M-27A, to the POS B **AND**

VERIFY by light indication that Valve 1-FCV-67-146 OPENS to the POS B. _____

[16] **PLACE** Handswitch 2-HS-67-146A, CCS HX B ALT DISCH TO HDR A, on 0-M-27A, to the POS A **AND**

VERIFY by light indication that Valve 1-FCV-67-146 OPENS to the POS A. _____

[17] **PLACE** Handswitch 2-HS-67-143A, CCS HTX B BYPASS FLOW CNTL, on 0-M-27A, to CLOSE **AND**

VERIFY by light indication that Valve 2-FCV-67-143 CLOSES. _____

[18] **PLACE** Handswitch 2-HS-67-146A, CCS HX B ALT DISCH TO HDR A, on 0-M-27A, to the POS B **AND**

VERIFY by light indication that Valve 2-FCV-67-146 OPENS to the POS B. _____

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

6.3 UNIT 1 COLD SHUTDOWN, UNIT 2 LOCA-RECIRC (continued)

[19] **RECORD** data and

CALCULATE differential pressure required to simulate the loss of a downstream dam:

_____ 1st

_____ CV

River level 0-LI-67-490, INTAKE PUMP STATION RIVER WATER LEVEL, [0-PNL-276-L147A, IPS, EL 722, West side] local at Intake Pumping Station _____ feet

Header Pressure (0-PI-67-18B) _____ psig

$$DP = (\text{River Level} - 666)\left[\frac{1}{2.31}\right] = \left(\frac{(\text{River Level} - 666)}{2.31}\right) =$$

_____ psid

[20] **RECORD** the running ERCW pump discharge valve numbers for pumps selected in Steps 6.1[9] or 6.1[11] and ΔP from the M & TE used in Step 4.3[12] for the applicable pump.

A. ERCW Pump #1 Discharge Valve 0-ISV-67-504___ _____

$\Delta P_{PMP\#1}$ = _____ psid

M&TE _____ Cal Due Date _____

B. ERCW Pump #2 Discharge Valve 0-ISV-67-504___ _____

$\Delta P_{PMP\#2}$ = _____ psid

M&TE _____ Cal Due Date _____

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

6.3 UNIT 1 COLD SHUTDOWN, UNIT 2 LOCA-RECIRC (continued)

CALCULATE the revised ΔP (this ΔP simulates loss of downstream dam):

C. $\text{Revised}\Delta P_{\text{Pump\#1}} = \frac{\quad}{\Delta P_{\text{Pump\#1}}} + \frac{\quad}{\Delta P_{\text{STEP [19]}}} =$ _____ psid _____

1st

_____

CV

D. $\text{Revised}\Delta P_{\text{Pump\#2}} = \frac{\quad}{\Delta P_{\text{Pump\#2}}} + \frac{\quad}{\Delta P_{\text{STEP [19]}}} =$ _____ psid _____

1st

_____

CV

[21] **ADJUST** the running pumps discharge valves to obtain the revised ΔP calculated in 6.3[20] (it may be necessary to readjust each valve several times to achieve required results), **AND**

RECORD valve turns from OPEN.

A. ERCW Pump #1 Discharge Valve 0-ISV-67-504___ _____

Turns Open _____ ΔP = _____ psid

M&TE _____ Cal Due Date _____

B. ERCW Pump #2 Discharge Valve 0-ISV-67-504___ _____

Turns Open _____ ΔP = _____ psid

M&TE _____ Cal Due Date _____

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

6.3 UNIT 1 COLD SHUTDOWN, UNIT 2 LOCA-RECIRC (continued)

NOTE

Adjustment for flow through any of the newly added components for this mode, identified on Data Sheet 2, DOES NOT invalidate setpoints from previous modes. Adjustment of components set in previous modes, requires a RETEST of the previous mode.

[22] **PERFORM** Train A flow balance in accordance with Appendix I and Data Sheet 2, for U-1 COLD SHUTDOWN, U-2 LOCA-RECIRC. _____

[23] **RE-VERIFY** the ERCW pump discharge valve ΔP as follows:

A. **CALCULATE** the lower limit ΔP from Step 6.3[20] values:

$$[\frac{\text{\_\_\_\_\_}}{\text{Valve\#1}\Delta P} + \frac{\text{\_\_\_\_\_}}{\text{Valve\#2}\Delta P} / 2] * 0.9 = \text{\_\_\_\_\_}$$

_____ 1st

_____ CV

B. **CALCULATE** the upper limit ΔP from Step 6.3[20] values:

$$[\frac{\text{\_\_\_\_\_}}{\text{Valve\#1}\Delta P} + \frac{\text{\_\_\_\_\_}}{\text{Valve\#2}\Delta P} / 2] * 1.1 = \text{\_\_\_\_\_}$$

_____ 1st

_____ CV

[24] **RECORD** the running ERCW pump discharge valves ΔP:

A. ERCW Pump #1 Discharge Valve 0-ISV-67-504___ _____

ΔP = _____ psid

M&TE _____ Cal Due Date _____

B. ERCW Pump #2 Discharge Valve 0-ISV-67-504___ _____

ΔP = _____ psid

M&TE _____ Cal Due Date _____

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

6.3 UNIT 1 COLD SHUTDOWN, UNIT 2 LOCA-RECIRC (continued)

[25] **ENSURE** the values in Step 6.3[24]A & 6.3[24]B are greater than the lower limit value of Step 6.3[23]A and less than the upper limit value of Step 6.3[23]B. _____

NOTE

Only valves that have been adjusted after the throttle setpoint was recorded need to be reperformed. This would be the case if this subsection is being retested because of valve adjustment in a succeeding subsection.

[26] **DETERMINE** the total flow through CCS A HX (EFD-1) and

RECORD data below: _____ _____

EFD-1 (gpm) (CCS A HX) _____

[27] **RECORD** flow rate as indicated on 2-FT-67-222, CCS HEAT EXCHANGER B ERCW SUP, **THEN**

SUBTRACT EFD-1 to obtain flow through CCS HTX B as follows:

_____ 1st

_____ CV

2-FT-67-222 flow _____gpm (-) EFD-1 flow _____gpm = _____ gpm CCS B HX

[28] **VERIFY** the following: **(ACC CRIT)**

A. 1-FCV-67-146 (POS B) flow >5650 gpm. _____

B. 2-FCV-67-146 (POS B) flow > 4400 gpm. _____

[29] **RECORD** throttle valve positions in accordance with Data Sheet 2 for valves applicable to the LOCA Mode. _____

[30] **VERIFY** that all flows on Data Sheet 2 meet the listed acceptance criteria. **(ACC CRIT)** _____

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

6.3 UNIT 1 COLD SHUTDOWN, UNIT 2 LOCA-RECIRC (continued)

NOTE

The following step is NOT applicable if this subsection is being retested due to valve adjustment in another mode invalidating the original setpoint.

[31] **RECORD** pump data on Data Sheet 6. _____

[32] **RECORD** applicable pressure data on Data Sheet 2. _____

NOTE

IF Section 6.4 is to be performed immediately upon completion of Section 6.3, step 6.3[33] may be N/A'd.

[33] **OPEN** ERCW pump discharge valves throttled in Step 6.3[21]. _____

[34] **PLACE** Handswitch 2-HS-67-125A, CNTMT SPRAY HX 2A INLET, on 0-M-27A, to CLOSE **AND**

VERIFY by light indication that Valve 2-FCV-67-125 CLOSES. _____

[35] **PLACE** Handswitch 2-HS-67-126A, CNTMT SPRAY HTX 2A A RETURN VLV, on 0-M-27A, to CLOSE **AND**

VERIFY by light indication that Valve 2-FCV-67-126 CLOSES. _____

[36] **PLACE** Handswitch 1-HS-67-66A, DG 1A-A NORM SUP, on 0-M-27A, to CLOSE **AND**

VERIFY by light indication that Valve 1-FCV-67-66 CLOSES. _____

[37] **PLACE** Handswitch 2-HS-67-66A, DG 2A-A NORM SUP, on 0-M-27A, to CLOSE **AND**

VERIFY by light indication that Valve 2-FCV-67-66 CLOSES. _____

[38] **PLACE** Handswitch 2-HS-67-83A, LWR CNTMT A CLRS SUP CIV-∅B, on 0-M-27A, to OPEN **AND**

VERIFY by light indication that Valve 2-FCV-67-83 OPENS. _____

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

6.3 UNIT 1 COLD SHUTDOWN, UNIT 2 LOCA-RECIRC (continued)

[39] **PLACE** Handswitch 2-HS-67-91A, LWR CNTMT C CLRS SUP CIV-ØB, on 0-M-27A, to OPEN **AND**

VERIFY by light indication that Valve 2-FCV-67-91 OPENS. _____

[40] **PLACE** Handswitch 2-HS-67-130A, UPR CNTMT CLR 2A SUP CIV-ØB, on 0-M-27A, to OPEN **AND**

VERIFY by light indication that Valve 2-FCV-67-130 OPENS. _____

[41] **PLACE** Handswitch 2-HS-67-133A, UPR CNTMT CLR C SUP CIV-ØB, on 0-M-27A, to OPEN **AND**

VERIFY by light indication that Valve 2-FCV-67-133 OPENS. _____

[42] **CLOSE** 2-FCV-67-176 **VERIFY** NO flow through 2A SI pump room cooler. _____

[43] **CLOSE** 2-FCV-67-184 and **VERIFY** NO flow through 2A CS pump room cooler. _____

[44] **PLACE** Handswitch 2-HS-67-143A, CCS HTX B BYPASS FLOW CNTL, on 0-M-27A, to OPEN (>3330 gpm) **AND**

VERIFY by light indication that Valve 2-FCV-67-143 OPENS. _____

[45] **PLACE** Handswitch 2-HS-67-146A, CCS HX B ALT DISCH TO HDR A, on 0-M-27A, to the POS CLOSE **AND**

VERIFY by light indication that Valve 2-FCV-67-146 CLOSES. _____

[46] **PLACE** Handswitch 1-HS-67-143A, CCS HTX A BYPASS FLOW CNTL, on 0-M-27A, to OPEN **AND**

VERIFY by light indication that Valve 1-FCV-67-143 OPENS (>3330 gpm). _____

[47] **PLACE** Handswitch 1-HS-67-146A, CCS HX A ALT DISCH TO HDR B, on 0-M-27A, to the POS CLOSE **AND**

VERIFY by light indication that Valve 1-FCV-67-146 CLOSES. _____

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

6.4 UNIT 1 LOCA-RECIRC - UNIT 2 COLD SHUTDOWN

[1] **VERIFY** prerequisites listed in Section 4.0 and 6.1 for Section 6.4 have been completed. _____

[2] **VERIFY** flows are equal to or greater than the minimum required flows, as specified by Data Sheet 1. _____

[3] **PLACE** Handswitch 1-HS-67-83A, LWR CNTMT A CLRS SUP CIV-ØB, on 0-M-27A, to CLOSE **AND**

VERIFY by light indication that Valve 1-FCV-67-83 CLOSES. _____

[4] **PLACE** Handswitch 1-HS-67-91A, LWR CNTMT C CLRS SUP CIV-ØB, on 0-M-27A, to CLOSE **AND**

VERIFY by light indication that Valve 1-FCV-67-91 CLOSES. _____

[5] **PLACE** Handswitch 1-HS-67-130A, UPR CNTMT CLR A SUP CIV-ØB, on 0-M-27A, to CLOSE **AND**

VERIFY by light indication that Valve 1-FCV-67-130 CLOSES. _____

[6] **PLACE** Handswitch 1-HS-67-133A, UPR CNTMT CLR C SUP CIV-ØB, on 0-M-27A, to CLOSE **AND**

VERIFY by light indication that Valve 1-FCV-67-133 CLOSES. _____

[7] **PLACE** Handswitch 1-HS-67-125A, CNTMT SPRAY HX 1A INLET, on 0-M-27A, to OPEN **AND**

VERIFY by light indication that Valve 1-FCV-67-125 OPENS. _____

[8] **PLACE** Handswitch 1-HS-67-126A, CNTMT SPRAY HTX 1A RETURN VLV, on 0-M-27A, to OPEN **AND**

VERIFY by light indication that Valve 1-FCV-67-126 OPENS. _____

[9] **VERIFY** flow through 2A SI pump room cooler. _____

[10] **VERIFY** flow through 2A CS pump room cooler. _____

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

6.4 UNIT 1 LOCA-RECIRC - UNIT 2 COLD SHUTDOWN (continued)

[11] **PLACE** Handswitch 1-HS-67-66A, DG 1A-A NORM SUP, on 0-M-27A, to OPEN **AND**

VERIFY by light indication that Valve 1-FCV-67-66 OPENS. _____

[12] **PLACE** Handswitch 2-HS-67-66A, DG 2A-A NORM SUP, on 0-M-27A, to OPEN **AND**

VERIFY by light indication that Valve 2-FCV-67-66 OPENS. _____

[13] **PLACE** Handswitch 2-HS-67-146A, CCS HX B ALT DISCH TO HDR B, on 0-M-27A, to the POS A **AND**

VERIFY by light indication that Valve 2-FCV-67-146 OPENS to the POS A. _____

[14] **PLACE** Handswitch 2-HS-67-143A, CCS HTX B BYPASS FLOW CNTL, on 0-M-27A, to CLOSE **AND**

VERIFY by light indication that Valve 2-FCV-67-143 CLOSES. _____

[15] **PLACE** Handswitch 1-HS-67-146A, CCS HX A ALT DISCH TO HDR A, on 0-M-27A, to the POS A **AND**

VERIFY by light indication that Valve 1-FCV-67-146 OPENS to the POS A. _____

[16] **PLACE** Handswitch 1-HS-67-143A, CCS HTX A BYPASS FLOW CNTL, on 0-M-27A, to CLOSE **AND**

VERIFY by light indication that Valve 1-FCV-67-143 CLOSES. _____

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

6.4 UNIT 1 LOCA-RECIRC - UNIT 2 COLD SHUTDOWN (continued)

NOTE

If ERCW pump discharge valves are throttled (Step 6.3[19]) and pump alignments are unchanged, THEN (Step 6.4[20]), through 6.4[19] may be N/A'd

[17] **RECORD** data **AND**

CALCULATE differential pressure required to simulate the loss of a downstream dam:

_____ 1st

_____ CV

River level (0-LI-67-479) local at Intake Pumping Station _____ feet

Header Pressure (0-PI-67-18B) _____ psig

$$DP = (\text{River Level} - 666)\left[\frac{1}{2.31}\right] = \left(\frac{\text{River Level} - 666}{2.31}\right) =$$ _____ psid

A. **RECORD** the running ERCW pump discharge valve numbers for pumps selected in Steps 6.1[9] or 6.1[11] and ΔP from the M & TE used in Step 4.3[12] for the applicable pump.

ERCW Pump #1 Discharge Valve 0-ISV-67-504___ _____

$\Delta P_{PMP\#1}$ = _____ psid

M&TE _____ Cal Due Date _____

B. ERCW Pump #2 Discharge Valve 0-ISV-67-504___ _____

$\Delta P_{PMP\#2}$ = _____ psid

M&TE _____ Cal Due Date _____

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

6.4 UNIT 1 LOCA-RECIRC - UNIT 2 COLD SHUTDOWN (continued)

[18] **CALCULATE** the revised ΔP (this ΔP simulates loss of downstream dam):

A. $\text{Revised}\Delta P_{\text{Pump\#1}} = \frac{\quad}{\Delta P_{\text{Pump\#1}}} + \frac{\quad}{\Delta P_{\text{Step [17]}}} =$ _____psid _____

1st

_____

CV

B. $\text{Revised}\Delta P_{\text{Pump\#2}} = \frac{\quad}{\Delta P_{\text{Pump\#2}}} + \frac{\quad}{\Delta P_{\text{Step [17]}}} =$ _____psid _____

1st

_____

CV

[19] **ADJUST** the running pumps discharge valves to obtain the revised ΔP calculated in step 6.4[17]A (it may be necessary to readjust each valve several times to achieve required results).

A. ERCW Pump #1 Discharge Valve 0-ISV-67-504___ _____

ΔP = _____ psid

M&TE _____ Cal Due Date _____

B. ERCW Pump #2 Discharge Valve 0-ISV-67-504___ _____

ΔP = _____ psid

M&TE _____ Cal Due Date _____

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

6.4 UNIT 1 LOCA-RECIRC - UNIT 2 COLD SHUTDOWN (continued)

NOTE

IF Steps 6.4[17] through 6.4[19] were previously N/A'd then, Steps 6.4[20] through 6.4[22] may be N/A'd

[20] **RE-VERIFY** the ERCW pump discharge valve ΔP as follows:

A. **CALCULATE** the lower limit ΔP from 6.4[19] values:

$[\frac{\text{\_\_\_\_\_}}{\text{Valve\#1}\Delta P} + \frac{\text{\_\_\_\_\_}}{\text{Valve\#2}\Delta P} / 2] * 0.9 = \text{\_\_\_\_\_}$

_____ 1st

_____ CV

B. **CALCULATE** the upper limit ΔP from 6.4[19] values:

$[\frac{\text{\_\_\_\_\_}}{\text{Valve\#1}\Delta P} + \frac{\text{\_\_\_\_\_}}{\text{Valve\#2}\Delta P} / 2] * 1.1 = \text{\_\_\_\_\_}$

_____ 1st

_____ CV

[21] **RECORD** the running ERCW pump discharge valves ΔP:

A. ERCW Pump #1 Discharge Valve 0-ISV-67-504___ _____

ΔP = _____ psid

M&TE _____ Cal Due Date _____

B. ERCW Pump #2 Discharge Valve 0-ISV-67-504___ _____

ΔP = _____ psid

M&TE _____ Cal Due Date _____

[22] **ENSURE** values in Step 6.4[21]A & 6.4[21]B are greater than the lower limit value of Step 6.4[20]A and less than the upper limit value of Step 6.4[20]B. _____

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

6.4 UNIT 1 LOCA-RECIRC - UNIT 2 COLD SHUTDOWN (continued)

NOTE

Only valves that have been adjusted after the throttle setpoint was recorded need to be re-performed. This would be the case if this section is being retested because of valve adjustment in a succeeding section.

[23] **DETERMINE** the total flow through CCS A HX (EFD-1) and

RECORD data below: _____ _____

EFD-1 (gpm) (CCS A HX) _____

[24] **RECORD** flow rate as indicated on 2-FT-67-222, CCS HEAT EXCHANGER B ERCW SUP, **THEN**

SUBTRACT EFD-1 to obtain flow through CCS HTX B as follows:

_____ 1st

_____ CV

2-FT-67-222 flow	_____gpm	(-)	EFD-1 flow	_____gpm	=	_____ gpm	CCS B HX

[25] **VERIFY** the following: **(ACC CRIT)**

A. 1-FCV-67-146 ("A" valve position) flow >4400 gpm. _____

B. 2-FCV-67-146 ("A" valve position) flow > 5850 gpm. _____

NOTE

Adjustment for flow through any of the newly added components for this mode, identified on Data Sheet 3, DOES NOT invalidate setpoints from previous modes. Adjustment of components set in previous modes, requires a RETEST of the previous mode.

[26] **PERFORM** Train A flow balance in accordance with Appendix I and Data Sheet 3, for U-1 LOCA-RECIRC, U-2 COLD SHUTDOWN. **(ACC CRIT)** _____

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

6.4 UNIT 1 LOCA-RECIRC - UNIT 2 COLD SHUTDOWN (continued)

NOTE

The following step is NOT applicable if this Section is being retested due to valve adjustment in another mode invalidating the original setpoint.

[27] **RECORD** pump data on Data Sheet 7. _____

[28] **RECORD** applicable pressure data on Data Sheet 3. _____

[29] **OPEN** ERCW pump discharge valves throttled in Step 6.4[19]. _____

[30] **PLACE** Handswitch 1-HS-67-83A, LWR CNTMT 1A CLRS SUP CIV-∅B, on 0-M-27A, to OPEN **AND**

VERIFY by light indication that Valve 1-FCV-67-83 OPENS. _____

[31] **PLACE** Handswitch 1-HS-67-91A, LWR CNTMT 1C CLRS SUP CIV-ϕB, on 0-M-27A, to OPEN **AND**

VERIFY by light indication that Valve 1-FCV-67-91 OPENS. _____

[32] **PLACE** Handswitch 1-HS-67-130A, UPR CNTMT CLR 1A SUP CIV-ϕB, on 0-M-27A, to OPEN **AND**

VERIFY by light indication that Valve 1-FCV-67-130 OPENS. _____

[33] **PLACE** Handswitch 1-HS-67-133A, UPR CNTMT CLR 1C SUP CIV-ϕB, on 0-M-27A, to OPEN **AND**

VERIFY by light indication that Valve 1-FCV-67-133 OPENS. _____

[34] **PLACE** Handswitch 1-HS-67-125A, CNTMT SPRAY HX 1A INLET, on 0-M-27A, to CLOSE **AND**

VERIFY by light indication that Valve 1-FCV-67-125 CLOSES. _____

[35] **PLACE** Handswitch 1-HS-67-126A, CNTMT SPRAY HTX 1A DISCH VLV, on 0-M-27A, to CLOSE **AND**

VERIFY by light indication that Valve 1-FCV-67-126 CLOSES. _____

[36] **CLOSE** 1-FCV-67-176 **VERIFY** NO flow through 1A SI pump room cooler. _____

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

6.4 UNIT 1 LOCA-RECIRC - UNIT 2 COLD SHUTDOWN (continued)

[37] **CLOSE** 1-FCV-67-184 and **VERIFY** NO flow through 1A CS pump room cooler. _____

[38] **PLACE** Handswitch 1-HS-67-143A, CCS HTX A BYPASS FLOW CNTL, on 0-M-27A, to OPEN (> 3330 gpm) **AND**

VERIFY by light indication that Valve 1-FCV-67-143 OPENS. _____

[39] **PLACE** Handswitch 1-HS-67-146A, CCS HX A ALT DISCH TO HDR B, on 0-M-27A, to the POS CLOSE **AND**

VERIFY by light indication that Valve 1-FCV-67-146 CLOSES. _____

[40] **PLACE** Handswitch 2-HS-67-143A, CCS HTX B BYPASS FLOW CNTL, on 0-M-27A, to OPEN (>3330 gpm) **AND**

VERIFY by light indication that Valve 2-FCV-67-143 OPENS. _____

[41] **PLACE** Handswitch 2-HS-67-146A, CCS HX B ALT DISCH TO HDR A, on 0-M-27A, to the POS CLOSE **AND**

VERIFY by light indication that Valve 2-FCV-67-146 CLOSES. _____

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

6.5 UNIT 1 HOT SHUTDOWN - UNIT 2 STARTUP

NOTE

The Normal Mode flow balance is done solely to put the system in a configuration for setting of the Component Cooling Heat Exchanger discharge valve limit switches, and DOES NOT constitute acceptance criteria OR ultimate alignment for normal operation.

[1] **VERIFY** prerequisites listed in Sections 4.0 and 6.1 for Section 6.5 have been completed. _____

[2] **ENSURE** Normal Operation Mode flow balance has been performed in accordance with Data Sheet 1, **AND**

VERIFY flows are equal to or greater than the minimum required flows on Data Sheet 1. _____

[3] **PLACE** Handswitch 1-HS-67-146A, CCS HX A ALT DISCH TO HDR B, on 0-M-27A, to the POS B **AND**

VERIFY by light indication that Valve 1-FCV-67-146 OPENS to the POS B. _____

[4] **PLACE** Handswitch 2-HS-67-146A, CCS HX B ALT DISCH TO HDR A, on 0-M-27A, to the POS B **AND**

VERIFY by light indication that Valve 2-FCV-67-146 OPENS to the POS B. _____

[5] **POSITION** Handswitch 1-HS-67-143A, CCS HX A DISCH TO HDR B, on 0-M-27A, to obtain total indicated flow (EFD-1) of >6650 gpm (**ACC CRIT**). _____

[6] **POSITION** Handswitch 2-HS-67-143A, CCS HX A DISCH TO HDR B, on 0-M-27A, to obtain total indicated flow (2-FI-67-222 - EFD-1) of >6650 gpm (**ACC CRIT**). _____

2-FI-67-222 flow _____gpm (-) EFD-1 flow ____ gpm = _____ gpm CCS B HX

[7] **DETERMINE** the total flow through CCS A HX (EFD-1) and

RECORD data below: _____ _____

EFD-1 (gpm) (CCS A HX) _____

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

6.5 UNIT 1 HOT SHUTDOWN - UNIT 2 STARTUP (continued)

[8] **RECORD** the differential pressure from the ΔP gauge/device at 2-FT-67-222, CCS HEAT EXCHANGER B ERCW SUP FLOW, **AND**,

CALCULATE the total flow (**ACC CRIT**). _____

1st

_____

CV

M&TE _____ Cal Due Date

EFD FLOW _____ GPM

M&TE _____ Cal Due Date _____

FLOW ΔP = _____ in. H_2O

K $(\Delta P)^{1/2}$ = 852 ($)^{1/2}$ = _____ GPM

[9] **SUBTRACT** EFD-1 to obtain flow through CCS HTX B as follows:_____

1st

_____

CV

2-FT-67-222 flow _____gpm (-) EFD-1 flow _____gpm = _____ gpm CCS B HX

[10] **POSITION** Handswitch 2-HS-67-143A, CCS HX B DISCH TO HDR A, on 0-M-27A, to obtain total indicated flow of >5850 gpm. (2-FT-67-222 minus EFD-1) _____

[11] **IF NECESSARY, ADJUST** Handswitch 1-HS-67-143A, CCS HX A DISCH TO HDR B, on 0-M-27A, to obtain total indicated flow (EFD-1) of >6650 gpm. _____

[12] **IF NECESSARY, ADJUST** Handswitch 2-HS-67-143A, CCS HX B DISCH TO HDR A, on 0-M-27A, to obtain total indicated flow of >5850 gpm. _____

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

6.5 UNIT 1 HOT SHUTDOWN - UNIT 2 STARTUP (continued)

[13] **RECORD** the differential pressure from the ΔP gauge/device at 2-FT-67-222, CCS HEAT EXCHANGER B ERCW SUP FLOW, **AND**,

CALCULATE the total flow (**ACC CRIT**). _____ 1st _____ CV

M&TE _____ Cal Due Date

EFD FLOW _____ GPM

M&TE _____ Cal Due Date _____

FLOW ΔP = _____ in. H_2O

K $(\Delta P)^{1/2}$ = 852 ($)^{1/2}$ = _____ GPM

[14] **VERIFY** the following: **(ACC CRIT)**

C. CCS A HX TOTAL FLOW >6650 gpm. _____

D. CCS B HX TOTAL FLOW > 5850 gpm. _____

[15] **PERFORM** Train A flow balance and

RECORD data in accordance with Appendix I and Data Sheet 4, and Data Sheet 5, for U-1 HOT SHUTDOWN, U-2 STARTUP. _____

[16] **IF** flow balance adjustments were required, **THEN:**

A. **VERIFY** 1-FCV-67-143, CCS HX A DISCH TO HDR B, on 0-M-27A is positioned to obtain flow of >6650 gpm. **(ACC CRIT)** _____

B. **VERIFY** 2-FCV-67-143, CCS HX B DISCH TO HDR A, on 0-M-27A is positioned to obtain flow of >5850 gpm. **(ACC CRIT)** _____

OTHERWISE

C. **RE-PERFORM** steps 6.5[3] through 6.5[16]B. (This step may be N/A if not performed.) _____

[17] **RECORD** applicable pressure data on Data Sheet 4. _____

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

6.5 UNIT 1 HOT SHUTDOWN - UNIT 2 STARTUP (continued)

[18] **PLACE** Handswitch 1-HS-67-146A, CCS HX A ALT DISCH TO HDR B, on 0-M-27A, to the POS CLOSE **AND**

VERIFY by light indication that Valve 1-FCV-67-146 CLOSES. _____

[19] **ADJUST** Handswitch 1-HS-67-143A, CCS HTX A BYPASS FLOW CNTL, on 0-M-27A, to obtain > 3330 (3330-3630) gpm flow rate as indicated by EFD-1. _____

[20] **PLACE** Handswitch 2-HS-67-146A, CCS HX B ALT DISCH TO HDR A, on 0-M-27A, to the POS CLOSE **AND**

VERIFY by light indication that Valve 2-FCV-67-146 CLOSES. _____

[21] **ADJUST** Handswitch 2-HS-67-143A, CCS HTX B BYPASS FLOW CNTL, on 0-M-27A, to obtain >3330 (3330-3630) gpm flow rate as indicated by 2-FT-67-222 (Total flow rate minus EFD-1 flow). _____

7.0 POST-PERFORMANCE ACTIVITIES

[1] **REQUEST** Operations to terminate ERCW strainer backwash operation and return the strainer alignment to normal configuration. _____

[2] **RESTORE** Station and Control Air compressors A, B & C to automatic operation. _____

[3] **ENSURE** the Auxiliary Air Compressors control switches are placed in auto. _____

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

7.0 POST-PERFORMANCE ACTIVITIES (continued)

[4] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 1-ISV-32-3609 to RESTORE air to 1-TCV-67-84, LWR CONT VENT CLR 1A.

_____ 1st

_____ CV

CLOSE the air bleed petcock, **AND**

OPEN Air Supply Valve 2-ISV-32-3609 to RESTORE air to 2-TCV-67-84, LWR CONT VENT CLR 2A.

_____ 1st

_____ CV

[5] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 1-ISV-32-3610 to RESTORE air to 1-TCV-67-85, CRDM VENT CLR 1A.

_____ 1st

_____ CV

[6] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 2-ISV-32-3610 to RESTORE air to 2-TCV-67-85, CRDM VENT CLR 2A.

_____ 1st

_____ CV

[7] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 1-ISV-32-3611 to RESTORE air to 1-TCV-67-86, RCP MTR CLR 1-1.

_____ 1st

_____ CV

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

7.0 POST-PERFORMANCE ACTIVITIES (continued)

[8] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 2-ISV-32-3611 to RESTORE air to 2-TCV-67-86, RCP MTR CLR 2-1.

_____ 1st

_____ CV

[9] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 1-ISV-32-3561 to RESTORE air to 1-TCV-67-92, LWR CONT VENT CLR 1C.

_____ 1st

_____ CV

[10] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 2-ISV-32-3561 to RESTORE air to 2-TCV-67-92, LWR CONT VENT CLR 2C.

