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July 12, 2010

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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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 Preoperational Test Instructions**

The following approved Watts Bar Unit 2 Preoperational Test Instructions (PTIs) are enclosed:

PTI NUMBER	Rev.	TITLE
2-PTI-027-01	0	Condenser Circulating Water System
2-PTI-030D-01	0	Unit 2 TDAFW Pump Room Exhaust Fans
2-PTI-032-01	0	Control and Auxiliary Air System
2-PTI-064-01	0	Local Leak Rate Testing

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

Sincerely,

M. Bajestani

Masoud Bajestani
Watts Bar Unit 2 Vice President

D030
NRR

cc (Enclosures):

U. S. Nuclear Regulatory Commission
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NRC Resident Inspector Unit 2
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WATTS BAR NUCLEAR PLANT

UNIT 2 STARTUP

TITLE: Condenser Circulating Water System

Instruction No: 2-PTI-027-01

Revision No: 0

PREPARED BY: Brian Vaughn DATE 6/17/10

PRINT NAME/ SIGNATURE

REVIEWED BY: Brian Vaughn for James Klaw per Telecon DATE 6/17/10

PRINT NAME/ SIGNATURE

INSTRUCTION APPROVAL

JTG MEETING NO: 2-10-003

JTG CHAIRMAN: DATE 6/17/10

APPROVED BY: DATE 6/17/10

PREOPERATIONAL STARTUP MANAGER

TEST RESULTS APPROVAL

JTG MEETING NO: _____

JTG CHAIRMAN: _____ DATE _____

APPROVED BY: _____ DATE _____

PREOPERATIONAL STARTUP MANAGER

Revision Log

Revision or Change Number	Effective Date	Affected Page Numbers	Description of Revision/Change
0000	6/17/10	ALL	This procedure was converted from Word 95 to Word 2002 (XP) using Rev. 0 of 1-PTI-027-01

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1.0 INTRODUCTION

1.1 Test Objectives

This test verifies the logic/controls and performance for the Condenser Circulating Water (CCW) System (System 027) pumps and valves. The logic/controls testing is performed, generally, under static (no flow) conditions. All CCW Pumps are run and all major flow paths are verified.

1.2 Scope

A. Condenser Water box Inlet and Outlet Valves manual operation, indication and interlocks.

B. CCWP Suction Valves manual operation, indication, and interlocks.

C. CCWP's, and Discharge Valves, manual operation, indication, and interlocks.

D. Holding Pond and Diffuser Valves manual operation, indication, and interlocks.

E. Cooling Tower De-icing Valves manual operation, indication, and interlocks.

F. CCWP's are run with flow directed over all of the Cooling Tower Fill (normal mode), over only part of the Cooling Tower Fill (de-icing mode), and through the Cooling Tower Bypass line.

G. Flow from the Cooling Tower to the river (normal blow down mode), from the Cooling Tower to the Holding Pond (blow down during low river flow periods), from the Holding Pond to the river, from the Cooling Tower to the Desilting basin, and from the Desilting basin to the Holding Pond.

H. System alarms.

I. System instrumentation output is recorded to provide baseline operating data during the various flow modes.

2.0 REFERENCES

2.1 Performance References

A. SMP-4.0, System Completion and Turnover, Rev 4

B. SMP-6.0, Administration, Conduct and Test Results Processing of Generic Test Instructions, Rev 1

C. SMP-7.0, Control of Cleanness, Layup and Flushing, Rev 0

D. SMP-9.0, Conduct of Test, Rev 0

E. GOI-7.0, Generic Equipment Operating Guidelines, Rev 39

F. 2-TSD-27.1, Condenser Circulating Water Test Scoping Document, Rev. 0

G. 2-ATI-280-01, Condenser Tube Cleaning (Amertap) System, Not Issued

H. N3C-945, Procedure for Evaluation and Qualification of Piping System Vibrations, Rev 0

2.2 Developmental References

A. Final Safety Analysis Report, Amendment 98

1. Section 10.4.5, Condenser Circulating Water System
2. Table 14.2-1, Preoperational Tests Summaries Page 70 of 89

B. Drawings

1. Flow Diagrams
   a. 2-47W831-1, Condenser Circulating Water, Rev 2
   b. 2-47W831-2, Condenser Circulating Water, Rev 0
   c. 2-47W837-1, CCW Pumps Gland Seal, Rev 1
   d. 2-47W857-1, Cond Tube Cleaning System, Rev 4
2. Electrical Control Diagrams
   a. 2-47W610-27-1, Cond. Circulating water, Rev 4
   b. 2-47W610-27-2,Cond. Circulating Water, Rev 3

2.2 Developmental References (continued)

3. Mechanical
   a. N/A
4. Logic/Control
   a. 2-47W611-27-1, Cond. Circulating Water, Rev 2
5. Schematic Diagrams
   a. 2-45W760-27-1, CCW System, Rev 2
   b. 2-45W760-27-2, CCW System, Rev 2
   c. 2-45W760-27-4, CCW System, Rev 2
   d. 2-45W760-27-5, CCW System, Rev 1
   e. 45W760-27-6, CCW System, Rev 4
   f. 2-45W760-201-2, 6900V Unit Boards, Rev 0
   g. 2-45W600-57-21, Sep. & Misc.Aux. Relays, Rev 0
6. Single Line Diagrams
   a. 2-35W711-3, 480V CCW Pump Sta. Bd & MCC, Rev 0
   b. 2-35W712, 480V CCW HYCL BLDG FDR BD, Rev 0
   c. 1-35W713-2, 480V Intake Pumping Stat. MCC, Rev 24
   d. 2-45W721-1, 6900V Unit BDS 2A & 2B, Rev 0
   e. 2-45W721-2, 6900V Unit BDS 2C & 2D, Rev 0
   f. 2-45W753-3, 480V Turbine MOV BD 2A, Rev 1
   g. 2-45W753-4, 480V Turbine MOV BD 2B, Rev 1
   h. 2-45W753-5, 480V Turbine MOV BD 2B, Rev 0
7. Contact Development of Selector Switches and Pushbuttons
   a. 2-45B655-15A, XA-55-15A Inputs, Rev 0
   b. 2-45B655-E15A, XA-55-15A Window Display, Rev 0
   c. ARI-159-165, XA-55-15A Annunciator Response Instructions, Rev 34

2.2 Developmental References (continued)

8. Technical Manuals

   a. WBN-VTM-I075-0180, Vendor Technical Manual for Ingersoll-Rand Condenser and Cooling Tower Pumps

3.0 PRECAUTIONS AND LIMITATIONS

A. Portions of this test are conducted in or around electrically energized equipment. Standard precautions shall be followed for working around energized electrical equipment in accordance with TVA Safety Procedure 1021.

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

C. 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 as appropriate.

D. All wires removed from a terminal shall be identified, grouped together, and taped or covered with an insulator to prevent personnel or equipment hazard and possible spurious initiations.

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

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

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

H. If operating during cold weather, ice formation on the cooling tower fill is possible, even during de-icing mode operation. If this weather condition exists, the fill material should be observed frequently for ice formation. If ice forms on the fill material, operate the CCW system in the Bypass Mode, bypass valve open with two (2) pumps operating.

I. The CCW system must be filled and vented prior to actuation of any flow control valves.

J. When operating with less than four pumps, pump discharge valves may be throttled to maintain pump motor amps $\leq$ 247.

K. Only batch effluent releases from the Cooling Tower Desilting Basin are authorized by the NPDES permit; special regulator approval must be obtained before the Cooling Tower Blow down (CTBD) can be routed in a flow-thru mode by opening both Cooling Tower Desilting Basin Sluice Gate and Cooling Tower Sluice Gate(s).

3.0 PRECAUTIONS AND LIMITATIONS (continued)

L. Only two (2) pumps are to be used during BYPASS MODE of operation. More than two pumps will force water into the Cooling tower fill and result in icing, as well as produce excessive vibration in the bypass piping. One pump flow can allow the pump to run out too far on its Flow/head curve, resulting in pump cavitation.

M. CCWP starting is limited by guidelines of GOI-7.

N. When the under voltage relay trips of the CCWP's are tested, other pumps in other systems are also affected. Notify the SM/US prior to performing any of this testing in Subsections 6.4 through 6.6.

O. The CCW system includes interfaces with the Condenser Tube Cleaning System (Amertap). Some of the Amertap system (System 280) components carry CCW system (system 027) designators, but all Amertap system testing is performed in 2-ATI-280-01.

P. The CCW system also includes gland seal water supply, since the original CCWP packing required cooling water. The original packing in all four Unit 2 pumps has been replaced with a type that does not require cooling water. Therefore, the CCW gland seal supply, instrumentation, and alarms are no longer needed and will not be tested in this instruction.

Q. Valve position must be verified throughout this instruction. Initially, this is to be accomplished visually. Remote indicating lights may be used after they have been verified in the test.

R. Steps which determine Acceptance Criteria are designated by an "(**Acc Crit**)".

S. Serious inlet tunnel damage/failure can occur if both condenser water boxes are isolated with a CCW Pump Running

T. Do NOT operate pumps at less than 35 psid when 2 CCWPs are operating through both sides of the condenser and cooling tower bypass.

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

4.0 PREREQUISITE ACTIONS

NOTE
Preliminary action steps may be performed in any order with Test Director approval.

4.1 Preliminary Actions

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

[2] **OBTAIN** copies of the applicable forms from the latest revision of SMP-9.0 and ATTACH to this PTI for use during the performance of this PTI. _____

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

[4] **VERIFY** current revisions and change paper for referenced drawings have 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 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 they will **NOT** adversely affect the test performance.

A. Subsection 6.1 _____

B. Subsection 6.2 _____

C. Subsection 6.3 _____

D. Subsection 6.4 _____

E. Subsection 6.5 _____

F. Subsection 6.6 _____

G. Subsection 6.7 _____

H. Subsection 6.8 _____

I. Subsection 6.9 _____

J. Subsection 6.10 _____

K. Subsection 6.11 _____

L. Subsection 6.12 _____

M. Subsection 6.13 _____

N. Subsection 6.14 _____

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

4.1 Preliminary Actions (continued)

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

A. Subsection 6.1 _____

B. Subsection 6.2 _____

C. Subsection 6.3 _____

D. Subsection 6.4 _____

E. Subsection 6.5 _____

F. Subsection 6.6 _____

G. Subsection 6.7 _____

H. Subsection 6.8 _____

I. Subsection 6.9 _____

J. Subsection 6.10 _____

K. Subsection 6.11 _____

L. Subsection 6.12 _____

M. Subsection 6.13 _____

N. Subsection 6.14 _____

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

[8] **ENSURE** a review of outstanding Clearances has been coordinated with Operations for impact to the test performance and recorded in Appendix B, Temporary Condition Log, if required. _____

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

4.1 Preliminary Actions (continued)

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

A. Subsection 6.1 _____

B. Subsection 6.2 _____

C. Subsection 6.3 _____

D. Subsection 6.4 _____

E. Subsection 6.5 _____

F. Subsection 6.6 _____

G. Subsection 6.7 _____

H. Subsection 6.8 _____

I. Subsection 6.9 _____

J. Subsection 6.10 _____

K. Subsection 6.11 _____

L. Subsection 6.12 _____

M. Subsection 6.13 _____

N. Subsection 6.14 _____

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

4.1 Preliminary Actions (continued)

[10] **VERIFY** Measuring and Test Equipment (M&TE) required for test performance has been recorded on Measuring and Test Equipment (M&TE) Log (Appendix D).

A. Subsection 6.1 _____

B. Subsection 6.2 _____

C. Subsection 6.3 _____

D. Subsection 6.4 _____

E. Subsection 6.5 _____

F. Subsection 6.6 _____

G. Subsection 6.7 _____

H. Subsection 6.8 _____

I. Subsection 6.9 _____

J. Subsection 6.10 _____

K. Subsection 6.11 _____

L. Subsection 6.12 _____

M. Subsection 6.13 _____

N. Subsection 6.14 _____

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

4.1 Preliminary Actions (continued)

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

A. Subsection 6.1 _____

B. Subsection 6.2 _____

C. Subsection 6.3 _____

D. Subsection 6.4 _____

E. Subsection 6.5 _____

F. Subsection 6.6 _____

G. Subsection 6.7 _____

H. Subsection 6.8 _____

I. Subsection 6.9 _____

J. Subsection 6.10 _____

K. Subsection 6.11 _____

L. Subsection 6.12 _____

M. Subsection 6.13 _____

N. Subsection 6.14 _____

[12] **VERIFY** the cleanliness verifications of the Condenser Circulating Water and Condenser Tube Cleaning Systems have been completed. _____

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

4.1 Preliminary Actions (continued)

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

A. System 201, 6.9kV Unit Power System - Provide power for CCWP motors. (6900V Unit Bds 2A, 2B, 2C, & 2D energized) _____

B. System 225, Condenser Circ Water Pumping Station Power - Provide power to CCWP suction and discharge valves. (0-MCC-225-B energized) _____

C. System 261, Integrated Computer System - Provide readouts of CCW system parameters. _____

D. System 219 - Chlorination building Power System - Provide power to the Cooling Tower De-icing valves. (0-MCC-219-1 energized) _____

E. System 226 - Intake Pumping Station Power System - Provide power to the Holding pond and Diffuser Discharge valves. (0-MCC-226-1 energized) _____

F. System 253 - Microwave and VHF Radio System - Relay the low hydro flow signal from the Watts Bar Dam to the System 027 logic. _____

G. System 239 - 250V DC Power System - Provide control power for pumps and valves. (Power available to 6900V Unit Boards) (0-DPL-239-2 energized) (Power available to 0-MCC-226-1) _____

H. System 55 - Annunciator System - Provide annunciation of CCW System alarms. _____

I. System 209 - Turbine Building MOV Board Power - Provide power to CCW components in Turbine Building _____

[14] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) in accordance with SMP-4.0.

A. System 027 _____

B. System 280 _____

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

4.1 Preliminary Actions (continued)

[15] **ENSURE** the necessary personnel have been notified and are available to support the test _____

[16] **VERIFY** the following alarms on MISC & HFPF, 2-XA-55-15A, on 2-M-15 are CLEAR:

A. Window 163D, COOLING TOWER BASIN LEVEL HI. _____

B. Window 163E, COOLING TOWER BASIN LEVEL LO. _____

C. Window 162B, EAST COND OUTLET WTRBOX LEVEL LO. _____

D. Window 161B, WEST COND OUTLET WTRBOX LEVEL LO. _____

E. Window 164C, CCWP MOTOR OVERLOAD. _____

F. Window 164B, CCW/HPFP/RCW/ MOTOR TRIP OUT. _____

G. Window 162C, EAST COND CCW ΔP HI. _____

H. Window 161C, WEST COND CCW ΔP HI. _____

I. Window 164E, DIFFUSER TEMP HI. _____

[17] **VERIFY** the environmental conditions are available for testing (ambient temperature above freezing). _____

[18] **VERIFY** Boundary Drawings are up to date, or necessary changes have been accomplished prior to the start of testing, and that any change to the Boundary Drawings do not impact the validity of the test. _____

[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 _____**

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

[1] **VERIFY** the following Measuring & Test Equipment (M&TE) are available and within their calibration frequency:

A. Stopwatch, 0-5 min, ± 0.1 sec/hr _____

B. Clamp-on Amp meter, 0-20 amps, ± 3.6% _____

C. Voltmeter, 0-600 VAC, ± 5% _____

D. Thermometer, 0-200 °F, ± 2 °F _____

E. Diff. Pressure Gages, 0-500 in H_2O, ± 1% _____

4.3 Field Preparations

NOTE

Step 4.3[1] should be repeated every day of testing to ensure new conditions do not exist which would impact test performance.

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

[2] **PERFORM** the switch lineup listed in Appendix E. _____

[3] **PERFORM** the electrical breaker lineup listed in Appendix F, including verification that the control fuses are installed. _____

[4] **PERFORM** the valve lineup listed in Appendix G. _____

[5] **PERFORM** Appendix N, to ensure the Cooling Tower Basin, Condenser Tunnels, and Water boxes are filled and vented. _____

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.

_____ _____
US/SRO/SM Signature Date

5.0 ACCEPTANCE CRITERIA

[1] CCWP suction valves can be operated from the CCW pumping station and local control panel.

VALVE NUMBER	VERIFICATION STEPS
2-FCV-27-5	6.2[2]B, 6.2[3]B, 6.2[4], 6.2[5], 6.2[6], 6.2[7]
2-FCV-27-15	6.2[8]B, 6.2[9]B, 6.2[10], 6.2[11], 6.2[12], 6.2[13]
2-FCV-27-25	6.2[14]B, 6.2[15]B, 6.2[16], 6.2[17], 6.2[18], 6.2[19]
2-FCV-27-35	6.2[20]B, 6.2[21]B, 6.2[22], 6.2[23], 6.2[24], 6.2[25]

[2] Correct CCWP suction valve position is indicated at each control station.

VALVE NUMBER	VERIFICATION STEPS
2-FCV-27-5	6.2[2]C, 6.2[2]D, 6.2[3]C, 6.2[3]D
2-FCV-27-15	6.2[8]C, 6.2[8]D, 6.2[9]C, 6.2[9]D
2-FCV-27-25	6.2[14]C, 6.2[14]D, 6.2[15]C, 6.2[15]D
2-FCV-27-35	6.2[20]C, 6.2[20]D, 6.2[21]C, 6.2[21]D

5.0 ACCEPTANCE CRITERIA (continued)

[3] CCWP suction valves can be closed when their respective pump is off, but cannot be closed if the pump is running.

VALVE NUMBER	VERIFICATION STEPS
2-FCV-27-5	6.2[4], 6.3[20], 6.3[21]
2-FCV-27-15	6.2[8]B, 6.4[20], 6.4[21]
2-FCV-27-25	6.2[14]B, 6.5[20], 6.5[21]
2-FCV-27-35	6.2[20]B, 6.6[20], 6.6[21]

[4] CCWP discharge valves can be operated from the CCW pumping station, local control panel and the Main Control Room (MCR).

VALVE NUMBER	VERIFICATION STEPS
2-FCV-27-11	6.3[12]A, 6.3[15], 6.3[23]A, 6.3[28]A, 6.3[29]A, 6.3[31]A, 6.3[33]A, 6.3[34]A, 6.3[36]A
2-FCV-27-21	6.4[12]A, 6.4[15], 6.4[23]A, 6.4[28]A, 6.4[29]A, 6.4[31]A, 6.4[33]A, 6.4[34]A, 6.4[36]A
2-FCV-27-31	6.5[12]A, 6.5[15], 6.5[23]A, 6.5[28]A, 6.5[29]A, 6.5[31]A, 6.5[33]A, 6.5[34]A, 6.5[36]A
2-FCV-27-41	6.6[12]A, 6.6[15], 6.6[23]A, 6.6[28]A, 6.6[29]A, 6.6[31]A, 6.6[33]A, 6.6[34]A, 6.6[36]A

5.0 ACCEPTANCE CRITERIA (continued)

[5] Correct CCWP discharge valve position is indicated at each control station.

VALVE NUMBER	VERIFICATION STEPS
2-FCV-27-11	6.3[19]H, 6.3[19]I, 6.3[19]J, 6.3[23]H, 6.3[23]I, 6.3[23]J
2-FCV-27-21	6.4[19]H, 6.4[19]I, 6.4[19]J, 6.4[23]H, 6.4[23]I, 6.4[23]J
2-FCV-27-31	6.5[19]H, 6.5[19]I, 6.5[19]J, 6.5[23]H, 6.5[23]I, 6.5[23]J
2-FCV-27-41	6.6[19]H, 6.6[19]I, 6.6[19]J, 6.6[23]H, 6.6[23]I, 6.6[23]J

[6] CCWP discharge valves close automatically when their respective pump trips (after 7 second time delay).

VALVE NUMBER	VERIFICATION STEPS
2-FCV-27-11	6.3[40]C
2-FCV-27-21	6.4[40]C
2-FCV-27-31	6.5[40]C
2-FCV-27-41	6.6[40]C

5.0 ACCEPTANCE CRITERIA (continued)

[7] The CCW Inlet and Outlet Valves can be operated from the Main Control Room (MCR).

VALVE NUMBER	VERIFICATION STEPS
2-FCV-27-55	6.1[9]B, 6.1[14]B
2-FCV-27-65	6.1[31]B, 6.1[36]B
2-FCV-27-77	6.1[20]B, 6.1[23]B
2-FCV-27-87	6.1[42]B, 6.1[45]B

[8] The CCW Inlet and Outlet Valves can be operated from the local control panel.

VALVE NUMBER	VERIFICATION STEPS
2-FCV-27-55	6.1[2], 6.1[3], 6.1[10], 6.1[11]
2-FCV-27-65	6.1[24], 6.1[25], 6.1[32], 6.1[33]
2-FCV-27-77	6.1[12], 6.1[13], 6.1[21], 6.1[22]
2-FCV-27-87	6.1[34], 6.1[35], 6.1[43], 6.1[44], 6.1[48]

5.0 ACCEPTANCE CRITERIA (continued)

[9] Correct CCW Inlet/Outlet valve position is indicated at each control station.

VALVE NUMBER	VERIFICATION STEPS
2-FCV-27-55	6.1[9]C, 6.1[9]D, 6.1[14]C, 6.2[14]D
2-FCV-27-65	6.1[31]C, 6.1[31]D, 6.1[36]C, 6.1[36]D
2-FCV-27-77	6.1[20]C, 6.1[20]D, 6.1[23]C, 6.1[23]D
2-FCV-27-87	6.1[42]C, 6.1[42]D, 6.1[45]C, 6.1[45]D

[10] Any CCW Inlet/Outlet valve can be closed when all four CCW Inlet/Outlet valves are open.

VALVE NUMBER	VERIFICATION STEPS
2-FCV-27-55	6.1[2]
2-FCV-27-65	6.1[24]
2-FCV-27-77	6.1[46]A
2-FCV-27-87	6.1[46]B

[11] Any CCW Inlet/Outlet valve can be closed when its corresponding Inlet/Outlet valve on the same flow path is not fully open.

VALVE NUMBER	VERIFICATION STEPS
2-FCV-27-55	6.1[49]
2-FCV-27-65	6.1[52]
2-FCV-27-77	6.1[12]
2-FCV-27-87	6.1[34]

5.0 ACCEPTANCE CRITERIA (continued)

[12] Condenser Inlet/Outlet valves on one flow path cannot be closed if both valves on the other flow path are not fully open, while the corresponding inlet/outlet valve is fully opened.

VALVE NUMBER	VERIFICATION STEPS
2-FCV-27-55	6.1[26], 6.1[27], 6.1[37], 6.1[38]
2-FCV-27-65	6.1[4], 6.1[5], 6.1[15], 6.1[16]
2-FCV-27-77	6.1[28],6.1[29],6.1[39], 6.1[40]
2-FCV-27-87	6.1[6], 6.1[7], 6.1[17], 6.1[18]

[13] The Tower Bypass Valve, 2-FCV-27-92, can be operated from the remote and local control panels. (Steps 6.8[2]B, 6.8[3]B, 6.8[4], 6.8[5], 6.8[6], 6.8[7], 6.8[8], 6.8[9], 6.8[10])

[14] Correct Tower Bypass Valve, 2-FCV-27-92, position is indicated at each control station. (Steps 6.8[2]C, 6.8[2]D, 6.8[3]C, 6.8[3]D)

[15] With the Tower Bypass Valve, 2-FCV-27-92, open and two CCWP's running, no CCW flow through the cooling tower distribution is present. (Steps 6.11[12])

[16] The Tower De-icing valves can be operated from the remote and local control panels.

VALVE NUMBER	VERIFICATION STEPS
2-FCV-27-140	6.8[11]A, 6.8[12]A, 6.8[13], 6.8[14], 6.8[15], 6.8[16]
2-FCV-27-141	6.8[33]A, 6.8[34]A, 6.8[35], 6.8[36], 6.8[37], 6.8[38]

5.0 ACCEPTANCE CRITERIA (continued)

[17] Correct Tower De-icing Valve position is indicated at the MCR.

VALVE NUMBER	VERIFICATION STEPS
2-FCV-27-140	6.8[11]B, 6.8[12]B
2-FCV-27-141	6.8[33]B, 6.8[34]B

[18] With the Tower De-icing valves closed and four (4) CCWP's running, the center of the cooling tower does not receive flow.

VALVE NUMBER	VERIFICATION STEPS
2-FCV-27-140	6.10[8]
2-FCV-27-141	6.10[8]

[19] Each CCWP starts from its respective discharge valve opening.

VALVE NUMBER	VERIFICATION STEPS
CCWP 2A	6.3[19]C
CCWP 2B	6.4[19]C
CCWP 2C	6.5[19]C
CCWP 2D	6.6[19]C

[20] Each CCWP stops by its respective discharge valve closure to the 50% position.

VALVE NUMBER	VERIFICATION STEPS
CCWP 2A	6.3[23]C
CCWP 2B	6.4[23]C
CCWP 2C	6.5[23]C
CCWP 2D	6.6[23]C

5.0 ACCEPTANCE CRITERIA (continued)

[21] Each CCWP will not start unless its respective suction valve is fully open.

VALVE NUMBER	VERIFICATION STEPS
CCWP 2A	6.3[26]B
CCWP 2B	6.4[26]B
CCWP 2C	6.5[26]B
CCWP 2D	6.6[26]B

[22] Correct CCWP status is indicated on the MCR Board and the CCW pumping station.

VALVE NUMBER	VERIFICATION STEPS
CCWP 2A	6.3[19]D, 6.3[19]E, 6.3[23]D, 6.3[23]E
CCWP 2B	6.4[19]D, 6.4[19]E, 6.4[23]D, 6.4[23]E
CCWP 2C	6.5[19]D, 6.5[19]E, 6.5[23]D, 6.5[23]E
CCWP 2D	6.6[19]D, 6.6[19]E, 6.6[23]D, 6.6[23]E

5.0 ACCEPTANCE CRITERIA (continued)

[23] CCWP's require at least one condenser inlet & outlet valve on the same flow path to be fully open prior to starting.

VALVE NUMBER	VERIFICATION STEPS
CCWP 2A	6.7[5], 6.7[11], 6.7[17], 6.7[23]
CCWP 2B	6.7[6], 6.7[12], 6.7[18], 6.7[24]
CCWP 2C	6.7[7], 6.7[13], 6.7[19], 6.7[25]
CCWP 2D	6.7[8], 6.7[14], 6.7[20], 6.7[26]

[24] CCWP's require other CCWP's to be running, or their respective discharge valves to be closed, prior to starting.

VALVE NUMBER	VERIFICATION STEPS
CCWP 2A	6.7[31], 6.7[33]A, 6.7[38], 6.7[40]A, 6.7[45], 6.7[47]A
CCWP 2B	6.7[52], 6.7[54]A, 6.7[59], 6.7[61]A, 6.7[66], 6.7[68]A
CCWP 2C	6.7[73], 6.7[75]A, 6.7[80], 6.7[82]A, 6.7[87], 6.7[89]A
CCWP 2D	6.7[94], 6.7[96]A, 6.7[101], 6.7[103]A, 6.7[108], 6.7[110]A

5.0 ACCEPTANCE CRITERIA (continued)

[25] The following abnormal CCWP conditions are annunciated on 2-M-15:

ABNORMAL CONDITION	VERIFICATION STEPS
CCWP MOTOR OVERLOAD	6.3[39]B, 6.4[39]B, 6.5[39]B, 6.6[39]B
CCW MOTOR TRIPOUT	6.3[40]B, 6.4[40]B, 6.5[40]B, 6.6[40]B

[26] The following abnormal CCW system conditions are annunciated on 2-M-15:

COMPONENT	ABNORMAL CONDITION	VERIFICATION STEPS
2-LS-27-93B	COOLING TOWER BASIN LEVEL HI	6.13[5]
2-LS-27-93D	COOLING TOWER BASIN LEVEL LO	6.12[4]
2-LS-27-71	EAST COND OUTLET WTRBOX LEVEL LO	6.13[18]
2-LS-27-81	WEST COND OUTLET WTRBOX LEVEL LO	6.13[21]
2-PDIS-27-70	EAST COND CCW ΔP HI	6.13[9]
2-PDIS-27-80	WEST COND CCW ΔP HI	6.13[13]
0-TT-27-99	DIFFUSER TEMP HI	6.14[11]

[27] The CCW System with four running pumps provides a flow of >410,000 GPM to the Main Steam Turbine Condensers. (Steps 6.9[19])

5.0 ACCEPTANCE CRITERIA (continued)

[28] Upon receipt of the opening signal, the CCWP discharge valves stop opening after a 3 ± .3 second delay, if their respective CCWP breakers do not close.

VALVE NUMBER	VERIFICATION STEPS
2-FCV-27-11	
2-FCV-27-21	
2-FCV-27-31	
2-FCV-27-41	

[29] Upon receipt of the opening signal, the CCWP discharge valves begin closing after at least a 7 ± .7 second delay, if their respective CCWP breakers do not close.

VALVE NUMBER	VERIFICATION STEPS
2-FCV-27-11	6.3[14]
2-FCV-27-21	6.4[14]
2-FCV-27-31	6.5[14]
2-FCV-27-41	6.6[14]

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6.0 PERFORMANCE

NOTES

1) This test shall be performed sequentially, unless otherwise noted.
2) All personnel initialing or signing within this PTI should fill out the Signature Log (Appendix O) following their first initialing or signing.

6.1 Condenser Circulating Water Inlet and Outlet Valves

[1] **VERIFY** the prerequisites, Section 4.0, for Subsection 6.1, are complete. _____

NOTE

Steps [2] and [3] should be performed in rapid succession so that valve does not completely close before pressing the STOP button

[2] **PRESS** the CLOSE 2-HS-27-55B pushbutton on the local control panel (JB-217), **AND**

VERIFY the East Side Cond CCW Inlet Valve 2-FCV-27-55 STARTS TO CLOSE. (**Acc Crit**) _____

[3] **PRESS** the STOP 2-HS-27-55B pushbutton on the local control panel when dual indication is noted for valve 2-FCV-27-55, **AND**

VERIFY the East Side Cond CCW Inlet Valve 2-FCV-27-55 STOPS. (**Acc Crit**) _____

[4] **PRESS** the CLOSE 2-HS-27-65B pushbutton on the local control panel (JB-217), **AND**

VERIFY the West Side Cond CCW Inlet Valve 2-FCV-27-65 does not CLOSE. (**Acc Crit**) _____

[5] **PLACE** Hand Switch 2-HS-27-65A on 2-M-15 in the CLOSE position, **AND**

VERIFY the West Side Condenser CCW Inlet Valve 2-FCV-27-65 does not CLOSE. (**Acc Crit**) _____

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6.1 Condenser Circulating Water Inlet and Outlet Valves (continued)

[6] **PRESS** the CLOSE 2-HS-27-87B pushbutton on the local control panel (JB-88), **AND**

VERIFY the West Side Condenser CCW Outlet Valve 2-FCV-27-87 does not CLOSE. (**Acc Crit**) _____

[7] **PLACE** Hand Switch 2-HS-27-87A on 2-M-15 in the CLOSE position, **AND**

VERIFY the West Side Condenser CCW Outlet Valve 2-FCV-27-87 does not CLOSE. (**Acc Crit**) _____

[8] **PRESS** the OPEN 2-HS-27-55B pushbutton on the local control panel, **AND**

VERIFY the East Side Cond CCW Inlet Valve 2-FCV-27-55 OPENS. _____

[9] **PLACE** Hand Switch 2-HS-27-55A on the 2-M-15 in the CLOSE position, **AND**

VERIFY:

A. 480V Turbine MOV Bd 2A, Compt 7A, red light ON, while the valve CLOSES. _____

B. East Side Cond CCW Inlet Valve 2-FCV-27-55 CLOSES. (**Acc Crit**) _____

C. Valve 2-FCV-27-55 Closed status (green indicating light ON, red indicating light OFF) is indicated on 2-M-15. (**Acc Crit**) _____

D. Valve 2-FCV-27-55 Closed status (green indicating light ON, red indicating light OFF) is indicated on local control panel. (**Acc Crit**) _____

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6.1 Condenser Circulating Water Inlet and Outlet Valves (continued)

NOTE

Steps [10] and [11] should be performed in rapid succession so that valve does not completely close before pressing the STOP button

[10] **PRESS** the OPEN 2-HS-27-55B pushbutton on the local control panel, **AND**

VERIFY the East Side Cond CCW Inlet Valve 2-FCV-27-55 STARTS TO OPEN. (**Acc Crit**) _____

[11] **PRESS** the STOP 2-HS-27-55B pushbutton on the local control panel when dual indication is noted for valve 2-FCV-27-55, **AND**

VERIFY the East Side Cond CCW Inlet Valve 2-FCV-27-55 STOPS. (**Acc Crit**) _____

NOTE

Steps [12] and [13] should be performed in rapid succession so that valve does not completely close before pressing the STOP button

[12] **PRESS** the CLOSE 2-HS-27-77B pushbutton on the local control panel (JB-88), **AND**

VERIFY the East Side Cond CCW Outlet Valve 2-FCV-27-77 STARTS TO CLOSE. (**Acc Crit**) _____

[13] **PRESS** the STOP 2-HS-27-77B pushbutton on the local control panel when dual indication is noted for valve 2-FCV-27-77, **AND**

VERIFY the East Side Cond CCW Outlet Valve 2-FCV-27-77 STOPS. (**Acc Crit**) _____

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6.1 Condenser Circulating Water Inlet and Outlet Valves (continued)

[14] **PLACE** Hand Switch 2-HS-27-55A on 2-M-15 in the OPEN position, **AND**

VERIFY:

A. 480V Turbine MOV Bd 2A, Compt 7A, red light ON, while the valve OPENS. _____

B. East Side Cond CCW Inlet Valve 2-FCV-27-55 OPENS. (**Acc Crit**) _____

C. Valve 2-FCV-27-55 OPEN status (red indicating light ON, green indicating light OFF) is indicated on 2-M-15. (**Acc Crit**) _____

D. Valve 2-FCV-27-55 OPEN status (red indicating light ON, green indicating light OFF) is indicated on local control panel. (**Acc Crit**) _____

[15] **PRESS** the CLOSE 2-HS-27-65B pushbutton on the local control panel, **AND**

VERIFY the West Side Condenser CCW Inlet Valve 2-FCV-27-65 does not CLOSE. (**Acc Crit**) _____

[16] **PLACE** Hand Switch 2-HS-27-65A on 2-M-15 in the CLOSE position, **AND**

VERIFY the West Side Condenser CCW Inlet Valve 2-FCV-27-65 does not CLOSE. (**Acc Crit**) _____

[17] **PRESS** the CLOSE 2-HS-27-87B pushbutton on the local control panel, **AND**

VERIFY the West Side Condenser CCW Outlet Valve 2-FCV-27-87 does not CLOSE. (**Acc Crit**) _____

[18] **PLACE** Hand Switch 2-HS-27-87A on 2-M-15 in the CLOSE position, **AND**

VERIFY the West Side Condenser CCW Outlet Valve 2-FCV-27-87 does not CLOSE. (**Acc Crit**) _____

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6.1 Condenser Circulating Water Inlet and Outlet Valves (continued)

[19] **PRESS** the OPEN 2-HS-27-77B pushbutton on the local control panel, **AND**

VERIFY the East Side Cond CCW Outlet Valve 2-FCV-27-77 OPENS. _____

[20] **PLACE** Hand Switch 2-HS-27-77A on 2-M-15 in the CLOSE position, **AND**

VERIFY:

A. 480V Turbine MOV Bd 2B, Compt 12A, red light ON, while the valve CLOSES. _____

B. East Side Cond CCW Outlet Valve 2-FCV-27-77 CLOSES. (**Acc Crit**) _____

C. Valve 2-FCV-27-77 CLOSED status (green indicating light ON, red indicating light OFF) is indicated on 2-M-15. (**Acc Crit**) _____

D. Valve 2-FCV-27-77 CLOSED status (green indicating light ON, red indicating light OFF) is indicated on local control panel. (**Acc Crit**) _____

[21] **PRESS** the OPEN 2-HS-27-77B pushbutton on the local control panel, **AND**

VERIFY the East Side Cond CCW Outlet Valve 2-FCV-27-77 STARTS TO OPEN. (**Acc Crit**) _____

[22] **PRESS** the STOP 2-HS-27-77B pushbutton on the local control panel, **AND**

VERIFY the East Side Cond CCW Outlet Valve 2-FCV-27-77 STOPS. (**Acc Crit**) _____

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6.1 Condenser Circulating Water Inlet and Outlet Valves (continued)

[23] **PLACE** Hand Switch 2-HS-27-77A on 2-M-15 in the OPEN position, **AND**

VERIFY:

A. 480V Turbine MOV Bd 2B, Compt 12A, red light ON, while the valve OPENS. _____

B. East Side Cond CCW Outlet Valve 2-FCV-27-77 OPENS. (**Acc Crit**) _____

C. Valve 2-FCV-27-77 OPEN status (red indicating light ON, green indicating light OFF) is indicated on 2-M-15. (**Acc Crit**) _____

D. Valve 2-FCV-27-77 OPEN status (red indicating light ON, green indicating light OFF) is indicated on local control panel. (**Acc Crit**) _____

NOTE

Steps [24] and [25] should be performed in rapid succession so that valve does not completely open before pressing the STOP button

[24] **PRESS** the CLOSE 2-HS-27-65B pushbutton on the local control panel, **AND**

VERIFY the West Side Cond CCW Inlet Valve 2-FCV-27-65 STARTS TO CLOSE. (**Acc Crit**) _____

[25] **PRESS** the STOP 2-HS-27-65B pushbutton on the local control panel when dual indication is noted for valve 2-FCV-27-65, **AND**

VERIFY the West Side Cond CCW Inlet Valve 2-FCV-27-65 STOPS. (**Acc Crit**) _____

[26] **PRESS** the CLOSE 2-HS-27-55B pushbutton on the local control panel, **AND**

VERIFY the East Side Cond CCW Inlet Valve 2-FCV-27-55 does not CLOSE. (**Acc Crit**) _____

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6.1 Condenser Circulating Water Inlet and Outlet Valves (continued)

[27] **PLACE** Hand Switch 2-HS-27-55A on 2-M-15 in the CLOSE position, **AND**

VERIFY the East Side Condenser CCW Inlet Valve 2-FCV-27-55 does not CLOSE. (**Acc Crit**) _____

[28] **PRESS** the CLOSE 2-HS-27-77B pushbutton on the local control panel, **AND**

VERIFY the East Side Condenser CCW Outlet Valve 2-FCV-27-77 does not CLOSE. (**Acc Crit**) _____

[29] **PLACE** Hand Switch 2-HS-27-77A on 2-M-15 in the CLOSE position, **AND**

VERIFY the East Side Condenser CCW Outlet Valve 2-FCV-27-77 does not CLOSE. (**Acc Crit**) _____

[30] **PRESS** the OPEN 2-HS-27-65B pushbutton on the local control panel, **AND**

VERIFY the West Side Cond CCW Inlet Valve 2-FCV-27-65 OPENS. _____

[31] **PLACE** Hand Switch 2-HS-27-65A on 2-M-15 in the CLOSE position, **AND**

VERIFY:

A. 480V Turbine MOV Bd 2A, Compt 7B, red light ON, while the valve CLOSES. _____

B. West Side Cond CCW Inlet Valve 2-FCV-27-65 CLOSES. (**Acc Crit**) _____

C. Valve 2-FCV-27-65 CLOSED status (green indicating light ON, red indicating light OFF) is indicated on 2-M-15. (**Acc Crit**) _____

D. Valve 2-FCV-27-65 CLOSED status (green indicating light ON, red indicating light OFF) is indicated on local control panel. (**Acc Crit**) _____

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6.1 Condenser Circulating Water Inlet and Outlet Valves (continued)

NOTE
Steps [32] and [33] should be performed in rapid succession so that valve does not completely open before pressing the STOP button

[32] **PRESS** the OPEN 2-HS-27-65B pushbutton on the local control panel, **AND**

VERIFY the West Side Cond CCW Inlet Valve 2-FCV-27-65 STARTS TO OPEN. (**Acc Crit**) _____

[33] **PRESS** the STOP 2-HS-27-65B pushbutton on the local control panel when dual indication is noted for valve 2-FCV-27-65, **AND**

VERIFY the West Side Cond CCW Inlet Valve 2-FCV-27-65 STOPS. (**Acc Crit**) _____

[34] **PRESS** the CLOSE 2-HS-27-87B pushbutton on the local control panel, **AND**

VERIFY the West Side Cond CCW Outlet Valve 2-FCV-27-87 STARTS TO CLOSE. (**Acc Crit**) _____

[35] **PRESS** the STOP 2-HS-27-87B pushbutton on the local control panel when dual indication is noted for valve 2-FCV-27-87, **AND**

VERIFY the West Side Cond CCW Outlet Valve 2-FCV-27-87 STOPS. (**Acc Crit**) _____

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6.1 Condenser Circulating Water Inlet and Outlet Valves (continued)

[36] **PLACE** Hand Switch 2-HS-27-65A on 2-M-15 in the OPEN position, **AND**

VERIFY:

A. 480V Turbine MOV Bd 2A, Compt 7B, red light ON, while the valve OPENS. _____

B. West Side Cond CCW Inlet Valve 2-FCV-27-65 OPENS. (**Acc Crit**) _____

C. Valve 2-FCV-27-65 OPEN status (red indicating light ON, green indicating light OFF) is indicated on 2-M-15. (**Acc Crit**) _____

D. Valve 2-FCV-27-65 OPEN status (red indicating light ON, green indicating light OFF) is indicated on local control panel. (**Acc Crit**) _____

[37] **PRESS** the CLOSE 2-HS-27-55B pushbutton on the local control panel, **AND**

VERIFY the East Side Condenser CCW Inlet Valve 2-FCV-27-55 does not CLOSE. (**Acc Crit**) _____

[38] **PLACE** Hand Switch 2-HS-27-55A on 2-M-15 in the CLOSE position, **AND**

VERIFY the East Side Condenser CCW Inlet Valve 2-FCV-27-55 does not CLOSE. (**Acc Crit**) _____

[39] **PRESS** the CLOSE 2-HS-27-77B pushbutton on the local control panel, **AND**

VERIFY the East Side Condenser CCW Outlet Valve 2-FCV-27-77 does not CLOSE. (**Acc Crit**) _____

[40] **PLACE** Hand Switch 2-HS-27-77A on 2-M-15 in the CLOSE position, **AND**

VERIFY the East Side Condenser CCW Outlet Valve 2-FCV-27-77 does not CLOSE. (**Acc Crit**) _____

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

6.1 Condenser Circulating Water Inlet and Outlet Valves (continued)

[41] **PRESS** the OPEN 2-HS-27-87B pushbutton on the local control panel, **AND**

VERIFY the West Side Cond CCW Outlet Valve 2-FCV-27-87 OPENS. _____

[42] **PLACE** Hand Switch 2-HS-27-87A on 2-M-15 in the CLOSE position, **AND**

VERIFY:

A. 480V Turbine MOV Bd 2B, Compt 12B, red light ON, while the valve CLOSES. _____

B. West Side Cond CCW Outlet Valve 2-FCV-27-87 CLOSES. (**Acc Crit**) _____

C. Valve 2-FCV-27-87 CLOSED status (green indicating light ON, red indicating light OFF) is indicated on 2-M-15. (**Acc Crit**) _____

D. Valve 2-FCV-27-87 CLOSED status (green indicating light ON, red indicating light OFF) is indicated on local control panel. (**Acc Crit**) _____

NOTE

Steps [43] and [44] should be performed in rapid succession so that valve does not completely open before pressing the STOP button

[43] **PRESS** the OPEN 2-HS-27-87B pushbutton on the local control panel, **AND**

VERIFY the West Side Cond CCW Outlet Valve 2-FCV-27-87 STARTS TO OPEN. (**Acc Crit**) _____

[44] **PRESS** the STOP 2-HS-27-87B pushbutton on the local control panel when dual indication is noted for valve 2-FCV-27-87, **AND**

VERIFY the West Side Cond CCW Outlet Valve 2-FCV-27-87 STOPS. (**Acc Crit**) _____

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6.1 Condenser Circulating Water Inlet and Outlet Valves (continued)

[45] **PLACE** Hand Switch 2-HS-27-87A on 2-M-15 in the OPEN position, **AND**

VERIFY:

A. 480V Turbine MOV Bd 2B, Compt 12B, red light ON, while the valve OPENS. _____

B. West Side Cond CCW Outlet Valve 2-FCV-27-87 OPENS. (**Acc Crit**) _____

C. Valve 2-FCV-27-87 OPEN status (red indicating light ON, green indicating light OFF) is indicated on 2-M-15. (**Acc Crit**) _____

D. Valve 2-FCV-27-87 OPEN status (red indicating light ON, green indicating light OFF) is indicated on local control panel. (**Acc Crit**) _____

NOTE

Steps [46], [47], and [48] should be performed in rapid succession so that valves do not completely close before pressing the STOP button

[46] **PRESS**, simultaneously, the CLOSE 2-HS-27-77B and 2-HS-27-87B pushbuttons on the local control panel, **AND**

VERIFY:

A. East Side Cond CCW Outlet Valve 2-FCV-27-77 STARTS TO CLOSE. (**Acc Crit**) _____

B. West Side Cond CCW Outlet Valve 2-FCV-27-87 STARTS TO CLOSE. (**Acc Crit**) _____

[47] **PRESS** the STOP 2-HS-27-77B pushbutton on the local control pane when dual indication is noted for valve 2-FCV-27-77, **AND**

VERIFY the East Side Cond CCW Outlet Valve 2-FCV-27-77 STOPS. _____

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6.1 Condenser Circulating Water Inlet and Outlet Valves (continued)

[48] **PRESS** the STOP 2-HS-27-87B pushbutton on the local control panel when dual indication is noted for valve 2-FCV-27-87, **AND**

VERIFY the West Side Cond CCW Outlet Valve 2-FCV-27-87 STOPS. (**Acc Crit**) _____

[49] **PRESS** the CLOSE 2-HS-27-55B pushbutton on the local control panel, **AND**

VERIFY the East Side Cond CCW Inlet Valve 2-FCV-27-55 STARTS TO CLOSE. (**Acc Crit**) _____

[50] **PRESS** the STOP 2-HS-27-55B pushbutton on the local control panel, **AND**

VERIFY the East Side Cond CCW Inlet Valve 2-FCV-27-55 STOPS. _____

[51] **PRESS** the OPEN 2-HS-27-55B pushbutton on the local control panel, **AND**

VERIFY the East Side Cond CCW Inlet Valve 2-FCV-27-55 OPENS. _____

[52] **PRESS** the CLOSE 2-HS-27-65B pushbutton on the local control panel, **AND**

VERIFY the West Side Cond CCW Inlet Valve 2-FCV-27-65 STARTS TO CLOSE. (**Acc Crit**) _____

[53] **PRESS** the STOP 2-HS-27-65B pushbutton on the local control panel, **AND**

VERIFY the West Side Cond CCW Inlet Valve 2-FCV-27-65 STOPS. _____

[54] **PRESS** the OPEN 2-HS-27-65B pushbutton on the local control panel, **AND**

VERIFY the West Side Cond CCW Inlet Valve 2-FCV-27-65 OPENS. _____

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6.1 Condenser Circulating Water Inlet and Outlet Valves (continued)

[55] **PRESS** the OPEN 2-HS-27-77B pushbutton on the local control panel, **AND**

VERIFY the East Side Cond CCW Outlet Valve 2-FCV-27-77 OPENS. _____

[56] **PRESS** the OPEN 2-HS-27-87B pushbutton on the local control panel, **AND**

VERIFY the West Side Cond CCW Outlet Valve 2-FCV-27-87 OPENS. _____

[57] **PRESS**, simultaneously, the CLOSE 2-HS-27-55B and 2-HS-27-65B pushbuttons on the local control panel, **AND**

VERIFY both the East Side Cond CCW Inlet Valve 2-FCV-27-55 and the West Side Cond CCW Inlet Valve 2-FCV-27-65 START TO CLOSE. _____

[58] **PRESS** the STOP 2-HS-27-55B pushbutton on the local control panel, **AND**

VERIFY the East Side Cond CCW Inlet Valve 2-FCV-27-55 STOPS. _____

[59] **PRESS** the STOP 2-HS-27-65B pushbutton on the local control panel, **AND**

VERIFY the West Side Cond CCW Inlet Valve 2-FCV-27-65 STOPS. _____

[60] **PRESS** the OPEN 2-HS-27-55B pushbutton on the local control panel, **AND**

VERIFY the East Side Cond CCW Inlet Valve 2-FCV-27-55 OPENS. _____

[61] **PRESS** the OPEN 2-HS-27-65B pushbutton on the local control panel, **AND**

VERIFY the West Side Cond CCW Inlet Valve 2-FCV-27-65 OPENS. _____

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6.2 CCW Pump Suction Valve Operation

NOTES

1) 0-298-JB 2437 is the Condenser Cooling Water Unit 1 and Unit 2 Pump & Valve Central Control Stations located on the West wall of the entranceway, at El. 721', in the CCW pump house.
2) JB 2954 and JB2952 are located on the East wall of the CCW Pump Room, at El. 721', in the CCW pump house.
3) 0-MCC-255-B is the 480V Motor Control Center located on the East wall, at El. 721', in the CCW pump house.

[1] **VERIFY** the prerequisites, Section 4.0, for Subsection 6.2, are complete. _____

[2] **PRESS** the CLOSE 2-HS-27-5B pushbutton on local panel, JB-2954, **AND**

VERIFY the following:

A. Red light ON at 0-MCC-225-B, Compt 2E while valve CLOSES. _____

B. Visually that the suction valve 2-FCV-27-5 CLOSES. (**Acc Crit**) _____

C. Green indicating light ON and the red indicating OFF for FCV-27-5 on the local panel, JB-2954. (**Acc Crit**) _____

D. Green indicating light ON and the red indicating OFF for FCV-27-5 on JB 2437. (**Acc Crit**) _____

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6.2 CCW Pump Suction Valve Operation (continued)

[3] **PRESS** the OPEN 2-HS-27-5B pushbutton on local panel, JB-2954, **AND**

VERIFY the following:

A. Red light ON at 0-MCC-225-B, Compt 2E while valve OPENS. _____

B. Visually that the suction valve 2-FCV-27-5 OPENS. (**Acc Crit**) _____

C. Red indicating light ON and the green indicating OFF for FCV-27-5 on the local panel, JB-2954. (**Acc Crit**) _____

D. Red indicating light ON and the green indicating OFF for FCV-27-5 on JB 2437. (**Acc Crit**) _____

[4] **PLACE** 2-HS-27-5A on JB-2437 in the CLOSE position, **AND**

VERIFY valve 2-FCV-27-5 STARTS TO CLOSE. (**Acc Crit**) _____

[5] **OBSERVE** travel for 10 seconds, **THEN**

PRESS 2-HS-27-5B STOP pushbutton on local panel, JB 2954, **AND**

VERIFY valve STOPS. (**Acc Crit**) _____

CAUTION

The actions in step [6] should be performed in rapid succession, so that the valve does not reach the end of travel prior to pressing the manual stop button.

[6] **PLACE** 2-HS-27-5A on JB-2437 in the OPEN position, **AND**

VERIFY valve 2-FCV-27-5 STARTS TO OPEN, **THEN**

IMMEDIATELY PRESS 2-HS-27-5B STOP pushbutton on local panel, JB 2954. (**Acc Crit**) _____

[7] **VERIFY** valve STOPS. (**Acc Crit**) _____

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6.2 CCW Pump Suction Valve Operation (continued)

[8] **PRESS** the CLOSE 2-HS-27-15B pushbutton on local panel, JB-2954, **AND**

VERIFY the following:

A. Red light ON at 0-MCC-225-B, Compt 4A while valve CLOSES. _____

B. Visually that the suction valve 2-FCV-27-15 CLOSES. (**Acc Crit**) _____

C. Green indicating light ON and the red indicating OFF for FCV-27-15 on the local panel, JB-2954. (**Acc Crit**) _____

D. Green indicating light ON and the red indicating OFF for FCV-27-15 on JB 2437. (**Acc Crit**) _____

[9] **PRESS** the OPEN 2-HS-27-15B pushbutton on local panel, JB-2954, **AND**

VERIFY the following:

A. Red light ON at 0-MCC-225-B, Compt 4A while valve OPENS. _____

B. Visually that the suction valve 2-FCV-27-15 OPENS. (**Acc Crit**) _____

C. Red indicating light ON and the green indicating OFF for FCV-27-15 on the local panel, JB-2954. (**Acc Crit**) _____

D. Red indicating light ON and the green indicating OFF for FCV-27-15 on JB 2437. (**Acc Crit**) _____

[10] **PLACE** 2-HS-27-15A on JB-2437 in the CLOSE position, **AND**

VERIFY valve 2-FCV-27-15 STARTS TO CLOSE. (**Acc Crit**) _____

[11] **OBSERVE** travel for 10 seconds, **THEN**

PRESS 2-HS-27-15B STOP pushbutton on local panel, JB 2954, **AND**

VERIFY valve STOPS. (**Acc Crit**) _____

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6.2 CCW Pump Suction Valve Operation (continued)

CAUTION

The actions in step [12] should be performed in rapid succession, so that the valve does not reach the end of travel prior to pressing the manual stop button.

[12] **PLACE** 2-HS-27-15A on JB-2437 in the OPEN position, **AND**

VERIFY valve 2-FCV-27-15 STARTS TO OPEN, **THEN**

IMMEDIATELY PRESS 2-HS-27-15B STOP pushbutton on local panel, JB 2954. (**Acc Crit**) _____

[13] **VERIFY** valve STOPS. (**Acc Crit**) _____

[14] **PRESS** the CLOSE 2-HS-27-25B pushbutton on local panel, JB-2952, **AND**

VERIFY the following:

A. Red light ON at 0-MCC-225-B, Compt 4B while valve CLOSES. _____

B. Visually that the suction valve 2-FCV-27-25 CLOSES. (**Acc Crit**) _____

C. Green indicating light ON and the red indicating OFF for FCV-27-25 on the local panel, JB-2952. (**Acc Crit**) _____

D. Green indicating light ON and the red indicating OFF for FCV-27-25 on JB 2437. (**Acc Crit**) _____

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6.2 CCW Pump Suction Valve Operation (continued)

[15] **PRESS** the OPEN 2-HS-27-25B pushbutton on local panel, JB-2952, **AND**

VERIFY the following:

A. Red light ON at 0-MCC-225-B, Compt 4B while valve OPENS. _____

B. Visually that the suction valve 2-FCV-27-25 OPENS. (**Acc Crit**) _____

C. Red indicating light ON and the green indicating OFF for FCV-27-25 on the local panel, JB-2952. (**Acc Crit**) _____

D. Red indicating light ON and the green indicating OFF for FCV-27-25 on JB 2437. (**Acc Crit**) _____

[16] **PLACE** 2-HS-27-25A on JB-2437 in the CLOSE position, **AND**

VERIFY valve 2-FCV-27-25 STARTS TO CLOSE. (**Acc Crit**) _____

[17] **OBSERVE** travel for 10 seconds, **THEN**

PRESS 2-HS-27-25B STOP pushbutton on local panel, JB 2952, **AND**

VERIFY valve STOPS. (**Acc Crit**) _____

CAUTION

The actions in step [18] should be performed in rapid succession, so that the valve does not reach the end of travel prior to pressing the manual stop button.

