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

March 7, 2011

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

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

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

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

PTI NUMBER	Rev.	TITLE
2-PTI-030E-01	0	Containment Air Return Fans
2-PTI-061-01	0	Ice Condenser System
2-PTI-077-02	0	Gaseous Waste Disposal System

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

Respectfully,

David Stinson
Watts Bar Unit 2 Vice President

D030
NRR

cc (Enclosures):

U. S. Nuclear Regulatory Commission
Region II
Marquis One Tower
245 Peachtree Center Ave., NE Suite 1200
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NRC Resident Inspector Unit 2
Watts Bar Nuclear Plant
1260 Nuclear Plant Road
Spring City, Tennessee 37381

WATTS BAR NUCLEAR PLANT
UNIT 2 PREOPERATIONAL TEST

TITLE: Containment Air Return Fans

Instruction No: 2-PTI-030E-01

Revision No: 0000

PREPARED BY: Keith Jones Keith Jones DATE: 12-8-10
PRINT NAME / SIGNATURE

REVIEWED BY: Bethany Merriman Bethany B Merriman DATE: 12-10-10
PRINT NAME / SIGNATURE

INSTRUCTION APPROVAL

JTG MEETING No: 2-11-006

JTG CHAIRMAN: _____ DATE: 3/3/11

APPROVED BY : _____ DATE: 3/3/11
PREOPERATIONAL STARTUP MANAGER

TEST RESULTS APPROVAL

JTG MEETING No: _____

JTG CHAIRMAN: _____ DATE: _____

APPROVED BY : _____ DATE: _____
PREOPERATIONAL STARTUP MANAGER

Revision Log

Revision or Change Number	Effective Date	Affected Page Numbers	Description of Revision/Change
0000	3/3/11	ALL	This procedure is written using the Unit 1 PTI-030L-01 Rev 0 as a guide. The Air Return Fans' flow instrumentation has been disabled and is not in the scope of this test.

Table of Contents

Table of Contents (continued)

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1.0 INTRODUCTION

1.1 Test Objectives

Demonstrate the proper operation of the Containment Air Return Fans, including associated dampers and hydrogen collection headers.

1.2 Scope

This test demonstrates the operability of the Unit 2 Containment Air Return System to ensure the following:

A. The Air Return Fans operate correctly from their respective handswitches in the Main Control Room and on the 480V Shutdown Boards, and their indicating lights indicate correct status.

B. The Air Return Fans can recirculate air through the Ice Condenser at or above the design air flow, including that from the hydrogen collection headers.

C. The Air Return Fans' backdraft dampers remain closed unless their respective fan is running.

D. The Air Return Fans start approximately 9 minutes after a Phase B Containment Isolation Signal and remain running after reset of that signal.

E. The Air Return Fans will operate correctly during accident conditions.

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2.0 REFERENCES

2.1 Performance References

A. SMP-9.0, Test Conduct

B. GTM-05, HVAC Air Balance

2.2 Developmental References

A. Final Safety Analysis Report, Amendment 101

1. Section 6.8, Air Return Fans

2. Table 14.2-1, Sheets 38 & 39, Containment Ventilation System Test Summary

B. Drawings

1. Flow Diagrams

a. 2-47W866-1, Rev 2, HEATING AND VENTILATION AIR FLOW DRA 53788-020, Rev 0

2. Electrical

a. 2-45W760-30-13, Rev 0, VENTILATING SYSTEM SCHEMATIC DIAGRAMS

b. 2-47W760-30-8, Rev 1, VENTILATING SYSTEM SCHEMATIC DIAGRAMS

c. 1-45W760-30-21, Rev 10, VENTILATING SYSTEM SCHEMATIC DIAGRAMS

d. 2-45W600-30-7, Rev 1, VENTILATING SYSTEM SCHEMATIC DIAGRAM
DRA 54172-185, Rev 0

e. 1-45W760-55-1A, Rev 13, ANNUNCIATOR SYSTEM SCHEMATIC DIAGRAMS

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2.2 Developmental References (continued)