_____ 1st

_____ CV

[11] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 1-ISV-32-3560 to RESTORE air to 1-TCV-67-93, CRDM VENT CLR 1C.

_____ 1st

_____ CV

[12] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 2-ISV-32-3560 to RESTORE air to 2-TCV-67-93, CRDM VENT CLR 2C.

_____ 1st

_____ CV

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

7.0 POST-PERFORMANCE ACTIVITIES (continued)

[13] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 1-ISV-32-3559 to RESTORE air to 1-TCV-67-94, RCP MTR CLR 1-3.

_____ 1st

_____ CV

[14] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 2-ISV-32-3559 to RESTORE air to 2-TCV-67-94, RCP MTR CLR 2-3.

_____ 1st

_____ CV

[15] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 1-ISV-32-3158 to RESTORE air to 1-TCV-67-129, UPR CONT VENT CLR 1A.

_____ 1st

_____ CV

[16] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 1-ISV-32-3157 to RESTORE air to 1-TCV-67-132, UPR CONT VENT CLR 1C.

_____ 1st

_____ CV

[17] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 2-ISV-32-3117 to RESTORE air to 2-TCV-67-129, UPR CONT VENT CLR 2A.

_____ 1st

_____ CV

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

7.0 POST-PERFORMANCE ACTIVITIES (continued)

[18] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 2-ISV-32-3118 to RESTORE air to 2-TCV-67-132, UPR CONT VENT CLR 2C.

_____ 1st

_____ CV

[19] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 1-ISV-32-3282 to RESTORE air to 1-FCV-67-213, SF PIT & TB BSTR PMP SPACE CLR 1A-A.

_____ 1st

_____ CV

[20] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 1-ISV-32-3083 to RESTORE air to 1-FCV-67-162, CCS & AF PMPS SPACE CLR 1A-A.

_____ 1st

_____ CV

[21] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 1-ISV-32-2984 to RESTORE air to 1-FCV-67-176, SI PMP RM CLR 1A.

_____ 1st

_____ CV

[22] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 2-ISV-32-2881 to RESTORE air to 2-FCV-67-176, SI PMP RM CLR 2A.

_____ 1st

_____ CV

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

7.0 POST-PERFORMANCE ACTIVITIES (continued)

[23] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 1-ISV-32-3018 to RESTORE air to 1-FCV-67-184, CS PMP RM CLR 1A.

_____ 1st

_____ CV

[24] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 2-ISV-32-3029 to RESTORE air to 2-FCV-67-184, CS PMP RM CLR 2A.

_____ 1st

_____ CV

[25] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 1-ISV-32-2955 to RESTORE air to 1-FCV-67-346, PEN RM CLR 1A1.

_____ 1st

_____ CV

[26] **CLOSE** the air bleed petcock, **AND**

OPEN and **LOCK**Air Supply Valve 2-ISV-32-2963 to RESTORE air to 2-FCV-67-346, PEN RM CLR 2A1.

_____ 1st

_____ CV

[27] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 1-ISV-32-3146 to RESTORE air to 1-FCV-67-350, PEN RM CLR 1A2.

_____ 1st

_____ CV

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

7.0 POST-PERFORMANCE ACTIVITIES (continued)

[28] **CLOSE** the air bleed petcock, **AND**

OPEN and **LOCK** Air Supply Valve 2-ISV-32-3166 to RESTORE air to 2-FCV-67-350, PEN RM CLR 2A2.

_____ 1st

_____ CV

[29] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 1-ISV-32-3294 to RESTORE air to 1-FCV-67-354, PEN RM CLR 1A3.

_____ 1st

_____ CV

[30] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 2-ISV-32-3322 to RESTORE air to 2-FCV-67-354, PEN RM CLR 2A3.

_____ 1st

_____ CV

[31] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 1-ISV-32-2961 to RESTORE air to 1-FCV-67-342, PIPE CHASE CLR 1A.

_____ 1st

_____ CV

[32] **CLOSE** the air bleed petcock, **AND**

OPEN and **LOCK** Air Supply Valve 2-ISV-32-3804 to RESTORE air to 2-FCV-67-342, PIPE CHASE CLR 2A.

_____ 1st

_____ CV

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

7.0 POST-PERFORMANCE ACTIVITIES (continued)

[33] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 2-ISV-32-3409 to RESTORE air to 2-FCV-67-336, EMER GAS TRTMT RM CLR.

_____ 1st

_____ CV

[34] **CLOSE** the air bleed petcock, **AND**

OPEN Air Supply Valve 2-ISV-32-3030 to RESTORE air to 2-FCV-67-217, BA XFER PMPS & AF PMPS SP CLR.

_____ 1st

_____ CV

[35] **RESTORE** 0-TCV-67-1050, AUTO WATER REGULATING VALVE EBR CHILLER A-A, to normal operation by turning the Manual Flushing Screw at the top of the actuator fully counter-clockwise to allow pilot valve control.

_____ 1st

_____ CV

[36] **RESTORE** 0-TCV-67-1051, AUTO WATER REGULATING VALVE MCR CHILLER A-A, to normal operation by turning the Manual Flushing Screw at the top of the actuator fully counter-clockwise to allow pilot valve control.

_____ 1st

_____ CV

[37] **ROTATE** the local Bypass Stem fully clockwise to its seated postion for normal automatic valve operation (SHTDN BD RM A/C TEMP CONTROL). _____

[38] **PLACE** Handswitch 0-HS-67-208A, SS AND CNTL AIR COMPR SUP HDR 1B ISOL, on 0-M-27A to OPEN and

VERIFY by light indication that Valve 0-FCV-67-208 OPENS. _____

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

7.0 POST-PERFORMANCE ACTIVITIES (continued)

[39] **RESTORE** 1-TCV-67-115, INSTR RM WATER CLR 1A1 ERCW SUP TEMP CNTL, to normal by removing the temporary nitrogen supply.

1st _____
CV

[40] **RESTORE** 2-TCV-67-115, INSTR RM WATER CLR 2A1 ERCW SUP TEMP CNTL, to normal by removing the temporary nitrogen supply.

_____
1st
_____
CV

[41] **RE-ESTABLISH** the following administratively LOCKED valves in the OPEN position with breakers OPEN where applicable:

VALVE	BREAKER OPEN	INIT/DATE	CV/DATE
1-BKR-67-22-A	☐	_____/_____	_____/_____
2-BKR-67-22-A	☐	_____/_____	_____/_____
2-BKR-67-147-B	☐	_____/_____	_____/_____

VALVE	LOCKED OPEN	INIT/DATE	CV/DATE
1-FCV-67-22	☐	_____/_____	_____/_____
2-FCV-67-22	☐	_____/_____	_____/_____
2-FCV-67-147	☐	_____/_____	_____/_____

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

7.0 POST-PERFORMANCE ACTIVITIES (continued)

[42] **RE-ESTABLISH** the following administratively LOCKED valves in the CLOSED position with Breaker OPEN:

VALVE	BREAKER OPEN	INIT/DATE	CV/DATE
1-FCV-67-147	☐	_____/_____	_____/_____
0-FCV-67-151	☐	_____/_____	_____/_____

VALVE	LOCKED OPEN	INIT/DATE	CV/DATE
1-FCV-67-147	☐	_____/_____	_____/_____
0-FCV-67-151	☐	_____/_____	_____/_____

[43] **REMOVE** the EFD downstream of "TEE" on 2A header and upstream of 1-FCV-67-478, ERCW CCS HX A SUP and , and label it EFD-1 Step 4.3[11]V.

_____ 1st

_____ CV

[44] **REMOVE** the 0-50" H_2O differential pressure gauge between 0-PT-67-18 and 0-PT-67-29, ERCW PUMP A-A DISCH PRESS, installed at Step 4.3[12]A.

_____ 1st

_____ CV

[45] **REMOVE** the 0-50" H_2O differential pressure gauge between 0-PT-67-18 and 0-PT-67-33, ERCW PUMP B-A DISCH PRESS, installed at Step 4.3[12]B.

_____ 1st

_____ CV

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

7.0 POST-PERFORMANCE ACTIVITIES (continued)

[46] **REMOVE** the 0-50" H_2O differential pressure gauge between 0-PT-67-18 and 0-PT-67-37, ERCW PUMP C-A DISCH PRESS, installed at Step 4.3[12]C.

_____ 1st

_____ CV

[47] **REMOVE** the 0-50" H_2O differential pressure gauge between 0-PT-67-18 and 0-PT-67-41, ERCW PUMP D-A DISCH PRESS, installed at Step 4.3[12]D.

_____ 1st

_____ CV

[48] **ENSURE** test EF, pressure gauges and ΔP devices are removed at the following locations:

A. **REMOVE** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 1-VTV-67-534A, CS HEAT EXCHANGER 1A ERCW SUP HEADER VENT.

_____ 1st

_____ CV

B. **REMOVE** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 2-VTV-67-534A, CS HEAT EXCHANGER 2A ERCW SUP HEADER VENT.

_____ 1st

_____ CV

C. **REMOVE** a 0-200 psig pressure gauge, +1.0% accuracy, at the upstream side of 1-FE-67-61, ERCW SUP HEADER 1A FLOW.

_____ 1st

_____ CV

D. **REMOVE** a 0-200 psig pressure gauge, +1.0% accuracy, at the downstream side of 1-FE-67-61, ERCW SUP HEADER 1A FLOW.

_____ 1st

_____ CV

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

7.0 POST-PERFORMANCE ACTIVITIES (continued)

E. **REMOVE** a 0-200 psig pressure gauge, +1.0% accuracy, at the upstream side of 2-FE-67-61, ERCW SUP HEADER 2A FLOW.

_____ 1st

_____ CV

F. **REMOVE** a 0-200 psig pressure gauge, +1.0% accuracy, at the downstream side of 2-FE-67-61, ERCW SUP HEADER 2A FLOW.

_____ 1st

_____ CV

G. **REMOVE** a 0-200 psig pressure gauge, +1.0% accuracy, at the inlet side of 1-DRV-67-547, ERCW CCS HX A DRAIN.

_____ 1st

_____ CV

H. **REMOVE** a 0-200 psig pressure gaug, +1.0% accuracy, at the inlet side of 2-DRV-67-547, ERCW CCS HX B DRAIN.

_____ 1st

_____ CV

I. **REMOVE** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 0-TV-67-621A, MCR WTR CHILLER A-A ERCW SUP TEST CONN.

_____ 1st

_____ CV

J. **REMOVE** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 1-TV-67-690A, UPPER COMPARTMENT VENT CLR 1A ERCW SUP HDR TEST VENT.

_____ 1st

_____ CV

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

7.0 POST-PERFORMANCE ACTIVITIES (continued)

K. **REMOVE** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 2-TV-67-690A, UPPER COMPARTMENT VENT CLR 1A ERCW SUP HDR TEST VENT.

_____ 1st

_____ CV

L. **REMOVE** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 0-VTV-67-616A, ELEC BD RM A/C COND A ERCW SUP TEST VENT CONN.

_____ 1st

_____ CV

M. **REMOVE** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 0-PT-67-29, ERCW PUMP A-A DISCH PRESS, mounted at the same elevation as 0-PI-67-29B.

_____ 1st

_____ CV

N. **REMOVE** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 0-PT-67-37, ERCW PUMP C-A DISCH PRESS, mounted at the same elevation as 0-PI-67-37B.

_____ 1st

_____ CV

O. **REMOVE** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 0-PT-67-41, ERCW PUMP A-A DISCH PRESS, mounted at the same elevation as 0-PI-67-41B.

_____ 1st

_____ CV

P. **REMOVE** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 1-PI-67-9B, ERCW STRAINER 1A-A OUT PRESS.

_____ 1st

_____ CV

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

7.0 POST-PERFORMANCE ACTIVITIES (continued)

Q. **REMOVE** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 2-PI-67-9B, ERCW STRAINER 2A-A OUT PRESS.

_____ 1st

_____ CV

R. **REMOVE** a 0-200 psig pressure gauge, +1.0% accuracy, at valve 0-PI-67-17, ERCW HEADER B PRESS.

_____ 1st

_____ CV

[49] **Notify** Operations that Containment Spray Heat Exchangers may be placed in layup condition in accordance with SOI-67.02, if so desired by Unit 1 Operations. _____

[50] **VERIFY** that Post-test calibration of the M&TE used to record quantitative acceptance criteria has been satisfactorily performed and the results recorded on Measuring and Test Equipment (M&TE) Log in SMP-9.0. _____

[51] **VERIFY** that Post-test calibration of permanent plant instruments used to record quantitative acceptance criteria has been satisfactorily performed, **AND**

RECORD the results on Appendix C, Permanent Plant Instrumentation Log. _____

[52] **NOTIFY** the Unit 2 and Unit 1 SM/SRO of the test completion and system alignment. _____

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

8.0 RECORDS

8.1 QA Records

Completed Test Package (PTI)

8.2 Non-QA Records

None

Appendix A
(Page 1 of 2)

TEST INSTRUCTIONS REFERENCE REVIEW

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

Additional copies of this table may be made as necessary.

PROCEDURE/ INSTRUCTION	REVISION/CHANGES	INITIAL AND DATE. (N/A for no change)
FSAR Section 9.2.1 Table 14.2-1 Shts 4 & 5 of 89		
N3-67-4002 System Description for Essential Raw Cooling Water System		
T2-TST-067, Essential Raw Cooling Water System		
SOI-67.1, Essential Raw Cooling Water System Operating Instruction		
GOI-7, Generic Equipment Operating Guilelines		
VTD-M359-003 Rev 0, Valve Technical Manual for Metrex Model FTVA-400-WAT 4" 2 War Refrigerant Pressure Activated Condenser Cooling Water Control Valve.		
1-SOI-30.05, Auxiliary Building HVAC Systems		

Appendix A
(Page 2 of 2)

TEST INSTRUCTIONS REFERENCE REVIEW

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

PROCEDURE/ INSTRUCTION	REVISION/CHANGES	INITIAL AND DATE. (N/A for no change)

Appendix B
(Page 1 of 1)

TEMPORARY CONDITION LOG

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

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 5)

PERMANENT PLANT INSTRUMENTATION LOG

Data Package: Page ____ of ____ **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		
0-FIS-67-206							
1-FI-67-69							
1-FI-67-263							
2-FI-67-263							
1-FI-67-265							
2-FI-67-265							
1-FI-67-277							
2-FI-67-69							
2-FI-67-277							
1-LPF-67-61							
2-LPF-67-61							

Appendix C
(Page 2 of 5)

PERMANENT PLANT INSTRUMENTATION LOG

Data Package: Page ____ of ____ **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		
1-LPF-67-136							
2-LPF-67-136							
0-LPP-67-18							
1-PI-67-9B							
2-PI-67-9B							
1-PI-67-9A							
2-PI-67-9A							
0-PDI-67-431A							
0-PS-67-480							

Appendix C
(Page 3 of 5)

PERMANENT PLANT INSTRUMENTATION LOG

Data Package: Page ____ of ____ **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		
0-PS-67-481							
0-PS-67-482							
0-PS-67-483							
0-PS-67-460							
0-PS-67-462							
0-LPP-67-29							
0-LPP-67-33							
0-LPP-67-37							
0-LPP-67-41							

Appendix C
(Page 4 of 5)

PERMANENT PLANT INSTRUMENTATION LOG

Data Package: Page ____ of ____ **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		
0-LPT-67-26A							
0-LPT-67-26B							
0-LPT-67-30A							
0-LPT-67-30B							
0-LPT-67-34A							
0-LPT-67-34B							
0-LPT-67-38A							
0-LPT-67-38B							
2-LPF-67-222							

Appendix C
(Page 5 of 5)

PERMANENT PLANT INSTRUMENTATION LOG

Data Package: Page ____ of ____ **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		
0-LI-67-479							

[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 12)

SWITCH LINEUP

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

Switch	Location	Description	Position	Verified	Date
0-HS-67-205A	0-M-27A	C&SS COMPR SUP FROM HDR 1A	NORMAL		
1-HS-67-127A	0-M-27A	1A AB CLRS C&SS AUX AIR A SUP HDR	NORMAL		
1-HS-67-131A	0-M-27A	UPR CNTMT CLR 1A RET CIV-ϕB	A-AUTO		
1-HS-67-295A	0-M-27A	UPR CNTMT CLR 1A RET CIV-ϕB	A-AUTO		
1-HS-67-130A	0-M-27A	UPR CNTMT CLR 1A SUP CIV-ϕB	A-AUTO		
1-HS-67-126A	0-M-27A	CNTMT SPRAY HX 1A RETURN	NORMAL		
1-HS-67-125A	0-M-27A	CNTMT SPRAY HX 1A INLET	NORMAL		
1-HS-67-134A	0-M-27A	UPR CNTMT CLRS 1C RET CIV-ϕB	A-AUTO		
1-HS-67-296A	0-M-27A	UPR CNTMT CLRS 1C RET CIV-ϕB	A-AUTO		
1-HS-67-133A	0-M-27A	UPR CNTMT CLR 1C SUP CIV-ϕB	A-AUTO		
1-HS-67-88A	0-M-27A	LWR CNTMT 1A CLRS RET CIV-ϕB	A-AUTO		
1-HS-67-87A	0-M-27A	LWR CNTMT 1A CLRS RET CIV-ϕB	A-AUTO		
1-HS-67-86	0-M-27A	RCP1 MTR CLR SUP TCV	P-AUTO		
1-HS-67-85A	0-M-27A	CRDM CLR 1A-A OUTLET TCV	P-AUTO		
1-HS-67-84A	0-M-27A	LWR CNTMT CLR 1A OUTLET TCV	P-AUTO		
1-HS-67-89A	0-M-27A	LWR CNTMT 1A CLRS SUP CIV-ϕB	A-AUTO		
1-HS-67-83A	0-M-27A	LWR CNTMT 1A CLRS SUP CIV-ϕB	A-AUTO		
1-HS-67-96A	0-M-27A	LWR CNTMT 1C CLRS RET CIV-ϕB	A-AUTO		

Appendix D
(Page 2 of 12)

SWITCH LINEUP

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

Switch	Location	Description	Position	Verified	Date
1-HS-67-95A	0-M-27A	LWR CNTMT 1C CLRS RET CIV-ϕB	A-AUTO		
1-HS-67-94	0-M-27A	RCP3 MTR CLR SUP TCV	P-AUTO		
1-HS-67-93A	0-M-27A	CRDM CLR 1C-A OUTLET TCV	P-AUTO		
1-HS-67-92A	0-M-27A	LWR CNTMT CLR 1C OUTLET TCV	P-AUTO		
1-HS-67-97A	0-M-27A	LWR CNTMT 1C CLRS SUP CIV-ϕB	A-AUTO		
1-HS-67-91A	0-M-27A	LWR CNTMT 1C CLRS SUP CIV-ϕB	A-AUTO		
1-HS-67-81A	0-M-27A	AB SUP HDR 1A	NORMAL		
1-HS-67-22A	0-M-27A	STRAINER 1A-A INLET	NORMAL		
1-HS-67-66A	0-M-27A	DG 1A-A NORM SUP	P-AUTO		
2-HS-67-66A	0-M-27A	DG 2A-A NORM SUP	OPEN		
1-HS-67-68A	0-M-27A	DG 1A-A BACKUP SUP	P-AUTO		
2-HS-67-68A	0-M-27A	DG 2A-A BACKUP SUP	P-AUTO		
2-HS-67-81A	0-M-27A	AB SUPPLY HDR 2A	NORMAL		
2-HS-67-22A	0-M-27A	STRAINER 2A-A INLET	NORMAL		
1-HS-67-458A	0-M-27A	CCS HX A SUP FROM HDR 1B (LC)	NORMAL		
0-HS-67-208A	0-M-27A	C&SS COMPR SUP FROM HDR 1B	NORMAL		

Appendix D
(Page 3 of 12)

SWITCH LINEUP

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

Switch	Location	Description	Position	Verified	Date
2-HS-67-127A	0-M-27A	2A AB CLRS C&SS AUX AIR A SUP HDR	NORMAL		
2-HS-67-131A	0-M-27A	UPR CNTMT CLR 2A RET CIV-ϕB	A-AUTO		
2-HS-67-295A	0-M-27A	UPR CNTMT CLR 2A RET CIV-ϕB	A-AUTO		
2-HS-67-130A	0-M-27A	UPR CNTMT CLR 2A SUP CIV-ϕB	A-AUTO		
2-HS-67-126A	0-M-27A	CNTMT SPRAY HX 2A RETURN	NORMAL		
2-HS-67-125A	0-M-27A	CNTMT SPRAY HX 2A INLET	NORMAL		
2-HS-67-134A	0-M-27A	UPR CNTMT CLR 2C RET CIV-ϕB	A-AUTO		
2-HS-67-296A	0-M-27A	UPR CNTMT CLR 2C RET CIV-ϕB	A-AUTO		
2-HS-67-133A	0-M-27A	UPR CNTMT CLR 2C SUP CIV-ϕB	A-AUTO		
2-HS-67-88A	0-M-27A	LWR CNTMT 2A CLRS RET CIV-ϕB	A-AUTO		
2-HS-67-87A	0-M-27A	LWR CNTMT 2A CLRS RET CIV-ϕB	A-AUTO		
2-HS-67-86A	0-M-27A	RCP 1 MTR CLR SUP TCV	P-AUTO		
2-HS-67-85A	0-M-27A	CRDM CLR 2A-A OUTLET TCV	P-AUTO		
2-HS-67-84A	0-M-27A	LWR CNTMT CLR 2A OUTLET TCV	P-AUTO		
2-HS-67-89A	0-M-27A	LWR CNTMT 2A CLRS SUP CIV-ϕB	A-AUTO		
2-HS-67-83A	0-M-27A	LWR CNTMT 2A CLRS SUP CIV-ϕB	A-AUTO		

Appendix D
(Page 4 of 12)

SWITCH LINEUP

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

Switch	Location	Description	Position	Verified	Date
2-HS-67-96A	0-M-27A	LWR CNTMT 2C CLRS RET CIV-ϕB	A-AUTO		
2-HS-67-95A	0-M-27A	LWR CNTMT 2C CLRS RET CIV-ϕB	A-AUTO		
2-HS-67-94A	0-M-27A	RCP 3 MTR CLR SUP TCV	P-AUTO		
2-HS-67-93A	0-M-27A	CRDM CLR 2C-A OUTLET TCV	P-AUTO		
2-HS-67-92A	0-M-27A	LWR CNTMT CLR 2C OUTLET TCV	P-AUTO		
2-HS-67-97A	0-M-27A	LWR CNTMT 2C CLRS SUP CIV-ϕB	A-AUTO		
2-HS-67-91A	0-M-27A	LWR CNTMT 2C CLRS SUP CIV-ϕB	A-AUTO		
0-XS-67-285	0-M-27A	ERCW PUMP A-A/B-A DG POWER SEL	A-A		
0-HS-67-28A	0-M-27A	ERCW PMP A-A	A-AUTO		
0-HS-67-32A	0-M-27A	ERCW PMP B-A	A-AUTO		
1-HS-67-431A	0-M-27A	SCRN WASH PMP & TRAV SCRN 1A-A	P-AUTO		
1-HS-67-147A	0-M-27A	CCS HX C SUP FROM HDR 2B	NORMAL		
1-HS-67-478A	0-M-27A	CCS HX A INLET	NORMAL		
1-HS-67-146A	0-M-27A	CCS HX A ALT DISCH TO HDR B	CLOSE		
1-HS-67-223A	0-M-27A	ERCW HDR 1B TO 2A XTIE	NORMAL		
0-HS-67-151A	0-M-27A	CCS HX C ALT DISCH TO HDR A	CLOSE		

Appendix D
(Page 5 of 12)

SWITCH LINEUP

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

Switch	Location	Description	Position	Verified	Date
0-HS-67-144A	0-M-27A	CCS HX C DISCH TO HDR A	NORMAL		
1-HS-67-143A	0-M-27A	CCS HX A DISCH TO HDR B	NORMAL		
0-HS-67-362A	0-M-27A	DISCH HDR B TO CT BASIN	NORMAL		
0-HS-67-360A	0-M-27A	DISCH HDR A TO CT BASIN	NORMAL		
2-HS-67-437A	0-M-27A	SCRN WASH PMP & TRAV SCRN 2A-A	P-AUTO		
0-HS-67-36A	0-M-27A	ERCW PUMP C-A	A-AUTO		
0-HS-67-40A	0-M-27A	ERCW PUMP D-A	A-AUTO		
0-XS-67-286	0-M-27A	ERCW PMP C-A/D-A DG POWER SEL	C-A		
2-HS-67-147A	0-M-27A	CCS HX C SUP FROM HDR 1A	NORMAL		
0-HS-67-152A	0-M-27A	CCS HX C ALT DISCH TO HDR B	CLOSE		
2-HS-67-223A	0-M-27A	ERCW HDR 2A TO 1B XTIE	NORMAL		
1-HS-67-65A	0-M-27A	DG 1B-B BACKUP SUP	P-AUTO		
2-HS-67-65A	0-M-27A	DG 2B-B BACKUP SUP	P-AUTO		
1-HS-67-67A	0-M-27A	DG 1B-B NORM SUP	P-AUTO		
2-HS-67-67A	0-M-27A	DG-2B-B NORM SUP	P-AUTO		
1-XS-67-97-A	480V RMOV BD	TRANSFER SWITCH	NORMAL		

Appendix D
(Page 6 of 12)

SWITCH LINEUP

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

Switch	Location	Description	Position	Verified	Date
1-HS-67-97C-A	480V RMOV BD	1-FCV-67-97-A CONTROL SWITCH	NORMAL		
1-HS-67-89C	480V RMOV BD	1-FCV-67-89-A CONTROL SWITCH	NORMAL		
1-XS-67-89-A	480V RMOV BD	TRANSFER SWITCH	NORMAL		
1-XS-67-22-A	480V RMOV BD	TRANSFER SWITCH	NORMAL		
1-HS-67-22C	480V RMOV BD	1-FCV-67-22-A CONTROL SWITCH	NORMAL		
1-XS-67-87-A	480V RMOV BD	TRANSFER SWITCH	NORMAL		
1-HS-67-87C	480V RMOV BD	1-FCV-67-87-A CONTROL SWITCH	NORMAL		
1-XS-67-81-A	480V RMOV BD	TRANSFER SWITCH	NORMAL		
1-HS-67-81C	480V RMOV BD	1-FCV-67-81-A CONTROL SWITCH	NORMAL		
2-XS-67-97-A	480V RMOV BD	TRANSFER SWITCH	NORMAL		
2-HS-67-97C-A	480V RMOV BD	2-FCV-67-97-A CONTROL SWITCH	NORMAL		
1-XS-67-95-A	480V RMOV BD	TRANSFER SWITCH	NORMAL		
1-HS-67-95C	480V RMOV BD	1-FCV-67-95-A CONTROL SWITCH	NORMAL		
2-HS-67-89C	480V RMOV BD	2-FCV-67-89-A CONTROL SWITCH	NORMAL		
2-XS-67-89-A	480V RMOV BD	TRANSFER SWITCH	NORMAL		
2-XS-67-87-A	480V RMOV BD	TRANSFER SWITCH	NORMAL		

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SWITCH LINEUP

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

Switch	Location	Description	Position	Verified	Date
2-HS-67-87C	480V RMOV BD	2-FCV-67-87-A CONTROL SWITCH	NORMAL		
2-XS-67-81-A	480V RMOV BD	TRANSFER SWITCH	NORMAL		
2-HS-67-81C	480V RMOV BD	2-FCV-67-81-A CONTROL SWITCH	NORMAL		
1-XS-67-127-A	480V RMOV BD	TRANSFER SWITCH	NORMAL		
1-HS-67-127C	480V RMOV BD	1-FCV-67-127-A CONTROL SWITCH	NORMAL		
1-XS-67-146-A	480V RMOV BD	TRANSFER SWITCH	NORMAL		
1-HS-67-146C	480V RMOV BD	1-FCV-67-146-A CONTROL SWITCH	NORMAL		
1-XS-67-147-A	480V RMOV BD	TRANSFER SWITCH	NORMAL		
1-HS-67-147C	480V RMOV BD	1-FCV-67-147-A CONTROL SWITCH	NORMAL		
0-XS-67-151-A	480V RMOV BD	TRANSFER SWITCH	NORMAL		
0-HS-67-151C	480V RMOV BD	0-FCV-67-151 CONTROL SWITCH	NORMAL		
0-XS-67-205-A	480V RMOV BD	TRANSFER SWITCH	NORMAL		
0-HS-67-205C	480V RMOV BD	0-FCV-67-205-A CONTROL SWITCH	NORMAL		
1-XS-67-223-A	480V RMOV BD	TRANSFER SWITCH	NORMAL		
1-HS-67-223C	480V RMOV BD	1-FCV-67-223-A CONTROL SWITCH	NORMAL		
0-XS-67-360	480V RMOV BD	TRANSFER SWITCH	NORMAL		

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SWITCH LINEUP

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

Switch	Location	Description	Position	Verified	Date
1-XS-67-143	480V RMOV BD	TRANSFER SWITCH	NORMAL		
1-HS-67-143C	480V RMOV BD	1-FCV-67-143-A CONTROL SWITCH	NORMAL		
1-HS-67-458C	480V RMOV BD	1-FCV-67-458-A CONTROL SWITCH	NORMAL		
1-XS-67-458-A	480V RMOV BD	TRANSFER SWITCH	NORMAL		
2-XS-67-95-A	480V RMOV BD	TRANSFER SWITCH	NORMAL		
2-HS-67-95C	480V RMOV BD	2-FCV-67-95-A CONTROL SWITCH	NORMAL		
1-XS-67-88-B	480V RMOV BD	TRANSFER SWITCH	NORMAL		
1-HS-67-88C	480V RMOV BD	1-FCV-67-88-B CONTROL SWITCH	NORMAL		
1-XS-67-96-B	480V RMOV BD	TRANSFER SWITCH	NORMAL		
1-HS-67-96C	480V RMOV BD	1-FCV-67-96-B CONTROL SWITCH	NORMAL		
1-XS-67-91-B	480V RMOV BD	TRANSFER SWITCH	NORMAL		
1-HS-67-91C	480V RMOV BD	1-FCV-67-91-B CONTROL SWITCH	NORMAL		
1-XS-67-83-B	480V RMOV BD	TRANSFER SWITCH	NORMAL		
1-HS-67-83C	480V RMOV BD	1-FCV-67-83-B CONTROL SWITCH	NORMAL		
2-XS-67-127-A	480V RMOV BD	TRANSFER SWITCH	NORMAL		
2-HS-67-127C	480V RMOV BD	2-FCV-67-127-A CONTROL SWITCH	NORMAL		