[18] **PLACE** 2-HS-27-25A on JB-2437 in the OPEN position, **AND**

VERIFY valve 2-FCV-27-25 STARTS TO OPEN, **THEN**

IMMEDIATELY PRESS 2-HS-27-25B STOP pushbutton on local panel, JB 2952. (**Acc Crit**) _____

[19] **VERIFY** valve STOPS. (**Acc Crit**) _____

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6.2 CCW Pump Suction Valve Operation (continued)

[20] **PRESS** the CLOSE 2-HS-27-35B pushbutton on local panel, JB-2952, **AND**

VERIFY the following:

A. Red light ON at 0-MCC-225-B, Compt 5A while valve CLOSES. _____

B. Visually that the suction valve 2-FCV-27-35 CLOSES. (**Acc Crit**) _____

C. Green indicating light ON and the red indicating OFF for FCV-27-35 on the local panel, JB-2952. (**Acc Crit**) _____

D. Green indicating light ON and the red indicating OFF for FCV-27-35 on JB 2437. (**Acc Crit**) _____

[21] **PRESS** the OPEN 2-HS-27-35B pushbutton on local panel, JB-2952, **AND**

VERIFY the following:

A. Red light ON at 0-MCC-225-B, Compt 5A while valve OPENS. _____

B. Visually that the suction valve 2-FCV-27-35 OPENS. (**Acc Crit**) _____

C. Red indicating light ON and the green indicating OFF for FCV-27-35 on the local panel, JB-2952. (**Acc Crit**) _____

D. Red indicating light ON and the green indicating OFF for FCV-27-35 on JB 2437. (**Acc Crit**) _____

[22] **PLACE** 2-HS-27-35A on JB-2437 in the CLOSE position, **AND**

VERIFY valve 2-FCV-27-35 STARTS TO CLOSE. (**Acc Crit**) _____

[23] **OBSERVE** travel for 10 seconds, **THEN**

PRESS 2-HS-27-35B STOP pushbutton on local panel, JB 2952, **AND**

VERIFY valve STOPS. (**Acc Crit**) _____

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

6.2 CCW Pump Suction Valve Operation (continued)

CAUTION

The actions in step [24] should be performed in rapid succession, so that the valve does not reach the end of travel prior to pressing the manual stop button.

[24] **PLACE** 2-HS-27-35A on JB-2437 in the OPEN position, **AND**

VERIFY valve 2-FCV-27-35 STARTS TO OPEN, **THEN**

IMMEDIATELY PRESS 2-HS-27-35B STOP pushbutton on local panel, JB 2952. (**Acc Crit**) _____

[25] **VERIFY** valve STOPS. (**Acc Crit**) _____

[26] **OPEN** the following CCWP Suction Valves by **USING** the OPEN pushbutton on the local Hand Switch:

A. CCWP 2A, 2-FCV-27-5 (2-HS-27-5B) _____

B. CCWP 2B, 2-FCV-27-15 (2-HS-27-15B) _____

C. CCWP 2C, 2-FCV-27-25 (2-HS-27-25B) _____

D. CCWP 2D, 2-FCV-27-35 (2-HS-27-35B) _____

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

6.3 CCW Pump 2A and Discharge Valve Logic

[1] **VERIFY** the prerequisites, Section 4.0, for Subsection 6.3, are complete. _____

[2] **PRESS** the CLOSE test pushbutton (Inside compartment door) in 6900V Unit Bd 2A, Compt. #9, (CCW Pump 2A, 2-MTR-27-9), **AND**

VERIFY:

A. CCWP 2A breaker 2-BKR-27-9 CLOSED, by RED flag. _____

B. CCWP 2A breaker local green light OFF & red light ON. _____

[3] **PLACE** CCWP 2A Hand Switch 2-HS-27-9A on 2-M-15 in the CLOSE position, **AND**

VERIFY the CCWP 2A breaker did not OPEN. _____

[4] **PRESS** the TRIP test pushbutton (Inside compartment door) in 6900V Unit Bd 2A, Compt. #9, (CCW Pump 2A, 2-MTR-27-9), **AND**

VERIFY:

A. CCWP 2A breaker OPEN, by GREEN flag. _____

B. CCWP 2A breaker local green light ON & red light OFF. _____

[5] **PRESS** the TEST 2-HS-27-9B pushbutton on the local panel (outside, adjacent to the CCW Pump 2A motor), **AND**

VERIFY the 6900V Unit Bd 2A, Compt. #9, CCW Pump 2A, 2-MTR-27-9 breaker does not CLOSE. _____

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

6.3 CCW Pump 2A and Discharge Valve Logic (continued)

[6] **PERFORM** the following steps at the CCWP 2A breaker (2-BKR-27-009):

A. **DISCONNECT** the test umbilical cord,

REMOVE test plunger extension, **AND**

REMOVE the breaker from the panel. _____

B. **RACK-UP** the elevator mechanism for the CCWP 2A breaker. _____

C. **PLACE** the CCWP 2A breaker in the TEST position, **AND**

INSTALL the test umbilical cable, **AND**

INSTALL plunger extension. _____

[7] **PRESS** the CLOSE test pushbutton in the 6900V Unit Bd 2A, (Compt. #9, CCW Pump 2A, 2-MTR-27-9) cubicle, **AND**

VERIFY the breaker does not CLOSE. _____

[8] **PRESS** and **HOLD** the TEST 2-HS-27-9B pushbutton, **AND**

VERIFY:

A. CCWP 2A breaker CLOSES. _____

B. CCWP 2A Discharge Valve 2-FCV-27-11 remains CLOSED. _____

[9] **RELEASE** the 2-HS-27-9B TEST pushbutton, **AND**

VERIFY the CCWP 2A breaker OPENS. _____

[10] **PRESS** the SAFE STOP 2-HS-27-9B pushbutton. _____

[11] **PRESS** the TEST 2-HS-27-9B pushbutton, **AND**

VERIFY CCWP 2A breaker does not CLOSE. _____

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

6.3 CCW Pump 2A and Discharge Valve Logic (continued)

CAUTION

Steps [12] - [15] should be performed in rapid succession, so that the valve does not reach the end of its travel prior to pressing the manual stop.

[12] **PRESS** the OPEN 2-HS-27-11 pushbutton on local panel JB-2948,

START two timers, **AND**

VERIFY:

A. CCWP 2A Discharge Valve 2-FCV-27-11 STARTS TO OPEN. **(Acc Crit)** _____

B. CCWP 2A breaker does not CLOSE. _____

[13] **RECORD** the time when discharge valve 2-FCV-27-11 STOPS OPENING. **(Acc Crit)**

M&TE _____ Cal Due Date _____

Time _____ seconds (3 sec. ± .3 sec.) _____

[14] **RECORD** the time when discharge valve 2-FCV-27-11 STARTS TO CLOSE. **(Acc Crit)**

M&TE _____ Cal Due Date _____

Time _____ seconds (7 sec. ± .7 sec.) _____

[15] **PRESS** and **HOLD** the STOP 2-HS-27-11 pushbutton, **AND**

VERIFY CCWP 2A discharge valve 2-FCV-27-11 STOPS. **(Acc Crit)** _____

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

6.3 CCW Pump 2A and Discharge Valve Logic (continued)

[16] **RELEASE** the STOP 2-HS-27-11 pushbutton, **AND**

VERIFY CCWP 2A discharge valve 2-FCV-27-11 CLOSES. _____

[17] **INSTALL** a clamp-on ammeter on one of the CCWP 2A motor heater leads in 480V CCW Pump Station Bd & MCC B, Compt. 3C, **AND**

RECORD the current.

M&TE _____ Cal Due Date _____

CURRENT _____ AMPS _____

[18] **PRESS** the RESET 2-HS-27-9B pushbutton. _____

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

6.3 CCW Pump 2A and Discharge Valve Logic (continued)

[19] **PRESS** the OPEN 2-HS-27-11 pushbutton on local panel JB-2948, **AND**

VERIFY:

A. CCWP 2A Discharge Valve 2-FCV-27-11 STARTS TO OPEN. _____

B. Red light ON at 480V CCW Pump Station Control Center B, Compt 1A, during the discharge valve OPENING. _____

C. The CCWP 2A breaker CLOSES. (**Acc Crit**) _____

D. CCWP 2A motor status indicates RUNNING (red light ON, green light OFF) on the CCW Unit 2 Pump & Valve Central Control Station, JB-2437. (**Acc Crit**) _____

E. CCWP 2A motor status indicates RUNNING (red light ON, green light OFF) on 2-M-15. (**Acc Crit**) _____

F. Computer point Y2430D indicates the CCWP 2A Breaker is CLOSED. _____

G. CCWP 2A Discharge valve 2-FCV-27-11 fully OPENS. _____

H. CCWP 2A Discharge Valve OPEN status is indicated (red light ON, green light OFF) on the CCW Unit 2 Pump & Valve Central Control Station, JB-2437. (**Acc Crit**) _____

I. CCWP 2A Discharge Valve OPEN status is indicated (red light ON, green light OFF) on 2-M-15. (**Acc Crit**) _____

J. CCWP 2A Discharge Valve OPEN status is indicated (red light ON, green light OFF) on local control panel JB-2948. (**Acc Crit**) _____

K. CCWP 2A motor heater is DE-ENERGIZED (clamp-on ammeter indicates no current flow). _____

L. Red light OFF at 480V CCW Pump Station Control Center B, Compt 1A, after the discharge valve OPENS. _____

M. Red light OFF at 480V CCW Pump Station Control Center B, Compt 3C. _____

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6.3 CCW Pump 2A and Discharge Valve Logic (continued)

[20] **PRESS** the CLOSE 2-HS-27-5B pushbutton on local panel JB-2954, **AND**

VERIFY CCWP 2A Inlet Valve 2-FCV-27-5 does not CLOSE. **(Acc Crit)** _____

[21] **PLACE** Hand Switch 2-HS-27-5A on the Central Control Station in the CLOSE position, **AND**

VERIFY CCWP 2A Inlet Valve 2-FCV-27-5 does not CLOSE. **(Acc Crit)** _____

[22] **PRESS** the TRIP test pushbutton in the 6900V Unit Bd 2A, Compt. #9 (CCW Pump 2A, 2-MTR-27-9) cubicle, **AND**

VERIFY the breaker does not OPEN. _____

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6.3 CCW Pump 2A and Discharge Valve Logic (continued)

[23] **PRESS** the CLOSE 2-HS-27-11 pushbutton on local panel JB-2948, **AND**

VERIFY:

A. CCWP 2A Discharge Valve 2-FCV-27-11 STARTS TO CLOSE. (**Acc Crit**) _____

B. Red light ON at 480V CCW Pump Station Control Center B, Compt 1A, during the discharge valve CLOSING. _____

C. CCWP 2A breaker OPENS when its discharge valve indicates the 50% position. (**Acc Crit**) _____

D. CCWP 2A motor status indicates NOT RUNNING (green light ON, red light OFF) on the CCW Unit 2 Pump & Valve Central Control Station, JB-2437. (**Acc Crit**) _____

E. CCWP 2A motor status indicates NOT RUNNING (green light ON, red light OFF) on 2-M-15. (**Acc Crit**) _____

F. Computer point Y2430D indicates the CCWP 2A Breaker is OPEN. _____

G. CCWP 2A Discharge Valve 2-FCV-27-11 fully CLOSES. _____

H. CCWP 2A Discharge Valve CLOSED status is indicated (green light ON, red light OFF) on the CCW Unit 2 Pump & Valve Central Control Station, JB-2437. (**Acc Crit**) _____

I. CCWP 2A Discharge Valve CLOSED status is indicated (green light ON, red light OFF) on 2-M-15. (**Acc Crit**) _____

J. CCWP 2A Discharge Valve CLOSED status is indicated (green light ON, red light OFF) on local control panel JB-2948. (**Acc Crit**) _____

K. CCWP 2A motor heater is ENERGIZED (clamp-on ammeter indicates current flow). _____

L. Red light OFF at 480V CCW Pump Station Control Center B, Compt 1A after the discharge valve CLOSES. _____

M. Red light ON at 480V CCW Pump Station Control Center B, Compt 3C. _____

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6.3 CCW Pump 2A and Discharge Valve Logic (continued)

[24] **REMOVE** the clamp-on ammeter in the 480V CCW Pump Station Bd & MCC B, Compt. 3C. _____

[25] **PLACE** CCWP 2A Inlet Valve 2-FCV-27-5 in an INTERMEDIATE POSITION (both red and green indicating lights ON), using 2-HS-27-5B. _____

[26] **PRESS** the OPEN 2-HS-27-11 pushbutton on local panel JB-2948, **AND**

VERIFY:

A. CCWP 2A Discharge Valve 2-FCV-27-11 STARTS TO OPEN. _____

B. CCWP 2A breaker does not CLOSE. (**Acc Crit**) _____

C. CCWP 2A Discharge Valve 2-FCV-27-11 automatically CLOSES. _____

[27] **REOPEN** CCWP 2A Inlet Valve 2-FCV-27-5 by **PRESSING** the OPEN 2-HS-27-5B pushbutton. _____

[28] **PLACE** Hand Switch 2-HS-27-9D on the Central Control Station in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2A discharge valve 2-FCV-27-11 STARTS TO OPEN. (**Acc Crit**) _____

B. CCWP 2A breaker CLOSES. _____

C. CCWP 2A discharge valve 2-FCV-27-11 FULLY OPENS. _____

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6.3 CCW Pump 2A and Discharge Valve Logic (continued)

[29] **PLACE** Hand Switch 2-HS-27-9D on the Central Control Station in the CLOSE position, **AND**

VERIFY:

A. CCWP 2A discharge valve 2-FCV-27-11 STARTS TO CLOSE. (**Acc Crit**) _____

B. CCWP 2A breaker OPENS when 2-FCV-27-11 indicates the 50% position. _____

C. CCWP 2A discharge valve 2-FCV-27-11 FULLY CLOSES. _____

[30] **PLACE** Hand Switch 2-HS-27-9D on the Central Control Station in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2A discharge valve 2-FCV-27-11 STARTS TO OPEN. _____

B. CCWP 2A breaker CLOSES. _____

C. CCWP 2A discharge valve 2-FCV-27-11 FULLY OPENS. _____

[31] **PLACE** Hand Switch 2-HS-27-9D on the Central Control Station in the PULL TO STOP/CLOSE position, **AND**

VERIFY:

A. CCWP 2A discharge valve 2-FCV-27-11 STARTS TO CLOSE. (**Acc Crit**) _____

B. CCWP 2A breaker OPENS. _____

C. CCWP 2A discharge valve 2-FCV-27-11 FULLY CLOSES. _____

[32] **RETURN** Hand Switch 2-HS-27-9D to the "Normal" (not pulled OUT) position. _____

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6.3 CCW Pump 2A and Discharge Valve Logic (continued)

[33] **PLACE** Hand Switch 2-HS-27-9A on 2-M-15 in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2A discharge valve 2-FCV-27-11 STARTS TO OPEN. (**Acc Crit**) _____

B. CCWP 2A breaker CLOSES. _____

C. CCWP 2A Discharge valve 2-FCV-27-11 FULLY OPENS. _____

[34] **PLACE** Hand Switch 2-HS-27-9A in the CLOSE position, **AND**

VERIFY:

A. CCWP 2A Discharge valve 2-FCV-27-11 STARTS TO CLOSE. (**Acc Crit**) _____

B. CCWP 2A breaker OPENS when 2-FCV-27-11 indicates the 50% position. _____

C. CCWP 2A discharge valve 2-FCV-27-11 FULLY CLOSES. _____

[35] **PLACE** Hand Switch 2-HS-27-9A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2A discharge valve 2-FCV-27-11 OPENS. _____

B. CCWP 2A breaker CLOSES. _____

C. CCWP 2A discharge valve 2-FCV-27-11 FULLY OPENS. _____

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6.3 CCW Pump 2A and Discharge Valve Logic (continued)

[36] **PLACE** Hand Switch 2-HS-27-9A in the PULL TO STOP/CLOSE position, **AND**

VERIFY:

A. CCWP 2A discharge valve 2-FCV-27-11 STARTS TO CLOSE. (**Acc Crit**) _____

B. CCWP 2A breaker OPENS. _____

C. CCWP 2A discharge valve 2-FCV-27-11 FULLY CLOSES. _____

[37] **RETURN** Hand Switch 2-HS-27-9A to the "Normal" (not pulled OUT) position. _____

[38] **PLACE** Hand Switch 2-HS-27-9A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2A discharge valve 2-FCV-27-11 STARTS TO OPEN. _____

B. CCWP 2A breaker CLOSES. _____

C. CCWP 2A discharge valve 2-FCV-27-11 FULLY OPENS. _____

D. CCWP MOTOR OVERLOAD alarm CLEAR on 2-XA-55-15A, window 164C, on 2-M-15. _____

E. CCW/HPFP/RCW MOTOR TRIP OUT alarm CLEAR on 2-XA-55- 15A, window 164B, on 2-M-15. _____

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6.3 CCW Pump 2A and Discharge Valve Logic (continued)

NOTE
The disc that is held in step [38] should remain held until told to release in step [40].

[39] **ACTUATE** (manually ROTATE and HOLD the disc) the time portion (51) of the Ø A over current relay 50/51/83 at 6900V Unit Bd 2A, Compt. #9, **AND**

VERIFY:

A. CCWP 2A breaker does not OPEN. _____

B. CCWP MOTOR OVERLOAD alarm ANNUNCIATES on 2-XA-55-15A, window 164C, on 2-M-15. (**Acc Crit**) _____

C. CCWP 2A white indicating light ON at 2-HS-27-9A on 2-M-15. _____

[40] **MOMENTARILY PLACE** a jumper between terminal points 9 and 10 on the back of the Ø A over current relay 50/51/83, to simulate "83" coil pickup, **AND**

VERIFY:

A. CCWP 2A breaker OPENS. _____

B. CCW/HPFP/RCW MOTOR TRIP OUT alarm ANNUNCIATES on 2-XA-55-15A, window 164B, on 2-M-15. (**Acc Crit**) _____

C. Discharge Valve 2-FCV-27-11 STARTS TO CLOSE, following an approx. 7 sec time delay, after the CCWP 2A breaker OPENS. (**Acc Crit**) _____

D. TIME target on relay is visible. _____

[41] **RELEASE** the Ø A over current relay 50/51/83 disc. _____

[42] **VERIFY** the CCW/HPFP/RCW MOTOR TRIP OUT alarm CLEARS on 2-XA-55-15A, window 164B, on 2-M-15 when CCWP 2A discharge valve 2-FCV-27-11 indicates the 50% position. _____

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6.3 CCW Pump 2A and Discharge Valve Logic (continued)

[43] **RESET** the TIME (51) target for the Ø A over current relay 50/51/83, **AND**

VERIFY:

A. CCWP MOTOR OVERLOAD alarm CLEARS on 2-XA-55-15A, window 164C, on 2-M-15. _____

B. CCWP 2A white indicating light OFF at 2-HS-27-9A on 2-M-15. _____

[44] Once 2-FCV-27-11 is closed, **PLACE** Hand Switch 2-HS-27-9A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2A discharge valve 2-FCV-27-11 STARTS TO OPEN. _____

B. CCWP 2A breaker CLOSES. _____

C. CCWP 2A discharge valve 2-FCV-27-11 FULLY OPENS. _____

[45] **ACTUATE** (momentarily manually LIFT the plunger) the instantaneous portion (50) of the Ø A over current relay 50/51/83 at 6900V Unit Bd 2A, Compt. #9, **AND**

VERIFY:

A. CCWP 2A breaker OPENS. _____

B. INST Target on relay is visible. _____

C. Discharge Valve 2-FCV-27-11 STARTS TO CLOSE, following an approx. 7 sec time delay, after the CCWP 2A breaker OPENS. _____

D. CCW/HPFP/RCW MOTOR TRIP OUT alarm ANNUNICATES on 2-XA-55-15A, window 164B, on 2-M-15. _____

E. CCWP 2A white indicating light ON at 2-HS-27-9A on 2-M-15. _____

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6.3 CCW Pump 2A and Discharge Valve Logic (continued)

[46] **VERIFY** the following when CCWP 2A discharge valve 2-FCV-27-11 indicates the 50% position:

A. CCW/HPFP/RCW MOTOR TRIP OUT alarm CLEARS on 2-XA-55-15A, window 164B, on 2-M-15. _____

B. CCWP 2A white indicating light OFF at 2-HS-27-9A on 2-M-15. _____

[47] **RESET** the INST (50) target for the Ø A over current relay 50/51/83. _____

[48] Once 2-FCV-27-11 is closed, **PLACE** Hand Switch 2-HS-27-9A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2A discharge valve 2-FCV-27-11 STARTS TO OPEN. _____

B. CCWP 2A breaker CLOSES. _____

C. CCWP 2A discharge valve 2-FCV-27-11 FULLY OPENS. _____

NOTE

The disc that is held in step [48] should remain held until told to release in step [50].

[49] **ACTUATE** (manually ROTATE and HOLD the disc) the time portion (51) of the Ø C over current relay 50/51/83 at 6900V Unit Bd 2A, Compt. #9, **AND**

VERIFY:

A. CCWP 2A breaker does not OPEN. _____

B. CCWP MOTOR OVERLOAD alarm ANNUNCIATES on 2-XA-55-15A, window 164C, on 2-M-15. _____

C. CCWP 2A white indicating light ON at 2-HS-27-9A on 2-M-15. _____

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

6.3 CCW Pump 2A and Discharge Valve Logic (continued)

[50] **MOMENTARILY PLACE** a jumper between terminal points 9 and 10 on the back of the Ø C over current relay 50/51/83, to simulate "83" coil pickup, **AND**

VERIFY:

A. CCWP 2A breaker OPENS. _____

B. CCW/HPFP/RCW MOTOR TRIP OUT alarm ANNUNCIATES On 2-XA-55-15A, window 164B, on 2-M-15. _____

C. Discharge Valve 2-FCV-27-11 STARTS TO CLOSE, following an approx. 7 sec time delay, after the CCWP 2A breaker OPENS. _____

D. TIME target on relay is visible. _____

[51] **RELEASE** the Ø C over current relay 50/51/83 disc. _____

[52] **VERIFY** the CCW/HPFP/RCW MOTOR TRIP OUT alarm CLEARS on 2-XA-55-15A, window 164B, on 2-M-15 when CCWP 2A discharge valve 2-FCV-27-11 indicates the 50% position. _____

[53] **RESET** the TIME (51) target for the Ø C overcurrent, relay 50/51/83, **AND**

VERIFY:

A. CCWP MOTOR OVERLOAD alarm CLEARS on 2-XA-55-15A, window 164C, on 2-M-15. _____

B. CCWP 2A white indicating light OFF at 2-HS-27-9A on 2-M-15. _____

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

6.3 CCW Pump 2A and Discharge Valve Logic (continued)

[54] Once 2-FCV-27-11 is closed, **PLACE** Hand Switch 2-HS-27-9A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2A discharge valve 2-FCV-27-11 STARTS TO OPEN. _____

B. CCWP 2A breaker CLOSES. _____

C. CCWP 2A discharge valve 2-FCV-27-11 FULLY OPENS. _____

[55] **ACTUATE** (momentarily manually LIFT the plunger) the instantaneous portion (50) of the Ø C over current relay 50/51/83 at 6900V Unit Bd 2A, Compt. #9, **AND**

VERIFY:

A. CCWP 2A breaker OPENS. _____

B. INST Target on relay is visible. _____

C. Discharge Valve 2-FCV-27-11 STARTS TO CLOSE, following an approx. 7 sec time delay, after the CCWP 2A breaker OPENS. _____

D. CCW/HPFP/RCW MOTOR TRIP OUT alarm ANNUNCIATES on 2-XA-55-15A, window 164B, on 2-M-15. _____

E. CCWP 2A white indicating light ON at 2-HS-27-9A on 2-M-15. _____

[56] **VERIFY** the following when CCWP 2A discharge valve 2-FCV-27-11 indicates the 50% position:

A. CCW/HPFP/RCW MOTOR TRIP OUT alarm CLEARS on 2-XA-55-15A, window 164B, on 2-M-15. _____

B. CCWP 2A white indicating light OFF at 2-H9-27-9A on 2-M-15. _____

[57] **RESET** the INST (50) target for the Ø C over current relay 50/51/83. _____

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

6.3 CCW Pump 2A and Discharge Valve Logic (continued)

[58] Once 2-FCV-27-11 is closed, **PLACE** Hand Switch 2-HS-27-9A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2A discharge valve 2-FCV-27-11 STARTS TO OPEN. _____

B. CCWP 2A breaker CLOSES. _____

C. CCWP 2A discharge valve 2-FCV-27-11 FULLY OPENS. _____

[59] **ACTUATE** (momentarily manually LIFT the plunger) the ground over current relay 50G at 6900V Unit Bd 2A, Compt #9, **AND**

VERIFY:

A. CCWP 2A breaker OPENS. _____

B. Target on relay is visible.

C. CCW/HPFP/RCW MOTOR TRIP OUT alarm ANNUNCIATES on 2-XA-55-15A, window 164B, on 2-M-15. _____

D. CCWP 2A white indicating light ON at 2-HS-27-9A on 2-M-15. _____

E. Discharge Valve 2-FCV-27-11 STARTS TO CLOSE, following an approx. 7 sec time delay, after the CCWP 2A breaker OPENS. _____

[60] **VERIFY** the following when CCWP 2A discharge valve 2-FCV-27-11 indicates the 50% position:

A. CCW/HPFP/RCW MOTOR TRIP OUT alarm CLEARS on 2-XA-55- 15A, window 164B, on 2-M-15. _____

B. CCWP 2A white indicating light OFF at 2-HS-27-9A on 2-M-15. _____

[61] **RESET** the target for the ground over current relay 50G. _____

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

6.3 CCW Pump 2A and Discharge Valve Logic (continued)

[62] Once 2-FCV-27-11 is closed, **PLACE** Hand Switch 2-HS-27-9A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2A discharge valve 2-FCV-27-11 STARTS TO OPEN. _____

B. CCWP 2A breaker CLOSES. _____

C. CCWP 2A discharge valve 2-FCV-27-11 FULLY OPENS. _____

[63] **ACTUATE** (manually) the 272AX2 relay in the 6900V Unit Bd 2A, Compt. #3, **AND**

VERIFY:

A. CCWP 2A breaker OPENS. _____

B. CCWP 2A Discharge Valve 2-FCV-27-11 CLOSES. _____

6.4 CCW Pump 2B and Discharge Valve Logic

[1] **VERIFY** the prerequisites, Section 4.0, for Subsection 6.4 are complete. _____

[2] **PRESS** the CLOSE test pushbutton (Inside compartment door) in 6900V Unit Bd 2B, Compt. #5, (CCW Pump 2B, 2-MTR-27-19), **AND**

VERIFY:

A. CCWP 2B breaker 2-BKR-27-19 CLOSED, by RED flag. _____

B. CCWP 2B breaker local green light OFF & red light ON. _____

[3] **PLACE** CCWP 2B Hand Switch 2-HS-27-19A on 2-M-15 in the CLOSE position, **AND**

VERIFY the CCWP 2B breaker did not OPEN. _____

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

6.4 CCW Pump 2B and Discharge Valve Logic (continued)

[4] **PRESS** the TRIP test pushbutton (Inside compartment door) in 6900V Unit Bd 2B, Compt. #5, (CCW Pump 2B, 2-MTR-27-19), **AND**

VERIFY:

A. CCWP 2B breaker OPEN, by GREEN flag. _____

B. CCWP 2B breaker local green light ON & red light OFF. _____

[5] **PRESS** the TEST 2-HS-27-19B pushbutton on the local panel (outside, adjacent to the CCW Pump 2B motor), **AND**

VERIFY the 6900V Unit Bd 2B, Compt. #5, CCW Pump 2B, 2-MTR-27-19 breaker does not CLOSE. _____

[6] **PERFORM** the following steps at the CCWP 2B breaker (2-BKR-27-019):

A. **DISCONNECT** the test umbilical cord,

REMOVE test plunger extension, **AND**

REMOVE the breaker from the panel. _____

B. **RACK-UP** the elevator mechanism for the CCWP 2B breaker. _____

C. **PLACE** the CCWP 2B breaker in the TEST position, **AND**

INSTALL the test umbilical cable, **AND**

INSTALL plunger extension. _____

[7] **PRESS** the CLOSE test pushbutton in the 6900V Unit Bd 2B, Compt. #5 (CCW Pump 2B, 2-MTR-27-19) cubicle, **AND**

VERIFY the breaker does not CLOSE. _____

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

6.4 CCW Pump 2B and Discharge Valve Logic (continued)

[8] **PRESS** and **HOLD** the TEST 2-HS-27-19B pushbutton, **AND**

VERIFY:

A. CCWP 2B breaker CLOSES. _____

B. CCWP 2B Discharge Valve 2-FCV-27-21 remains CLOSED. _____

[9] **RELEASE** the 2-HS-27-19B TEST pushbutton, **AND**

VERIFY the CCWP 2B breaker OPENS. _____

[10] **PRESS** the SAFE STOP 2-HS-27-19B pushbutton. _____

[11] **PRESS** the TEST 2-HS-27-19B pushbutton, **AND**

VERIFY CCWP 2B breaker does not CLOSE. _____

CAUTION

Steps [12] - [15] should be performed in rapid succession, so that the valve does not reach the end of its travel prior to pressing the manual stop.

[12] **PRESS** the OPEN 2-HS-27-21 pushbutton on local panel JB-2948,

START two timers, **AND**

VERIFY:

A. CCWP 2B Discharge Valve 2-FCV-27-21 STARTS TO OPEN. (**Acc Crit**) _____

B. CCWP 2B breaker does not CLOSE. _____

[13] **RECORD** the time when discharge valve 2-FCV-27-21 (**Acc Crit**)

M&TE _____ Cal Due Date _____

Time _____ seconds (3 sec. ± .3 sec.) _____

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

6.4 CCW Pump 2B and Discharge Valve Logic (continued)

[14] **RECORD** the time when discharge valve 2-FCV-27-21 STARTS TO CLOSE. **(Acc Crit)**

M&TE _____ Cal Due Date _____

Time _____ seconds (7 sec. ± .7 sec.) _____

[15] **PRESS** and **HOLD** the STOP 2-HS-27-21 pushbutton, **AND**

VERIFY CCWP 2B discharge valve 2-FCV-27-21 STOPS. **(Acc Crit)** _____

[16] **RELEASE** the STOP 2-HS-27-21 pushbutton, **AND**

VERIFY CCWP 2B discharge valve 2-FCV-27-21 CLOSES. _____

[17] **INSTALL** a clamp-on ammeter on one of the CCWP 2B motor heater leads in 480V CCW Pump Station Bd & MCC B, Compt. 5B, **AND**

RECORD the current.

M&TE _____ Cal Due Date _____

CURRENT _____ AMPS _____

[18] **PRESS** the RESET 2-HS-27-19B pushbutton. _____

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

6.4 CCW Pump 2B and Discharge Valve Logic (continued)

[19] **PRESS** the OPEN 2-HS-27-21 pushbutton on local panel JB-2948, **AND**

VERIFY:

A. CCWP 2B Discharge Valve 2-FCV-27-21 STARTS TO OPEN. _____

B. Red light ON at 480V CCW Pump Station Control Center B, Compt 1A, during the discharge valve OPENING. _____

C. The CCWP 2B breaker CLOSES. (**Acc Crit**) _____

D. CCWP 2B motor status indicates RUNNING (red light ON, green light OFF) on the CCW Unit 2 Pump & Valve Central Control Station, JB-2437. (**Acc Crit**) _____

E. CCWP 2B motor status indicates RUNNING (red light ON, green light OFF) on 2-M-15. (**Acc Crit**) _____

F. Computer point Y2431D indicates the CCWP 2B Breaker is CLOSED. _____

G. CCWP 2B Discharge valve 2-FCV-27-21 fully OPENS. _____

H. CCWP 2B Discharge Valve OPEN status is indicated (red light ON, green light OFF) on the CCW Unit 2 Pump & Valve Central Control Station, JB-2437. (**Acc Crit**) _____

I. CCWP 2B Discharge Valve OPEN status is indicated (red light ON, green light OFF) on 2-M-15. (**Acc Crit**) _____

J. CCWP 2B Discharge Valve OPEN status is indicated (red light ON, green light OFF) on local control panel JB-2948. (**Acc Crit**) _____

K. CCWP 2B motor heater is DE-ENERGIZED (clamp-on ammeter indicates no current flow). _____

L. Red light OFF at 480V CCW Pump Station Control Center B, Compt 1B, after the discharge valve OPENS. _____

M. Red light OFF at 480V CCW Pump Station Control Center B, Compt 5B. _____

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

6.4 CCW Pump 2B and Discharge Valve Logic (continued)

[20] **PRESS** the CLOSE 2-HS-27-15B pushbutton on local panel JB-2954, **AND**

VERIFY CCWP 2B Inlet Valve 2-FCV-27-15 does not CLOSE. **(Acc Crit)** _____

[21] **PLACE** Hand Switch 2-HS-27-15A on the Central Control Station in the CLOSE position, **AND**

VERIFY CCWP 2B Inlet Valve 2-FCV-27-15 does not CLOSE. **(Acc Crit)** _____

[22] **PRESS** the TRIP test pushbutton in the 6900V Unit Bd 2B, Compt. #5 (CCW Pump 2B, 2-MTR-27-19) cubicle, **AND**

VERIFY the breaker does not OPEN. _____

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

6.4 CCW Pump 2B and Discharge Valve Logic (continued)

[23] **PRESS** the CLOSE 2-HS-27-21 pushbutton on local panel JB-2948, **AND**

VERIFY:

A. CCWP 2B Discharge Valve 2-FCV-27-21 STARTS TO CLOSE. (**Acc Crit**) _____

B. Red light ON at 480V CCW Pump Station Control Center B, Compt 1B, during the discharge valve CLOSING. _____

C. CCWP 2B breaker OPENS when its discharge valve indicates the 50% position. (**Acc Crit**) _____

D. CCWP 2B motor status indicates NOT RUNNING (green light ON, red light OFF) on the CCW Unit 2 Pump & Valve Central Control Station, JB-2437. (**Acc Crit**) _____

E. CCWP 2B motor status indicates NOT RUNNING (green light ON, red light OFF) on 2-M-15. (**Acc Crit**) _____

F. Computer point Y2431D indicates the CCWP 2B Breaker is OPEN. _____

G. CCWP 2B Discharge Valve 2-FCV-27-21 fully CLOSES. _____

H. CCWP 2B Discharge Valve CLOSED status is indicated (green light ON, red light OFF) on the CCW Unit 2 Pump & Valve Central Control Station, JB-2437. (**Acc Crit**) _____

I. CCWP 2B Discharge Valve CLOSED status is indicated (green light ON, red light OFF) on 2-M-15. (**Acc Crit**) _____

J. CCWP 2B Discharge Valve CLOSED status is indicated (green light ON, red light OFF) on local control panel JB-2948. (**Acc Crit**) _____

K. CCWP 2B motor heater is ENERGIZED (clamp-on ammeter indicates current flow). _____

L. Red light OFF at 480V CCW Pump Station Control Center B, Compt 1B after the discharge valve CLOSES. _____

M. Red light ON at 480V CCW Pump Station Control Center B, Compt 5B. _____

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

6.4 CCW Pump 2B and Discharge Valve Logic (continued)

[24] **REMOVE** the clamp-on ammeter in the 480V CCW Pump Station Bd & MCC B, Compt. 5B. _____

[25] **PLACE** CCWP 2B Inlet Valve 2-FCV-27-15 in an INTERMEDIATE POSITION (both red and green indicating lights ON), using 2-HS-27-15B. _____

[26] **PRESS** the OPEN 2-HS-27-21 pushbutton on local panel JB-2948, **AND**

VERIFY:

A. CCWP 2B Discharge Valve 2-FCV-27-21 STARTS TO OPEN. _____

B. CCWP 2B breaker does not CLOSE. (**Acc Crit**) _____

C. CCWP 2B Discharge Valve 2-FCV-27-21 automatically CLOSES. _____

[27] **REOPEN** CCWP 2B Inlet Valve 2-FCV-27-15 by **PRESSING** the OPEN 2-HS-27-15B pushbutton. _____

[28] **PLACE** Hand Switch 2-HS-27-19D on the Central Control Station in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2B discharge valve 2-FCV-27-21 STARTS TO OPEN. (**Acc Crit**) _____

B. CCWP 2B breaker CLOSES. _____

C. CCWP 2B discharge valve 2-FCV-27-21 FULLY OPENS. _____

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

6.4 CCW Pump 2B and Discharge Valve Logic (continued)

[29] **PLACE** Hand Switch 2-HS-27-19D on the Central Control Station in the CLOSE position, **AND**

VERIFY:

A. CCWP 2B discharge valve 2-FCV-27-21 STARTS TO CLOSE. (**Acc Crit**) _____

B. CCWP 2B breaker OPENS when 2-FCV-27-21 indicates the 50% position. _____

C. CCWP 2B discharge valve 2-FCV-27-21 FULLY CLOSES. _____

[30] **PLACE** Hand Switch 2-HS-27-19D on the Central Control Station in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2B discharge valve 2-FCV-27-21 STARTS TO OPEN. _____

B. CCWP 2B breaker CLOSES. _____

C. CCWP 2B discharge valve 2-FCV-27-21 FULLY OPENS. _____

[31] **PLACE** Hand Switch 2-HS-27-19D on the Central Control Station in the PULL TO STOP/CLOSE position, **AND**

VERIFY:

A. CCWP 2B discharge valve 2-FCV-27-21 STARTS TO CLOSE. (**Acc Crit**) _____

B. CCWP 2B breaker OPENS. _____

C. CCWP 2B discharge valve 2-FCV-27-21 FULLY CLOSES. _____

[32] **RETURN** Hand Switch 2-HS-27-19D to the "Normal" (not pulled OUT) position. _____

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6.4 CCW Pump 2B and Discharge Valve Logic (continued)

[33] **PLACE** Hand Switch 2-HS-27-19A on 2-M-15 in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2B discharge valve 2-FCV-27-21 STARTS TO OPEN. (**Acc Crit**) _____

B. CCWP 2B breaker CLOSES. _____

C. CCWP 2B Discharge valve 2-FCV-27-21 FULLY OPENS. _____

[34] **PLACE** Hand Switch 2-HS-27-19A in the CLOSE position, **AND**

VERIFY:

A. CCWP 2B Discharge valve 2-FCV-27-21 STARTS TO CLOSE. (**Acc Crit**) _____

B. CCWP 2B breaker OPENS when 2-FCV-27-21 indicates the 50% position. _____

C. CCWP 2B discharge valve 2-FCV-27-21 FULLY CLOSES. _____

[35] **PLACE** Hand Switch 2-HS-27-19A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2B discharge valve 2-FCV-27-21 OPENS. _____

B. CCWP 2B breaker CLOSES. _____

C. CCWP 2B discharge valve 2-FCV-27-21 FULLY OPENS. _____

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

6.4 CCW Pump 2B and Discharge Valve Logic (continued)

[36] **PLACE** Hand Switch 2-HS-27-19A in the PULL TO STOP/CLOSE position, **AND**

VERIFY:

A. CCWP 2B discharge valve 2-FCV-27-21 STARTS TO CLOSE. (**Acc Crit**) _____

B. CCWP 2B breaker OPENS. _____

C. CCWP 2B discharge valve 2-FCV-27-21 FULLY CLOSES. _____

[37] **RETURN** Hand Switch 2-HS-27-19A to the "Normal" (not pulled OUT) position. _____

[38] **PLACE** Hand Switch 2-HS-27-19A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2B discharge valve 2-FCV-27-21 STARTS TO OPEN. _____

B. CCWP 2B breaker CLOSES. _____

C. CCWP 2B discharge valve 2-FCV-27-21 FULLY OPENS. _____

D. CCWP MOTOR OVERLOAD alarm CLEAR on 2-XA-55-15A, window 164C, on 2-M-15. _____

E. CCW/HPFP/RCW MOTOR TRIP OUT alarm CLEAR on 2-XA-55- 15A, window 164B, on 2-M-15. _____

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6.4 CCW Pump 2B and Discharge Valve Logic (continued)

NOTE

The disc that is held in step [38] should remain held until told to release in step [40].

[39] **ACTUATE** (manually ROTATE and HOLD the disc) the time portion (51) of the Ø A over current relay 50/51/83 at 6900V Unit Bd 2B, Compt. #5, **AND**

VERIFY:

A. CCWP 2B breaker does not OPEN. _____

B. CCWP MOTOR OVERLOAD alarm ANNUNCIATES on 2-XA-55-15A, window 164C, on 2-M-15. (**Acc Crit**) _____

C. CCWP 2B white indicating light ON at 2-HS-27-19A on 2-M-15. _____

[40] **MOMENTARILY PLACE** a jumper between terminal points 9 and 10 on the back of the Ø A over current relay 50/51/83, to simulate "83" coil pickup, **AND**

VERIFY:

A. CCWP 2B breaker OPENS. _____

B. CCW/HPFP/RCW MOTOR TRIP OUT alarm ANNUNCIATES on 2-XA-55-15A, window 164B, on 2-M-15. (**Acc Crit**) _____

C. Discharge Valve 2-FCV-27-21 STARTS TO CLOSE, following an approx. 7 sec time delay, after the CCWP 2B breaker OPENS. (**Acc Crit**) _____

D. TIME target on relay is visible. _____

[41] **RELEASE** the Ø A over current relay 50/51/83 disc. _____

[42] **VERIFY** the CCW/HPFP/RCW MOTOR TRIP OUT alarm CLEARS on 2-XA-55-15A, window 164B, on 2-M-15 when CCWP 2A discharge valve 2-FCV-27-21 indicates the 50% position. _____

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

6.4 CCW Pump 2B and Discharge Valve Logic (continued)

[43] **RESET** the TIME (51) target for the Ø A over current relay 50/51/83, **AND**

VERIFY:

A. CCWP MOTOR OVERLOAD alarm CLEARS on 2-XA-55-15A, window 164C, on 2-M-15. _____

B. CCWP 2B white indicating light OFF at 2-HS-27-19A on 2-M-15. _____

[44] Once 2-FCV-27-21 has fully closed, **PLACE** Hand Switch 2-HS-27-19A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2B discharge valve 2-FCV-27-21 STARTS TO OPEN. _____

B. CCWP 2B breaker CLOSES. _____

C. CCWP 2B discharge valve 2-FCV-27-21 FULLY OPENS. _____

[45] **ACTUATE** (momentarily manually LIFT the plunger) the instantaneous portion (50) of: the Ø A over current relay 50/51/83 at 6900V Unit Bd 2B, Compt. #5, **AND**

VERIFY:

A. CCWP 2B breaker OPENS. _____

B. INST Target on relay is visible. _____

C. Discharge Valve 2-FCV-27-21 STARTS TO CLOSE, following an approx. 7 sec time delay, after the CCWP 2B breaker OPENS. _____

D. CCW/HPFP/RCW MOTOR TRIP OUT alarm ANUNICATES on 2-XA-55-15A, window 164B, on 2-M-15. _____

E. CCWP 2B white indicating light ON at 2-HS-27-19A on 2-M-15. _____

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

6.4 CCW Pump 2B and Discharge Valve Logic (continued)

[46] **VERIFY** the following when CCWP 2B discharge valve 2-FCV-27-21 indicates the 50% position:

A. CCW/HPFP/RCW MOTOR TRIP OUT alarm CLEARS on 2-XA-55-15A, window 164B, on 2-M-15. _____

B. CCWP 2B white indicating light OFF at 2-HS-27-19A on 2-M-15. _____

[47] **RESET** the INST (50) target for the Ø A over current relay 50/51/83. _____

[48] Once 2-FCV-27-21 has fully closed, **PLACE** Hand Switch 2-HS-27-19A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2B discharge valve 2-FCV-27-21 STARTS TO OPEN. _____

B. CCWP 2B breaker CLOSES. _____

C. CCWP 2B discharge valve 2-FCV-27-21 FULLY OPENS. _____

NOTE

The disc that is held in step [48] should remain held until told to release in step [50].

[49] **ACTUATE** (manually ROTATE and HOLD the disc) the time portion (51) of the Ø C over current relay 50/51/83 at 6900V Unit Bd 2B, Compt. #5, **AND**

VERIFY:

A. CCWP 2B breaker does not OPEN. _____

B. CCWP MOTOR OVERLOAD alarm ANNUNCIATES on 2-XA-55-15A, window 164C, on 2-M-15. _____

C. CCWP 2B white indicating light ON at 2-HS-27-19A on 2-M-15. _____

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

6.4 CCW Pump 2B and Discharge Valve Logic (continued)

[50] **MOMENTARILY PLACE** a jumper between terminal points 9 and 10 on the back of the Ø C over current relay 50/51/83, to simulate "83" coil pickup, **AND**

VERIFY:

A. CCWP 2B breaker OPENS. _____

B. CCW/HPFP/RCW MOTOR TRIP OUT alarm ANNUNCIATES on 2-XA-55-15A, window 164B, on 2-M-15. _____

C. Discharge Valve 2-FCV-27-21 STARTS TO CLOSE, following an approx. 7 sec time delay, after the CCWP 2B breaker OPENS. _____

D. TIME target on relay is visible. _____

[51] **RELEASE** the Ø C over current relay 50/51/83 disc. _____

[52] **VERIFY** the CCW/HPFP/RCW MOTOR TRIP OUT alarm CLEARS on 2-XA-55-15A, window 164B, on 2-M-15 when CCWP 2B discharge valve 2-FCV-27-21 indicates the 50% position. _____

[53] **RESET** the TIME (51) target for the Ø C over current, relay 50/51/83, **AND**

VERIFY:

A. CCWP MOTOR OVERLOAD alarm CLEARS on 2-XA-55-15A, window 164C, on 2-M-15. _____

B. CCWP 2B white indicating light OFF at 2-HS-27-19A on 2-M-15. _____

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

6.4 CCW Pump 2B and Discharge Valve Logic (continued)

[54] Once 2-FCV-27-21 has fully closed, **PLACE** Hand Switch 2-HS-27-19A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2B discharge valve 2-FCV-27-21 STARTS TO OPEN. _____

B. CCWP 2B breaker CLOSES. _____

C. CCWP 2B discharge valve 2-FCV-27-21 FULLY OPENS. _____

[55] **ACTUATE** (momentarily manually LIFT the plunger) the instantaneous portion (50) of the Ø C over current relay 50/51/83 at 6900V Unit Bd 2B, Compt. #5, **AND**

VERIFY:

A. CCWP 2B breaker OPENS. _____

B. INST Target on relay is visible. _____

C. CCW/HPFP/RCW MOTOR TRIP OUT alarm ANNUNCIATES on 2-XA-55-15A, window 164B, on 2-M-15. _____

D. CCWP 2B white indicating light ON at 2-HS-27-19A on 2-M-15. _____

E. Discharge Valve 2-FCV-27-21 STARTS TO CLOSE, following an approx. 7 sec time delay, after the CCWP 2B breaker OPENS. _____

[56] **VERIFY** the following when CCWP 2B discharge valve 2-FCV-27-21 indicates the 50% position:

A. CCW/HPFP/RCW MOTOR TRIP OUT alarm CLEARS on 2-XA-55-15A, window 164B, on 2-M-15. _____

B. CCWP 2B white indicating light OFF at 2-H9-27-19A on 2-M-15. _____

[57] **RESET** the INST (50) target for the Ø C over current relay 50/51/83. _____

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

6.4 CCW Pump 2B and Discharge Valve Logic (continued)

[58] Once 2-FCV-27-21 has fully closed, **PLACE** Hand Switch 2-HS-27-19A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2B discharge valve 2-FCV-27-21 STARTS TO OPEN. _____

B. CCWP 2B breaker CLOSES. _____

C. CCWP 2B discharge valve 2-FCV-27-21 FULLY OPENS. _____

[59] **ACTUATE** (momentarily manually LIFT the plunger) the ground over current relay 50G at 6900V Unit Bd 2B, Compt #5, **AND**

VERIFY:

A. CCWP 2B breaker OPENS. _____

B. Target on relay is visible.

C. CCW/HPFP/RCW MOTOR TRIP OUT alarm ANNUNCIATES on 2-XA-55-15A, window 164B, on 2-M-15. _____

D. CCWP 2B white indicating light ON at 2-HS-27-19A on 2-M-15. _____

E. Discharge Valve 2-FCV-27-21 STARTS TO CLOSE, following an approx. 7 sec time delay, after the CCWP 2B breaker OPENS. _____

[60] **VERIFY** the following when CCWP 2B discharge valve 2-FCV-27-21 indicates the 50% position:

A. CCW/HPFP/RCW MOTOR TRIP OUT alarm CLEARS on 2-XA-55- 15A, window 164B, on 2-M-15. _____

B. CCWP 2B white indicating light OFF at 2-HS-27-19A on 2-M-15. _____

[61] **RESET** the target for the ground over current relay 50G. _____

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

6.4 CCW Pump 2B and Discharge Valve Logic (continued)

[62] Once 2-FCV-27-21 has fully closed, **PLACE** Hand Switch 2-HS-27-19A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2B discharge valve 2-FCV-27-21 STARTS TO OPEN. _____

B. CCWP 2B breaker CLOSES. _____

C. CCWP 2B discharge valve 2-FCV-27-21 FULLY OPENS. _____

CAUTION

The following step also trips the 2B Condensate Booster Pump. Notify the SM/US and obtain permission prior to performing the next step.

[63] **ACTUATE** (manually) the 272BX2 relay in the 6900V Unit Bd 2B, Compt. #9, **AND**

VERIFY:

A. CCWP 2B breaker OPENS. _____

B. CCWP 2B Discharge Valve 2-FCV-27-21 CLOSES. _____

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

6.5 CCW Pump 2C and Discharge Valve Logic

[1] **VERIFY** the prerequisites, Section 4.0, for Subsection 6.5 are complete. _____

[2] **PRESS** the CLOSE test pushbutton (Inside compartment door) in 6900V Unit Bd 2C, Compt. #9, (CCW Pump 2C, 2-MTR-27-29), **AND**

VERIFY:

A. CCWP 2C breaker 2-BKR-27-29 CLOSED, by RED flag. _____

B. CCWP 2C breaker local green light OFF & red light ON. _____

[3] **PLACE** CCWP 2C Hand Switch 2-HS-27-29A on 2-M-15 in the CLOSE position, **AND**

VERIFY the CCWP 2C breaker did not OPEN. _____

[4] **PRESS** the TRIP test pushbutton (Inside compartment door) on 6900V Unit Bd 2C, Compt. #9, (CCW Pump 2C, 2-MTR-27-29), **AND**

VERIFY:

A. CCWP 2C breaker OPEN, by GREEN flag. _____

B. CCWP 2C breaker local green light ON & red light OFF. _____

[5] **PRESS** the TEST 2-HS-27-29B pushbutton on the local panel (outside, adjacent to the CCW Pump 2C motor), **AND**

VERIFY the 6900V Unit Bd 2C, Compt. #9, CCW Pump 2C, 2-MTR-27-29 breaker does not CLOSE. _____

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

6.5 CCW Pump 2C and Discharge Valve Logic (continued)

[6] **PERFORM** the following steps at the CCWP 2C breaker (2-BKR-27-019):

A. **DISCONNECT** the test umbilical cord,

REMOVE test plunger extension, **AND**

REMOVE the breaker from the panel. _____

B. **RACK-UP** the elevator mechanism for the CCWP 2C breaker. _____

C. **PLACE** the CCWP 2C breaker in the TEST position, **AND**

INSTALL the test umbilical cable, **AND**

INSTALL plunger extension. _____

[7] **PRESS** the CLOSE test pushbutton in the 6900V Unit Bd 2C, Compt. #9 (CCW Pump 2C, 2-MTR-27-29) cubicle **AND**

VERIFY the breaker does not CLOSE. _____

[8] **PRESS** and **HOLD** the TEST 2-HS-27-29B pushbutton, **AND**

VERIFY:

A. CCWP 2C breaker CLOSES. _____

B. CCWP 2C Discharge Valve 2-FCV-27-31 remains CLOSED. _____

[9] **RELEASE** the 2-HS-27-29B TEST pushbutton, **AND**

VERIFY the CCWP 2C breaker OPENS. _____

[10] **PRESS** the SAFE STOP 2-HS-27-29B pushbutton. _____

[11] **PRESS** the TEST 2-HS-27-29B pushbutton, **AND**

VERIFY CCWP 2C breaker does not CLOSE. _____

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

6.5 CCW Pump 2C and Discharge Valve Logic (continued)

CAUTION

Steps [12] - [15] should be performed in rapid succession, so that the valve does not reach the end of its travel prior to pressing the manual stop.

[12] **PRESS** the OPEN 2-HS-27-31 pushbutton on local panel JB-2950,

START two timers, **AND**

VERIFY:

A. CCWP 2C Discharge Valve 2-FCV-27-31 STARTS TO OPEN. (**Acc Crit**) _____

B. CCWP 2C breaker does not CLOSE. _____

[13] **RECORD** the time when discharge valve 2-FCV-27-31 STOPS OPENING. (**Acc Crit**)

M&TE _____ Cal Due Date _____

Time _____ seconds (3 sec. ± .3 sec.)

_____

[14] **RECORD** the time when discharge valve 2-FCV-27-31 STARTS TO CLOSE. (**Acc Crit**)

M&TE _____ Cal Due Date _____

Time _____ seconds (7 sec. ± .7 sec.)

_____

[15] **PRESS** and **HOLD** the STOP 2-HS-27-31 pushbutton, **AND**

VERIFY CCWP 2C discharge valve 2-FCV-27-31 STOPS. (**Acc Crit**) _____

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

6.5 CCW Pump 2C and Discharge Valve Logic (continued)

[16] **RELEASE** the STOP 2-HS-27-31 pushbutton, **AND**

VERIFY CCWP 2C discharge valve 2-FCV-27-31 CLOSES. _____

[17] **INSTALL** a clamp-on ammeter on one of the CCWP 2C motor heater leads in 480V CCW Pump Station Bd & MCC B, Compt. 5C, **AND**

RECORD the current.