f. 2-45W600-57-20, Rev 0, SEPARATION MISC AUX RELAYS SCHEMATIC DIAGRAMS

g. 2-45W600-57-21, Rev 0, SEPARATION & MISC AUX RELAYS SCHEMATIC DIAGRAMS

h. 2-45W749-1, Rev 1, 480V SHUTDOWN BD 2A1-A SINGLE LINE DRA 54172-252, Rev 0

i. 2-45W749-4, Rev 2, 480V SHUTDOWN BD 2B2-B SINGLE LINE DRA 54172-253, Rev 0

j. 45N2676-4, REV 16, SOLID STATE PROTECTION SYS TRAIN A CONNECTION DIAGRAM

k. 45N2677-4, REV 18, SOLID STATE PROTECTION SYS TRAIN B CONNECTION DIAGRAM

l. 6947D02 (AC), Rev G, LVME 'DS' SWGR 480V 3 PH 60 HZ SUBSTATION INTERNALS

m. 6947D61, Rev 906, LVME 'DS' SWGR 480V SHUTDOWN BD 2A1-A 480V 3 PH 60 HZ SUBSTATION CONN DIAG UNIT 10

n. 618F938, Rev 913, LVME 'DS' SWGR 480V SHUTDOWN BD 2A1-A 480V 3 PH 60 HZ SUBSTATION CONN DIAG UNIT 6
DRA 53066-030, Rev 0

o. 6947D87, Rev 912, LVME 'DS' SWGR 480V SHUTDOWN BD 2B2-B 480V 3∅ 60 HZ SUBSTATION CONN DIAG UNIT 8 & 9

p. 6947D85, Rev 915, LVME 'DS' SWGR 480V SHUTDOWN BD 2B2-B 480V 3∅ 60 HZ SUBSTATION CONN DIAG UNIT 6
DRA 53069-014, Rev 0
DRA 53069-018, Rev 0

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2.2 Developmental References (continued)

3. Logic/Control

   a. 2-47W610-30-1, Rev 1, ELECTRICAL CONTROL DIAGRAM VENTILATION SYSTEM
   DRA 53788-018, Rev 0
   DRA 54172-295, Rev 0

   b. 2-47W611-30-3, Rev 0, ELECTRICAL LOGIC DIAGRAM VENTILATION SYSTEM
   DRA 53788-019, Rev 0
   DRA 54172-297, Rev 0

4. Other

   a. 2-47B601-55-1, ELECTRICAL INSTRUMENT TABULATION, [Later]
   DRA 52453-04, Rev 0

   b. 2-47B601-55-2, ELECTRICAL INSTRUMENT TABULATION, [Later]
   DRA 52453-05, Rev 0

   c. 2-47B601-55-3, ELECTRICAL INSTRUMENT TABULATION, [Later]
   DRA 52453-06, Rev 0

   d. 2-47B601-55-4, ELECTRICAL INSTRUMENT TABULATION, [Later]
   DRA 52453-07, Rev 0

   e. 2-45B655-6E, Rev 0, MAIN CONTROL ROOM ANNUNCIATOR INPUTS WINDOW BOX XA-55-6E
   DCA 52630-091, Rev 0

   f. 2-45B655-E6E, Rev 0, ANNUNCIATOR WINDOW BOX XA-55-6E ENGRAVING

   g. 2-47A615-0, Rev 1, INTEGRATED COMPUTER SYSTEM TERMINATIONS AND I/O LIST (Pages 9 & 26 of 30)

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2.2 Developmental References (continued)

C. Documents

1. GTM-05, HVAC Air Balance (Draft)
2. WBN2-30RB-4002, Rev 1, Reactor Building Ventilation System
3. 2-TSD-30E-1, Rev 1, Containment Air Return Fans
4. G-37, Rev 4, Testing and Balancing of HVAC Systems During Installation, Modification, and Maintenance
5. Unit 2 Technical Specifications (Draft)
   a. Section 3.3.2 Engineered Safety Feature Actuation System (ESFAS) Instrumentation
   b. Section 3.6.10, Air Return System (ARS)
6. Unit 2 Technical Requirements Manual (Draft)
   a. Section 3.3.2, Engineered Safety Feature Actuation System (ESFAS) Instrumentation
7. 2-SI-99-200, Response Time Scheduling And Verification of Reactor Trip And Engineered Safety Features Systems (Draft)
8. MI-57.002, Rev 39, Westinghouse DS Circuit Breaker Routine Maintenance, Inspection and Testing

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3.0 PRECAUTIONS AND LIMITATIONS

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

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

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

D. IF/THEN steps may be marked N/A if stated condition does not exist.

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

F. All terminal points and connections are to be considered energized. Instrumentation must be used to determine if the circuits are de-energized.

G. Retermination of lifted leads requires that their restored bend radius is equal to or greater than the as-found condition.

H. 480V breaker secondary contact covers removed to support jumper installation/removal must be reinstalled with a torque value of 25-35 in-lbs in accordance with MI-57.002.