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(Page 9 of 12)

SWITCH LINEUP

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

Switch	Location	Description	Position	Verified	Date
0-XS-67-208-B	480V RMOV BD	TRANSFER SWITCH	NORMAL		
0-HS-67-208C	480V RMOV BD	0-FCV-67-208-B CONTROL SWITCH	NORMAL		
0-XS-67-362-B	480V RMOV BD	TRANSFER SWITCH	NORMAL		
0-HS-67-362C	480V RMOV BD	0-FCV-67-362-B CONTROL SWITCH	NORMAL		
1-XS-67-478-B	480V RMOV BD	TRANSFER SWITCH	NORMAL		
1-HS-67-478C	480V RMOV BD	1-FCV-67-478-B CONTROL SWITCH	NORMAL		
0-XS-67-144-B	480V RMOV BD	TRANSFER SWITCH	NORMAL		
0-HS-67-144C	480V RMOV BD	0-FCV-67-144-B CONTROL SWITCH	NORMAL		
2-XS-67-22-A	480V RMOV BD	TRANSFER SWITCH	NORMAL		
2-HS-67-22C	480V RMOV BD	2-FCV-67-22-A CONTROL SWITCH	NORMAL		
2-XS-67-223-A	480V RMOV BD	TRANSFER SWITCH	NORMAL		
2-HS-67-223C	480V RMOV BD	2-FCV-67-223-A CONTROL SWITCH	NORMAL		
0-XS-67-360	480V RMOV BD	TRANSFER SWITCH	NORMAL		
0-HS-67-360C	480V RMOV BD	0-FCV-67-360 CONTROL SWITCH	NORMAL		
0-XS-67-152	480V RMOV BD	TRANSFER SWITCH	NORMAL		
0-HS-67-152C	480V RMOV BD	0-FCV-67-152-B CONTROL SWITCH	NORMAL		

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SWITCH LINEUP

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

Switch	Location	Description	Position	Verified	Date
2-XS-67-147	480V RMOV BD	TRANSFER SWITCH	NORMAL		
2-HS-67-147C	480V RMOV BD	2-FCV-67-147-B CONTROL SWITCH	NORMAL		
1-XS-67-84	1-L-11A	TRANSFER SWITCH	NORMAL		
1-XS-67-85	1-L-11A	TRANSFER SWITCH	NORMAL		
1-XS-67-92	1-L-11A	TRANSFER SWITCH	NORMAL		
1-XS-67-93	1-L-11A	TRANSFER SWITCH	NORMAL		
1-XS-67-71	1-L-11A	TRANSFER SWITCH	NORMAL		
2-XS-67-84	2-L-11B	TRANSFER SWITCH	NORMAL		
2-XS-67-85	2-L-11B	TRANSFER SWITCH	NORMAL		
2-XS-67-92	2-L-11B	TRANSFER SWITCH	NORMAL		
2-XS-67-93	2-L-11B	TRANSFER SWITCH	NORMAL		
0-XS-67-28	6900V	TRANSFER SWITCH	NORMAL		
0-XS-67-32	6900V	TRANSFER SWITCH	NORMAL		
0-XS-67-51	6900V	TRANSFER SWITCH	NORMAL		
0-XS-67-47	6900V	TRANSFER SWITCH	NORMAL		
0-XS-67-40	6900V	TRANSFER SWITCH	NORMAL		

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SWITCH LINEUP

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

Switch	Location	Description	Position	Verified	Date
0-XS-67-36	6900V	TRANSFER SWITCH	NORMAL		
1-XS-67-66	480V DIESEL	TRANSFER SWITCH	NORMAL		
1-HS-67-66C	480V DIESEL	1-FCV-67-66-A CONTROL SWITCH	NORMAL		
1-XS-67-68	480V DIESEL	TRANSFER SWITCH	NORMAL		
1-HS-67-68C	480V DIESEL	1-FCV-67-68-A CONTROL SWITCH	NORMAL		
2-XS-67-66	480V DIESEL	TRANSFER SWITCH	NORMAL		
2-HS-67-66C	480V DIESEL	2-FCV-67-66-A CONTROL SWITCH	NORMAL		
1-XS-67-68	480V DIESEL	TRANSFER SWITCH	NORMAL		
2-HS-67-68C	480V DIESEL	2-FCV-67-68-A CONTROL SWITCH	NORMAL		
1-XS-67-65	480V DIESEL	TRANSFER SWITCH	NORMAL		
1-HS-67-65C	480V DIESEL	1-FCV-67-65-B CONTROL SWITCH	NORMAL		
1-XS-67-67	480V DIESEL	TRANSFER SWITCH	NORMAL		
1-HS-67-67C	480V DIESEL	1-FCV-67-67-B CONTROL SWITCH	NORMAL		
2-XS-67-65	480V DIESEL	TRANSFER SWITCH	NORMAL		
2-HS-67-65C	480V DIESEL	2-FCV-67-65-B CONTROL SWITCH	NORMAL		
2-XS-67-67	480V DIESEL	TRANSFER SWITCH	NORMAL		

Appendix D
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SWITCH LINEUP

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

Switch	Location	Description	Position	Verified	Date
2-HS-67-67C	480V DIESEL	2-FCV-67-67-B CONTROL SWITCH	NORMAL		
2-HS-67-65D	DIESEL GEN	EMER DSL HTX B1 & B2 SUP VLV FROM	CLOSE		
2-HS-67-67D	DIESEL	EMER DSL HTX B1 & B2 SUP VLV FROM	CLOSE		
1-HS-67-66D	DIESEL GEN	EMER DSL HTX B1 & B2 SUP VLV FROM	CLOSE		
1-HS-67-68D	DIESEL GEN	EMER DSL HTX B1 & B2 SUP VLV FROM	CLOSE		
2-HS-67-68D	DIESEL GEN	EMER DSL HTX A1 & A2 SUP VLV FROM	CLOSE		
2-HS-67-66D	DIESEL GEN	EMER DSL HTX A1 & A2 SUP VLV FROM	CLOSE		
1-HS-67-65D	DIESEL GEN	EMER DSL HTX B1 & B2 SUP VLV FROM	CLOSE		
1-HS-67-67D	DIESEL GEN	EMER DSL HTX B1 & B2 SUP VLV FROM	CLOSE		

Appendix E
(Page 1 of 3)

TRAIN A FLOW EFD OR ΔP DEVICES

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

		INSTALLED	REMOVED
ROOT VALVES	**DESCRIPTION**	**INIT/DATE**	**INIT/DATE**
1-TV-67-821A or B	1-FE-67-161 737 SDBD RM CHILLER	____/____	____/____
1-TV-67-860A or B	1-FE-67-257 1A INST RM CHLR	____/____	____/____
2-TV-67-860A or B	2-FE-67-257 2A INST RM CHLR	____/____	____/____
1-TV-67-864A or B	1-FE-67-241 RCP 3 MRT CLR	____/____	____/____
1-TV-67-865A or B	1-FE-67-235 RCP 1 MTR CLR	____/____	____/____
2-TV-67-864A or B	2-FE-67-241 RCP 3 MRT CLR	____/____	____/____
2-TV-67-865A or B	2-FE-67-235 RCP 1 MTR CLR	____/____	____/____
2-TV-67-866A or B	2-FE-67-337 2A EGTS RM CLR	____/____	____/____
2-TV-67-867A or B	2-FE-67-218 2A BA&AFW PMP CLR	____/____	____/____
1-TV-67-868A or B	1-FE-67-169 1A-A CCP RM CLR	____/____	____/____
2-TV-67-868A or B	2-FE-67-169 2A-A CCP RM CLR	____/____	____/____
1-TV-67-869A or B	1-FE-67-177 1A-A SIP RM CLR	____/____	____/____
2-TV-67-869A or B	2-FE-67-177 2A-A SIP RM CLR	____/____	____/____
1-TV-67-870A or B	1-FE-67-185 1A-A CS PMP RM CLR	____/____	____/____
2-TV-67-870A or B	2-FE-67-185 2A-A CS PMP RM CLR	____/____	____/____
1-TV-67-871A or B	1-FE-67-189 1A-A RHR PMP RM CLR	____/____	____/____
2-TV-67-871A or B	2-FE-67-189 2A-A RHR PMP RM CLR	____/____	____/____
1-TV-67-872A or B	1-FE-67-347 1A1 692 PEN RM CLR	____/____	____/____

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(Page 2 of 3)

TRAIN A FLOW EFD OR ΔP DEVICES

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

		INSTALLED	REMOVED
ROOT VALVES	**DESCRIPTION**	**INIT/DATE**	**INIT/DATE**
2-TV-67-872A or B	2-FE-67-347 2A1 692 PEN RM CLR	____/____	____/____
1-TV-67-873A	1-FE-67-351 1A2 713 PEN RM CLR	____/____	____/____
2-TV-67-873A	2-FE-67-351 2A2 713 PEN RM CLR	____/____	____/____
1-TV-67-874A	1-FE-67-355 1A3 737 PEN RM CLR	____/____	____/____
2-TV-67-874A	2-FE-67-355 2A3 737 PEN RM CLR	____/____	____/____
1-TV-67-875A	1-FE-67-343 1A-A 692 PIPE CHASE CLR	____/____	____/____
2-TV-67-875A	2-FE-67-343 2A-A 692 PIPE CHASE CLR	____/____	____/____
1-TV-67-887A	1-FE-67-340 757 AUX AIR COMP	____/____	____/____
1-TV-67-891A	1-FE-67-214 737 SFP&TBBP SP CLR	____/____	____/____
1-TV-67-892A	1-FE-67-163 713 CCS&AFWP SP CLR	____/____	____/____
0-TV-67-894A	0-FE-67-196 692 EBR A-A CONDENSER	____/____	____/____
0-TV-67-895A	0-FE-67-198 737 MCR CHLR	____/____	____/____
1-TV-67-915 & 916	1-FE-67-473 C-A CRDM CLR	____/____	____/____
1-TV-67-917 & 918	1-FE-67-470 A-A CRDM CLR	____/____	____/____
1-TV-67-919A	1-FE-67-471 1A-A LCC	____/____	____/____
1-TV-67-920A	1-FE-67-472 1C-A LCC	____/____	____/____

Appendix E
(Page 3 of 3)

TRAIN A FLOW EFD OR ΔP DEVICES

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

		INSTALLED	REMOVED
ROOT VALVES	**DESCRIPTION**	**INIT/DATE**	**INIT/DATE**
2-TV-67-915 & 916	2-FE-67-473 C-A CRDM CLR	_____/____	_____/____
2-TV-67-917 & 918	2-FE-67-470 A-A CRDM CLR	_____/____	_____/____
2-TV-67-919A	2-FE-67-471 A-A LCC	_____/____	_____/____
2-TV-67-920A	2-FE-67-472 C-A LCC	_____/____	_____/____

Appendix F
(Page 1 of 1)

CALCULATION INFORMATION SHEET

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

At 1-FE-67-61, Maximum Flow = 20000gpm with Maximum ΔP = 200"H_2O

Therefore:
$$\text{Output}[GPM] = 20{,}000 = K * SQRT(INPUT["H2O]/193.605)$$
$$K = 20{,}000 * (\sqrt{193.605}/193.605) = 1437.3805$$

$$Q_{gpm} = 1437.3805 * \sqrt{\Delta P}$$

Constants:

- Pd= discharge pressure = 1bf/in^2 x 144 in^2/ft^2
- ρ= Discharge fluid density = 62.37 1bm/ft^3 x 1bf/1bm = 62.37 1bf/ft^3 (average river temperature of 60°F)
- $Q_{ft/sec}$ = Pump flow(gpm) x 0.002228 ft^3/sec-gpm
- Ad= Pump discharge cross-sectional area = 2.18 ft^2
- g= Gravitational constant = 32.143 ft/sec^2
- zd= elevation difference between the discharge of pump (datum line) and gauge = -16.5 ft
- Ps/p= Suction pressure (River level -653.08 ft)
- As= Pump Suction cross-sectional area = 6.30 ft^2
- Zs= Elevation difference between the discharge of pump (datum line) and suction inlet = -90.25 ft

NOTE: The velocity heads (Q^2/Ad^2 2g and Q^2/As^2 2g) may be assumed to be zero since their results are insignificant.

$$TDH(ft) = (Pd/\rho + Q^2/Ad^2 * 2g + Zd) - (Ps/\rho + Q^2/As^2 * 2g + Zs)$$
$$= Pd * \frac{144}{62.37} + 0 + (-16.5) - (Ps/\rho - 653.08 + 0 + (-90.25)$$
$$= (Pd * 2.31) + 726.8 - \text{River level}$$

-

Appendix G
(Page 1 of 2)

CALCULATION FLOW ELEMENT CONSTANTS

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

Flow Element	Bore (maximum size)	ΔP ("H_2O)	Flow (gpm)	$K = \frac{Flow}{\sqrt{\Delta P}}$
1-FE-67-161	4.3446	100	750	75.0
1-FE-67-163	2.056	207	215	14.94
1-FE-67-169	1.0435	86	36	3.9
2-FE-67-169	1.043	86	36	3.9
1-FE-67-173	1.0092	60	30	3.9
1-FE-67-177	1.265	25	30	6.0
2-FE-67-177	1.265	25	30	6.0
1-FE-67-185	1.4582	15	33	8.5
2-FE-67-185	1.4582	15	33	8.5
1-FE-67-189	1.0112	60	30	3.9
2-FE-67-189	1.0112	60	30	3.9
0-FE-67-196	3.4405	100	440	44.0
0-FE-67-198	3.681	100.5	500	49.9
0-FE-67-204	1.4505	25	42	8.4
0-FE-67-207	1.4505	25	42	8.4
0-FE-67-210	1.4505	25	42	8.4
0-FE-67-211	1.4122	100	78	7.8
1-FE-67-214	1.3999	30	42	7.7
2-FE-67-218	0.50468	100	85	8.5
1-FE-67-222	15.052	310	15000	852.0
2-FE-67-222	15.052	310	15000	852.0
1-FE-67-235	1.976	100	150	15
1-FE-67-241	1.976	100	150	15
1-FE-67-257	1.011	123	43	3.9
2-FE-67-337	0.995	60	30	3.9

Appendix G
(Page 2 of 2)

CALCULATION FLOW ELEMENT CONSTANTS

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

Flow Element	Bore (maximum size)	ΔP ("H_2O)	Flow (gpm)	$K = \frac{Flow}{\sqrt{\Delta P}}$
1-FE-67-340	0.6970	60	15	1.9
2-FE-67-340	0.6978	60	15	1.9
2-FE-67-343	1.347	100	70	7.0
1-FE-67-343	0.652	100	70	7.0
1-FE-67-347	1.044	60	30	3.9
2-FE-67-347	0.50484	60	30	3.9
1-FE-67-351	1.044	60	30	3.9
2-FE-67-351	0.50484	60	30	3.9
1-FE-67-355	1.044	60	30	3.9
2-FE-67-355	0.50484	60	30	3.9
1-FE-67-470	1.794	222	177	11.9
1-FE-67-471	3.5227	50	320	45.3
1-FE-67-472	3.5227	50	320	45.3
1-FE-67-473	1.794	222	177	11.9

Appendix H
(Page 1 of 1)

COMMON TRAIN FLOW ELEMENT EFDs

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

		EFD	
FE ROOT VALVES	DESCRIPTION	Installed	Removed
		INITIAL/DATE	INITIAL/DATE
0-TV-67-898A&B	0-FE-67-207 C&S AIR COM C	_____/_____	_____/_____
0-TV-67-899A&B	0-FE-67-210 C&S AIR COM B	_____/_____	_____/_____
0-TV-67-900A&B	0-FE-67-204 C&S AIR COMP A	_____/_____	_____/_____
0-TV-67-910A&B	0-FE-67-211 C&S AIR COM D	_____/_____	_____/_____

Appendix I
(Page 1 of 2)

FLOW BALANCE INSTRUCTIONS

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

1.0 FLOW BALANCE

Flow balancing is an iterative process. The steps to balance each component may be repeated several times to align flow for all components on the data sheet. No initials, dates or calculations will be completed until the final proof run described in Step 1.0[2] is performed.

When a ΔP gauge is required, connect at the flow element test tubing quick disconnects. When an Ultrasonic Flowmeter is required, install it on the component piping per the flowmeter instruction. Permanent plant flow indicators will be utilized as they meet accuracy and calibration requirements for flow balance.

[1] **BALANCE** the Components Listed in Column [1] On the ERCW FLOW BALANCE DATA SHEET, Specified in Section 6.0, WITHOUT Making Any Entries On the Data Sheet 1 for Performance of the Following Steps:

A. **VERIFY/ INSTALL** (where applicable) a ΔP gauge or ultrasonic flowmeter with a range as indicated in column [3] or [9] respectively of the data sheet.

NOTE

Throttle valve in the CLOSED direction to set flow. If flow is initially too low, OPEN valve until an increase in flow above the setpoint is observed, then CLOSE down on the valve to attain proper flow.

B. **THROTTLE** the valve listed in column [2] of the data sheet to obtain the Target Value ΔP or flow as indicated on the first line in column [4] of the data sheet.

C. **REMOVE** the ΔP gauge or ultrasonic flowmeter if needed for another test point, or leave it in place until the flow balance is complete.

D. **REPEAT** Steps 1.0[1]A through 1.0[1]C for each component on the data sheet.

E. **REPEAT** the entire data sheet until all Target Values (column [4]) are obtained without any throttle valve adjustment.

Appendix I
(Page 2 of 2)

FLOW BALANCE INSTRUCTIONS

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

1.0 FLOW BALANCE (continued)

[2] **DOCUMENT** the Flow Balance for All Components On the Data Sheet as Follows:

A. **VERIFY/INSTALL** a differential pressure gauge with a range as indicated in column [3] of the data sheet, or a flowmeter as indicated for the component under test and RECORD the test equipment M&TE number (column [3]) if applicable.

B. **RECORD** the ΔP or Flow in column [5].

C. **DETERMINE** the throttle valve position for the valve listed in column [2] in accordance with Data Sheet 5 for Train A valves.

D. **MULTIPLY** the value in column [5] by the Correction Multiplier (second line in column [4]).

E. When the flow device in column [2] is an FI or ultrasonic flowmeter, **RECORD** the result of Step 1.0[2]D in column [8], Flow (corrected) line.

F. When the Flow device in column [2] is an FE, **RECORD** the result of Step 1.0[2]D in column [6], ΔP (corrected) 1st line. **CALCULATE** the square root of this value and **RECORD** on the second line in column [6]. **MULTIPLY** this result by the 'k' value (column [7]) and **RECORD** the result in column [8], Flow (corrected) line.

NOTE

Concurrent verification of test equipment removal is completed in Section 7.0 when all temporary connections are removed from Flow Element test valves.

G. **REMOVE** the differential pressure gauge or ultrasonic flowmeter if needed for another test point, or leave it in place until the flow balance is complete.

H. **REPEAT** Steps 1.0[2]A through 1.0[2]G for each of the components on the data sheet.

Data Sheet 1
(Page 1 of 14)
TRAIN A - NORMAL MODE

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device / Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$ / $(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc. Criteria Flow (gpm) (Max.)**
CCS HTX A	EFD-1 / 1-FCV-67-143	_____ / 0-200"H_2O	59-64"H_2O / (.906)	_____	_____ / _____	852.0	_____	≥3330
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
CCS HTX B	2-FE-67-222 / 2-FCV-67-143	_____ / 0-200"H_2O	59-64"H_2O / (.906)	_____	_____ / _____	852.0	_____	≥3330
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
DSL GEN CLR 1A1	1-FI-67-69 / 1-ISV-67-510A	N/A	700-760gpm / (.929)	_____	N/A / N/A	N/A	_____	≥650 (1200)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
DSL GEN CLR 1A2	1-FI-67-277 / 1-ISV-67-515A	N/A	700-760gpm / (.929)	_____	N/A / N/A	N/A	_____	≥650 (1200)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
DSL GEN CLR 2A1	2-FI-67-69 / 2-ISV-67-510A	N/A	700-760gpm / (.929)	_____	N/A / N/A	N/A	_____	≥650 (1200)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 1
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TRAIN A - NORMAL MODE

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device / Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$ / $(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc. Criteria Flow (gpm) (Max.)**
DSL GEN CLR 2A2	2-FI-67-277		700-760gpm		N/A			≥650
	2-ISV-67-515A	N/A	(.929)	_____	N/A	N/A	_____	(1200)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
SD BD RM A/C A	1-FE-67-161	_____	60-72"H_2O		_____			≥560
	1-ISV-67-555	0-100"H_2O	(.931)	_____	_____	75.0	_____	(560)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
ELEC BD RM A/C A	0-FE-67-196	_____	76-91"H_2O		_____			≥370
	0-ISV-67-618A	0-100"H_2O	(.936)	_____	_____	44.0	_____	(490)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
MAIN CONTROL RM A/C A	0-FE-67-198		108-130"H_2O		_____			≥293
	0-ISV-67-623A	_____	(.928)	_____	_____	35.0	_____	(460)
		0-200"H_2O						
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 1
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TRAIN A - NORMAL MODE

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc. Criteria Flow (gpm) (Max.)**
LWR CNTMT CLR 1A	1-FE-67-471 1-ISV-67-564A	_____ 0-50"H_2O	48.75-50"H_2O (.940)	_____	_____ _____	45.3	_____	≥306 (1060)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
LWR CNTMT CLR 2A	2-FE-67-471 2-ISV-67-564A	_____ 0-50"H_2O	48.75-50"H_2O (.940)	_____	_____ _____	45.3	_____	≥306 (1060)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
LWR CNTMT CLR 1C	1-FE-67-472 1-ISV-67-564C	_____ 0-50"H_2O	48.75-50"H_2O (.940)	_____	_____ _____	45.3	_____	≥306 (1060)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
LWR CNTMT CLR 2C	2-FE-67-472 2-ISV-67-564C	_____ 0-50"H_2O	48.75-50"H_2O (.940)	_____	_____ _____	45.3	_____	≥306 (1060)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 1
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TRAIN A - NORMAL MODE

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device / Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$ / $(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc. Criteria Flow (gpm) (Max.)**
CRDM CLR 1A	1-FE-67-470 / 1-ISV-67-567-A	_____ / 0-200"H_2O	118-143"H_2O (.931)	_____	_____ / _____	11.9	_____	≥124 (390)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
CRDM CLR 2A	2-FE-67-470 / 2-ISV-67-567-A	_____ / 0-200"H_2O	118-143"H_2O (.931)	_____	_____ / _____	11.9	_____	≥124 (390)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
CRDM CLR 1C	1-FE-67-473 / 1-ISV-67-567C	_____ / 0-200"H_2O	118-143"H_2O (.931)	_____	_____ / _____	11.9	_____	≥124 (390)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
CRDM CLR 2C	2-FE-67-473 / 2-ISV-67-567C	_____ / 0-200"H_2O	118-143"H_2O (.931)	_____	_____ / _____	11.9	_____	≥124 (390)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 1
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TRAIN A - NORMAL MODE

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	Flow Device / Throttle Valve	EDF or M&TE Gauge #	Target Value/(Corr. Multiplier)	ΔP("H_2O) or Flow(gpm)	$\Delta P_{corrected}$ / $(\Delta P)^{1/2}$	k	$Flow_{corrected}$ (gpm)	Acc. Criteria Flow (gpm) (Max.)
U-1 RCP MTR CLR 1	1-FE-67-235 / 1-ISV-67-572A	_____ / 0-100"H_2O	58-70"H_2O (.930)	_____	_____ / _____	15.0	_____	≥110 (220)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
U-2 RCP MTR CLR 1	2-FE-67-235 / 2-ISV-67-572A	_____ / 0-100"H_2O	58-70"H_2O (.930)	_____	_____ / _____	15.0	_____	≥110 (220)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
U-1 RCP MTR CLR 3	1-FE-67-241 / 1-ISV-67-572C	_____ / 0-100"H_2O	58-70"H_2O (.930)	_____	_____ / _____	15.0	_____	≥110 (220)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
U-2 RCP MTR CLR 3	2-FE-67-241 / 2-ISV-67-572C	_____ / 0-100"H_2O	58-70"H_2O (.930)	_____	_____ / _____	15.0	_____	≥110 (220)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 1
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TRAIN A - NORMAL MODE

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device / Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$ / $(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc. Criteria Flow (gpm) (Max.)**
CCS & AFW PUMP SP CLR 1A	1-FE-67-163 / 1-THV-67-643A	_____ 0-200"H_2O	108-131"H_2O (.928)	_____	_____ / _____	10.2	_____	≥102 (670)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
BA TRF & AFW SP CLR 2A	2-FE-67-218 / 2-THV-67-673A	_____ 0-100"H_2O	55-65"H_2O (.929)	_____	_____ / _____	8.5	_____	≥60 (360)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
INST RM WAT CLR 1A	1-FE-67-257 / 1-ISV-67-527A	_____ 0-100"H_2O	65-77"H_2O (.933)	_____	_____ / _____	3.9	_____	≥30 (200)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
INST RM WAT CLR 2A	2-FE-67-257 / 2-ISV-67-527A	_____ 0-100"H_2O	65-77"H_2O (.933)	_____	_____ / _____	3.9	_____	≥30 (200)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 1
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TRAIN A - NORMAL MODE

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device / Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$ / $(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc. Criteria Flow (gpm) (Max.)**
SFP & TB BSTR PMP CLR 1A	1-FE-67-214 / 1-THV-67-646A	_____ 0-50"H_2O	16-19"H_2O (.910)	_____	_____ / _____	7.7	_____	≥29 (170)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
CSS PMP RM CLR 1A-A	1-FE-67-185 / 1-THV-67-605A	_____ 0-50"H_2O	12-15"H_2O (.895)	_____	_____ / _____	8.5	_____	≥28 (190)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
CSS PMP RM CLR 2A-A	2-FE-67-185 / 2-THV-67-605A	_____ 0-50"H_2O	12-15"H_2O (.895)	_____	_____ / _____	8.5	_____	≥28 (190)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
CENT CHG PMP CLR 1A	1-FE-67-169 / 1-ISV-67-601A	_____ 0-100"H_2O	45-58"H_2O (.923)	_____	_____ / _____	3.9	_____	≥25 (28)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 1
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TRAIN A - NORMAL MODE

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	Flow Device / Throttle Valve	EDF or M&TE Gauge #	Target Value/(Corr. Multiplier)	ΔP("H_2O) or Flow(gpm)	$\Delta P_{corrected}$ / $(\Delta P)^{1/2}$	k	$Flow_{corrected}$ (gpm)	Acc. Criteria Flow (gpm) (Max.)
UPPER CNTMT CLR 1A	1-FI-67-263 / 1-THV-67-588A	N/A	24-25gpm (.958)	_____	N/A / N/A	N/A	_____	≥23 (26)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
UPPER CNTMT CLR 2A	2-FI-67-263 / 2-THV-67-588A	N/A	24-25gpm (.958)	_____	N/A / N/A	N/A	_____	≥23 (26)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
UPPER CNTMT CLR 1C	1-FI-67-265 / 1-THV-67-588C	N/A	24-25gpm (.958)	_____	N/A / N/A	N/A	_____	≥23 (26)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
UPPER CNTMT CLR 2C	2-FI-67-265 / 2-THV-67-588C	N/A	24-25gpm (.958)	_____	N/A / N/A	N/A	_____	≥23 (26)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 1
(Page 9 of 14)
TRAIN A - NORMAL MODE

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device / Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$ / $(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc. Criteria Flow (gpm) (Max.)**
SI PMP RM CLR 1A	1-FE-67-177	_____	15-20"H_2O		_____			≥22
	1-THV-67-604A	0-50"H_2O	(.907)	_____	_____	6.0	_____	(25)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
SI PMP RM CLR 2A	2-FE-67-177	_____	15-20"H_2O		_____			≥22
	2-THV-67-604A	0-50"H_2O	(.907)	_____	_____	6.0	_____	(25)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
RHR PMP RM CLR 1A-A	1-FE-67-189	_____	30-60"H_2O		_____			≥19
	1-THV-67-606A	0-100"H_2O	(.907)	_____	_____	3.9	_____	(21)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
RHR PMP RM CLR 2A-A	2-FE-67-189	_____	30-60"H_2O		_____			≥19
	2-THV-67-606A	0-100"H_2O	(.907)	_____	_____	3.9	_____	(21)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 1
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TRAIN A - NORMAL MODE

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	Flow Device / Throttle Valve	EDF or M&TE Gauge #	Target Value/(Corr. Multiplier)	$\Delta P("H_2O)$ or Flow(gpm)	$\Delta P_{corrected}$ / $(\Delta P)^{1/2}$	k	$Flow_{corrected}$ (gpm)	Acc. Criteria Flow (gpm) (Max.)
PIPE CHASE CLR 1A	1-FE-67-343	_____	15-20"H_2O		N/A			≥15
	1-THV-67-611A	0-50"H_2O	(.907)	_____	N/A	7.0	_____	(17)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
PIPE CHASE CLR 2A	2-FE-67-343	_____	15-20"H_2O		N/A			≥15
	2-THV-67-611A	0-50"H_2O	(.907)	_____	N/A	7.0	_____	(17)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
PEN RM CLR 1A1	1-FE-67-347	_____	30-60"H_2O		_____			≥12
	1-THV-67-608A	0-100"H_2O	(.907)	_____	_____	3.9	_____	(14)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
PEN RM CLR 1A2	1-FE-67-351	_____	30-60"H_2O		_____			≥11
	1-THV-67-609A	0-100"H_2O	(.907)	_____	_____	3.9	_____	(13)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 1
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TRAIN A - NORMAL MODE

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	Flow Device / Throttle Valve	EDF or M&TE Gauge #	Target Value/(Corr. Multiplier)	ΔP("H_2O) or Flow(gpm)	$\Delta P_{corrected}$ / $(\Delta P)^{1/2}$	k	$Flow_{corrected}$ (gpm)	Acc. Criteria Flow (gpm) (Max.)
PEN RM CLR 1A3	1-FE-67-355 / 1-THV-67-610A	_____ / 0-100"H_2O	30-60"H_2O (.907)	_____	_____ / _____	3.9	_____	≥12 (14)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
PEN RM CLR 2A1	2-FE-67-347 / 2-THV-67-608A	_____ / 0-100"H_2O	30-60"H_2O (.907)	_____	_____ / _____	3.9	_____	≥12 (14)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
PEN RM CLR 2A2	2-FE-67-351 / 2-THV-67-609A	_____ / 0-100"H_2O	30-60"H_2O (.907)	_____	_____ / _____	3.9	_____	≥11 (13)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
PEN RM CLR 2A3	2-FE-67-355 / 2-THV-67-610A	_____ / 0-100"H_2O	30-60"H_2O (.907)	_____	_____ / _____	3.9	_____	≥12 (14)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 1
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TRAIN A - NORMAL MODE