M&TE _____ Cal Due Date _____

CURRENT _____ AMPS _____

[18] **PRESS** the RESET 2-HS-27-29B pushbutton. _____

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

6.5 CCW Pump 2C and Discharge Valve Logic (continued)

[19] **PRESS** the OPEN 2-HS-27-31 pushbutton on local panel JB-2950, **AND**

VERIFY:

A. CCWP 2C Discharge Valve 2-FCV-27-31 STARTS TO OPEN. _____

B. Red light ON at 480V CCW Pump Station Control Center B, Compt 2A, during the discharge valve OPENING. _____

C. The CCWP 2C breaker CLOSES. (**Acc Crit**) _____

D. CCWP 2C motor status indicates RUNNING (red light ON, green light OFF) on the CCW Unit 2 Pump & Valve Central Control Station, JB-2437. (**Acc Crit**) _____

E. CCWP 2C motor status indicates RUNNING (red light ON, green light OFF) on 2-M-15. (**Acc Crit**) _____

F. Computer point Y2432D indicates the CCWP 2C Breaker is CLOSED. _____

G. CCWP 2C Discharge valve 2-FCV-27-31 fully OPENS. _____

H. CCWP 2C Discharge Valve OPEN status is indicated (red light ON, green light OFF) on the CCW Unit 2 Pump & Valve Central Control Station, JB-2437. (**Acc Crit**) _____

I. CCWP 2C Discharge Valve OPEN status is indicated (red light ON, green light OFF) on 2-M-15. (**Acc Crit**) _____

J. CCWP 2C Discharge Valve OPEN status is indicated (red light ON, green light OFF) on local control panel JB-2950. (**Acc Crit**) _____

K. CCWP 2C motor heater is DE-ENERGIZED (clamp-on ammeter indicates no current flow). _____

L. Red light OFF at 480V CCW Pump Station Control Center B, Compt 2A, after the discharge valve OPENS. _____

M. Red light OFF at 480V CCW Pump Station Control Center B, Compt 5C. _____

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

6.5 CCW Pump 2C and Discharge Valve Logic (continued)

[20] **PRESS** the CLOSE 2-HS-27-25B pushbutton on local panel JB-2952, **AND**

VERIFY CCWP 2C Inlet Valve 2-FCV-27-25 does not CLOSE. **(Acc Crit)** _____

[21] **PLACE** Hand Switch 2-HS-27-25A on the Central Control Station in the CLOSE position, **AND**

VERIFY CCWP 2C Inlet Valve 2-FCV-27-25 does not CLOSE. **(Acc Crit)** _____

[22] **PRESS** the TRIP test pushbutton in the 6900V Unit Bd 2C, Compt. #9, CCW Pump 2C, 2-MTR-27-29, cubicle **AND**

VERIFY the breaker does not OPEN. _____

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

6.5 CCW Pump 2C and Discharge Valve Logic (continued)

[23] **PRESS** the CLOSE 2-HS-27-31 pushbutton on local panel JB-2950, **AND**

VERIFY:

A. CCWP 2C Discharge Valve 2-FCV-27-31 STARTS TO CLOSE. (**Acc Crit**) _____

B. Red light ON at 480V CCW Pump Station Control Center B, Compt 2A, during the discharge valve CLOSING. _____

C. CCWP 2C breaker OPENS when its discharge valve indicates the 50% position. (**Acc Crit**) _____

D. CCWP 2C motor status indicates NOT RUNNING (green light ON, red light OFF) on the CCW Unit 2 Pump & Valve Central Control Station, JB-2437. (**Acc Crit**) _____

E. CCWP 2C motor status indicates NOT RUNNING (green light ON, red light OFF) on 2-M-15. (**Acc Crit**) _____

F. Computer point Y2432D indicates the CCWP 2C Breaker is OPEN. _____

G. CCWP 2C Discharge Valve 2-FCV-27-31 fully CLOSES. _____

H. CCWP 2C Discharge Valve CLOSED status is indicated (green light ON, red light OFF) on the CCW Unit 2 Pump & Valve Central Control Station, JB-2437. (**Acc Crit**) _____

I. CCWP 2C Discharge Valve CLOSED status is indicated (green light ON, red light OFF) on 2-M-15. (**Acc Crit**) _____

J. CCWP 2C Discharge Valve CLOSED status is indicated (green light ON, red light OFF) on local control panel JB-2950. (**Acc Crit**) _____

K. CCWP 2C motor heater is ENERGIZED (clamp-on ammeter indicates current flow). _____

L. Red light OFF at 480V CCW Pump Station Control Center B, Compt 2A after the discharge valve CLOSES. _____

M. Red light ON at 480V CCW Pump Station Control Center B, Compt 5C. _____

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

6.5 CCW Pump 2C and Discharge Valve Logic (continued)

[24] **REMOVE** the clamp-on ammeter in the 480V CCW Pump Station Bd & MCC B, Compt. 4D. _____

[25] **PLACE** CCWP 2C Inlet Valve 2-FCV-27-25 in an INTERMEDIATE POSITION (both red and green indicating lights ON), using 2-HS-27-25B. _____

[26] **PRESS** the OPEN 2-HS-27-31 pushbutton on local panel JB-2950, **AND**

VERIFY:

A. CCWP 2C Discharge Valve 2-FCV-27-31 STARTS TO OPEN. _____

B. CCWP 2C breaker does not CLOSE. (**Acc Crit**) _____

C. CCWP 2C Discharge Valve 2-FCV-27-31 automatically CLOSES. _____

[27] **REOPEN** CCWP 2C Inlet Valve 2-FCV-27-25 by **PRESSING** the OPEN 2-HS-27-25B pushbutton. _____

[28] **PLACE** Hand Switch 2-HS-27-29D on the Central Control Station in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2C discharge valve 2-FCV-27-31 STARTS TO OPEN. (**Acc Crit**) _____

B. CCWP 2C breaker CLOSES. _____

C. CCWP 2C discharge valve 2-FCV-27-31 FULLY OPENS. _____

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

6.5 CCW Pump 2C and Discharge Valve Logic (continued)

[29] **PLACE** Hand Switch 2-HS-27-29D on the Central Control Station in the CLOSE position, **AND**

VERIFY:

A. CCWP 2C discharge valve 2-FCV-27-31 STARTS TO CLOSE. (**Acc Crit**) _____

B. CCWP 2C breaker OPENS when 2-FCV-27-31 indicates the 50% position. _____

C. CCWP 2C discharge valve 2-FCV-27-31 FULLY CLOSES. _____

[30] **PLACE** Hand Switch 2-HS-27-29D on the Central Control Station in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2C discharge valve 2-FCV-27-31 STARTS TO OPEN. _____

B. CCWP 2C breaker CLOSES. _____

C. CCWP 2C discharge valve 2-FCV-27-31 FULLY OPENS. _____

[31] **PLACE** Hand Switch 2-HS-27-29D on the Central Control Station in the PULL TO STOP/CLOSE position, **AND**

VERIFY:

A. CCWP 2C discharge valve 2-FCV-27-31 STARTS TO CLOSE. (**Acc Crit**) _____

B. CCWP 2C breaker OPENS. _____

C. CCWP 2C discharge valve 2-FCV-27-31 FULLY CLOSES. _____

[32] **RETURN** Hand Switch 2-HS-27-29D to the "Normal" (not pulled OUT) position. _____

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

6.5 CCW Pump 2C and Discharge Valve Logic (continued)

[33] **PLACE** Hand Switch 2-HS-27-29A on 2-M-15 in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2C discharge valve 2-FCV-27-31 STARTS TO OPEN. (**Acc Crit**) _____

B. CCWP 2C breaker CLOSES. _____

C. CCWP 2C Discharge valve 2-FCV-27-31 FULLY OPENS. _____

[34] **PLACE** Hand Switch 2-HS-27-29A in the CLOSE position, **AND**

VERIFY:

A. CCWP 2C Discharge valve 2-FCV-27-31 STARTS TO CLOSE. (**Acc Crit**) _____

B. CCWP 2C breaker OPENS when 2-FCV-27-31 indicates the 50% position. _____

C. CCWP 2C discharge valve 2-FCV-27-31 FULLY CLOSES. _____

[35] **PLACE** Hand Switch 2-HS-27-29A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2C discharge valve 2-FCV-27-31 OPENS. _____

B. CCWP 2C breaker CLOSES. _____

C. CCWP 2C discharge valve 2-FCV-27-31 FULLY OPENS. _____

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

6.5 CCW Pump 2C and Discharge Valve Logic (continued)

[36] **PLACE** Hand Switch 2-HS-27-29A in the PULL TO STOP/CLOSE position, **AND**

VERIFY:

A. CCWP 2C discharge valve 2-FCV-27-31 STARTS TO CLOSE. (**Acc Crit**) _____

B. CCWP 2C breaker OPENS. _____

C. CCWP 2C discharge valve 2-FCV-27-31 FULLY CLOSES. _____

[37] **RETURN** Hand Switch 2-HS-27-29A to the "Normal" (not pulled OUT) position. _____

[38] **PLACE** Hand Switch 2-HS-27-29A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2C discharge valve 2-FCV-27-31 STARTS TO OPEN. _____

B. CCWP 2C breaker CLOSES. _____

C. CCWP 2C discharge valve 2-FCV-27-31 FULLY OPENS. _____

D. CCWP MOTOR OVERLOAD alarm CLEAR on 2-XA-55-15A, window 164C, on 2-M-15. _____

E. CCW/HPFP/RCW MOTOR TRIP OUT alarm CLEAR on 2-XA-55-15A, window 164B, on 2-M-15. _____

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

6.5 CCW Pump 2C and Discharge Valve Logic (continued)

NOTE

The disc that is held in step [38] should remain held until told to release in step [40].

[39] **ACTUATE** (manually ROTATE and HOLD the disc) the time portion (51) of the Ø A over current relay 50/51/83 at 6900V Unit Bd 2C, Compt. #9, **AND**

VERIFY:

A. CCWP 2C breaker does not OPEN. _____

B. CCWP MOTOR OVERLOAD alarm ANNUNCIATES on 2-XA155-15A, window 164C, on 2-M-15. (**Acc Crit**) _____

C. CCWP 2C white indicating light ON at 2-HS-27-29A on 2-M-15. _____

[40] **MOMENTARILY PLACE** a jumper between terminal points 9 and 10 on the back of the Ø A over current relay 50/51/83, to simulate "83" coil pickup, **AND**

VERIFY:

A. CCWP 2C breaker OPENS. _____

B. CCW/HPFP/RCW MOTOR TRIP OUT alarm ANNUNCIATES on 2-XA-55-15A, window 164B, on 2-M-15. (**Acc Crit**) _____

C. Discharge Valve 2-FCV-27-31 STARTS TO CLOSE, following an approx. 7 sec time delay, after the CCWP 2C breaker OPENS. (**Acc Crit**) _____

D. TIME target on relay is visible. _____

[41] **RELEASE** the Ø A over current relay 50/51/83 disc. _____

[42] **VERIFY** the CCW/HPFP/RCW MOTOR TRIP OUT alarm CLEARS on 2-XA-55-15A, window 164B, on 2-M-15 when CCWP 2C discharge valve 2-FCV-27-31 indicates the 50% position. _____

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

6.5 CCW Pump 2C and Discharge Valve Logic (continued)

[43] **RESET** the TIME (51) target for the Ø A over current relay 50/51/83, **AND**

VERIFY:

A. CCWP MOTOR OVERLOAD alarm CLEARS on 2-XA-55-15A, window 164C, on 2-M-15. _____

B. CCWP 2C white indicating light OFF at 2-HS-27-29A on 2-M-15. _____

[44] Once 2-FCV-27-31 is fully closed, **PLACE** Hand Switch 2-HS-27-29A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2C discharge valve 2-FCV-27-31 STARTS TO OPEN. _____

B. CCWP 2C breaker CLOSES. _____

C. CCWP 2C discharge valve 2-FCV-27-31 FULLY OPENS. _____

[45] **ACTUATE** (momentarily manually LIFT the plunger) the instantaneous portion (50) of: the Ø A over current relay 50/51/83 at 6900V Unit Bd 2C, compt. #9, **AND**

VERIFY:

A. CCWP 2C breaker OPENS. _____

B. INST Target on relay is visible. _____

C. Discharge Valve 2-FCV-27-31 STARTS TO CLOSE, following an approx. 7 sec time delay, after the CCWP 2C breaker OPENS. _____

D. CCW/HPFP/RCW MOTOR TRIP OUT alarm ANUNICATES on 2-XA-55-15A, window 164B, on 2-M-15. _____

E. CCWP 2C white indicating light ON at 2-HS-27-29A on 2-M-15. _____

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

6.5 CCW Pump 2C and Discharge Valve Logic (continued)

[46] **VERIFY** the following when CCWP 2C discharge valve 2-FCV-27-31 indicates the 50% position:

A. CCW/HPFP/RCW MOTOR TRIP OUT alarm CLEARS on 2-XA-55-15A, window 164B, on 2-M-15. _____

B. CCWP 2C white indicating light OFF at 2-HS-27-29A on 2-M-15. _____

[47] **RESET** the INST (50) target for the Ø A over current relay 50/51/83. _____

[48] Once 2-FCV-27-31 is fully closed, **PLACE** Hand Switch 2-HS-27-29A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2C discharge valve 2-FCV-27-31 STARTS TO OPEN. _____

B. CCWP 2C breaker CLOSES. _____

C. CCWP 2C discharge valve 2-FCV-27-31 FULLY OPENS. _____

NOTE

The disc that is held in step [48] should remain held until told to release in step [50].

[49] **ACTUATE** (manually ROTATE and HOLD the disc) the time portion (51) of the Ø C over current relay 50/51/83 at 6900V Unit Bd 2C, Compt. #9, **AND**

VERIFY:

A. CCWP 2C breaker does not OPEN. _____

B. CCWP MOTOR OVERLOAD alarm ANNUNCIATES on 2-XA-55-15A, window 164C, on 2-M-15. _____

C. CCWP 2C white indicating light ON at 2-HS-27-29A on 2-M-15. _____

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

6.5 CCW Pump 2C and Discharge Valve Logic (continued)

[50] **MOMENTARILY PLACE** a jumper between terminal points 9 and 10 on the back of the Ø C over current relay 50/51/83, to simulate "83" coil pickup, **AND**

VERIFY:

A. CCWP 2C breaker OPENS. _____

B. CCW/HPFP/RCW MOTOR TRIP OUT alarm ANNUNCIATES on 2-XA-55-15A, window 164B, on 2-M-15. _____

C. Discharge Valve 2-FCV-27-31 STARTS TO CLOSE, following an approx. 7 sec time delay, after the CCWP 2C breaker OPENS. _____

D. TIME target on relay is visible. _____

[51] **RELEASE** the Ø C over current relay 50/51/83 disc. _____

[52] **VERIFY** the CCW/HPFP/RCW MOTOR TRIP OUT alarm CLEARS on 2-XA-55-15A, window 164B, on 2-M-15 when CCWP 2C discharge valve 2-FCV-27-31 indicates the 50% position. _____

[53] **RESET** the TIME (51) target for the Ø C over current, relay 50/51/83, **AND**

VERIFY:

A. CCWP MOTOR OVERLOAD alarm CLEARS on 2-XA-55-15A, window 164C, on 2-M-15. _____

B. CCWP 2C white indicating light OFF at 2-HS-27-29A on 2-M-15. _____

[54] Once 2-FCV-27-31 is fully closed, **PLACE** Hand Switch 2-HS-27-29A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2C discharge valve 2-FCV-27-31 STARTS TO OPEN. _____

B. CCWP 2C breaker CLOSES. _____

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

6.5 CCW Pump 2C and Discharge Valve Logic (continued)

C. CCWP 2C discharge valve 2-FCV-27-31 FULLY OPENS. _____

[55] **ACTUATE** (momentarily manually LIFT the plunger) the instantaneous portion (50) of the Ø C over current relay 50/51/83 at 6900V Unit Bd 2C, Compt. #9, **AND**

VERIFY:

A. CCWP 2C breaker OPENS. _____

B. INST Target on relay is visible. _____

C. CCW/HPFP/RCW MOTOR TRIP OUT alarm ANNUNCIATES on 2-XA-55-15A, window 164B, on 2-M-15. _____

D. CCWP 2C white indicating light ON at 2-HS-27-29A on 2-M-15. _____

E. Discharge Valve 2-FCV-27-31 STARTS TO CLOSE, following an approx. 7 sec time delay, after the CCWP 2C breaker OPENS. _____

[56] **VERIFY** the following when CCWP 2C discharge valve 2-FCV-27-31 indicates the 50% position:

A. CCW/HPFP/RCW MOTOR TRIP OUT alarm CLEARS on 2-XA-55-15A, window 164B, on 2-M-15. _____

B. CCWP 2C white indicating light OFF at 2-H9-27-29A on 2-M-15. _____

[57] **RESET** the INST (50) target for the Ø C over current relay 50/51/83. _____

[58] Once 2-FCV-27-31 is fully closed, **PLACE** Hand Switch 2-HS-27-29A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2C discharge valve 2-FCV-27-31 STARTS TO OPEN. _____

B. CCWP 2C breaker CLOSES. _____

C. CCWP 2C discharge valve 2-FCV-27-31 FULLY OPENS. _____

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

6.5 CCW Pump 2C and Discharge Valve Logic (continued)

[59] **ACTUATE** (momentarily manually LIFT the plunger) the ground over current relay 50G at 6900V Unit Bd 2C, Compt #9, **AND**

VERIFY:

A. CCWP 2C breaker OPENS. _____

B. Target on relay is visible. _____

C. CCW/HPFP/RCW MOTOR TRIP OUT alarm ANNUNCIATES on 2-XA-55-15A, window 164B, on 2-M-15. _____

D. CCWP 2C white indicating light ON at 2-HS-27-29A on 2-M-15. _____

E. Discharge Valve 2-FCV-27-31 STARTS TO CLOSE, following an approx. 7 sec time delay, after the CCWP 2C breaker OPENS. _____

[60] **VERIFY** the following when CCWP 2C discharge valve 2-FCV-27-31 indicates the 50% position:

A. CCW/HPFP/RCW MOTOR TRIP OUT alarm CLEARS on 2-XA-55-15A, window 164B, on 2-M-15. _____

B. CCWP 2C white indicating light OFF at 2-HS-27-29A on 2-M-15. _____

[61] **RESET** the target for the ground over current relay 50G. _____

[62] Once 2-FCV-27-31 is fully closed, **PLACE** Hand Switch 2-HS-27-29A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2C discharge valve 2-FCV-27-31 STARTS TO OPEN. _____

B. CCWP 2C breaker CLOSES. _____

C. CCWP 2C discharge valve 2-FCV-27-31 FULLY OPENS. _____

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

6.5 CCW Pump 2C and Discharge Valve Logic (continued)

CAUTION

The following step also trips the 2B Hot Well Pump and the 2B #7 Heater Drain Pump. Notify the SM/US and obtain permission prior to performing the next step.

[63] **ACTUATE** (manually) the 272CX relay in the 6900V Unit Bd 2C, Compt. #3, **AND**

VERIFY:

A. CCWP 2C breaker OPENS. _____

B. CCWP 2C Discharge Valve 2-FCV-27-31 CLOSES. _____

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

6.6 CCW Pump 2D and Discharge Valve Logic

[1] **VERIFY** the prerequisites, Section 4.0, for Subsection 6.6 are complete. _____

[2] **PRESS** the CLOSE test pushbutton (Inside compartment door) in 6900V Unit Bd 2D, Compt. #5, (CCW Pump 2D, 2-MTR-27-39), **AND**

VERIFY:

A. CCWP 2D breaker 2-BKR-27-39 CLOSED, by RED flag. _____

B. CCWP 2D breaker local green light OFF & red light ON. _____

[3] **PLACE** CCWP 2D Hand Switch 2-HS-27-39A on 2-M-15 in the CLOSE position, **AND**

VERIFY the CCWP 2D breaker did not OPEN. _____

[4] **PRESS** the TRIP test pushbutton (Inside compartment door) in 6900V Unit Bd 2D, Compt. #5, (CCW Pump 2D, 2-MTR-27-39), **AND**

VERIFY:

A. CCWP 2D breaker OPEN, by GREEN flag. _____

B. CCWP 2D breaker local green light ON & red light OFF. _____

[5] **PRESS** the TEST 2-HS-27-39B pushbutton on the local panel (outside, adjacent to the CCWP 2D motor), **AND**

VERIFY the 6900V Unit Bd 2D, Compt. #5, CCW Pump 2D, 2-MTR-27-39 breaker does not CLOSE. _____

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

6.6 CCW Pump 2D and Discharge Valve Logic (continued)

[6] **PERFORM** the following steps at the CCWP 2D breaker (2-BKR-27-039):

A. **DISCONNECT** the test umbilical cord,

REMOVE test plunger extension, **AND**

REMOVE the breaker from the panel. _____

B. **RACK-UP** the elevator mechanism for the CCWP 2D breaker. _____

C. **PLACE** the CCWP 2D breaker in the TEST position,

INSTALL the test umbilical cable, **AND**

INSTALL plunger extension. _____

[7] **PRESS** the CLOSE test pushbutton in the 6900V Unit Bd 2D, Compt. #5 (CCW Pump 2D, 2-MTR-27-39) cubicle, **AND**

VERIFY the breaker does not CLOSE. _____

[8] **PRESS** and **HOLD** the TEST 2-HS-27-39B pushbutton, **AND**

VERIFY:

A. CCWP 2D breaker CLOSES. _____

B. CCWP 2D Discharge Valve 2-FCV-27-41 remains CLOSED. _____

[9] **RELEASE** the 2-HS-27-39B TEST pushbutton, **AND**

VERIFY the CCWP 2D breaker OPENS. _____

[10] **PRESS** the SAFE STOP 2-HS-27-39B pushbutton. _____

[11] **PRESS** the TEST 2-HS-27-39B pushbutton, **AND**

VERIFY CCWP 2D breaker does not CLOSE. _____

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

6.6 CCW Pump 2D and Discharge Valve Logic (continued)

CAUTION

Steps [12] - [15] should be performed in rapid succession, so that the valve does not reach the end of its travel prior to pressing the manual stop.

[12] **PRESS** the OPEN 2-HS-27-41 pushbutton on local panel JB-2950,

START two timers, **AND**

VERIFY:

A. CCWP 2D Discharge Valve 2-FCV-27-41 STARTS TO OPEN. (**Acc Crit**) _____

B. CCWP 2D breaker does not CLOSE. _____

[13] **RECORD** the time when discharge valve 2-FCV-27-41 STOPS OPENING. (**Acc Crit**)

M&TE _____ Cal Due Date _____

Time _____ seconds (3 sec. ± .3 sec.)

_____

[14] **RECORD** the time when discharge valve 2-FCV-27-41 STARTS TO CLOSE. (**Acc Crit**)

M&TE _____ Cal Due Date _____

Time _____ seconds (7 sec. ± .7 sec.)

_____

[15] **PRESS** and **HOLD** the STOP 2-HS-27-41 pushbutton, **AND**

VERIFY CCWP 2D discharge valve 2-FCV-27-41 STOPS. (**Acc Crit**) _____

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

6.6 CCW Pump 2D and Discharge Valve Logic (continued)

[16] **RELEASE** the STOP 2-HS-27-41 pushbutton, **AND**

VERIFY CCWP 2D discharge valve 2-FCV-27-41 CLOSES. _____

[17] **INSTALL** a clamp-on ammeter on one of the CCWP 2D motor heater leads in 480V CCW Pump Station Bd & MCC B, Compt. 5D, **AND**

RECORD the current.

M&TE _____ Cal Due Date _____

CURRENT _____ AMPS _____

[18] **PRESS** the RESET 2-HS-27-39B pushbutton. _____

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

6.6 CCW Pump 2D and Discharge Valve Logic (continued)

[19] **PRESS** the OPEN 2-HS-27-41 pushbutton on local panel JB-2950, **AND**

VERIFY:

A. CCWP 2D Discharge Valve 2-FCV-27-41 STARTS TO OPEN. _____

B. Red light ON at 480V CCW Pump Station Control Center B, Compt 2B, during the discharge valve OPENING. _____

C. The CCWP 2D breaker CLOSES. (**Acc Crit**) _____

D. CCWP 2D motor status indicates RUNNING (red light ON, green light OFF) on the CCW Unit 2 Pump & Valve Central Control Station, JB-2437. (**Acc Crit**) _____

E. CCWP 2D motor status indicates RUNNING (red light ON, green light OFF) on 2-M-15. (**Acc Crit**) _____

F. Computer point Y2425D indicates the CCWP 2D Breaker is CLOSED. _____

G. CCWP 2D Discharge valve 2-FCV-27-41 fully OPENS. _____

H. CCWP 2D Discharge Valve OPEN status is indicated (red light ON, green light OFF) on the CCW Unit 2 Pump & Valve Central Control Station, JB-2437. (**Acc Crit**) _____

I. CCWP 2D Discharge Valve OPEN status is indicated (red light ON, green light OFF) on 2-M-15. (**Acc Crit**) _____

J. CCWP 2D Discharge Valve OPEN status is indicated (red light ON, green light OFF) on local control panel JB-2950. (**Acc Crit**) _____

K. CCWP 2D motor heater is DE-ENERGIZED (clamp-on ammeter indicates no current flow). _____

L. Red light OFF at 480V CCW Pump Station Control Center B, Compt 2B, after the discharge valve OPENS. _____

M. Red light OFF at 480V CCW Pump Station Control Center B, Compt 5D. _____

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

6.6 CCW Pump 2D and Discharge Valve Logic (continued)

[20] **PRESS** the CLOSE 2-HS-27-35B pushbutton on local panel JB-2952, **AND**

VERIFY CCWP 2D Inlet Valve 2-FCV-27-35 does not CLOSE. (**Acc Crit**) _____

[21] **PLACE** Hand Switch 2-HS-27-35A on the Central Control Station in the CLOSE position, **AND**

VERIFY CCWP 2D Inlet Valve 2-FCV-27-35 does not CLOSE. (**Acc Crit**) _____

[22] **PRESS** the TRIP test pushbutton in the 6900V Unit Bd 2D, Compt. #5, CCW Pump 2D, 2-MTR-27-39, cubicle, **AND**

VERIFY the breaker does not OPEN. _____

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

6.6 CCW Pump 2D and Discharge Valve Logic (continued)

[23] **PRESS** the CLOSE 2-HS-27-41 pushbutton on local panel JB-2950, **AND**

VERIFY:

A. CCWP 2D Discharge Valve 2-FCV-27-41 STARTS TO CLOSE. (**Acc Crit**) _____

B. Red light ON at 480V CCW Pump Station Control Center B, Compt 2B, during the discharge valve CLOSING. _____

C. CCWP 2D breaker OPENS when its discharge valve indicates the 50% position. (**Acc Crit**) _____

D. CCWP 2D motor status indicates NOT RUNNING (green light ON, red light OFF) on the CCW Unit 2 Pump & Valve Central Control Station, JB-2437. (**Acc Crit**) _____

E. CCWP 2D motor status indicates NOT RUNNING (green light ON, red light OFF) on 2-M-15. (**Acc Crit**) _____

F. Computer point Y2425D indicates the CCWP 2D Breaker is OPEN. _____

G. CCWP 2D Discharge Valve 2-FCV-27-41 fully CLOSES. _____

H. CCWP 2D Discharge Valve CLOSED status is indicated (green light ON, red light OFF) on the CCW Unit 2 Pump & Valve Central Control Station, JB-2437. (**Acc Crit**) _____

I. CCWP 2D Discharge Valve CLOSED status is indicated (green light ON, red light OFF) on 2-M-15. (**Acc Crit**) _____

J. CCWP 2D Discharge Valve CLOSED status is indicated (green light ON, red light OFF) on local control panel JB-2950. (**Acc Crit**) _____

K. CCWP 2D motor heater is ENERGIZED (clamp-on ammeter indicates current flow). _____

L. Red light OFF at 480V CCW Pump Station Control Center B, Compt 2B after the discharge valve CLOSES. _____

M. Red light ON at 480V CCW Pump Station Control Center B, Compt 5D. _____

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

6.6 CCW Pump 2D and Discharge Valve Logic (continued)

[24] **REMOVE** the clamp-on ammeter in the 480V CCW Pump Station Bd & MCC B, Compt. 5D. _____

[25] **PLACE** CCWP 2D Inlet Valve 2-FCV-27-35 in an INTERMEDIATE POSITION (both red and green indicating lights ON), using 2-HS-27-35B. _____

[26] **PRESS** the OPEN 2-HS-27-41 pushbutton on local panel JB-2950, **AND**

VERIFY:

A. CCWP 2D Discharge Valve 2-FCV-27-41 STARTS TO OPEN. _____

B. CCWP 2D breaker does not CLOSE. (**Acc Crit**) _____

C. CCWP 2D Discharge Valve 2-FCV-27-41 automatically CLOSES. _____

[27] **REOPEN** CCWP 2D Inlet Valve 2-FCV-27-35 by **PRESSING** the OPEN 2-HS-27-35B pushbutton. _____

[28] **PLACE** Hand Switch 2-HS-27-39D on the Central Control Station in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2D discharge valve 2-FCV-27-41 STARTS TO OPEN. (**Acc Crit**) _____

B. CCWP 2D breaker CLOSES. _____

C. CCWP 2D discharge valve 2-FCV-27-41 FULLY OPENS. _____

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

6.6 CCW Pump 2D and Discharge Valve Logic (continued)

[29] **PLACE** Hand Switch 2-HS-27-39D on the Central Control Station in the CLOSE position, **AND**

VERIFY:

A. CCWP 2D discharge valve 2-FCV-27-41 STARTS TO CLOSE. (**Acc Crit**) _____

B. CCWP 2D breaker OPENS when 2-FCV-27-41 indicates the 50% position. _____

C. CCWP 2D discharge valve 2-FCV-27-41 FULLY CLOSES. _____

[30] **PLACE** Hand Switch 2-HS-27-39D on the Central Control Station in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2D discharge valve 2-FCV-27-41 STARTS TO OPEN. _____

B. CCWP 2D breaker CLOSES. _____

C. CCWP 2D discharge valve 2-FCV-27-41 FULLY OPENS. _____

[31] **PLACE** Hand Switch 2-HS-27-39D on the Central Control Station in the PULL TO STOP/CLOSE position, **AND**

VERIFY:

A. CCWP 2D discharge valve 2-FCV-27-41 STARTS TO CLOSE. (**Acc Crit**) _____

B. CCWP 2D breaker OPENS. _____

C. CCWP 2D discharge valve 2-FCV-27-41 FULLY CLOSES. _____

[32] **RETURN** Hand Switch 2-HS-27-39D to the "Normal" (not pulled OUT) position. _____

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

6.6 CCW Pump 2D and Discharge Valve Logic (continued)

[33] **PLACE** Hand Switch 2-HS-27-39A on 2-M-15 in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2D discharge valve 2-FCV-27-41 STARTS TO OPEN. (**Acc Crit**) _____

B. CCWP 2D breaker CLOSES. _____

C. CCWP 2D Discharge valve 2-FCV-27-41 FULLY OPENS. _____

[34] **PLACE** Hand Switch 2-HS-27-39A in the CLOSE position, **AND**

VERIFY:

A. CCWP 2D Discharge valve 2-FCV-27-41 STARTS TO CLOSE. (**Acc Crit**) _____

B. CCWP 2D breaker OPENS when 2-FCV-27-41 indicates the 50% position. _____

C. CCWP 2D discharge valve 2-FCV-27-41 FULLY CLOSES. _____

[35] **PLACE** Hand Switch 2-HS-27-39A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2D discharge valve 2-FCV-27-41 OPENS. _____

B. CCWP 2D breaker CLOSES. _____

C. CCWP 2D discharge valve 2-FCV-27-41 FULLY OPENS. _____

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

6.6 CCW Pump 2D and Discharge Valve Logic (continued)

[36] **PLACE** Hand Switch 2-HS-27-39A in the PULL TO STOP/CLOSE position, **AND**

VERIFY:

A. CCWP 2D discharge valve 2-FCV-27-41 STARTS TO CLOSE. (**Acc Crit**) _____

B. CCWP 2D breaker OPENS. _____

C. CCWP 2D discharge valve 2-FCV-27-41 FULLY CLOSES. _____

[37] **RETURN** Hand Switch 2-HS-27-39A to the "Normal" (not pulled OUT) position. _____

[38] **PLACE** Hand Switch 2-HS-27-39A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2D discharge valve 2-FCV-27-41 STARTS TO OPEN. _____

B. CCWP 2D breaker CLOSES. _____

C. CCWP 2D discharge valve 2-FCV-27-41 FULLY OPENS. _____

D. CCWP MOTOR OVERLOAD alarm CLEAR on 2-XA-55-15A, window 164C, on 2-M-15. _____

E. CCW/HPFP/RCW MOTOR TRIP OUT alarm CLEAR on 2-XA-55-15A, window 164B, on 2-M-5. _____

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6.6 CCW Pump 2D and Discharge Valve Logic (continued)

NOTE
The disc that is held in step [38] should remain held until told to release in step [40].

[39] **ACTUATE** (manually ROTATE and HOLD the disc) the time portion (51) of the Ø A over current relay 50/51/83 at 6900V Unit Bd 2D, Compt. #5, **AND**

VERIFY:

A. CCWP 2D breaker does not OPEN. _____

B. CCWP MOTOR OVERLOAD alarm ANNUNCIATES on 2-XA-55-15A, window 164C, on 2-M-15. (**Acc Crit**) _____

C. CCWP 2D white indicating light ON at 2-HS-27-39A on 2-M-15. _____

[40] **MOMENTARILY PLACE** a jumper between terminal points 9 and 10 on the back of the Ø A over current relay 50/51/83, to simulate "83" coil pickup, **AND**

VERIFY:

A. CCWP 2D breaker OPENS. _____

B. CCW/HPFP/RCW MOTOR TRIP OUT alarm ANNUNCIATES on 2-XA-55-15A, window 164B, on 2-M-15. (**Acc Crit**) _____

C. Discharge Valve 2-FCV-27-41 STARTS TO CLOSE, following an approx. 7 sec time delay, after the CCWP 2D breaker OPENS. (**Acc Crit**) _____

D. TIME target on relay is visible. _____

[41] **RELEASE** the Ø A over current relay 50/51/83 disc. _____

[42] **VERIFY** the CCW/HPFP/RCW MOTOR TRIP OUT alarm CLEARS on 2-XA-55-15A, window 164B, on 2-M-15 when CCWP 2D discharge valve 2-FCV-27-41 indicates the 50% position. _____

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

6.6 CCW Pump 2D and Discharge Valve Logic (continued)

[43] **RESET** the TIME (51) target for the Ø A over current relay 50/51/83, **AND**

VERIFY:

A. CCWP MOTOR OVERLOAD alarm CLEARS on 2-XA-55-15A, window 164C, on 2-M-15. _____

B. CCWP 2D white indicating light OFF at 2-HS-27-39A on 2-M-15. _____

[44] Once 2-FCV-27-41 is fully closed, **PLACE** Hand Switch 2-HS-27-39A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2D discharge valve 2-FCV-27-41 STARTS TO OPEN. _____

B. CCWP 2D breaker CLOSES. _____

C. CCWP 2D discharge valve 2-FCV-27-41 FULLY OPENS. _____

[45] **ACTUATE** (momentarily manually LIFT the plunger) the instantaneous portion (50) of the Ø A over current relay 50/51/83 at 6900V Unit Bd 2D, Compt. #5, **AND**

VERIFY:

A. CCWP 2D breaker OPENS. _____

B. INST Target on relay is visible. _____

C. Discharge Valve 2-FCV-27-41 STARTS TO CLOSE, following an approx. 7 sec time delay, after the CCWP 2D breaker OPENS. _____

D. CCW/HPFP/RCW MOTOR TRIP OUT alarm ANUNICATES on 2-XA-55-15A, window 164B, on 2-M-15. _____

E. CCWP 2D white indicating light ON at 2-HS-27-39A on 2-M-15. _____

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6.6 CCW Pump 2D and Discharge Valve Logic (continued)

[46] **VERIFY** the following when CCWP 2D discharge valve 2-FCV-27-41 indicates the 50% position:

A. CCW/HPFP/RCW MOTOR TRIP OUT alarm CLEARS on 2-XA-55-15A, window 164B, on 2-M-15. _____

B. CCWP 2D white indicating light OFF at 2-HS-27-39A on 2-M-15. _____

[47] **RESET** the INST (50) target for the Ø A over current relay 50/51/83. _____

[48] Once 2-FCV-27-41 is fully closed, **PLACE** Hand Switch 2-HS-27-39A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2D discharge valve 2-FCV-27-41 STARTS TO OPEN. _____

B. CCWP 2D breaker CLOSES. _____

C. CCWP 2D discharge valve 2-FCV-27-41 FULLY OPENS. _____

NOTE

The disc that is held in step [48] should remain held until told to release in step [50].

[49] **ACTUATE** (manually ROTATE and HOLD the disc) the time portion (51) of the Ø C over current relay 50/51/83 at 6900V Unit Bd 2D, Compt. #5, **AND**

VERIFY:

A. CCWP 2D breaker does not OPEN. _____

B. CCWP MOTOR OVERLOAD alarm ANNUNCIATES on 2-XA-55-15A, window 164C, on 2-M-15. _____

C. CCWP 2D white indicating light ON at 2-HS-27-39A on 2-M-15. _____

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

6.6 CCW Pump 2D and Discharge Valve Logic (continued)

[50] **MOMENTARILY PLACE** a jumper between terminal points 9 and 10 on the back of the Ø C over current relay 50/51/83, to simulate "83" coil pickup, **AND**

VERIFY:

A. CCWP 2D breaker OPENS. _____

B. CCW/HPFP/RCW MOTOR TRIP OUT alarm ANNUNCIATES On 2-XA-55-15A, window 164B, on 2-M-15. _____

C. Discharge Valve 2-FCV-27-41 STARTS TO CLOSE, following an approx. 7 sec time delay, after the CCWP 2D breaker OPENS. _____

D. TIME target on relay is visible. _____

[51] **RELEASE** the Ø C over current relay 50/51/83 disc. _____

[52] **VERIFY** the CCW/HPFP/RCW MOTOR TRIP OUT alarm CLEARS on 2-XA-55-15A, window 164B, on 2-M-15 when CCWP 2D discharge valve 2-FCV-27-41 indicates the 50% position. _____

[53] **RESET** the TIME (51) target for the Ø C over current, relay 50/51/83, **AND**

VERIFY:

A. CCWP MOTOR OVERLOAD alarm CLEARS on 2-XA-55-15A, window 164C, on 2-M-15. _____

B. CCWP 2D white indicating light OFF at 2-HS-27-39A on 2-M-15. _____

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6.6 CCW Pump 2D and Discharge Valve Logic (continued)

[54] Once 2-FCV-27-41 is fully closed, **PLACE** Hand Switch 2-HS-27-39A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2D discharge valve 2-FCV-27-41 STARTS TO OPEN. _____

B. CCWP 2D breaker CLOSES. _____

C. CCWP 2D discharge valve 2-FCV-27-41 FULLY OPENS. _____

[55] **ACTUATE** (momentarily manually LIFT the plunger) the instantaneous portion (50) of the Ø C over current relay 50/51/83 at 6900V Unit Bd 2D, Compt. #5, **AND**

VERIFY:

A. CCWP 2D breaker OPENS. _____

B. INST Target on relay is visible. _____

C. Discharge Valve 2-FCV-27-41 STARTS TO CLOSE, following an approx. 7 sec time delay, after the CCWP 2D breaker OPENS. _____

D. CCW/HPFP/RCW MOTOR TRIP OUT alarm ANNUNCIATES on 2-XA-55-15A, window 164B, on 2-M-15. _____

E. CCWP 2D white indicating light ON at 2-HS-27-39A on 2-M-15. _____

[56] **VERIFY** the following when CCWP 2D discharge valve 2-FCV-27-41 indicates the 50% position:

A. CCW/HPFP/RCW MOTOR TRIP OUT alarm CLEARS on 2-XA-55-15A, window 164B, on 2-M-15. _____

B. CCWP 2D white indicating light OFF at 2-H9-27-39A on 2-M-15. _____

[57] **RESET** the INST (50) target for the Ø C over current relay 50/51/83. _____

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

6.6 CCW Pump 2D and Discharge Valve Logic (continued)

[58] Once 2-FCV-27-41 is fully closed, **PLACE** Hand Switch 2-HS-27-39A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2D discharge valve 2-FCV-27-41 STARTS TO OPEN. _____

B. CCWP 2D breaker CLOSES. _____

C. CCWP 2D discharge valve 2-FCV-27-41 FULLY OPENS. _____

[59] **ACTUATE** (momentarily manually LIFT the plunger) the ground over current relay 50G at 6900V Unit Bd 2D, Compt #5, **AND**

VERIFY:

A. CCWP 2D breaker OPENS. _____

B. Target on relay is visible. _____

C. CCW/HPFP/RCW MOTOR TRIP OUT alarm ANNUNCIATES on 2-XA-55-15A, window 164B, on 2-M-15. _____

D. CCWP 2D white indicating light ON at 2-HS-27-39A on 2-M-15. _____

E. Discharge Valve 2-FCV-27-41 STARTS TO CLOSE, following an approx. 7 sec time delay, after the CCWP 2D breaker OPENS. _____

[60] **VERIFY** the following when CCWP 2D discharge valve 2-FCV-27-41 indicates the 50% position:

A. CCW/HPFP/RCW MOTOR TRIP OUT alarm CLEARS on 2-XA-55- 15A, window 164B, on 2-M-15. _____

B. CCWP 2D white indicating light OFF at 2-HS-27-39A on 2-M-15. _____

[61] **RESET** the target for the ground over current relay 50G. _____

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6.6 CCW Pump 2D and Discharge Valve Logic (continued)

[62] Once 2-FCV-27-41 is fully closed, **PLACE** Hand Switch 2-HS-27-39A in the OPEN/START position, **AND**

VERIFY:

A. CCWP 2D discharge valve 2-FCV-27-41 STARTS TO OPEN. _____

B. CCWP 2D breaker CLOSES. _____

C. CCWP 2D discharge valve 2-FCV-27-41 FULLY OPENS. _____

CAUTION

The following step also trips the 2C Hot Well Pump and the 2C #3 Heater Drain Pump. Notify the SM/US and obtain permission prior to performing the next step.

[63] **ACTUATE** (manually) the 272DX relay in the 6900V Unit Bd 2D, Compt. #9, **AND**

VERIFY:

A. CCWP 2D breaker OPENS. _____

B. CCWP 2D Discharge Valve 2-FCV-27-41 CLOSES. _____

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6.7 CCW Pump Start Interlocks

[1] **VERIFY** the prerequisites, Section 4.0, for Subsection 6.7 are complete. _____

[2] **PRESS** the CLOSE 2-HS-27-55B pushbutton on the local control panel, **AND**

VERIFY East Side Cond CCW Inlet Valve 2-FCV-27-55 STARTS TO CLOSE. _____

[3] **PRESS** the STOP 2-HS-27-55B pushbutton on the local control panel when an INTERMEDIATE POSITION (both red & green indicating lights ON) is indicated, **AND**

VERIFY East Side Cond CCW Inlet Valve 2-FCV-27-55 STOPS. _____

[4] **MANUALLY PLACE** the West Side Cond CCW Inlet Valve 2-FCV-27-65 in an INTERMEDIATE POSITION. _____

[5] **PRESS** the TEST 2-HS-27-9B pushbutton on the local panel (outside, adjacent to the CCWP 2A motor), **AND**

VERIFY 2-BKR-27-9, CCWP 2A, 2-MTR-27-9, 6900V Unit Bd 2A, Compt #9, does not CLOSE. (**Acc Crit**) _____

[6] **PRESS** the TEST 2-HS-27-19B pushbutton on the local panel (outside, adjacent to the CCWP 2B motor), **AND**

VERIFY 2-BKR-27-19, CCWP 2B, 2-MTR-27-19, 6900V Unit Bd 2B, Compt #5, does not CLOSE. (**Acc Crit**) _____

[7] **PRESS** the TEST 2-HS-27-29B pushbutton on the local panel (outside, adjacent to the CCWP 2C motor), **AND**

VERIFY 2-BKR-27-29, CCWP 2C, 2-MTR-27-29, 6900V Unit Bd 2C, Compt #9, does not CLOSE. (**Acc Crit**) _____

[8] **PRESS** the TEST 2-HS-27-39B pushbutton on the local panel (outside, adjacent to the CCWP 2D motor), **AND**

VERIFY 2-BKR-27-39, CCWP 2D, 2-MTR-27-39, 6900V Unit Bd 2D, Compt #5, does not CLOSE. (**Acc Crit**) _____

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

6.7 CCW Pump Start Interlocks (continued)

[9] **PRESS** the OPEN 2-HS-27-65B pushbutton on the local control panel, **AND**

VERIFY West Side Cond CCW Inlet Valve 2-FCV-27-65 fully OPENS. _____

[10] **MANUALLY PLACE** the West Side Cond CCW Outlet Valve 2-FCV-27-87 in an INTERMEDIATE POSITION. _____

[11] **PRESS** the TEST 2-HS-27-9B pushbutton on the local panel (outside, adjacent to the CCWP 2A motor), **AND**

VERIFY CCWP 2A, 2-MTR-27-9, 6900V Unit Bd 2A, Compt #9, does not CLOSE in the test position. (**Acc Crit**) _____

[12] **PRESS** the TEST 2-HS-27-19B pushbutton on the local panel (outside, adjacent to the CCWP 2B motor), **AND**

VERIFY CCWP 2B, 2-MTR-27-19, 6900V Unit Bd 2B, Compt #5, does not CLOSE in the test position. (**Acc Crit**) _____

[13] **PRESS** the TEST 2-HS-27-29B pushbutton on the local panel (outside, adjacent to the CCWP 2C motor), **AND**

VERIFY CCWP 2C, 2-MTR-27-29, 6900V Unit Bd 2C, Compt #9, does not CLOSE in the test position. (**Acc Crit**) _____

[14] **PRESS** the TEST 2-HS-27-39B pushbutton on the local panel (outside, adjacent to the CCWP 2D motor), **AND**

VERIFY CCWP 2D, 2-MTR-27-39, 6900V Unit Bd 2D, Compt #5, does not CLOSE in the test position. (**Acc Crit**) _____

[15] **PRESS** the OPEN 2-HS-27-55B pushbutton on the local control panel, **AND**

VERIFY East Side Cond CCW Inlet Valve 2-FCV-27-55 fully OPENS. _____

[16] **MANUALLY PLACE** the East Side Cond CCW Outlet Valve 2-FCV-27-77 in an INTERMEDIATE POSITION. _____

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6.7 CCW Pump Start Interlocks (continued)

[17] **PRESS** the TEST 2-HS-27-9B pushbutton on the local panel (outside, adjacent to the CCWP 2A motor), **AND**

VERIFY CCWP 2A, 2-MTR-27-9, 6900V Unit Bd 2A, Compt #9, does not CLOSE in the test position. (**Acc Crit**) _____

[18] **PRESS** the TEST 2-HS-27-19B pushbutton on the local panel (outside, adjacent to the CCWP 2B motor), **AND**

VERIFY CCWP 2B, 2-MTR-27-19, 6900V Unit Bd 2B, Compt #5, does not CLOSE in the test position. (**Acc Crit**) _____

[19] **PRESS** the TEST 2-HS-27-29B pushbutton on the local panel (outside, adjacent to the CCWP 2C motor), **AND**

VERIFY CCWP 2C, 2-MTR-27-29, 6900V Unit Bd 2C, Compt #9, does not CLOSE in the test position. (**Acc Crit**) _____

[20] **PRESS** the TEST 2-HS-27-39B pushbutton on the local panel (outside, adjacent to the CCWP 2D motor), **AND**

VERIFY CCWP 2D, 2-MTR-27-39, 6900V Unit Bd 2D, Compt #5, does not CLOSE in the test position. (**Acc Crit**) _____

[21] **PRESS** the OPEN 2-HS-27-87B pushbutton on the local control panel, **AND**

VERIFY West Side Cond CCW Outlet Valve 2-FCV-27-87 fully OPENS. _____

[22] **MANUALLY PLACE** the West Side Cond CCW Inlet Valve 2-FCV-27-65 in an INTERMEDIATE POSITION. _____

[23] **PRESS** the TEST 2-HS-27-9B pushbutton on the local panel (outside, adjacent to the CCWP 2A motor), **AND**

VERIFY CCWP 2A, 2-MTR-27-9, 6900V Unit Bd 2A, Compt, #9, does not CLOSE in the test position. (**Acc Crit**) _____

[24] **PRESS** the TEST 2-HS-27-19B pushbutton on the local panel (outside, adjacent to the CCWP 2B motor), **AND**

VERIFY CCWP 2B, 2-MTR-27-19, 6900V Unit Bd 2B Compt #5, does not CLOSE in the test position. (**Acc Crit**) _____

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

6.7 CCW Pump Start Interlocks (continued)

[25] **PRESS** the TEST 2-HS-27-29B pushbutton on the local panel (outside, adjacent to the CCWP 2C motor), **AND**

VERIFY CCWP 2C. 2-MTR-27-29, 6900V Unit Bd 2C, Compt #9, does not CLOSE in the TEST position. (**Acc Crit**) _____

[26] **PRESS** the TEST 2-HS-27-39B pushbutton on the local panel (outside, adjacent to the CCWP 2D motor), **AND**

VERIFY CCWP 2D, 2-MTR-27-39, 6900V Unit 2D, Compt #5, does not CLOSE in the test position. (**Acc Crit**) _____

[27] **PRESS** the OPEN 2-HS-27-77B pushbutton on the local control panel, **AND**

VERIFY East Side Cond CCW Outlet Valve 2-FCV-27-77 fully OPENS. _____

[28] **PRESS** the OPEN 2-HS-27-65B pushbutton on the local control panel, **AND**

VERIFY West Side Cond CCW Inlet Valve 2-FCV-27-65 fully OPENS. _____

NOTE

The following steps test the CCWP 2A interlocks with the other pumps/discharge valves.

NOTE

Steps [29] and [30] must be performed within 7 seconds, or 2-FCV-27-21 will close.

[29] **PRESS** the OPEN 2-HS-27-21 pushbutton on local panel JB-2948. _____

[30] Once the TDR stops movement of the CCWP 2B Discharge Valve 2-FCV-27-21 (Approx. 3 seconds), **OPEN** 2-BKR-27-21. _____

[31] **PRESS** the TEST 2-HS-27-9B pushbutton, **AND**

VERIFY the CCWP 2A breaker does not CLOSE. (**Acc Crit**) _____

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

6.7 CCW Pump Start Interlocks (continued)

[32] **PRESS** and **HOLD** the TEST 2-HS-27-19B pushbutton on the local panel (outside, adjacent to the CCWP 2B motor), **AND**

VERIFY the CCWP 2B breaker CLOSES. _____

[33] **PRESS** and **RELEASE** the TEST 2-HS-27-9B pushbutton, **AND**

VERIFY:

A. CCWP 2A breaker CLOSES when the pushbutton is pressed. (**Acc Crit**) _____

B. CCWP 2A breaker OPENS when the pushbutton is RELEASED. _____

[34] **RELEASE** the TEST 2-HS-27-19B pushbutton, **AND**

VERIFY the CCWP 2B breaker OPENS. _____

[35] **CLOSE** CCWP 2B Discharge Valve's breaker (0-MCC-225-B, Compartment 1B), **AND**

VERIFY the 2-FCV-27-21 valve CLOSES. _____

NOTE

Steps [36] and [37] must be performed within 7 seconds, or 2-FCV-27-31 will close.

[36] **PRESS** the OPEN 2-HS-27-31 pushbutton on local panel JB-2950. _____

[37] Once the TDR stops movement of the CCWP 2B Discharge Valve 2-FCV-27-31 (Approx. 3 seconds), **OPEN** 2-BKR-27-31. _____

[38] **PRESS** the TEST 2-HS-27-9B pushbutton, **AND**

VERIFY the CCWP 2A breaker does not CLOSE. (**Acc Crit**) _____

[39] **PRESS** and **HOLD** the TEST 2-HS-27-29B pushbutton on the local panel (outside, adjacent to the CCWP 2C motor), **AND**

VERIFY the CCWP 2C breaker CLOSES. _____

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6.7 CCW Pump Start Interlocks (continued)

[40] **PRESS** and **RELEASE** the TEST 2-HS-27-9B pushbutton, **AND**

VERIFY:

A. CCWP 2A breaker CLOSES when the pushbutton is pressed. (**Acc Crit**) _____

B. CCWP 2A breaker OPENS when the pushbutton is RELEASED. _____

[41] **RELEASE** the TEST 2-HS-27-29B pushbutton, **AND**

VERIFY the CCWP 2C breaker OPENS. _____

[42] **CLOSE** CCWP 2C Discharge Valve's breaker (0-MCC-225-B, Compartment 2A), **AND**

VERIFY the 2-FCV-27-31 valve CLOSES. _____

NOTE

Steps [43] and [44] must be performed within 7 seconds, or 2-FCV-27-41 will close.

[43] **PRESS** the OPEN 2-HS-27-41 pushbutton on local panel JB-2950. _____

[44] Once the TDR stops movement of the CCWP 2B Discharge Valve 2-FCV-27-41 (Approx. 3 seconds), **OPEN** 2-BKR-27-41. _____

[45] **PRESS** the TEST 2-HS-27-9B pushbutton, **AND**

VERIFY the CCWP 2A breaker does not CLOSE. (**Acc Crit**) _____

[46] **PRESS** and **HOLD** the TEST 2-HS-27-39B pushbutton on the local panel (outside, adjacent to the CCWP 2D motor), **AND**

VERIFY the CCWP 2D breaker CLOSES. _____

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

6.7 CCW Pump Start Interlocks (continued)

[47] **PRESS** and **RELEASE** the TEST 2-HS-27-9B pushbutton, **AND**

VERIFY:

A. CCWP 2A breaker CLOSES when the pushbutton is pressed. (**Acc Crit**) _____

B. CCWP 2A breaker OPENS when the pushbutton is RELEASED. _____

[48] **RELEASE** the TEST 2-HS-27-39B pushbutton, **AND**

VERIFY the CCWP 2D breaker OPENS. _____

[49] **CLOSE** CCWP 2D Discharge Valve's breaker (0-MCC-225-B, Compartment 2B), **AND**

VERIFY the 2-FCV-27-41 valve CLOSES. _____

NOTE

The following steps test the CCWP 2B interlocks with the other pumps/discharge valves.

NOTE

Steps [50] and [51] must be performed within 7 seconds, or 2-FCV-27-11 will close.

[50] **PRESS** the OPEN 2-HS-27-11 pushbutton on local panel JB-2948. _____

[51] Once the TDR stops movement of the CCWP 2B Discharge Valve 2-FCV-27-11 (Approx. 3 seconds), **OPEN** 2-BKR-27-11. _____

[52] **PRESS** the TEST 2-HS-27-19B pushbutton, **AND**

VERIFY the CCWP 2B breaker does not CLOSE. (**Acc Crit**) _____

[53] **PRESS** and **HOLD** the TEST 2-HS-27-9B pushbutton on the local panel (outside, adjacent to the CCWP 2A motor), **AND**

VERIFY the CCWP 2A breaker CLOSES. _____

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

6.7 CCW Pump Start Interlocks (continued)

[54] **PRESS** and **RELEASE** the TEST 2-HS-27-19B pushbutton, **AND**

VERIFY:

A. CCWP 2B breaker CLOSES when the pushbutton is pressed. (**Acc Crit**) _____

B. CCWP 2B breaker OPENS when the pushbutton is RELEASED. _____

[55] **RELEASE** the TEST 2-HS-27-9B pushbutton, **AND**

VERIFY the CCWP 2A breaker OPENS. _____

[56] **CLOSE** CCWP 2A Discharge Valve's breaker (0-MCC-225-B, Compartment 1A), **AND**

VERIFY the 2-FCV-27-11 valve CLOSES. _____

NOTE

Steps [57] and [58] must be performed within 7 seconds, or 2-FCV-27-31 will close.

[57] **PRESS** the OPEN 2-HS-27-31 pushbutton on local panel JB-2950. _____

[58] Once the TDR stops movement of the CCWP 2B Discharge Valve 2-FCV-27-31 (Approx. 3 seconds), **OPEN** 2-BKR-27-31. _____

[59] **PRESS** the TEST 2-HS-27-19B pushbutton, **AND**

VERIFY the CCWP 2B breaker does not CLOSE. (**Acc Crit**) _____

[60] **PRESS** and **HOLD** the TEST 2-HS-27-29B pushbutton on the local panel (outside, adjacent to the CCWP 2C motor), **AND**

VERIFY the CCWP 2C breaker CLOSES. _____

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

6.7 CCW Pump Start Interlocks (continued)

[61] **PRESS** and **RELEASE** the TEST 2-HS-27-19B pushbutton, **AND**

VERIFY:

A. CCWP 2B breaker CLOSES when the pushbutton is pressed. (**Acc Crit**) _____

B. CCWP 2B breaker OPENS when the pushbutton is RELEASED. _____

[62] **RELEASE** the TEST 2-HS-27-29B pushbutton, **AND**

VERIFY the CCWP 2C breaker OPENS. _____

[63] **CLOSE** CCWP 2C Discharge Valve's breaker (0-MCC-225-B, Compartment 2A), **AND**

VERIFY the 2-FCV-27-31 valve CLOSES. _____

NOTE

Steps [64] and [65] must be performed within 7 seconds, or 2-FCV-27-41 will close.

[64] **PRESS** the OPEN 2-HS-27-41 pushbutton on local panel JB-2950. _____

[65] Once the TDR stops movement of the CCWP 2B Discharge Valve 2-FCV-27-41 (Approx. 3 seconds), **OPEN** 2-BKR-27-41. _____

[66] **PRESS** the TEST 2-HS-27-19B pushbutton, **AND**

VERIFY the CCWP 2B breaker does not CLOSE. (**Acc Crit**) _____

[67] **PRESS** and **HOLD** the TEST 2-HS-27-39B pushbutton on the local panel (outside, adjacent to the CCWP 2D motor), **AND**

VERIFY the CCWP 2D breaker CLOSES. _____

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

6.7 CCW Pump Start Interlocks (continued)

[68] **PRESS** and **RELEASE** the TEST 2-HS-27-19B pushbutton, **AND**

VERIFY:

A. CCWP 2B breaker CLOSES when the pushbutton is pressed. (**Acc Crit**) _____

B. CCWP 2B breaker OPENS when the pushbutton is RELEASED. _____

[69] **RELEASE** the TEST 2-HS-27-39B pushbutton, **AND**

VERIFY CCWP 2D breaker OPENS. _____

[70] **CLOSE** CCWP 2D Discharge Valve's breaker (0-MCC-225-B, Compartment 2B), **AND**

VERIFY the 2-FCV-27-41 valve CLOSES. _____

NOTE

The following steps test the CCWP 2C interlocks with the other pumps/discharge valves.