I. Air Return Fan Circuit Breakers have Overload Trip Switch (OTS) reset coils. Placing the Handswitch to STOP will energize the OTS Reset Coil and reset the OTS. The OTS Reset Coil should only be energized momentarily; the OTS contact in series with the coil should open to de-energize the coil. To avoid overheating the coil, do not hold Handswitch in STOP if the coil does not de-energize.

J. When installing fuses with actuators, ensure that the actuating rod is oriented correctly to provide for proper alarm initiation and visual indication.

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3.0 PRECAUTIONS AND LIMITATIONS (continued)

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

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

M. Observe all Radiation Protection requirements when working in or near contaminated areas.

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

O. Vibration testing of this system is performed during the GTM-05, HVAC Air Balance for this system.

P. During the performance of this instruction, visual observation of fans and ductwork is required. This includes steady-state and transient operations (fan starts and stops) with visual confirmation that vibration is not excessive.

Q. To verify that transient conditions are not causing excessive vibration, observe components (duct, dampers, fans, etc) during the transient, to the extent practical. If not practical to observe during the transient, verify after the transient that no damage has occurred.

R. If the vibration is determined to be excessive the Test Engineer shall initiate a Test Deficiency Notice.

S. Access to Backdraft Damper 2-BKD-30-550, AIR RETURN FAN A-A BACKDRAFT DAMPER, may require entry into a confined space. Refer to TVA Safety Procedure 801.

T. Maintain the force gauge as close as possible to a perpendicular position to the axis of rotation to assure the most accurate results.

U. Operation of Containment Air Return Fans could create a local personnel hazard due to high noise levels, high air velocity, and the possibility of flying debris. Ensure personnel and loose equipment are clear of fan suction and discharge, and that personnel in the area are cognizant of expected fan start prior to starting an Air Return Fan.

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4.0 PREREQUISITE ACTIONS

NOTE

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

4.1 Preliminary Actions

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

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

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

[3] **ENSURE** changes to the references listed on Appendix A 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 the data package. _____

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4.1 Preliminary Actions (continued)

[5] **EVALUATE** open items in 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 _____

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4.1 Preliminary Actions (continued)

[6] **ENSURE** outstanding Design Change Notices (DCNs), Engineering Document Construction Releases (EDCRs) or Temporary Alterations (TAs) do NOT adversely impact testing, **AND**

ATTACH documentation of DCNs, EDCRs, and TAs that were reviewed to the data package.

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 _____

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

A. SubSection 6.1 _____

B. SubSection 6.2 _____

C. SubSection 6.3 _____

D. SubSection 6.4 _____

E. SubSection 6.5 _____

F. SubSection 6.6 _____

G. SubSection 6.7 _____

H. SubSection 6.8 _____

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4.1 Preliminary Actions (continued)

[8] **ENSURE** Work Order that center-punches a reference mark on the first damper blade arm of Backdraft Dampers 2-BKD-30-550 and 2-BKD-30-543 is complete, **AND**

RECORD the distance measured in the Work Order from the center-punch dimple to the center line of the first blade axle in Data Sheets 1 & 2.

WO No: _____ _____

[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 No: _____ _____

[10] **ATTACH** completed GTM-05 HVAC Air Balance package for system 30E to this instruction. _____

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

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

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

[13] **REVIEW** preventive maintenance records for components with the scope of this test, **AND**

VERIFY no conditions exist that will impact test performance. _____

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4.1 Preliminary Actions (continued)

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

A. SubSection 6.8 _____

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

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 _____

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

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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	REQUIRED ACCURACY	M&TE ID NUMBER	CALIBRATION DUE DATE
Force Gauge	0-50 lbs	±1% of range		
Digital Stopwatch	N/A	±0.1 sec/hr		N/A*
Ammeter (Clamp-on)	600V AC 200A	±2.4% of reading + 1 digit		
Current Probe (Clamp-on)	600V AC 200A	±2.4% of reading		
Chart Recorder	20mm/sec chart speed	±5% of chart speed setting		
Torque Wrench	0-35 in-lbs	±5% of scale		

* Digital stopwatches are calibrated one time only and do not require recalibration.

_____

[2] **ENSURE** the following are available:

A. Non-switched jumpers [2] (for secondary contacts on 480V switchgear) _____

B. Switched jumpers [2] _____

C. Handheld jumper [1] _____

D. Wood wedges (Figure 1) _____

E. 7' × 7' Tarp _____

F. Duct Tape _____

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4.2 Special Tools, Measuring and Test Equipment, Parts, and Supplies (continued)

[3] **ENSURE** Chart Recorder is calibrated for an input of 0-200 Amps AC.