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device / Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$ / $(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc. Criteria Flow (gpm) (Max.)**
EMER GAS TR RM CLR 2A	2-FE-67-337 / 2-THV-67-685A	_____ / 0-100"H_2O	30-60"H_2O (.907)	_____	_____ / _____	3.9	_____	≥10 (11)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
ST AIR COMP (header)	0-FIS-67-206 / 0-THV-67-632C	N/A	152-155gpm (.932)	N/A	N/A / N/A	N/A	_____	≥183 (196)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
CENT CHG PMP CLR 2A	2-FE-67-169 / 2-ISV-67-601A	_____ / 0-100"H_2O	45-58"H_2O (.923)	_____	_____ / _____	3.9	_____	≥25 (28)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
AUX CNTRL AIR COMP A	1-FE-67-340 / 1-ISV-67-683A	_____ / 0-50"H_2O	16-25"H_2O (.910)	N/A	_____ / _____	1.9	_____	≥3.5 (185)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 1
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TRAIN A - NORMAL MODE

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

Component UNID	DESCRIPTION	M&TE #	PRESSURE (PSIG)	INITIALS
1-VTV-67-534A	CS HX 1A ERCW SUP HDR VT			
2-VTV-67-534A	CS HX 2A ERCW SUP HDR VT			
1-FE-67-61	ERCW SUP HDR 1A (up strm)			
1-FE-67-61	ERCW SUP HDR 1A (dn strm)			
2-FE-67-61	ERCW SUP HDR 1A (up strm)			
2-FE-67-61	ERCW SUP HDR 1A (dn strm)			
1-DRV-67-547	ERCW CCS HX A DR.			
2-DRV-67-547	ERCW CCS HX B DR.			
0-TV-67-621A	MCR CHLR A-A ERCW CONN.			
1-TV-67-690A	UCC 1A ERCW SUP TEST CONN			
2-TV-67-690A	UCC 2A ERCW SUP TEST CONN			
0-TV-67-616A	EBR A ERCW SUP TEST CONN			
0-ISOL-67-820A	ERCW PMP A-A DISCH PRESS			
0-ISOL-67-819A	ERCW PMP B-A DISCH PRESS			
0-ISOL-67-817A	ERCW PMP C-A DISCH PRESS			
0-ISOL-67-916A	ERCW PMP D-A DISCH PRESS			

Data Sheet 1
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TRAIN A - NORMAL MODE

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

Component UNID	DESCRIPTION	M&TE #	PRESSURE (PSIG)	INITIALS
1-PI-67-9B	ERCW STRNR 1A-A OUT PRESS			
2-PI-67-9B	ERCW STRNR 2A-A OUT PRESS			
0-PI-67-17	ERCW HRD B PRESS			
1-PI-67-9A	ERCW STRNR 1A-A SUPPLY PRESS			
2-PI-67-9A	ERCW STRNR 2A-A SUPPLY PRESS			

ERCW Strainer DP is recorded below:

Equation	Data Entry	INITIALS
1-PI-67-9A - 1-PI-67-9B = DP	_____ - _____ = _____	
2-PI-67-9A - 2-PI-67-9B = DP		

Data Sheet 2
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TR. A - U-1 COLD SHUTDOWN, U-2 LOCA-RECIRC

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device / Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$ / $(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
ERCW HEADER 2A	2-FI-67-222 / N/A	N/A	14k-15kgpm (.935)	N/A	N/A / N/A	N/A	_____	N/A
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
CCS HTX A (B position)	EFD-1 / 1-FCV-67-146	_____	N/A	_____	Use HTX ΔP gauge value to flow curve		_____	>5650
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
CCS HTX B (B position)	N/A / 2-FCV-67-146	Calculated using values calculated above: ERCW Header 2A - CCS HTX A =					_____	>4400
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 2
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TR. A - U-1 COLD SHUTDOWN, U-2 LOCA-RECIRC

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** / **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** / **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
CSS HTX 1A	1-FI-67-136	N/A	5700-6200gpm (.927)	N/A	N/A	N/A	_____	NA
	1-ISV-67-537A				N/A			
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
CSS HTX 2A	2-FI-67-136	N/A	5700-6200gpm (.927)	N/A	N/A	N/A	_____	5200
	2-ISV-67-537A				N/A			
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
DSL GEN CLR 1A1	1-FI-67-69	N/A	700-760gpm (.929)	_____	N/A	N/A	_____	≥650 (1200)
	1-ISV-67-510A				N/A			
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

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TR. A - U-1 COLD SHUTDOWN, U-2 LOCA-RECIRC

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
DSL GEN CLR 1A2	1-FI-67-277 1-ISV-67-515A	N/A	700-760gpm (.929)	_____	N/A N/A	N/A	_____	≥650 (1200)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
DSL GEN CLR 2A1	2-FI-67-69 2-ISV-67-510A	N/A	700-760gpm (.929)	_____	N/A N/A	N/A	_____	≥650 (1200)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
DSL GEN CLR 2A2	2-FI-67-277 2-ISV-67-515A	N/A	700-760gpm (.929)	_____	N/A N/A	N/A	_____	≥650 (1200)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 2
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TR. A - U-1 COLD SHUTDOWN, U-2 LOCA-RECIRC

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** / **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** / **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
SD BD RM A/C A	1-FE-67-161 / 1-ISV-67-555	_____ 0-100"H_2O	60-72"H_2O (.931)	_____	_____ / _____	75.0	_____	≥560 (560)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
ELEC BD RM A/C A	0-FE-67-196 / 0-ISV-67-618A	_____ 0-100"H_2O	76-91"H_2O (.936)	_____	_____ / _____	44.0	_____	≥370 (490)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
MAIN CONTROL RM A/C A	0-FE-67-198 / 0-ISV-67-623A	_____ 0-200"H_2O	108-130"H_2O (.928)	_____	_____ / _____	35.0	_____	≥293 (460)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

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TR. A - U-1 COLD SHUTDOWN, U-2 LOCA-RECIRC

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** / **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** / **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
CCS & AFW PUMP SP CLR 1A	1-FE-67-163 / 1-THV-67-643A	_____ 0-200"H_2O	108-131"H_2O (.928)	_____	_____ / _____	10.2	_____	≥102 (670)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
BA TRF & AFW SP CLR 2A	2-FE-67-218 / 2-THV-67-673A	_____ 0-100"H_2O	55-65"H_2O (.929)	_____	_____ / _____	8.5	_____	≥60 (360)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
SFP & TB BSTR PMP CLR 1A	1-FE-67-214 / 1-THV-67-646A	_____ 0-50"H_2O	16-19"H_2O (.910)	_____	_____ / _____	7.7	_____	≥29 (170)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

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TR. A - U-1 COLD SHUTDOWN, U-2 LOCA-RECIRC

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device / Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$ / $(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
CSS PMP RM CLR 1A-A	1-FE-67-185 / 1-THV-67-605A	_____ 0-50"H_2O	12-15"H_2O (.895)	_____	_____ / _____	8.5	_____	≥28 (190)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
CSS PMP RM CLR 2A-A	2-FE-67-185 / 2-THV-67-605A	_____ 0-50" H_2O	12-15"H_2O (.895)	_____	_____ / _____	8.5	_____	≥28 (190)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
CENT CHG PMP CLR 2A	2-FE-67-169 / 2-ISV-67-601A	_____ 0-100"H_2O	45-58"H_2O (.923)	_____	_____ / _____	3.9	_____	≥25 (28)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

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TR. A - U-1 COLD SHUTDOWN, U-2 LOCA-RECIRC

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** / **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** / **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
CENT CHG PMP CLR 1A	1-FE-67-169 / 1-ISV-67-601A	_____ 0-100"H_2O	45-58"H_2O (.923)	_____	_____ / _____	3.9	_____	≥25 (28)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
SI PMP RM CLR 1A	1-FE-67-177 / 1-THV-67-604A	_____ 0-50"H_2O	15-20"H_2O (.907)	_____	_____ / _____	6.0	_____	≥22 (25)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
SI PMP RM CLR 2A	2-FE-67-177 / 2-THV-67-604A	_____ 0-50"H_2O	15-20"H_2O (.907)	_____	_____ / _____	6.0	_____	≥22 (25)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

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TR. A - U-1 COLD SHUTDOWN, U-2 LOCA-RECIRC

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** / **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** / **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
RHR PMP RM CLR 1A-A	1-FE-67-189 / 1-THV-67-606A	_____ 0-100"H_2O	30-60"H_2O (.907)	_____	_____ / _____	3.9	_____	≥19 (21)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
RHR PMP RM CLR 2A-A	2-FE-67-189 / 2-THV-67-606A	_____ 0-100"H_2O	30-60"H_2O (.907)	_____	_____ / _____	3.9	_____	≥19 (21)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
PIPE CHASE CLR 1A	1-FE-67-343 / 1-THV-67-611A	_____ 0-50"H_2O	15-20"H_2O (.907)	_____	N/A / N/A	7.0	_____	≥15 (17)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

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TR. A - U-1 COLD SHUTDOWN, U-2 LOCA-RECIRC

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** / **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** / **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
PIPE CHASE CLR 2A	2-FE-67-343	_____	15-20"H_2O		N/A			≥15
	2-THV-67-611A	0-50"H_2O	(.907)	_____	N/A	7.0	_____	(17)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
PEN RM CLR 1A1	1-FE-67-347	_____	30-60"H_2O		_____			≥12
	1-THV-67-608A	0-100"H_2O	(.907)	_____	_____	3.9	_____	(14)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
PEN RM CLR 1A2	1-FE-67-351	_____	30-60"H_2O		_____			≥11
	1-THV-67-609A	0-100"H_2O	(.907)	_____	_____	3.9	_____	(13)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 2
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TR. A - U-1 COLD SHUTDOWN, U-2 LOCA-RECIRC

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** / **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** / **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
PEN RM CLR 1A3	1-FE-67-355 / 1-THV-67-610A	_____ 0-100"H_2O	30-60"H_2O (.907)	_____	_____ / _____	3.9	_____	≥12 (14)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
PEN RM CLR 2A1	2-FE-67-347 / 2-THV-67-608A	_____ 0-100"H_2O	30-60"H_2O (.907)	_____	_____ / _____	3.9	_____	≥12 (14)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
PEN RM CLR 2A2	2-FE-67-351 / 2-THV-67-609A	_____ 0-100"H_2O	30-60"H_2O (.907)	_____	_____ / _____	3.9	_____	≥11 (13)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

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TR. A - U-1 COLD SHUTDOWN, U-2 LOCA-RECIRC

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	Flow Device / Throttle Valve	EDF or M&TE Gauge #	Target Value/(Corr. Multiplier)	ΔP("H_2O) or Flow(gpm)	$\Delta P_{corrected}$ / $(\Delta P)^{1/2}$	k	$Flow_{corrected}$ (gpm)	Acc Crit Flow (gpm) (Max.)
PEN RM CLR 2A3	2-FE-67-355 / 2-THV-67-610A	_____ 0-100"H_2O	30-60"H_2O (.907)	_____	_____ / _____	3.9	_____	≥12 (14)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
EMER GAS TR RM CLR 2A	2-FE-67-337 / 2-THV-67-685A	_____ 0-100"H_2O	30-60"H_2O (.907)	_____	_____ / _____	3.9	_____	≥10 (11)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
ST AIR COMP (header)	0-FIS-67-206 / 0-THV-67-632C	N/A	152-155gpm (.932)	N/A	N/A / N/A	N/A	_____	≥183 (196)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

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TR. A - U-1 COLD SHUTDOWN, U-2 LOCA-RECIRC

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** / **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** / **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
AUX CNTRL AIR COMP A	1-FE-67-340 / 1-ISV-67-683A	_____ 0-50"H_2O	16-25"H_2O (.910)	N/A	_____ / _____	1.9	_____	≥3.5 (185)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
LWR CNTMT CLR 1A	1-FE-67-471 / 1-ISV-67-564A	_____ 0-50"H_2O	48.75-50"H_2O (.940)	_____	_____ / _____	45.3	_____	≥306 (1060)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
LWR CNTMT CLR 1C	1-FE-67-472 / 1-ISV-67-564C	_____ 0-50"H_2O	48.75-50"H_2O (.940)	_____	_____ / _____	45.3	_____	≥306 (1060)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 2
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TR. A - U-1 COLD SHUTDOWN, U-2 LOCA-RECIRC

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
UPPER CNTMT CLR 1A	1-FI-67-263 1-THV-67-588A	N/A	24-25gpm (.958)	_____	N/A N/A	N/A	_____	≥23 (26)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
UPPER CNTMT CLR 1C	1-FI-67-265 1-THV-67-588C	N/A	24-25gpm (.958)	_____	N/A N/A	N/A	_____	≥23 (26)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 2
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TR. A - U-1 COLD SHUTDOWN, U-2 LOCA-RECIRC

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

Component UNID	DESCRIPTION	M&TE #	PRESSURE (PSIG)	INITIALS
1-VTV-67-534A	CS HX 1A ERCW SUP HDR VT			
2-VTV-67-534A	CS HX 2A ERCW SUP HDR VT			
1-FE-67-61	ERCW SUP HDR 1A (up strm)			
1-FE-67-61	ERCW SUP HDR 1A (dn strm)			
2-FE-67-61	ERCW SUP HDR 1A (up strm)			
2-FE-67-61	ERCW SUP HDR 1A (dn strm)			
1-DRV-67-547	ERCW CCS HX A DR.			
2-DRV-67-547	ERCW CCS HX B DR.			
0-TV-67-621A	MCR CHLR A-A ERCW CONN.			
1-TV-67-690A	UCC 1A ERCW SUP TEST CONN			
2-TV-67-690A	UCC 2A ERCW SUP TEST CONN			
0-TV-67-616A	EBR A ERCW SUP TEST CONN			
0-ISOL-67-820A	ERCW PMP A-A DISCH PRESS			
0-ISOL-67-819A	ERCW PMP B-A DISCH PRESS			
0-ISOL-67-817A	ERCW PMP C-A DISCH PRESS			
0-ISOL-67-916A	ERCW PMP D-A DISCH PRESS			

Data Sheet 2
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TR. A - U-1 COLD SHUTDOWN, U-2 LOCA-RECIRC

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

Component UNID	DESCRIPTION	M&TE #	PRESSURE (PSIG)	INITIALS
1-PI-67-9B	ERCW STRNR 1A-A OUT PRESS			
2-PI-67-9B	ERCW STRNR 2A-A OUT PRESS			
0-PI-67-17	ERCW HRD B PRESS			
1-PI-67-9A	ERCW STRNR 1A-A SUPPLY PRESS			
2-PI-67-9A	ERCW STRNR 2A-A SUPPLY PRESS			

ERCW Strainer DP is recorded below:

Equation	Data Entry	INITIALS
1-PI-67-9A - 1-PI-67-9B = DP	_____ - _____ = _____	
2-PI-67-9A - 2-PI-67-9B = DP		

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TR. A - U-1 LOCA-RECIRC, U-2 COLD SHUTDOWN

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** / **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** / **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
ERCW HEADER 2A	2-FI-67-222 / N/A	N/A	14k-15kgpm (.935)	N/A	N/A / N/A	N/A	_____	N/A
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
CCS HTX A (A position)	EFD-1 / N/A	_____	N/A	_____	EFD-1		_____	≥4400
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
CCS HTX B (A position)	N/A / N/A	_____	N/A	_____	2-FI-67-222 (-) EFD-1 = ____gpm		_____	≥5850
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 3
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TR. A - U-1 LOCA-RECIRC, U-2 COLD SHUTDOWN

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
CNTMT SPR HTX 1A	1-FI-67-136 1-ISV-67-537A	N/A	5700-6200gpm (.927)	N/A	N/A N/A	N/A	_____	≥5200
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
DSL GEN CLR 1A1	1-FI-67-69 1-ISV-67-510A	N/A	700-760gpm (.929)	_____	N/A N/A	N/A	_____	≥650 (1200)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 3
(Page 3 of 15)

TR. A - U-1 LOCA-RECIRC, U-2 COLD SHUTDOWN

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** / **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** / **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
DSL GEN CLR 1A2	1-FI-67-277 / 1-ISV-67-515A	N/A	700-760gpm (.929)	_____	N/A / N/A	N/A	_____	≥650 (1200)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
DSL GEN CLR 2A1	2-FI-67-69 / 2-ISV-67-510A	N/A	700-760gpm (.929)	_____	N/A / N/A	N/A	_____	≥650 (1200)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
DSL GEN CLR 2A2	2-FI-67-277 / 2-ISV-67-515A	N/A	700-760gpm (.929)	_____	N/A / N/A	N/A	_____	≥650 (1200)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 3
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TR. A - U-1 LOCA-RECIRC, U-2 COLD SHUTDOWN

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** / **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** / **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
SD BD RM A/C A	1-FE-67-161 / 1-ISV-67-555	_____ 0-100"H_2O	60-72"H_2O (.931)	_____	_____ / _____	75.0	_____	≥560 (560)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
ELEC BD RM A/C A	0-FE-67-196 / 0-ISV-67-618A	_____ 0-100"H_2O	76-91"H_2O (.936)	_____	_____ / _____	44.0	_____	≥370 (490)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
MAIN CONTROL RM A/C A	0-FE-67-198 / 0-ISV-67-623A	_____ 0-200"H_2O	108-130"H_2O (.928)	_____	_____ / _____	35.0	_____	≥293 (460)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 3
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TR. A - U-1 LOCA-RECIRC, U-2 COLD SHUTDOWN

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** / **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** / **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
CCS & AFW PUMP SP CLR 1A	1-FE-67-163 / 1-THV-67-643A	_____ 0-200"H_2O	108-131"H_2O (.928)	_____	_____ / _____	10.2	_____	≥102 (670)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
BA TRF & AFW SP CLR 2A	2-FE-67-218 / 2-THV-67-673A	_____ 0-100"H_2O	55-65"H_2O (.929)	_____	_____ / _____	8.5	_____	≥60 (360)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
SFP & TB BSTR PMP CLR 1A	1-FE-67-214 / 1-THV-67-646A	_____ 0-50"H_2O	16-19"H_2O (.910)	_____	_____ / _____	7.7	_____	≥29 (170)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 3
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TR. A - U-1 LOCA-RECIRC, U-2 COLD SHUTDOWN

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** / **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** / **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
CSS PMP RM CLR 1A-A	1-FE-67-184 / 1-THV-67-605A	_____ 0-50"H_2O	12-15"H_2O (.895)	_____	_____ / _____	8.5	_____	≥28 (190)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
CENT CHG PMP CLR 2A	2-FE-67-169 / 2-ISV-67-601A	_____ 0-100"H_2O	45-58"H_2O (.923)	_____	_____ / _____	3.9	_____	≥25 (28)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 3
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TR. A - U-1 LOCA-RECIRC, U-2 COLD SHUTDOWN

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** / **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** / **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
CENT CHG PMP CLR 1A	1-FE-67-169 / 1-ISV-67-601A	_____ 0-100"H_2O	45-58"H_2O (.923)	_____	_____ / _____	3.9	_____	≥25 (28)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
SI PMP RM CLR 1A	1-FE-67-177 / 1-THV-67-604A	_____ 0-50"H_2O	15-20"H_2O (.907)	_____	_____ / _____	6.0	_____	≥22 (25)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
RHR PMP RM CLR 1A-A	1-FE-67-189 / 1-THV-67-606A	_____ 0-100"H_2O	30-60"H_2O (.907)	_____	_____ / _____	3.9	_____	≥19 (21)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 3
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TR. A - U-1 LOCA-RECIRC, U-2 COLD SHUTDOWN

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** / **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** / **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
RHR PMP RM CLR 2A-A	2-FE-67-189	_____	30-60"H_2O		_____			≥19
	2-THV-67-606A	0-100"H_2O	(.907)	_____	_____	3.9	_____	(21)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
PIPE CHASE CLR 1A	1-FE-67-343	_____	15-20"H_2O		N/A			≥15
	1-THV-67-611A	0-50"H_2O	(.907)	_____	N/A	7.0	_____	(17)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
PIPE CHASE CLR 2A	2-FE-67-343	_____	15-20"H_2O		N/A			≥15
	2-THV-67-611A	0-50"H_2O	(.907)	_____	N/A	7.0	_____	(17)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 3
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TR. A - U-1 LOCA-RECIRC, U-2 COLD SHUTDOWN

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	Flow Device / Throttle Valve	EDF or M&TE Gauge #	Target Value/(Corr. Multiplier)	ΔP("H_2O) or Flow(gpm)	$\Delta P_{corrected}$ / $(\Delta P)^{1/2}$	k	$Flow_{corrected}$ (gpm)	Acc Crit Flow (gpm) (Max.)
PEN RM CLR 1A1	1-FE-67-347	_____	30-60"H_2O		_____			≥12
	1-THV-67-608A	0-100"H_2O	(.907)	_____	_____	3.9	_____	(14)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
PEN RM CLR 1A2	1-FE-67-351	_____	30-60"H_2O		_____			≥11
	1-THV-67-609A	0-100"H_2O	(.907)	_____	_____	3.9	_____	(13)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
PEN RM CLR 1A3	1-FE-67-355	_____	30-60"H_2O		_____			≥12
	1-THV-67-610A	0-100"H_2O	(.907)	_____	_____	3.9	_____	(14)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 3
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TR. A - U-1 LOCA-RECIRC, U-2 COLD SHUTDOWN

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** / **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** / **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
PEN RM CLR 2A1	2-FE-67-347 / 2-THV-67-608A	_____ 0-100"H_2O	30-60"H_2O (.907)	_____	_____ / _____	3.9	_____	≥12 (14)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
PEN RM CLR 2A2	2-FE-67-351 / 2-THV-67-609A	_____ 0-100"H_2O	30-60"H_2O (.907)	_____	_____ / _____	3.9	_____	≥11 (13)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
PEN RM CLR 2A3	2-FE-67-355 / 2-THV-67-610A	_____ 0-100"H_2O	30-60"H_2O (.907)	_____	_____ / _____	3.9	_____	≥12 (14)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 3
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TR. A - U-1 LOCA-RECIRC, U-2 COLD SHUTDOWN

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** / **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** / **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
SI RM CLR 2A	2-FE-67-177	_____	30-60"H_2O	_____	_____	3.9	_____	≥22
	2-THV-67-604A	0-100"H_2O	(.907)		_____			(25)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
EMER GAS TR RM CLR 2A	2-FE-67-337	_____	30-60"H_2O	_____	_____	3.9	_____	≥10
	2-THV-67-685A	0-100"H_2O	(.907)		_____			(11)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
ST AIR COMP (header)	0-FIS-67-206	N/A	152-155gpm	N/A	N/A	N/A	_____	≥183
	0-THV-67-632C		(.932)		N/A			(196)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

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TR. A - U-1 LOCA-RECIRC, U-2 COLD SHUTDOWN

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** / **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** / **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
AUX CNTRL AIR COMP A	1-FE-67-340 / 1-ISV-67-683A	_____ 0-50"H_2O	16-25"H_2O (.910)	N/A	_____ / _____	1.9	_____	≥3.5 (185)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
LWR CNTMT CLR 2A	2-FE-67-471 / 2-ISV-67-64A	_____ 0-50"H_2O	48.75-50"H_2O (.940)	_____	_____ / _____	45.3	_____	≥306 (1060)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
LWR CNTMT CLR 2C	2-FE-67-472 / 2-ISV-67-564C	_____ 0-50"H_2O	48.75-50"H_2O (.940)	_____	_____ / _____	45.3	_____	≥306 (1060)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 3
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TR. A - U-1 LOCA-RECIRC, U-2 COLD SHUTDOWN

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** / **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** / **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
UPPER CNTMT CLR 2A	2-FI-67-263 / 2-THV-67-588A	N/A	24-25gpm (.958)	_____	N/A / N/A	N/A	_____	≥23 (26)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
UPPER CNTMT CLR 2C	2-FI-67-265 / 2-THV-67-588C	N/A	24-25gpm (.958)	_____	N/A / N/A	N/A	_____	≥23 (26)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
INST RM WAT CLR 2A	2-FE-67-257 / 2-ISV-67-527A	_____ / 0-100"H_2O	65-77"H_2O (.933)	_____	_____ / _____	3.9	_____	≥30 (200)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

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TR. A - U-1 LOCA-RECIRC, U-2 COLD SHUTDOWN

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

Component UNID	DESCRIPTION	M&TE #	PRESSURE (PSIG)	INITIALS
1-VTV-67-534A	CS HX 1A ERCW SUP HDR VT			
2-VTV-67-534A	CS HX 2A ERCW SUP HDR VT			
1-FE-67-61	ERCW SUP HDR 1A (up strm)			
1-FE-67-61	ERCW SUP HDR 1A (dn strm)			
2-FE-67-61	ERCW SUP HDR 1A (up strm)			
2-FE-67-61	ERCW SUP HDR 1A (dn strm)			
1-DRV-67-547	ERCW CCS HX A DR.			
2-DRV-67-547	ERCW CCS HX B DR.			
0-TV-67-621A	MCR CHLR A-A ERCW CONN.			
1-TV-67-690A	UCC 1A ERCW SUP TEST CONN			
2-TV-67-690A	UCC 2A ERCW SUP TEST CONN			
0-TV-67-616A	EBR A ERCW SUP TEST CONN			
0-ISOL-67-820A	ERCW PMP A-A DISCH PRESS			
0-ISOL-67-819A	ERCW PMP B-A DISCH PRESS			
0-ISOL-67-817A	ERCW PMP C-A DISCH PRESS			
0-ISOL-67-916A	ERCW PMP D-A DISCH PRESS			

Data Sheet 3
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TR. A - U-1 LOCA-RECIRC, U-2 COLD SHUTDOWN

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

Component UNID	DESCRIPTION	M&TE #	PRESSURE (PSIG)	INITIALS
1-PI-67-9B	ERCW STRNR 1A-A OUT PRESS			
2-PI-67-9B	ERCW STRNR 2A-A OUT PRESS			
0-PI-67-17	ERCW HRD B PRESS			

ERCW Strainer DP is recorded below:

Equation	Data Entry	INITIALS
1-PI-67-9A - 1-PI-67-9B = DP	_____ - _____ = _____	
2-PI-67-9A - 2-PI-67-9B = DP		

Data Sheet 4
(Page 1 of 14)

TR. A U-1 HOT SHUTDOWN - U-2 STARTUP

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device / Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$ / $(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
CCS HTX A (B + bypass)	EFD-1 / 1-FCV-67-143	_____ / 0-200"H_2O	59-64"H_2O (.906)	_____	_____ / _____	852.0	_____	≥6650
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
CCS HTX B (B + bypass)	2-FE-67-222 / 2-FCV-67-143	_____ / 0-200"H_2O	59-64"H_2O (.906)	2-FE-67-222 (-) EFD-1 = gpm _____	_____ / _____	852.0	_____	≥5850
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
DSL GEN CLR 1A1	1-FI-67-69 / 1-ISV-67-510A	N/A	700-760gpm (.929)	_____	N/A / N/A	N/A	_____	≥650 (1200)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
DSL GEN CLR 1A2	1-FI-67-277 / 1-ISV-67-515A	N/A	700-760gpm (.929)	_____	N/A / N/A	N/A	_____	≥650 (1200)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
DSL GEN CLR 2A1	2-FI-67-69 / 2-ISV-67-510A	N/A	700-760gpm (.929)	_____	N/A / N/A	N/A	_____	≥650 (1200)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 4
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TR. A U-1 HOT SHUTDOWN - U-2 STARTUP

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device / Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$ / $(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
DSL GEN CLR 2A2	2-FI-67-277		700-760gpm		N/A			≥650
	2-ISV-67-515A	N/A	(.929)	_____	N/A	N/A	_____	(1200)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
SD BD RM A/C A	1-FE-67-161	_____	60-72"H_2O		_____			≥560
	1-ISV-67-555	0-100"H_2O	(.931)	_____	_____	75.0	_____	(560)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
ELEC BD RM A/C A	0-FE-67-196	_____	76-91"H_2O		_____			≥370
	0-ISV-67-618A	0-100"H_2O	(.936)	_____	_____	44.0	_____	(490)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
MAIN CONTROL RM A/C A	0-FE-67-198		108-130"H_2O		_____			≥293
	0-ISV-67-623A	_____ 0-200"H_2O	(.928)	_____	_____	35.0	_____	(460)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 4
(Page 3 of 14)

TR. A U-1 HOT SHUTDOWN - U-2 STARTUP

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device / Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$ / $(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
LWR CNTMT CLR 1A	1-FE-67-471 / 1-ISV-67-564A	_____ / 0-50"H_2O	48.75-50"H_2O (.940)	_____	_____ / _____	45.3	_____	≥306 (1060)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
LWR CNTMT CLR 2A	2-FE-67-471 / 2-ISV-67-564A	_____ / 0-50"H_2O	48.75-50"H_2O (.940)	_____	_____ / _____	45.3	_____	≥306 (1060)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
LWR CNTMT CLR 1C	1-FE-67-472 / 1-ISV-67-564C	_____ / 0-50"H_2O	48.75-50"H_2O (.940)	_____	_____ / _____	45.3	_____	≥306 (1060)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
LWR CNTMT CLR 2C	2-FE-67-472 / 2-ISV-67-564C	_____ / 0-50"H_2O	48.75-50"H_2O (.940)	_____	_____ / _____	45.3	_____	≥306 (1060)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 4
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TR. A U-1 HOT SHUTDOWN - U-2 STARTUP