NOTE

Steps [71] and [72] must be performed within 7 seconds, or 2-FCV-27-11 will close.

[71] **PRESS** the OPEN 2-HS-27-11 pushbutton on local panel JB-2948. _____

[72] Once the TDR stops movement of the CCWP 2B Discharge Valve 2-FCV-27-11 (Approx. 3 seconds), **OPEN** 2-BKR-27-11. _____

[73] **PRESS** the TEST 2-HS-27-29B pushbutton, **AND**

VERIFY the CCWP 2C breaker does not CLOSE. (**Acc Crit**) _____

[74] **PRESS** and **HOLD** the TEST 2-HS-27-9B pushbutton on the local panel (outside, adjacent to the CCWP 2A motor), **AND**

VERIFY the CCWP 2A breaker CLOSES. _____

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

6.7 CCW Pump Start Interlocks (continued)

[75] **PRESS** and **RELEASE** the TEST 2-HS-27-29B pushbutton, **AND**

VERIFY:

A. CCWP 2C breaker CLOSES when the pushbutton is pressed. (**Acc Crit**) _____

B. CCWP 2C breaker OPENS when the pushbutton is RELEASED. _____

[76] **RELEASE** the TEST 2-HS-27-9B pushbutton, **AND**

VERIFY the CCWP 2A breaker OPENS. _____

[77] **CLOSE** CCWP 2A Discharge Valve's breaker (0-MCC-225-B-1A), **AND**

VERIFY the 2-FCV-27-11 valve CLOSES. _____

NOTE

Steps [78] and [79] must be performed within 7 seconds, or 2-FCV-27-21 will close.

[78] **PRESS** the OPEN 2-HS-27-21 pushbutton on local panel JB-2948. _____

[79] Once the TDR stops movement of the CCWP 2B Discharge Valve 2-FCV-27-21 (Approx. 3 seconds), **OPEN** 2-BKR-27-21. _____

[80] **PRESS** the TEST 2-HS-27-29B pushbutton, **AND**

VERIFY the CCWP 2C breaker does not CLOSE. (**Acc Crit**) _____

[81] **PRESS** and **HOLD** the TEST 2-HS-27-19B pushbutton on the local panel (outside, adjacent to the CCWP 2B motor), **AND**

VERIFY the CCWP 2B breaker CLOSES. _____

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

6.7 CCW Pump Start Interlocks (continued)

[82] **PRESS** and **RELEASE** the TEST 2-HS-27-29B pushbutton, **AND**

VERIFY:

A. CCWP 2C breaker CLOSES when the pushbutton is pressed. (**Acc Crit**) _____

B. CCWP 2C breaker OPENS when the pushbutton is RELEASED. _____

[83] **RELEASE** the TEST 2-HS-27-19B pushbutton, **AND**

VERIFY the CCWP 2B breaker OPENS. _____

[84] **CLOSE** CCWP 2B Discharge Valve's breaker (0-MCC-225-B-1B), **AND**

VERIFY the 2-FCV-27-21 valve CLOSES. _____

NOTE

Steps [85] and [86] must be performed within 7 seconds, or 2-FCV-27-41 will close.

[85] **PRESS** the OPEN 2-HS-27-41 pushbutton on local panel JB-2950. _____

[86] Once the TDR stops movement of the CCWP 2B Discharge Valve 2-FCV-27-41 (Approx. 3 seconds), **OPEN** 2-BKR-27-41. _____

[87] **PRESS** the TEST 2-HS-27-29B pushbutton, **AND**

VERIFY the CCWP 2C breaker does not CLOSE. (**Acc Crit**) _____

[88] **PRESS** and **HOLD** the TEST 2-HS-27-39B pushbutton on the local panel (outside, adjacent to the CCWP 2D motor), **AND**

VERIFY the CCWP 2D breaker CLOSES. _____

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6.7 CCW Pump Start Interlocks (continued)

[89] **PRESS** and **RELEASE** the TEST 2-HS-27-29B pushbutton, **AND**

VERIFY:

A. CCWP 2C breaker CLOSES when the pushbutton is pressed. (**Acc Crit**) _____

B. CCWP 2C breaker OPENS when the pushbutton is RELEASED. _____

[90] **RELEASE** the TEST 2-HS-27-39B pushbutton, **AND**

VERIFY the CCWP 2D breaker OPENS. _____

[91] **CLOSE** CCWP 2D Discharge Valve's breaker (0-MCC-225-B-2B), **AND**

VERIFY the 2-FCV-27-41 valve CLOSES. _____

NOTE

The following steps test the CCWP 2D interlocks with the other pumps/discharge valves.

NOTE

Steps [92] and [93] must be performed within 7 seconds, or 2-FCV-27-11 will close.

[92] **PRESS** the OPEN 2-HS-27-11 pushbutton on local panel JB-2948. _____

[93] Once the TDR stops movement of the CCWP 2B Discharge Valve 2-FCV-27-11 (Approx. 3 seconds), **OPEN** 2-BKR-27-11. _____

[94] **PRESS** the TEST 2-HS-27-39B pushbutton, **AND**

VERIFY the CCWP 2D breaker does not CLOSE. (**Acc Crit**) _____

[95] **PRESS** and **HOLD** the TEST 2-HS-27-9B pushbutton on the local panel (outside, adjacent to the CCWP 2A motor), **AND**

VERIFY the CCWP 2A breaker CLOSES. _____

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6.7 CCW Pump Start Interlocks (continued)

[96] **PRESS** and **RELEASE** the TEST 2-HS-27-39B pushbutton, **AND**

VERIFY:

A. CCWP 2D breaker CLOSES when the pushbutton is pressed. (**Acc Crit**) _____

B. CCWP 2D breaker OPENS when the pushbutton is RELEASED. _____

[97] **RELEASE** the TEST 2-HS-27-9B pushbutton, **AND**

VERIFY the CCWP 2A breaker OPENS. _____

[98] **CLOSE** CCWP 2A Discharge Valve's breaker (0-MCC-225-B, Compartment 1A), **AND**

VERIFY the 2-FCV-27-11 valve CLOSES. _____

NOTE

Steps [99] and [100] must be performed within 7 seconds, or 2-FCV-27-21 will close.

[99] **PRESS** the OPEN 2-HS-27-21 pushbutton on local panel JB-2948. _____

[100] Once the TDR stops movement of the CCWP 2B Discharge Valve 2-FCV-27-21 (Approx. 3 seconds), **OPEN** 2-BKR-27-21. _____

[101] **PRESS** the TEST 2-HS-27-39B pushbutton, **AND**

VERIFY the CCWP 2D breaker does not CLOSE. (**Acc Crit**) _____

[102] **PRESS** and **HOLD** the TEST 2-HS-27-19B pushbutton on the local panel (outside, adjacent to the CCWP 2B motor), **AND**

VERIFY the CCWP 2B breaker CLOSES. _____

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6.7 CCW Pump Start Interlocks (continued)

[103] **PRESS** and **RELEASE** the TEST 2-HS-27-39B pushbutton, **AND**

VERIFY:

A. CCWP 2D breaker CLOSES when the pushbutton is pressed. (**Acc Crit**) _____

B. CCWP 2D breaker OPENS when the pushbutton is RELEASED. _____

[104] **RELEASE** the TEST 2-HS-27-19B pushbutton, **AND**

VERIFY the CCWP 2B breaker OPENS. _____

[105] **CLOSE** CCWP 2B Discharge Valve's breaker (0-MCC-225-B, Compartment 1B), **AND**

VERIFY the 2-FCV-27-21 valve CLOSES. _____

NOTE

Steps [106] and [107] must be performed within 7 seconds, or 2-FCV-27-31 will close.

[106] **PRESS** the OPEN 2-HS-27-31 pushbutton on local panel JB-2950. _____

[107] Once the TDR stops movement of the CCWP 2B Discharge Valve 2-FCV-27-31 (Approx. 3 seconds), **OPEN** 2-BKR-27-31. _____

[108] **PRESS** the TEST 2-HS-27-39B pushbutton, **AND**

VERIFY the CCWP 2D breaker does not CLOSE. (**Acc Crit**) _____

[109] **PRESS** and **HOLD** the TEST 2-HS-27-29B pushbutton on the local panel (outside, adjacent to the CCWP 2C motor), **AND**

VERIFY the CCWP 2C breaker CLOSES. _____

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6.7 CCW Pump Start Interlocks (continued)

[110] **PRESS** and **RELEASE** the TEST 2-HS-27-39B pushbutton, **AND**

VERIFY:

A. CCWP 2D breaker CLOSES when the pushbutton is pressed. (**Acc Crit**) _____

B. CCWP 2D breaker OPENS when the pushbutton is RELEASED. _____

[111] **RELEASE** the TEST 2-HS-27-29B pushbutton, **AND**

VERIFY the CCWP 2C breaker OPENS. _____

[112] **CLOSE** CCWP 2C Discharge Valve's breaker (0-MCC-225-B, Compartment 2A), **AND**

VERIFY the 2-FCV-27-31 valve CLOSES. _____

6.8 Cooling Tower Valves

[1] **VERIFY** the Prerequisites, Section 4.0, for Subsection 6.8 are complete. _____

[2] **PLACE** Hand Switch 2-HS-27-92A in the OPEN position on 2-M-15, **AND**

VERIFY:

A. Red light ON at 480V CCW Pump Station Motor Control Center B, Compt 1E, while valve is OPENING. _____

B. Cooling Tower Bypass Valve 2-FCV-27-92 OPENS. (**Acc Crit**) _____

C. Cooling Tower Bypass Valve 2-FCV-27-92 OPEN status (red indicating light ON, green indicating light OFF) on the local control panel. (**Acc Crit**) _____

D. Cooling Tower Bypass Valve 2-FCV-27-92 OPEN status (red indicating light ON, green indicating light OFF) on 2-M-15. (**Acc Crit**) _____

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6.8 Cooling Tower Valves (continued)

[3] **PLACE** Hand Switch 2-HS-27-92A in the CLOSE position on 2-M-15, **AND**

VERIFY:

A. Red light ON at 480V CCW Pump Station Motor Control Center B, Compt 1E, while valve is CLOSING. _____

B. Cooling Tower Bypass Valve 2-FCV-27-92 CLOSES. (**Acc Crit**) _____

C. Cooling Tower Bypass Valve 2-FCV-27-92 CLOSED status (green indicating light ON, red indicating light OFF) on the local control panel. (**Acc Crit**) _____

D. Cooling Tower Bypass Valve 2-FCV-27-92 CLOSED status (green indicating light ON, red indicating light OFF) on 2-M-15. (**Acc Crit**) _____

[4] **PRESS** the OPEN 2-HS-27-92B pushbutton on the local control panel, **AND**

VERIFY Cooling Tower Bypass Valve 2-FCV-27-92 STARTS TO OPEN. (**Acc Crit**) _____

[5] **OBSERVE** travel for 10 seconds, **THEN**

PRESS the STOP 2-HS-27-92B pushbutton on the local control panel, **AND**

VERIFY Cooling Tower Bypass Valve 2-FCV-27-92 STOPS. (**Acc Crit**) _____

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6.8 Cooling Tower Valves (continued)

CAUTION

The actions in step [6] should be performed in rapid succession, so that the valve does not reach the end of travel prior to pressing the manual stop button.

[6] **PRESS** the CLOSE 2-HS-27-92B pushbutton on the local control panel, **AND**

VERIFY Cooling Tower Bypass Valve 2-FCV-27-92 STARTS TO CLOSE, **THEN**

IMMEDIATELY PRESS the STOP 2-HS-27-92B pushbutton on the local control panel. **(Acc Crit)** _____

[7] **VERIFY** Cooling Tower Bypass Valve 2-FCV-27-92 STOPS. **(Acc Crit)** _____

[8] **PLACE** Hand Switch 2-HS-27-92A on 2-M-15 in the OPEN position, **AND**

VERIFY Cooling Tower Bypass Valve 2-FCV-27-92 STARTS TO OPEN. **(Acc Crit)** _____

[9] **PRESS** the STOP 2-HS-27-92B pushbutton on the local control panel, **AND**

VERIFY Cooling Tower Bypass Valve 2-FCV-27-92 STOPS. **(Acc Crit)** _____

[10] **PLACE** Hand Switch 2-HS-27-92A on 2-M-15 in the CLOSE position, **AND**

VERIFY Cooling Tower Bypass Valve 2-FCV-27-92 CLOSES. **(Acc Crit)** _____

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6.8 Cooling Tower Valves (continued)

[11] **PLACE** Hand Switch 2-HS-27-140A on 2-M-15 in the CLOSE position, **AND**

VERIFY:

A. Cooling Tower De-icing Valve 2-FCV-27-140 (Slide Gate 2A) CLOSES. (**Acc Crit**) _____

B. Cooling Tower De-icing Valve 2-FCV-27-140 (Slide Gate 2A) CLOSED status (green indicating light ON, red indicating light OFF) on 2-M-15. (**Acc Crit**) _____

[12] **PLACE** Hand Switch 2-HS-27-140A on 2-M-15 in the OPEN position, **AND**

VERIFY:

A. Cooling Tower De-icing Valve 2-FCV-27-140 (Slide Gate 2A) OPENS. (**Acc Crit**) _____

B. Cooling Tower De-icing Valve 2-FCV-27-140 (Slide Gate 2A) OPEN status (red indicating light ON, green indicating light OFF) on 2-M-15. (**Acc Crit**) _____

[13] **PLACE** local (mounted on valve operator) Hand Switch 2-HS-27-140B to the CLOSE position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-140 (Slide Gate 2A) STARTS TO CLOSE. (**Acc Crit**) _____

[14] **OBSERVE** travel for 10 seconds, **THEN**

PRESS the STOP 2-HS-27-140B pushbutton, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-140 (Slide Gate 2A) STOPS. (**Acc Crit**) _____

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6.8 Cooling Tower Valves (continued)

CAUTION

The actions in step [15] should be performed in rapid succession, so that the valve does not reach the end of travel prior to pressing the manual stop button.

[15] **PLACE** local (mounted on valve operator) Hand Switch 2-HS-27-140B to the OPEN position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-140 (Slide Gate 2A) STARTS TO OPEN, **THEN**

PRESS the STOP 2-HS-27-140B pushbutton. (**Acc Crit**) _____

[16] **VERIFY** Cooling Tower De-icing Valve 2-FCV-27-140 (Slide Gate 2A) STOPS. (**Acc Crit**) _____

[17] **PLACE** the 2-XS-27-140 selector switch (mounted on valve operator) in the REMOTE position. _____

[18] **PLACE** Hand Switch 2-HS-27-140A on 2-M-15 in the CLOSE position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-140 (Slide Gate 2A) STARTS TO CLOSE. _____

[19] **OBSERVE** travel for 10 seconds, **THEN**

PRESS the STOP 2-HS-27-140B pushbutton, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-140 (Slide Gate 2A) STOPS. _____

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6.8 Cooling Tower Valves (continued)

CAUTION

The actions in step [20] should be performed in rapid succession, so that the valve does not reach the end of travel prior to pressing the manual stop button.

[20] **PLACE** Hand Switch 2-HS-27-140A on 2-M-I5 in the OPEN position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-140 (Slide Gate 2A) STARTS TO OPEN, **THEN**

PRESS the STOP 2-HS-27-140B pushbutton. _____

[21] **VERIFY** Cooling Tower De-icing Valve 2-FCV-27-140 (Slide Gate 2A) STOPS. _____

[22] **PLACE** local (mounted on valve operator) Hand Switch 2-HS-27-140B to the CLOSE position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-140 (Slide Gate 2A) does not MOVE. _____

[23] **PLACE** local (mounted on valve operator) Hand Switch 2-HS-27-140B to the OPEN position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-140 (Slide Gate 2A) does not MOVE. _____

[24] **PLACE** the 2-XS-27-140 selector switch (mounted on valve operator) in the LOCAL position. _____

[25] **PLACE** local (mounted on valve operator) Hand Switch 2-HS-27-140B to the CLOSE position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-140 (Slide Gate 2A) STARTS TO CLOSE. _____

[26] **OBSERVE** travel for 10 seconds, **THEN**

PRESS the STOP 2-HS-27-140B pushbutton, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-140 (Slide Gate 2A) STOPS. _____

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

6.8 Cooling Tower Valves (continued)

CAUTION

The actions in step [27] should be performed in rapid succession, so that the valve does not reach the end of travel prior to pressing the manual stop button.

[27] **PLACE** local (mounted on valve operator) Hand Switch 2-HS-27-140B to the OPEN position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-140 (Slide Gate 2A) STARTS TO OPEN, **THEN**

PRESS the STOP 2-HS-27-140B pushbutton. _____

[28] **VERIFY** Cooling Tower De-icing Valve 2-FCV-27-140 (Slide Gate 2A) STOPS. _____

[29] **PLACE** Hand Switch 2-HS-27-140A on 2-M-15 in the CLOSE position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-140 (Slide Gate 2A) does not MOVE. _____

[30] **PLACE** Hand Switch 2-HS-27-140A on 2-M-15 in the OPEN position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-140 (Slide Gate 2A) does not MOVE. _____

[31] **PLACE** the 2-XS-27-140 selector switch (mounted on valve operator) in the LOCAL & REMOTE position. _____

[32] **PLACE** Hand Switch 2-HS-27-140A on 2-M-15 in the OPEN position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-140 (Slide Gate 2A) OPENS. _____

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

6.8 Cooling Tower Valves (continued)

[33] **PLACE** Hand Switch 2-HS-27-141A on 2-M-15 in the CLOSE position, **AND**

VERIFY:

A. Cooling Tower De-icing Valve 2-FCV-27-141 (Slide Gate 2A) CLOSES. (**Acc Crit**) _____

B. Cooling Tower De-icing Valve 2-FCV-27-141 (Slide Gate 2A) CLOSED status (green indicating light ON, red indicating light OFF) on 2-M-15. (**Acc Crit**) _____

[34] **PLACE** Hand Switch 2-HS-27-141A on 2-M-15 in the OPEN position, **AND**

VERIFY:

A. Cooling Tower De-icing Valve 2-FCV-27-141 (Slide Gate 2A) OPENS. (**Acc Crit**) _____

B. Cooling Tower De-icing Valve 2-FCV-27-141 (Slide Gate 2A) OPEN status (red indicating light ON, green indicating light OFF) on 2-M-15. (**Acc Crit**) _____

[35] **PLACE** local (mounted on valve operator) Hand Switch 2-HS-27-141B to the CLOSE position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-141 (Slide Gate 2A) STARTS TO CLOSE. (**Acc Crit**) _____

[36] **OBSERVE** travel for 10 seconds, **THEN**

PRESS the STOP 2-HS-27-141B pushbutton, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-141 (Slide Gate 2A) STOPS. (**Acc Crit**) _____

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

6.8 Cooling Tower Valves (continued)

CAUTION

The actions in step [37] should be performed in rapid succession, so that the valve does not reach the end of travel prior to pressing the manual stop button.

[37] **PLACE** local (mounted on valve operator) Hand Switch 2-HS-27-141B to the OPEN position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-141 (Slide Gate 2A) STARTS TO OPEN, **THEN**

PRESS the STOP 2-HS-27-141B pushbutton. (**Acc Crit**) _____

[38] **VERIFY** Cooling Tower De-icing Valve 2-FCV-27-141 (Slide Gate 2A) STOPS. (**Acc Crit**) _____

[39] **PLACE** the 2-XS-27-141 selector switch (mounted on valve operator) in the REMOTE position. _____

[40] **PLACE** Hand Switch 2-HS-27-141A on 2-M-15 in the CLOSE position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-141 (Slide Gate 2A) STARTS TO CLOSE. _____

[41] **OBSERVE** travel for 10 seconds, **THEN**

PRESS the STOP 2-HS-27-141B pushbutton, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-141 (Slide Gate 2A) STOPS. _____

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

6.8 Cooling Tower Valves (continued)

CAUTION

The actions in step [42] should be performed in rapid succession, so that the valve does not reach the end of travel prior to pressing the manual stop button.

[42] **PLACE** Hand Switch 2-HS-27-141A on 2-M-15 in the OPEN position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-141 (Slide Gate 2A) STARTS TO OPEN, **THEN**

PRESS the STOP 2-HS-27-141B pushbutton. _____

[43] **VERIFY** Cooling Tower De-icing Valve 2-FCV-27-141 (Slide Gate 2A) STOPS. _____

[44] **PLACE** local (mounted on valve operator) Hand Switch 2-HS-27-141B to the CLOSE position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-141 (Slide Gate 2A) does not MOVE. _____

[45] **PLACE** local (mounted on valve operator) Hand Switch 2-HS-27-141B to the OPEN position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-141 (Slide Gate 2A) does not MOVE. _____

[46] **PLACE** the 2-XS-27-141 selector switch (mounted on valve operator) in the LOCAL position. _____

[47] **PLACE** local (mounted on valve operator) Hand Switch 2-HS-27-141B to the CLOSE position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-141 (Slide Gate 2A) STARTS TO CLOSE. _____

[48] **PRESS** the STOP 2-HS-27-141B pushbutton, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-141 (Slide Gate 2A) STOPS. _____

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

6.8 Cooling Tower Valves (continued)

[49] **PLACE** local (mounted on valve operator) Hand Switch 2-HS-27-141B to the OPEN position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-141 (Slide Gate 2A) STARTS TO OPEN. _____

[50] **PRESS** the STOP 2-HS-27-141B pushbutton, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-141 (Slide Gate 2A) STOPS. _____

[51] **PLACE** Hand Switch 2-HS-27-141A on 2-M-15 in the CLOSE position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-141 (Slide Gate 2A) does not MOVE. _____

[52] **PLACE** Hand Switch 2-HS-27-141A on 2-M-15 in the OPEN position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-141 (Slide Gate 2A) does not MOVE. _____

[53] **PLACE** the 2-XS-27-141 selector switch (mounted on valve operator) in the LOCAL & REMOTE position. _____

[54] **PLACE** Hand Switch 2-HS-27-141A on main control room panel 2-M-15 in the OPEN position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-141 (Slide Gate 2A) OPENS. _____

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

6.9 Normal Full Flow

[1] **VERIFY** the prerequisites, Section 4.0, for Subsection 6.9 are complete. _____

[2] **INSTALL** differential pressure gages to monitor condenser inlet/outlet water box differential pressure at the following locations:

A. 2-PDIS-27-70

M&TE _____ Cal Due Date _____ _____

B. 2-PDIS-27-80

M&TE _____ Cal Due Date _____ _____

[3] **REMOVE** the test umbilical cable and plunger,

RACK elevator mechanism down, **AND**

RACK UP the following breakers to the CONNECT position:

A. 6900V Unit Bd 2A, Compt #9, CCWP 2A, 2-BKR-27-9 _____

B. 6900V Unit Bd 2B, Compt #5, CCWP 2B, 2-BKR-27-19 _____

C. 6900V Unit Bd 2C, Compt #9, CCWP 2C, 2-BKR-27-29 _____

D. 6900VUnit Bd 2D, Compt #5, CCWP 2D, 2-BKR-27-39 _____

NOTES

1) The following steps require recording discharge valve characteristics during their pump start. (Stroke Time, Voltage, and Current)
2) Pump/discharge valve vibration is to be visually monitored in accordance with the reference 2.1.H, Appendix A guidelines during the pump start transient. Any excessive vibration will result in a Test Deficiency Notice (TDN) with engineering evaluation as part of the TDN closure.

[4] **PLACE** 2-HS-27-9D, CCWP 2A to the OPEN/START position. _____

[5] **RECORD** the Appendix H CCWP 2A Discharge Valve 2-FCV-27-11 opening information. _____

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

6.9 Normal Full Flow (continued)

[6] **OBSERVE** the pump/discharge valve vibration during starting, **AND**

VERIFY vibration is not excessive. _____

[7] **PLACE** 2-HS-27-19D, CCWP 2B to the OPEN/START position. _____

[8] **RECORD** the Appendix H CCWP 2B Discharge Valve 2-FCV-27-21 opening information. _____

[9] **OBSERVE** the pump/discharge valve vibration during starting, **AND**

VERIFY vibration is not excessive. _____

[10] **PLACE** 2-HS-27-29D, CCWP 2C to the OPEN/START position. _____

[11] **RECORD** the Appendix H CCWP 2C Discharge Valve 2-FCV-27-31 opening information. _____

[12] **OBSERVE** the pump/discharge valve vibration during starting, **AND**

VERIFY vibration is not excessive. _____

[13] **PLACE** 2-HS-27-39D, CCWP 2D to the OPEN/START position. _____

[14] **RECORD** the Appendix H CCWP 2D Discharge Valve 2-FCV-27-41 opening information. _____

[15] **OBSERVE** the pump/discharge valve vibration during starting, **AND**

VERIFY vibration is not excessive. _____

[16] **RECORD** the Appendix I and Appendix J information, after steady-state conditions have been reached. _____

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

6.9 Normal Full Flow (continued)

[17] **WALKDOWN** the accessible portions of the CCW System, **AND**

VERIFY the steady-state piping and component vibration is acceptable. _____

[18] **RECORD** the condenser inlet/outlet water box differential pressures indicated by the two test DP gages:

A. East Side

M&TE _____ Cal Due Date _____

_____ inches H_2O

_____

B. West Side

M&TE _____ Cal Due Date _____

_____ inches H_2O

_____

[19] **VERIFY** the condenser differential pressure recorded is greater than 342 in. H_2O on both the East and West sides of the condenser (greater than 410,000 GPM flow through the condenser per dwg 2-47W831-2). (**Acc Crit**) _____

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

6.10 De-Icing Flow

[1] **VERIFY** the prerequisites, Section 4.0, for Subsection 6.10 are complete. _____

NOTES

1) The following steps require recording the De-Icing Valve opening and closing characteristics. (Stroke Time, Voltage, and Current)
2) De-Icing Valve vibration is to be visually monitored in accordance with the reference 2.1.H Appendix A guidelines during the transient. Any excessive vibration will result in a Test Deficiency Notice (TDN) with engineering evaluation as part of the TDN closure.

[2] **PLACE** Hand Switch 2-HS-27-140A on 2-M-15 in the CLOSE position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-140 CLOSES. _____

[3] **RECORD** the Appendix K information for De-icing Valve 2-FCV-27-140 closing information. _____

[4] **OBSERVE** the de-icing valve vibration during starting, **AND**

VERIFY vibration is not excessive. _____

[5] **PLACE** Hand Switch 2-HS-27-141A on 2-M-15 in the CLOSE position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-141 CLOSES. _____

[6] **RECORD** the Appendix K information for De-icing valve 2-FCV-27-141 closing information. _____

[7] **OBSERVE** the de-icing valve vibration during starting, **AND**

VERIFY vibration is not excessive. _____

[8] **VERIFY** no CCW flow at the center of the cooling tower. (**Acc Crit**) _____

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

6.10 De-Icing Flow (continued)

[9] **WALKDOWN** the accessible portions of the CCW System, **AND**

VERIFY the steady-state piping and component vibration is acceptable. _____

[10] **PLACE** Hand Switch 2-HS-27-140A on 2-M-15 in the OPEN position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-140 OPENS. _____

[11] **RECORD** the Appendix K information for De-icing Valve 2-FCV-27-140 opening information. _____

[12] **OBSERVE** the de-icing valve vibration during starting, **AND**

VERIFY vibration is not excessive. _____

[13] **PLACE** Hand Switch 2-HS-27-141A on 2-M-15 in the OPEN position, **AND**

VERIFY Cooling Tower De-icing Valve 2-FCV-27-141 OPENS. _____

[14] **RECORD** the Appendix K information for De-icing Valve 2-FCV-27-141 opening information. _____

[15] **OBSERVE** the de-icing valve vibration during starting, **AND**

VERIFY vibration is not excessive. _____

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

6.11 Bypass Flow

[1] **VERIFY** the prerequisites, Section 4.0, for Subsection 6.11 are complete. _____

NOTES

1) The following steps require recording Pump Discharge Valve closing, and Cooling Tower Bypass Valve opening and closing, characteristics. (Stroke Time, Voltage, and Current)
2) Pump/discharge valve vibration is to be visually monitored in accordance with the reference 2.1.H Appendix A guidelines during the pump stopping transient. Any excessive vibration will result in a Test Deficiency Notice (TDN) with engineering evaluation as part of the TDN closure.

[2] **PLACE** 2-HS-27-39D in the CLOSE position, to STOP CCWP 2D. _____

[3] **RECORD** the Appendix L CCWP 2D Discharge Valve 2-FCV-27-41 closing information. _____

[4] **OBSERVE** the pump/discharge valve vibration during stopping, **AND**

VERIFY vibration is not excessive. _____

[5] **RECORD** the condenser inlet/outlet water box differential pressures indicated by the two test DP gages, (expected value is 264 in H_2O, nominally):

A. East Side

M&TE _____ Cal Due Date _____ _____

_____ inches in H_2O _____

B. West Side

M&TE _____ Cal Due Date _____ _____

_____ inches in H_2O _____

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

6.11 Bypass Flow (continued)

[6] **PLACE** 2-HS-27-29D in the CLOSE position, to STOP the CCWP 2C. _____

[7] **RECORD** the Appendix L CCWP 2C Discharge Valve 2-FCV-27-31 closing information. _____

[8] **OBSERVE** the pump/discharge valve vibration during stopping, **AND**

VERIFY vibration is not excessive. _____

[9] **PLACE** Hand Switch 2-HS-27-92A on 2-M-15 in the OPEN position, **AND**

VERIFY the Cooling Tower Bypass Valve 2-FCV-27-92 OPENS. _____

[10] **RECORD** the Appendix L Cooling Tower Bypass Valve 2-FCV-27-92 opening information. _____

[11] **OBSERVE** the Cooling Tower Bypass Valve vibration during opening, **AND**

VERIFY vibration is not excessive. _____

[12] **VERIFY** no CCW flow through the cooling tower distribution system. (**Acc Crit**) _____

[13] **RECORD** the Appendix M information, after steady-state conditions have been reached. _____

[14] **WALKDOWN** the accessible portions of the CCW System, **AND**

VERIFY the steady-state piping and component vibration is acceptable. _____

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

6.11 Bypass Flow (continued)

[15] **RECORD** the condenser inlet/outlet water box differential pressures indicated by the two test DP gages, (expected value is 144" H_2O, nominally):

A. East Side

M&TE _____ Cal Due Date _____ _____

_____ inches H_2O _____

B. West Side

M&TE _____ Cal Due Date _____ _____

_____ inches H_2O _____

[16] **PLACE** Hand Switch 2-HS-27-92A on 2-M-15 in the CLOSE position, **AND**

VERIFY the Cooling Tower Bypass Valve CLOSES. _____

[17] **RECORD** the Appendix L Cooling Tower Bypass Valve 2-FCV-27-92 closing information. _____

[18] **OBSERVE** the Cooling Tower Bypass Valve vibration during closing, **AND**

VERIFY vibration is not excessive. _____

[19] **PLACE** 2-HS-27-19D in the CLOSE position, to STOP the CCWP 2B. _____

[20] **RECORD** the Appendix L CCWP 2B Discharge Valve 2-FCV-27-21 closing information. _____

[21] **OBSERVE** the pump/discharge valve vibration during stopping, **AND**

VERIFY vibration is not excessive. _____

[22] **PLACE** 2-HS-27-9D in the CLOSE position, to STOP the CCWP 2A. _____

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

6.11 Bypass Flow (continued)

[23] **RECORD** the Appendix L CCWP 2A Discharge Valve 2-FCV-27-11 closing information. _____

[24] **OBSERVE** the pump/discharge valve vibration during stopping, **AND**

VERIFY vibration is not excessive. _____

[25] **REMOVE** the M&TE test gauges, **AND**

RESTORE the test connections:

A. 2-PDIS-27-70 _____

_____ CV

B. 2-PDIS-27-80 _____

_____ CV

6.12 Yard Piping Flow Verification

[1] **VERIFY** the prerequisites, Section 4.0, for Subsection 6.12 are complete. _____

[2] **VERIFY** COOLING TOWER BASIN LEVEL LO alarm CLEAR on 2-XA-55-15A; window 163E, on 2-M-15. _____

[3] **MANUALLY ACTUATE** and **HOLD** level switch 2-LS-27-93D. _____

[4] **VERIFY** the COOLING TOWER BASIN LEVEL LO alarm ANNUNCIATES on 2-XA-55-15A, window 163E, on 2-M-15. (**Acc Crit**) _____

[5] **RELEASE** level switch 2-LS-27-93D _____

[6] **VERIFY** the COOLING TOWER BASIN LEVEL LO alarm CLEARS on 2-XA-55-15A, window 163E, on 2-M-15. _____

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

6.13 CCW System Alarms

[1] **VERIFY** the Prerequisites, Section 4.0, for Subsection 6.13 are complete. _____

[2] **VERIFY** the following:

A. COOLING TOWER BASIN LEVEL HI alarm CLEAR on 2-XA-55-15A, window 163D, on 2-M-15. _____

B. EAST COND CCW ΔP HI alarm CLEAR on 2-XA-55-15A, window 162C, on 2-M-15. _____

C. WEST COND CCW ΔP HI alarm CLEAR on 2-XA-55-15A, window 161C, on 2-M-15. _____

D. EAST COND OUTLET WTRBOX LEVEL LO alarm CLEAR on 2-XA- 55-15A window 162B, on 2-M-15. _____

E. WEST COND OUTLET WTRBOX LEVEL LO alarm CLEAR on 2-XA- 55-15A, window 161B, on 2-M-15. _____

F. DIFFUSER TEMP HI alarm CLEAR on 2-XA-55-15A, window 164E, on 2-M-15. _____

[3] **REMOVE** the top cover from Cooling Tower Basin High level switch, 2-LS-27-93B. _____

[4] **ACTUATE** and **HOLD** the switch in 2-LS-27-93B, to simulate a high Cooling Tower Basin level. _____

[5] **VERIFY** the COOLING TOWER BASIN LEVEL HI alarm ANNUNCIATES on 2-XA-55-15A, window 163D, on 2-M-15. (**Acc Crit**) _____

[6] **RELEASE** the 2-LS-27-93B switch, **AND**

VERIFY COOLING TOWER BASIN LEVEL HI alarm CLEARS on 2-XA-55-15A, window 163D, on 2-M-15. _____

[7] **REPLACE** the 2-LS-27-93B top cover. _____

[8] **ISOLATE** and **VENT** the Condenser Water box Outlet (low side) of East Side Condenser Differential Pressure instrument 2-PDIS-27-70. _____

[9] **VERIFY** the EAST COND CCW ΔP HI alarm ANNUNCIATES on 2-XA-55-15A, window 162C, on 2-M-15. (**Acc Crit**) _____

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

6.13 CCW System Alarms (continued)

[10] **CLOSE** the 2-PDIS-27-70 low side vent, **AND**

RETURN the instrument to normal service. _____

[11] **VERIFY** the EAST COND CCW ΔP HI alarm CLEARS on 2-XA-55-15A window 162C on 2-M-15. _____

[12] **ISOLATE** and **VENT** the Condenser Water box Outlet (low side) of West Side Condenser Differential Pressure instrument 2-PDIS-27-80. _____

[13] **VERIFY** the WEST COND CCW ΔP HI alarm ANNUNCIATES on 2-XA-55-15A, window 161C, on 2-M-15. (**Acc Crit**) _____

[14] **CLOSE** the 2-PDIS-27-80 low side vent, **AND**

RETURN the instrument to normal service. _____

[15] **VERIFY** the WEST COND CCW ΔP HI alarm CLEARS on 2-XA-55-15A, window 161C, on 2-M-15. _____

[16] **ISOLATE** the Condenser by closing the Inlet and Outlet valves:

A. 2-FCV-27-55, East Side Inlet CLOSED. _____

B. 2-FCV-27-65, West Side Inlet CLOSED. _____

C. 2-FCV-27-77, East Side Outlet CLOSED. _____

D. 2-FCV-27-87, West Side Outlet CLOSED. _____

CAUTION

Carefully monitor the water box draining in the next steps and modulate the drains as necessary to prevent flooding.

[17] **OPEN** 2-DRV-27-598, East Side Condenser Water box Drain Valve. _____

[18] **VERIFY** the EAST COND OUTLET WTRBOX LEVEL LO alarm ANNUNCIATES on 2-XA-55-15A, window 162B, on 2-M-15. (**Acc Crit**) _____

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

6.13 CCW System Alarms (continued)

[19] **CLOSE** 2-DRV-27-598, East Side Condenser Water box Drain Valve. _____

[20] **OPEN** 2-DRV-27-597, West Side Condenser Water box Drain valve. _____

[21] **VERIFY** the WEST COND OUTLET WTRBOX LEVEL LO alarm ANNUNCIATES on 2-XA-55-15A, window 161B, on 2-M-15. (**Acc Crit**) _____

[22] **CLOSE** 2-DRV-27-597, West Side Condenser Water box Drain Valve. _____

[23] **CRACK OPEN** the following valves:

A. 2-FCV-27-55, East Side Inlet. _____

B. 2-FCV-27-65, West Side Inlet. _____

C. 2-FCV-27-77, East Side Outlet. _____

D. 2-FCV-27-87, West Side outlet. _____

[24] **PERFORM** Appendix N to refill the Condenser water boxes. _____

[25] **VERIFY** the following:

A. WEST COND OUTLET WTRBOX LEVEL LO alarm CLEAR on 2-XA-55-15A, window 161B. _____

B. EAST COND OUTLET WTRBOX LEVEL LO alarm CLEAR on 2-XA-55-15A, window 162B. _____

[26] **FULLY OPEN** the following valves:

A. 2-FCV-27-55, East Side Inlet. _____

B. 2-FCV-27-65, West Side Inlet. _____

C. 2-FCV-27-77, East Side Outlet. _____

D. 2-FCV-27-87, West Side Outlet. _____

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

6.14 Plant Discharge Line Instrumentation

[1] **VERIFY** the prerequisites, Section 4.0, for Subsection 6.14 are complete. _____

[2] **VERIFY** the following:

A. 0-FCV-27-97, Holding Pond to Diffuser Valve CLOSED. _____

B. 0-FCV-27-100, Diffuser Outlet Valve OPEN. _____

C. 0-FCV-27-101, Diffuser Outlet Valve OPEN. _____

[3] **ENSURE** the Holding Pond water level is above the Cooling Tower Blow down line Pond inlet/outlet structure. _____

[4] **OPEN** 0-FCV-27-97 Bypass Flow Isol Valve 0-ISV-27-610. _____

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

6.14 Plant Discharge Line Instrumentation (continued)

[5] **RECORD** the Holding Pond Discharge Flow Characteristics:

PARAMETER	INSTRUMENT	LOCATION	UNITS	OBSERVED VALUE
Holding Pond Discharge Flow Rate	0-FIT-27-96	Local	GPM	
	0-FI-27-145	Local	GPM	
Diffuser Inlet Temperature	0-TI-27-99	2-M-15	°F	
	0-TR-27-99	2-M-15	°F	
		Y8001A	°F	
Diffuser Flow Rate	0-FR-27-98	2-M-15	GPM	
		Y8000A	GPM	

_____

[6] **VERIFY** DIFFUSER TEMP HI alarm CLEAR on 2-XA-55-15A, window 164E, on 2-M-15. _____

[7] **OBTAIN** a confined space entry permit to allow entry to Manhole "A". _____

[8] **ENSURE** rescue equipment has been staged at Manhole "A".

[9] **REMOVE** the cover from 0-TE-27-99. _____

[10] **LIFT** and **INSULATE** one of the 0-TE-27-99 leads, to simulate a high diffuser inlet temperature. _____

[11] **VERIFY** the DIFFUSER TEMP HI alarm ANNUNCIATES on 2-XA-55-15A window 164E, on 2-M-15. (**Acc Crit**) _____

[12] **LAND** the 0-TE-27-99 lead. _____

_____
CV

[13] **VERIFY** the DIFFUSER TEMP HI alarm CLEARS on 2-XA-55-15A, window 164E, on 2-M-15. _____

[14] **RECORD** the diffuser inlet temperature:

0-TI-27-99 _____ °F _____

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

7.0 POST PERFORMANCE ACTIVITY

[1] **VERIFY** that Post-test calibration of the M&TE used to record quantitative acceptance criteria has been satisfactorily performed and results, **AND**

RECORD the results on Measuring and Test Equipment (M&TE) Log in Appendix D. _____

[2] **ENSURE** participants who initialed or signed steps in the prerequisites section, instruction section, test logs, or data sheets, enter their initials and signature on the Appendix O Signature Log. _____

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

8.0 RECORDS

8.1 QA Records

Complete Test Package

8.2 Non-QA Records

None

Appendix A
(Page 1 of 1)

TEST PROCEDURES/INSTRUCTIONS REFERENCE

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

NOTE
Additional copies of this table may be made as necessary.

PROCEDURE/ INSTRUCTION	REVISION/CHANGES	INITIAL AND DATE. (N/A for no change)
FSAR		
FSAR SECTIONS 10.4.5		
FSAR TABLE 14.2-1, Sheet 70 of 90		
SMP-4.0		
SMP-7.0		
SMP-9.0		
GOI-7.0		
TSD-27.1		
N3C-945		

Reviewed By: _____/_____

Appendix B
(Page 1 of 1)

TEMPORARY CONDITION LOG

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

NOTE

These steps will be N/A'd if no temporary condition existed. Additional copies of this table may be made as necessary.

ITEM NUMBER	TEMPORARY CONDITION DESCRIPTION	PERFORMED		RETURNED TO NORMAL	
		Step Number	Perf. By/Date CV By/Date	Step Number	Returned By/Date CV By/Date

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PERMANENT PLANT INSTRUMENTATION LOG

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

INSTRUMENT OR INSTRUMENT LOOP	DESCRIPTION	CAL DUE DATE[1]	INSTRUMENT OR INSTRUMENT LOOP IN SERVICE INITIAL/DATE	TEST STEPS USED	POST TEST CAL DUE[2]	POST TEST CALIBRATION ACCEPTABLE[2] INITIAL/DATE
2-PI-27-36	CCW-PUMP 2A SUCTION PRESS			6.9.16 6.11.13	NR	NR
2-PI-27-26	CCW-PUMP 2B SUCTION PRESS			6.9.16 6.11.13	NR	NR
2-PI-27-16	CCW-PUMP 2C SUCTION PRESS			6.9.16	NR	NR
2-PI-27-6	CCW-PUMP 2D SUCTION PRESS			6.9.16	NR	NR
2-PI-27-57	EAST COND CCW INLET PRESS			6.9.16 6.11.13	NR	NR
2-PI-27-67	WEST COND CCW INLET PRESS			6.9.16 6.11.13	NR	NR
2-PI-27-76	EAST COND CCW OUTLET PRESS			6.9.16 6.11.13	NR	NR
2-PI-27-86	WEST COND CCW OUTLET PRESS			6.9.16 6.11.13	NR	NR
2-TI-27-56	EAST COND CCW INLET TEMP			6.9.16 6.11.13	NR	NR

1 This data to be entered after approval to perform test.

2 May be identified as not required (NR) if instrument was not used to verify/record quantitative acceptance criteria data.

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PERMANENT PLANT INSTRUMENTATION LOG

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

INSTRUMENT OR INSTRUMENT LOOP	DESCRIPTION	CAL DUE DATE[1]	INSTRUMENT OR INSTRUMENT LOOP IN SERVICE INITIAL/DATE	TEST STEPS USED	POST TEST CAL DUE[2]	POST TEST CALIBRATION ACCEPTABLE[2] INITIAL/DATE
2-TI-27-66	WEST COND CCW INLET TEMP			6.9.16, 6.11.13	NR	NR
2-TI-27-73	EAST COND CCW OUTLET TEMP			6.9.16, 6.11.13	NR	NR
2-TI-27-83	WEST COND CCW OUTLET TEMP			6.9.16, 6.11.13	NR	NR
2-LPP-27-40	CCW PUMP 2A DISCH PRESS			6.9.16, 6.11.13	NR	NR
2-LPP-27-30	CCW PUMP 2B DISCH PRESS			6.9.16, 6.11.13	NR	NR
2-LPP-27-20	CCW PUMP 2C DISCH PRESS			6.9.16	NR	NR
2-LPP-27-10	CCW PUMP 2D DISCH PRESS			6.9.16	NR	NR
2-PI-27-40B	CCW PUMP 2A DISCHARGE PRESS			6.9.16, 6.11.13	NR	NR
2-PI-27-30B	CCW PUMP 2B DISCHARGE PRESS			6.9.16, 6.11.13	NR	NR

1 This data to be entered after approval to perform test.

2 May be identified as not required (NR) if instrument was not used to verify/record quantitative acceptance criteria data.

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PERMANENT PLANT INSTRUMENTATION LOG

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

INSTRUMENT OR INSTRUMENT LOOP	DESCRIPTION	CAL DUE DATE[1]	INSTRUMENT OR INSTRUMENT LOOP IN SERVICE INITIAL/DATE	TEST STEPS USED	POST TEST CAL DUE[2]	POST TEST CALIBRATION ACCEPTABLE[2] INITIAL/DATE
2-PI-27-20B	CCW PUMP 2C DISCHARGE PRESS			6.9.16	NR	NR
2-PI-27-10B	CCW PUMP 2D DISCHARGE PRESS			6.9.16	NR	NR
2-LPT-27-58	EAST SIDE COND CCW INLET TEMP			6.9.16, 6.11.13	NR	NR
2-LPT-27-68	WEST SIDE COND CCW INLET TEMP			6.9.16, 6.11.13	NR	NR
2-LPT-27-74	EAST SIDE COND CCW OUTLET TEMP			6.9.16, 6.11.13	NR	NR
2-LPT-27-84	WEST SIDE COND CCW OUTLET TEMP			6.9.16, 6.11.13	NR	NR
2-PDIS-27-70	CCW TO COND EAST SIDE DIFF PRESS			6.9.16, 6.11.13	NR	NR
2-PDIS-27-80	CCW TO COND WEST SIDE DIFF PRESS			6.9.16, 6.11.13	NR	NR

1 *This data to be entered after approval to perform test.*

2 May be identified as not required (NR) if instrument was not used to verify/record quantitative acceptance criteria data.

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PERMANENT PLANT INSTRUMENTATION LOG

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

INSTRUMENT OR INSTRUMENT LOOP	DESCRIPTION	CAL DUE DATE[1]	INSTRUMENT OR INSTRUMENT LOOP IN SERVICE INITIAL/DATE	TEST STEPS USED	POST TEST CAL DUE[2]	POST TEST CALIBRATION ACCEPTABLE[2] INITIAL/DATE
2-EI-27-1	CCWP 2A MOTOR AMPS			6.9.16	NR	NR
2-EI-27-2	CCWP 2B MOTOR AMPS			6.9.16	NR	NR
2-EI-27-2	CCWP 2B MOTOR AMPS			6.9.16	NR	NR
2-EI-27-7	CCWP 2C MOTOR AMPS			6.9.16	NR	NR
2-EI-27-8	CCWP 2D MOTOR AMPS			6.9.16	NR	NR
2-LPT-27-13A	CCWP 2D TOP GUIDE BRG TEMP			6.9.16	NR	NR
2-LPT-27-13B	CCWP 2D MTR GUIDE BRG TEMP			6.9.16	NR	NR
2-LPT-27-13D	CCWP 2D MTR THR BRG TEMP			6.9.16	NR	NR
2-LPT-27-13E	CCWP 2D MTR THR BRG TEMP			6.9.16	NR	NR
2-LPT-27-13F	CCWP 2D THRUST BRG TEMP			6.9.16	NR	NR
2-LPT-27-13G	CCWP 2D PH A MTR WIND TEMP			6.9.16	NR	NR
2-LPT-27-13K	CCWP 2D PH C MTR WIND TEMP			6.9.16	NR	NR
2-LPT-27-13L	CCWP 2D THRUST BRG TEMP			6.9.16	NR	NR

1 This data to be entered after approval to perform test.

2 May be identified as not required (NR) if instrument was not used to verify/record quantitative acceptance criteria data.

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PERMANENT PLANT INSTRUMENTATION LOG

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

INSTRUMENT OR INSTRUMENT LOOP	DESCRIPTION	CAL DUE DATE[1]	INSTRUMENT OR INSTRUMENT LOOP IN SERVICE INITIAL/DATE	TEST STEPS USED	POST TEST CAL DUE[2]	POST TEST CALIBRATION ACCEPTABLE[2] INITIAL/DATE
2-LPT-27-13M	CCWP 2D BOT GUIDE BRG TEMP			6.9.16	NR	NR
2-LPT-27-13N	CCWP 2D PH B MTR WIND TEMP			6.9.16	NR	NR
2-LPT-27-17A	CCWP 2C TOP GUIDE BRG TEMP			6.9.16	NR	NR
2-LPT-27-17B	CCWP 2C MTR GUIDE BRG TEMP			6.9.16	NR	NR
2-LPT-27-17D	CCWP 2C MTR THR BRG TEMP			6.9.16	NR	NR
2-LPT-27-17E	CCWP 2C MTR THR BRG TEMP			6.9.16	NR	NR
2-LPT-27-17F	CCWP 2C THRUST BRG TEMP			6.9.16	NR	NR
2-LPT-27-17G	CCWP 2C PH A MTR WIND TEMP			6.9.16	NR	NR
2-LPT-27-17K	CCWP 2C PH C MTR WIND TEMP			6.9.16	NR	NR
2-LPT-27-17L	CCWP 2C THRUST BRG TEMP			6.9.16	NR	NR
2-LPT-27-17M	CCWP 2C BOT GUIDE BRG TEMP			6.9.16	NR	NR
2-LPT-27-17N	CCWP 2C PH B MTR WIND TEMP			6.9.16	NR	NR
2-LPT-27-18A	CCWP 2B TOP GUIDE BRG TEMP			6.9.16	NR	NR

1 This data to be entered after approval to perform test.

2 May be identified as not required (NR) if instrument was not used to verify/record quantitative acceptance criteria data.

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PERMANENT PLANT INSTRUMENTATION LOG

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

INSTRUMENT OR INSTRUMENT LOOP	DESCRIPTION	CAL DUE DATE[1]	INSTRUMENT OR INSTRUMENT LOOP IN SERVICE INITIAL/DATE	TEST STEPS USED	POST TEST CAL DUE[2]	POST TEST CALIBRATION ACCEPTABLE[2] INITIAL/DATE
2-LPT-27-18B	CCWP 2B MTR GUIDE BRG TEMP			6.9.16	NR	NR
2-LPT-27-18D	CCWP 2B MTR THR BRG TEMP			6.9.16	NR	NR
2-LPT-27-18E	CCWP 2B MTR THR BRG TEMP			6.9.16	NR	NR
2-LPT-27-18F	CCWP 2B THRUST BRG TEMP			6.9.16	NR	NR
2-LPT-27-18G	CCWP 2B PH A MTR WIND TEMP			6.9.16	NR	NR
2-LPT-27-18K	CCWP 2B PH C MTR WIND TEMP			6.9.16	NR	NR
2-LPT-27-18L	CCWP 2B THRUST BRG TEMP			6.9.16	NR	NR
2-LPT-27-18M	CCWP 2B BOT GUIDE BRG TEMP			6.9.16	NR	NR
2-LPT-27-18N	CCWP 2B PH B MTR WIND TEMP			6.9.16	NR	NR
2-LPT-27-22A	CCWP 2A TOP GUIDE BRG TEMP			6.9.16	NR	NR
2-LPT-27-22B	CCWP 2A MTR GUIDE BRG TEMP			6.9.16	NR	NR
2-LPT-27-22D	CCWP 2A MTR THR BRG TEMP			6.9.16	NR	NR
2-LPT-27-22E	CCWP 2A MTR THR BRG TEMP			6.9.16	NR	NR

1 This data to be entered after approval to perform test.

2 May be identified as not required (NR) if instrument was not used to verify/record quantitative acceptance criteria data.

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PERMANENT PLANT INSTRUMENTATION LOG

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

INSTRUMENT OR INSTRUMENT LOOP	DESCRIPTION	CAL DUE DATE[1]	INSTRUMENT OR INSTRUMENT LOOP IN SERVICE INITIAL/DATE	TEST STEPS USED	POST TEST CAL DUE[2]	POST TEST CALIBRATION ACCEPTABLE[2] INITIAL/DATE
2-LPT-27-22F	CCWP 2A THRUST BRG TEMP			6.9.16	NR	NR
2-LPT-27-22G	CCWP 2A PH A MTR WIND TEMP			6.9.16	NR	NR
2-LPT-27-22K	CCWP 2A PH C MTR WIND TEMP			6.9.16	NR	NR
2-LPT-27-22L	CCWP 2A THRUST BRG TEMP			6.9.16	NR	NR
2-LPT-27-22M	CCWP 2A BOT GUIDE BRG TEMP			6.9.16	NR	NR
2-LPT-27-22N	CCWP 2A BOT GUIDE BRG TEMP			6.9.16	NR	NR
0-LPT-27-99	DIFFUSER OUTLET TEMP			6.14.5[3]	NR	NR
0-LPT-27-96	HOLDING POND OUTLET FLOW			6.14.5[3]	NR	NR
0-LPT-27-98	DIFFUSER OUTLET FLOW			6.14.5[3]	NR	NR
0-LPT-27-145	HOLD POND BYPASS OUTLET FLOW			6.14.5[3]	NR	NR

1 This data to be entered after approval to perform test.

2 May be identified as not required (NR) if instrument was not used to verify/record quantitative acceptance criteria data.

3 The instruments used for step 6.14.7 are not required to be calibrated or placed in service until subsection 6.14 is to be tested.