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
CRDM CLR 1A	1-FE-67-470	_____	118-143"H_2O		_____			≥124
	1-ISV-67-567-A	0-200"H_2O	(.931)	_____	_____	11.9	_____	(390)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
CRDM CLR 2A	2-FE-67-470	_____	118-143"H_2O		_____			≥124
	2-ISV-67-567-A	0-200"H_2O	(.931)	_____	_____	11.9	_____	(390)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
CRDM CLR 1C	1-FE-67-473	_____	118-143"H_2O		_____			≥124
	1-ISV-67-567C	0-200"H_2O	(.931)	_____	_____	11.9	_____	(390)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
CRDM CLR 2C	2-FE-67-473	_____	118-143"H_2O		_____			≥124
	2-ISV-67-567C	0-200"H_2O	(.931)	_____	_____	11.9	_____	(390)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 4
(Page 5 of 14)
TR. A U-1 HOT SHUTDOWN - U-2 STARTUP

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device / Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$ / $(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
U-1 RCP MTR CLR 1	1-FE-67-235 / 1-ISV-67-572A	_____ / 0-100"H_2O	58-70"H_2O (.930)	_____	_____ / _____	15.0	_____	≥110 (220)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
U-2 RCP MTR CLR 1	2-FE-67-235 / 2-ISV-67-572A	_____ / 0-100"H_2O	58-70"H_2O (.930)	_____	_____ / _____	15.0	_____	≥110 (220)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
U-1 RCP MTR CLR 3	1-FE-67-241 / 1-ISV-67-572C	_____ / 0-100"H_2O	58-70"H_2O (.930)	_____	_____ / _____	15.0	_____	≥110 (220)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
U-2 RCP MTR CLR 3	2-FE-67-241 / 2-ISV-67-572C	_____ / 0-100"H_2O	58-70"H_2O (.930)	_____	_____ / _____	15.0	_____	≥110 (220)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 4
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TR. A U-1 HOT SHUTDOWN - U-2 STARTUP

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device / Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$ / $(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
CCS & AFW PUMP SP CLR 1A	1-FE-67-163 / 1-THV-67-643A	_____ 0-200"H_2O	108-131"H_2O (.928)	_____	_____ / _____	10.2	_____	≥102 (670)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
BA TRF & AFW SP CLR 2A	2-FE-67-218 / 2-THV-67-673A	_____ 0-100"H_2O	55-65"H_2O (.929)	_____	_____ / _____	8.5	_____	≥60 (360)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
INST RM WAT CLR 1A	1-FE-67-257 / 1-ISV-67-527A	_____ 0-100"H_2O	65-77"H_2O (.933)	_____	_____ / _____	3.9	_____	≥30 (200)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
INST RM WAT CLR 2A	2-FE-67-257 / 2-ISV-67-527A	_____ 0-100"H_2O	65-77"H_2O (.933)	_____	_____ / _____	3.9	_____	≥30 (200)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 4
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TR. A U-1 HOT SHUTDOWN - U-2 STARTUP

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

[1] Component	[2] Flow Device / Throttle Valve	[3] EDF or M&TE Gauge #	[4] Target Value/(Corr. Multiplier)	[5] ΔP("H_2O) or Flow(gpm)	[6] $\Delta P_{corrected}$ / $(\Delta P)^{1/2}$	[7] k	[8] $Flow_{corrected}$ (gpm)	[9] Acc Crit Flow (gpm) (Max.)
SFP & TB BSTR PMP CLR 1A	1-FE-67-214 / 1-THV-67-646A	_____ 0-50"H_2O	16-19"H_2O (.910)	_____	_____ / _____	7.7	_____	≥29 (170)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
CSS PMP RM CLR 1A-A	1-FE-67-185 / 1-THV-67-605A	_____ 0-50"H_2O	12-15"H_2O (.895)	_____	_____ / _____	8.5	_____	≥28 (190)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
CSS PMP RM CLR 2A-A	2-FE-67-185 / 2-THV-67-605A	_____ 0-50"H_2O	12-15"H_2O (.895)	_____	_____ / _____	8.5	_____	≥28 (190)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
CENT CHG PMP CLR 1A	1-FE-67-169 / 1-ISV-67-601A	_____ 0-100"H_2O	45-58"H_2O (.923)	_____	_____ / _____	3.9	_____	≥25 (28)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 4
(Page 8 of 14)

TR. A U-1 HOT SHUTDOWN - U-2 STARTUP

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
UPPER CNTMT CLR 1A	1-FI-67-263 1-THV-67-588A	N/A	24-25gpm (.958)	_____	N/A N/A	N/A	_____	≥23 (26)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
UPPER CNTMT CLR 2A	2-FI-67-263 2-THV-67-588A	N/A	24-25gpm (.958)	_____	N/A N/A	N/A	_____	≥23 (26)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
UPPER CNTMT CLR 1C	1-FI-67-265 1-THV-67-588C	N/A	24-25gpm (.958)	_____	N/A N/A	N/A	_____	≥23 (26)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
UPPER CNTMT CLR 2C	2-FI-67-265 2-THV-67-588C	N/A	24-25gpm (.958)	_____	N/A N/A	N/A	_____	≥23 (26)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 4
(Page 9 of 14)
TR. A U-1 HOT SHUTDOWN - U-2 STARTUP

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device / Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$ / $(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
SI PMP RM CLR 1A	1-FE-67-177	_____	15-20"H_2O		_____			≥22
	1-THV-67-604A	0-50"H_2O	(.907)	_____	_____	6.0	_____	(25)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
SI PMP RM CLR 2A	2-FE-67-177	_____	15-20"H_2O		_____			≥22
	2-THV-67-604A	0-50"H_2O	(.907)	_____	_____	6.0	_____	(25)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
RHR PMP RM CLR 1A-A	1-FE-67-189	_____	30-60"H_2O		_____			≥19
	1-THV-67-606A	0-100"H_2O	(.907)	_____	_____	3.9	_____	(21)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
RHR PMP RM CLR 2A-A	2-FE-67-189	_____	30-60"H_2O		_____			≥19
	2-THV-67-606A	0-100"H_2O	(.907)	_____	_____	3.9	_____	(21)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 4
(Page 10 of 14)
TR. A U-1 HOT SHUTDOWN - U-2 STARTUP

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
PIPE CHASE CLR 1A	1-FE-67-343	_____	15-20"H_2O		N/A			≥15
	1-THV-67-611A	0-50"H_2O	(.907)	_____	N/A	7.0	_____	(17)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
PIPE CHASE CLR 2A	2-FE-67-343	_____	15-20"H_2O		N/A			≥15
	2-THV-67-611A	0-50"H_2O	(.907)	_____	N/A	7.0	_____	(17)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
PEN RM CLR 1A1	1-FE-67-347	_____	30-60"H_2O		_____			≥12
	1-THV-67-608A	0-100"H_2O	(.907)	_____	_____	3.9	_____	(14)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
PEN RM CLR 1A2	1-FE-67-351	_____	30-60"H_2O		_____			≥11
	1-THV-67-609A	0-100"H_2O	(.907)	_____	_____	3.9	_____	(13)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 4
(Page 11 of 14)

TR. A U-1 HOT SHUTDOWN - U-2 STARTUP

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	Flow Device / Throttle Valve	EDF or M&TE Gauge #	Target Value/(Corr. Multiplier)	ΔP("H_2O) or Flow(gpm)	$\Delta P_{corrected}$ / $(\Delta P)^{1/2}$	k	$Flow_{corrected}$ (gpm)	Acc Crit Flow (gpm) (Max.)
PEN RM CLR 1A3	1-FE-67-355 / 1-THV-67-610A	_____ / 0-100"H_2O	30-60"H_2O (.907)	_____	_____ / _____	3.9	_____	≥12 (14)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
PEN RM CLR 2A1	2-FE-67-347 / 2-THV-67-608A	_____ / 0-100"H_2O	30-60"H_2O (.907)	_____	_____ / _____	3.9	_____	≥12 (14)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
PEN RM CLR 2A2	2-FE-67-351 / 2-THV-67-609A	_____ / 0-100"H_2O	30-60"H_2O (.907)	_____	_____ / _____	3.9	_____	≥11 (13)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
PEN RM CLR 2A3	2-FE-67-355 / 2-THV-67-610A	_____ / 0-100"H_2O	30-60"H_2O (.907)	_____	_____ / _____	3.9	_____	≥12 (14)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 4
(Page 12 of 14)
TR. A U-1 HOT SHUTDOWN - U-2 STARTUP

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Component	**Flow Device** **Throttle Valve**	**EDF or M&TE Gauge #**	**Target Value/(Corr. Multiplier)**	**ΔP("H_2O) or Flow(gpm)**	**$\Delta P_{corrected}$** **$(\Delta P)^{1/2}$**	**k**	**$Flow_{corrected}$ (gpm)**	**Acc Crit Flow (gpm) (Max.)**
EMER GAS TR RM CLR 2A	2-FE-67-337 2-THV-67-685A	_____ 0-100"H_2O	30-60"H_2O (.907)	_____	_____ _____	3.9	_____	≥10 (11)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
ST AIR COMP (header)	0-FIS-67-206 0-THV-67-632C	N/A	152-155gpm (.932)	N/A	N/A N/A	N/A	_____	≥183 (196)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
CENT CHG PMP CLR 2A	2-FE-67-169 2-ISV-67-601A	_____ 0-100"H_2O	45-58"H_2O (.923)	_____	_____ _____	3.9	_____	≥25 (28)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			
AUX CNTRL AIR COMP A	1-FE-67-340 1-ISV-67-683A	_____ 0-50"H_2O	16-25"H_2O (.910)	N/A	_____ _____	1.9	_____	≥3.5 (185)
Steps and calculations performed by (init./date): _____/_____					Calculations verified by (init./date): _____/_____			

Data Sheet 4
(Page 13 of 14)

TR. A U-1 HOT SHUTDOWN - U-2 STARTUP

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

Component UNID	DESCRIPTION	M&TE #	PRESSURE (PSIG)	INITIALS
1-VTV-67-534A	CS HX 1A ERCW SUP HDR VT			
2-VTV-67-534A	CS HX 2A ERCW SUP HDR VT			
1-FE-67-61	ERCW SUP HDR 1A (up strm)			
1-FE-67-61	ERCW SUP HDR 1A (dn strm)			
2-FE-67-61	ERCW SUP HDR 1A (up strm)			
2-FE-67-61	ERCW SUP HDR 1A (dn strm)			
1-DRV-67-547	ERCW CCS HX A DR.			
2-DRV-67-547	ERCW CCS HX B DR.			
0-TV-67-621A	MCR CHLR A-A ERCW CONN.			
1-TV-67-690A	UCC 1A ERCW SUP TEST CONN			
2-TV-67-690A	UCC 2A ERCW SUP TEST CONN			
0-TV-67-616A	EBR A ERCW SUP TEST CONN			
0-ISOL-67-820A	ERCW PMP A-A DISCH PRESS			
0-ISOL-67-819A	ERCW PMP B-A DISCH PRESS			
0-ISOL-67-817A	ERCW PMP C-A DISCH PRESS			
0-ISOL-67-916A	ERCW PMP D-A DISCH PRESS			

Data Sheet 4
(Page 14 of 14)

TR. A U-1 HOT SHUTDOWN - U-2 STARTUP

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

Component UNID	DESCRIPTION	M&TE #	PRESSURE (PSIG)	INITIALS
1-PI-67-9B	ERCW STRNR 1A-A OUT PRESS			
2-PI-67-9B	ERCW STRNR 2A-A OUT PRESS			
0-PI-67-17	ERCW HRD B PRESS			
1-PI-67-9A	ERCW STRNR 1A-A SUPPLY PRESS			
2-PI-67-9A	ERCW STRNR 2A-A SUPPLY PRESS			

ERCW Strainer DP is recorded below:

Equation	Data Entry	INITIALS
1-PI-67-9A - 1-PI-67-9B = DP	_____ - _____ = _____	
2-PI-67-9A - 2-PI-67-9B = DP		

Data Sheet 5
(Page 1 of 4)

TRAIN A THROTTLE VALVE SETPOINTS

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

1.0 APPLICATION

Use this data sheet only for the valves adjusted in the flow mode applicable to the subsection of the procedure being performed (i.e. only valves applicable to the Cold Shutdown Mode are completed with Section 6.4 U-1 LOCA, U-2 Hot Standby.

2.0 PROCEDURE

[1] **DETERMINE** valve throttle position as follows:

[2] **OPEN** the valve to the full open stop.

[3] **CLOSE** the valve while counting the number of turns until the flow returns to that previously recorded on the data sheet.

[4] **RECORD** the number of turns from the full open stop to the desired flow position to the nearest 1/4 turn. DO NOT discount any handwheel movement as valve slack, count ALL turns. For plug valves (0-90° travel) record the position to the nearest 15°.

[5] **CLOSE** the valve fully.

[6] **OPEN** the valve while counting the number of turns until the flow returns to that previously recorded on the data sheet.

[7] **RECORD** the number of turns from full closed position to the desired flow position to the nearest 1/4 turn. DO NOT discount any handwheel movement as valve slack, count ALL turns. For plug valves (0-90° travel) record the position to the nearest 15°

Component	Throttle Valve	Mode Application	Turns From		Initial/Date
			Full Open	Full Closed	
AUX CNTRL AIR COMP A	1-ISV 67-683	LOCA			_____/_____
BA TRF & AFW SP CLR 2A	2-THV-67-673A	Normal			_____/_____
CCS HTX A 'A'	1-FCV-67-146	LOCA			_____/_____
CCS HTX A "B"	1-FCV-67-146	LOCA			

Data Sheet 5
(Page 2 of 4)

TRAIN A THROTTLE VALVE SETPOINTS

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

2.0 PROCEDURE (continued)

Component	Throttle Valve	Mode Application	Turns From		Initial/Date
			Full Open	Full Closed	
CCS HTX B "A'	2-FCV-67-143	LOCA			_____/_____
CCS HTX B "B"	2-FCV-67-143	LOCA			
CCS & AFW PMP SP CLR 1A	1-THV-67-643A	Normal			_____/_____
CENT CHG PMP 1A-A	1-THV-67-601A	Normal			_____/_____
CENT CHG PMP 2A-A	2-THV-67-601A	Normal			_____/_____
CSS HTX 1A	1-ISV-67-537A	LOCA			_____/_____
CSS HTX 2A	2-ISV-67-537A	LOCA			_____/_____
CSS PMP RM CLR 1A-A	1-THV-67-605A	Normal			_____/_____
CSS PMP RM CLR 2A-A	2-THV-67-605A	Normal			_____/_____
CRDM CLR 1A	1-ISV-67-567A	Normal			_____/_____
CRDM CLR 1C	1-ISV-67-567C	Normal			_____/_____
CRDM CLR 2A	2-ISV-67-567A	Normal			_____/_____
CRDM CLR 2C	2-ISV-67-567C	Normal			_____/_____
DSL DEN CLR 1A1	1-ISV-67-510A	LOCA			_____/_____
DSL DEN CLR 1A2	1-ISV-67-515A	LOCA			_____/_____
DSL DEN CLR 2A1	2-ISV-67-510A	LOCA			_____/_____
DSL DEN CLR 2A2	2-ISV-67-515A	LOCA			_____/_____
ELEC BD RM A/C A	0-ISV-67-618A	Normal			_____/_____
EGTS RM CLR 2A	2-THV-67-685A	Normal			_____/_____
INST RM WTR CLR 1A	1-ISV-67-527A	Normal			_____/_____
INST RM WTR CLR 2A	2-ISV-67-527A	Normal			_____/_____
LWR CNTMT CLR 1A	1-ISV-67-564A	Normal			_____/_____
LWR CNTMT CLR 1C	1-ISV-67-564C	Normal			_____/_____
LWR CNTMT CLR 2A	2-ISV-67-564A	Normal			_____/_____
LWR CNTMT CLR 2C	2-ISV-67-564C	Normal			_____/_____
MCR A/C A	0-ISV-67-623A	Normal			_____/_____

Data Sheet 5
(Page 3 of 4)

TRAIN A THROTTLE VALVE SETPOINTS

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

2.0 PROCEDURE (continued)

Component	Throttle Valve	Mode Application	Turns From		Initial/Date
			Full Open	Full Closed	
PEN RM CLR 1A1	1-THV-67-608A	Normal			_____/_____
PEN RM CLR 1A2	1-THV-67-609A	Normal			_____/_____
PEN RM CLR 1A3	1-THV-67-610A	Normal			_____/_____
PEN RM CLR 2A1	2-THV-67-608A	Normal			_____/_____
PEN RM CLR 2A2	2-THV-67-609A	Normal			_____/_____
PEN RM CLR 2A3	2-THV-67-610A	Normal			_____/_____
PIPE CHASE CLR 1A	1-THV-67-611A	Normal			_____/_____
PIPE CHASE CLR 2A	2-THV-67-611A	Normal			_____/_____
U-1 RCP MTR CLR 1-1	1-ISV-67-572A	Normal			_____/_____
U-1 RCP MTR CLR 1-3	1-ISV-67-572C	Normal			_____/_____
U-2 RCP MTR CLR 2-1	2-ISV-67-572A	Normal			_____/_____
U-2 RCP MTR CLR 2-3	2-ISV-67-572C	Normal			_____/_____
RHRP RM CLR 1A-A	1-THV-606A	Normal			_____/_____
RHRP RM CLR 2A-A	2-THV-606A	Normal			_____/_____
SD BD RM A/C A	1-ISV-67-555	Normal			_____/_____
SFP & TB BSTR PMP CLR 1A	1-THV-67-646A	Normal			_____/_____
SI PMP RM CLR 1A	1-THV-67-604A	Normal			_____/_____
SI PMP RM CLR 2A	2-THV-67-604A	Normal			_____/_____
ST AIR COMP A (aftercooler)	1-THV-67-632A	Normal			_____/_____
ST AIR COMP A (intercooler)	1-THV-67-635A	Normal			_____/_____
ST AIR COMP B (aftercooler)	1-THV-67-632B	Normal			_____/_____
ST AIR COMP B (intercooler)	1-THV-67-635B	Normal			_____/_____
ST AIR COMP C (aftercooler)	1-THV-67-632C	Normal			_____/_____

Data Sheet 5
(Page 4 of 4)

TRAIN A THROTTLE VALVE SETPOINTS

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

2.0 PROCEDURE (continued)

Component	Throttle Valve	Mode Application	Turns From		Initial/Date
			Full Open	Full Closed	
ST AIR COMP C (intercooler)	1-THV-67-635C	Normal			_____/_____
ST AIR COMP D (aftercooler)	1-THV-67-632D	Normal			_____/_____
ST AIR COMP D (intercooler)	1-THV-67-635D	Normal			_____/_____
UPR CNTMT CLR 1A	1-THV-67-588A	Normal			_____/_____
UPR CNTMT CLR 1C	1-THV-67-588C	Normal			_____/_____
UPR CNTMT CLR 2A	2-THV-67-588A	Normal			_____/_____
UPR CNTMT CLR 2C	2-THV-67-588C	Normal			_____/_____

Data Sheet 6
(Page 1 of 1)

PUMP DATA -U-1 COLD SD, U-2 LOCA-RECIRC

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

Location /Component	Instrument	M&TE#	Reading	Range/Accuracy	Initial/Date
Discharge Pressures at ERCW Pumps	0-PI-67-29B (Pump A-A)		_____ psig	200 psig/±4 psig	_____/_____
(N/A data for pumps NOT running)	0-PI-67-33B (Pump B-A)		_____ psig	200 psig/±4 psig	_____/_____
	0-PI-67-37B (Pump C-A)		_____ psig	200 psig/±4 psig	_____/_____
	0-PI-67-41B (Pump D-A)		_____ psig	200 psig/±4 psig	_____/_____
Header Pressure	0-PI-67-18B		_____ psig	200 psig/±1.75%	_____/_____

Data Sheet 7
(Page 1 of 1)

PUMP DATA - U-1 LOCA, U-2 COLD SD

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

Location /Component	Instrument	M&TE#	Reading	Range/Accuracy	Initial/Date
Discharge Pressures at ERCW Pumps	0-PI-67-29B (Pump A-A)		_____ psig	200 psig/±4 psig	_____/_____
(N/A data for pumps NOT running)	0-PI-67-33B (Pump B-A)		_____ psig	200 psig/±4 psig	_____/_____
	0-PI-67-37B (Pump C-A)		_____ psig	200 psig/±4 psig	_____/_____
	0-PI-67-41B (Pump D-A)		_____ psig	200 psig/±4 psig	_____/_____
Header Pressure	0-PI-67-18B		_____ psig	200 psig/±1.75%	_____/_____

Data Sheet 8
(Page 1 of 1)

CCS HTX A FLOW/DP DATA

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

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Flow Point	**ΔP at 2-FE-67-222 GPM**	**Correction Factor**	**1ΔPcorrected**	**2Corrected Flow (gpm)**	**CCS HTX A ΔP at EFD-1 GPM**	**Calculation Performed by: Init/Date**	**Calculation Verified by: Init/Date**
23"H_2O (A) ~4400 gpm							
88"H_2O (B) ~5650 gpm							

Data Sheet 9
(Page 1 of 1)

CCS HTX B FLOW/DP DATA

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Flow Point	**ΔP at 2-FE-67-222 (GPM)**	**Correction Factor**	**1ΔPcorrected**	**2Corrected Flow (gpm)**	**CCS HTX A ΔP at EDF-1 (GPM)**	**Calculation Performed by: Init/Date**	**Calculation Verified by: Init/Date**
23"H_2O (A) ~4400 gpm							
88"H_2O (B) ~5650 gpm							

2-FT-67-222 flow _____gpm (-) EFD-1 flow ____ gpm = _____ gpm CCS B HX

Checklist 1
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1A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
		IPS el 722			
		Yard			
ERCW DISCH HDR A COOLING TOWER ISOL	North of SGWLU TK	POSITION AS NEEDED	0-FCV-67-360		CV
ERCW HDR 1A BACKWASH ISOL	YARD	0-PI-OPS-17.0 LC	1-ISV-67-506A		
DG 2A-A ERCW SUP HDR ISOL	YARD	0-PI-OPS-17.0 LO	1-ISV-67-507B		
DG 1A-A ERCW SUP HDR ISOL	YARD	0-PI-OPS-17.0 LO	1-ISV-67-507A		
1-FT-67-61/1-FT-67-61C ROOT	U-1 PIPE TUNNEL	OPEN	1-RTV-67-800A		CV
1-FT-67-61/1-FT-67-61C ROOT	U-1 PIPE TUNNEL	OPEN	1-RTV-67-800B		CV
		DG Bldg el 742			
DG HX 1A1/1A2 ERCW DISCH HDR THROTTLE	DGB/742	0-PI-OPS-17.0 LT	1-THV-67-8020		
DG HX 1A1/1A2 ERCW DISCH HDR A ISOL	DGB/742	0-PI-OPS-17.0 LO	1-ISV-67-511A		
DG HX 1A1/1A2 ERCW DISCH HDR B ISOL	DGB/742	0-PI-OPS-17.0 LO	1-ISV-67-516B		
DG HX 1A1/1A2 ERCW SUP HDR 1A ISOL	DGB/742	CLOSED	1-FCV-67-66		
		DG Bldg el 742			
DG HX 1A1 ERCW OUT THROTTLE	DGB/742	0-PI-OPS-17.0 LT	1-THV-67-510A		
DG HX 1A1 ERCW SUP VENT	DGB/742	CLOSED	1-VTV-67-519A		CV
DG HX 1A1 ERCW DRAIN	DGB/742	CLOSED	1-DRV-67-981A		CV
1-FI-67-69 ROOT	DGB/742	OPEN	1-RTV-67-827A		CV
1-FI-67-69 ROOT	DGB/742	OPEN	1-RTV-67-827B		CV
DG HX 1A2 ERCW OUT THROTTLE	DGB/742	0-PI-OPS-17.0 LT	1-THV-67-515A		
DG HX 1A2 ERCW DRAIN	DGB/742	CLOSED	1-DRV-67-980A		CV

Checklist 1
(Page 2 of 22)
1A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
DG HX 1A2 ERCW SUP VENT	DGB/742	CLOSED	1-VTV-67-518A		CV
1-FI-67-277 ROOT	DGB/742	OPEN	1-RTV-67-828A		CV
1-FI-67-277 ROOT	DGB/742	OPEN	1-RTV-67-828B		CV
DG 1A-A OUT ERCW HDR VENT	DGB/742	CLOSED	1-VTV-67-982		CV
2-FI-67-277 ROOT	DGB/742	OPEN	2-RTV-67-828B		CV
DG 2A-A HX ERCW OUT HDR VENT	DGB/742	CLOSED	2-VTV-67-982		CV
D/G HX 2A1/2A2 ERCW DISCH HDR THROTTLE	DGB/742	0-PI-OPS-17.0 LT	2-THV-67-8020		
DG HX 2A1/2A2 ERCW DISCH HDR A ISOL	DGB/742	0-PI-OPS-17.0 LO	2-ISV-67-511A		
DG HX 2A1/2A2 ERCW DISCH HDR B ISOL	DGB/742	0-PI-OPS-17.0 LO	2-ISV-67-516B		
DG HX 2A1/2A2 ERCW SUP HDR 1A ISOL	DGB/742	OPEN	2-FCV-67-66		
DG HX 2A1 ERCW OUT THROTTLE	DGB/742	0-PI-OPS-17.0 LT	2-THV-67-510A		
DG HX 2A1 ERCW SUP VENT	DGB/742	CLOSED	2-VTV-67-519A		CV
DG HX 2A1 ERCW DRAIN	DGB/742	CLOSED	2-DRV-67-981A		CV
DG Bldg el 742					
2-FI-67-69 ROOT	DGB/742	OPEN	2-RTV-67-827A		CV
2-FT-67-69 ROOT	DGB/742	OPEN	2-RTV-67-827B		CV
DG HX 2A2 ERCW OUT THROTTLE	DGB/742	0-PI-OPS-17.0 LT	2-THV-67-515A		
DG HX 2A2 ERCW SUP VENT	DGB/742	CLOSED	2-VTV-67-518A		CV
DG HX 2A2 ERCW DRAIN	DGB/742	CLOSED	2-DRV-67-980A		CV
2-FI-67-277 ROOT	DGB/742	OPEN	2-RTV-67-828A		CV
Turbine Bldg el 708					
STA AIR COMP A AFTCLR ERCW SUP ISOL	T7K/708	OPEN	0-ISV-67-627A		CV

Checklist 1
(Page 3 of 22)
1A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
STA AIR COMPR A AFTRCLR ERCW DRAIN	T5K/708	CLOSED	0-DRV-67-628A		CV
STA AIR COMPR A AFTRCLR ERCW DRAIN	T5K/708	CLOSED	0-DRV-67-629A		CV
STA AIR COMPR A AFTRCLR ERCW VENT	T5K/708	CLOSED	0-VTV-67-630A		CV
STA AIR COMP A AFTCLR ERCW VENT	T5K/708	CLOSED	0-VTV-67-631A		CV
STA AIR COMP A AFTCLR ERCW SUP THROTTLE	T5K/708	TI-31.08	0-THV-67-632A		CV
STA AIR COMPR A INTCLR ERCW SUP ISOL	T6K/708	OPEN	0-ISV-67-633A		CV
STA AIR COMP A AFTCLR ERCW SUP HDR DRAIN	T5K/708	CLOSED	0-DRV-67-634A		CV
STA AIR COMP A INTCLR ERCW SUP THROTTLE	T5K/708	TI-31.08	0-THV-67-635A		CV
STA AIR COMPR A AFTCLR ERCW RET ISOL	T7K/708	OPEN	0-ISV-67-636A		CV
STA AIR COMPR A CYL THROTTLE	T5K/708	OPEN	0-THV-67-659A		CV
0-TCV-67-1215A BYPASS	T6K/708	1/4 turn OPEN	0-BYV-67-662A		CV
0-FE-67-204 TEST POINT	T6K/717	CLOSED	0-TV-67-900A		CV
0-FE-67-204 TEST POINT	T6K/717	CLOSED	0-TV-67-900B		CV
STA AIR COMPR RAW WTR SUP ISOL	T3N/720	CLOSED	0-ISV-67-661		CV
Turbine Bldg el 708					
STA AIR COMPR B AFT CLR ERCW SUP ISOL	T5K/708	OPEN	0-ISV-67-627B		CV
STA AIR COMPR B AFTRCLR ERCW DRAIN	T6K/708	CLOSED	0-DRV-67-628B		CV
STA AIR COMPR B AFTRCLR ERCW DRAIN	T6K/708	CLOSED	0-DRV-67-629B		CV
STA AIR COMPR B AFTRCLR ERCW VENT	T6K/708	CLOSED	0-VTV-67-630B		CV
STA AIR COMPR B AFTRCLR ERCW VENT	T6K/708	CLOSED	0-VTV-67-631B		CV

Checklist 1
(Page 4 of 22)

1A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
STA AIR COMP B AFTCLR ERCW SUP THROTTLE	T7K/708	TI-31.08	0-THV-67-632B		CV
STA AIR COMP B INTCLR ERCW SUP ISOL	T6K/708	OPEN	0-ISV-67-633B		CV
STA AIR COMP B AFTCLR ERCW SUP HDR DRAIN	T6K/708	CLOSED	0-DRV-67-634B		CV
STA AIR COMP B INTCLR ERCW SUP THROTTLE	T6K/708	TI-31.08	0-THV-67-635B		CV
STA AIR COMP B AFTCLR ERCW RET ISOL	T7K/708	OPEN	0-ISV-67-636B		CV
STA AIR COMP B CYL THROTTLE	T6K/708	OPEN	0-THV-67-659B		CV
0-TCV-67-1220A BYASS	T6K/708	1/4 turn OPEN	0-BYV-67-662B		CV
0-FE-67-210 TEST POINT	T6K/708	CLOSED	0-TV-67-899A		CV
0-FE-67-210 TEST POINT	T6K/708	CLOSED	0-TV-67-899B		CV
STA AIR COMP C AFTCLR ERCW SUP ISOL	T5K/708	OPEN	0-ISV-67-627C		CV
STA AIR COMPR C AFTCLR ERCW DRAIN	T7K/708	CLOSED	0-DRV-67-628C		CV
STA AIR COMPR C AFTCLR ERCW DRAIN	T7K/708	CLOSED	0-DRV-67-629C		CV
STA AIR COMPR C AFTRCLR ERCW VENT	T7K/708	CLOSED	0-VTV-67-630C		CV
Turbine Bldg el 708					
STA AIR COMP C AFT CLR ERCW VENT	T7K/708	CLOSED	0-VTV-67-631C		CV
STA AIR COMPR C AFT CLR ERCW SUP THROT	T7K/708	TI-31.08	0-THV-67-632C		CV
STA AIR COMPR C INTCLR ERCW SUP ISOL	T7K/708	OPEN	0-ISV-67-633C		CV
STA AIR COMPR C AFT CLR ERCW SUP HDR DR	T7K/708	CLOSED	0-DRV-67-634C		CV
STA AIR COMPR C INTCLR ERCW SUP THROTTLE	T7K/708	TI-31.08	0-THV-67-635C		CV