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PERMANENT PLANT INSTRUMENTATION LOG

Data Package: Page ____ of ____ Date _____

Appendix D
(Page 1 of 2)

MEASURING AND TEST EQUIPMENT LOG

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

M&TE ID*	Description	Range and Minimum Accuracy Requirements	Cal. Due Date[1]	Verified by Initial/Date[1]	Test Steps Used[1]	Post-Test Calibration Acceptable Initial/Date[2]
	STOPWATCH	0-5 MIN ± 0.1 SEC/HR			6.2.13, 6.3.13, 6.4.13, 6.5.13, 6.7.33, 6.7.44, APP. H	
	CLAMP-ON AMPMETER	0-20 AMPS AC ± 3.6% OF READING			6.2.16, 6.3.16, 6.4.16, 6.5.16, APP. H	
	VOLTMETER	0-600VAC ± 5% OF READING			APP. H	
	THERMOMETER	0-200°F ± 2°F			APP. J	

1 This data to be entered during test conduct.

2 May be identified as not required (NR) if instrument is not used to meet quantitative acceptance criteria.

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MEASURING AND TEST EQUIPMENT LOG

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

M&TE ID*	Description	Range and Minimum Accuracy Requirements	Cal. Due Date[1]	Verified by Initial/Date[1]	Test Steps Used[1]	Post-Test Calibration Acceptable Initial/Date[2]
	DIFFERENTIAL PRESSURE GAGE	0-500 INCHES H2O ± 1%			6.9.18	
	DIFFERENTIAL PRESSURE GAGE	0-500 INCHES H2O ± 1%			6.9.18	

1 This data to be entered during test conduct.

2 May be identified as not required (NR) if instrument is not used to meet quantitative acceptance criteria.

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SWITCH LINEUP

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

SWITCH	LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-HS-27-9A	MCR 2-M-15	CCWP 2A & DISCH FCV-27-11	NORMAL (NOT PULLED)	
2-HS-27-19A		CCWP 2B & DISCH FCV-27-21	NORMAL (NOT PULLED)	
2-HS-27-29A		CCWP 2C & DISCH FCV-27-31	NORMAL (NOT PULLED)	
2-HS-27-39A		CCWP 2D & DISCH FCV-27-41	NORMAL (NOT PULLED)	
2-HS-27-9B	LOCAL (OUTSIDE, NEXT TO MOTOR)	CCWP 2A	RESET (DEPRESSED)	
2-HS-27-19B		CCWP 2B	RESET (DEPRESSED)	
2-HS-27-29B		CCWP 2C	RESET (DEPRESSED)	
2-HS-27-39B		CCWP 2D	RESET (DEPRESSED)	

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SWITCH LINEUP

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

SWITCH	LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-HS-27-9D	CONDENSER COOLING WATER UNIT 2 PUMP & VALVE CENTRAL CONTROL STATION 0-JB-298-2437	CCWP 2A	NORMAL (NOT PULLED)	
2-HS-27-19D		CCWP 2B	NORMAL (NOT PULLED)	
2-HS-27-29D		CCWP 2C	NORMAL (NOT PULLED)	
2-HS-27-39D		CCWP 2D	NORMAL (NOT PULLED)	
2-XS-27-140	LOCAL (ON VALVE OPERATOR)	COOLING TOWER DE-ICING VALVE, 2-FCV-27-140, SELECTOR SWITCH	LOCAL & REMOTE	
2-XS-27-141	LOCAL (ON VALVE OPERATOR)	COOLING TOWER DE-ICING VALVE, 2-FCV-27-141, SELECTOR SWITCH	LOCAL & REMOTE	

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SWITCH LINEUP

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

SWITCH	LOCATION	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
LATER	PANEL 2-M-21 ANNUNCIATOR SYSTEM UNIT 2 CABINET V (MCR)	ANNUNCIATOR WINDOW #164E	ON	
TBK 14 / SW 82		ANNUNCIATOR WINDOW #164B	ON	
TBK 14 / SW 61		ANNUNCIATOR WINDOW #161B	ON	
TBK 14 / SW 62		ANNUNCIATOR WINDOW #162B	ON	
TBK 14 / SW 86		ANNUNCIATOR WINDOW #164C	ON	
TBK 14 / SW 63		ANNUNCIATOR WINDOW #162C	ON	
TBK 14 / SW 64		ANNUNCIATOR WINDOW #163E	ON	
TBK 14 / SW 67		ANNUNCIATOR WINDOW #161C	ON	
TBK 14 / SW 65		ANNUNCIATOR WINDOW #163D	ON	
2-HS-27-97A	MCR 2-M-15	HOLDING POND ISOL	P AUTO (NOT PULLED)	

Appendix F
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ELECTRICAL BREAKER LINEUP

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

PANEL	COMPARTMENT	DESCRIPTION	POSITION	Performed By/Date CV[1] By/Date
480V CCW PUMP STA CONTROL CENTER B (0-MCC-225-B)	1A 2-BKR-27-11	CCWP 2A DISCHARGE VALVE 2-FCV-27-11	ON	
	1B 2-BKR-27-21	CCWP 2B DISCHARGE VALVE 2-FCV-27-21	ON	
	2A 2-BKR-27-31	CCWP 2C DISCHARGE VALVE 2-FCV-27-31	ON	
	2B 2-BKR-27-41	CCWP 2D DISCHARGE VALVE 2-FCV-27-41	ON	
	2E 2-BKR-27-5	CCWP 2A SUCTION VALVE 2-FCV-27-5	ON	
	4A 2-BKR-27-15	CCWP 2B SUCTION VALVE 2-FCV-27-15	ON	
	4B 2-BKR-27-25	CCWP 2C SUCTION VALVE 2-FCV-27-25	ON	

[1] Verify control fuses installed as well as breaker positions

Appendix F
(Page 2 of 5)

ELECTRICAL BREAKER LINEUP

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

PANEL	COMPARTMENT	DESCRIPTION	POSITION	Performed By/Date CV[1] By/Date
480V CCW PUMP STA CONTROL CENTER B (0-MCC-225-B)	5A 2-BKR-27-35	CCWP 2D SUCTION VALVE 2-FCV-27-35	ON	
	1E 2-BKR-27-92	UNIT 2 COOLING TOWER BYPASS VALVE 2-FCV-27-92	ON	
	3C 2-BKR-27-9A	CCWP 2A MOTOR HEATER 2-HTR-27-9	ON	
	5B 2-BKR-27-19A	CCWP 2B MOTOR HEATER 2-HTR-27-19	ON	
	5C 2-BKR-27-29A	CCWP 2C MOTOR HEATER 2-HTR-27-29	ON	
	5D 2-BKR-27-39A	CCWP 2D MOTOR HEATER 2-HTR-27-39	ON	

[1] Verify control fuses installed as well as breaker positions

Appendix F
(Page 3 of 5)

ELECTRICAL BREAKER LINEUP

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

PANEL	BREAKER	DESCRIPTION	POSITION	Performed By/Date CV[1] By/Date
480V TURBINE MOV BD 2B (2-MCC-209-B) (729/DT8)	12A 2-BKR-27-77	EAST CONDENSER CCW OUTLET VALVE 2-FCV-27-77	ON	
	12B 2-BKR-27-87	WEST CONDENSER CCW OUTLET VALVE 2-FCV-27-87	ON	
	5B 2-BKR-209-B000/5B	FEED TO 120V AC DISTRIBUTION PANEL	ON	
	5C3 2-BKR-209-B000/5C3	COND CCW INLET & OUTLET VALVE INTERLOCKING RELAY	ON	
480V TURBINE MOV BD 2A (2-MCC-209-A) (708/D13)	7A 2-BKR-27-55	EAST CONDENSER INLET VALVE 2-FCV-27-55	ON	
	7B 2-BKR-27-65	WEST CONDENSER INLET VALVE 2-FCV-27-65	ON	

1 Verify control fuses installed as well as breaker positions

Appendix F
(Page 4 of 5)

ELECTRICAL BREAKER LINEUP

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

PANEL	BREAKER	DESCRIPTION	POSITION	Performed By/Date CV[1] By/Date
480V CCW HYPCL BLDG FDR BD (0-MCC-219-1)	4F1 2-BKR-27-140	COOLING TOWER DE-ICING VALVES 2-FCV-27-140 AND 2-FCV-27-141	ON	
480V INTAKE PUMPING STA MCC (0-MCC-226-1)	2C 0-BKR-27-101	DIFFSER OUTLET VALVE 0-FCV-27-101	ON	
	3A 0-BKR-27-97	HOLDING POND VALVE 0-FCV-27-97	ON	
	5B 0-BKR-27-100	DIFFSER OUTLET VALVE 0-FCV-27-100	ON	
250V DC TURBINE DISTRIBUTION BD 2 (0-DPL-239-2) (708/DT14)	PANEL 2 BKR #215	HEATER DRAIN AND HOTWELL PUMPS AUTO CKT UNIT 2 (ALSO INCLUDES THE CCWP ENABLE CIRCUIT)	ON	

1 Verify control fuses installed as well as breaker position.

Appendix F
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ELECTRICAL BREAKER LINEUP

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

PANEL	BREAKER	DESCRIPTION	POSITION	Performed By/Date CV[1] By/Date
6900V UNIT BOARD 2A	COMPT #9 2-BKR-27-9	CCW PUMP 2A, 2-MTR-27-9	TEST[2]	
6900V UNIT BOARD 2B	COMPT #5 2-BKR-27-19	CCW PUMP 2B, 2-MTR-27-19	TEST[2]	
6900V UNIT BOARD 2C	COMPT #9 2-BKR-27-29	CCW PUMP 2C, 2-MTR-27-29	TEST[2]	
6900V UNIT BOARD 2D	COMPT #5 2-BKR-27-39	CCW PUMP 2D, 2-MTR-27-39	TEST[2]	

1 Verify control fuses installed as well as breaker position.

2 Breaker in "TEST" position with test umbilical cable connected and 52STA plunger extension is installed.

Appendix G
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VALVE LINEUP

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

VALVE	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
0-ISV-27-527	GLAND SEAL SUPPLY ISOLATION	CLOSED	
0-ISV-27-541	EMERGENCY GLAND SEAL SUPPLY ISOLATION	CLOSED	
0-BYV-27-543	EMERGENCY GLAND SEAL PVC BYPASS	CLOSED	
2-FCV-27-5	CCWP 2A SUCTION VALVE	CLOSED	
2-TV-27-501A	CCWP 2A SUCTION TEST CONNECTION	CLOSED	
2-TV-27-502A	CCWP 2A SUCTION TEST CONNECTION	CLOSED	
2-TV-27-503A	CCWP 2A SUCTION TEST CONNECTION	CLOSED	
2-TV-27-504A	CCWP 2A SUCTION TEST CONNECTION	CLOSED	
2-TV-27-605	CCWP 2A SUCTION TEST CONNECTION	CLOSED	
2-RTV-27-258A	CCWP 2A SUCTION PRESSURE ROOT VALVE, 2-PI-27-36	OPEN	
2-VTV-27-9	CCWP 2A CASING VENT	CLOSED	
2-TV-27-505A	CCWP 2A DISCHARGE TEST CONNECTION	CLOSED	
2-TV-27-506A	CCWP 2A DISCHARGE TEST CONNECTION	CLOSED	
2-TV-27-507A	CCWP 2A DISCHARGE TEST CONNECTION	CLOSED	
2-TV-27-508A	CCWP 2A DISCHARGE TEST CONNECTION	CLOSED	
2-TV-27-250A	CCWP 2A DISCHARGE TEST CONNECTION	CLOSED	

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VALVE LINEUP

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

VALVE	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-RTV-27-251A	CCWP 2A DISCHARGE PRESS ROOT VALVE, 2-PI-27-40B	OPEN	
2-FCV-27-11	CCWP 2A DISCHARGE VALVE	CLOSED	
2-FCV-27-15	CCWP 2B SUCTION VALVE	CLOSED	
2-TV-27-501B	CCWP 2B SUCTION TEST CONNECTION	CLOSED	
2-TV-27-502B	CCWP 2B SUCTION TEST CONNECTION	CLOSED	
2-TV-27-503B	CCWP 2B SUCTION TEST CONNECTION	CLOSED	
2-TV-27-504B	CCWP 2B SUCTION TEST CONNECTION	CLOSED	
2-TV-27-604	CCWP 2B SUCTION TEST CONNECTION	CLOSED	
2-RTV-27-259A	CCWP 2B SUCTION PRESSURE ROOT VALVE, 2-PI-27-26	OPEN	
2-VTV-27-19	CCWP 2B CASING VENT	CLOSED	
2-TV-27-505B	CCWP 2B DISCHARGE TEST CONNECTION	CLOSED	
2-TV-27-506B	CCWP 2B DISCHARGE TEST CONNECTION	CLOSED	
2-TV-27-507B	CCWP 2B DISCHARGE TEST CONNECTION	CLOSED	
2-TV-27-508B	CCWP 2B DISCHARGE TEST CONNECTION	CLOSED	
2-TV-27-252A	CCWP 2B DISCHARGE TEST CONNECTION	CLOSED	
2-RTV-27-253A	CCWP 2B DISCHARGE PRESSURE ROOT VALVE, 2-PI-27-30B	OPEN	

Appendix G
(Page 3 of 12)

VALVE LINEUP

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

VALVE	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-FCV-27-21	CCWP 2B DISCHARGE VALVE	CLOSED	
2-FCV-27-25	CCWP 2C SUCTION VALVE	CLOSED	
2-TV-27-501C	CCWP 2C SUCTION TEST CONNECTION	CLOSED	
2-TV-27-502C	CCWP 2C SUCTION TEST CONNECTION	CLOSED	
2-TV-27-503C	CCWP 2C SUCTION TEST CONNECTION	CLOSED	
2-TV-27-504C	CCWP 2C SUCTION TEST CONNECTION	CLOSED	
2-TV-27-603	CCWP 2C SUCTION TEST CONNECTION	CLOSED	
2-RTV-27-260A	CCWP 2C SUCTION PRESSURE ROOT VALVE, 2-PI-27-16	OPEN	
2-VTV-27-29	CCWP 2C CASING VENT	CLOSED	
2-TV-27-505C	CCWP 2C DISCHARGE TEST CONNECTION	CLOSED	
2-TV-27-506C	CCWP 2C DISCHARGE TEST CONNECTION	CLOSED	
2-TV-27-507C	CCWP 2C DISCHARGE TEST CONNECTION	CLOSED	
2-TV-27-508C	CCWP 2C DISCHARGE TEST CONNECTION	CLOSED	
2-TV-27-254A	CCWP 2C DISCHARGE TEST CONNECTION	CLOSED	
2-RTV-27-255A	CCWP 2C DISCHARGE PRESSURE ROOT VALVE, 2-PI-27-20B	OPEN	
2-FCV-27-31	CCWP 2C DISCHARGE VALVE	CLOSED	

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VALVE LINEUP

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

VALVE	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-FCV-27-35	CCWP 2D SUCTION VALVE	CLOSED	
2-TV-27-501D	CCWP 2D SUCTION TEST CONNECTION	CLOSED	
2-TV-27-502D	CCWP 2D SUCTION TEST CONNECTION	CLOSED	
2-TV-27-503D	CCWP 2D SUCTION TEST CONNECTION	CLOSED	
2-TV-27-504D	CCWP 2D SUCTION TEST CONNECTION	CLOSED	
2-TV-27-602	CCWP 2D SUCTION TEST CONNECTION	CLOSED	
2-RTV-27-261A	CCWP 2D SUCTION PRESSURE ROOT VALVE, 2-PI-27-6	OPEN	
2-VTV-27-39	CCWP 2D CASING VENT	CLOSED	
2-TV-27-505D	CCWP 2D DISCHARGE TEST CONNECTION	CLOSED	
2-TV-27-506D	CCWP 2D DISCHARGE TEST CONNECTION	CLOSED	
2-TV-27-507D	CCWP 2D DISCHARGE TEST CONNECTION	CLOSED	
2-TV-27-508D	CCWP 2D DISCHARGE TEST CONNECTION	CLOSED	
2-TV-27-256A	CCWP 2D DISCHARGE TEST CONNECTION	CLOSED	
2-RTV-27-257A	CCWP 2D DISCHARGE PRESSURE ROOT VALVE, 2-PI-27-10B	OPEN	
2-FCV-27-41	CCWP 2D DISCHARGE VALVE	CLOSED	
2-BYV-27-509	CCWP DISCHARGE HEADER VENT	CLOSED	

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VALVE LINEUP

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

VALVE	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-BYV-27-510	CCWP DISCHARGE HEADER VENT	CLOSED	
2-ISV-27-511	CCWP DISCHARGE HEADER AIR RELEASE VALVE ISOLATION	OPEN	
2-SPV-27-512	CCWP DISCHARGE HEADER AIR RELEASE VALVE	INSTALLED	
2-ISV-27-606	CCWP DISCHARGE HEADER AIR RELEASE VALVE ISOLATION	OPEN	
2-ISV-27-607	CCWP DISCHARGE HEADER AIR RELEASE VALVE	INSTALLED	
2-ISV-40-510	CCW DISCHARGE CONDUIT DRAIN VALVE	CLOSED	
2-ISV-40-511	CCW SUPPLY CONDUIT DRAIN VALVE	CLOSED	
2-FCV-27-55	EAST CONDENSER INLET VALVE	OPEN	
2-BYV-27-513	EAST CONDENSER INLET VALVE BYPASS	CLOSED	
2-DRV-27-595	EAST CONDENSER INLET WATERBOX DRAIN	CLOSED	
2-ISV-27-555	EAST COND AMERTAP BALL DISTRIBUTION	OPEN	
2-ISV-27-556	EAST COND AMERTAP BALL DISTRIBUTION	OPEN	
2-ISV-27-557	EAST COND AMERTAP BALL DISTRIBUTION	OPEN	
2-ISV-27-558	EAST COND AMERTAP BALL DISTRIBUTION	OPEN	
2-RTV-27-262A	EAST COND IN\LET WTRBOX PRESS ROOT VALVE, 2-PI-27-57	OPEN	
2-DRV-27-591	EAST CONDENSER INLET WATERBOX DRAIN	CLOSED	

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VALVE LINEUP

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

VALVE	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-VTV-27-515	EAST CONDENSER INLET WATERBOX VENT	CLOSED	
2-RTV-27-264A	EAST COND HIGH SIDE DP ROOT VALVE, 2-PDIS-27-70	OPEN	
2-FCV-27-65	WEST CONDENSER INLET VALVE	OPEN	
2-BYV-27-514	WEST CONDENSER INLET VALVE BYPASS	CLOSED	
2-DRV-27-596	WEST CONDENSER INLET WATERBOX DRAIN	CLOSED	
2-ISV-27-551	WEST COND AMERTAP BALL DISTRIBUTION	OPEN	
2-ISV-27-552	WEST COND AMERTAP BALL DISTRIBUTION	OPEN	
2-ISV-27-553	WEST COND AMERTAP BALL DISTRIBUTION	OPEN	
2-ISV-27-554	WEST COND AMERTAP BALL DISTRIBUTION	OPEN	
2-RTV-27-263A	WEST COND INLET WTRBOX PRESS ROOT VALVE, 2-PI-27-67	OPEN	
2-DRV-27-592	WEST CONDENSER INLET WATERBOX DRAIN	CLOSED	
2-VTV-27-516	WEST CONDENSER INLET WATERBOX VENT	CLOSED	
2-RTV-27-266A	WEST COND HIGH SIDE DP ROOT VALVE, 2-PDIS-27-80	OPEN	
2-RTV-27-265A	EAST COND LOW SIDE DP ROOT VALVE, 2-PDIS-27-70	OPEN	
2-RTV-27-268A	EAST COND OUTLET WTRBOX LEVEL ROOT VALVE, 2-LS-27-71	OPEN	
2-RTV-27-269A	EAST COND OUTLET WTRBOX LEVEL ROOT VALVE, 2-LS-27-71	OPEN	

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VALVE LINEUP

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

VALVE	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-SPV-27-526A	EAST COND OUTLET WTRBOX AIR/VACUUM RELEASE VALVE	INSTALLED	
2-SPV-27-526B	EAST COND OUTLET WTRBOX AIR/VACUUM RELEASE VALVE	INSTALLED	
2-ISV-27-526	ISOLATION FOR 2-SPV-27-526B	OPEN	
2-VTV-27-517	EAST COND OUTLET WATERBOX VENT VALVE	CLOSED	
2-DRV-27-593	EAST COND OUTLET WATERBOX DRAIN VALVE	CLOSED	
2-RTV-27-273A	EAST COND OUTLET WTRBOX PRESS ROOT VALVE, 2-PI-27-76	OPEN	
2-ISV-27-587	EAST COND AMERTAP SCREEN OUTLET	OPEN	
2-ISV-27-588	EAST COND AMERTAP SCREEN OUTLET	OPEN	
2-ISV-27-589	EAST COND AMERTAP SCREEN OUTLET	OPEN	
2-ISV-27-590	EAST COND AMERTAP SCREEN OUTLET	OPEN	
2-BYV-27-519	EAST COND OUTLET ISOLATION BYPASS VALVE	CLOSED	
2-DRV-27-598	EAST COND OUTLET WATERBOX DRAIN VALVE	CLOSED	
2-FCV-27-77	EAST COND OUTLET ISOLATION VALVE	OPEN	
2-RTV-27-267A	WEST COND LOW SIDE DP ROOT VALVE, 2-PDIS-27-80	OPEN	
2-RTV-27-270A	WEST COND OUTLET WTRBOX LEVEL ROOT VALVE, 2-LS-27-81	OPEN	
2-RTV-27-271A	WEST COND OUTLET WTRBOX LEVEL ROOT VALVE, 2-LS-27-81	OPEN	

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VALVE LINEUP

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

VALVE	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-SPV-27-525A	WEST COND OUTLET WTRBOX AIR/VACUUM RELEASE VALVE	INSTALLED	
2-SPV-27-525B	WEST COND OUTLET WTRBOX AIR/VACUUM RELEASE VALVE	INSTALLED	
2-ISV-27-525	ISOLATION FOR 2-SPV-27-525B	OPEN	
2-VTV-27-518	WEST COND OUTLET WATERBOX VENT VALVE	CLOSED	
2-DRV-27-594	WEST COND OUTLET WATERBOX DRAIN VALVE	CLOSED	
2-RTV-27-272A	WEST COND OUTLET WTRBOX PRESS ROOT VALVE, 2-PI-27-86	OPEN	
2-ISV-27-583	WEST COND AMERTAP SCREEN OUTLET	OPEN	
2-ISV-27-584	WEST COND AMERTAP SCREEN OUTLET	OPEN	
2-ISV-27-585	WEST COND AMERTAP SCREEN OUTLET	OPEN	
2-ISV-27-596	WEST COND AMERTAP SCREEN OUTLET	OPEN	
2-BYV-27-520	WEST COND OUTLET ISOLATION BYPASS VALVE	CLOSED	
2-DRV-27-597	WEST COND OUTLET WATERBOX DRAIN VALVE	CLOSED	
2-FCV-27-87	WEST COND OUTLET ISOLATION VALVE	OPEN	
2-RTV-27-294A	AMERTAP PUMP 2A1 SUCTION PRESSURE ROOT VALVE, 2-PI-27-34	OPEN	
2-ISV-27-579	AMERTAP PUMP 2A1 SUCTION	OPEN	
2-DRV-27-575	AMERTAP PUMP 2A1 DRAIN	CLOSED	

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VALVE LINEUP

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

VALVE	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-RTV-27-279A	AMERTAP PUMP 2A1 DISCHARGE PRESSURE ROOT VALVE, 2-PI-27-37	OPEN	
2-ISV-27-571	AMERTAP PUMP 2A1 DISCHARGE	OPEN	
2-RTV-27-280A	AMERTAP PUMP 2A2 SUCTION PRESSURE ROOT VALVE, 2-PI-27-38	OPEN	
2-ISV-27-580	AMERTAP PUMP 2A2 SUCTION	OPEN	
2-DRV-27-576	AMERTAP PUMP 2A2 DRAIN	CLOSED	
2-RTV-27-295A	AMERTAP PUMP 2A2 DISCHARGE PRESSURE ROOT VALVE, 2-PI-27-42	OPEN	
2-ISV-27-572	AMERTAP PUMP 2A2 DISCHARGE	OPEN	
2-DRV-27-569	WEST COND COLLECTOR TANK DRAIN	CLOSED	
2-VTV-27-567	WEST COND COLLECTOR TANK VENT	CLOSED	
2-FCV-27-49	WEST COND COLLECTOR TANK INLET VALVE	CLOSED	
2-FCV-27-50	WEST COND COLLECTOR TANK FLAP VALVE	CLOSED	
2-ISV-27-563	WEST COND COLLECTOR TANK OUTLET	OPEN	
2-ISV-27-559	WEST COND BALL DISTRIBUTION	OPEN	
2-ISV-27-560	WEST COND BALL DISTRIBUTION	OPEN	

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VALVE LINEUP

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

VALVE	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-MVOP-280-US1A	WEST COND AMERTAP UPPER SCREEN #1	OPEN	
2-MVOP-280-US2A	WEST COND AMERTAP UPPER SCREEN #2	OPEN	
2-MVOP-280-US3A	WEST COND AMERTAP UPPER SCREEN #3	OPEN	
2-MVOP-280-US4A	WEST COND AMERTAP UPPER SCREEN #4	OPEN	
2-MVOP-280-LS1A	WEST COND AMERTAP LOWER SCREEN #1	OPEN	
2-MVOP-280-LS2A	WEST COND AMERTAP LOWER SCREEN #2	OPEN	
2-RTV-27-296A	AMERTAP PUMP 2B1 SUCTION PRESSURE ROOT VALVE, 2-PI-27-43	OPEN	
2-ISV-27-581	AMERTAP PUMP 2B1 SUCTION	OPEN	
2-DRV-27-577	AMERTAP 2B1 DRAIN	CLOSED	
2-RTV-27-297A	AMERTAP PUMP 2B1 DISCHARGE PRESSURE ROOT VALVE, 2-PI-27-44	OPEN	
2-ISV-27-573	AMERTAP PUMP 2B1 DISCHARGE	OPEN	
2-RTV-27-290A	AMERTAP PUMP 2B2 SUCTION PRESSURE ROOT VALVE, 2-PI-27-45	OPEN	
2-ISV-27-582	AMERTAP PUMP 2B2 SUCTION	OPEN	
2-DRV-27-578	AMERTAP 2B2 DRAIN	CLOSED	
2-RTV-27-291A	AMERTAP PUMP 2B2 DISCHARGE PRESSURE ROOT VALVE, 2-PI-27-46	OPEN	
2-ISV-27-574	AMERTAP PUMP 2B2 DISCHARGE	OPEN	

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VALVE LINEUP

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

VALVE	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
2-DRV-27-570	EAST COND COLLECTOR TANK DRAIN	CLOSED	
2-VTV-27-568	EAST COND COLLECTOR TANK VENT	CLOSED	
2-ISV-27-564	EAST COND COLLECTOR TANK OUTLET	OPEN	
2-ISV-27-561	EAST COND BALL DISTRIBUTION	OPEN	
2-ISV-27-562	EAST COND BALL DISTRIBUTION	OPEN	
2-MVOP-280-US1B	EAST COND AMERTAP UPPER SCREEN #1	OPEN	
2-MVOP-280-US2B	EAST COND AMERTAP UPPER SCREEN #2	OPEN	
2-MVOP-280-US3B	EAST COND AMERTAP UPPER SCREEN #3	OPEN	
2-MVOP-280-US4B	EAST COND AMERTAP UPPER SCREEN #4	OPEN	
2-MVOP-280-LS1B	EAST COND AMERTAP LOWER SCREEN #1	OPEN	
2-MVOP-280-LS2B	EAST COND AMERTAP LOWER SCREEN #2	OPEN	
2-FCV-27-92	COOLING TOWER BYPASS	CLOSED	
2-FCV-27-140	COOLING DE-ICING ISOLATION	OPEN	
2-FCV-27-141	COOLING DE-ICING ISOLATION	OPEN	
2-ISV-27-521	COOLING TOWER BOTTOM BLOWDOWN SLUICE GATE	CLOSED	
2-ISV-27-522	COOLING TOWER DRAIN/DESILTING SLUICE GATE	CLOSED	

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VALVE LINEUP

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

VALVE	DESCRIPTION	POSITION	VERIFIED BY INITIAL/DATE
0-SPV-27-523	DESILTING BASIN SUPERNATANT VALVE	CLOSED	
0-BYV-27-524	DESILTING BASIN SLUICE GATE	CLOSED	
0-RTV-27-275A	HOLDING POND OUTLET TO DIFFUSER FLOW, 0-FT-27-96, ROOT VALVE	OPEN	
0-ISV-27-610	0-FCV-27-97 BYPASS FLOW ISOLATION	CLOSED	
0-ISV-27-611	0-FCV-27-97 BYPASS FLOW ISOLATION	OPEN	
0-RTV-27-276A	SPARE ROOT VALVE FLOWMETER AND RADIATION MONITOR MANHOLE	CLOSED	
0-RTV-27-277A	DIFFUSER OUTLET FLOW, 0-FI-27-98, ROOT VALVE	OPEN	

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VALVE DYNAMIC OPERATING CHARACTERISTICS

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

STEP	VALVE	PARAMETER	M&TE NUMBER	UNITS	OBSERVED VALUE	EXPECTED VALUE
6.9.5	CCWP 2A DISCHARGE VALVE, 2-FCV-27-11: OPENING	STROKE TIME		SEC		30 (NOMINAL)
		VOLTAGE		VOLTS		414-506
		RUNNING CURRENT Ø A		AMPS		13.6 (MAX)
		RUNNING CURRENT Ø B		AMPS		13.6 (MAX)
		RUNNING CURRENT Ø C		AMPS		13.6 (MAX)
6.9.8	CCWP 2B DISCHARGE VALVE, 2-FCV-27-21: OPENING	STROKE TIME		SEC		30 (NOMINAL)
		VOLTAGE		VOLTS		414-506
		RUNNING CURRENT Ø A		AMPS		13.6 (MAX)
		RUNNING CURRENT Ø B		AMPS		13.6 (MAX)
		RUNNING CURRENT Ø C		AMPS		13.6 (MAX)
6.9.11	CCWP 2C DISCHARGE VALVE, 2-FCV-27-31: OPENING	STROKE TIME		SEC		30 (NOMINAL)
		VOLTAGE		VOLTS		414-506
		RUNNING CURRENT Ø A		AMPS		13.6 (MAX)
		RUNNING CURRENT Ø B		AMPS		13.6 (MAX)
		RUNNING CURRENT Ø C		AMPS		13.6 (MAX)
6.9.14	CCWP 2D DISCHARGE VALVE, 2-FCV-27-41: OPENING	STROKE TIME		SEC		30 (NOMINAL)
		VOLTAGE		VOLTS		414-506
		RUNNING CURRENT Ø A		AMPS		13.6 (MAX)
		RUNNING CURRENT Ø B		AMPS		13.6 (MAX)
		RUNNING CURRENT Ø C		AMPS		13.6 (MAX)

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NORMAL FULL FLOW CCW SYSTEM CHARACTERISTICS

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

PARAMETER	INSTRUMENT	LOCATION	UNITS	OBSERVED VALUE	EXPECTED VALUE
COOLING TOWER BASIN LEVEL	DEPTH GAGE	LOCAL	INCHES		≥ 0
CCW PUMP 2A SUCTION PRESSURE	2-PI-27-36	2-L-504	PSIG		3 (NOMINAL)
CCW PUMP 2B SUCTION PRESSURE	2-PI-27-26	2-L-505	PSIG		3 (NOMINAL)
CCW PUMP 2C SUCTION PRESSURE	2-PI-27-16	2-L-506	PSIG		3 (NOMINAL)
CCW PUMP 2D SUCTION PRESSURE	2-PI-27-6	2-L-507	PSIG		3 (NOMINAL)
CCW PUMP 2A DISCHARGE PRESSURE	2-PI-27-40B	2-L-504	PSIG		43 (NOMINAL)
	2-PT-27-40	P2401	PSIG		43 (NOMINAL)
CCW PUMP 2B DISCHARGE PRESSURE	2-PI-27-30B	2-L-505	PSIG		43 (NOMINAL)
	2-PT-27-30	P2403	PSIG		43 (NOMINAL)
CCW PUMP 2C DISCHARGE PRESSURE	2-PI-27-20B	2-L-506	PSIG		43 (NOMINAL)
	2-PT-27-20	P2405	PSIG		43 (NOMINAL)
CCW PUMP 2D DISCHARGE PRESSURE	2-PI-27-10B	2-L-507	PSIG		43 (NOMINAL)
	2-PT-27-10	P2406	PSIG		43 (NOMINAL)
EAST CONDENSER INLET TEMPERATURE	2-TI-27-56	LOCAL	°F		92 (MAX)
	2-TI-27-58	2-M-15	°F		92 (MAX)
	2-TE-27-58	T2430	°F		92 (MAX)

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NORMAL FULL FLOW CCW SYSTEM CHARACTERISTICS

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

PARAMETER	INSTRUMENT	LOCATION	UNITS	OBSERVED VALUE	EXPECTED VALUE
WEST CONDENSER INLET TEMPERATURE	2-TI-27-66	LOCAL	°F		92 (MAX)
	2-TI-27-68	2-M-15	°F		92 (MAX)
	2-TE-27-68	T2431	°F		92 (MAX)
EAST CONDENSER INLET PRESSURE	2-PI-27-57	2-L-130	PSIG		53 (NOMINAL)
EAST CONDENSER DIFFERENTIAL PRESSURE	2-PDIS-27-70	2-L-130	PSID		13 (NOMINAL)
EAST CONDENSER OUTLET PRESSURE	2-PI-27-76	2-L-277	PSIG		43 (NOMINAL)
EAST CONDENSER OUTLET TEMPERATURE	2-TI-27-73	LOCAL	°F		130 (MAX)
	2-TI-27-74	2-M-15	°F		130 (MAX)
	2-TE-27-74	T2440	°F		130 (MAX)
WEST CONDENSER INLET PRESSURE	2-PI-27-67	2-L-130	PSIG		53 (NOMINAL)
WEST CONDENSER DIFFERENTIAL PRESSURE	2-PDIS-27-80	2-L-130	PSID		13 (NOMINAL)
WEST CONDENSER OUTLET PRESSURE	2-PI-27-86	2-L-277	PSIG		43 (NOMINAL)
WEST CONDENSER OUTLET TEMPERATURE	2-TI-27-83	LOCAL	°F		130 (MAX)
	2-TI-27-84	2-M-15	°F		130 (MAX)
	2-TE-27-84	T2441	°F		130 (MAX)

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CCW PUMPS/MOTORS FULL FLOW CHARACTERISTICS

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

PARAMETER	INSTRUMENT	LOCATION	UNITS	OBSERVED VALUE	EXPECTED VALUE
CCW 2A MOTOR CURRENT/POWER	2-EI-27-1	2-M-15	AMPS		247 (MAX)
	2-EI-27-1	Q2820A	KW		2250 (MAX)
	PHASE 1	2-BD-201A SWITCHGEAR (2-MTR-27-9)	AMPS		247 (MAX)
	PHASE 2		AMPS		247 (MAX)
	PHASE 3		AMPS		247 (MAX)
CCWP 2A MOTOR BUS VOLTAGE	PHASE 1-2	2-BD-201A SWITCHGEAR	VOLTS		6900 (NOMINAL)
	PHASE 2-3		VOLTS		6900 (NOMINAL)
	PHASE 3-1		VOLTS		6900 (NOMINAL)
CCW 2A PUMP BOTTOM GUIDE BEARING TEMP	2-TE-27-22M	T2432A	°F		200 (MAX)[1]
CCW 2A PUMP THRUST BEARING TEMP	2-TE-27-22F	T2433A	°F		200 (MAX)[1]
	2-TE-27-22L	T2434A	°F		200 (MAX)[1]
CCW 2A PUMP TOP GUIDE BEARING TEMP	2-TE-27-22A	T2400A	°F		167 (MAX)[1]
CCW 2A MOTOR BOTTOM GUIDE BEARING TEMP	2-TE-27-22B	T2401A	°F		167 (MAX)[1]
CCW 2A MOTOR THRUST BEARING TEMP	2-TE-27-22D	T2402A	°F		167 (MAX)[1]
	2-TE-27-22E	T2403A	°F		167 (MAX)[1]
CCWP 2A Ø A MOTOR WINDING TEMP	2-TE-27-22G	T2404A	°F		248 (MAX)[1]
CCWP 2A Ø B MOTOR WINDING TEMP	2-TE-27-22N	T2406A	°F		248 (MAX)[1]
CCWP 2A Ø C MOTOR WINDING TEMP	2-TE-27-22K	T2405A	°F		248 (MAX)[1]
AMBIENT TEMPERATURE (VICINITY OF CCWP 2A)	M&TE NO.:	LOCAL	°F		104 (MAX)[2]

1 Based upon process computer alarm set points.

2 Based upon motor nameplate data of 40°C maximum ambient temperature.

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CCW PUMPS/MOTORS FULL FLOW CHARACTERISTICS

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

PARAMETER	INSTRUMENT	LOCATION	UNITS	OBSERVED VALUE	EXPECTED VALUE
CCW 2B MOTOR CURRENT/POWER	2-EI-27-2	2-M-15	AMPS		247 (MAX)
	2-EI-27-2	Q2821A	KW		2250 (MAX)
	PHASE 1	2-BD-201B SWITCHGEAR (2-MTR-27-19)	AMPS		247 (MAX)
	PHASE 2		AMPS		247 (MAX)
	PHASE 3		AMPS		247 (MAX)
CCWP 2B MOTOR BUS VOLTAGE	PHASE 1-2	2-BD-201B SWITCHGEAR	VOLTS		6900 (NOMINAL)
	PHASE 2-3		VOLTS		6900 (NOMINAL)
	PHASE 3-1		VOLTS		6900 (NOMINAL)
CCW 2B PUMP BOTTOM GUIDE BEARING TEMP	2-TE-27-18M	T2435A	°F		200 (MAX)[1]
CCW 2B PUMP THRUST BEARING TEMP	2-TE-27-18L	T2437A	°F		200 (MAX)[1]
	2-TE-27-18F	T2436A	°F		200 (MAX)[1]
CCW 2B PUMP TOP GUIDE BEARING TEMP	2-TE-27-18A	T2407A	°F		167 (MAX)[1]
CCW 2B MOTOR BOTTOM GUIDE BEARING TEMP	2-TE-27-18B	T2408A	°F		167 (MAX)[1]
CCW 2B MOTOR THRUST BEARING TEMP	2-TE-27-18D	T2409A	°F		167 (MAX)[1]
	2-TE-27-18E	T2410A	°F		167 (MAX)[1]
CCWP 2B Ø A MOTOR WINDING TEMP	2-TE-27-18G	T2411A	°F		248 (MAX)[1]
CCWP 2B Ø B MOTOR WINDING TEMP	2-TE-27-18N	T2413A	°F		248 (MAX)[1]
CCWP 2B Ø C MOTOR WINDING TEMP	2-TE-27-18K	T2412A	°F		248 (MAX)[1]
AMBIENT TEMPERATURE (VICINITY OF CCWP 2B)	M&TE NO.:	LOCAL	°F		104 (MAX)[2]

1 Based upon process computer alarm set points.

2 Based upon motor nameplate data of 40°C maximum ambient temperature.

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CCW PUMPS/MOTORS FULL FLOW CHARACTERISTICS

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

PARAMETER	INSTRUMENT	LOCATION	UNITS	OBSERVED VALUE	EXPECTED VALUE
CCW 2C MOTOR CURRENT/POWER	2-EI-27-7	2-M-15	AMPS		247 (MAX)
	2-EI-27-7	Q2822A	KW		2250 (MAX)
	PHASE 1	2-BD-201C SWITCHGEAR (2-MTR-27-29)	AMPS		247 (MAX)
	PHASE 2		AMPS		247 (MAX)
	PHASE 3		AMPS		247 (MAX)
CCWP 2C MOTOR BUS VOLTAGE	PHASE 1-2	2-BD-201C SWITCHGEAR	VOLTS		6900 (NOMINAL)
	PHASE 2-3		VOLTS		6900 (NOMINAL)
	PHASE 3-1		VOLTS		6900 (NOMINAL)
CCW 2C PUMP BOTTOM GUIDE BEARING TEMP	2-TE-27-17M	T2442A	°F		200 (MAX)[1]
CCW 2C PUMP THRUST BEARING TEMP	2-TE-27-17L	T2443A	°F		200 (MAX)[1]
	2-TE-27-17F	T2444A	°F		200 (MAX)[1]
CCW 2C PUMP TOP GUIDE BEARING TEMP	2-TE-27-17A	T2414A	°F		167 (MAX)[1]
CCW 2C MOTOR BOTTOM GUIDE BEARING TEMP	2-TE-27-17B	T2415A	°F		167 (MAX)[1]
CCW 2C MOTOR THRUST BEARING TEMP	2-TE-27-17D	T2416A	°F		167 (MAX)[1]
	2-TE-27-17E	T2417A	°F		167 (MAX)[1]
CCWP 2C Ø A MOTOR WINDING TEMP	2-TE-27-17G	T2418A	°F		248 (MAX)[1]
CCWP 2C Ø B MOTOR WINDING TEMP	2-TE-27-17N	T2420A	°F		248 (MAX)[1]
CCWP 2C Ø C MOTOR WINDING TEMP	2-TE-27-17K	T2419A	°F		248 (MAX)[1]
AMBIENT TEMPERATURE (VICINITY OF CCWP 2C)	M&TE NO.:	LOCAL	°F		104 (MAX)[2]

1 Based upon process computer alarm set points.

2 Based upon motor nameplate data of 40°C maximum ambient temperature.

Appendix J
(Page 4 of 4)

CCW PUMPS/MOTORS FULL FLOW CHARACTERISTICS

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

PARAMETER	INSTRUMENT	LOCATION	UNITS	OBSERVED VALUE	EXPECTED VALUE
CCW 2D MOTOR CURRENT/POWER	2-EI-27-8	2-M-15	AMPS		247 (MAX)
	2-EI-27-8	Q2824A	KW		2250 (MAX)
	PHASE 1	2-BD-201D SWITCHGEAR (2-MTR-27-39)	AMPS		247 (MAX)
	PHASE 2		AMPS		247 (MAX)
	PHASE 3		AMPS		247 (MAX)
CCWP 2D MOTOR BUS VOLTAGE	PHASE 1-2	2-BD-201D SWITCHGEAR	VOLTS		6900 (NOMINAL)
	PHASE 2-3		VOLTS		6900 (NOMINAL)
	PHASE 3-1		VOLTS		6900 (NOMINAL)
CCW 2D PUMP BOTTOM GUIDE BEARING TEMP	2-TE-27-13M	T2445A	°F		200 (MAX)[1]
CCW 2D PUMP THRUST BEARING TEMP	2-TE-27-13L	T2446A	°F		200 (MAX)[1]
	2-TE-27-13F	T2447A	°F		200 (MAX)[1]
CCW 2D PUMP TOP GUIDE BEARING TEMP	2-TE-27-13A	T2345A	°F		167 (MAX)[1]
CCW 2D MOTOR BOTTOM GUIDE BEARING TEMP	2-TE-27-13B	T2346A	°F		167 (MAX)[1]
CCW 2D MOTOR THRUST BEARING TEMP	2-TE-27-13D	T2350A	°F		167 (MAX)[1]
	2-TE-27-13E	T2351A	°F		167 (MAX)[1]
CCWP 2D Ø A MOTOR WINDING TEMP	2-TE-27-13G	T2352A	°F		248 (MAX)[1]
CCWP 2D Ø B MOTOR WINDING TEMP	2-TE-27-13N	T2354A	°F		248 (MAX)[1]
CCWP 2D Ø C MOTOR WINDING TEMP	2-TE-27-13K	T2353A	°F		248 (MAX)[1]
AMBIENT TEMPERATURE (VICINITY OF CCWP 2D)	M&TE NO.:	LOCAL	°F		104 (MAX)[2]

1 Based upon process computer alarm set points.

2 Based upon motor nameplate data of 40°C maximum ambient temperature.

Appendix K
(Page 1 of 1)

VALVE DYNAMIC OPERATING CHARACTERISTICS

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

STEP	VALVE	PARAMETER	M&TE NUMBER	UNITS	OBSERVED VALUE	EXPECTED VALUE
6.10[3]	COOLING TOWER DE-ICING VALVE 2-FCV-27-140: CLOSING	STROKE TIME		SEC		N/A
		VOLTAGE		VOLTS		414-506
		RUNNING CURRENT Ø A		AMPS		2.7 (MAX)
		RUNNING CURRENT Ø B		AMPS		2.7 (MAX)
		RUNNING CURRENT Ø C		AMPS		2.7 (MAX)
6.10[6]	COOLING TOWER DE-ICING VALVE 2-FCV-27-141: CLOSING	STROKE TIME		SEC		N/A
		VOLTAGE		VOLTS		414-506
		RUNNING CURRENT Ø A		AMPS		2.7 (MAX)
		RUNNING CURRENT Ø B		AMPS		2.7 (MAX)
		RUNNING CURRENT Ø C		AMPS		2.7 (MAX)
6.10[11]	COOLING TOWER DE-ICING VALVE 2-FCV-27-140: OPENING	STROKE TIME		SEC		N/A
		VOLTAGE		VOLTS		414-506
		RUNNING CURRENT Ø A		AMPS		2.7 (MAX)
		RUNNING CURRENT Ø B		AMPS		2.7 (MAX)
		RUNNING CURRENT Ø C		AMPS		2.7 (MAX)
6.10[14]	COOLING TOWER DE-ICING VALVE 2-FCV-27-141: OPENING	STROKE TIME		SEC		N/A
		VOLTAGE		VOLTS		414-506
		RUNNING CURRENT Ø A		AMPS		2.7 (MAX)
		RUNNING CURRENT Ø B		AMPS		2.7 (MAX)
		RUNNING CURRENT Ø C		AMPS		2.7 (MAX)

Appendix L
(Page 1 of 2)

VALVE DYNAMIC OPERATING CHARACTERISTICS

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

STEP	VALVE	PARAMETER	M&TE NUMBER	UNITS	OBSERVED VALUE	EXPECTED VALUE
6.11[3]	CCWP 2D DISCHARGE VALVE 2-FCV-27-41: CLOSING	STROKE TIME		SEC		30 (NOMINAL)
		VOLTAGE		VOLTS		414-506
		RUNNING CURRENT Ø A		AMPS		13.6 (MAX)
		RUNNING CURRENT Ø B		AMPS		13.6 (MAX)
		RUNNING CURRENT Ø C		AMPS		13.6 (MAX)
6.11[7]	CCWP 2D DISCHARGE VALVE 2-FCV-27-31: CLOSING	STROKE TIME		SEC		30 (NOMINAL)
		VOLTAGE		VOLTS		414-506
		RUNNING CURRENT Ø A		AMPS		13.6 (MAX)
		RUNNING CURRENT Ø B		AMPS		13.6 (MAX)
		RUNNING CURRENT Ø C		AMPS		13.6 (MAX)
6.11[10]	COOLING TOWER BYPASS VALVE 2-FCV-27-92: OPENING	STROKE TIME		SEC		30 (NOMINAL)
		VOLTAGE		VOLTS		414-506
		RUNNING CURRENT Ø A		AMPS		16.3 (MAX)
		RUNNING CURRENT Ø B		AMPS		16.3 (MAX)
		RUNNING CURRENT Ø C		AMPS		16.3 (MAX)
6.11[17]	COOLING TOWER BYPASS VALVE 2-FCV-27-92: CLOSING	STROKE TIME		SEC		30 (NOMINAL)
		VOLTAGE		VOLTS		414-506
		RUNNING CURRENT Ø A		AMPS		16.3 (MAX)
		RUNNING CURRENT Ø B		AMPS		16.3 (MAX)
		RUNNING CURRENT Ø C		AMPS		16.3 (MAX)

Appendix L
(Page 2 of 2)

VALVE DYNAMIC OPERATING CHARACTERISTICS

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

STEP	VALVE	PARAMETER	M&TE NUMBER	UNITS	OBSERVED VALUE	EXPECTED VALUE
6.11[20]	CCWP 2B DISCHARGE VALVE 2-FCV-27-21: CLOSING	STROKE TIME		SEC		30 (NOMINAL)
		VOLTAGE		VOLTS		414-506
		RUNNING CURRENT ∅ A		AMPS		13.6 (MAX)
		RUNNING CURRENT ∅ B		AMPS		13.6 (MAX)
		RUNNING CURRENT ∅ C		AMPS		13.6 (MAX)
6.11[23]	CCWP 2A DISCHARGE VALVE 2-FCV-27-11: CLOSING	STROKE TIME		SEC		30 (NOMINAL)
		VOLTAGE		VOLTS		414-506
		RUNNING CURRENT ∅ A		AMPS		13.6 (MAX)
		RUNNING CURRENT ∅ B		AMPS		13.6 (MAX)
		RUNNING CURRENT ∅ C		AMPS		13.6 (MAX)

Appendix M
(Page 1 of 2)

BYPASS FLOW CCW SYSTEM CHARACTERISTICS

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

PARAMETER	INSTRUMENT	LOCATION	UNITS	OBSERVED VALUE	EXPECTED VALUE
COOLING TOWER BASIN LEVEL	DEPTH GAGE	LOCAL	INCHES		≥ 0
CCW PUMP 2A SUCTION PRESSURE	2-PI-27-36	2-L-504	PSIG		6 (NOMINAL)
CCW PUMP 2B SUCTION PRESSURE	2-PI-27-26	2-L-505	PSIG		6 (NOMINAL)
CCW PUMP 2A DISCHARGE PRESSURE	2-PI-27-40B	2-L-504	PSIG		28 (NOMINAL)
	2-PT-27-40	P2401	PSIG		28 (NOMINAL)
CCW PUMP 2B DISCHARGE PRESSURE	2-PI-27-30B	2-L-505	PSIG		28 (NOMINAL)
	2-PT-27-30	P2403	PSIG		28 (NOMINAL)
EAST CONDENSER INLET TEMPERATURE	2-TI-27-56	LOCAL	°F		92 (MAX)
	2-TI-27-58	2-M-15	°F		92 (MAX)
	2-TE-27-58	T2430	°F		92 (MAX)
WEST CONDENSER INLET TEMPERATURE	2-TI-27-66	LOCAL	°F		92 (MAX)
	2-TI-27-68	2-M-15	°F		92 (MAX)
	2-TT-27-68	T2431	°F		92 (MAX)

Appendix M
(Page 2 of 2)

BYPASS FLOW CCW SYSTEM CHARACTERISTICS

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

PARAMETER	INSTRUMENT	LOCATION	UNITS	OBSERVED VALUE	EXPECTED VALUE
EAST CONDENSER INLET PRESSURE	2-PI-27-57	2-L-130	PSIG		22 (NOMINAL)
EAST CONDENSER DIFFERENTIAL PRESSURE	2-PDIS-27-70	2-L-130	PSID		5 (NOMINAL)
EAST CONDENSER OUTLET PRESSURE	2-PI-27-76	2-L-277	PSIG		20 (NOMINAL)
EAST CONDENSER OUTLET TEMPERATURE	2-TI-27-73	LOCAL	°F		130 (MAX)
	2-TI-27-74	2-M-15	°F		130 (MAX)
	2-TE-27-74	T2440	°F		130 (MAX)
WEST CONDENSER INLET PRESSURE	2-PI-27-67	2-L-130	PSIG		22 (NOMINAL)
WEST CONDENSER DIFFERENTIAL PRESSURE	2-PDIS-27-80	2-L-130	PSID		5 (NOMINAL)
WEST CONDENSER OUTLET PRESSURE	2-PI-27-86	2-L-277	PSIG		20 (NOMINAL)
WEST CONDENSER OUTLET TEMPERATURE	2-TI-27-83	LOCAL	°F		130 (MAX)
	2-TI-27-84	2-M-15	°F		130 (MAX)
	2-TE-27-84	T2441	°F		130 (MAX)

Appendix N
(Page 1 of 2)

FILLING COOLING TOWER BASIN, CONDENSER TUNNELS, AND WATERBOXES

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

[1] **ENSURE** CCWP Inlet Valves are OPEN:

A. 2-FCV-27-5, CCWP 2A _____

B. 2-FCV-27-15, CCWP 2B _____

C. 2-FCV-27-25, CCWP 2C _____

D. 2-FCV-27-35, CCWP 2D _____

[2] **OPEN** 480V CCWP Station MCC B breaker 1A CCWP 2A discharge valve, 2-FCV-27-11. _____

[3] **MANUALLY OPEN** CCWP 2A discharge valve 2-FCV-27-11 to indicate ~25%. _____

[4] **OPEN** the condenser inlet and outlet bypass valves:

A. 2-BYV-27-513, CCW EAST SIDE CONDENSER INLET BYPASS _____

B. 2-BYV-27-514, CCW WEST SIDE CONDENSER INLET BYPASS _____

C. 2-BYV-27-519, CCW EAST SIDE CONDENSER OUTLET BYPASS _____

D. 2-BYV-27-520, CCW WEST SIDE CONDENSER OUTLET BYPASS _____

CAUTION

Extreme care should be used when filling water boxes to avoid flooding foundation sump area.

[5] **OPEN** Condenser Water box Outlet Vent Valves one turn:

A. 2-VTV-27-517 _____

B. 2-VTV-27-518 _____

Appendix N
(Page 2 of 2)

FILLING COOLING TOWER BASIN, CONDENSER TUNNELS, AND WATERBOXES

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

[6] **FILL** Cooling Tower Basin by opening one or several of the following valves (N/A if one is not used):

A. 2-FCV-24-191, RCW Bypass Flow Control Valve (yard) _____

B. 0-FCV-67-362, Header B Cooling Tower Isolation Valve (yard) _____

C. 0-FCV-27-112, SCCW Supply Valve (yard) _____

[7] **ENSURE** air being expelled from 2-SPV-27-512, 6" Air Release Valve. _____

[8] **CLOSE** Outlet Water box Vent Valves when water box is filled:

A. 2-VTV-27-517 _____

B. 2-VTV-27-518 _____

[9] **CLOSE** CCWP 2A discharge valve 2-FCV-27-11. _____

[10] **CLOSE** 480V CCWP Station MCC B breaker 1A (CCWP 2A discharge valve, 2-FCV-27-11). _____

[11] **CLOSE** valve(s) opened in step [5] (N/A if one is not used):

A. 2-FCV-24-191, RCW Bypass Plow Control Valve (yard) _____

B. 0-FCV-67-362, Header B Cooling Tower Isolation Valve (yard) _____

[12] **OPEN** the following CCWP casing vents **AND** when a solid stream of water flows from the vent, **THEN**

CLOSE the casing vent:

A. CCWP 2A Casing Vent (2-VTV-27-009) _____

B. CCWP 2B Casing Vent (2-VTV-27-019) _____

C. CCWP 2C Casing Vent (2-VTV-27-029) _____

D. CCWP 2D Casing Vent (2-VTV-27-039) _____

Appendix O
(Page 1 of 1)

PREOPERATIONAL/ACCEPTANCE TEST INSTRUCTION TEST PERSONNEL SIGNATURE LOG

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

NAME (PRINT)	TITLE/ ORGANIZATION	SIGNATURE	INITIAL/DATE

WATTS BAR NUCLEAR PLANT

UNIT 2 STARTUP

TITLE: Unit 2 TDAFW Pump Room Exhaust Fans

Instruction No: 2-PTI-030D-01

Revision No: 0000

PREPARED BY: Keith Jones Keith Jones DATE 6-29-10

PRINT NAME/ SIGNATURE

REVIEWED BY: Bethany Merriman Bethany Merriman DATE 6-29-10

PRINT NAME/ SIGNATURE

INSTRUCTION APPROVAL

JTG MEETING NO: 2-10-005

JTG CHAIRMAN: _____ DATE 6/29/10

APPROVED BY: _____ DATE 6/29/10

PREOPERATIONAL STARTUP MANAGER

TEST RESULTS APPROVAL

JTG MEETING NO: _____

JTG CHAIRMAN: _____ DATE _____

APPROVED BY: _____ DATE _____

PREOPERATIONAL STARTUP MANAGER

Revision Log

Revision or Change Number	Effective Date	Affected Page Numbers	Description of Revision/Change
0000	6/29/10	ALL	This procedure is written using the Unit 1 PTI-030C-01 Rev 0 as a guide for testing of the TDAFW Pump Room exhaust fans. Converted to Word 2007

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1.0 INTRODUCTION

1.1 Test Objectives

Demonstrate the proper operation of the Unit 2 Turbine Driven Auxiliary Feedwater (TDAFW) Pump Room Exhaust Fans.

1.2 Scope

A. This test demonstrates the operability of the Unit 2 TDAFW Pump Room Exhaust Fans to ensure the following:

1. The AC and DC TDAFW Pump Room exhaust fans start upon receipt of room Hi-Temperature signal.

2. The TDAFW Pump Room Exhaust Fans maintain desired air flows.

B. The testing of the logic function of the DC TDAFW Pump Room exhaust fan start upon TDAFW Pump start will be performed in 2-PTI-003B-04.

2.0 REFERENCES

2.1 Performance References

A. SMP-9.0, Conduct of Test

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

2.2 Developmental References

A. Final Safety Analysis Report

1. FSAR Section 9.4.5.3, Auxiliary Building Engineered Safety Features (ESF) Equipment Coolers

2. FSAR Table 14.2-1, Sheets 36 & 37, Auxiliary Building Ventilation System

B. Drawings

1. Flow Diagrams

a. 1-47W866-11, Rev 27 , HEATING, COOLING & VENTILATING AIR FLOW

b. 2-47W866-11, Rev 0, HEATING, COOLING & VENTILATING AIR FLOW

2. Electrical

a. 2-45W600-30-12, Rev 0, VENTILATING SYSTEM SCHEMATIC DIAGRAMS

b. 2-45W600-46-6, Rev 0, FEEDWATER PUMP & TURBINE SCHEMATIC DIAGRAMS

c. 1-45W703-1, Rev 47, 125V VITAL BATTERY BOARD I SINGLE LINE

d. 1-45W703-2, Rev 36, 125V VITAL BATTERY BOARD II SINGLE LINE

e. 2-45W708-2, Rev 0, MISC 120V AC DISTR PANELS CONNECTION DIAGRAMS

f. 45N2632-9, Rev 1, MISCELLANEOUS CONTROLS CONNECTION DIAGRAMS

g. 45W2614-9, Rev 9, FEEDWATER PUMP & TURB CONNECTION DIAGRAMS

h. 45W2614-10, Rev 11, FEEDWATER PUMP & TURB CONNECTION DIAGRAM

i. 45W2614-11, Rev 8, FEEDWATER PUMP & TURB CONNECTION DIAGRAMS

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

2.2 Developmental References (continued)

3. Mechanical

   a. 47W920-2, Rev 53, MECHANICAL HEATING, VENTILATING, AND AIR CONDITIONING

4. Logic/Control

   a. 2-47W610-30-6, Rev 0, ELECTRICAL CONTROL DIAGRAM VENTILATION SYSTEM

   b. 2-47W611-30-6, Rev 0, ELECTRICAL LOGIC DIAGRAM VENTILATION SYSTEM

C. Documents

1. SMP-4.0, Rev 1, System Completion and Turnover
2. SMP-8.0, Rev 3, Administration of Preoperational Test Instructions
3. 2-PTI-003B-04, Auxiliary Feedwater Pumps and Valves Logic Test (Draft)
4. GTM-05, HVAC Air Balance (Draft)
5. WBN2-30AB-4001, Rev 1, Auxiliary Building Heating, Ventilation, Air Conditioning System (30, 31, 44)
6. G-37, Rev 4, Testing and Balancing of HVAC Systems During Installation, Modification, and Maintenance.
7. 2-TSD-30D-1, Rev 2, Turbine Driven Auxiliary Feedwater Pump Room Exhaust Fans
8. SSD-2-TS-30-214, TD AFW Pump Room Thermostat, [Later]
9. SSD-2-TS-30-217, TD AFW Pump Room Thermostat, [Later]

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

3.0 PRECAUTIONS AND LIMITATIONS

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

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

C. 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 contaminated areas.

H. All terminal points and connections are to be considered energized. Instrumentation must be used to determine if the circuits are de-energized.

I. Retermination of lifted leads requires that their restored bend radius is equal to or greater than the As Found condition.

J. During the performance of this procedure visual observation of the exhaust fans is required. This includes steady-state and transient operations with visual confirmation that vibration is not excessive.

K. If the vibration is determined to be excessive the Test Engineer shall initiate a Test Deficiency Notice (TDN) and notify Nuclear Engineering (NE).

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

3.0 PRECAUTIONS AND LIMITATIONS (continued)

L. Portions of this test will simulate a high ambient room temperature using an electric heat gun. This activity shall be performed slowly to prevent damage to the temperature switch sensing bulb.

M. Vibration testing will be verified during performance of GTM-05, HVAC Air Balance.

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

4.0 PREREQUISITE ACTIONS

NOTE
Prerequisite action steps may be performed in any order with Test Directors approval.

4.1 Preliminary Actions

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

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

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

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

[4] **VERIFY** current revisions and change paper for referenced drawings have 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 data package. _____

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

ENSURE that they will **NOT** adversely affect the test performance.

A. Subsection 6.1 _____

B. Subsection 6.2 _____

C. Subsection 6.3 _____

D. Subsection 6.4 _____

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

4.1 Preliminary Actions (continued)

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

A. Subsection 6.1 _____

B. Subsection 6.2 _____

C. Subsection 6.3 _____

D. Subsection 6.4 _____

[7] **ENSURE** outstanding Design Change Notices (DCNs), Engineering Document Construction Releases (EDCRs) or Temporary Alterations (TAs) do **NOT** adversely impact testing.

A. Subsection 6.1 _____

B. Subsection 6.2 _____

C. Subsection 6.3 _____

D. Subsection 6.4 _____

[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] **ENSURE** GTM-05, HVAC Air Balance, has been submitted to the JTG for concurrence that it adequately satisfies the requirements of this instruction.

JTG Meeting: _____ _____

[10] **ATTACH** completed GTM-05, HVAC Air Balance package for system 30D. _____

[11] **ENSURE** plant instruments required for test performance, listed on Appendix C, Permanent Plant Instrumentation Log, have been placed in service and are within their calibration interval.

A. SubSection 6.1 _____

B. SubSection 6.2 _____

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

4.1 Preliminary Actions (continued)

[12] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) in accordance with SMP-4.0. _____

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

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

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

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

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

[1] **OBTAIN** the following M&TE, or equivalent, **AND**

COMPLETE the following table: _____

DESCRIPTION	MINIMUM RANGE	ACTUAL RANGE	REQUIRED ACCURACY	M&TE ID NUMBER	CALIBRATION DUE DATE
Digital Thermometer with Surface Temperature Probe	0-200°F		±3°F		

[2] **ENURE** the following are available:

A. Clean cloth soaked in cool water (to be used to cool temperature elements) _____

B. Electric heat gun (to be used to heat temperature elements) _____

C. Ladder (to access duct openings and temperature elements on the ceiling of TDAFW Pump Room) _____

[3] **VERIFY** M&TE calibration due dates will support the completion of this test performance.

A. Subsection 6.1 _____

B. Subsection 6.2 _____

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

4.3 Field Preparations

[1] **ENSURE** applicable portions of Appendix D, Electrical Lineup, have been performed

A. SubSection 6.1 _____

B. SubSection 6.2 _____

C. SubSection 6.3 _____

D. SubSection 6.4 _____

[2] **ENSURE** applicable portions of Appendix E, Switch Lineup, have been performed:

A. SubSection 6.1 _____

B. SubSection 6.2 _____

[3] **VERIFY** there is no Auxiliary Building Isolation (ABI) or High Radiation in Refuel Area Signals present by:

A. The ABI window **NOT** lit on either the Tr-A or Tr-B Master Isolation Signal Status Panels (Window 5 on 1-XX-55-6C and 1-XX-55-6D) on 1-M-6. _____

B. No high rad alarm for 0-RM-90-102 and -103, annunciator window 184B, 0-M-12. _____

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

A. System 237, 120V AC Instrument Power Distribution Panel 2A (SubSection 6.2 and 6.4) _____

B. System 236, 125V DC Vital Battery Bd I or II (SubSection 6.1 and 6.3) _____

[5] **VERIFY** no other work or test activities are in progress on or near TDAFW pump which could cause unexpected exhaust fan starts. _____

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.

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

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

5.0 ACCEPTANCE CRITERIA

A. Auxiliary Building Engineered Safety Features (ESF) Room/Area Coolers function in accordance with design requirements.

[1] The controls and interlocks for the following fans function properly.

[1.1] Each TDAFW Pump Room exhaust fan STARTS upon receipt of an associated Room Hi-Temperature signal.

A. 2-FAN-30-214, TD AFW PUMP ROOM 125V DC EMERG EXH FAN (Step 6.1[7])

B. 2-FAN-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN (Step 6.2[7])

[1.2] Each TDAFW pump room exhaust fan can be controlled manually by local handswitch.

A. 2-FAN-30-214, TD AFW PUMP ROOM 125V DC EMERG EXH FAN (Step 6.1[3], 6.1[4], 6.1[9])

B. 2-FAN-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN (Step 6.2[3], 6.2[4], 6.2[9])

NOTE

The Acceptance Criteria in the following steps have been adjusted to account for -5% to +10% of design/rated flow as delineated in G-37.

[2] Safety Features Equipment Room Coolers and Fans maintain design air flows as follows:

A. 2-FAN-30-214, TD AFW PUMP ROOM 125V DC EMERG EXH FAN (Step 6.3[5])

1200 cfm (1140 - 1320)

B. 2-FAN-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN (Step 6.4[5])

1200 cfm (1140 - 1320)

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

6.0 PERFORMANCE

NOTES

1) SubSections 6.1 through 6.4 may be performed in any order provided the steps within are performed in the order written.
2) All verifications (fan starts, fan stops, etc) are to be done by local observation unless otherwise noted.
3) IF/THEN steps may be marked N/A if stated condition does not exist.

6.1 2-FAN-30-214, TD AFW PUMP ROOM 125V DC EMERG EXH FAN LOGIC

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

[2] **ENSURE** Handswitch 2-HS-30-214-S, TD AFW PUMP ROOM 125V DC EMERG EXH FAN, at 2-JB-292-2243-S, [A15T/692], is in AUTO, **AND**

ENSURE Fan 2-FAN-30-214, TD AFW PUMP ROOM 125V DC EMERG EXH FAN, [A15T/703], is OFF. _____

[3] **PLACE** Handswitch 2-HS-30-214-S, TD AFW PUMP ROOM 125V DC EMERG EXH FAN, to START, **AND**

VERIFY Fan 2-FAN-30-214, TD AFW PUMP ROOM 125V DC EMERG EXH FAN, STARTS. (**Acc Crit**) _____

[4] **PLACE** Handswitch 2-HS-30-214-S, TD AFW PUMP ROOM 125V DC EMERG EXH FAN, to STOP, **AND**

VERIFY Fan 2-FAN-30-214, TD AFW PUMP ROOM 125V DC EMERG EXH FAN, STOPS. (**Acc Crit**) _____

[5] **PLACE** Handswitch 2-HS-30-214-S, TD AFW PUMP ROOM 125V DC EMERG EXH FAN, to AUTO **AND**

VERIFY Fan 2-FAN-30-214, TD AFW PUMP ROOM 125V DC EMERG EXH FAN, remains OFF. _____

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

6.1 2-FAN-30-214, TD AFW PUMP ROOM 125V DC EMERG EXH FAN LOGIC (continued)

CAUTION

The following step will simulate a high ambient room temperature using an electric heatgun. Heat the temperature switch sensing bulb SLOWLY while monitoring the bulb temperature with a surface temperature probe. Temperature of sensing bulb shall NOT exceed 115°F.

[6] **HEAT** Temperature Switch 2-TS-30-214-S, TD AFW PUMP ROOM DC FAN THERMOSTAT [A15T/692], sensing bulb to greater than 100°F. _____

[7] **VERIFY** Fan 2-FAN-30-214, TD AFW PUMP ROOM 125V DC EMERG EXH FAN, STARTS. (**Acc Crit**) _____

[8] **MAINTAIN** Temperature Switch 2-TS-30-214-S, TD AFW PUMP ROOM DC FAN THERMOSTAT, sensing bulb at greater than 100°F, **AND**

PLACE Handswitch 2-HS-30-214-S, TD AFW PUMP ROOM 125V DC EMERG EXH FAN, to STOP. _____

[9] **VERIFY** Fan 2-FAN-30-214, TD AFW PUMP ROOM 125V DC EMERG EXH FAN, STOPS. (**Acc Crit**) _____

[10] **PLACE** Handswitch 2-HS-30-214-S, TD AFW PUMP ROOM 125V DC EMERG EXH FAN, to AUTO. _____

[11] **VERIFY** Fan 2-FAN-30-214, TD AFW PUMP ROOM 125V DC EMERG EXH FAN, STARTS. _____

[12] **COOL** Temperature Switch 2-TS-30-214-S, TD AFW PUMP ROOM DC FAN THERMOSTAT, sensing bulb to less than 100°F. _____

[13] **VERIFY** Fan 2-FAN-30-214, TD AFW PUMP ROOM 125V DC EMERG EXH FAN, STOPS. _____

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

6.1 2-FAN-30-214, TD AFW PUMP ROOM 125V DC EMERG EXH FAN LOGIC (continued)

[14] **IF** no further testing is to be performed on Fan 2-FAN-30-214, TD AFW PUMP ROOM 125V DC EMERG EXH FAN, **THEN**

NOTIFY the Unit 2 US/SRO that testing is complete for Fan 2-FAN-30-214, TD AFW PUMP ROOM 125V DC EMERG EXH FAN, and that the fan can be placed into a configuration as required to support plant operations. _____

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

6.2 2-FAN-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN LOGIC

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

[2] **ENSURE** Handswitch 2-HS-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN, at 2-JB-292-2535, [A15T/692], is in AUTO, **AND**

ENSURE Fan 2-FAN-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN, [A15T/703], is OFF. _____

[3] **PLACE** Handswitch 2-HS-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN, to START, **AND**

VERIFY Fan 2-FAN-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN, STARTS. (**Acc Crit**) _____

[4] **PLACE** Handswitch 2-HS-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN, to STOP, **AND**

VERIFY Fan 2-FAN-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN, STOPS. (**Acc Crit**) _____

[5] **PLACE** Handswitch 2-HS-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN, to AUTO, **AND**

VERIFY Fan 2-FAN-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN, remains OFF. _____

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

6.2 2-FAN-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN LOGIC (continued)

CAUTION

The following step will simulate a high ambient room temperature using an electric heatgun. Heat the temperature switch sensing bulb SLOWLY while monitoring the bulb temperature with a surface temperature probe. Temperature of sensing bulb shall NOT exceed 120°F.

[6] **HEAT** Temperature Switch 2-TS-30-217, TDAFW PUMP ROOM THERMOSTAT, [A15T/692], sensing bulb to greater than 90°F. _____

[7] **VERIFY** Fan 2-FAN-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN, STARTS. (**Acc Crit**) _____

[8] **MAINTAIN** Temperature Switch, 2-TS-30-217, TD AFW PUMP ROOM THERMOSTAT, sensing bulb at greater than 90°F **AND**

PLACE Handswitch 2-HS-30-217 TD AFW PUMP ROOM 120V AC EMERG EXH FAN, to STOP. _____

[9] **VERIFY** Fan 2-FAN-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN, STOPS. (**Acc Crit**) _____

[10] **PLACE** Handswitch 2-HS-30-217 TDAFW PUMP ROOM 120V AC EMERG EXH FAN, to AUTO. _____

[11] **VERIFY** Fan 2-FAN-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN, STARTS. _____

[12] **COOL** Temperature Switch 2-TS-30-217, TDAFW PUMP ROOM THERMOSTAT, sensing bulb to less than 90°F. _____

[13] **VERIFY** Fan 2-FAN-30-217, TDAFW PUMP ROOM 120V AC EMERG EXH EXHAUST FAN, STOPS. _____

[14] **IF** no further testing is to be performed on Fan 2-FAN-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN, **THEN**

NOTIFY the Unit 2 US/SRO that testing is complete for Fan 2-FAN-30-217, TDAFW PUMP ROOM 120V AC EMERG EXH, and that the fan can be placed into a configuration as required to support plant operations. _____

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

6.3 2-FAN-30-214, TD AFW PUMP ROOM 125V DC EMERG EXH FAN AIR FLOW

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

[2] **ENSURE** the following

A. Handswitch 2-HS-30-214-S, TD AFW PUMP ROOM 125V DC EMERG EXH FAN, at 2-JB-292-2243-S, [A15T/692], is in START. _____

B. Fan 2-FAN-30-214, TD AFW PUMP ROOM 125V DC EMERG EXH FAN, [A15T/703], is ON. _____

[3] **OBSERVE** operation of Fan 2-FAN-30-214, TD AFW PUMP ROOM 125V DC EMERG EXH FAN, **AND**

VERIFY it is in a steady state condition. _____

[4] **ENSURE** Fan 2-FAN-30-214, TD AFW PUMP ROOM 125V DC EMERG EXH FAN, air flow measurement has been performed using GTM-05, **AND**

ATTACH completed GTM-05 data sheets. _____

[5] **RECORD** the measurement below, **AND**

VERIFY it meets acceptance criteria.

_____ CFM

Acc Crit: 1200 CFM (1140 - 1320)

_____

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

6.3 2-FAN-30-214, TD AFW PUMP ROOM 125V DC EMERG EXH FAN AIR FLOW (continued)

[6] **PLACE** Handswitch 2-HS-30-214-S, TD AFW PUMP ROOM 125V DC EMERG EXH FAN, to OFF, **AND**

VERIFY Fan 2-FAN-30-214, TD AFW PUMP ROOM 125V DC EMERG EXH FAN, STOPS. _____

[7] **IF** no further testing is to be performed on 2-FAN-30-214, TD AFW PUMP ROOM 125V DC EMERG EXH FAN, **THEN**

NOTIFY the Unit 2 US/SRO that testing is complete for Fan 2-FAN-30-214 TD AFW PUMP ROOM 125V DC EMERG EXH FAN, and the fan can be placed into a configuration as required to support plant operations. _____

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

6.4 2-FAN-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN AIR FLOW

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

[2] **ENSURE** the following:

A. Handswitch 2-HS-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN, at 2-JB-292-2535, [A15T/692], is in START. _____

B. Fan 2-FAN-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN, [A15T/703], is ON. _____

[3] **OBSERVE** operation of Fan 2-FAN-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN, **AND**

VERIFY that it is in a steady state condition. _____

[4] **ENSURE** Fan 2-FAN-30-214, TD AFW PUMP ROOM 125V DC EMERG EXH FAN, air flow measurement has been performed using GTM-05, **AND**

ATTACH completed GTM-05 data sheets. _____

[5] **RECORD** the measurement below, **AND**

VERIFY it meets acceptance criteria.

_____ CFM

Acc Crit: 1200 CFM (1140 - 1320)

_____

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

6.4 2-FAN-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN AIR FLOW (continued)

[6] **PLACE** Handswitch 2-HS-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN, to OFF, **AND**

VERIFY Fan 2-FAN-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN, STOPS. _____

[7] **IF** no further testing is to be performed on 2-FAN-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN, **THEN**

NOTIFY the Unit 2 US/SRO that testing is complete for Fan 2-FAN-30-217, TD AFW PUMP ROOM 120V AC EMERG EXH FAN, and the fan can be placed into a configuration as required to support plant operations. _____

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

7.0 POST PERFORMANCE ACTIVITIES

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

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 _____**

NOTE
Additional copies of this table may be made as necessary

PROCEDURE/ INSTRUCTION	REVISION/CHANGES	INITIAL AND DATE. (N/A for no change)
SMP-4.0		
SMP-8.0		
SMP-9.0		
2-PTI-003B-04		
GTM-05		
FSAR Section 9.4.5.3 Table 14.2-1 Shts 36 & 37 of 90		
WBN2-30AB-4001		
G-37		
2-TSD-30D-1		
SSD-2-TS-30-214		
SSD-2-TS-30-217		

Appendix B
(Page 1 of 1)

TEMPORARY CONDITION LOG

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

NOTE

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		
2-TS-30-214-S		N/A	N/A		NO	N/A	N/A
2-TS-30-217		N/A	N/A		NO	N/A	N/A

1 These items may be initialed and dated by personnel performing the task. Instrumentation not required to be filled and vented may be identified as Not Applicable. (N/A)

2 May be identified as Not Applicable (N/A) if instrument was not used to verify/record quantitative acceptance criteria data.

Appendix D
(Page 1 of 1)

ELECTRICAL LINEUP

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

1.0 TDAFW PUMP ROOM VENTILATION FAN 120V AC POWER

A. The following alignment is required for SubSections 6.2 and 6.4:

IDENTIFICATION	NOMENCLATURE	LOCATION	POSITION	INITIALS
2-BKR-292-2534	TURBINE DRIVEN AFP ROOM VENT FAN	120V AC Instrument Power Distribution Panel 2A	ON	

2.0 TDAFW PUMP ROOM VENTILATION FAN 125V DC POWER

A. ONE of the following alignments is required for SubSections 6.1 and 6.3. The one that is not used may be marked N/A.

IDENTIFICATION	NOMENCLATURE	LOCATION	POSITION	INITIALS
0-BKR-236-1/321-D	NORM FDR FOR UNIT 2 AFWT PUMPT	125V DC Vital Battery Bd I	ON	
2-XSW-46-DC-S	AFWT DC PWR MANUAL TRANS SW	A14U/692	NOR	

OR

IDENTIFICATION	NOMENCLATURE	LOCATION	POSITION	INITIALS
0-BKR-236-2/321-E	ALT FDR FOR UNIT 2 AFWT PUMP	125V DC Vital Battery Bd II	ON	
2-XSW-46-DC-S	AFWT DC PWR MANUAL TRANS SW	A14U/692	ALT	

Appendix E
(Page 1 of 1)

SWITCH LINEUP

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

Section	SWITCH NUMBER	SWITCH LOCATION	NOMENCLATURE	POSITION	INITIALS
6.1	2-HS-30-214-S	2-JB-292-2243-S [A15T/692]	TD AFW PUMP ROOM 125V DC EMERG EXH FAN	AUTO after STOP	
6.2	2-HS-30-217	2-JB-292-2535 [A15T/692]	TD AFW PUMP ROOM 120V AC EMERG EXH FAN	AUTO after STOP	

WATTS BAR NUCLEAR PLANT

UNIT 2 STARTUP

TITLE: Control and Auxiliary Air System

Instruction No: 2-PTI-032-01

Revision No: 0

PREPARED BY: Robert Moyers Robert Moyers DATE 6-21-10

PRINT NAME/ SIGNATURE

REVIEWED BY: Jamie Parham Jamie Parham DATE 6-21-10

PRINT NAME/ SIGNATURE

INSTRUCTION APPROVAL

JTG MEETING NO: 2-10-004

JTG CHAIRMAN: _____ DATE 6/21/10

APPROVED BY: _____ DATE 6/21/10

PREOPERATIONAL STARTUP MANAGER

TEST RESULTS APPROVAL

JTG MEETING NO: _____

JTG CHAIRMAN: _____ DATE _____

APPROVED BY: _____ DATE _____

PREOPERATIONAL STARTUP MANAGER

Revision Log

Revision or Change Number	Effective Date	Affected Page Numbers	Description of Revision/Change
0000	6/21/10	ALL	This procedure was converted from Word 95 to Word 2002 (XP) using Rev. 0 of 1-PTI-032-01, and updated to Word 2007.

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1.0 INTRODUCTION

1.1 TEST OBJECTIVES

Verify the proper operation of automatic controls, interlocks, and alarms of the Control Air System (CAS) and Auxiliary Control Air Subsystem (ACAS).

1.2 SCOPE

NOTE

2-PTI-032-02 will verify the ability of each Auxiliary Control Air compressor to maintain normal operating pressure when simultaneously supplying control air to at least two of the highest demand loads in the same trains.

Verify Control Air System containment isolation valves fail closed on loss of power, and close within in the required time period.

2.0 REFERENCES

2.1 Performance References

A. SMP-9.0, CONDUCT OF TEST, Rev 0000

B. TVA Safety Procedure 1021, Rev 0003

2.2 Developmental References

A. SMP-4.0, SYSTEM COMPLETION AND TURNOVER, Rev 0001

B. WBN U2 ICS Factory Acceptance Test Field Input Verifications, Rev 0001

C. Drawings

1. Flow Diagrams

   a. 2-47W848-1, Control Air, Rev 1

   b. 2-47W848-5, Control Air, Rev 0

   c. 2-47W848-9, Control Air, Rev 1

   d. 2-47W848-10, Control Air, Rev 3

2. Electrical Control Diagrams:

   a. 2-47W610-32-2, Control Air, Rev 0

2.2 Developmental References (continued)

3. Electrical Logic Diagram:

   a. 2-47W611-32-2, Compressed Air, Rev 0

4. Schematic Diagrams:

   a. 2-45W600-32, Control Air, Rev 0; DRA 52453-105, Rev 0

   b. 2-45W600-32, Control Air, Rev 0; DRA 52453-106, Rev 0

5. Connection Diagrams:

   a. 1-45W706-3, 120V-AC VITAL INST PWR BDS 1-III & 2-III, Rev 48

   b. 1-45W706-4, 120V-AC VITAL INST PWR BDS 1-IV & 2-IV, Rev 49

   c. 2-47A615-0, Integrated Computer System terminations and I/O List

D. FSAR References:

1. Chapter 6, Table 6.2.4-1, Containment Penetrations and Barriers

2. Chapter 9, Section 9.3.1, Compressed Air System

3. Chapter 14, Table 14.2-1, Sheets 85 and 86 of 89, Control Air System based on U2 A98 submittal.

E. Test Scoping Document, 2-TSD-032-1, Rev 0

3.0 PRECAUTIONS AND LIMITATIONS

A. Portions of this test are conducted in or around electrically energized equipment. Standard precautions shall be followed for working around energized electrical equipment in accordance with TVA Safety Procedure 1021.

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

C. 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 as appropriate.

3.0 PRECAUTIONS AND LIMITATIONS (continued)

D. All wires removed from a terminal shall be identified, grouped together, and taped or covered with an insulator to prevent personnel or equipment hazard and possible spurious initiations. Lifted leads shall be marked as a minimum with the terminal number and procedure number, if left unattended.

E. 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 punch list.

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

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

H. 0-FCV-32-82 and 0-FCV-32-85 will CLOSE and isolate Auxiliary control air system from the control air system, if control air pressure decreases below approximately 79.5 psig.

I. 2-FCV-32-81, 2-FCV-32-103, 2-FCV-32-111, will CLOSE and control air to Unit 2 Reactor Building will be isolated, if the control and/or auxiliary control air pressure decreases below approximately 70 psig.

J. 0-PCV-33-4 will CLOSE and control air supply to service air system may be isolated, if control air pressure decreases below approximately 80 psig.

K. Re-termination of lifted leads requires the bend radius to be equal to or greater than the as-found condition.

L. Exercise caution when opening control air vent, drain, and blow down valves to prevent injuring personnel in the immediate area. Opening these valves could cause dirt, debris and liquid to become airborne and be hazardous.

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

4.0 PREREQUISITE ACTIONS

4.1 Preliminary Actions

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

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

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

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

[4] **VERIFY** current revisions and change paper for referenced drawings have 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 data package. _____

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

ENSURE that they will NOT adversely affect the test results.

A. Subsection 6.1 _____

B. Subsection 6.2 _____

C. Subsection 6.3 _____

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

4.1 Preliminary Actions (continued)

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

A. Subsection 6.1 _____

B. Subsection 6.2 _____

C. Subsection 6.3 _____

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

[8] **ENSURE** a review of outstanding Clearances has been coordinated with Operations for impact to the test performance. If required, items will be recorded in Appendix B, Temporary Condition Log. _____

[9] **VERIFY** plant instruments required for test performance, listed on Appendix C, Permanent Plant Instrumentation Log, have been verified to be filled, vented, (as required) placed in service, and are within their calibration interval.

A. Subsection 6.1 _____

B. Subsection 6.2 _____

C. Subsection 6.3 _____

[10] **VERIFY** Measuring and Test Equipment (M&TE) required for test performance has been recorded on Measuring and Test Equipment (M&TE) Log, Appendix D.

A. Subsection 6.1 _____

B. Subsection 6.2 _____

C. Subsection 6.3 _____

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

4.1 Preliminary Actions (continued)

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

A. Subsection 6.1 _____

B. Subsection 6.2 _____

C. Subsection 6.3 _____

[12] **VERIFY** System cleanliness as required for the performance of this test has been completed _____

[13] **PERFORM** the switch lineup listed in Appendix E. _____

[14] **PERFORM** the electrical breaker lineup listed in Appendix F. _____

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

[16] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) in accordance with SMP-4.0. _____

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

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

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

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

A. HD2024 _____

B. HD2058 _____

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

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

NOTE
Stopwatches (2 required) 0-59 minutes elapsed time (minimum), ± 0.1 sec./hr. (or better)

[1] **VERIFY** the following Measuring & Test Equipment (M&TE) is available and within their calibration due dates, **AND**

RECORD the M&TE actually used in Appendix D. _____

4.3 Approvals and Notifications

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

_____ _____
Preoperational Startup Manager Signature Date

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

_____ _____
U2 US/SRO/SM Signature Date

5.0 ACCEPTANCE CRITERIA

[1] The following System 32 valves may be operated from the main control board.

VALVE NUMBER	VERIFICATION STEPS
2-FCV-32-81	6.1[2]B, 6.1[3]B
2-FCV-32-103	6.2[3]B, 6.2[4]B
2-FCV-32-111	6.3[3]B, 6.3[4]B

[2] The following System 32 valves indicating lights indicate the correct valve position:

VALVE NUMBER	VERIFICATION STEPS
2-FCV-32-81	6.1[2]C, 6.1[2]E, 6.1[3]D, 6.1[3]F
2-FCV-32-103	6.2[3]C, 6.2[3]E, 6.2[4]D, 6.2[4]F
2-FCV-32-111	6.3[3]C, 6.3[3]E 6.3[4]D, 6.3[4]F

[3] The following System 32 valves will close on decreasing air pressure.

VALVE NUMBER	VERIFICATION STEPS
2-FCV-32-81	6.1[13]C
2-FCV-32-103	6.2[12]C
2-FCV-32-111	6.3[13]C

5.0 ACCEPTANCE CRITERIA (continued)

[4] The following System 32 valves will close in ≤ 10 seconds.

VALVE NUMBER	VERIFICATION STEPS
2-FCV-32-81	6.1[25]C
2-FCV-32-103	6.2[24]C
2-FCV-32-111	6.3[25]B

[5] The following System 32 valves will fail closed upon loss of power to solenoids.

VALVE NUMBER	VERIFICATION STEPS
2-FCV-32-81	6.1[6]A
2-FCV-32-103	6.2[7]A
2-FCV-32-111	6.3[7]A

[6] The following System 32 safety-related components will fail closed upon loss of air pressure.

VALVE NUMBER	VERIFICATION STEPS
2-FCV-32-81	6.1[17]B
2-FCV-32-103	6.2[16]B
2-FCV-32-111	6.3[17]B

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

6.0 TEST INSTRUCTIONS

NOTE
The Subsections of this instruction may be performed in any order.

6.1 Reactor Building Unit 2 Train A Isolation Valve 2-FCV-32-81

[1] **VERIFY** applicable prerequisites of Section 4.0 have been satisfied for Section 6.1. _____

[2] **PLACE** AUX AIR TO RX BLDG TR A CIV Hand Switch 2-HS-32-81A on Main Control Room (MCR) Panel 2-M-15 in the OPEN position **AND**

RELEASE; when valve 2-FCV-32-81 is OPEN. _____

A. **VERIFY** Hand Switch 2-HS-32-81A spring returns to A-AUTO position. _____

B. **VERIFY** valve 2-FCV-32-81 is OPEN by observation of valve position (local). (**Acc Crit**) _____

C. **VERIFY** Hand Switch 2-HS-32-81A RED light is ON. (**Acc Crit**) _____

D. **VERIFY** Hand Switch 2-HS-32-81A GREEN light is OFF. _____

E. **VERIFY** Containment Isolation Status Panel (CISP) RED light is ON, on Panel 2-M-6. (**Acc Crit**) _____

F. **VERIFY** CISP GREEN light is OFF. _____

G. **VERIFY** ICS point HD2024 displays "OPN/AUT". _____

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

6.1 Reactor Building Unit 2 Train A Isolation Valve 2-FCV-32-81 (continued)

[3] **PLACE** Hand Switch 2-HS-32-81A to the CLOSE position. _____

A. **VERIFY** Hand Switch 2-HS-32-81A remains in the CLOSE position. _____

B. **VERIFY** valve 2-FCV-32-81 is CLOSED by observation of valve position (local). (**Acc Crit**) _____

C. **VERIFY** Hand Switch 2-HS-32-81A RED light is OFF. _____

D. **VERIFY** Hand Switch 2-HS-32-81A GREEN light is ON. (**Acc Crit**) _____

E. **VERIFY** CISP RED light is OFF. _____

F. **VERIFY** CISP GREEN light is ON. (**Acc Crit**) _____

G. **VERIFY** ICS point HD2024 displays "CLOSE". _____

[4] **PLACE** Hand Switch 2-HS-32-81A to the OPEN position, **AND**

RELEASE when valve 2-FCV-32-81 is OPEN. _____

[5] **VERIFY** valve 2-FCV-32-81 is OPEN, using Hand Switch 2-HS-32-81A indication. _____

NOTE

120V-AC Vital Power Board 2-III, Breaker 41 provides power to 2-FCV-32-81 solenoid valves.

[6] **OPEN** 120V-AC Vital Power Board 2-III, Breaker 41. _____

A. **VERIFY** valve 2-FCV-32-81 FAILS CLOSED upon loss of power by observation of valve position (local). (**Acc Crit**) _____

B. **VERIFY** Hand Switch 2-HS-32-81A RED light is OFF. _____

C. **VERIFY** Hand Switch 2-HS-32-81A GREEN light is OFF. _____

[7] **CLOSE** 120V-AC Vital Power Board 2-III, Breaker 41. _____

[8] **VERIFY** valve 2-FCV-32-81 remains CLOSED when power is restored, using Hand Switch 2-HS-32- 81A indication. _____

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

6.1 Reactor Building Unit 2 Train A Isolation Valve 2-FCV-32-81 (continued)

[9] **PLACE** Hand Switch 2-HS-32-81A to OPEN position, **AND**

RELEASE when valve 2-FCV-32-81 is OPEN. _____

[10] **VERIFY** valve 2-FCV-32-81 is OPEN, using Hand Switch 2-HS-32-81A indication. _____

[11] **PLACE** Hand Switch 2-HS-32-111A to OPEN position, **AND**

RELEASE when valve 2-FCV-32-111 OPENS. _____

[12] **ENSURE** the following initial conditions are established:

A. Power is available to valve 2-FCV-32-81 from 120V-AC Vital Power Board 2-III, Breaker 41. _____

B. Control air is available to valve 2-FCV-32- 81. _____

C. **NOTIFY** Operations that U2 Train A auxiliary control air in the reactor building will be isolated while performing this subsection. _____

[13] **SIMULATE** a loss of control air to valve 2-FCV-32-81 as follows:

A. **CLOSE** valve 2-RTV-32-346, RT VLV TO 2-FSV-32-81B. _____

NOTE

2-PIC-32-81 leakage may cause 2-FCV-32-81 to close without opening 2-PREG-32-81 drain valve. If so, [13B] may be N/A'd.

B. **OPEN** the pressure regulator drain valve on 2-PREG-32-81. _____

C. **VERIFY** valve 2-FCV-32-81 FAILS CLOSED on loss of control air. (**Acc Crit**) _____

[14] **ENSURE** the pressure regulator drain valve on 2-PREG-32-81 is closed. _____

[15] **OPEN** valve 2-RTV-32-346, **AND**

VERIFY valve 2-FCV-32-81 remains CLOSED, using Hand Switch 2-HS-32-81A indication, when control air is restored. _____

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

6.1 Reactor Building Unit 2 Train A Isolation Valve 2-FCV-32-81 (continued)

[16] **PLACE** Hand Switch 2-HS-32-81A to OPEN position, **AND**

RELEASE when valve 2-FCV-32-81 is OPEN. _____

[17] **SIMULATE** a loss of auxiliary control air pressure in the reactor building as follows:

A. **CLOSE** valve 2-RTV-32-330, RT VLV TO PIC-32-81. _____

B. **VERIFY** valve 2-FCV-32-81 is CLOSED, using Hand Switch 2-HS-32-81A indication. (**Acc Crit**) _____

C. **PLACE/HOLD** Hand Switch 2-HS-32-81A in the OPEN position, **AND**

VERIFY that 2-FCV-32-81 OPENS. _____

D. **RELEASE** Hand Switch 2-HS-32-81A, **AND**

ALLOW it to spring-return to the A-AUTO position. _____

E. **VERIFY** valve 2-FCV-32-81 CLOSES when Hand Switch 2-HS-32-81A is released. _____

F. **OPEN** valve 2-RTV-32-330 to valve positioner 2-PIC-32-81. _____

G. **VERIFY** valve 2-FCV-32-81 remains CLOSED, using Hand Switch 2-HS-32-81A indication, when auxiliary control air is restored. _____

[18] **PLACE** Hand Switch 2-HS-32-81A to OPEN position, **AND**

RELEASE when valve 2-FCV-32-81 is OPEN. _____

[19] **VERIFY** valve 2-FCV-32-81 is OPEN, using Hand Switch 2-HS-32-81A indication. _____

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

6.1 Reactor Building Unit 2 Train A Isolation Valve 2-FCV-32-81 (continued)

NOTE

Lifted leads shall be marked with terminal numbers and test instruction number if left unattended. Concurrent verification is required when lifting leads. Also see precautions 3.D and 3.K when lifting and landing permanent plant wiring.

[20] **SIMULATE** a Containment Isolation Phase B signal to 2-FCV-32-81 by lifting lead at TB609-3 (field side) for K619 (3-4) in the SSPS Output Bay in Panel 2-PNL-99-R-48. _____

_____ CV

[21] **VERIFY** valve 2-FCV-32-81 is CLOSED, using Hand Switch 2-HS-32-81A indication. _____

[22] **RESTORE** the lifted lead at TB609-3 for K619 (3-4) in Panel 2-PNL-99-R-48. _____

_____ CV

[23] **VERIFY** 2-FCV-32-81 remains CLOSED, using Hand Switch 2-HS-32-81A indication. _____

[24] **PLACE** Hand Switch 2-HS-32-81A to OPEN position, **AND**

RELEASE when 2-FCV-32-81 is OPEN. _____

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

6.1 Reactor Building Unit 2 Train A Isolation Valve 2-FCV-32-81 (continued)

NOTES

1) The following steps time the CLOSING stroke of valve 2-FCV-32-81. Timing to be done simultaneously from the MCR, using Hand Switch position indication lights and local valve position indication.
2) Start the stopwatches when the Hand Switch is placed in the CLOSE position and stop the watches when the valve is closed (i.e., RED light OFF, valve motion stops).

[25] **TIME** the close stroke of 2-FCV-32-81 as follows :

A. **PLACE** Hand Switch 2-HS-32-81A in the CLOSE position, **AND**

START the stopwatches. _____

B. **STOP** the stopwatches when the valve is closed. _____

C. **RECORD** the closing times for 2-FCV-32-81.

M&TE _____ Cal Due Date _____

MCR Closing Time: _____ seconds

(Equal to or less than 10 seconds) (**Acc Crit**) _____

M&TE _____ Cal Due Date _____

Local Closing Time _____ seconds

[26] **PLACE** Hand Switch 2-HS-32-81A to OPEN position, **AND**

RELEASE when valve 2-FCV-32-81 is OPEN. _____

[27] **VERIFY** valve 2-FCV-32-81 is OPEN, using 2-HS-32-81A indication. _____

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

6.2 Reactor Building Unit 2 Train B Isolation Valve 2-FCV-32-103

[1] **VERIFY** applicable prerequisites of Section 4.0 have been satisfied for Section 6.2. _____

[2] **ENSURE** the following initial conditions are established:

A. Power is available to valve 2-FCV-32-103 from 120V-AC Vital Power Board 2-IV, Breaker 36. _____

B. Control air is available to valve 2-FCV-32-103. _____

C. **NOTIFY** Operations that Train B and Non Essential auxiliary control air in the reactor building will be isolated while performing this subsection. _____

[3] **PLACE** AUX AIR TO RX BLDG TR B CLV Hand Switch 2-HS-32-103A on Main Control Room (MCR) Panel 2-M-15 in the OPEN position, **AND**

RELEASE; when valve 2-FCV-32-103 is OPEN. _____

A. **VERIFY** Hand Switch 2-HS-32-103A spring returns to A-AUTO position. _____

B. **VERIFY** valve 2-FCV-32-103 is OPEN by observation of valve position (local). (**Acc Crit**) _____

C. **VERIFY** Hand Switch 2-HS-32-103A RED light is ON. (**Acc Crit**) _____

D. **VERIFY** Hand Switch 2-HS-32-103A GREEN light is OFF. _____

E. **VERIFY** Containment Isolation Status Panel (CISP) RED light is ON, on Panel 2-M-6. (**Acc Crit**) _____

F. **VERIFY** CISP GREEN light is OFF. _____

G. **VERIFY** ICS point HD2058 displays "OPN/AUT". _____

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

6.2 Reactor Building Unit 2 Train B Isolation Valve 2-FCV-32-103 (continued)

[4] **PLACE** Hand Switch 2-HS-32-103A to the CLOSE position. _____

A. **VERIFY** Hand Switch 2-HS-32-103A remains in the CLOSE position. _____

B. **VERIFY** valve 2-FCV-32-103 is CLOSED by observation of valve position (local). (**Acc Crit**) _____

C. **VERIFY** Hand Switch 2-HS-32-103A RED light is OFF. _____

D. **VERIFY** Hand Switch 2-HS-32-103A GREEN light is ON. (**Acc Crit**) _____

E. **VERIFY** CISP RED light is OFF. _____

F. **VERIFY** CISP GREEN light is ON. (**Acc Crit**) _____

G. **VERIFY** ICS point HD2058 displays "CLOSE". _____

[5] **PLACE** Hand Switch 2-HS-32-103A to the OPEN position **AND**

RELEASE when valve 2-FCV-32-103 is OPEN. _____

[6] **VERIFY** valve 2-FCV-32-103 is OPEN, using Hand Switch 2-HS-32-103A indication. _____

NOTE

120V-AC Vital Power Board 2-IV, Breaker 36 provides power to both 2-FCV-32-103 and 2-FCV-32-111 solenoid valves.

[7] **OPEN** 120V-AC Vital Power Board 2-IV, Breaker 36 to de-energize 2-FCV-32-103 solenoid. _____

A. **VERIFY** valve 2-FCV-32-103 FAILS CLOSED upon loss of power by observation of valve position (local). (**Acc Crit**) _____

B. **VERIFY** Hand Switch 2-HS-32-103A RED light is OFF. _____

C. **VERIFY** Hand Switch 2-HS-32-103A GREEN light is OFF.

[8] **CLOSE** 120V-AC Vital Power Board 2-IV, Breaker 36. _____

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

6.2 Reactor Building Unit 2 Train B Isolation Valve 2-FCV-32-103 (continued)

[9] **VERIFY** valve 2-FCV-32-103 remains CLOSED when power is restored, using Hand Switch 2-HS-32- 103A indication. _____

[10] **PLACE** Hand Switch 2-HS-32-103A to OPEN position, **AND**

RELEASE when valve 2-FCV-32-103 is OPEN. _____

[11] **VERIFY** valve 2-FCV-32-103 is OPEN, using Hand Switch 2-HS-32-103A indication. _____

[12] **SIMULATE** a loss of control air to valve 2-FCV-32-103 as follows:

A. **CLOSE** valve 2-RTV-32-348, RT VLV TO 2-FSV-32-103B. _____

NOTE

2-PIC-32-103 leakage may cause 2-FCV-32-103 to close without opening 2-PREG-32-103 drain valve. If so, [12]B may be N/A'd.

B. **OPEN** the pressure regulator drain valve on 2-PREG-32-103. _____

C. **VERIFY** valve 2-FCV-32-103 FAILS CLOSED on loss of control air. (**Acc Crit**) _____

[13] **ENSURE** the pressure regulator drain valve on 2-PREG-32-103 is closed. _____

[14] **OPEN** valve 2-RTV-32-348, **AND**

VERIFY valve 2-FCV-32-103 remains CLOSED, using Hand Switch 2-HS-32-103A indication, when control air is restored. _____

[15] **PLACE** Hand Switch 2-HS-32-103A to OPEN position, **AND**

RELEASE when valve 2-FCV-32-103 is OPEN. _____

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

6.2 Reactor Building Unit 2 Train B Isolation Valve 2-FCV-32-103 (continued)

[16] **SIMULATE** a loss of auxiliary control air pressure in the reactor building as follows:

A. **CLOSE** valve 2-RTV-32-320, RT VLV TO 2-PIC-32-103. _____

B. **VERIFY** valve 2-FCV-32-103 is CLOSED, using Hand Switch 2-HS-32-103A indication. (**Acc Crit**) _____

C. **PLACE/HOLD** Hand Switch 2-HS-32-103A in the OPEN position, **AND**

VERIFY that 2-FCV-32-103 OPENS. _____

D. **RELEASE** Hand Switch 2-HS-32-103A, **AND**

ALLOW it to spring-return to the A-AUTO position. _____

E. **VERIFY** valve 2-FCV-32-103 CLOSES when Hand Switch 2-HS-32-103A is released. _____

F. **OPEN** valve 2-RTV-32-340 to valve positioner 2-PIC-32-103. _____

G. **VERIFY** valve 2-FCV-32-103 remains CLOSED, using Hand Switch 2-HS-32-103A indication, when auxiliary control air is restored. _____

[17] **PLACE** Hand Switch 2-HS-32-103A to OPEN position, **AND**

RELEASE when valve 2-FCV-32-103 is OPEN. _____

[18] **VERIFY** valve 2-FCV-32-103 is OPEN, using Hand Switch 2-HS-32-103A indication. _____

NOTE

Lifted leads shall be marked with terminal numbers and test instruction number if left unattended. Concurrent verification is required when lifting leads. Also see precautions 3.D and 3.K when lifting and landing permanent plant wiring.

[19] **SIMULATE** a Containment Isolation Phase B signal to 2-FCV-32-103 by lifting lead at TB609-3 (field side) for K619 (3-4) in the SSPS Output Bay in Panel 2-PNL-99-R-51. _____

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

6.2 Reactor Building Unit 2 Train B Isolation Valve 2-FCV-32-103 (continued)

_____ CV

[20] **VERIFY** valve 2-FCV-32-103 is CLOSED, using Hand Switch 2-HS-32-103A indication. _____

[21] **RESTORE** the lifted lead at TB609-3 for K619 (3-4) in Panel 2-PNL-99-R-51. _____

_____ CV

[22] **VERIFY** 2-FCV-32-103 remains CLOSED, using Hand Switch 2-HS-32-103A indication. _____

[23] **PLACE** Hand Switch 2-HS-32-103A to OPEN position, **AND**

RELEASE when 2-FCV-32-103 is OPEN. _____

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

6.2 Reactor Building Unit 2 Train B Isolation Valve 2-FCV-32-103 (continued)

NOTES

1) The following steps time the CLOSING stroke of valve 2-FCV-32-103. Timing to be done simultaneously from the MCR, using Hand Switch position indication lights and local valve position indication.

2) Start the stopwatches when the Hand Switch is placed in the CLOSE position and stop the watches when the valve is closed (i.e., RED light OFF, valve motion stops).

[24] **TIME** the close stroke of 2-FCV-32-103 as follows:

A. **PLACE** Hand Switch 2-HS-32-103A in the CLOSE position, **AND**

START the stopwatches. _____

B. **STOP** the stopwatches when the valve is closed. _____

C. **RECORD** the closing times for 2-FCV-32-103.

M&TE _____ Cal Due Date _____

MCR Closing Time: _____ seconds

(Equal to or less than 10 seconds) (**Acc Crit**) _____

M&TE _____ Cal Due Date _____

Local Closing Time _____ seconds

[25] **PLACE** Hand Switch 2-HS-32-103A to OPEN position, **AND**

RELEASE when valve 2-FCV-32-103 is OPEN. _____

[26] **VERIFY** valve 2-FCV-32-103 is OPEN, using 2-HS- 32-103A indication. _____

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

6.3 Reactor Building Unit 2 Non-Essential Isolation Valve 2-FCV-32-111

NOTE

120V-AC Vital Power Board 2-IV, Breaker 36 provides power to both 2-FCV-32-103 and 2-FCV-32-111 solenoid valves.

[1] **VERIFY** applicable prerequisites of Section 4.0 have been satisfied for Section 6.3. _____

[2] **ENSURE** the following initial conditions are established:

A. Power is available to valve 2-FCV-32-111 from 120V-AC Vital Power Board 2-IV, Breaker 36. _____

B. Control air is available to valve 2-FCV-32-111. _____

C. **NOTIFY** Operations that Train B and Non-Essential auxiliary control air in the reactor building will be isolated while performing this subsection. _____

[3] **PLACE** NON-ESS AUX AIR TO RX BLDG CIV Hand Switch 2-HS-32-111A on MCR Panel 2-M-15 in the OPEN position, **AND**

RELEASE when valve 2-FCV-32-111 is OPEN. _____

A. **VERIFY** Hand Switch 2-HS-32-111A returns to the A-AUTO position. _____

B. **VERIFY** valve 2-FCV-32-111 is OPEN by observation of valve position (local). (**Acc Crit**) _____

C. **VERIFY** Hand Switch 2-HS-32-111A RED light is ON. (**Acc Crit**)

D. **VERIFY** Hand Switch 2-HS-32-111A GREEN light is OFF. _____

E. **VERIFY** CISP RED Light is ON. (**Acc Crit**) _____

F. **VERIFY** CISP GREEN light is OFF. _____

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

6.3 Reactor Building Unit 2 Non-Essential Isolation Valve 2-FCV-32-111 (continued)

[4] **PLACE** Hand Switch 2-HS-32-111A to the CLOSE position. _____

A. **VERIFY** Hand Switch 2-HS-32-111A remains in the CLOSE position. _____

B. **VERIFY** valve 2-FCV-32-111 is CLOSED by observation of valve position (local). (**Acc Crit**) _____

C. **VERIFY** Hand Switch 2-HS-32-111A RED light is OFF.

D. **VERIFY** Hand Switch 2-HS-32-111A GREEN light is ON. (**Acc Crit)** _____

E. **VERIFY** CISP RED light is OFF. _____

F. **VERIFY** CISP GREEN light is ON. (**Acc Crit**) _____

[5] **PLACE** Hand Switch 2-HS-32-111A to the OPEN position **AND**

RELEASE when valve 2-FCV-32-111 is OPEN. _____

[6] **VERIFY** valve 2-FCV-32-111 is OPEN, using Hand Switch 2-HS-32-111A indication. _____

[7] **OPEN** 120V-AC Vital Power Board 2-IV, Breaker 36. _____

A. **VERIFY** valve 2-FCV-32-111 FAILS CLOSED upon loss of power by observation of valve position (local). (**Acc Crit**) _____

B. **VERIFY** Hand Switch 2-HS-32-111A RED light is OFF. _____

C. **VERIFY** Hand Switch 2-HS-32-111A GREEN light is OFF. _____

[8] **CLOSE** 120V-AC Vital Power Board 2-IV, Breaker 36. _____

[9] **VERIFY** valve 2-FCV-32-111 remains CLOSED, using Hand Switch 2-HS-32-111A indication, when power is restored. _____

[10] **PLACE** Hand Switch 2-HS-32-111A to OPEN position, **AND**

RELEASE when valve 2-FCV-32-111 is OPEN. _____

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

6.3 Reactor Building Unit 2 Non-Essential Isolation Valve 2-FCV-32-111 (continued)

[11] **VERIFY** valve 2-FCV-32-111 is OPEN, using Hand Switch 2-HS-32-111A indication. _____

[12] **PLACE** Hand Switch 2-HS-32-81A to OPEN position **AND**

RELEASE when valve 2-FCV-32-81 OPENS. _____

[13] **SIMULATE** a loss of control air to valve 2-FCV-32-111 as follows:

A. **CLOSE** valve 2-RTV-32-344, RT VLV TO 2-FSV-32-111B. _____

NOTE

2-PIC-32-111 leakage may cause 2-FCV-32-111 to close without opening 2-PREG-32-111 drain valve. If so, [13]B may be N/A'd.

B. **OPEN** the pressure regulator drain valve on 2-PREG-32-111 _____

C. **VERIFY** valve 2-FCV-32-111 FAILS CLOSED on loss of control air. (**Acc Crit**) _____

[14] **ENSURE** the pressure regulator drain valve on 2-PREG-32-111 is closed. _____

[15] **OPEN** 2-RTV-32-344, **AND**

VERIFY valve 2-FCV-32-111 remains CLOSED, using Hand Switch 2-HS-32-111A indication, when control air is restored. _____

[16] **PLACE** Hand Switch 2-HS-32-111A to OPEN position, **AND**

RELEASE when valve 2-FCV-32-111 is OPEN. _____

[17] **SIMULATE** a loss of control air pressure in the reactor building as follows:

A. **CLOSE** valve 2-RTV-32-340, RT VLV TO PIC-32-111. _____

B. **VERIFY** valve 2-FCV-32-111 is CLOSED, using Hand Switch 2-HS-32-111A indication. (**Acc Crit**) _____

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

6.3 Reactor Building Unit 2 Non-Essential Isolation Valve 2-FCV-32-111 (continued)

C. **PLACE/HOLD** Hand Switch 2-HS -32 -111A in the OPEN position, **AND**

VERIFY that 2-FCV-32-111 OPENS. _____

D. **RELEASE** Hand Switch 2-HS-32-111A, and ALLOW it to spring-return to the A-AUTO position. _____

E. **VERIFY** valve 2-FCV-32-111 CLOSES when Hand Switch 2-HS-32-111A is released. _____

F. **OPEN** valve 2-RTV-32-340 to valve positioner 2-PIC-32-111. _____

G. **VERIFY** valve 2-FCV-32-111 remains CLOSED when control air is restored, using Hand Switch 2-HS-32-111A indication. _____

[18] **PLACE** Hand Switch 2-HS-32-111A to OPEN position, **AND**

RELEASE when valve 2-FCV-32-111 is OPEN. _____

[19] **VERIFY** valve 2-FCV-32-111 is OPEN, using Hand Switch 2-HS-32-111A indication. _____

NOTE

Lifted leads shall be marked with terminal numbers and test instruction number if left unattended. Concurrent verification is required when lifting leads. Also see precautions 3.D and 3.K when lifting and landing permanent plant wiring.

[20] **SIMULATE** a Containment Isolation Phase B signal to 2-FCV-32-111 by lifting lead at TB 609-5 (field side) for K619 (7-8) in the SSPS Output Bay in Panel 2-PNL-99-R-51. _____

_____
CV

[21] **VERIFY** valve 2-FCV-32-111 is CLOSED, using Hand Switch 2-HS-32-111A indication. _____

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

6.3 Reactor Building Unit 2 Non-Essential Isolation Valve 2-FCV-32-111 (continued)

[22] **RESTORE** the lifted lead at TB-609-5 (field side) for K619 (7-8) in Panel 2-PNL-99-R-51. _____

_____
CV

[23] **VERIFY** valve 2-FCV-32-111 remains CLOSED, using Hand Switch 2-HS-32-111A indication. _____

[24] **PLACE** Hand Switch 2-HS-32-111A to OPEN position, **AND**

RELEASE when valve 2-FCV-32-111 is OPEN. _____

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

6.3 Reactor Building Unit 2 Non-Essential Isolation Valve 2-FCV-32-111 (continued)

NOTES

1) The following steps time the CLOSING stroke of valve 2-FCV-32-111. Timing to be done simultaneously from the MCR, using Hand Switch position indication lights and local valve position indication.
2) Start the stopwatches when the Hand Switch is placed in the CLOSE position and stop the watches when the valve is closed (i.e. RED light OFF, valve motion stops).

[25] **TIME** the close stroke of 2-FCV-32-111 as follows:

PLACE Hand Switch 2-HS-32-111A in the CLOSE position, **AND**

START the stopwatches. _____

A. **STOP** the stopwatches when the valve is CLOSED. _____

B. **RECORD** the closing times for 2-FCV-32-111. _____

M&TE _____ Cal Due Date _____

MCR Closing Time: _____ seconds

(Equal to or less than 10 seconds) (**Acc Crit**) _____

M&TE _____ Cal Due Date _____

Local Closing Time _____ seconds

[26] **PLACE** Hand Switch 2-HS-32-111A to OPEN position, **AND**

RELEASE when valve 2-FCV-32-111 is OPEN. _____

[27] **VERIFY** valve 2-FCV-32-111 is OPEN, using Hand Switch 2-HS-32-111A indication. _____

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

7.0 POST PERFORMANCE ACTIVITY

[1] **VERIFY** that Post-test calibration of the M&TE used to record quantitative acceptance criteria has been satisfactorily performed and results recorded on Measuring and Test Equipment (M&TE) Log in Appendix D. _____

[2] **VERIFY** that Post-test calibration of permanent plant instruments used to record quantitative acceptance criteria has been satisfactorily performed and the results RECORDED on Appendix C, Permanent Plant Instrumentation Log. _____

[3] **ENSURE** participants who initialed or signed steps in the prerequisite and instruction sections, test logs, or data sheets enter their initials and signature on Appendix A, Signature Log. _____

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

8.0 RECORDS

8.1 QA Records

Complete Test Package

8.2 Non-QA Records

None

Appendix A
(Page 1 of 1)

TEST PROCEDURES/INSTRUCTIONS REFERENCE REVIEW

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

NOTE
Additional copies of this table may be made as necessary.