Checklist 1
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1A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
STA AIR COMP C AFTCLR ERCW RET ISOL	T7K/708	OPEN	0-ISV-67-636C		CV
STA AIR COMPR C CYL THROTTLE	T7K/708	OPEN	0-THV-67-659C		CV
0-TCV-67-1219A BYPASS	T6K/708	1/4 turn OPEN	0-BYV-67-662C		CV
0-FE-67-207 TEST POINT	T7K/708	CLOSED	0-TV-67-898A		CV
0-FE-67-207 TEST POINT	T7K/708	CLOSED	0-TV-67-898B		CV
STA AIR COMP D AFTCLR ERCW SUP ISOL	T7K/708	OPEN	0-ISV-67-626D		CV
STA AIR COMP D AFTCLR ERCW SUP ISOL	T6K/708	OPEN	0-ISV-67-627D		CV
STA AIR COMPR D AFT CLR ERCW RET DRAIN	T6K/708	CLOSED	0-DRV-67-1113		CV
STA AIR COMPR D INTCLR ERCW VENT ISOL	T6K/708	THROTTLED (1)	0-ISV-67-1105		CV
STA AIR COMPR D AFT CLR ERCW VENT ISOL	T6K/708	THROTTLED (1)	0-ISV-67-1116		CV
(1) Throttled to maintain continuous flow when Air Compressor in service.					
STA AIR COMPR D AFT CLR ERCW RET THROTLE	T6K/708	TI-31.08	0-THV-67-1111		CV
STA AIR COMP D AFTCLR ERCW RET ISOL	T6K/708	OPEN	0-ISV-67-637D		CV
Turbine Bldg el 708					
0-PI-67-1102 ROOT	T6K/708	OPEN	0-RTV-67-1104		CV
0-PI-67-1114 ROOT	T6K/708	OPEN	0-RTV-67-1112		CV
STA AIR COMP D AFTCLR ERCW RET ISOL	T7K/708	OPEN	0-ISV-67-636D		CV
STA AIR COMPR ERCW HDR VENT	T7K/708	CLOSED	0-VTV-67-637		CV
STA AIR COMP ERCW DISCHARGE ISOLATION	T7K/708	OPEN	0-ISV-67-638		CV
STA AIR COMPR RCW DISCH ISOL	T7K/708	OPEN	1-ISV-67-638		CV
0-FE-67-211 TEST POINT	T7K/717	CLOSED	0-TV-67-910A		CV
0-FE-67-211 TEST POINT	T7K/717	CLOSED	0-TV-67-910B		CV

Checklist 1
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1A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
Control Bldg el 692					
EBR A/C COND A-A ERCW SUP TEST CONN	C13N/692	CLOSED	0-TV-67-616A		CV
EBR A/C COND A-A ERCW RET TEST CONN	C13N/692	CLOSED	0-TV-67-617A		CV
0-FE-67-196 TEST	C12N/692	CLOSED	0-TV-67-894A		CV
0-FE-67-196 TEST	C12N/692	CLOSED	0-TV-67-894B		CV
ELEC BD RM A/C COND A-A ERCW SUP ISOL	C12N/694	(1) 0-PI-OPS-17.0 LO	0-ISV-67-615A		
EBR A/C COND A-A ERCW RET THROTTLE	C12N/696	(1) 0-PI-OPS-17.0 LT	0-THV-67-618A		
ELEC BD RM A/C COND A-A ERCW SUP VENT	C12N/701	CLOSED	0-VTV-67-614A		CV
(1) See Precautions & Limitation R					
Aux Bldg el 676					
CS PMP 1A-A RM CLER FLUSH CONNECTION	A6U/676	CLOSED	1-ISV-67-620		CV
CSP RM COOLER 1A-A ERCW SUP FLOW CNTL	A7U/676	CLOSED	1-FCV-67-184		CV
CONTROL AIR ISOLATION VALVE TO 1-FCV-67-184	A7U/676	OPEN	1-ISV-32-3018		CV
1-FE-67-185 TEST POINT	A7U/676	CLOSED	1-TV-67-870A		CV
1-FE-67-185 TEST POINT	A7U/676	CLOSED	1-TV-67-870B		CV
CS PMP RM CLR 1A-A ERCW RET THROTTLE	A7U/676	0-PI-OPS-17.0 LT	1-THV-67-605A		
RHR PMP RM CLR 1A-A ERCW RET THROTTLE	A7W/676	0-PI-OPS-17.0 LT	1-THV-67-606A		
RHRP RM COOLER 1A-A ERCW SUP FLOW CNTL	A7V/676	0-PI-OPS-17.0 LO	1-FCV-67-188		
RHR PMP 1A-A RM CLR FLUSH CONNECTION	A7V/676	CLOSED	1-ISV-67-621		CV
CONTROL AIR ISOLATION VALVE TO 1-FCV-67-188	A7W/676	0-PI-OPS-17.0 LC	1-ISV-32-3021		

Checklist 1
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1A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
1-FE-67-189 TEST POINT	A7V/676	CLOSED	1-TV-67-871A		CV
1-FE-67-189 TEST POINT	A7V/676	CLOSED	1-TV-67-871B		CV
Aux Bldg el 692					
SIP ROOM COOLER 1A-A ERCW SUP FLOW CNTL	A7V/692	CLOSED	1-FCV-67-176		CV
CONTROL AIR ISOLATION VALVE TO 1-FCV-67-176	A7U/692	0-PI-OPS-17.0 LC	1-ISV-32-2984		CV
SIS PMP RM CLR 1A-A ERCW RET THROTTLE	A7V/692	0-PI-OPS-17.0 LT	1-THV-67-604A		
SI PMP 1A-A RM COOLER FLUSH CONNECTION	A6U/692	CLOSED	1-ISV-67-624		CV
1-FE-67-177 TEST POINT	A7V/700	CLOSED	1-TV-67-869A		CV
1-FE-67-177 TEST POINT	A7V/700	CLOSED	1-TV-67-869B		CV
LOWER CNTMT VT CLR 1A & 1C ERCW SUP ISOL	A2U/708	0-PI-OPS-17.0 LO	1-ISV-67-523A		
INSTR RM WATER CLR 1A ERCW SUP ISOL	A2U/708	OPEN	1-ISV-67-524A		CV
INSTR RM WATER CLR 1A ERCW IN TEST CONN	A4W/692	CLOSED	1-TV-67-525A		CV
INSTR RM WATER CLR 1A ERCW OUT TEST CONN	A4W/692	CLOSED	1-TV-67-526A		CV
INSTR RM WATER CLR 1A ERCW RET THROTTLE	A4W/706	TI-31.08	1-THV-67-527A		CV
LWR CNTMT CLR HDR A ERCW SUP TST CONN	A2U/692	CLOSED	1-TV-67-560A		CV
LWR CNTMT CLR HDR C ERCW SUP TST CONN	A2U/708	CLOSED	1-TV-67-560C		CV
LWR CNTMT CLR HDR A ERCW RET TEST CONN	A2U/708	CLOSED	1-TV-67-576A		CV
LWR CNTMT CLR HDR C ERCW RET TST CONN	A2U/708	CLOSED	1-TV-67-576C		CV
PENT/PIPE CHSE RM CLR ERCW SUP HDR 1A ISOL	A7V/692	0-PI-OPS-17.0 LO	1-ISV-67-607A		
PENT ROOM CLR 1A-A ERCW RET THROTTLE	A4V/692	0-PI-OPS-17.0 LT	1-THV-67-608A		

Checklist 1
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1A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
		Aux Bldg el 692			
1-FE-67-347 TEST POINT	A4V/699	CLOSED	1-TV-67-872A		CV
1-FE-67-347 TEST POINT	A4V/699	CLOSED	1-TV-67-872B		CV
CCP OIL CLR ERCW SUP XTIE ISOL	A4U/698	CLOSED	1-ISV-67-1015B		CV
CCP OIL CLR ERCW SUP XTIE ISOL	A4U/698	CLOSED	1-ISV-67-1016B		CV
CCP OIL CLR ERCW SUP XTIE HDR DRAIN	A4U/698	CLOSED	1-DRV-67-1017B		CV
PENT ROOM CLR 1A-A ERCW SUP FLOW CNTL	A4V/692	OPEN	1-FCV-67-346		CV
CONTROL AIR ISOLATION VALVE TO 1-FCV-67-346	A4V/692	CLOSED	1-ISV-32-2955		CV
CCP ROOM COOLER 1A-A ERCW SUP FLOW CNTL	A4T/692	0-PI-OPS-17.0 LO	1-FCV-67-168		
CONTROL AIR ISOLATION VALVE TO 1-FCV-67-168	A4T/698	0-PI-OPS-17.0 LC	1-ISV-32-2935		
CVCS CCP ROOM CLR 1A-A ERCW SUP ISOL	A4T/695	0-PI-OPS-17.0 LO	1-ISV-67-600A		
CVCS CCP ROOM CLR 1A ERCW RET THROTTLE	A4T/695	0-PI-OPS-17.0 LT	1-THV-67-601A		
CVCS CCP ROOM CLR 1A-A ERCW RET ISOL	A4T/695	0-PI-OPS-17.0 LO	1-ISV-67-602A		
1-FE-67-169 TEST POINT	A4T/698	CLOSED	1-TV-67-868A		CV
1-FE-67-169 TEST POINT	A4T/698	CLOSED	1-TV-67-868B		CV
INSTR RM WATER CLR 1A ERCW SUP ISOL	A4W/697	OPEN	1-ISV-67-710A		CV
ERCW FLOOD MODE RET HDR A ISOL	A2U/702	CLOSED	0-ISV-67-528A		CV
SIS/CS/RHR PMP RM CLR ERCW SUP HDR 1A ISOL	A7V/703	0-PI-OPS-17.0 LO	1-ISV-67-603A		
OUTAGE CW SUPPLY TO LCC	A5V/703	CLOSED (1)	1-ISV-67-232		CV
OUTAGE LCC CW RETURN	A5V/703	CLOSED (1)	1-ISV-67-238		CV

Checklist 1
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1A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
(1) = Flange Installed					
Aux Bldg el 692					
PIPE CHASE COOLER 1A-A ERCW SUP FLOW CNTL	A1U/692	OPEN	1-FCV-67-342		CV
OUTAGE LCC CW RETURN	A5V/703	CLOSED (1)	1-ISV-67-237		CV
CONTROL AIR ISOLATION VALVE TO 1-FCV-67-342	A1U/692	OPEN	1-ISV-32-2961		CV
PIPE CHASE RM CLR 1A-A ERCW RET ISOL	A1U/703	0-PI-OPS-17.0 LT	1-THV-67-611A		
1-FE-67-343 TEST POINT	A1U/700	CLOSED	1-TV-67-875A		CV
1-FE-67-343 TEST POINT	A1U/700	CLOSED	1-TV-67-875B		CV
DEMIN WATER INJ TO ERCW DEAD LEG ISV	A1T/700	CLOSED	1-ISV-67-750		CV
PEN/PIPE CHASE RM CLR ERCW RET HDR 1A ISOL	A7V/703	0-PI-OPS-17.0 LO	1-ISV-67-612A		
SIS/CS/RHR PMP RM CLR ERCW RET HDR 1A ISOL	A7V/703	0-PI-OPS-17.0 LO	1-ISV-67-613A		
AUX BLDG ERCW SUP HDR 1A ISOL	A15U/706	0-PI-OPS-17.0 LO	1-FCV-67-81		
1-FI-67-237 ROOT	A2U/707	OPEN	1-RTV-67-849A		CV
1-FI-67-237 ROOT	A2U/707	OPEN	1-RTV-67-849B		CV
1-FI-67-231 ROOT	A2U/707	OPEN	1-RTV-67-851A		CV
1-FI-67-231 ROOT	A2U/707	OPEN	1-RTV-67-851B		CV
ERCW SUP HDR 1A DRAIN	A1U/707	CLOSED	1-DRV-67-950A		CV
ERCW FLOOD MODE RET HDR A RCP TH BAR ISOL	A4V/708	CLOSED	0-ISV-67-558A		CV
ERCW FLD MODE RT HDR A SAM/SEAL WTR ISOL	A4V/708	CLOSED	0-ISV-67-559A		CV
1-FE-67-257 TEST POINT	A4W/708	CLOSED	1-TV-67-860A		CV
1-FE-67-257 TEST POINT	A4W/708	CLOSED	1-TV-67-860B		CV
(1) = Check 30 inch ERCW discharge header level $\geq$ 26 inches above the bottom of the pipe.					

Checklist 1
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1A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
		Aux Bldg el 713			
CCS/AFW PMP SPACE CLR 1A-A ERCW SUP FLOW CNTL	A3S/713	OPEN	1-FCV-67-162		CV
CONTROL AIR ISOLATION VALVE TO 1-FCV-67-162	A3S/713	OPEN	1-ISV-32-3083		CV
		Aux Bldg el 713			
INSTR RM WATER CLR 1A ERCW RET ISOL	A3W/713	OPEN	1-ISV-67-530A		CV
UPPER CNTMT VENT CLR 1A & 1C ERCW SUP ISOL	A3U/713	OPEN	1-ISV-67-531A		CV
CS HX 1A ERCW DRAIN	A5V/713	CLOSED	1-DRV-67-536A		CV
CS HX 1A ERCW RET THROTTLE	A5V/713	0-PI-OPS-17.0 LT	1-THV-67-537A		
1-FT-67-136 ROOT	A5V/713	OPEN	1-RTV-67-833A		CV
1-FT-67-136 ROOT	A5V/713	OPEN	1-RTV-67-833B		CV
CNTMT SPRAY HX 1A ERCW BIOCIDE CIRC BYP	A4V/713	OPEN	1-ISV-67-538A		CV
ERCW HDR A A/C EQUIP RET ISOL	A4T/713	0-PI-OPS-17.0 LO	1-ISV-67-554A		
UPPER CNTMT VENT CLR 1A & 1C ERCW RET ISOL	A3U/713	OPEN	1-ISV-67-590A		CV
PENT ROOM CLR 1A-A ERCW RET THROTTLE	A2U/713	0-PI-OPS-17.0 LT	1-THV-67-609A		
CCS/AFW PMP SPACE CLR 1A-A ERCW RET THROTTLE	A3S/713	0-PI-OPS-17.0 LT	1-THV-67-643A		
CCS/AFW PMP SPACE CLR 1A-A ERCW RET ISOL	A3S/713	0-PI-OPS-17.0 LO	1-ISV-67-644A		
ERCW HDR A RCW RT ISOL	A1U/713	OPEN	0-ISV-67-702		CV
BIOCIDE RECIRC ERCW HDR 1A ISOL	A4S/713	CLOSED	1-ISV-67-716A		CV

Checklist 1
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1A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
0-FIS-67-206 ROOT	A2Q/713	OPEN	0-RTV-67-984A		CV
0-FIS-67-206 ROOT	A2Q/713	OPEN	0-RTV-67-985A		CV
UPPER CNTMT VENT CLR 1A ERCW RET TEMP CNTL	A3V/713 Pent Rm	OPEN	1-TCV-67-129		CV
CONTROL AIR ISOLATION VALVE TO 1-TCV-67-129	A3U/713	OPEN	1-ISV-32-3158		CV
UPPER CNTMT VENT CLR 1C ERCW RET TEMP CNTL	A3V/713	OPEN	1-TCV-67-132		CV
CONTROL AIR ISOLATION VALVE TO 1-TCV-67-132	A3U/713	OPEN	1-ISV-32-3157		CV
Aux Bldg el 713					
ERCW DISCHARGE HDR 'A' ARV ISOLATION VALVE	AUX / 713	CLOSED	0-ISV-067-1106A		CV
ERCW DISCHARGE HDR 'A' AIR RELEASE VALVE	AUX / 713	**CLOSED**	0-ARV-067-1108A		CV
ERCW DISCHARGE HDR 'A' ARV TEST VALVE	AUX / 713	CLOSED	0-TV-067-1112A		CV
PENT ROOM CLR 1A-A ERCW SUP FLOW CNTL	A2V/713	OPEN	1-FCV-67-350		CV
CONTROL AIR ISOLATION VALVE TO 1-TCV-67-350	A2U/713	OPEN	1-ISV-32-3146		CV
1-TCV-67-132 BYPASS	A3U/713	CLOSED	1-BYV-67-589C		CV
UPPER CNTMT VENT CLR 1A ERCW RET HDR ISOL	A3U/713	OPEN	1-ISV-67-587A		CV
UPPER CNTMT VENT CLR 1C ERCW RET HDR ISOL	A3U/713	OPEN	1-ISV-67-587C		CV
BIOCIDE RECIRC ERCW HDR 1A ISOL	A4T/720	CLOSED	1-ISV-67-715A		CV
DEMIN WATER INJ TO ERCW DEAD LEG ISV	A3T/720	CLOSED	1-ISV-67-751		CV
UPPER CNTMT VENT CLR 1A ERCW RET THROTTLE	A3U/718	TI-31.08	1-THV-67-588A		CV
UPPER CNTMT VENT CLR 1C ERCW THROTTLE	A3U/718	TI-31.08	1-THV-67-588C		CV

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1A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
1-TCV-67-129 BYPASS	A3U/718	CLOSED	1-BYV-67-589A		CV
1-FE-67-351 TEST POINT	A2V/718	CLOSED	1-TV-67-873A		CV
1-FE-67-351 TEST POINT	A2V/718	CLOSED	1-TV-67-873B		CV
1-FI-67-239 ROOT	A2V/719	OPEN	1-RTV-67-848A		CV
1-FE-67-239 ROOT	A2V/719	OPEN	1-RTV-67-848B		CV
1-FI-67-233 ROOT	A2V/719	OPEN	1-RTV-67-850A		CV
1-FI-67-233 ROOT	A2V/719	OPEN	1-RTV-67-850B		CV
1-FE-67-163 TEST POINT	A3S/721	CLOSED	1-TV-67-892A		CV
1-FE-67-163 TEST POINT	A3S/721	CLOSED	1-TV-67-892B		CV
STA AIR COMPR ERCW SUP HDR 1A ISOL	A2Q/726	OPEN	0-FCV-67-205		CV
STA AIR COMPR ERCW SUP HDR 1A VENT	A2Q/726	CLOSED	0-VTV-67-625A		CV
CNTMT SPRAY HX 1A-A ERCW RETURN	A4V/730 Pent Rm	CLOSED	1-FCV-67-126		CV
ERCW FLOOD MODE RET SFPC HX ISOL	A3U/730	CLOSED	0-ISV-67-556A		CV
Aux Bldg el 713					
ERCW FLOOD MODE RET SFPC HX ISOL	A3U/730	CLOSED	0-ISV-67-557		CV
CCS/AFW PMP SPCE CLR 1A-A ERCW SUP ISOL	A3S/713	0-PI-OPS-17.0 LO	1-ISV-67-642A		
LWR CNTMT VENT CLR 1A & 1C ERCW RET ISOL	A3V/730	0-PI-OPS-17.0 LO	1-ISV-67-577A		
TD AFW PUMP ERCW SUP HDR ISOL	A3T/730	0-PI-OPS-17.0 LO	1-ISV-67-923A		
UPP CNTMT VENT CLR 1A ERCW SUP HDR TST CON	A4V/732	CLOSED	1-TV-67-578A		CV
UPP CNTMT VENT CLR 1C ERCW SUP HDR TST CON	A4V/732	CLOSED	1-TV-67-578C		CV
UPP CNTMT VENT CLR 1A ERCW RET HDR TST CON	A4V/732	CLOSED	1-TV-67-586A		CV
UPP CNTMT VENT CLR 1C ERCW RET HDR TST CON	A3V/732	CLOSED	1-TV-67-586C		CV

Checklist 1
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1A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
1-FI-67-333 ROOT	A3V/733	OPEN	1-RTV-67-840A		CV
1-FI-67-333 ROOT	A3V/733	OPEN	1-RTV-67-840B		CV
1-FI-67-265 ROOT	A3V/733	OPEN	1-RTV-67-841A		CV
1-FI-67-265 ROOT	A3V/733	OPEN	1-RTV-67-841B		CV
1-FI-67-332 ROOT	A3V/733	OPEN	1-RTV-67-842A		CV
1-FI-67-332 ROOT	A3V/733	OPEN	1-RTV-67-842B		CV
1-FI-67-263 ROOT	A3U/733	OPEN	1-RTV-67-843A		CV
1-FI-67-263 ROOT	A3U/733	OPEN	1-RTV-67-843B		CV
ERCW CCS FLOOD MODE SS EQUIP SUP HDR ISLN	A8U/735	CLOSED	1-ISV-67-687-A		CV
ERCW A DISC HDR VENT	A2U/730	CLOSED	0-VTV-67-1110 (CAPPED)		CV
Aux Bldg el 737					
CNTMT SPRAY HX 1A-A ERCW SUPPLY	A4U/737	CLOSED	1-FCV-67-125		CV
CCS HX C OUTLET ERCW FLOW CNTL BYP	A11S/737	OPERABLE	0-FCV-67-144		CV
CCS HX C OUTLET ERCW HDR A FLOW CNTL	A12T/737	0-PI-OPS-17.0	0-FCV-67-151		
SFP/TBBP SP CLR 1A-A ERCW SUP FLOW CNTL	A5W/737	OPERABLE	1-FCV-67-213		CV
Aux Bldg el 737					
ERCW FLOOD MODE SUP SFPC HX ISOL	A8S/737	CLOSED	0-ISV-67-529		CV
ERCW FLOOD MODE SUP RCW/ICE COND ISOL	A3U/737	CLOSED	0-ISV-67-532A		CV
CNTMT SPRAY HX 1A ERCW BIOCIDE CIRC BYP	A4U/737	CLOSED	1-ISV-67-533A		CV
CS HX 1A ERCW SUP HDR VENT	A4U/737	CLOSED	1-VTV-67-534A		CV
SD BD RM WTR CHLR A-A ERCW DISCH THROTTLE	A3R/737	0-PI-OPS-17.0 LT	1-THV-67-555		
CSS HX 1A INLET ERCW FLUSH	A4U/737	0-PI-OPS-17.0 LC	1-FLV-67-927		

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1A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
PENT ROOM CLR 1A-A ERCW RET THROTTLE	A4V/737	0-PI-OPS-17.0 LT	1-THV-67-610A		
MCR WTR CHLR A-A ERCW SUP VENT	A3Q/737	CLOSED	0-VTV-67-619A		CV
CONTROL AIR ISOLATION VALVE TO 1-FCV-67-213	A5W/737	OPEN	1-ISV-32-3282		CV
PENT ROOM CLR 1A3 ERCW SUP FLOW CNTL	A4U/737	OPEN	1-FCV-67-354		CV
CONTROL AIR ISOL VALVE TO 1-FCV-67-354	A4U/737	OPEN	1-ISV-032-3294		CV
MCR WTR CHLR A-A ERCW SUP ISOL	A3Q/737	0-PI-OPS-17.0 LO	0-ISV-67-620A		
Aux Bldg el 737					
MCR WTRCHIL A-A ERCW SUP TEST CONN	A3Q/737	CLOSED	0-TV-67-621A		CV
MCR WTR CHLR A-A ERCW OUT TEST CONN	A3Q/737	CLOSED	0-TV-67-622A		CV
MCR WTR CHLR A-A ERCW OUT ISOL	A3Q/737	0-PI-OPS-17.0 LO	0-ISV-67-623A		
MCR CHLR A-A ERCW DRAIN	A4R/737	CLOSED	0-DRV-67-2184		CV
CCS HX A OUTLET ERCW FLOW CNTL	A10T/746	CLOSED	1-FCV-67-146		CV
CCS HEAT EXCHANGER A ERCW IN ISOL	A5T/737	OPEN	1-FCV-67-478		CV
CCS HX A ERCW VENT	A5T/745	CLOSED	1-VTV-67-540		CV
CCS HX A ERCW VENT	A10T/745	CLOSED	1-VTV-67-541		CV
CCS HX A ERCW DRAIN	A5T/737	CLOSED	1-VTV-67-547		CV
CCS HX A ERCW DRAIN	A5T/737	CLOSED	1-VTV-67-548		CV
CCS HX A ERCW OUT ISO	A11T/737	OPEN	1-ISV-67-551		CV
CCS HX A OUTLET ERCW FLOW CNTL BYP ISOL	A10T/737	OPEN	1-ISV-67-1009		CV
CCS HX A OUTLET ERCW BYP DRAIN	A10S/737	CLOSED	1-DRV-67-1011		CV

Checklist 1
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1A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
ROOT VLV TST CONN OUTLET OF CCS HX A	A10S/737	CLOSED	1-RTV67-1062		CV
CCS HX A OUTLET ERCW BYP DRAIN	A11S/737	CLOSED	1-DRV-67-1012		CV
CCS HX A OUTLET ERCW FLOW CNTL BYP ISOL	A11T/737	OPEN	1-ISV-67-1010		CV
Aux Bldg el 737					
MCR WTR CHLR A-A ERCW OUT VENT	A3Q/737	OPEN	0-VTV-67-624A		CV
SFP/TBBP SPACE CLR 1A-A ERCW SUP ISOL	A5W/737	OPEN	1-ISV-67-645A		
SFP/TBBP SPACE CLR 1A-A ERCW THROTTLE	A5W/737	0-PI-OPS-17.0 LT	1-THV-67-646A		
SFP/TBBP SPACE CLR 1A-A ERCW RET ISOL	A5W/737	OPEN	1-ISV-67-647A		
1-FE-67-355 TEST POINT	A4V/737	CLOSED	1-TV-67-874A		CV
1-FE-67-355 TEST POINT	A4V/737	CLOSED	1-TV-67-874B		CV
SD BD RM WTR CLR A-A ERCW DRAIN	A3R/737	CLOSED	1-DRV-67-924		CV
SD BD RM WTR CHLR A-A ERCW RET VENT	A3R/737	CLOSED	1-VTV-67-948		CV
CCS HX SUPPLY ERCW HDR 1B/2A CROSSTIE	A5S/737	0-PI-OPS-17.0 LO	1-FCV-67-223		
CCS HX A HDR 1B ERCW SUP	A4T/737	0-PI-OPS-17.0 LC	1-FCV-67-458		
SD BD RM WTR CHLR A-A ERCW IN TEST CONN	A3R/740	CLOSED	1-TV-67-676		CV
SD BD RM WTR CHLR A-A ERCW OUT TEST CONN	A3R/740	CLOSED	1-TV-67-677		CV
SD BD RM WTR CHLR A-A ERCW SUP ISOL	A3R/742	0-PI-OPS-17.0 LO	1-ISV-67-675		
1-FE-67-161 TEST POINT	A3R/742	CLOSED	1-TV-67-821A		CV
1-FE-67-161 TEST POINT	A3R/742	CLOSED	1-TV-67-821B		CV
0-FE-67-198 TEST POINT	A3Q/744	CLOSED	0-TV-67-895A		CV
0-FE-67-198 TEST POINT	A3Q/744	CLOSED	0-TV-67-895B		CV

Checklist 1
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1A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
Aux Bldg el 737					
CS HX 1A ERCW VENT	A5V/748	CLOSED	1-VTV-67-535A		CV
CCS SURGE TANK A ERCW SUP HDR DRAIN	A3T/749	CLOSED	1-DRV-67-545		CV
1-FE-67-214 TEST POINT	A7W/750	CLOSED	1-TV-67-891A		CV
1-FE-67-214 TEST POINT	A7W/750	CLOSED	1-TV-67-891B		CV
AUX BLDG AIR CLR ERCW SUP HDR 1A ISOL	A4T/754	0-PI-OPS-17.0 LO	1-FCV-67-127		
1-FE-67-340 TEST POINT	A7U/754	CLOSED	1-TV-67-887A		CV
1-FE-67-340 TEST POINT	A7U/754	CLOSED	1-TV-67-887B		CV
CCS FLOOD MODE ERCW SUP HDR VENT	A4U/755	CLOSED	1-VTV-67-686		CV
Aux Bldg el 757					
AUX CNTL AIR COMPR A ERCW SUP ISOL	A7U/757	0-PI-OPS-17.0 LO	0-ISV-67-678A		
AUX CNTL AIR COMPR A ERCW SUP ISOL	A7U/757	0-PI-OPS-17.0 LO	0-ISV-67-678B		
AUX CNTL AIR COMPR A-A ERCW INLET BYPASS	A7U/757	0-PI-OPS-17.0 LC	0-BYV-67-679		
AUX CNTL AIR COMPR A ERCW SUP ISOL	A6U/757	0-PI-OPS-17.0 LO	1-ISV-67-680		
AUX CNTL AIR COMPR A ERCW RET ISOL	A6U/757	0-PI-OPS-17.0 LT	1-ISV-67-683		
CCS SURGE TNK A ERCW SUP HDR ISOL	A7T/757	0-PI-OPS-17.0 LC	1-ISV-67-544		
U-1 Containment					
LWR CNTMT VENT CLR 1A-A ERCW SUP HDR VENT	#1 FAN Rm IC/724 Az 4	CLOSED	1-VTV-67-698A		CV
LWR CNTMT VENT CLR 1A-A ERCW RET HDR VENT	#1 FAN Rm IC/725 Az 4	CLOSED	1-VTV-67-699A		CV
CRD VENT CLR 1A-A RET ERCW HDR DRAIN	IC/717Az 7	CLOSED	1-DRV-67-996		CV