PROCEDURE/ INSTRUCTION	REVISION/CHANGES	INITIAL AND DATE (N/A for no change)
FSAR		
FSAR Chapter 6 Table 6.2.4-1		
FSAR Chapter 9 SECTIONS 9.3.1		
FSAR TABLE 14.2-1, Sheets 85 and 86 of 89		
SMP-9.0		
TVA Safety Procedure 1021		
2-TSD-032-1		

Appendix B
(Page 1 of 1)

TEMPORARY CONDITIONS LOG

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

NOTE

These steps will be N/A'd if no temporary condition existed. Additional copies of this table may be made as necessary.

ITEM NUMBER	TEMPORARY CONDITION DESCRIPTION	PERFORMED		RETURNED TO NORMAL	
		Step Number	Perf. By/Date CV/Date	Step Number	Returned By/Date CV/Date

Appendix C
(Page 1 of 1)

PERMANENT PLANT INSTRUMENTATION LOG

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

INSTRUMENT OR INSTRUMENT LOOP NO.	CAL DUE DATE	FILLED AND VENTED[1]	PLACED IN SERVICE[1]	USED FOR QUANTITATIVE ACC CRIT		POST-TEST CAL DATE[2]	POST-TEST CALIBRATION ACCEPTANCE INITIAL/DATE
		INITIAL/DATE	INITIAL/DATE	YES	NO		
2-PIC-32-81							
2-PIC-32-103							
2-PIC-32-111							

1 This data to be entered during test conduct.
2 May be identified as N/A if instrument was not used to verify/record quantitative acceptance criteria data.

Appendix D
(Page 1 of 1)

MEASURING AND TEST EQUIPMENT LOG

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

M&TE ID*	Description	Range and Minimum Accuracy Requirements	Cal. Due Date[1]	Verified by Initial/Date[1]	Test Steps Used[1]	Post-Test Calibration Acceptable Initial/Date[2]
	STOPWATCH	0-59 Minutes Elapsed Time (Minimum) ± 0.1 sec/hr (or better)				
	STOPWATCH	0-59 Minutes Elapsed Time (Minimum) ± 0.1 sec/hr (or better)				

1 This data to be entered during test conduct.
2 May be identified as NOT required (NR) if instrument is NOT used to meet acceptance criteria.

Appendix E
(Page 1 of 1)

SWITCH LINEUP

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

SWITCH	LOCATION	DESCRIPTION	POSITION	VERIFIED	DATE
2-HS-32-81A	2-M-15	Reactor Bldg Unit 2 Train A ISOL	CLOSE		
2-HS-32-103A	2-M-15	Reactor Bldg Unit 2 Train B ISOL	CLOSE		
2-HS-32-111A	2-M-15	Reactor Bldg Unit 2 Train Non-Essen ISOL	CLOSE		

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

8.2 Non-QA Records (continued)

Appendix F
(Page 1 of 1)

ELECTRICAL BREAKER LINEUP

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

PANEL	BREAKER	DESCRIPTION	POSITION	VERIFIED	DATE
120V-AC VITAL PWR BD 2-III	41	REAC BLDG ISOL VLV 2-FCV-32-81	CLOSED		
120V-AC VITAL PWR BD 2-IV	36	REACTOR BLDG ISOL VLVS 2-FCV-32-103 & -111	CLOSED		

Appendix G
(Page 1 of 3)

VALVE ALIGNMENT CHECKLIST

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

VALVE ID	NOMENCLATURE	LOCATION	POSITION	VERIFIED	DATE
0-ISV-032-418	ESSENT CNTL AIR U-2 RB SUPPLY HDR ISOL	EL 737 A12W	OPEN		
2-RTV-32-317	FCV-32-103 ISOL VALVE	OC/754 AZ 280	OPEN		
2-RTV-32-316	RT VLV TO P-TEST UPSTREAM FCV-32-103	OC/757 AZ 280	CLOSED		
2-RTV-32-348	RT VALVE TO FSV-32-103	OC/724 AZ 280	OPEN		
2-FCV-32-103	ESSENT CONTROL AIR TR B CNTMT ISOL	ANN/720 AZ 290	CLOSED		
2-RTV-32-318	FCV-32-103 BYPASS VALVE	OC/754 AZ 280	LOCKED CLOSED		
2-RTV-32-320	RT VALVE TO PIC-32-103	OC/724 AZ 280	OPEN		
2-RTV-32-321	FCV-32-103 ISOL VALVE	OC/724 AZ 280	OPEN		
0-ISV-032-390	ESSENT CNTL AIR EL 737 AB HDR SECT ISOL TO RB	EL 757 A12U	OPEN		
0-ISV-032-388	ESSENT CNTRL AIR U-2 RBSUPPLY HDR ISOL	EL 737 A12W	OPEN		

Appendix G
(Page 2 of 3)

VALVE ALIGNMENT CHECKLIST

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

VALVE ID	NOMENCLATURE	LOCATION	POSITION	VERIFIED	DATE
2-RTV-32-326	RT VLV TO P-TEST UPSTREAM FCV-32-81	OC/724 AZ 290	CLOSED		
2-RTV-32-346	VLV TO FSV-32-81	OC/719 AZ 300	OPEN		
2-FCV-32-81	ESSENT CONTROL AIR TR A CNTMT ISOL	ANN /728 AZ 301	CLOSED		
2-BYV-32-328	FCV-32-81 BYPASS	OC/719 AZ 290	LOCKED CLOSED		
2-RTV-32-330	RTV VLV PIC-32-81	OC/719 AZ 300	OPEN		
2-ISV-32-331	FCV-32-81 ISOL VLV	OC/719 AZ 290	OPEN		
2-ISV-32-327	FCV-32-81 ISOL VLV	OC/724 AZ 290	OPEN		
0-ISV-32-1016	CONTROL AIR AB HDR ISOLTO U-2 NON ESSENT RB	A12W/713	OPEN		
2-ISV-32-337	FCV-32-111 ISOL	OC/723 AZ 300	OPEN		
2-RTV-32-336	RT VLV P-TEST	OC/723 AZ 300	CLOSED		

Appendix G
(Page 3 of 3)

VALVE ALIGNMENT CHECKLIST

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

VALVE ID	NOMENCLATURE	LOCATION	POSITION	VERIFIED	DATE
2-RTV-32-344	RT VLV TP PIC-32-111B	OC/723 AZ 300	OPEN		
2-FCV-32-111	CONTROL AIR CNTMT ISOL	ANN/720 AZ 290	CLOSED		
2-BYV-32-338	FCV-32-111 BYPASS	OC/723 AZ 300	LOCKED CLOSED		
2-RTV-32-340	RT VLV TP PIC-32-111	OC/723 AZ 300	OPEN		
2-ISV-32-341	FCV-32-111 ISOL	OC/723 AZ 300	OPEN		

WATTS BAR NUCLEAR PLANT

UNIT 2 STARTUP

TITLE: LOCAL LEAK RATE TESTING

Instruction No: 2-PTI-064-01

Revision No: 0

PREPARED BY: Gary K. Bonine/ Gary K Bonine DATE 6/22/2010

PRINT NAME/ SIGNATURE

REVIEWED BY: Charles Driskell/ Charles Driskell DATE 6/22/10

PRINT NAME/ SIGNATURE

INSTRUCTION APPROVAL

JTG MEETING NO: 2-10-005

JTG CHAIRMAN: _____ DATE 6/24/10

APPROVED BY: _____ DATE 6/24/10

PREOPERATIONAL STARTUP MANAGER

TEST RESULTS APPROVAL

JTG MEETING NO: _____

JTG CHAIRMAN: _____ DATE _____

APPROVED BY: _____ DATE _____

PREOPERATIONAL STARTUP MANAGER

Revision Log

Revision or Change Number	Effective Date	Affected Page Numbers	Description of Revision/Change
0000	6/29/10	ALL	Initial Issue based on Unit 1 (PTI-064-01).

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1.0 INTRODUCTION

1.1 Test Objectives

This test is being performed to determine the leakage rate across each pressure-containing or leakage-limiting boundary for primary containment penetrations as applicable, including containment isolation valves.

1.2 Scope

A. Determine the combined leakage rates for all penetrations and valves subject to Type B and Type C leak rate testing.

B. Determine the leakage rate for all penetrations and isolation valves subject to bypass leakage -Primary Containment Bypass Leakage to the Auxiliary Building).

C. Determine the leakage rate from valves subject to inventory requirements.

D. Determine the leakage rate for the Personnel Airlocks door seals.

E. Determine the overall leakage rate of Personnel Airlocks.

2.0 REFERENCES

2.1 Performance References

A. SMP-4.0, SYSTEM COMPLETION AND TURNOVER, Rev 1

B. SMP-6.0, ADMINISTRATION, CONDUCT AND TEST RESULTS PROCESSING OF GENERIC TEST INSTRUCTIONS, Rev 1

C. SMP-7.0, CONTROL OF CLEANNESS, LAYUP AND FLUSHING, Rev 0

D. SMP-9.0, CONDUCT OF TEST, Rev 0

2.2 Developmental References

A. Final Safety Analysis Report A97

1. FSAR Table 6.2.1-13, Watts Bar Ice Condenser Design Parameters

2.2 Developmental References (continued)

2. FSAR Table 6.2.4-1, Watts Bar Nuclear Plant Containment Penetrations and Barriers

3. FSAR Table 6.2.4-2, Possible Bypass Leakage Paths To The Auxiliary Building

4. FSAR Table 6.2.6-2b, Valves Exempted From Type C Leak Testing

5. FSAR Table 14.2, Containment Local Leak Rate Tests Summary

6. FSAR Section 6.2.6, Containment Leakage Testing

B. Drawings

None

C. Vendor Manuals

None

D. Technical Specifications A97

1. Watts Bar Unit 2 Technical Specification 3.6.1, Containment

2. Watts Bar Unit 2 Technical Specification 3.6.2, Containment Air Locks

3. Watts Bar Unit 2 Technical Specification 3.6.3, Containment Isolation Valves

4. Watts Bar Unit 2 Technical Specification 5.7.2.19, Containment Leakage Rate Testing Program

E. Documents

1. 10 CFR Part 50, Appendix J - Primary Reactor Containment Leakage Testing For Water Cooled Power Reactors

2. ANSI/ANS-56.8-1994, Containment System Leakage Testing Requirements, Approved 08/04/94

3. 2-TSD-64-1, Test Scoping Document Local Leak Rate Testing

4. WBN-0SG4-102, Containment Isolation System - Determination of Compliance to Isolation Provisions of GDC 55, 56, 57 and SRP 6.2.4

5. WBN-0SG4-128, Evaluation of the WBN CIS Test Program

2.2 Developmental References (continued)

F. Station Surveillances

1. 2-SI-0-702, Type "B" Local Leak Rate Test
2. 2-SI-0-704, El 713' Personnel Air Lock Overall Leakage Test
3. 2-SI-0-705, El 757' Personnel Air Lock Overall Leakage Test
4. 2-SI-0-706, El 713' Personnel Air Lock Door Seals Leak Test
5. 2-SI-0-707, El 757' Personnel Air Lock Door Seals Leak Test
6. 2-SI-26-701, Containment Isolation Valve Local Leak Rate Test High Pressure Fire Protection
7. 2-SI-30-701, Containment Isolation Valve Local Leak Rate Test Purge Air
8. 2-SI-31-701, Containment Isolation Valve Local Leak Rate Test Chilled Water System
9. 2-SI-32-701, Containment Isolation Valve Local Leak Rate Test Control Air System
10. 2-SI-33-701, Containment Isolation Valve Local Leak Rate Test Service Air
11. 2-SI-43-701, Containment Isolation Valve Local Leak Rate Test Sampling System
12. 2-SI-52-701, Containment Isolation Valve Local Leak Rate Test System Test Facility
13. 2-SI-59-701, Containment Isolation Valve Local Leak Rate Test Demineralized Water
14. 2-SI-61-701, Containment Isolation Valve Local Leak Rate Test Ice Condenser
15. 2-SI-62-701, Containment Isolation Valve Local Leak Rate Test Chemical and Volume Control System
16. 2-SI-63-701, Containment Isolation Valve Local Leak Rate Test Safety Injection and Reactor Coolant
17. 2-SI-67-701-A, Containment Isolation Valve Local Leak Rate Test Train A Upper Compartment ERCW

2.2 Developmental References (continued)

18. 2-SI-67-701-B, Containment Isolation Valve Local Leak Rate Test Train B Upper Compartment ERCW

19. 2-SI-67-701-C, Containment Isolation Valve Local Leak Rate Test Lower Compartment ERCW

20. 2-SI-70-701, Containment Isolation Valve Local Leak Rate Test Component Cooling

21. 2-SI-72-701, Containment Spray and RHR Spray Header Valve Water Inventory Test

22. 2-SI-77-701 Containment Isolation Valve Local Leak Rate Test Waste Disposal System

23. 2-SI-78-701, Containment Isolation Valve Local Leak Rate Test Spent Fuel Pit Cooling

24. 2-SI-81-701, Containment Isolation Valve Local Leak Rate Test Primary Water System

25. 2-SI-90-701, Containment Isolation Valve Local Leak Rate Test Radiation Monitoring

3.0 PRECAUTIONS AND LIMITATIONS

A. Each Person operating test equipment, recording data, performing calculations or verifying calculations must be qualified in accordance with NEDP-14 requirements.

B. Unit 2 should use available Unit 1 test results to help determine if a valve/penetration should be repaired. This will ensure the acceptance criteria is met.

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

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.

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 typo change in the procedure as appropriate.

F. 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.

G. 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 punch list.

H. 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.

I. Test Deficiencies identified during Leak Rate Testing shall be documented and reported as required in SMP-14.0

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

3.0 PRECAUTIONS AND LIMITATIONS (continued)

K. Observe the precautions and limitations prescribed in Section 3.0 of the station procedures performed in Section 6.0 of this test.

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

4.0 PREREQUISITE ACTIONS

NOTE
Preliminary action steps may be performed in any order with Test Directors approval.
Systems and Penetrations may be tested in any order with Test Directors approval.

4.1 Preliminary Actions

4.1.1 The following steps are applicable to Step 6.1[1] (System 26):

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

[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 in Appendix A have been reviewed, recorded in Appendix A, and determined not to adversely affect the test results.

A. PENETRATION X-31 _____

B. PENETRATION X-78 _____

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

ATTACH change paper to data package.

A. PENETRATION X-31 _____

B. PENETRATION X-78 _____

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

ENSURE that they will **NOT** adversely affect the test results.

A. PENETRATION X-31 _____

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

4.1.1 The following steps are applicable to Step 6.1[1] (System 26): (continued)

B. PENETRATION X-78 _____

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

A. PENETRATION X-31 _____

B. PENETRATION X-78 _____

[7] **ENSURE** Outstanding Design Change Notices (DCNs) Engineering Design Change Requests (EDCRs) or Temporary Alterations (TACFs) 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.

A. PENETRATION X-31 _____

B. PENETRATION X-78 _____

[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. _____

[11] **VERIFY** Measuring and Test Equipment (M&TE) required for test performance has been (as required) filled, vented, placed in service and recorded on Measuring and Test Equipment Log from SMP-9.0.

A. PENETRATION X-31 _____

B. PENETRATION X-78 _____

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

A. PENETRATION X-31 _____

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

4.1.1 The following steps are applicable to Step 6.1[1] (System 26): (continued)

B. PENETRATION X-78 _____

[13] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) in accordance with SMP-4.0.

A. PENETRATION X-31 _____

B. PENETRATION X-78 _____

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

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

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

[17] **VERIFY** piping supports required for testing are installed and adjusted as required. _____

[18] **VERIFY** System Boundary Drawings have been updated and outstanding changes do **NOT** impact the validity of this test.

A. PENETRATION X-31 _____

B. PENETRATION X-78 _____

[19] **ENSURE** Surveillance Procedure 2-SI-26-701 has been submitted to the JTG for concurrence.

JTG Meeting #_____ _____

4.1.2 The following steps are applicable to Step 6.1[2] (System 30):

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

[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. _____

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

4.1.2 The following steps are applicable to Step 6.1[2] (System 30): (continued)

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

A. PENETRATION X-4 _____

B. PENETRATION X-5 _____

C. PENETRATION X-6 _____

D. PENETRATION X-7 _____

E. PENETRATION X-9A _____

F. PENETRATION X-9B _____

G. PENETRATION X-10A _____

H. PENETRATION X-10B _____

I. PENETRATION X-11 _____

J. PENETRATION X-80 _____

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

ATTACH change paper to data package.

A. PENETRATION X-4 _____

B. PENETRATION X-5 _____

C. PENETRATION X-6 _____

D. PENETRATION X-7 _____

E. PENETRATION X-9A _____

F. PENETRATION X-9B _____

G. PENETRATION X-10A _____

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

4.1.2 The following steps are applicable to Step 6.1[2] (System 30): (continued)

H. PENETRATION X-10B _____

I. PENETRATION X-11 _____

J. PENETRATION X-80 _____

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

ENSURE that they will NOT adversely affect the test results.

A. PENETRATION X-4 _____

B. PENETRATION X-5 _____

C. PENETRATION X-6 _____

D. PENETRATION X-7 _____

E. PENETRATION X-9A _____

F. PENETRATION X-9B _____

G. PENETRATION X-10A _____

H. PENETRATION X-10B _____

I. PENETRATION X-11 _____

J. PENETRATION X-80 _____

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

A. PENETRATION X-4 _____

B. PENETRATION X-5 _____

C. PENETRATION X-6 _____

D. PENETRATION X-7 _____

E. PENETRATION X-9A _____

F. PENETRATION X-9B _____

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

4.1.2 The following steps are applicable to Step 6.1[2] (System 30): (continued)

G. PENETRATION X-10A _____

H. PENETRATION X-10B _____

I. PENETRATION X-11 _____

J. PENETRATION X-80 _____

[7] **ENSURE** Outstanding Design Change Notices (DCNs) Engineering Design Change Requests (EDCRs) or Temporary Alterations (TACFs) 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.

A. PENETRATION X-4 _____

B. PENETRATION X-5 _____

C. PENETRATION X-6 _____

D. PENETRATION X-7 _____

E. PENETRATION X-9A _____

F. PENETRATION X-9B _____

G. PENETRATION X-10A _____

H. PENETRATION X-10B _____

I. PENETRATION X-11 _____

J. PENETRATION X-80 _____

[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. _____

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

4.1.2 The following steps are applicable to Step 6.1[2] (System 30): (continued)

[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 from SMP-9.0.

A. PENETRATION X-4 _____

B. PENETRATION X-5 _____

C. PENETRATION X-6 _____

D. PENETRATION X-7 _____

E. PENETRATION X-9A _____

F. PENETRATION X-9B _____

G. PENETRATION X-10A _____

H. PENETRATION X-10B _____

I. PENETRATION X-11 _____

J. PENETRATION X-80 _____

NOTE

Flush plans are not developed for ventilation systems.

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

A. PENETRATION X-4 _____

B. PENETRATION X-5 _____

C. PENETRATION X-6 _____

D. PENETRATION X-7 _____

E. PENETRATION X-9A _____

F. PENETRATION X-9B _____

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

4.1.2 The following steps are applicable to Step 6.1[2] (System 30): (continued)

G. PENETRATION X-10A _____

H. PENETRATION X-10B _____

I. PENETRATION X-11 _____

J. PENETRATION X-80 _____

[13] **VERIFY** components contained within the boundaries of this test are under jurisdictional control of Preoperational Startup Engineering (PSE) in accordance with SMP-4.0.

A. PENETRATION X-4 _____

B. PENETRATION X-5 _____

C. PENETRATION X-6 _____

D. PENETRATION X-7 _____

E. PENETRATION X-9A _____

F. PENETRATION X-9B _____

G. PENETRATION X-10A _____

H. PENETRATION X-10B _____

I. PENETRATION X-11 _____

J. PENETRATION X-80 _____

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

[15] **CONDUCT** a pretest briefing with test and operations personnel in accordance with SMP-9.0. _____

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

[17] **VERIFY** piping supports required for testing are installed and adjusted as required. _____

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

4.1.2 The following steps are applicable to Step 6.1[2] (System 30): (continued)

[18] **VERIFY** System Boundary Drawings have been updated and outstanding changes do **NOT** impact the validity of this test.

A. PENETRATION X-4 _____

B. PENETRATION X-5 _____

C. PENETRATION X-6 _____

D. PENETRATION X-7 _____

E. PENETRATION X-9A _____

F. PENETRATION X-9B _____

G. PENETRATION X-10A _____

H. PENETRATION X-10B _____

I. PENETRATION X-11 _____

J. PENETRATION X-80 _____

[19] **ENSURE** Surveillance Procedure 2-SI-30-701 has been submitted to the JTG for concurrence.

JTG Meeting #_____ _____

4.1.3 The following steps are applicable to Step 6.1[3] (System 31):

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

[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 in Appendix A have been reviewed, recorded in Appendix A, and determined **NOT** to adversely affect the test results.

A. PENETRATION X-64 _____

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

4.1.3 The following steps are applicable to Step 6.1[3] (System 31): (continued)

B. PENETRATION X-65 _____

C. PENETRATION X-66 _____

D. PENETRATION X-67 _____

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

ATTACH change paper to data package.

A. PENETRATION X-64 _____

B. PENETRATION X-65 _____

C. PENETRATION X-66 _____

D. PENETRATION X-67 _____

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

ENSURE that they will **NOT** adversely affect the test performance.

A. PENETRATION X-64 _____

B. PENETRATION X-65 _____

C. PENETRATION X-66 _____

D. PENETRATION X-67 _____

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

A. PENETRATION X-64 _____

B. PENETRATION X-65 _____

C. PENETRATION X-66 _____

D. PENETRATION X-67 _____

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

4.1.3 The following steps are applicable to Step 6.1[3] (System 31): (continued)

[7] **ENSURE** Outstanding Design Change Notices (DCNs) Engineering Design Change Requests (EDCRs) or Temporary Alterations (TACFs) 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.

A. PENETRATION X-64 _____

B. PENETRATION X-65 _____

C. PENETRATION X-66 _____

D. PENETRATION X-67 _____

[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.

[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 from SMP-9.0.

A. PENETRATION X-64 _____

B. PENETRATION X-65 _____

C. PENETRATION X-66 _____

D. PENETRATION X-67 _____

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

A. PENETRATION X-64 _____

B. PENETRATION X-65 _____

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

4.1.3 The following steps are applicable to Step 6.1[3] (System 31): (continued)

C. PENETRATION X-66 _____

D. PENETRATION X-67 _____

[13] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) in accordance with SMP-4.0.

A. PENETRATION X-64 _____

B. PENETRATION X-65 _____

C. PENETRATION X-66 _____

D. PENETRATION X-67 _____

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

[15] **CONDUCT** a pretest briefing with test and operations personnel in accordance with SMP-9.0. _____

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

[17] **VERIFY** piping supports required for testing are installed and adjusted as required. _____

[18] **VERIFY** System Boundary Drawings have been updated and outstanding changes do **NOT** impact the validity of this test.

A. PENETRATION X-64 _____

B. PENETRATION X-65 _____

C. PENETRATION X-66 _____

D. PENETRATION X-67 _____

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

4.1.3 The following steps are applicable to Step 6.1[3] (System 31): (continued)

[19] **ENSURE** Surveillance Procedure 2-SI-31-701 has been submitted to the JTG for concurrence.

JTG Meeting #_____ _____

4.1.4 The following steps are applicable to Step 6.1[4] (System 32):

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

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

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

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

A. PENETRATION X-34 _____

B. PENETRATION X-90 _____

C. PENETRATION X-91 _____

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

ATTACH change paper to data package.

A. PENETRATION X-34 _____

B. PENETRATION X-90 _____

C. PENETRATION X-91 _____

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

4.1.4 The following steps are applicable to Step 6.1[4] (System 32): (continued)

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

ENSURE that they will **NOT** adversely affect the test performance.

A. PENETRATION X-34 _____

B. PENETRATION X-90 _____

C. PENETRATION X-91 _____

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

A. PENETRATION X-34 _____

B. PENETRATION X-90 _____

C. PENETRATION X-91 _____

[7] **ENSURE** Outstanding Design Change Notices (DCNs) Engineering Design Change Requests (EDCRs) or Temporary Alterations (TACFs) 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.

A. PENETRATION X-34 _____

B. PENETRATION X-90 _____

C. PENETRATION X-91 _____

[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. _____

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

4.1.4 The following steps are applicable to Step 6.1[4] (System 32): (continued)

[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 from SMP-9.0.

A. PENETRATION X-34 _____

B. PENETRATION X-90 _____

C. PENETRATION X-91 _____

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

A. PENETRATION X-34 _____

B. PENETRATION X-90 _____

C. PENETRATION X-91 _____

[13] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) in accordance with SMP-4.0.

A. PENETRATION X-34 _____

B. PENETRATION X-90 _____

C. PENETRATION X-91 _____

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

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

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

[17] **VERIFY** piping supports required for testing are installed and adjusted as required. _____

[18] **VERIFY** System Boundary Drawings have been updated and outstanding changes do **NOT** impact the validity of this test.

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

4.1.4 The following steps are applicable to Step 6.1[4] (System 32): (continued)

A. PENETRATION X-34 _____

B. PENETRATION X-90 _____

C. PENETRATION X-91 _____

[19] **ENSURE** Surveillance Procedure 2-SI-32-701 has been submitted to the JTG for concurrence.

JTG Meeting #_____ _____

4.1.5 The following steps are applicable to Step 6.1[5] (System 33 Penetration X-76):

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

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

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

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

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

ATTACH change paper to data package. _____

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

ENSURE that they will **NOT** adversely affect the test performance. _____

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

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

4.1.5 The following steps are applicable to Step 6.1[5] (System 33 Penetration X-76): (continued)

[7] **ENSURE** Outstanding Design Change Notices (DCNs) Engineering Design Change Requests (EDCRs) or Temporary Alterations (TACFs) 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. _____

[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 from 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) in accordance with SMP-4.0. _____

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

[15] **CONDUCT** a pretest briefing with test and operations personnel in accordance with SMP-9.0.

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

[17] **VERIFY** piping supports required for testing are installed and adjusted as required. _____

[18] **VERIFY** System Boundary Drawings have been updated and outstanding changes do **NOT** impact the validity of this test. _____

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

4.1.5 The following steps are applicable to Step 6.1[5] (System 33 Penetration X-76): (continued)

[19] **ENSURE** Surveillance Procedure 2-SI-33-701 has been submitted to the JTG for concurrence.

JTG Meeting #_____ _____

4.1.6 The following steps are applicable to Step 6.1[6] (System 43):

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

[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 in Appendix A have been reviewed, recorded in Appendix A, and determined not to adversely affect the test results.

A. PENETRATION X-25A _____

B. PENETRATION X-25D _____

C. PENETRATION X-85B _____

D. PENETRATION X-93 _____

E. PENETRATION X-99 _____

F. PENETRATION X-100 _____

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

ATTACH change paper to data package.

A. PENETRATION X-25A _____

B. PENETRATION X-25D _____

C. PENETRATION X-85B _____

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

4.1.6 The following steps are applicable to Step 6.1[6] (System 43): (continued)

D. PENETRATION X-93 _____

E. PENETRATION X-99 _____

F. PENETRATION X-100 _____

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

ENSURE that they will **NOT** adversely affect the test performance.

A. PENETRATION X-25A _____

B. PENETRATION X-25D _____

C. PENETRATION X-85B _____

D. PENETRATION X-93 _____

E. PENETRATION X-99 _____

F. PENETRATION X-100 _____

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

A. PENETRATION X-25A _____

B. PENETRATION X-25D _____

C. PENETRATION X-85B _____

D. PENETRATION X-93 _____

E. PENETRATION X-99 _____

F. PENETRATION X-100 _____

[7] **ENSURE** Outstanding Design Change Notices (DCNs) Engineering Design Change Requests (EDCRs) or Temporary Alterations (TACFs) do **NOT** adversely impact testing. _____

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

4.1.6 The following steps are applicable to Step 6.1[6] (System 43): (continued)

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

RECORD in Appendix B, Temporary Condition Log if required.

A. PENETRATION X-25A _____

B. PENETRATION X-25D _____

C. PENETRATION X-85B _____

D. PENETRATION X-93 _____

E. PENETRATION X-99 _____

F. PENETRATION X-100 _____

[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. _____

[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 from SMP-9.0.

A. PENETRATION X-25A _____

B. PENETRATION X-25D _____

C. PENETRATION X-85B _____

D. PENETRATION X-93 _____

E. PENETRATION X-99 _____

F. PENETRATION X-100 _____

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

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

4.1.6 The following steps are applicable to Step 6.1[6] (System 43): (continued)

A. PENETRATION X-25A _____

B. PENETRATION X-25D _____

C. PENETRATION X-85B _____

D. PENETRATION X-93 _____

E. PENETRATION X-99 _____

F. PENETRATION X-100 _____

[13] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) in accordance with SMP-4.0.

A. PENETRATION X-25A _____

B. PENETRATION X-25D _____

C. PENETRATION X-85B _____

D. PENETRATION X-93 _____

E. PENETRATION X-99 _____

F. PENETRATION X-100 _____

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

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

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

[17] **VERIFY** piping supports required for testing are installed and adjusted as required. _____

[18] **VERIFY** System Boundary Drawings have been updated and outstanding changes do **NOT** impact the validity of this test.

A. PENETRATION X-25A _____

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

4.1.6 The following steps are applicable to Step 6.1[6] (System 43): (continued)

B. PENETRATION X-25D _____

C. PENETRATION X-85B _____

D. PENETRATION X-93 _____

E. PENETRATION X-99 _____

F. PENETRATION X-100 _____

[19] **ENSURE** Surveillance Procedures 2-SI-43-701 have been submitted to the JTG for concurrence.

JTG Meeting #_____ _____

4.1.7 The following steps are applicable to Step 6.1[7] (System 52):

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

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

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

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

A. PENETRATION X-26A _____

B. PENETRATION X-26B _____

C. PENETRATION X-96A _____

D. PENETRATION X-96B _____

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

ATTACH change paper to data package.

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

4.1.7 The following steps are applicable to Step 6.1[7] (System 52): (continued)

A. PENETRATION X-26A _____

B. PENETRATION X-26B _____

C. PENETRATION X-96A _____

D. PENETRATION X-96B _____

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

ENSURE that they will **NOT** adversely affect the test performance.

A. PENETRATION X-26A _____

B. PENETRATION X-26B _____

C. PENETRATION X-96A _____

D. PENETRATION X-96B _____

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

A. PENETRATION X-26A _____

B. PENETRATION X-26B _____

C. PENETRATION X-96A _____

D. PENETRATION X-96B _____

[7] **ENSURE** Outstanding Design Change Notices (DCNs) Engineering Design Change Requests (EDCRs) or Temporary Alterations (TACFs) 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.

A. PENETRATION X-26A _____

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

4.1.7 The following steps are applicable to Step 6.1[7] (System 52): (continued)

B. PENETRATION X-26B _____

C. PENETRATION X-96A _____

D. PENETRATION X-96B _____

[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. _____

[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 from SMP-9.0.

A. PENETRATION X-26A _____

B. PENETRATION X-26B _____

C. PENETRATION X-96A _____

D. PENETRATION X-96B _____

NOTE

System 52, System test Facility, is used as a connection from outside to inside containment during Integrated Leak Rate Testing and no flushing is required.

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

A. PENETRATION X-26A _____

B. PENETRATION X-26B _____

C. PENETRATION X-96A _____

D. PENETRATION X-96B _____

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

4.1.7 The following steps are applicable to Step 6.1[7] (System 52): (continued)

[13] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) in accordance with SMP-4.0

A. PENETRATION X-26A _____

B. PENETRATION X-26B _____

C. PENETRATION X-96A _____

D. PENETRATION X-96B _____

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

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

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

[17] **VERIFY** System Boundary Drawings have been updated and outstanding changes do **NOT** impact the validity of this test.

A. PENETRATION X-26A _____

B. PENETRATION X-26B _____

C. PENETRATION X-96A _____

D. PENETRATION X-96B _____

[18] **ENSURE** Surveillance Procedure 2-SI-52-701 has been submitted to the JTG for concurrence.

JTG Meeting #_____ _____

4.1.8 The following steps are applicable to Step 6.1[8] (System 59 Penetration X-77):

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

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

4.1.8 The following steps are applicable to Step 6.1[8] (System 59 Penetration X-77): (continued)

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

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

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

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

ATTACH change paper to data package. _____

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

ENSURE that they 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 (TACFs) 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. _____

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

4.1.8 The following steps are applicable to Step 6.1[8] (System 59 Penetration X-77): (continued)

[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 from 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) in accordance with SMP-4.0. _____

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

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

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

[17] **VERIFY** piping supports required for testing are installed and adjusted as required. _____

[18] **VERIFY** System Boundary Drawings have been updated and outstanding changes do **NOT** impact the validity of this test. _____

[19] **ENSURE** Surveillance Procedure 2-SI-59-701 has been submitted to the JTG for concurrence.

JTG Meeting #_____ _____

4.1.9 The following steps are applicable to Step 6.1[9] (System 61):

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

[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. _____

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

4.1.9 The following steps are applicable to Step 6.1[9] (System 61): (continued)

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

A. PENETRATION X-47A _____

B. PENETRATION X-47B _____

C. PENETRATION X-114 _____

D. PENETRATION X-115 _____

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

ATTACH change paper to data package.

A. PENETRATION X-47A _____

B. PENETRATION X-47B _____

C. PENETRATION X-114 _____

D. PENETRATION X-115 _____

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

ENSURE that they will **NOT** adversely affect the test performance.

A. PENETRATION X-47A _____

B. PENETRATION X-47B _____

C. PENETRATION X-114 _____

D. PENETRATION X-115 _____

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

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

4.1.9 The following steps are applicable to Step 6.1[9] (System 61): (continued)

A. PENETRATION X-47A _____

B. PENETRATION X-47B _____

C. PENETRATION X-114 _____

D. PENETRATION X-115 _____

[7] **ENSURE** Outstanding Design Change Notices (DCNs) Engineering Design Change Requests (EDCRs) or Temporary Alterations (TACFs) 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.

A. PENETRATION X-47A _____

B. PENETRATION X-47B _____

C. PENETRATION X-114 _____

D. PENETRATION X-115 _____

[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. _____

[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 from SMP-9.0.

A. PENETRATION X-47A _____

B. PENETRATION X-47B _____

C. PENETRATION X-114 _____

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

4.1.9 The following steps are applicable to Step 6.1[9] (System 61): (continued)

D. PENETRATION X-115 _____

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

A. PENETRATION X-47A _____

B. PENETRATION X-47B _____

C. PENETRATION X-114 _____

D. PENETRATION X-115 _____

[13] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) in accordance with SMP-4.0.

A. PENETRATION X-47A _____

B. PENETRATION X-47B _____

C. PENETRATION X-114 _____

D. PENETRATION X-115 _____

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

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

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

[17] **VERIFY** piping supports required for testing are installed and adjusted as required. _____

[18] **VERIFY** System Boundary Drawings have been updated and outstanding changes do **NOT** impact the validity of this test.

A. PENETRATION X-47A _____

B. PENETRATION X-47B _____

C. PENETRATION X-114 _____

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

4.1.9 The following steps are applicable to Step 6.1[9] (System 61): (continued)

D. PENETRATION X-115 _____

[19] **ENSURE** Surveillance Procedure 2-SI-61-701 has been submitted to the JTG for concurrence.

JTG Meeting #_____ _____

4.1.10 The following steps are applicable to Step 6.1[10] (System 62):

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

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

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

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

A. PENETRATION X-15 _____

B. PENETRATION X-44 _____

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

ATTACH change paper to data package.

A. PENETRATION X-15 _____

B. PENETRATION X-44 _____

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

ENSURE that they will **NOT** adversely affect the test performance.

A. PENETRATION X-15 _____

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

4.1.10 The following steps are applicable to Step 6.1[10] (System 62): (continued)

B. PENETRATION X-44 _____

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

A. PENETRATION X-15 _____

B. PENETRATION X-44 _____

[7] **ENSURE** Outstanding Design Change Notices (DCNs) Engineering Design Change Requests (EDCRs) or Temporary Alterations (TACFs) 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

A. PENETRATION X-15 _____

B. PENETRATION X-44 _____

[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. _____

[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 from SMP-9.0.

A. PENETRATION X-15 _____

B. PENETRATION X-44 _____

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

A. PENETRATION X-15 _____

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

4.1.10 The following steps are applicable to Step 6.1[10] (System 62): (continued)

B. PENETRATION X-44 _____

[13] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) in accordance with SMP-4.0.

A. PENETRATION X-15 _____

B. PENETRATION X-44 _____

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

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

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

[17] **VERIFY** piping supports required for testing are installed and adjusted as required.

A. PENETRATION X-15 _____

B. PENETRATION X-44 _____

[18] **VERIFY** System Boundary Drawings have been updated and outstanding changes do **NOT** impact the validity of this test.

A. PENETRATION X-15 _____

B. PENETRATION X-44 _____

[19] **ENSURE** Surveillance Procedure 2-SI-62-701 has been submitted to the JTG for concurrence.

JTG Meeting #_____ _____

4.1.11 The following steps are applicable to Step 6.1[11] (System 63):

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

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

4.1.11 The following steps are applicable to Step 6.1[11] (System 63): (continued)

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

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

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

A. PENETRATION X-30 _____

B. PENETRATION X-39A _____

C. PENETRATION X-39B _____

D. PENETRATION X-84A _____

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

ATTACH change paper to data package.

A. PENETRATION X-30 _____

B. PENETRATION X-39A _____

C. PENETRATION X-39B _____

D. PENETRATION X-84A _____

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

ENSURE that they will **NOT** adversely affect the test performance.

A. PENETRATION X-30 _____

B. PENETRATION X-39A _____

C. PENETRATION X-39B _____

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

4.1.11 The following steps are applicable to Step 6.1[11] (System 63): (continued)

D. PENETRATION X-84A _____

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

A. PENETRATION X-30 _____

B. PENETRATION X-39A _____

C. PENETRATION X-39B _____

D. PENETRATION X-84A _____

[7] **ENSURE** Outstanding Design Change Notices (DCNs) Engineering Design Change Requests (EDCRs) or Temporary Alterations (TACFs) 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.

A. PENETRATION X-30 _____

B. PENETRATION X-39A _____

C. PENETRATION X-39B _____

D. PENETRATION X-84A _____

[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. _____

[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 from SMP-9.0.

A. PENETRATION X-30 _____

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

4.1.11 The following steps are applicable to Step 6.1[11] (System 63): (continued)

B. PENETRATION X-39A _____

C. PENETRATION X-39B _____

D. PENETRATION X-84A _____

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

A. PENETRATION X-30 _____

B. PENETRATION X-39A _____

C. PENETRATION X-39B _____

D. PENETRATION X-84A _____

[13] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) in accordance with SMP-4.0

A. PENETRATION X-30 _____

B. PENETRATION X-39A _____

C. PENETRATION X-39B _____

D. PENETRATION X-84A _____

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

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

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

[17] **VERIFY** piping supports required for testing are installed and adjusted as required. _____

[18] **VERIFY** System Boundary Drawings have been updated and outstanding changes do **NOT** impact the validity of this test.

A. PENETRATION X-30 _____

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

4.1.11 The following steps are applicable to Step 6.1[11] (System 63): (continued)

B. PENETRATION X-39A _____

C. PENETRATION X-39B _____

D. PENETRATION X-84A _____

[19] **ENSURE** Surveillance Procedure 2-SI-63-701 has been submitted to the JTG for concurrence.

JTG Meeting #_____ _____

4.1.12 The following steps are applicable to Step 6.1[12] (System 67):

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

[2] **OBTAIN** copies of the applicable forms from the latest revision of SMP-9.0 and ATTACH to this PTI for use during the performance of this PTI. _____

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

A. PENETRATION X-56A _____

B. PENETRATION X-57A _____

C. PENETRATION X-58A _____

D. PENETRATION X-59A _____

E. PENETRATION X-60A _____

F. PENETRATION X-61A _____

G. PENETRATION X-62A _____

H. PENETRATION X-63A _____

I. PENETRATION X-68 _____

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

4.1.12 The following steps are applicable to Step 6.1[12] (System 67): (continued)

J. PENETRATION X-69 _____

K. PENETRATION X-70 _____

L. PENETRATION X-71 _____

M. PENETRATION X-72 _____

N. PENETRATION X-73 _____

O. PENETRATION X-74 _____

P. PENETRATION X-75 _____

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

ATTACH change paper to data package.

A. PENETRATION X-56A _____

B. PENETRATION X-57A _____

C. PENETRATION X-58A _____

D. PENETRATION X-59A _____

E. PENETRATION X-60A _____

F. PENETRATION X-61A _____

G. PENETRATION X-62A _____

H. PENETRATION X-63A _____

I. PENETRATION X-68 _____

J. PENETRATION X-69 _____

K. PENETRATION X-70 _____

L. PENETRATION X-71 _____

M. PENETRATION X-72 _____

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

4.1.12 The following steps are applicable to Step 6.1[12] (System 67): (continued)

N. PENETRATION X-73 _____

O. PENETRATION X-74 _____

P. PENETRATION X-75 _____

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

ENSURE that they will **NOT** adversely affect the test performance.

A. PENETRATION X-56A _____

B. PENETRATION X-57A _____

C. PENETRATION X-58A _____

D. PENETRATION X-59A _____

E. PENETRATION X-60A _____

F. PENETRATION X-61A _____

G. PENETRATION X-62A _____

H. PENETRATION X-63A _____

I. PENETRATION X-68 _____

J. PENETRATION X-69 _____

K. PENETRATION X-70 _____

L. PENETRATION X-71 _____

M. PENETRATION X-72 _____

N. PENETRATION X-73 _____

O. PENETRATION X-74 _____

P. PENETRATION X-75 _____

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

4.1.12 The following steps are applicable to Step 6.1[12] (System 67): (continued)

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

A. PENETRATION X-56A _____

B. PENETRATION X-57A _____

C. PENETRATION X-58A _____

D. PENETRATION X-59A _____

E. PENETRATION X-60A _____

F. PENETRATION X-61A _____

G. PENETRATION X-62A _____

H. PENETRATION X-63A _____

I. PENETRATION X-68 _____

J. PENETRATION X-69 _____

K. PENETRATION X-70 _____

L. PENETRATION X-71 _____

M. PENETRATION X-72 _____

N. PENETRATION X-73 _____

O. PENETRATION X-74 _____

P. PENETRATION X-75 _____

[7] **ENSURE** Outstanding Design Change Notices (DCNs) Engineering Design Change Requests (EDCRs) or Temporary Alterations (TACFs) 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.

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

4.1.12 The following steps are applicable to Step 6.1[12] (System 67): (continued)

A. PENETRATION X-56A _____

B. PENETRATION X-57A _____

C. PENETRATION X-58A _____

D. PENETRATION X-59A _____

E. PENETRATION X-60A _____

F. PENETRATION X-61A _____

G. PENETRATION X-62A _____

H. PENETRATION X-63A _____

I. PENETRATION X-68 _____

J. PENETRATION X-69 _____

K. PENETRATION X-70 _____

L. PENETRATION X-71 _____

M. PENETRATION X-72 _____

N. PENETRATION X-73 _____

O. PENETRATION X-74 _____

P. PENETRATION X-75 _____

[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. _____

[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 from SMP-9.0.

A. PENETRATION X-56A _____

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

4.1.12 The following steps are applicable to Step 6.1[12] (System 67): (continued)

B. PENETRATION X-57A _____

C. PENETRATION X-58A _____

D. PENETRATION X-59A _____

E. PENETRATION X-60A _____

F. PENETRATION X-61A _____

G. PENETRATION X-62A _____

H. PENETRATION X-63A _____

I. PENETRATION X-68 _____

J. PENETRATION X-69 _____

K. PENETRATION X-70 _____

L. PENETRATION X-71 _____

M. PENETRATION X-72 _____

N. PENETRATION X-73 _____

O. PENETRATION X-74 _____

P. PENETRATION X-75 _____

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

A. PENETRATION X-56A _____

B. PENETRATION X-57A _____

C. PENETRATION X-58A _____

D. PENETRATION X-59A _____

E. PENETRATION X-60A _____

F. PENETRATION X-61A _____

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

4.1.12 The following steps are applicable to Step 6.1[12] (System 67): (continued)

G. PENETRATION X-62A _____

H. PENETRATION X-63A _____

I. PENETRATION X-68 _____

J. PENETRATION X-69 _____

K. PENETRATION X-70 _____

L. PENETRATION X-71 _____

M. PENETRATION X-72 _____

N. PENETRATION X-73 _____

O. PENETRATION X-74 _____

P. PENETRATION X-75 _____

[13] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) in accordance with SMP-4.0.

A. PENETRATION X-56A _____

B. PENETRATION X-57A _____

C. PENETRATION X-58A _____

D. PENETRATION X-59A _____

E. PENETRATION X-60A _____

F. PENETRATION X-61A _____

G. PENETRATION X-62A _____

H. PENETRATION X-63A _____

I. PENETRATION X-68 _____

J. PENETRATION X-69 _____

K. PENETRATION X-70 _____

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

4.1.12 The following steps are applicable to Step 6.1[12] (System 67): (continued)

L. PENETRATION X-71 _____

M. PENETRATION X-72 _____

N. PENETRATION X-73 _____

O. PENETRATION X-74 _____

P. PENETRATION X-75 _____

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

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

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

[17] **VERIFY** piping supports required for testing are installed and adjusted as required. _____

[18] **VERIFY** System Boundary Drawings have been updated and outstanding changes do **NOT** impact the validity of this test.

A. PENETRATION X-56A _____

B. PENETRATION X-57A _____

C. PENETRATION X-58A _____

D. PENETRATION X-59A _____

E. PENETRATION X-60A _____

F. PENETRATION X-61A _____

G. PENETRATION X-62A _____

H. PENETRATION X-63A _____

I. PENETRATION X-68 _____

J. PENETRATION X-69 _____

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

4.1.12 The following steps are applicable to Step 6.1[12] (System 67): (continued)

K. PENETRATION X-70 _____

L. PENETRATION X-71 _____

M. PENETRATION X-72 _____

N. PENETRATION X-73 _____

O. PENETRATION X-74 _____

P. PENETRATION X-75 _____

[19] **ENSURE** Surveillance Procedures 2-SI-67-701-A, 2-SI-67-701-B, and 2-SI-67-701-C, have been submitted to the JTG for concurrence.

JTG Meeting #_____ _____

4.1.13 The following steps are applicable to Step 6.1[13] (System 70):

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

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

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

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

A. PENETRATION X-29 _____

B. PENETRATION X-35 _____

C. PENETRATION X-50A _____

D. PENETRATION X-50B _____

E. PENETRATION X-52 _____

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

4.1.13 The following steps are applicable to Step 6.1[13] (System 70): (continued)

F. PENETRATION X-53 _____

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

ATTACH change paper to data package.

A. PENETRATION X-29 _____

B. PENETRATION X-35 _____

C. PENETRATION X-50A _____

D. PENETRATION X-50B _____

E. PENETRATION X-52 _____

F. PENETRATION X-53 _____

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

ENSURE that they will **NOT** adversely affect the test performance. **ENSURE** Outstanding Engineering Design Change Requests (EDCRs) or Temporary Alterations (TACFs) do NOT adversely impact testing.

A. PENETRATION X-29 _____

B. PENETRATION X-35 _____

C. PENETRATION X-50A _____

D. PENETRATION X-50B _____

E. PENETRATION X-52 _____

F. PENETRATION X-53 _____

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

A. PENETRATION X-29 _____

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

4.1.13 The following steps are applicable to Step 6.1[13] (System 70): (continued)

B. PENETRATION X-35 _____

C. PENETRATION X-50A _____

D. PENETRATION X-50B _____

E. PENETRATION X-52 _____

F. PENETRATION X-53 _____

[7] **ENSURE** Outstanding Design Change Notices (DCNs) Engineering Design Change Requests (EDCRs) or Temporary Alterations (TACFs) 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.

A. PENETRATION X-29 _____

B. PENETRATION X-35 _____

C. PENETRATION X-50A _____

D. PENETRATION X-50B _____

E. PENETRATION X-52 _____

F. PENETRATION X-53 _____

[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. _____

[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 from SMP-9.0.

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

4.1.13 The following steps are applicable to Step 6.1[13] (System 70): (continued)

A. PENETRATION X-29 _____

B. PENETRATION X-35 _____

C. PENETRATION X-50A _____

D. PENETRATION X-50B _____

E. PENETRATION X-52 _____

F. PENETRATION X-53 _____

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

A. PENETRATION X-29 _____

B. PENETRATION X-35 _____

C. PENETRATION X-50A _____

D. PENETRATION X-50B _____

E. PENETRATION X-52 _____

F. PENETRATION X-53 _____

[13] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) in accordance with SMP-4.0.

A. PENETRATION X-29 _____

B. PENETRATION X-35 _____

C. PENETRATION X-50A _____

D. PENETRATION X-50B _____

E. PENETRATION X-52 _____

F. PENETRATION X-53 _____

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

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

4.1.13 The following steps are applicable to Step 6.1[13] (System 70): (continued)

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

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

[17] **VERIFY** piping supports required for testing are installed and adjusted as required. _____

[18] **VERIFY** System Boundary Drawings have been updated and outstanding changes do **NOT** impact the validity of this test.

A. PENETRATION X-29 _____

B. PENETRATION X-35 _____

C. PENETRATION X-50A _____

D. PENETRATION X-50B _____

E. PENETRATION X-52 _____

F. PENETRATION X-53 _____

[19] **ENSURE** Surveillance Procedure 2-SI-70-701 has been submitted to the JTG for concurrence.

JTG Meeting #_____ _____

4.1.14 The following steps are applicable to Step 6.1[14] (System 72):

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

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

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

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

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

4.1.14 The following steps are applicable to Step 6.1[14] (System 72): (continued)

A. PENETRATION X-48A _____

B. PENETRATION X-48B _____

C. PENETRATION X-49A _____

D. PENETRATION X-49B _____

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

ATTACH change paper to data package.

A. PENETRATION X-48A _____

B. PENETRATION X-48B _____

C. PENETRATION X-49A _____

D. PENETRATION X-49B _____

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

ENSURE that they will **NOT** adversely affect the test performance.

A. PENETRATION X-48A _____

B. PENETRATION X-48B _____

C. PENETRATION X-49A _____

D. PENETRATION X-49B _____

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

A. PENETRATION X-48A _____

B. PENETRATION X-48B _____

C. PENETRATION X-49A _____

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

4.1.14 The following steps are applicable to Step 6.1[14] (System 72): (continued)

D. PENETRATION X-49B _____

[7] **ENSURE** Outstanding Design Change Notices (DCNs) Engineering Design Change Requests (EDCRs) or Temporary Alterations (TACFs) 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.

A. PENETRATION X-48A _____

B. PENETRATION X-48B _____

C. PENETRATION X-49A _____

D. PENETRATION X-49B _____

[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. _____

[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 from SMP-9.0.

A. PENETRATION X-48A _____

B. PENETRATION X-48B _____

C. PENETRATION X-49A _____

D. PENETRATION X-49B _____

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

A. PENETRATION X-48A _____

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

4.1.14 The following steps are applicable to Step 6.1[14] (System 72): (continued)

B. PENETRATION X-48B _____

C. PENETRATION X-49A _____

D. PENETRATION X-49B _____

[13] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) in accordance with SMP-4.0.

A. PENETRATION X-48A _____

B. PENETRATION X-48B _____

C. PENETRATION X-49A _____

D. PENETRATION X-49B _____

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

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

[16] **ESTABLISH** communications in areas where testing is to be conducted. _____

[17] .**VERIFY** piping supports required for testing are installed and adjusted as required. _____

[18] **VERIFY** System Boundary Drawings have been updated and outstanding changes do **NOT** impact the validity of this test.

A. PENETRATION X-48A _____

B. PENETRATION X-48B _____

C. PENETRATION X-49A _____

D. PENETRATION X-49B _____

[19] **ENSURE** Surveillance Procedure 2-SI-72-701 has been submitted to the JTG for concurrence.

JTG Meeting #_____ _____

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

4.1.15 The following steps are applicable to Step 6.1[15] (System 77):

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

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

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

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

A. PENETRATION X-41 _____

B. PENETRATION X-45 _____

C. PENETRATION X-46 _____

D. PENETRATION X-81 _____

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

ATTACH change paper to data package.

A. PENETRATION X-41 _____

B. PENETRATION X-45 _____

C. PENETRATION X-46 _____

D. PENETRATION X-81 _____

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

ENSURE that they will **NOT** adversely affect the test performance.

A. PENETRATION X-41 _____

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

4.1.15 The following steps are applicable to Step 6.1[15] (System 77): (continued)

B. PENETRATION X-45 _____

C. PENETRATION X-46 _____

D. PENETRATION X-81 _____

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

A. PENETRATION X-41 _____

B. PENETRATION X-45 _____

C. PENETRATION X-46 _____

D. PENETRATION X-81 _____

[7] **ENSURE** Outstanding Design Change Notices (DCNs) Engineering Design Change Requests (EDCRs) or Temporary Alterations (TACFs) 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.

A. PENETRATION X-41 _____

B. PENETRATION X-45 _____

C. PENETRATION X-46 _____

D. PENETRATION X-81 _____

[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. _____

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

4.1.15 The following steps are applicable to Step 6.1[15] (System 77): (continued)

[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 from SMP-9.0.

A. PENETRATION X-41 _____

B. PENETRATION X-45 _____

C. PENETRATION X-46 _____

D. PENETRATION X-81 _____

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

A. PENETRATION X-41 _____

B. PENETRATION X-45 _____

C. PENETRATION X-46 _____

D. PENETRATION X-81 _____

[13] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) in accordance with SMP-4.

A. PENETRATION X-41 _____

B. PENETRATION X-45 _____

C. PENETRATION X-46 _____

D. PENETRATION X-81 _____

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

[15] **CONDUCT** a pretest briefing with test and operations personnel in accordance with SMP-9.0. _____

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

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

4.1.15 The following steps are applicable to Step 6.1[15] (System 77): (continued)

[17] **VERIFY** piping supports required for testing are installed and adjusted as required. _____

[18] **VERIFY** System Boundary Drawings have been updated and outstanding changes do **NOT** impact the validity of this test.

A. PENETRATION X-41 _____

B. PENETRATION X-45 _____

C. PENETRATION X-46 _____

D. PENETRATION X-81 _____

[19] **ENSURE** Surveillance Procedure 2-SI-77-701 has been submitted to the JTG for concurrence.

JTG Meeting #_____ _____

4.1.16 The following steps are applicable to Step 6.1[16] (System 78):

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

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

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

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

A. PENETRATION X-82 _____

B. PENETRATION X-83 _____

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

ATTACH change paper to data package.

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

4.1.16 The following steps are applicable to Step 6.1[16] (System 78): (continued)

A. PENETRATION X-82 _____

B. PENETRATION X-83 _____

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

ENSURE that they will **NOT** adversely affect the test performance

A. .PENETRATION X-82. _____

B. PENETRATION X-83 _____

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

A. PENETRATION X-82 _____

B. PENETRATION X-83 _____

[7] **ENSURE** Outstanding Design Change Notices (DCNs) Engineering Design Change Requests (EDCRs) or Temporary Alterations (TACFs) 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.

A. PENETRATION X-82 _____

B. PENETRATION X-83 _____

[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.

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

4.1.16 The following steps are applicable to Step 6.1[16] (System 78): (continued)

[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 from SMP-9.0.

A. PENETRATION X-82 _____

B. PENETRATION X-83 _____

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

A. PENETRATION X-82 _____

B. PENETRATION X-83 _____

[13] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) in accordance with SMP-4.0.

A. PENETRATION X-82 _____

B. PENETRATION X-83 _____

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

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

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

[17] **VERIFY** piping supports required for testing are installed and adjusted as required. _____

[18] **VERIFY** System Boundary Drawings have been updated and outstanding changes do **NOT** impact the validity of this test.

A. PENETRATION X-82 _____

B. PENETRATION X-83 _____

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

4.1.16 The following steps are applicable to Step 6.1[16] (System 78): (continued)

[19] **ENSURE** Surveillance Procedure 2-SI-78-701 has been submitted to the JTG for concurrence.