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1A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
CRD VT CLR 1A-A ERCW SUP HDR THROTTLE	#1 FAN Rm IC/726 Az 7	TI-31.08	1-THV-67-567A		CV
1-FE-67-470 TEST POINT	IC/717 Az 9	CLOSED	1-TV-67-918		CV
CRD VENT CLR 1A-A SUP ERCW HDR DRAIN	IC/717 Az 9	CLOSED	1-DRV-67-998		CV
1-FE-67-470 TEST POINT	IC/717 Az 9	CLOSED	1-TV-67-917		CV
RCP 1 MTR CLR ERCW RET HDR THROTTLE	#1 FAN Rm IC/725 Az 8	TI-31.08	1-THV-67-572A		CV
RCP MTR CLR 1 ERCW RET HDR VENT	IC/740 Az 8	CLOSED	1-VTV-67-696A		CV
1-FE-67-235 TEST POINT	IC/729 Az 60	CLOSED	1-TV-67-865A		CV
1-FE-67-235 TEST POINT	IC/729 Az 60	CLOSED	1-TV-67-865B		CV
RCP MTR CLR 1 ERCW IN SUP VENT	IC/732 Az 60	CLOSED	1-VTV-67-700A		CV
RCP 3 MTR CLR ERCW RET HDR THROTTLE	#2 FAN Rm 725 Az 185	TI-31.08	1-THV-67-572C		CV
LWR CNTMT VT CLR 1C-A ERCW RET HDR VENT	#2 FAN Rm 725 Az 185	CLOSED	1-VTV-67-699C		CV
LWR CNTMT VT CLR 1C-A ERCW SUP HDR VENT	#2 FAN Rm 727 Az 200	CLOSED	1-VTV-67-698C		CV
1-FE-67-473 TEST POINT	730 Az 185	CLOSED	1-TV-67-915		CV
U-1 Containment					
1-FE-67-473 TEST POINT	730 Az 185	CLOSED	1-TV-67-916		CV
CRD VT CLR 1C-A ERCW SUP HDR THROTTLE	#2 FAN Rm 726 Az 187	TI-31.08	1-THV-67-567C		CV
LWR CNTMT CLR HDR C ERCW SUP HDR TST CON	#2 FAN Rm 720 Az 187	CLOSED	1-TV-67-563C		CV
RCP MTR CLR 3 ERCW RET HDR VENT	726 Az 189	CLOSED	1-VTV-67-696C		CV
RCP MTR CLR 3 ERCW IN SUP VENT	732 Az 239	CLOSED	1-VTV-67-700C		CV
1-FE-67-241 TEST POINT	729 Az 243	CLOSED	1-TV-67-864A		CV
1-FE-67-241 TEST POINT	729 Az 243	CLOSED	1-TV-67-864B		CV
LOWER CNTMT CLR HDR ERCW RET VENT	#1 Fan Rm IC/716 Az 4	CLOSED	1-VTV-67-695A		CV

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1A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
LWR CNTMT CLR HDR A ERCW RET TEST CONN	#1 Fan Rm IC/720 Az 4	CLOSED	1-TV-67-574A		CV
LOWER CNTMT CLR HDR A ERCW RET ISOL	#1 Fan Rm IC/720 Az 4	0-PI-OPS-17.0 LO	1-ISV-67-1005A		
LOWER CNTMT CLR HDR A ERCW SUP ISOL	#1 Fan Rm IC/716 Az 7	0-PI-OPS-17.0 LO	1-ISV-67-1004A		
LOWER CNTMT CLR HDR A ERCW SUP ISOL	#1 Fan Rm IC/720 Az 7	OPEN	1-FCV-67-89		CV
LWR CNTMT CLR HDR A ERCW SUP HDR TST CON	#1 Fan Rm IC/720 Az 7	CLOSED	1-TV-67-563A		CV
RCP 1 MOTOR CLR ERCW SUP CNTL	#1 Fan Rm IC/727 Az 12	OPEN	1-TCV-67-86		CV
CONTROL AIR ISOLATION VALVE TO 1-TCV-67-86	#1 Fan Rm IC/727 Az 12	OPEN	1-ISV-32-3611		CV
U-1 Containment					
LOWER CNTMT CLR HDR A ERCW RET DRAIN	#1 Fan Rm IC/716 Az 8	CLOSED	1-DRV-67-777		CV
LOWER CNTMT CLR HDR A ERCW SUP DRAIN	#1 Fan Rm IC/716 Az 8	CLOSED	1-DRV-67-778		CV
CRD VENT CLR 1A-A OUT TEMP CNTL	#1 Fan Rm IC/725 Az 8	OPEN	1-TCV-67-85		CV
CONTROL AIR ISOLATION VALVE TO 1-TCV-67-85	#1 Fan Rm IC/725 Az 8	OPEN	1-ISV-32-3610		CV
LOWER CNTMT CLR HDR A ERCW RET ISOL	#1 Fan Rm IC/725 Az 8	OPEN	1-FCV-67-87		CV
LWR CNTMT VENT CLR 1A-A OUT TEMP CNTL	#1 Fan Rm 723 Az 12	OPEN	1-TCV-67-84		CV
CONTROL AIR ISOLATION VALVE TO 1-TCV-67-84	#1 Fan Rm 723 Az 12	OPEN	1-ISV-32-3609		CV
LWR CNTMT VT CLR 1A-A ERCW SUP HDR THRTLE	#1 Fan Rm 726 Az 21	0-PI-OPS-17.0 LT	1-THV-67-564A		
1-FE-67-471 TEST POINT	#1 Fan Rm 724 Az 23	CLOSED	1-TV-67-919A		CV
1-FE-67-471 TEST POINT	#1 Fan Rm 724 Az 23	CLOSED	1-TV-67-919B		CV

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1A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
CRD VENT CLR 1C-A OUT TEMP CNTL	#2 Fan Rm 725 Az 185	OPEN	1-TCV-67-93		CV
CONTROL AIR ISOLATION VALVE TO 1-TCV-67-93	#2 Fan Rm 725 Az 185	OPEN	1-ISV-32-3560		CV
LOWER CNTMT CLR HDR C ERCW SUP ISOL	#2 Fan Rm 720 Az 185	0-PI-OPS-17.0 LO	1-ISV-67-1004C		
LOWER CNTMT CLR HDR C ERCW RET ISOL	#2 Fan Rm 720 Az 185	0-PI-OPS-17.0 LO	1-ISV-67-1005C		
LWR CNTMT CLR HDR C ERCW RET TST CONN	#2 Fan Rm 720 Az 185	CLOSED	1-TV-67-574C		CV
LOWER CNTMT CLR HDR ERCW RET VENT	#2 Fan Rm 726 Az 185	CLOSED	1-VTV-67-695C		CV

U-1 Containment

LWR CNTMT VENT CLR 1C-A OUT TEMP CNTL	#2 Fan Rm 723 Az 185	OPEN	1-TCV-67-92		CV
CONTROL AIR ISOLATION VALVE TO 1-TCV-67-92	#2 Fan Rm 723 Az 185	OPEN	1-ISV-32-3561		CV
LWR CNTMT VT CLR 1C-A ERCW SUP HDR THRTLE	#2 Fan Rm 726 Az 187	0-PI-OPS-17.0 LT	1-THV-67-564C		
LOWER CNTMT CLR HDR C ERCW SUP ISOL	#2 Fan Rm 720 Az 187	OPEN	1-FCV-67-97		CV
LOWER CNTMT CLR HDR C ERCW RET DRAIN	#2 Fan Rm 716 Az 188	CLOSED	1-DRV-67-775		CV
LOWER CNTMT CLR HDR C ERCW SUP DRAIN	#2 Fan Rm 716 Az 188	CLOSED	1-DRV-67-776		CV
LOWER CNTMT CLR HDR C ERCW RET ISOL	#2 Fan Rm 720 Az 189	OPEN	1-FCV-67-95		CV
RCP 3 MOTOR CLR ERCW SUP CNTL	#2 Fan Rm 727 Az 190	OPEN	1-TCV-67-94		CV
CONTROL AIR ISOLATION VALVE TO 1-TCV-67-94	#2 Fan Rm 727 Az 190	OPEN	1-ISV-32-3559		CV
1-FE-67-472 TEST POINT	#2 Fan Rm 724 Az 200	CLOSED	1-TV-67-920A		CV
1-FE-67-472 TEST POINT	#2 Fan Rm 724 Az 200	CLOSED	1-TV-67-920B		CV

U1 Containment

Checklist 1
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1A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
UPP CNTMT VENT CLR 1A ERCW RET HDR DRAIN	IC/791 Az 300(2)	0-PI-OPS-17.0 LC & capped	1-DRV-67-770		
UPP CNTMT VENT CLR 1A ERCW SUP HDR DRAIN	IC/792 Az 300(2)	0-PI-OPS-17.0 LC & capped	1-DRV-67-769		
UPP CNTMT VENT CLR 1C ERCW SUP HDR DRAIN	IC/795 Az 300(2)	0-PI-OPS-17.0 LC & capped	1-DRV-67-767		
UPP CNTMT VENT CLR 1C ERCW RET HDR DRAIN	IC/796 Az 300(2)	0-PI-OPS-17.0 LC & capped	1-DRV-67-768		
U-1 Containment					
LOWER CNTMT CLR HDR A ERCW SUP VENT	Annulus 716/Az 7	CLOSED	1-VTV-67-694A		CV
LOWER CNTMT CLR HDR A ERCW SUP ISOL	Annulus 719/Az 7	OPEN	1-FCV-67-83		CV
LOWER CNTMT CLR HDR A ERCW RET VENT	Annulus 716/Az 9	CLOSED	1-VTV-67-693A		CV
LOWER CNTMT CLR HDR A ERCW RET ISOL	Annulus 715/Az 20	OPEN	1-FCV-67-88		CV
LOWER CNTMT CLR HDR C ERCW RET DRAIN	Annulus 705/Az 189	CLOSED	1-DRV-67-1006C		CV
LOWER CNTMT CLR HDR C ERCW SUP ISOL	Annulus 720/Az 190	OPEN	1-FCV-67-91		CV
LOWER CNTMT CLR HDR C ERCW RET ISOL	Annulus 720/Az 190	OPEN	1-FCV-67-96		CV
LOWER CNTMT CLR HDR C ERCW RET VENT	Annulus 720/Az 190	CLOSED	1-VTV-67-693C		CV
LOWER CNTMT CLR HDR C ERCW SUP VENT	Annulus 720/Az 172	CLOSED	1-VTV-67-694C		CV
UPPER CNTMT VENT CLR 1C ERCW SUP HDR VENT	Annulus 799/Az 313	CLOSED	1-VTV-67-688C		CV
UPPER CNTMT VENT CLR 1A ERCW SUP HDR VENT	Annulus 795/Az 313	CLOSED	1-VTV-67-688A		CV
UPPER CNTMT VENT CLR 1A ERCW SUP HDR VENT	Annulus 795/Az 313	CLOSED	1-VTV-67-689A		CV
UPPER CNTMT VENT CLR 1C ERCW SUP HDR VENT	Annulus 800/Az 316	CLOSED	1-VTV-67-689C		CV

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1A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
UPPER CNTMT VENT CLR 1A ERCW SUP HDR ISOL	Annulus 795/Az 305	OPEN	1-FCV-67-130		CV
UPPER CNTMT VENT CLR 1A ERCW RET HDR ISOL	Annulus 798/Az 318	OPEN	1-FCV-67-131		CV
UPPER CNTMT VENT CLR 1C ERCW SUP HDR ISOL	Annulus 798/Az 318	OPEN	1-FCV-67-133		CV
UPPER CNTMT VENT CLR 1C ERCW RET HDR ISOL	Annulus 798/Az 318	OPEN	1-FCV-67-134		CV
		U-1 Containment			
UPP CNTMT VT CLR 1A ERCW RET HDR TST CON	IC/808 Az 25(1)	CLOSED	1-TV-67-584A		CV
UPP CNTMT VT CLR 1A ERCW RET HDR TST VLV	IC/807 Az 28(1)	CLOSED	1-TV-67-1210		CV
UPPER CNTMT VENT CLR 1A ERCW RET ISOL	IC/807 Az 28(1)	OPEN	1-FCV-67-295		CV
UPPER CNTMT VENT CLR 1A ERCW RET HDR ISOL	IC/807 Az 30(1)	OPEN	1-ISV-67-692A		CV
UPP CNTMT VT CLR 1A ERCW SUP HDR TST CON	IC/808 Az 30(1)	0-PI-OPS-17.0 LC & capped	1-TV-67-579A		
UPP CNTMT VT CLR 1A ERCW SUP HDR TST CON	IC/808 Az 30(1)	CLOSED	1-TV-67-581A		CV
UPPER CNTMT VENT CLR 1A ERCW RET HDR ISOL	IC/808 Az 37(1)	OPEN	1-ISV-67-583A		CV
UPPER CNTMT VENT CLR 1A ERCW SUP HDR ISOL	IC/805 Az 45(1)	OPEN	1-ISV-67-691A		CV
UPP CNTMT VNT CLR 1C ERCW RET HDR TST CON	IC/808 Az 205(1)	CLOSED	1-TV-67-584C		CV
UPP CNTMT VT CLR 1C ERCW RET HDR DR	IC/807 Az 208(1)	CLOSED	1-TV-67-1212		CV
UPPER CNTMT VENT CLR 1C ERCW RET ISOL	IC/807 Az 208(1)	OPEN	1-FCV-67-296		CV
UPPER CNTMT VENT CLR 1C ERCW RET HDR ISOL	IC/807 Az 210(1)	OPEN	1-ISV-67-692C		CV
UPP CNTMT VT CLR 1C ERCW SUP HDR EST CON	IC/808 Az 210(1)	0-PI-OPS-17.0 LC & capped	1-TV-67-579C		

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1A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
UPP CNTMT VT CLR 1C ERCW SUP HDR TST CON	IC/808 Az 210(1)	CLOSED	1-TV-67-581C		CV
UPPER CNTMT VENT CLR 1C ERCW RET HDR ISOL	IC/808 Az 215(1)	OPEN	1-ISV-67-583C		CV
UPP CNTMT VENT CLR 1C ERCW SUP HDR EST VT	IC/807 Az 224(1)	CLOSED	1-TV-67-690C		CV
UPP CNTMT VENT CLR 1A ERCW SUP HDR TEST VT	IC/807 Az 224(1)	CLOSED	1-TV-67-690A		CV
UPPER CNTMT VENT CLR 1C ERCW SUP HDR ISOL	IC/805 Az 225(1)	OPEN	1-ISV-67-691C		CV
(1- Top of S/G doghouse					

Checklist 2
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2A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
		YARD			
DG 1B-B/2B-B ERCW SUP HDR 2A ISOL	YARD	0-PI-OPS-17.0 LO	2-ISV-67-507A		
		U2 ERCW Tunnel			
2-FT-67-61/2-FT-67-61C ROOT	U2 ERCW Tunnel	OPEN	2-RTV-67-800A		CV
2-FT-67-61/2-FT-67-61C ROOT	U2 ERCW Tunnel	OPEN	2-RTV-67-800B		CV
		Aux Bldg el 692			
PIPE CHASE ROOM CLR 2A-A ERCW RET THROTTLE	A15U/692	0-PI-OPS-17.0 LT	2-THV-67-611A		
2-FE-67-343 TEST POINT	A15U/692	CLOSED	2-TV-67-875A		CV
2-FE-67-343 TEST POINT	A15U/692	CLOSED	2-TV-67-875B		CV
PIPE CHASE COOLER 2A-A ERCW SUP FLOW CNTL	A15U/692	0-PI-OPS-17.0 LO	2-FCV-67-342		
CONTROL AIR ISO VLV TO 2-FCV-67-342	A15U/692	0-PI-OPS-17.0 LC	2-ISV-32-3804		
PENT ROOM COOLER 2A-A ERCW SUP FLOW CNTL	A12V/692	0-PI-OPS-17.0 LO	2-FCV-67-346		
CONTROL AIR ISO VLV TO 2-FCV-67-346	A12U/692	0-PI-OPS-17.0 LC	2-ISV-32-2963		
2-FE-67-347 TEST POINT	A12V/692	CLOSED	2-TV-67-872A		CV
2-FE-67-347 TEST POINT	A12V/692	CLOSED	2-TV-67-872B		CV
PENT ROOM COOLER 2A-A ERCW RET THROTTLE	A12W/702	0-PI-OPS-17.0 LT	2-THV-67-608A		
PENT/PIPE CHASE RM CLR ERCW SUP HDR 2A ISOL	A8V/703	OPEN	2-ISV-67-607A		
PENT/PIPE CHASE RM CLR ERCW RET HDR 2A ISOL	A8V/703	OPEN	2-ISV-67-612A		
AUX BLDG ERCW SUP HDR 2A ISOL	A15U/706	OPEN	2-FCV-67-81		
ERCW SUP HDR 2B DRAIN	A15U/706	CLOSED	2-DRV-67-951A		CV

Checklist 2
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2A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
Aux Bldg el 713					
BA XFER/AFW PMP SPACE CLR 2A-A ERCW THROTTLE	A15S/713	0-PI-OPS-17.0 LT	2-THV-67-673A		
BA XFER/AFW PMP SPACE CLR 2A-A ERCW RET ISOL	A15S/713	0-PI-OPS-17.0 LO	2-ISV-67-674A		
2-FE-67-218 TEST POINT	A14S/713	CLOSED	2-TV-67-867A		CV
2-FE-67-218 TEST POINT	A14S/713	CLOSED	2-TV-67-867B		CV
PENT ROOM COOLER 2A-A ERCW RET THROTTLE	A14W/713	0-PI-OPS-17.0 LT	2-THV-67-609A		
PENT ROOM COOLER 2A-A ERCW SUP FLOW CNTL	A14V/713	0-PI-OPS-17.0 LO	2-FCV-67-350		
CONTROL AIR ISOLATION VALVE TO 2-FCV-67-350	A14V/713	0-PI-OPS-17.0 LC	2-ISV-32-3166		
2-FE-67-351 TEST POINT	A14V/713	CLOSED	2-TV-67-873A		CV
2-FE-67-351 TEST POINT	A14V/713	CLOSED	2-TV-67-873B		CV
BA XFER/AFW PMP SPACE CLR 2A-A ERCW FLOW CNTL	A15S/718	OPEN	2-FCV-67-217		CV
CONTROL AIR ISOLATION VALVE TO 2-FCV-67-217	A15S/713	OPEN	2-ISV-32-3030		CV
BA XFER/AFW PMP SPACE CLR 2A-A ERCW SUP ISOL	A15S/719	0-PI-OPS-17.0 LO	2-ISV-67-648A		
ERCW HDR 2A A/C EQUIP RET ISOL	A12T/735	0-PI-OPS-17.0 LO	2-ISV-67-554A		
ERCW CCS FLOOD MODE SS EQUIP SUP HDR ISLN	A8U/735	CLOSED	2-ISV-67-687-A		IV
Aux Bldg el 737					
CCS HX A OUTLET ERCW FLOW CNTL BYP	A10T/737	TI-31.08	1-FCV-67-143		
CCS HX B OUTLET ERCW FLOW CNTL BYP	A11S/737	TI-31.08	2-FCV-67-143		
CCS HX B ERCW DRAIN	A5R/737	CLOSED	2-DRV-67-547		CV
CCS HX B ERCW DRAIN	A10T/737	CLOSED	2-DRV-67-548		CV
Aux Bldg el 737					
CCS HX B ERCW OUT SAMPLE	A10T/737	CLOSED	2-SMV-67-549		CV

Checklist 2
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2A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
CCS HX B OUTLET ERCW FLOW CNTL BYP ISOL	A10R/737	0-PI-OPS-17.0 LO	2-ISV-67-1009		
CCS HX B OUTLET ERCW FLOW CNTL BYP ISOL	A11S/737	0-PI-OPS-17.0 LO	2-ISV-67-1010		
CCS HX B OUTLET ERCW BYP DRAIN	A11S/737	CLOSED	2-DRV-67-1011		CV
CCS HX-B OUTLET ERCW BYP DRAIN	A11S/737	CLOSED	2-DRV-67-1012		CV
PENT ROOM COOLER 2A-A ERCW SUP FLOW CNTL	A12V/737	OPEN	2-FCV-67-354		CV
CONTROL AIR ISOLATION VALVE TO 2-FCV-67-354	A12V/737	OPEN	2-ISV-32-3322		CV
PENT ROOM COOLER 2A-A ERCW RET THROTTLE	A12U/737	0-PI-OPS-17.0 LT	2-THV-67-610A		
2-FE-67-355 TEST POINT	A12V/737	CLOSED	2-TV-67-874A		CV
2-FE-67-355 TEST POINT	A12V/737	CLOSED	2-TV-67-874B		CV
CCS HX B ERCW VENT	A5S/745	CLOSED	2-VTV-67-540		CV
CCS HX B ERCW VENT	A5S/745	CLOSED	2-VTV-67-541		CV
CCS HX B OUTLET ERCW FLOW CNTL	A12T/746	0-PI-OPS-17.0 LC	2-FCV-67-146		
EGTS ROOM COOLER A ERCW SUP HDR DRAIN	A11W/747	CLOSED	2-DRV-67-990		CV
CCS SURGE TANK B ERCW SUP HDR 2A ISOL	A13T/749	CLOSED	2-ISV-67-543A		CV
CCS SURGE TANK B ERCW SUP HDR DRAIN	A13T/749	CLOSED	2-DRV-67-545		CV
AUX BLDG AIR CLR ERCW SUP HDR 2A ISOL	A12T/752	0-PI-OPS-17.0 LO	2-FCV-67-127		
Aux Bldg el 737					
CCS HX SUPPLY ERCW HDR 2A/1B CROSSTIE	A5R/752	0-PI-OPS-17.0 LO	2-FCV-67-223		
CCS HX B ERCW SUP ISOL	A5R/752	0-PI-OPS-17.0 LO	2-ISV-67-546		
CCS HX B ERCW OUT ISOL	A10T/752	0-PI-OPS-17.0 LO	2-ISV-67-551		

Checklist 2
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2A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
CCS FLOOD MODE ERCW SUP HDR VENT	A12U/752	CLOSED	2-VTV-67-686		CV
EGTS ROOM COOLER A ERCW SUP HDR VENT	A12T/752	CLOSED	2-VTV-67-989		CV
EGTS ROOM COOLER A ERCW SUP HDR VENT	A12T/752	CLOSED	2-VTV-67-991		CV
2-FT-67-222 ROOT	A6S/753	OPEN	2-RTV-67-831A		CV
2-FT-67-222 ROOT	A6S/753	OPEN	2-RTV-67-831B		CV
EGTS ROOM COOLER A ERCW RET HDR DRAIN	A12V/753	CLOSED	2-DRV-67-992		CV
Aux Bldg el 757					
EGTS ROOM COOLER 2A-A ERCW RET THROTTLE	EGTS RM A12W/757	0-PI-OPS-17.0 LT	2-THV-67-685A		
2-FE-67-337 TEST POINT	EGTS RM A12W/757	CLOSED	2-TV-67-866A		CV
2-FE-67-337 TEST POINT	EGTS RM A12W/757	CLOSED	2-TV-67-866B		CV
CCS SURGE TANK B ERCW SUP HDR ISOL	A10T/760	0-PI-OPS-17.0 LC	2-ISV-67-544		
EGTS ROOM COOLER 2A-A ERCW SUP ISOL	EGTS RM A12W/772	0-PI-OPS-17.0 LO	2-ISV-67-684A		
EGTS ROOM COOLER 2A-A ERCW SUPPLY FLOW CNTL	EGTS RM A12W/772	OPEN	2-FCV-67-336		CV
CONTROL AIR ISOLATION VALVE TO 2-FCV-67-336	EGTS RM A12W/772	OPEN	2-ISV-32-3409		CV
Aux Bldg el 676					
CS PMP 2A-A RM COOLER FLUSH CONNECTION	A6U/676	CLOSED	2-ISV-67-620		CV
CSP ROOM COOLER 2A-A ERCW SUP FLOW CNTL	A7U/676	OPEN	2-FCV-67-184		CV
CONTROL AIR ISOLATION VALVE TO 2-FCV-67-184	A7U/676	OPEN	2-ISV-32-3018		CV
2-FE-67-185 TEST POINT	A7U/676	CLOSED	2-TV-67-870A		CV
2-FE-67-185 TEST POINT	A7U/676	CLOSED	2-TV-67-870B		CV

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2A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
CS PMP RM CLR 2A-A ERCW RET THROTTLE	A7U/676	CLOSED	2-THV-67-605A		
RHR PMP RM CLR 2A-A ERCW RET THROTTLE	A7W/676	OPEN	2-THV-67-606A		
RHRP ROOM COOLER 2A-A ERCW SUP FLOW CNTL	A7V/676	OPEN	2-FCV-67-188		
RHR PMP 2A-A RM COOLER FLUSH CONNECTION	A7V/676	CLOSED	2-ISV-67-621		CV
CONTROL AIR ISOLATION VALVE TO 2-FCV-67-188	A7W/676	0-PI-OPS-17.0	2-ISV-32-3021		
2-FE-67-189 TEST POINT	A7V/676	CLOSED	2-TV-67-871A		CV
2-FE-67-189 TEST POINT	A7V/676	CLOSED	2-TV-67-871B		CV
Aux Bldg el 692					
SIP ROOM COOLER 2A-A ERCW SUP FLOW CNTL	A7V/692	CLOSED	2-FCV-67-176		CV
CONTROL AIR ISOLATION VALVE TO 2-FCV-67-176	A7U/692	OPEN	2-ISV-32-2984		CV
SIS PMP RM CLR 2A-A ERCW RET THROTTLE	A7V/692	OPEN	2-THV-67-604A		
SI PMP 2A-A RM COOLER FLUSH CONNECTION	A6U/692	CLOSED	2-ISV-67-624		CV
2-FE-67-177 TEST POINT	A7V/700	CLOSED	2-TV-67-869A		CV
2-FE-67-177 TEST POINT	A7V/700	CLOSED	2-TV-67-869B		CV
LOWER CNTMT VENT CLR 2A & 2C ERCW SUP ISOL	A2U/708	OPEN	2-ISV-67-523A		
INSTR RM WATER CLR 2A ERCW SUP ISOL	A2U/708	OPEN	2-ISV-67-524A		CV
INSTR RM WATER CLR 2A ERCW IN TEST CONN	A4W/692	CLOSED	2-TV-67-525A		CV
INSTR RM WATER CLR 2A ERCW OUT TEST CONN	A4W/692	CLOSED	2-TV-67-526A		CV
INSTR RM WATER CLR 2A ERCW RET THROTTLE	A4W/706	TI-31.08	2-THV-67-527A		CV
LOWER CNTMT CLR HDR A ERCW SUP HDR TEST CONN	A2U/692	CLOSED	2-TV-67-560A		CV

Checklist 2
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2A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
LOWER CNTMT CLR HDR C ERCW SUP HDR TEST CONN	A2U/708	CLOSED	2-TV-67-560C		CV
LOWER CNTMT CLR HDR A ERCW RET TEST CONN	A2U/708	CLOSED	2-TV-67-576A		CV
LOWER CNTMT CLR HDR C ERCW RET TEST CONN	A2U/708	CLOSED	2-TV-67-576C		CV
CCP OIL CLR ERCW SUP XTIE ISOL	A4U/698	CLOSED	2-ISV-67-1015B		CV
CCP OIL CLR ERCW SUP XTIE ISOL	A4U/698	CLOSED	2-ISV-67-1016B		CV
CCP OIL CLR ERCW SUP XTIE HDR DRAIN	A4U/698	CLOSED	2-DRV-67-1017B		CV
Aux Bldg el 692					
CCP ROOM COOLER 2A-A ERCW SUP FLOW CNTL	A4T/692	OPEN	2-FCV-67-168		
CONTROL AIR ISOLATION VALVE TO 2-FCV-67-168	A4T/698	0-PI-OPS-17.0	2-ISV-32-2935		
CVCS CCP ROOM CLR 2A-A ERCW SUP ISOL	A4T/695	OPEN	2-ISV-67-600A		
CVCS CCP ROOM CLR 2A ERCW RET THROTTLE	A4T/695	OPEN	2-THV-67-601A		
CVCS CCP ROOM CLR 2A-A ERCW RET ISOL	A4T/695	OPEN	2-ISV-67-602A		
2-FE-67-169 TEST POINT	A4T/698	CLOSED	2-TV-67-868A		CV
2-FE-67-169 TEST POINT	A4T/698	CLOSED	2-TV-67-868B		CV
INSTR RM WATER CLR 2A ERCW SUP ISOL	A4W/697	OPEN	2-ISV-67-710A		CV
ERCW FLOOD MODE RET HDR A ISOL	A2U/702	CLOSED	0-ISV-67-528B		CV
SIS/CS/RHR PMP RM CLR ERCW SUP HDR 2A ISOL	A7V/703	OPEN	2-ISV-67-603A		
OUTAGE CW SUPPLY TO LCC	A5V/703	CLOSED	2-ISV-67-232		CV
OUTAGE LCC CW RETURN	A5V/703	CLOSED	2-ISV-67-238		CV
OUTAGE LCC CW RETURN	A5V/703	CLOSED	2-ISV-67-237		CV
SIS/CS/RHR PMP RM CLR ERCW RET HDR 2A ISOL	A7V/703	OPEN	2-ISV-67-613A		

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2A ERCW SUPPLY HEADER ALIGNMENT

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
2-FI-67-237 ROOT	A2U/707	OPEN	2-RTV-67-849A		CV
2-FI-67-237 ROOT	A2U/707	OPEN	2-RTV-67-849B		CV
2-FI-67-231 ROOT	A2U/707	OPEN	2-RTV-67-851A		CV
2-FI-67-231 ROOT	A2U/707	OPEN	2-RTV-67-851B		CV
ERCW FLOOD MODE RET HDR A RCP TH BAR ISOL	A4V/708	CLOSED	0-ISV-67-558B		CV
ERCW FLOOD MODE RET HDR A SAMP/SEAL WTR ISOL	A4V/708	CLOSED	0-ISV-67-559B		CV
2-FE-67-257 TEST POINT	A4W/708	CLOSED	2-TV-67-860A		CV
2-FE-67-257 TEST POINT	A4W/708	CLOSED	2-TV-67-860B		CV
Aux Bldg el 713					
INSTR RM WATER CLR 2A ERCW RET ISOL	A3W/713	OPEN	2-ISV-67-530A		CV
UPPER CNTMT VENT CLR 2A & 2C ERCW SUP ISOL	A3U/713	OPEN	2-ISV-67-531A		CV
CS HX 2A ERCW DRAIN	A5V/713	CLOSED	2-DRV-67-536A		CV
CS HX 2A ERCW RET THROTTLE	A5V/713	OPEN	2-THV-67-537A		
2-FT-67-136 ROOT	A5V/713	OPEN	2-RTV-67-833A		CV
2-FT-67-136 ROOT	A5V/713	OPEN	2-RTV-67-833B		CV
CNTMT SPRAY HX 2A ERCW BIOCIDE CIRC BYP	A4V/713	CLOSED	2-ISV-67-538A		CV
UPPER CNTMT VENT CLR 2A & 2C ERCW RET ISOL	A3U/713	OPEN	2-ISV-67-590A		CV
BIOCIDE RECIRC ERCW HDR 2A ISOL	A4S/713	CLOSED	2-ISV-67-716A		CV
UPPER CNTMT VENT CLR 2A ERCW RET TEMP CNTL	A3V/713 Pent Rm	OPEN	2-TCV-67-129		CV
CONTROL AIR ISOLATION VALVE TO 2-TCV-67-129	A3U/713	OPEN	2-ISV-32-3158		CV
UPPER CNTMT VENT CLR 2C ERCW RET TEMP CNTL	A3V/713	OPEN	2-TCV-67-132		CV
CONTROL AIR ISOLATION VALVE TO 2-TCV-67-132	A3U/713	OPEN	2-ISV-32-3157		CV
2-TCV-67-132 BYPASS	A3U/713	CLOSED	2-BYV-67-589C		CV

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2A ERCW SUPPLY HEADER ALIGNMENT

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NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
UPPER CNTMT VENT CLR 2A ERCW RET HDR ISOL	A3U/713	OPEN	2-ISV-67-587A		CV
UPPER CNTMT VENT CLR 2C ERCW RET HDR ISOL	A3U/713	OPEN	2-ISV-67-587C		CV
BIOCIDE RECIRC ERCW HDR 2A ISOL	A4T/720	CLOSED	2-ISV-67-715A		CV
DEMIN WATER INJ TO ERCW DEAD LEG ISV	A3T/720	CLOSED	2-ISV-67-751		CV
UPPER CNTMT VENT CLR 2A ERCW RET THROTTLE	A3U/718	TI-31.08	2-THV-67-588A		CV
UPPER CNTMT VENT CLR 2C ERCW THROTTLE	A3U/718	TI-31.08	2-THV-67-588C		CV
2-TCV-67-129 BYPASS	A3U/718	CLOSED	2-BYV-67-589A		CV
Aux Bldg el 713					
2-FI-67-239 ROOT	A2V/719	OPEN	2-RTV-67-848A		CV
2-FE-67-239 ROOT	A2V/719	OPEN	2-RTV-67-848B		CV
2-FI-67-233 ROOT	A2V/719	OPEN	2-RTV-67-850A		CV
2-FI-67-233 ROOT	A2V/719	OPEN	2-RTV-67-850B		CV
CNTMT SPRAY HX 2A-A ERCW RETURN	A4V/730 Pent Rm	CLOSED	2-FCV-67-126		CV
LOWER CNTMT VENT CLR 2A & 2C ERCW RET ISOL	A3V/730	OPEN	2-ISV-67-577A		
TD AFW PUMP ERCW SUP HDR ISOL	A3T/730	CLOSED	2-ISV-67-923A		
UPPER CNTMT VENT CLR 2A ERCW SUP HDR TEST CONN	A4V/732	CLOSED	2-TV-67-578A		CV
UPPER CNTMT VENT CLR 2C ERCW SUP HDR TEST CONN	A4V/732	CLOSED	2-TV-67-578C		CV
UPPER CNTMT VENT CLR 2A ERCW RET HDR TEST CONN	A4V/732	CLOSED	2-TV-67-586A		CV
UPPER CNTMT VENT CLR 2C ERCW RET HDR TEST CONN	A3V/732	CLOSED	2-TV-67-586C		CV
2-FI-67-333 ROOT	A3V/733	OPEN	2-RTV-67-840A		CV
2-FI-67-333 ROOT	A3V/733	OPEN	2-RTV-67-840B		CV
2-FI-67-265 ROOT	A3V/733	OPEN	2-RTV-67-841A		CV

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2A ERCW SUPPLY HEADER ALIGNMENT

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NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
2-FI-67-265 ROOT	A3V/733	OPEN	2-RTV-67-841B		CV
2-FI-67-332 ROOT	A3V/733	OPEN	2-RTV-67-842A		CV
2-FI-67-332 ROOT	A3V/733	OPEN	2-RTV-67-842B		CV
2-FI-67-263 ROOT	A3U/733	OPEN	2-RTV-67-843A		CV
2-FI-67-263 ROOT	A3U/733	OPEN	2-RTV-67-843B		CV
Aux Bldg el 737					
CNTMT SPRAY HX 2A-A ERCW SUPPLY	A4U/737	CLOSED	2-FCV-67-125		CV
Aux Bldg el 737					
CNTMT SPRAY HX 2A ERCW BIOCIDE CIRC BYP	A4U/737	CLOSED	2-ISV-67-533A		CV
CS HX 2A ERCW SUP HDR VENT	A4U/737	CLOSED	2-VTV-67-534A		CV
CSS HX 2A INLET ERCW FLUSH	A4U/737	CLOSED	2-FLV-67-927		
CS HX 2A ERCW VENT	A5V/748	CLOSED	1-VTV-67-535A		CV
CCS SURGE TANK A ERCW SUP HDR DRAIN	A3T/749	CLOSED	2-DRV-67-545		CV
CCS FLOOD MODE ERCW SUP HDR VENT	A4U/755	CLOSED	2-VTV-67-686		CV
U-2 Containment					
LWR CNTMT VENT CLR 2A-A ERCW SUP HDR VENT	#1 FAN Rm IC/724 Az 4	CLOSED	2-VTV-67-698A		CV
LWR CNTMT VENT CLR 2A-A ERCW RET HDR VENT	#1 FAN Rm IC/725 Az 4	CLOSED	2-VTV-67-699A		CV
CRD VENT CLR 2A-A RET ERCW HDR DRAIN	IC/717 Az 7	CLOSED	2-DRV-67-996		CV
CRD VENT CLR 2A-A ERCW SUP HDR THROTTLE	#1 FAN Rm IC/726 Az 7	OPEN	2-THV-67-567A		CV
2-FE-67-470 TEST POINT	IC/717 Az 9	CLOSED	2-TV-67-918		CV
CRD VENT CLR 2A-A SUP ERCW HDR DRAIN	IC/717 Az 9	CLOSED	2-DRV-67-998		CV
2-FE-67-470 TEST POINT	IC/717 Az 9	CLOSED	2-TV-67-917		CV
RCP 2 MTR CLR ERCW RET HDR THROTTLE	#1 FAN Rm IC/725 Az 8	OPEN	2-THV-67-572A		CV

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2A ERCW SUPPLY HEADER ALIGNMENT

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NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
RCP MTR CLR 2 ERCW RET HDR VENT	IC/740 Az 8	CLOSED	2-VTV-67-696A		CV
2-FE-67-235 TEST POINT	IC/729 Az 60	CLOSED	2-TV-67-865A		CV
2-FE-67-235 TEST POINT	IC/729 Az 60	CLOSED	2-TV-67-865B		CV
RCP MTR CLR 2 ERCW IN SUP VENT	IC/732 Az 60	CLOSED	2-VTV-67-700A		CV
RCP 3 MTR CLR ERCW RET HDR THROTTLE	#2 FAN Rm 725 Az 185	OPEN	2-THV-67-572C		CV
LWR CNTMT VENT CLR 2C-A ERCW RET HDR VENT	#2 FAN Rm 725 Az 185	CLOSED	2-VTV-67-699C		CV
LWR CNTMT VENT CLR 2C-A ERCW SUP HDR VENT	#2 FAN Rm 727 Az 200	CLOSED	2-VTV-67-698C		CV
2-FE-67-473 TEST POINT	730 Az 185	CLOSED	2-TV-67-915		CV
U-2 Containment					
2-FE-67-473 TEST POINT	730 Az 185	CLOSED	2-TV-67-916		CV
CRD VENT CLR 2C-A ERCW SUP HDR THROTTLE	#2 FAN Rm 726 Az 187	OPEN	2-THV-67-567C		CV
LOWER CNTMT CLR HDR C ERCW SUP HDR TEST CONN	#2 FAN Rm 720 Az 187	CLOSED	2-TV-67-563C		CV
RCP MTR CLR 3 ERCW RET HDR VENT	726 Az 189	CLOSED	2-VTV-67-696C		CV
RCP MTR CLR 3 ERCW IN SUP VT	732 Az 239	CLOSED	2-VTV-67-700C		CV
2-FE-67-241 TEST POINT	729 Az 243	CLOSED	2-TV-67-864A		CV
2-FE-67-241 TEST POINT	729 Az 243	CLOSED	2-TV-67-864B		CV
LOWER CNTMT CLR HDR ERCW RET VENT	#1 Fan Rm IC/716 Az 4	CLOSED	2-VTV-67-695A		CV
LOWER CNTMT CLR HDR A ERCW RET TEST CONN	#1 Fan Rm IC/720 Az 4	CLOSED	2-TV-67-574A		CV
LOWER CNTMT CLR HDR A ERCW RET ISOL	#1 Fan Rm IC/720 Az 4	OPEN	2-ISV-67-1005A		
LOWER CNTMT CLR HDR A ERCW SUP ISOL	#1 Fan Rm IC/716 Az 7	OPEN	2-ISV-67-1004A		
LOWER CNTMT CLR HDR A ERCW SUP ISOL	#1 Fan Rm IC/720 Az 7	OPEN	2-FCV-67-89		CV

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2A ERCW SUPPLY HEADER ALIGNMENT

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NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
LOWER CNTMT CLR HDR A ERCW SUP HDR TEST CONN	#1 Fan Rm IC/720 Az 7	CLOSED	2-TV-67-563A		CV
RCP 1 MOTOR CLR ERCW SUP CNTL	#1 Fan Rm IC/727 Az 12	OPEN	2-TCV-67-86		CV
CONTROL AIR ISOLATION VALVE TO 2-TCV-67-86	#1 Fan Rm IC/727 Az 12	OPEN	2-ISV-32-3611		CV
U-2 Containment					
LOWER CNTMT CLR HDR A ERCW RET DRAIN	#1 Fan Rm IC/716 Az 8	CLOSED	2-DRV-67-777		CV
LOWER CNTMT CLR HDR A ERCW SUP DRAIN	#1 Fan Rm IC/716 Az 8	CLOSED	2-DRV-67-778		CV
CRD VENT CLR 2A-A OUT TEMP CNTL	#1 Fan Rm IC/725 Az 8	OPEN	2-TCV-67-85		CV
CONTROL AIR ISOLATION VALVE TO 2-TCV-67-85	#1 Fan Rm IC/725 Az 8	OPEN	2-ISV-32-3610		CV
LOWER CNTMT CLR HDR A ERCW RET ISOL	#1 Fan Rm IC/725 Az 8	OPEN	2-FCV-67-87		CV
LWR CNTMT VENT CLR 2A-A OUT TEMP CNTL	#1 Fan Rm IC/723 Az 12	OPEN	2-TCV-67-84		CV
CONTROL AIR ISOLATION VALVE TO 2-TCV-67-84	#1 Fan Rm IC/723 Az 12	OPEN	2-ISV-32-3609		CV
LWR CNTMT VENT CLR 2A-A ERCW SUP HDR THROTTLE	#1 Fan Rm IC/726 Az 21	OPEN	2-THV-67-564A		
2-FE-67-471 TEST POINT	#1 Fan Rm IC/724 Az 23	CLOSED	2-TV-67-919A		CV
2-FE-67-471 TEST POINT	#1 Fan Rm IC/724 Az 23	CLOSED	2-TV-67-919B		CV
CRD VENT CLR 2C-A OUT TEMP CNTL	#2 Fan Rm 725 Az 185	OPEN	2-TCV-67-93		CV
CONTROL AIR ISOLATION VALVE TO 2-TCV-67-93	#2 Fan Rm 725 Az 185	OPEN	2-ISV-32-3560		CV
LOWER CNTMT CLR HDR C ERCW SUP ISOL	#2 Fan Rm 720 Az 185	OPEN	2-ISV-67-1004C		
LOWER CNTMT CLR HDR C ERCW RET ISOL	#2 Fan Rm 720 Az 185	OPEN	2-ISV-67-1005C		

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2A ERCW SUPPLY HEADER ALIGNMENT

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NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
LOWER CNTMT CLR HDR C ERCW RET TEST CONN	#2 Fan Rm 720 Az 185	CLOSED	2-TV-67-574C		CV
LOWER CNTMT CLR HDR ERCW RET VENT	#2 Fan Rm 726 Az 185	CLOSED	2-VTV-67-695C		CV

U-2 Containment

LWR CNTMT VENT CLR 2C-A OUT TEMP CNTL	#2 Fan Rm 723 Az 185	OPEN	2-TCV-67-92		CV
CONTROL AIR ISOLATION VALVE TO 2-TCV-67-92	#2 Fan Rm 723 Az 185	OPEN	2-ISV-32-3561		CV
LWR CNTMT VENT CLR 2C-A ERCW SUP HDR THROTTLE	#2 Fan Rm 726 Az 187	0-PI-OPS-17.0	2-THV-67-564C		
LOWER CNTMT CLR HDR C ERCW SUP ISOL	#2 Fan Rm 720 Az 187	OPEN	2-FCV-67-97		CV
LOWER CNTMT CLR HDR C ERCW RET DRAIN	#2 Fan Rm 716 Az 188	CLOSED	2-DRV-67-775		CV
LOWER CNTMT CLR HDR C ERCW SUP DRAIN	#2 Fan Rm 716 Az 188	CLOSED	2-DRV-67-776		CV
LOWER CNTMT CLR HDR C ERCW RET ISOL	#2 Fan Rm 720 Az 189	OPEN	2-FCV-67-95		CV
RCP 3 MOTOR CLR ERCW SUP CNTL	#2 Fan Rm 727 Az 190	OPEN	2-TCV-67-94		CV
CONTROL AIR ISOLATION VALVE TO 2-TCV-67-94	#2 Fan Rm 727 Az 190	OPEN	2-ISV-32-3559		CV
2-FE-67-472 TEST POINT	#2 Fan Rm 724 Az 200	CLOSED	2-TV-67-920A		CV
2-FE-67-472 TEST POINT	#2 Fan Rm 724 Az 200	CLOSED	2-TV-67-920B		CV
UPPER CNTMT VENT CLR 2A ERCW RET HDR DRAIN	IC/791 Az 300[2]	CLOSED	2-DRV-67-770		
UPPER CNTMT VENT CLR 2A ERCW SUP HDR DRAIN	IC/792 Az 300[2]	CLOSED	2-DRV-67-769		
UPPER CNTMT VENT CLR 2C ERCW SUP HDR DRAIN	IC/795 Az 300[2]	CLOSED	2-DRV-67-767		
UPPER CNTMT VENT CLR 2C ERCW RET HDR DRAIN	IC/796 Az 300[2]	CLOSED	2-DRV-67-768		

U-2 Containment

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2A ERCW SUPPLY HEADER ALIGNMENT

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NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
LOWER CNTMT CLR HDR A ERCW SUP VENT	Annulus 716/Az 7	CLOSED	2-VTV-67-694A		CV
LOWER CNTMT CLR HDR A ERCW SUP ISOL	Annulus 719/Az 7	OPEN	2-FCV-67-83		CV
LOWER CNTMT CLR HDR A ERCW RET VENT	Annulus 716/Az 9	CLOSED	2-VTV-67-693A		CV
LOWER CNTMT CLR HDR A ERCW RET ISOL	Annulus 715/Az 20	OPEN	2-FCV-67-88		CV
LOWER CNTMT CLR HDR C ERCW RET DRAIN	Annulus 705/Az 189	CLOSED	2-DRV-67-1006C		CV
LOWER CNTMT CLR HDR C ERCW SUP ISOL	Annulus 720/Az 190	OPEN	2-FCV-67-91		CV
LOWER CNTMT CLR HDR C ERCW RET ISOL	Annulus 720/Az 190	OPEN	2-FCV-67-96		CV
LOWER CNTMT CLR HDR C ERCW RET VENT	Annulus 720/Az 190	CLOSED	2-VTV-67-693C		CV
LOWER CNTMT CLR HDR C ERCW SUP VENT	Annulus 720/Az 172	CLOSED	2-VTV-67-694C		CV
UPPER CNTMT VENT CLR 2C ERCW SUP HDR VENT	Annulus 799/Az 313°	CLOSED	2-VTV-67-688C		CV
UPPER CNTMT VENT CLR 2A ERCW SUP HDR VENT	Annulus 795/Az 313°	CLOSED	2-VTV-67-688A		CV
UPPER CNTMT VENT CLR 2A ERCW SUP HDR VENT	Annulus 795/Az 313°	CLOSED	2-VTV-67-689A		CV
UPPER CNTMT VENT CLR 2C ERCW SUP HDR VENT	Annulus 800/Az 316°	CLOSED	2-VTV-67-689C		CV
UPPER CNTMT VENT CLR 2A ERCW SUP HDR ISOL	Annulus 795/Az 305	OPEN	2-FCV-67-130		CV
UPPER CNTMT VENT CLR 2A ERCW RET HDR ISOL	Annulus 798/Az 318	OPEN	2-FCV-67-131		CV
UPPER CNTMT VENT CLR 2C ERCW SUP HDR ISOL	Annulus 798/Az 318	OPEN	2-FCV-67-133		CV
UPPER CNTMT VENT CLR 2C ERCW RET HDR ISOL	Annulus 798/Az 318	OPEN	2-FCV-67-134		CV

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2A ERCW SUPPLY HEADER ALIGNMENT

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NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
U-2 Containment					
UPPER CNTMT VENT CLR 2A ERCW RET HDR TEST CONN	IC/808 Az 25(1)	CLOSED	2-TV-67-584A		CV
UPPER CNTMT VENT CLR 2A ERCW RET HDR TEST VALVE	IC/807 Az 28(1)	CLOSED	2-TV-67-1210		CV
UPPER CNTMT VENT CLR 2A ERCW RET ISOL	IC/807 Az 28(1)	OPEN	2-FCV-67-295		CV
UPPER CNTMT VENT CLR 2A ERCW RET HDR ISOL	IC/807 Az 30(1)	OPEN	2-ISV-67-692A		CV
UPPER CNTMT VENT CLR 2A ERCW SUP HDR TEST CONN	IC/808 Az 30(1)	CLOSED	2-TV-67-579A		
UPPER CNTMT VENT CLR 2A ERCW SUP HDR TEST CONN	IC/808 Az 30(1)	CLOSED	2-TV-67-581A		CV
UPPER CNTMT VENT CLR 2A ERCW RET HDR ISOL	IC/808 Az 37(1)	OPEN	2-ISV-67-583A		CV
UPPER CNTMT VENT CLR 2A ERCW SUP HDR ISOL	IC/805 Az 45(1)	OPEN	2-ISV-67-691A		CV
UPPER CNTMT VENT CLR 2C ERCW RET HDR TEST CONN	IC/808 Az 205(1)	CLOSED	2-TV-67-584C		CV
UPPER CNTMT VENT CLR 2C ERCW RET HDR DRAIN	IC/807 Az 208(1)	CLOSED	2-TV-67-1212		CV
UPPER CNTMT VENT CLR 2C ERCW RET ISOL	IC/807 Az 208(1)	OPEN	2-FCV-67-296		CV
UPPER CNTMT VENT CLR 2C ERCW RET HDR ISOL	IC/807 Az 210(1)	OPEN	2-ISV-67-692C		CV
UPPER CNTMT VENT CLR 2C ERCW SUP HDR TEST CONN	IC/808 Az 210(1)	CLOSED	2-TV-67-579C		
UPPER CNTMT VENT CLR 2C ERCW SUP HDR TEST CONN	IC/808 Az 210(1)	CLOSED	2-TV-67-581C		CV
UPPER CNTMT VENT CLR 2C ERCW RET HDR ISOL	IC/808 Az 215(1)	OPEN	2-ISV-67-583C		CV
UPPER CNTMT VENT CLR 2C ERCW SUP HDR TEST VENT	IC/807 Az 224(1)	CLOSED	2-TV-67-690C		CV
UPPER CNTMT VENT CLR 2A ERCW SUP HDR TEST VENT	IC/807 Az 224(1)	CLOSED	2-TV-67-690A		CV

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2A ERCW SUPPLY HEADER ALIGNMENT

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NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIFIER INITIAL
UPPER CNTMT VENT CLR 2C ERCW SUP HDR ISOL	IC/805 Az 225[1]	OPEN	2-ISV-67-691C		CV

Checklist 3
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POWER CHECKLIST

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NOTES

1) Alignment assumes IPS and main headers into Aux Bldg are currently aligned and in service. This particular checklist is only for electrical power to valves needed to conduct 2-PTI-067-02-A.
2) Inside and outside containment isolation valves are both A and B train valves. This checklist contains B Tr. power supplies necessary to establish the desired flowpath.

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIF INITIAL
Diesel Aux Bd 1A1/1A2					
DG HX 1A1-A ERCW HDR 1A ISOL (1-FCV-67-66)	C/3A	CLOSED	1-BKR-67-66		
DG HX 1A2-A ERCW HDR 2B SUPPLY (1-FCV-67-68)	C/3A	CLOSED	1-BKR-67-68		
Diesel Aux Bd 2A1/2A2					
DG HX 2A1-A ERCW HDR 1A ISOL (2-FCV-67-66)	C/3A	CLOSED	2-BKR-67-66		
DG HX 2A2-A ERCW HDR 1B SUPPLY (2-FCV-67-68)	C/3A	CLOSED	2-BKR-67-68		
Diesel Aux Bd 1B1/1B2					
DG HX 1B1-B ERCW HDR 1B ISOL (1-FCV-67-67)	C/3A	CLOSED	1-BKR-67-67		
DG HX 1B2-A ERCW HDR 2A SUPPLY (1-FCV-67-65)	C/3A	CLOSED	1-BKR-67-65		
Diesel Aux Bd 2B1/2B2					
DG HX 2B1/2B2 ERCW HDR 1B ISOL (2-FCV-67-67)	C/3A	CLOSED	2-BKR-67-67		
DG HX 2B2-A ERCW HDR 2A SUPPLY (2-FCV-67-65)	C/3A	CLOSED	2-BKR-67-65		
Rx MOV Bd 1A2-A					
LWR CNTMT A CLR ERCW RETURN (1-FCV-67-87)	C/7D	ON	1-BKR-67-87		CV
LWR CNTMT 1A CLRS SUP (1-FCV-67-89)	C/15D	ON	1-BKR-67-89		
LWR CNTMT C CLR ERCW RETURN (1-FCV-67-95)	C/8D	ON	1-BKR-67-95		CV

Checklist 3
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POWER CHECKLIST

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NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIF INITIAL
LWR CNTMT CLR 1D DISCH (1-FCV-67-112)	C/10A	ON	1-BKR-67-112		CV
CNTMT SPRAY HX 1A-A ERCW IN (1-FCV-67-125)	C/5E	ON	1-BKR-67-125		CV
CNTMT SPRAY HX 1A-A ERCW OUT (1-FCV-67-126)	C/5F	ON	1-BKR-67-126		CV
AB AIR CLR ERCW SUP HDR 1A ISOL (1-FCV-67-127)	C/10B	ON	1-BKR-67-127		
UPPER CNTMT VT CLR 1A ERCW SUP (1-FCV-67-130)	C/7F	ON	1-BKR-67-130		CV
UPPER CNTMT VT CLR 1C ERCW SUP (1-FCV-67-133)	C/8F	ON	1-BKR-67-133		CV
CCS HX A OUT ERCW FLOW CNTL BYP (1-FCV-67-143-A)	C/15A	ON	1-BKR-67-143		CV
CCS HX A OUT ERCW FLOW CNTL (1-FCV-67-146A)	C/11A	ON	1-BKR-67-146		
LWR COMPT CLR DISCHARCH ISOL (1-FCV-67-142)	C/10F	ON	1-BKR-67-142		
CCS HX C HDR 1A SUPPLY (1-FCV-67-147-A)	C/5B	ON	1-BKR-67-147A		
STA AIR COMPR ERCW SUP HDR 1A (0-FCV-67-205)	C/12B	ON	0-BKR-67-205		CV
UPPER CNTMT VT CLR 1A ERCW RET (1-FCV-67-295)	C/9D	ON	1-BKR-67-295		CV
UPPER CNTMT VT CLR 1C ERCW RET (1-FCV-67-296)	C/10D	ON	1-BKR-67-296		CV
Rx MOV Bd 1B2-B					
LWR CNTMT CLR HDR A ERCW SUP (1-FCV-67-83)	C/10B	ON	1-BKR-67-83		CV
LWR CNTMT A CLR ERCW RETURN (1-FCV-67-88)	C/9A	ON	1-BKR-67-88		CV
LWR CNTMT CLR HDR C ERCW SUP (1-FCV-67-91)	C/10A	ON	1-BKR-67-91		CV
LWR CNTMT C CLR ERCW RETURN (1-FCV-67-96)	C/9B	ON	1-BKR-67-96		CV

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POWER CHECKLIST

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NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIF INITIAL
UPPER CNTMT VT CLR 1A ERCW RET (1-FCV-67-131)	C/7F	ON	1-BKR-67-131		CV
UPPER CNTMT VT CLR 1C ERCW RET (1-FCV-67-134)	C/8F	ON	1-BKR-67-134		CV
Rx MOV Bd 1A1-A					
LWR CNTMT CLR HDR A ERCW SUP (1-FCV-67-89)	C/15D	ON	1-BKR-67-89		CV
LWR CNTMT CLR HDR C ERCW SUP (1-FCV-67-97)	C/5C	ON	1-BKR-67-97		CV
Rx MOV Bd 2A2-A					
ERCW DISCH HDR A CT ISOL (0-FCV-67-360)	C/13B	ON	0-BKR-67-360		CV
LWR CNTMT 2A CLR ERCW RETURN (2-FCV-67-87)	C/7D	ON	2-BKR-67-87		CV
LWR CNTMT 2C CLR ISOL 2-FCV-67-89	15D	ON	2-BKR-67-89		CV
LWR CNTMT C CLR ERCW RETURN (2-FCV-67-95)	C/8D	ON	2-BKR-67-95		CV
LWR CNTMT 2C CLRS SUP ISOL 2-FCV-67-97	5C	ON	2-BKR-67-97		CV
CNTMT SPRAY HX 2A-A ERCW IN (2-FCV-67-125)	C/5E	ON	2-BKR-67-125		CV
CNTMT SPRAY HX 2A-A ERCW OUT (2-FCV-67-126)	C/5F	ON	2-BKR-67-126		CV
AB AIR CLR ERCW SUP HDR 2A ISOL (2-FCV-67-127)	C/10B	ON	2-BKR-67-127		
UPPER CNTMT VT CLR 2A ERCW SUP (2-FCV-67-130)	C/7F	ON	2-BKR-67-130		CV
UPPER CNTMT VT CLR 2C ERCW SUP (2-FCV-67-133)	C/8F	ON	2-BKR-67-133		CV
CCS HX B OUT ERCW FLOW CNTL BYP (2-FCV-67-143-A)	C/15A	ON	2-BKR-67-143		CV
CCS HX B OUT ERCW FLOW CNTL (2-FCV-67-146A)	C/11A	ON	2-BKR-67-146		CV
UPPER CNTMT VT CLR 2A ERCW RET (2-FCV-67-295)	C/9D	ON	2-BKR-67-295		CV

Checklist 3
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POWER CHECKLIST

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NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIF INITIAL
UPPER CNTMT VT CLR 2C ERCW RET (2-FCV-67-296)	C/10D	ON	2-BKR-67-296		CV
Rx MOV Bd 2B2-B					
LWR CNTMT 2A CLR SUP ISOL (2-FCV-67-83)	C/10B	ON	2-BKR-67-83		
LWR CNTMT A CLR ERCW RETURN (2-FCV-67-88)	C/9A	ON	2-BKR-67-88		CV
LWR CNTMT 2C CLR ERCW RETURN (2-FCV-67-96)	C/9B	ON	2-BKR-67-96		CV
LWR CNTMT 2A CLR SUP ISO (2-FCV-67-91)	C/10A	ON	2-BKR-67-91		CV
UPPER CNTMT VT CLR 2A ERCW RET (2-FCV-67-131)	C/7F	ON	2-BKR-67-131		CV
UPPER CNTMT VT CLR 2C ERCW RET (2-FCV-67-134)	C/8F	ON	2-BKR-67-134		CV

ERCW FCV for each ESF room cooler is powered from that cooler's control circuit and opens by de-energizing the FSV, EXCEPT for 67-168 amd 170 (CCP Rms) and FCV-67-188 & 190 (RHRP) which are de-energized OPEN for Appendix R.

C & A VENT Bd 1A1-A					
RHR PUMP RM CLR 1-PMCL-30-175	C/9A	OFF	1-BKR-30-175		CV
CS PUMP RM CLR 1-PMCL-30-177	C/3C	OFF	1-BKR-30-177		CV
SIS PUMP RM CLR 1-PMCL-30-180	C/8A	OFF	1-BKR-30-180		CV
CCP 1A-A PMP RM CLR 1-PMCL-30-183	C/10A	ON	1-BKR-30-183		CV
C & A VENT Bd 1B1-B					
RHR PUMP RM CLR 1-PMCL-30-176	C/9A	OFF	1-BKR-30-176		CV
CS PUMP RM CLR 1-PMCL-30-178	C/3C	OFF	1-BKR-30-178		CV
SIS PUMP RM CLR 1-PMCL-30-179	C/8A	OFF	1-BKR-30-179		CV
CCP 1A-A PMP RM CLR 1-PMCL-30-182	C/10A	ON	1-BKR-30-182		CV

Checklist 3
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POWER CHECKLIST

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

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIF INITIAL
C & A VENT Bd 2A1-A					
RHR PUMP RM CLR 2-PMCL-30-175	C/9A	OFF	2-BKR-30-175		CV
CS PUMP RM CLR 2-PMCL-30-177	C/3C	OFF	2-BKR-30-177		CV
SIS PUMP RM CLR 2-PMCL-30-180	C/8A	OFF	2-BKR-30-180		CV
CCP 1A-A PMP RM CLR 2-PMCL-30-183	C/10A	ON	2-BKR-30-183		CV
C & A VENT Bd 2B1-B					
RHR PUMP RM CLR 2-PMCL-30-176	C/9A	OFF	2-BKR-30-176		CV
CS PUMP RM CLR 2-PMCL-30-178	C/3C	OFF	2-BKR-30-178		CV
SIS PUMP RM CLR 2-PMCL-30-179	C/8A	OFF	2-BKR-30-179		CV
CCP 1A-A PMP RM CLR 2-PMCL-30-182	C/10A	ON	2-BKR-30-182		CV