JTG Meeting #_____ _____

4.1.17 The following steps are applicable to Step 6.1[17] (System 81 Penetration X-42):

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

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

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

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

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

ATTACH change paper to data package. _____

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

ENSURE that they 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 (TACFs) do **NOT** adversely impact testing. _____

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

4.1.17 The following steps are applicable to Step 6.1[17] (System 81 Penetration X-42): (continued)

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

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

[9] **VERIFY** 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. _____

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

[12] **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 from SMP-9.0. _____

[13] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) in accordance with SMP-4.0. _____

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

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

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

[17] **VERIFY** piping supports required for testing are installed and adjusted as required. _____

[18] **VERIFY** System Boundary Drawings have been updated and outstanding changes do **NOT** impact the validity of this test. _____

[19] **ENSURE** Surveillance Procedure 2-SI-81-701 has been submitted to the JTG for concurrence.

JTG Meeting #_____ _____

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

4.1.18 The following steps are applicable to Step 6.1[18] (System 90):

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

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

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

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

A. PENETRATION X-94B _____

B. PENETRATION X-94C _____

C. PENETRATION X-95B _____

D. PENETRATION X-95C _____

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

ATTACH change paper to data package.

A. PENETRATION X-94B _____

B. PENETRATION X-94C _____

C. PENETRATION X-95B _____

D. PENETRATION X-95C _____

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

ENSURE that they will **NOT** adversely affect the test performance.

A. PENETRATION X-94B _____

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

4.1.18 The following steps are applicable to Step 6.1[18] (System 90): (continued)

B. PENETRATION X-94C _____

C. PENETRATION X-95B _____

D. PENETRATION X-95C _____

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

A. PENETRATION X-94B _____

B. PENETRATION X-94C _____

C. PENETRATION X-95B _____

D. PENETRATION X-95C _____

[7] **ENSURE** Outstanding Design Change Notices (DCNs) Engineering Design Change Requests (EDCRs) or Temporary Alterations (TACFs) 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.

A. PENETRATION X-94B _____

B. PENETRATION X-94C _____

C. PENETRATION X-95B _____

D. PENETRATION X-95C _____

[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. _____

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

4.1.18 The following steps are applicable to Step 6.1[18] (System 90): (continued)

[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 from SMP-9.0.

A. PENETRATION X-94B _____

B. PENETRATION X-94C _____

C. PENETRATION X-95B _____

D. PENETRATION X-95C _____

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

A. PENETRATION X-94B _____

B. PENETRATION X-94C _____

C. PENETRATION X-95B _____

D. PENETRATION X-95C _____

[13] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) in accordance with SMP-4.0.

A. PENETRATION X-94B _____

B. PENETRATION X-94C _____

C. PENETRATION X-95B _____

D. PENETRATION X-95C _____

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

[15] **CONDUCT** a pretest briefing with test and operations personnel in accordance with SMP-9.0. _____

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

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

4.1.18 The following steps are applicable to Step 6.1[18] (System 90): (continued)

[17] **VERIFY** piping supports required for testing are installed and adjusted as required. _____

[18] **VERIFY** System Boundary Drawings have been updated and outstanding changes do **NOT** impact the validity of this test.

A. PENETRATION X-94B _____

B. PENETRATION X-94C _____

C. PENETRATION X-95B _____

D. PENETRATION X-95C _____

[19] **ENSURE** Surveillance Procedure 2-SI-90-701 has been submitted to the JTG for concurrence.

JTG Meeting #_____ _____

4.1.19 The following steps are applicable to Step 6.2[1] (Type B Tests):

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

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

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

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

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

ATTACH change paper to data package. _____

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

4.1.19 The following steps are applicable to Step 6.2[1] (Type B Tests): (continued)

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

ENSURE that they 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 (TACFs) 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. _____

[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 from 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) in accordance with SMP-4.0. _____

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

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

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

4.1.19 The following steps are applicable to Step 6.2[1] (Type B Tests): (continued)

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

[17] **VERIFY** System Boundary Drawings have been updated and outstanding changes do **NOT** impact the validity of this test. _____

[18] **ENSURE** Surveillance Procedure 2-SI-0-702 has been submitted to the JTG for concurrence.

JTG Meeting #_____ _____

4.1.20 The following steps are applicable to Step 6.3[1]: (EL 713 PAL Overall)

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

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

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

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

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

ATTACH change paper to data package. _____

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

ENSURE that they will **NOT** adversely affect the test performance. _____

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

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

4.1.20 The following steps are applicable to Step 6.3[1]: (EL 713 PAL Overall) (continued)

[7] **ENSURE** Outstanding Design Change Notices (DCNs) Engineering Design Change Requests (EDCRs) or Temporary Alterations (TACFs) 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. _____

[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 from 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) in accordance with SMP-4.0. _____

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

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

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

[17] **VERIFY** System Boundary Drawings have been updated and outstanding changes do **NOT** impact the validity of this test. _____

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

4.1.20 The following steps are applicable to Step 6.3[1]: (EL 713 PAL Overall) (continued)

[18] **ENSURE** Surveillance Procedure 2-SI-0-704 has been submitted to the JTG for concurrence.

JTG Meeting #_____ _____

4.1.21 The following steps are applicable to Step 6.3[2] (EL 757 PAL Overall):

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

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

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

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

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

ATTACH change paper to data package. _____

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

ENSURE that they 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 (TACFs) do **NOT** adversely impact testing. _____

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

4.1.21 The following steps are applicable to Step 6.3[2] (EL 757 PAL Overall): (continued)

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

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

[9] **VERIFY** 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. _____

[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 from 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) in accordance with SMP-4.0. _____

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

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

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

[17] **VERIFY** System Boundary Drawings have been updated and outstanding changes do **NOT** impact the validity of this test. _____

[18] **ENSURE** Surveillance Procedure 2-SI-0-705 has been submitted to the JTG for concurrence.

JTG Meeting #_____ _____

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

4.1.22 The following steps are applicable to Step 6.3[3] (EL 713 PAL Seals):

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

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

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

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

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

ATTACH change paper to data package. _____

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

ENSURE that they 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 (TACFs) 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. _____

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

4.1.22 The following steps are applicable to Step 6.3[3] (EL 713 PAL Seals): (continued)

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

[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 from SMP-9.0. _____

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

[13] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) in accordance with SMP-4.0 _____

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

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

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

[17] **VERIFY** System Boundary Drawings have been updated and outstanding changes do **NOT** impact the validity of this test. _____

[18] **ENSURE** Surveillance Procedure 2-SI-0-706 has been submitted to the JTG for concurrence.

JTG Meeting #_____ _____

4.1.23 The following steps are applicable to Step 6.3[4] (EL 757 PAL Seals):

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

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

4.1.23 The following steps are applicable to Step 6.3[4] (EL 757 PAL Seals): (continued)

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

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

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

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

ATTACH change paper to data package. _____

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

ENSURE that they 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 (TACFs) 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. _____

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

4.1.23 The following steps are applicable to Step 6.3[4] (EL 757 PAL Seals): (continued)

[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 from 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) in accordance with SMP-4.0. _____

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

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

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

[17] **VERIFY** System Boundary Drawings have been updated and outstanding changes do **NOT** impact the validity of this test. _____

[18] **ENSURE** Surveillance Procedure 2-SI-0-707 has been submitted to the JTG for concurrence.

JTG Meeting #_____ _____

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

4.2 Special Tools, Measuring and Test Equipment (M&TE), Parts, and Supplies

[1] The following M&TE is available:

A. GRAFTEL Model 9623-7 or equal

B. 0-60 psig Pressure Gauge (± 1% of Full Scale) or equal

4.3 Field Preparations

4.3.1 Approvals and Notifications

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

_____ _____

Preoperational Startup Manager Signature — Date

[2] **OBTAIN** the U-2 Shift Manager/Unit SRO (SM/Unit SRO) authorization.

_____ _____

U2 SM/Unit SRO Signature — Date

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

5.0 ACCEPTANCE CRITERIA

NOTE

Per Technical Specification 5.7.2.19:

The peak calculated containment internal pressure for the design basis loss of coolant accident, P_a, is 15.0 psig.

The maximum allowable containment leakage rate, L_a, at P_a, is 0.25% of the primary containment air weight per day.

$$L_a = \frac{0.0025 \text{ x Containment Volume X (15 psig + Patm)}}{\text{24 hour/day X Patm}}$$

Per FSAR Table 6.2.1-13, Containment Volume is 1.171012×10^6 ft^3

Therefore, $L_a = \frac{0.0025 \text{ x } (1.171012 \times 10^6 \text{ X (15 psig + 14.69595 psig)}}{\text{24 hour/day X 14.69595 psig}} = 246.48$ SCFH

NOTE

60% $L_a = 0.60 \times 246.48 = 147.89$ SCFH

[1] The combined leakage rate for all penetrations and valves subject to Type B and Type C leak rate testing shall be $\leq 0.6L_a$ at $\geq$ 15 psig (criteria obtained from Section 2.2D.4).

NOTE

25% $L_a = 0.25 \times 246.48 = 61.62$ SCFH

[2] The combined leakage rate for all penetrations and isolation valves subject to bypass leakage (Primary Containment Bypass Leakage to the Auxiliary Building) requirements shall be ≤ 0.25 L_a at $\geq$ 15 psig (criteria obtained from Section 2.2D.3).

[3] The leakage rates from isolation valves subject to inventory requirements are as follows (criteria obtained from Section 2.2E.3) :

A. Containment Spray isolation valve leakage shall be less than 16.98 ft^3 per 30 days (0.024 ft^3/hr), liquid leakage per valve. (see Appendix E)

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

5.0 ACCEPTANCE CRITERIA (continued)

B. Residual Heat Removal Spray isolation valve leakage shall be less than 23.01 ft^3 per 30 days (0.032 ft^3/hr), liquid leakage per valve. (see Appendix E)

NOTE
1% L_a = 0.01 x 246.48 = 2.46 SCFH

[4] The seal leakage for each personnel airlock door does NOT exceed 0.01L_a when the volume between the seals is pressurized to ≥ 6.0 PSIG (criteria obtained from Section 2.2D.4).

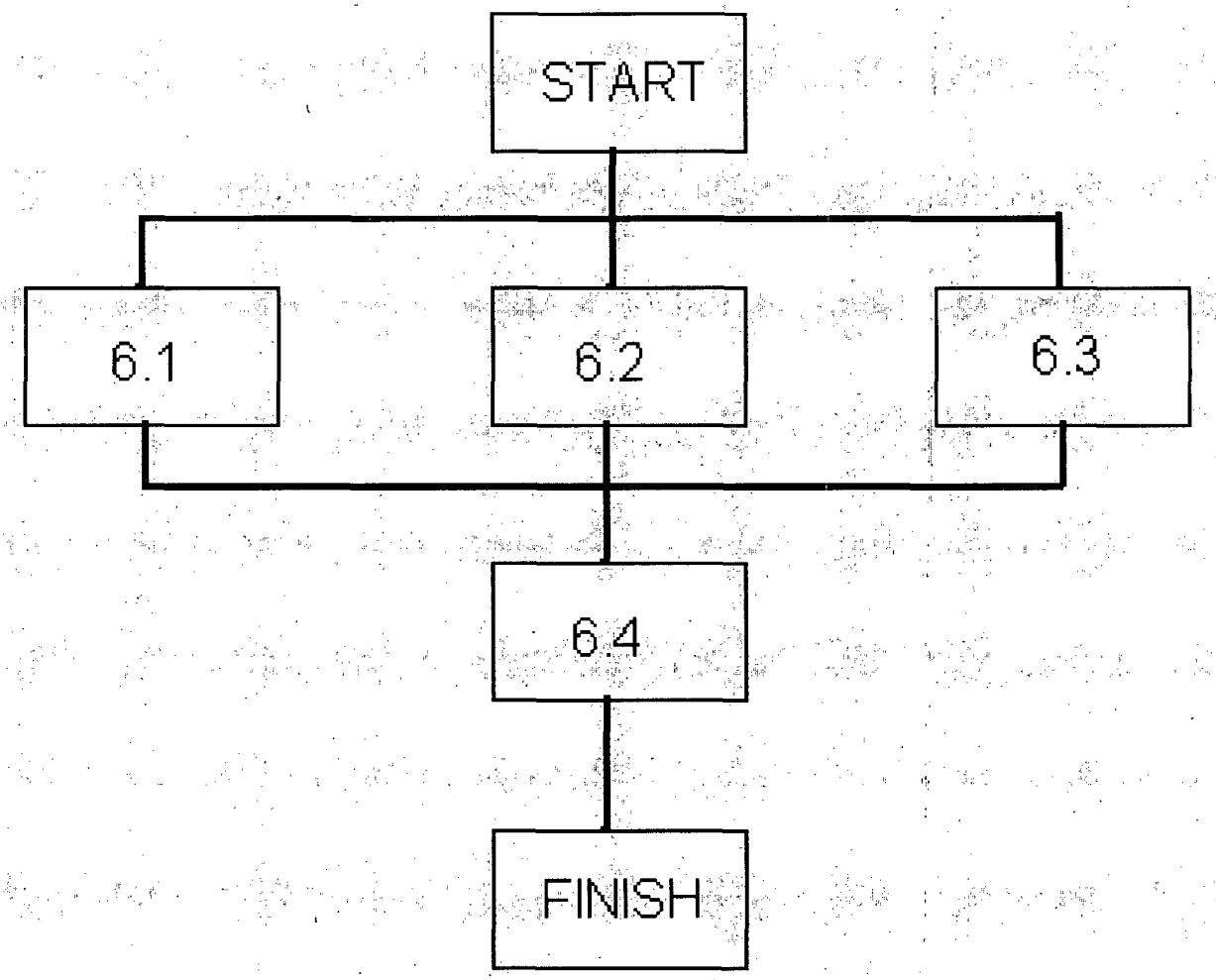
NOTE
5% L_a = 0.05 x 246.48 = 12.32 SCFH

[5] An overall personnel airlock leakage does NOT exceed 0.05L_a when the airlock is pressurized to ≥ 15.0 PSIG (criteria obtained from Section 2.2D.4).

6.0 INSTRUCTIONS

NOTES

1) The subsections of this test shall be performed per the flow diagram below.
2) Sections 6.1, 6.2, and 6.3 can be performed simultaneously.



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

6.1 Type C and Water Inventory Testing

NOTE

Steps 6.1[1] through 6.1[18] may be performed in any order or concurrently.

[1] **VERIFY** prerequisites listed in Section 4.1.1 for Steps 6.1[1] have been completed. _____

A. **PERFORM** 2-SI-26-701, Containment Isolation Valve Local Leak Rate Test High Pressure Fire Protection. _____

B. **TRANSFER** collected data from 2-SI-26-701 to Appendix D _____

[2] **VERIFY** prerequisites listed on Section 4.1.2 for Step 6.1[2] have been completed. _____

A. **PERFORM** 2-SI-30-701 Containment Isolation Valve Local Leak Rate Test Purge Air. _____

B. **TRANSFER** collected data from 2-SI-30-701 to Appendix D. _____

[3] **VERIFY** prerequisites listed in Section 4.1.3 for Step 6.1[3] have been completed. _____

A. **PERFORM** 2-SI-31-701, Containment Isolation Valve Local Leak Rate Test Chilled Water System. _____

B. **TRANSFER** collected data from 2-SI-31-701 to Appendix D. _____

[4] **VERIFY** prerequisites listed in Section 4.1.4 for Step 6.1[4] have been completed. _____

A. **PERFORM** 2-SI-32-701, Containment Isolation Valve Local Leak Rate Test Control Air System. _____

B. **TRANSFER** collected data from 2-SI-32-701 to Appendix D. _____

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

6.1 Type C and Water Inventory Testing (continued)

[5] **VERIFY** prerequisites listed in Section 4.1.5 for Step 6.1[5] have been completed. _____

A. **PERFORM** 2-SI-33-701, Containment Isolation Valve Local Leak Rate Test Service Air. _____

B. **TRANSFER** collected data from 2-SI-33-701 to Appendix D. _____

[6] **VERIFY** prerequisites listed in Section 4.1.6 for Step 6.1[6] have been completed. _____

A. **PERFORM** 2-SI-43-701, Containment Isolation Valve Local Leak Rate Test Sampling System. _____

B. **TRANSFER** collected data from 2-SI-43-701, to Appendix D. _____

[7] **VERIFY** prerequisites listed in Section 4.1.7 for Step 6.1[7] have been completed. _____

A. **PERFORM** 2-SI-52-701, Containment Isolation Valve Local Leak Rate Test System Test Facility. _____

B. **TRANSFER** collected data from 2-SI-52-701 to Appendix D. _____

[8] **VERIFY** prerequisites listed in Section 4.1.8 for Steps 6.1[8] have been completed. _____

A. **PERFORM** 2-SI-59-701, Containment Isolation Valve Local Leak Rate Test Demineralized Water. _____

B. **TRANSFER** collected data from 2-SI-59-701 to Appendix D _____

[9] **VERIFY** prerequisites listed on Section 4.1.9 for Step 6.1[9] have been completed. _____

A. **PERFORM** 2-SI-61-701, Containment Isolation Valve Local Leak Rate Test Ice Condenser. _____

B. **TRANSFER** collected data from 2-SI-61-701 to Appendix D. _____

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

6.1 Type C and Water Inventory Testing (continued)

[10] **VERIFY** prerequisites listed in Section 4.1.10 for Step 6.1[10] have been completed. _____

A. **PERFORM** 2-SI-62-701, CVCS Containment Isolation Valve Local Leak Rate Test. _____

B. **TRANSFER** collected data from 2-SI-62-701 to Appendix D. _____

[11] **VERIFY** prerequisites listed in Section 4.1.11 for Step 6.1[11] have been completed. _____

A. **PERFORM** 2-SI-63-701, Containment Isolation Valve Local Leak Rate Test Safety Injection and Reactor Coolant. _____

B. **TRANSFER** collected data from 2-SI-63-701 to Appendix D. _____

[12] **VERIFY** prerequisites listed in Section 4.1.12 for Step 6.1[12] have been completed. _____

A. **PERFORM** 2-SI-67-701-A, Containment Isolation Valve Local Leak Rate Test Train A Upper Compartment ERCW; 2-SI-67-701-B, Containment Isolation Valve Local Leak Rate Test Train B Upper Compartment ERCW; and 2-SI-67-701-C Containment Isolation Valve Local Leak Rate Test Lower Compartment ERCW. _____

B. **TRANSFER** collected data from 2-SI-67-701-A, and 2-SI-67-701-B, and 2-SI-67-701-C to Appendix D. _____

[13] **VERIFY** prerequisites listed in Section 4.1.13 for Step 6.1[13] have been completed. _____

A. **PERFORM** 2-SI-70-701, Containment Isolation Valve Local Leak Rate Test Component Cooling. _____

B. **TRANSFER** collected data from 2-SI-70-701 to Appendix D. _____

[14] **VERIFY** prerequisites listed in Section 4.1.14 for Steps 6.1[14] have been completed. _____

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

6.1 Type C and Water Inventory Testing (continued)

A. **PERFORM** 2-SI-72-701, Containment Spray and RHR Spray Valve Water Inventory Test. _____

B. **TRANSFER** collected data from 2-SI-72-701 to Appendix E. _____

[15] **VERIFY** prerequisites listed on Section 4.1.15 for Step 6.1[15] have been completed. _____

A. **PERFORM** 2-SI-77-701, Containment Isolation Valve Local Leak Rate Test Waste Disposal System. _____

B. **TRANSFER** collected data from 2-SI-77-701 to Appendix D. _____

[16] **VERIFY** prerequisites listed in Section 4.1.16 for Step 6.1[16] have been completed. _____

A. **PERFORM** 2-SI-78-701, Containment Isolation Valve Local Leak Rate Test Spent Fuel Pit Cooling. _____

B. **TRANSFER** collected data from 2-SI-78-701 to Appendix D. _____

[17] **VERIFY** prerequisites listed in Section 4.1.17 for Step 6.1[17] have been completed. _____

A. **PERFORM** 2-SI-81-701, Containment Isolation Valve Local Leak Rate Test Primary Water System. _____

B. **TRANSFER** collected data from 2-SI-81-701 to Appendix D. _____

[18] **VERIFY** prerequisites listed in Section 4.1.18 for Step 6.1[18] have been completed. _____

A. **PERFORM** 2-SI-90-701, Containment Isolation Valve Local Leak Rate Test Radiation Monitoring. _____

B. **TRANSFER** collected data from 2-SI-90-701 to Appendix D _____

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

6.2 Type B Testing

NOTE

The individual penetrations may be tested in any order or concurrently.

[1] **VERIFY** prerequisites listed in Section 4.1.19 for Step 6.2[1] have been completed. _____

A. **PERFORM** 2-SI-0-702, Type B Local Leak Rate Test. _____

B. **TRANSFER** collected data from 2-SI-0-702 to Appendix F. _____

6.3 Personnel Airlock Testing

NOTE

Steps 6.3[1] through 6.3[4] may be performed in any order or concurrently.

[1] **VERIFY** prerequisites listed in Section 4.1.20 for Step 6.3[1] have been completed. _____

A. **PERFORM** 2-SI-0-704, El. 713' Personnel Air Lock Overall Leakage Test. _____

B. **TRANSFER** collected data from 2-SI-0-704 to Appendix F. _____

[2] **VERIFY** prerequisites listed in Section 4.1.21 for Step 6.3[2] have been completed. _____

A. **PERFORM** 2-SI-0-705, E. 757' Personnel Air Lock Overall Leakage Test. _____

B. **TRANSFER** collected data from 2-SI-0-705 to Appendix F. _____

[3] **VERIFY** prerequisites listed in Section 4.1.22 for Step 6.3[3] have been completed. _____

A. **PERFORM** 2-SI-0-706, El 713 Personnel Air Lock Door Seals Leak Test. _____

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

6.3 Personnel Airlock Testing (continued)

B. **TRANSFER** collected data from 2-SI-0-706 to Appendix F. _____

[4] **VERIFY** prerequisites listed in Section 4.1.23 for Step 6.3[4] have been completed. _____

A. **PERFORM** 2-SI-0-707, El 757' Personnel Air Lock Door Seals Leak Test. _____

B. **TRANSFER** collected data from 2-SI-0-707 to Appendix F. _____

6.4 Leak Rate Summary

[1] **PERFORM** calculations on Appendix D. _____

[2] **PERFORM** calculations on Appendix F. _____

[3] **PERFORM** calculations on Appendix G. _____

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

7.0 POST PERFORMANCE ACTIVITY

[1] **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 from SMP-9.0. _____

[2] **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. _____

[3] **ATTACH** copies of the Surveillance Instructions utilized in Section 6.0 of this procedure to the test results package. _____

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

8.0 RECORDS

8.1 QA Records

Complete Test Package

8.2 Non QA Records

None

Appendix A
(Page 1 of 4)

TEST PROCEDURES/INSTRUCTIONS REFERENCE REVIEW

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

Additional copies of this table may be made as necessary.

PROCEDURE/ INSTRUCTION	TITLE	REVISION/ CHANGES	INITIAL AND DATE (N/A for no change)
FSAR TABLE 6.2.1-13	Watts Bar Ice Condenser Design Paramaters -Table 6.2.1-13		
FSAR TABLE 6.2.4-1	Watts Bar Nuclear Plant Containment Penetrations and Barriers-Table 6.2.4-1		
FSAR TABLE 6.2.4-2	Possible Bypass Leakage Paths to the Auxiliary Building		
FSAR TABLE 6.2.6-2b	Valves Exempted from Type C Leak Testing		
FSAR TABLE 14.2-1 SHEET 81 OF 90	Containment Local Leak Rate Tests Test Summary		
FSAR SECTION 6.2.6	Containment Leakage Testing		
TECH. SPEC 3.6.1	Containment		
TECH. SPEC 3.6.2	Containment Air Locks		
TECH. SPEC 3.6.3	Containment Isolation Valves		
TECH. SPEC 5.7.2.19	Containment Leakage Rate Testing Program		
SMP-4.0	Watts Bar Nuclear Plant Unit 2 System Completion and Turnover		
SMP-6.0	Watts Bar Nuclear Plant Unit 2 Administration, Conduct and Test Results Processing of Generic Test Instructions		
SMP-7.0	Watts Bar Nuclear Plant Unit 2 Control of Cleanness, Layup and Flushing		
SMP-9.0	Watts Bar Nuclear Plant Unit 2 Conduct of Test		
2-TSD-64-1	Test Scoping Document Local Leak Rate Testing		

Appendix A
(Page 2 of 4)

TEST PROCEDURES/INSTRUCTIONS REFERENCE REVIEW

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

PROCEDURE/ INSTRUCTION	TITLE	REVISION/ CHANGES	INITIAL AND DATE (N/A for no change)
ANSI/ANS-56.8 -1994	Containment System Leakage Testing Requirements		
10 CFR PART 50 APPENDIX J	Primary Reactor Containment Leakage Testing for Water Cooled Power Reactors		
WBN-0SG4-102	Containment Isolation System-Determination of Compliance to Isolation Provisions of GDC 55, 56, 57, and SRP 6.2.4		
WBN-0SG4-128	Evaluation of the WBN CIS Test Program		
2-SI-0-702	Type "B" Local Leak Rate Test		
2-SI-0-704	EL 713 Air Lock Overall Leakage Test		
2-SI-0-705	EL 757 Air lock Overall Leakage Test		
2-SI-0-706	EL 713 Air Lock Door Seals Leak Test		
2-SI-0-707	EL 757 Air Lock Door Seal Leak Test		
2-SI-26-701	Containment Isolation Valve Local Leak Rate Test High Pressure Fire Protection		
2-SI-30-701	Containment Isolation Valve Local Leak Rate Test Purge Air		
2-SI-31-701	Containment Isolation valve Local Leak Rate Test Chilled Water System		
2-SI-32-701	Containment Isolation Valve Local Leak rate Test Control Air System		
2-SI-33-701	Containment Isolation Valve Local Leak Rate Test Service Air		

Appendix A
(Page 3 of 4)

TEST PROCEDURES/INSTRUCTIONS REFERENCE REVIEW

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

PROCEDURE/ INSTRUCTION	TITLE	REVISION/ CHANGES	INITIAL AND DATE (N/A for no change)
2-SI-43-701	Containment Isolation Valve Local Leak Rate Test Sampling System		
2-SI-52-701	Containment Isolation Valve Local Leak Rate Test System Test Facility		
2-SI-59-701	Containment Isolation Valve Local Leak Rate Test Demineralized Water		
2-SI-61-701	Containment Isolation Valve Local Leak Rate Test Ice Condenser		
2-SI-62-701	CVCS Containment Isolation Valve Local Leak Rate Test		
2-SI-63-701	Containment Isolation Valve Local Leak Rate Test Safety Injection and Reactor Coolant		
2-SI-67-701-A	Containment Isolation Valve Local Leak Rate TestTrain A Upper Compartment ERCW		
2-SI-67-701-B	Containment Isolation Valve Local Leak Rate Test Train B Upper Compartment ERCW		
2-SI-67-701-C	Containment Isolation Valve Local Leak Rate Test Lower compartment ERCW		
2-SI-70-701	Containment Isolation Valve Local Leak Rate Test Component Cooling		
2-SI-72-701	Containment Spray and RHR Spray Header Valve Water Inventory Test		

Appendix A
(Page 4 of 4)

TEST PROCEDURES/INSTRUCTIONS REFERENCE REVIEW

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

PROCEDURE/ INSTRUCTION	TITLE	REVISION/ CHANGES	INITIAL AND DATE (N/A for no change)
2-SI-77-701	Containment Isolation Valve Local Leak Rate Test Waste Disposal System		
2-SI-78-701	Containment Isolation Valve Local Leak Rate Test Spent Fuel Pit Cooling		
2-SI-81-701	Containment Isolation Valve Local Leak Rate Test Primary Water System		
2-SI-90-701	Containment Isolation Valve Local Leak Rate Test Radiation Monitoring		

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 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 15)

CONTAINMENT ISOLATION VALVES SUBJECTED TO TYPE C TESTING

NOTES

1) For containment isolation barriers tested simultaneously (pressurizing between barriers) the leakage rate reported for the penetration path shall be the total leakage rate measured.
2) For containment isolation barriers in series, tested individually, the leakage rate reported for the penetration path shall be the measured leakage rate of the isolation barrier with the highest leakage rate. Valve stem leakage shall be properly considered.
3) For containment isolation barriers tested individually that are in parallel, the leakage rate reported for that penetration is the sum of the individually measured leakage rates, if parallel valves are tested together, the value assigned to the penetration will be the measured leakage rate.

Appendix D
(Page 2 of 15)

CONTAINMENT ISOLATION VALVES SUBJECTED TO TYPE C TESTING

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

SURVEILLANCE INSTRUCTION NO.	DESCRIPTION	PEN NO.	ISOL VALVE NO.	LEAKAGE RATE SCFH	MAX PATH LEAKAGE	INITIAL/DATE
2-SI-30-701	LOWER COMPARTMENT PURGE AIR EXHAUST	X-4	30-56			
			30-57			
2-SI-30-701	INSTRUMENT ROOM PURGE AIR EXHAUST	X-5	30-58			
			30-59			
2-SI-30-701	UPPER COMPARTMENT PURGE AIR EXHAUST	X-6	30-50			
			30-51			
2-SI-30-701	UPPER COMPARTMENT PURGE AIR EXHAUST	X-7	30-52			
			30-53			
2-SI-30-701	UPPER COMPARTMENT PURGE AIR SUPPLY	X-9A	30-7			
			30-8			
2-SI-30-701	UPPER COMPARTMENT PURGE AIR SUPPLY	X-9B	30-9			
			30-10			
2-SI-30-701	LOWER COMPARTMENT PURGE AIR SUPPLY	X-10A	30-14			
			30-15			

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CONTAINMENT ISOLATION VALVES SUBJECTED TO TYPE C TESTING

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

SURVEILLANCE INSTRUCTION NO.	DESCRIPTION	PEN NO.	ISOL VALVE NO.	LEAKAGE RATE SCFH	MAX PATH LEAKAGE	INITIAL/DATE
2-SI-30-701	LOWER COMPARTMENT PURGE AIR SUPPLY	X-10B	30-16			
			30-17			
2-SI-30-701	LOWER COMPARTMENT PURGE AIR SUPPLY	X-11	30-19			
			30-20			
2-SI-62-701	CHEMICAL AND VOLUME CONTROL SYSTEM LETDOWN	* X-15	62-72			
			62-73			
			62-74			
			62-76			
			62-77			
			62-662			
2-SI-43-701	PRESSURIZER LIQUID SAMPLE	* X-25A	43-11			
			43-12			
2-SI-43-701	PRESSURIZER STEAM SAMPLE	* X-25D	43-2			
			43-3			

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CONTAINMENT ISOLATION VALVES SUBJECTED TO TYPE C TESTING

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

SURVEILLANCE INSTRUCTION NO.	DESCRIPTION	PEN NO.	ISOL VALVE NO.	LEAKAGE RATE SCFH	MAX PATH LEAKAGE	INITIAL/DATE
2-SI-52-701	ILRT SENSOR LINE	X-26A	52-501			
			52-505			
2-SI-52-701	ILRT SENSOR LINE	X-26B	52-500			
			52-504			
2-SI-70-701	CCS FROM RC PUMP COOLERS	* X-29	70-89			
			70-92			
			70-698			
2-SI-63-701	ACCUM TO HOLDUP TANK	* X-30	63-23			
			63-71			
			63-84			
2-SI-26-701	FIRE PROTECTION RCP STANDPIPE	* X-31	26-243			
			26-1296			
2-SI-32-701	CONTROL AIR	* X-34	32-111			
			32-338			

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CONTAINMENT ISOLATION VALVES SUBJECTED TO TYPE C TESTING

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

SURVEILLANCE INSTRUCTION NO.	DESCRIPTION	PEN NO.	ISOL VALVE NO.	LEAKAGE RATE SCFH	MAX PATH LEAKAGE	INITIAL/DATE
			32-343			
2-SI-70-701	CCS FROM EXCESS LETDN HX	* X-35	70-85			
	CCS TO EXCESS LETDN HX		70-703			
2-SI-63-701	N2 TO ACCUMULATORS	* X-39A	63-64			
			63-868			
2-SI-63-701	N2 TO PRESS RELIEF TANK	* X-39B	68-305			
			68-849			
2-SI-77-701	FLOOR SUMP PUMP DISCH.	* X-41	77-127			
			77-128			
			77-2875			
2-SI-81-701	PRIMARY WATER MAKEUP	* X-42	81-12			
			81-502			
2-SI-62-701	RCP SEAL WATER RETURN	* X-44	62-61			
			62-63			
			62-639			

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CONTAINMENT ISOLATION VALVES SUBJECTED TO TYPE C TESTING

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

SURVEILLANCE INSTRUCTION NO.	DESCRIPTION	PEN NO.	ISOL VALVE NO.	LEAKAGE RATE SCFH	MAX PATH LEAKAGE	INITIAL/DATE
2-SI-77-701	RC DRAIN TANK AND PRT TO VENT HEADER	* X-45	77-18			
			77-19			
			77-20			
2-SI-77-701	RC DRAIN TANK PUMP DISCH.	* X-46	77-9			
			77-10			
			84-530			
2-SI-61-701	UPPER GLYCOL SUPPLY	* X-47A	61-191			
			61-192			
			61-533			
2-SI-61-701	UPPER GLYCOL RETURN	* X-47B	61-193			
			61-194			
			61-680			
2-SI-70-701	RCP THERMAL BARRIER RETURN	* X-50A	70-87			
			70-90			
			70-687			

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CONTAINMENT ISOLATION VALVES SUBJECTED TO TYPE C TESTING

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

SURVEILLANCE INSTRUCTION NO.	DESCRIPTION	PEN NO.	ISOL VALVE NO.	LEAKAGE RATE SCFH	MAX PATH LEAKAGE	INITIAL/DATE
2-SI-70-701	RCP THERMAL BARRIER SUPPLY	* X-50B	70-134			
			70-679			
2-SI-70-701	CCS TO RC PUMP COOLERS	X-52	70-100			
			70-140			
			70-790			
2-SI-70-701	CCS TO EXCESS LETDN HX	X-53	70-143			
2-SI-67-701C	LOWER CONTAINMENT ERCW SUPPLY	X-56A	67-107			
			67-113			
			67-1054D			
2-SI-67-701C	LOWER CONTAINMENT ERCW RETURN	X-57A	67-111			
			67-112			
			67-575D			
2-SI-67-701C	LOWER CONTAINMENT ERCW SUPPLY	X-58A	67-83			
			67-89			
			67-1054A			

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CONTAINMENT ISOLATION VALVES SUBJECTED TO TYPE C TESTING

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

SURVEILLANCE INSTRUCTION NO.	DESCRIPTION	PEN NO.	ISOL VALVE NO.	LEAKAGE RATE SCFH	MAX PATH LEAKAGE	INITIAL/DATE
2-SI-67-701C	LOWER CONTAINMENT ERCW RETURN	X-59A	67-87			
			67-88			
			67-575A			
2-SI-67-701C	LOWER CONTAINMENT ERCW SUPPLY	X-60A	67-99			
			67-105			
			67-1054B			
2-SI-67-701C	LOWER CONTAINMENT ERCW RETURN	X-61A	67-103			
			67-104			
			67-575B			
2-SI-67-701C	LOWER CONTAINMENT ERCW SUPPLY	X-62A	67-91			
			67-97			
			67-1054C			
2-SI-67-701C	LOWER CONTAINMENT ERCW RETURN	X-63A	67-95			
			67-96			
			67-575C			

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CONTAINMENT ISOLATION VALVES SUBJECTED TO TYPE C TESTING

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

SURVEILLANCE INSTRUCTION NO.	DESCRIPTION	PEN NO.	ISOL VALVE NO.	LEAKAGE RATE SCFH	MAX PATH LEAKAGE	INITIAL/DATE
2-SI-31-701	INSTRUMENT ROOM CHILLED H2O RETURN	* X-64	31-305			
			31-306			
			31-3421			
2-SI-31-701	INSTRUMENT ROOM CHILLED H2O SUPPLY	* X-65	31-308			
			31-309			
			31-3407			
2-SI-31-701	INSTRUMENT ROOM CHILLED H2O RETURN	* X-66	31-326			
			31-327			
			31-3392			
2-SI-31-701	INSTRUMENT ROOM CHILLED H2O SUPPLY	* X-67	31-329			
			31-330			
			31-3378			
2-SI-67-701B	UPPER CONTAINMENT ERCW SUPPLY	X-68	67-141			
			67-580D			

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CONTAINMENT ISOLATION VALVES SUBJECTED TO TYPE C TESTING

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

SURVEILLANCE INSTRUCTION NO.	DESCRIPTION	PEN NO.	ISOL VALVE NO.	LEAKAGE RATE SCFH	MAX PATH LEAKAGE	INITIAL/DATE
2-SI-67-701A	UPPER CONTAINMENT ERCW SUPPLY	X-69	67-130			
			67-580A			
2-SI-67-701B	UPPER CONTAINMENT ERCW RETURN	X-70	67-139			
			67-297			
			67-585B			
2-SI-67-701A	UPPER CONTAINMENT ERCW RETURN	X-71	67-134			
			67-296			
			67-585C			
2-SI-67-701B	UPPER CONTAINMENT ERCW RETURN	X-72	67-142			
			67-298			
			67-585D			
2-SI-67-701A	UPPER CONTAINMENT ERCW RETURN	X-73	67-131			
			67-295			
			67-585A			

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CONTAINMENT ISOLATION VALVES SUBJECTED TO TYPE C TESTING

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

SURVEILLANCE INSTRUCTION NO.	DESCRIPTION	PEN NO.	ISOL VALVE NO.	LEAKAGE RATE SCFH	MAX PATH LEAKAGE	INITIAL/DATE
2-SI-67-701B	UPPER CONTAINMENT ERCW SUPPLY	X-74	67-138			
			67-580B			
2-SI-67-701A	UPPER CONTAINMENT ERCW SUPPLY	X-75	67-133			
			67-580C			
2-SI-33-701	SERVICE AIR	* X-76	33-732			
			33-733			
2-SI-59-701	DEMINERALIZED WATER	* X-77	59-522			
			59-698			
2-SI-26-701	FIRE PROTECTION	* X-78	26-240			
			26-1260			
2-SI-30-701	LOWER COMPARTMENT PRESS RELIEF	X-80	30-37			
			30-40			
2-SI-77-701	RC DRAIN TK TO GAS ANALYZER	* X-81	77-16			
			77-17			

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CONTAINMENT ISOLATION VALVES SUBJECTED TO TYPE C TESTING

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

SURVEILLANCE INSTRUCTION NO.	DESCRIPTION	PEN NO.	ISOL VALVE NO.	LEAKAGE RATE SCFH	MAX PATH LEAKAGE	INITIAL/DATE
2-SI-78-701	REFUEL CAVITY PURIFICATION PUMP SUCT	* X-82	78-560			
			78-561			
2-SI-78-701	REFUEL CAVITY PURIFICATION PUMP DISCH	* X-83	78-557			
			78-558			
2-SI-63-701	PRT TO GAS ANALYZER	* X-84A	68-307			
			68-308			
2-SI-43-701	HOT LEG SAMPLE - LOOPS 1 & 3	* X-85B	43-22			
			43-23			
2-SI-32-701	CONTROL AIR TR-B	* X-90	32-103			
			32-318			
			32-323			
2-SI-32-701	CONTROL AIR TR-A	* X-91	32-81			
			32-328			
			32-333			
2-SI-43-701	ACCUMULATOR SAMPLE	* X-93	43-34			

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CONTAINMENT ISOLATION VALVES SUBJECTED TO TYPE C TESTING

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

SURVEILLANCE INSTRUCTION NO.	DESCRIPTION	PEN NO.	ISOL VALVE NO.	LEAKAGE RATE SCFH	MAX PATH LEAKAGE	INITIAL/DATE
			43-35			
2-SI-90-701	LOWER COMPARTMENT AIR MONITOR INTAKE	* X-94B	90-110			
			90-111			
2-SI-90-701	LOWER COMPARTMENT AIR MONITOR RETURN	* X-94C	90-107			
			90-108			
			90-109			
2-SI-90-701	UPPER COMPARTMENT AIR MONITOR INTAKE	* X-95B	90-116			
			90-117			
2-SI-90-701	UPPER COMPARTMENT AIR MONITOR RETURN	* X-95C	90-113			
			90-114			
			90-115			
2-SI-52-701	ILRT SENSOR LINE	X-96A	52-502			
			52-506			
2-SI-52-701	ILRT SENSOR LINE	X-96B	52-503			
			52-507			

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CONTAINMENT ISOLATION VALVES SUBJECTED TO TYPE C TESTING

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

SURVEILLANCE INSTRUCTION NO.	DESCRIPTION	PEN NO.	ISOL VALVE NO.	LEAKAGE RATE SCFH	MAX PATH LEAKAGE	INITIAL/DATE
2-SI-43-701	HYDROGEN ANALYZER TR-A	* X-99	43-202			
			43-434			
2-SI-43-701	HYDROGEN ANALYZER TR-A	* X-100	43-201			
			43-433			
2-SI-61-701	GLYCOL FLOOR COOLING (FROM)	* X-114	61-110			
			61-122			
			61-745			
2-SI-61-701	GLYCOL FLOOR COOLING (TO)	* X-115	61-96			
			61-97			
			61-692			

* Penetrations subject to bypass leakage.

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CONTAINMENT ISOLATION VALVES SUBJECTED TO TYPE C TESTING

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

(1) MAX PATH TOTAL LEAKAGE RATE _____ SCFH

CALCULATION PERFORMED BY: _____
CALCULATION VERIFIED BY: _____

(2) MAX PATH TOTAL BYPASS LEAKAGE RATE _____ SCFH

CALCULATION PERFORMED BY: _____
CALCULATION VERIFIED BY: _____

1 TOTAL LEAKAGE RATE IS CALCULATED BY ADDING THE LARGEST LEAKAGE RATE FROM EACH PENETRATION.

2 TOTAL BYPASS LEAKAGE RATE IS CALCULATED BY ADDING THE LARGEST LEAKAGE RATE FROM EACH PENETRATION MARKED WITH AN ASTERISK (*).

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VALVES SUBJECTED TO WATER INVENTORY TESTING

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

SURVEILLANCE INSTRUCTION NO.	DESCRIPTION	PENETRATION NO.	VALVE NO.	LEAKAGE RATE CFH	INITIAL/DATE
2-SI-72-701	CONTAINMENT SPRAY HEADER A	X-48A	72-39		(< 0.024 FT^3/HR) (Acc Crit 5.3A) _____
2-SI-72-701	CONTAINMENT SPRAY HEADER B	X-48B	72-2		(< 0.024 FT^3/HR) (Acc Crit 5.3A) _____
2-SI-72-701	RHR SPRAY HEADER A	X-49A	72-40		(< 0.032 FT^3/HR) (Acc Crit 5.3B) _____
2-SI-72-701	RHR SPRAY HEADER B	X-49B	72-41		(< 0.032 FT^3/HR) (Acc Crit 5.3B) _____

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PENETRATIONS SUBJECTED TO TYPE B TESTING

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

SURVEILLANCE INSTRUCTION NO.	DESCRIPTION	PENETRATION NO.	LEAKAGE RATE SCFH	INITIAL/DATE
2-SI-0-702	RCP NO. 1 - NON DIV.	X-121E		
2-SI-0-702	RCP NO. 2 - NON DIV.	X-122E		
2-SI-0-702	RCP NO. 3 - NON DIV.	X-123E		
2-SI-0-702	RCP NO. 4 - NON DIV.	X-124E		
2-SI-0-702	480V POWER - NON-DIV.	X-125E		
2-SI-0-702	480V POWER A	X-126E		
2-SI-0-702	480V POWER B	X-127E		
2-SI-0-702	480V POWER A	X-128E		
2-SI-0-702	480V POWER B	X-129E		
2-SI-0-702	CONTROL - NON-DIV.	X-130E		
2-SI-0-702	480V POWER - NON-DIV.	X-131E		
2-SI-0-702	CONTROL ROD DRIVE POWER	X-132E		
2-SI-0-702	CONTROL ROD DRIVE POWER	X-133E		
2-SI-0-702	480V POWER A	X-134E		
2-SI-0-702	480V POWER A	X-135E		
2-SI-0-702	480V POWER B	X-136E		
2-SI-0-702	480V POWER B	X-137E		
2-SI-0-702	LOW LEVEL - NON-DIV.	X-138E		
2-SI-0-702	PROCESS INSTR. PROTECTION	X-139E		

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PENETRATIONS SUBJECTED TO TYPE B TESTING

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

SURVEILLANCE INSTRUCTION NO.	DESCRIPTION	PENETRATION NO.	LEAKAGE RATE SCFH	INITIAL/DATE
2-SI-0-702	INCORE INSTRUMENTATION	X-140E		
2-SI-0-702	480V POWER A	X-141E		
2-SI-0-702	INCORE INSTRUMENTATION	X-142E		
2-SI-0-702	NIS CHANNEL III	X-143E		
2-SI-0-702	480V POWER - NON-DIV.	X-144E		
2-SI-0-702	CONTROL ROD POS. DETECTION	X-145E		
2-SI-0-702	CONTROL ROD DRIVE POWER	X-146E		
2-SI-0-702	CONTROL A	X-147E		
2-SI-0-702	PROCESS INSTR. CONTROL	X-148E		
2-SI-0-702	LOW LEVEL - NON-DIV.	X-149E		
2-SI-0-702	ANNUNCIATION AND COMMUNICATION	X-150E		
2-SI-0-702	NIS CHANNEL IV	X-151E		
2-SI-0-702	480V POWER - NON-DIV.	X-152E		
2-SI-0-702	LOW LEVEL - NON-DIV.	X-153E		
2-SI-0-702	PROCESS INSTR. CONTROL	X-154E		
2-SI-0-702	480V POWER - NON-DIV.	X-155E		
2-SI-0-702	CONTROL B	X-156E		

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PENETRATIONS SUBJECTED TO TYPE B TESTING

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

SURVEILLANCE INSTRUCTION NO.	DESCRIPTION	PENETRATION NO.	LEAKAGE RATE SCFH	INITIAL/DATE
2-SI-0-702	ANNUNCIATION	X-157E		
2-SI-0-702	PROCESS INSTR. PROTECTION	X-158E		
2-SI-0-702	PROCESS INSTR. CONTROL	X-159E		
2-SI-0-702	ANNUNCIATION AND COMMUNICATION	X-160E		
2-SI-0-702	480V POWER - NON-DIV.	X-161E		
2-SI-0-702	NIS CHANNEL I	X-163E		
2-SI-0-702	CONTROL A	X-164E		
2-SI-0-702	PROCESS INSTR. PROTECTION	X-165E		
2-SI-0-702	CONTROL NON-DIV.	X-166E		
2-SI-0-702	480V POWER - NON-DIV.	X-167E		
2-SI-0-702	CONTROL NON-DIV.	X-168E		
2-SI-0-702	PROCESS INSTR. PROTECTION	X-169E		
2-SI-0-702	PROCESS INSTR. CONTROL	X-170E		
2-SI-0-702	CONTROL NON-DIV.	X-171E		
2-SI-0-702	CONTROL B	X-172E		
2-SI-0-702	CONTROL NON-DIV.	X-173E		
2-SI-0-702	NIS CHANNEL II	X-174E		
2-SI-0-702	EQUIPMENT HATCH (RESILIENT SEAL)	X-1		

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PENETRATIONS SUBJECTED TO TYPE B TESTING

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

SURVEILLANCE INSTRUCTION NO.	DESCRIPTION	PENETRATION NO.	LEAKAGE RATE SCFH	INITIAL/DATE
2-SI-0-702	FUEL TRANSFER TUBE (RESILIENT SEAL)	*X-3		
2-SI-0-702	THIMBLE RENEWAL (RESILIENT SEAL)	X-54		
2-SI-0-702	MAIN STEAM LINE (BELLOWS)	X-13A INNER		
		X-13A OUTER		
2-SI-0-702	MAIN STEAM LINE (BELLOWS)	X-13B INNER		
		X-13B OUTER		
2-SI-0-702	MAIN STEAM LINE (BELLOWS)	X-13C INNER		
		X-13C OUTER		
2-SI-0-702	MAIN STEAM LINE (BELLOWS)	X-13D INNER		
		X-13D OUTER		
2-SI-0-702	MAIN FEEDWATER LINE (BELLOWS)	X-12A INNER		
		X-12A OUTER		

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PENETRATIONS SUBJECTED TO TYPE B TESTING

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

SURVEILLANCE INSTRUCTION NO.	DESCRIPTION	PENETRATION NO.	LEAKAGE RATE SCFH	INITIAL/DATE
2-SI-0-702	MAIN FEEDWATER LINE (BELLOWS)	X-12B INNER		
		X-12B OUTER		
2-SI-0-702	MAIN FEEDWATER LINE (BELLOWS)	X-12C INNER		
		X-12C OUTER		
2-SI-0-702	MAIN FEEDWATER LINE (BELLOWS)	X-12D INNER		
		X-12D OUTER		
2-SI-0-702	RHR PUMP RETURN LINE (BELLOWS)	X-17		
2-SI-0-702	RHR PUMP RETURN LINE (BELLOWS)	X-107		
2-SI-0-702	STEAM GENERATOR BLOWDOWN (BELLOWS)	X-14A		
2-SI-0-702	STEAM GENERATOR BLOWDOWN (BELLOWS)	X-14B		
2-SI-0-702	STEAM GENERATOR BLOWDOWN (BELLOWS)	X-14C		
2-SI-0-702	STEAM GENERATOR BLOWDOWN (BELLOWS)	X-14D		
2-SI-0-702	CHEMICAL & VOLUME CONTROL SYSTEM (BELLOWS)	X-15		

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PENETRATIONS SUBJECTED TO TYPE B TESTING

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

SURVEILLANCE INSTRUCTION NO.	DESCRIPTION	PENETRATION NO.	LEAKAGE RATE SCFH	INITIAL/DATE
2-SI-0-702	LOW HEAD SAFETY INJECTION (BELLOWS)	X-20A		
2-SI-0-702	LOW HEAD SAFETY INJECTION (BELLOWS)	X-20B		
2-SI-0-702	SAFETY INJECTION HOT LEGS (BELLOWS)	X-21		
2-SI-0-702	BIT CHARGING PMP DISCHARGE (BELLOWS)	X-22		
2-SI-0-702	SIS RELIEF VALVE DISCHARGE (BELLOWS)	X-24		
2-SI-0-702	HYDROGEN PURGE (RESILIENT SEAL)	*X-40D		
2-SI-0-702	ICE BLOWING (RESILIENT SEAL)	X-79A		
2-SI-0-702	NEGATIVE RETURN (RESILIENT SEAL)	X-79B		
2-SI-0-702	FEEDWATER BYPASS (BELLOWS)	X-8A INNER		
		X-8A OUTER		
2-SI-0-702	FEEDWATER BYPASS (BELLOWS)	X-8B INNER		
		X-8B OUTER		
2-SI-0-702	FEEDWATER BYPASS (BELLOWS)	X-8C INNER		
		X-8C OUTER		
2-SI-0-702	FEEDWATER BYPASS (BELLOWS)	X-8D INNER		
		X-8D OUTER		
2-SI-0-702	ACCUM. TO HOLDUP TANK (BELLOWS)	X-30		
2-SI-0-702	GLYCOL (BELLOWS)	X-47A		

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PENETRATIONS SUBJECTED TO TYPE B TESTING

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

SURVEILLANCE INSTRUCTION NO.	DESCRIPTION	PENETRATION NO.	LEAKAGE RATE SCFH	INITIAL/DATE
2-SI-0-702	GLYCOL (BELLOWS)	X-47B		
2-SI-0-702	R. C. DRAIN TANK TO GAS ANALYZER (BELLOWS)	X-81		
2-SI-0-702	TESTABLE SPARE (RESILIENT SEAL)	*X-108		
2-SI-0-702	MAINTENANCE PORT (BELLOWS)	X-108		
2-SI-0-702	TESTABLE SPARE (RESILIENT SEAL)	*X-109		
2-SI-0-702	MAINTENANCE PORT (BELLOWS)	X-109		
2-SI-0-702	STEAM GEN. CLEANUP (RESILIENT SEAL)	X-36		
2-SI-0-702	MAINTENANCE PORT (RESILIENT SEAL)	X-37		
2-SI-0-702	MAINTENANCE PORT (RESILIENT SEAL)	X-117		
2-SI-0-702	LAYUP WATER (RESILIENT SEAL)	X-118		
2-SI-0-702	HIGH HEAD SIS (BELLOWS)	X-32		
2-SI-0-702	HIGH HEAD SIS (BELLOWS)	X-33		
2-SI-0-702	R. C. DRAIN TANK (BELLOWS)	X-45		
2-SI-0-702	R. C. DRAIN TANK (BELLOWS)	X-46		

* Penetrations subject to bypass leakage.

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PENETRATIONS SUBJECTED TO TYPE B TESTING

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

(1) TOTAL LEAKAGE RATE _____ SCFH

CALCULATION PERFORMED BY: _____
CALCULATION VERIFIED BY: _____

(2) TOTAL BYPASS LEAKAGE RATE _____ SCFH

CALCULATION PERFORMED BY: _____
CALCULATION VERIFIED BY: _____

1 TOTAL LEAKAGE RATE IS CALCULATED BY ADDING THE LEAKAGE RATE FROM EACH PENETRATION.

2 TOTAL BYPASS LEAKAGE RATE IS CALCULATED BY ADDING THE LEAKAGE RATE FROM EACH PENETRATION MARKED WITH AN ASTERISK (*).

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PENETRATIONS SUBJECTED TO TYPE B TESTING

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

SURVEILLANCE INSTRUCTION NO.	DESCRIPTION	PENETRATION NO.	LEAKAGE RATE-SCFH	ACCEPTANCE CRITERIA	INITIAL/DATE
2-SI-0-704	PERSONNEL HATCH (OVERALL)	* X-2A		(≤ 12.05 SCFH) (Acc Crit 5.5)	
2-SI-0-705	PERSONNEL HATCH (OVERALL)	* X-2B		(≤ 12.05 SCFH) (Acc Crit 5.5)	
2-SI-0-706	PERSONNEL HATCH (RESILIENT SEAL)	X-2A INNER		(≤ 2.41 SCFH) (Acc Crit 5.4)	
		X-2A OUTER		(≤ 2.41 SCFH) (Acc Crit 5.4)	
2-SI-0-707	PERSONNEL HATCH (RESILIENT SEAL)	X-2B INNER		(≤ 2.41 SCFH) (Acc Crit 5.4)	
		X-2B OUTER		(≤ 2.41 SCFH) (Acc Crit 5.4)	

* Penetrations subject to bypass leakage.

Appendix G
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LOCAL LEAK RATE SUMMARY

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

Total Leakage Tabulation

Personnel Hatch X-2A Overall Leakage (from Appendix F) _____ SCFH

Personnel Hatch X-2B Overall Leakage (from Appendix F) _____ SCFH

Total Type B Penetration Leakage (from Appendix F) _____ SCFH

Total Type C Isolation Valve Leakage (from Appendix D) _____ SCFH

TOTAL _____ (≤ 147.89 SCFH) (**Acc Crit 5.1**)

CALCULATION PERFORMED BY: _____
CALCULATION VERIFIED BY: _____

Total Bypass Leakage Tabulation (Penetrations marked with an asterisk (*))

Personnel Hatch X-2A Overall Leakage (from Appendix F) _____ SCFH

Personnel Hatch X-2B Overall Leakage (from Appendix F) _____ SCFH

Total Type B Penetration Bypass Leakage (from Appendix F) _____ SCFH

Total Type C Isolation Valve Bypass Leakage (from Appendix D) _____ SCFH

TOTAL _____ (≤ 61.62 SCFH) (**Acc Crit 5.2**)

CALCULATION PERFORMED BY: _____
CALCULATION VERIFIED BY: _____

Source Notes
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Requirements Statement	Source Document	Implementing Statement
None		