A. SubSection 6.7 _____

B. SubSection 6.8 _____

[4] **VERIFY** 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 _____

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

4.3 Field Preparations

[1] **ENSURE** the following systems are operable and have been placed in service to the extent necessary to support this test:

A. System 55, Annunciator and Sequential Events Recording System _____

B. System 30H, Lower Compartment Coolers _____

C. System 30I, Control Rod Drive Mechanism Coolers _____

D. System 99, Reactor Protection System _____

E. System 212, 480V Shutdown Power _____

F. System 238, 120V AC Preferred Power _____

G. System 261, Integrated Computer System (ICS) _____

NOTES

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

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

- 2-XA-55-6E-138E, PANEL M-9 MOTOR TRIPOUT _____

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4.3 Field Preparations (continued)

[3] **ENSURE** the following ICS points are in scan:

A. HD2030, VENT SYS HS-38A, 88A, 74A, 77A, 83A _____

B. HD2064, VENT SYS HS-39A, 78A, 75A, 92A, 80A _____

C. XD2036, CNTMT AIR RETURN FAN 2A _____

D. XD2037, CNTMT AIR RETURN FAN 2A _____

E. XD2091, CNTMT AIR RETURN FAN 2B _____

F. XD2092, CNTMT AIR RETURN FAN 2B _____

G. XD9055, CNTMT AIR RETURN FAN 2B _____

H. XD9107, CNTMT AIR RETURN FAN 2A _____

[4] **VERIFY** there are no Unit 2 Phase B Containment Isolation Signals present by the ∅B window NOT LIT on either the TR-A or TR-B MASTER ISOL SIGNAL STATUS PNLs (Window 3 on 2-XX-55-6C and 2-XX-55-6D) on 2-M-6. _____

[5] **ENSURE** system is configured in accordance with Appendix C, Electrical Lineup. _____

[6] **ENSURE** the following Throttling Valves are NOT CLOSED:

- 2-THV-30-541, UPPER REACTOR COMPT HYDROGEN COLLECTION EXH _____
- 2-THV-30-542, UPPER REACTOR COMPT HYDROGEN COLLECTION EXH _____

[7] **ENSURE** any required ladders, scaffolding, and/or Confined Space Permits required to access Backdraft Damper 2-BKD-30-550, AIR RETURN FAN A-A BACKDRAFT DAMPER, are in place.

A. SubSection 6.1 _____

B. SubSection 6.7 _____

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4.3 Field Preparations (continued)

[8] **ENSURE** 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.

A. SubSection 6.1 _____

B. SubSection 6.2 _____

C. SubSection 6.3 _____

D. SubSection 6.4 _____

E. SubSection 6.7 _____

F. SubSection 6.8 _____

[9] **INSTALL** switched jumpers at the following locations, **AND**

ENSURE that the jumper switches are OPEN (OFF).

[9.1] Labeled TS-1:
In SSPS Train-A Output Cabinet 2-R-48, at TB615, between Pt. 5 (Wire A110CC3) and Pt. 6 (Wire A110CCP).
(45N2676-4)

A. Jumper Installed _____ 1st _____ CV

B. Jumper Switch OPEN (OFF) _____

[9.2] Labeled TS-2:
In SSPS Train-B Output Cabinet 2-R-51, at TB615, between Pt. 5 (Wire B29CC3) and Pt. 6 (Wire B29CCP).
(45N2677-4)

A. Jumper Installed _____ 1st _____ CV

B. Jumper Switch OPEN (OFF) _____

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4.4 Approvals and Notifications

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

_____ _____
Preoperational Startup Manager Signature — Date

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

_____ _____
Unit 2 US/SRO/SM Signature — Date

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

_____ _____
Unit 1 US/SRO/SM Signature — Date

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5.0 ACCEPTANCE CRITERIA

NOTE

Acceptance Criteria values have been adjusted to account for instrument inaccuracies. See Appendix D for calculation basis.

A. Air Return Fan Backdraft Dampers

1. The Air Return Fan Backdraft Dampers operate correctly:

Backdraft Damper	Indicating Lights	Fails Closed	Opening Torque ≤ 89 in-lbs[1]
2-BKD-30-550	6.1[7] 6.1[8]B	6.1[8]A	6.1[6]
2-BKD-30-543	6.2[7] 6.2[8]B	6.2[8]A	6.2[6]

[1] Required value is 92.4 in-lbs, reduced to 89 in-lbs to account for instrument inaccuracies

2. The Hydrogen Collection Header Backdraft Dampers operate correctly:

Backdraft Damper	Position When Air Return Fan 2A-A is Running	Position When Air Return Fan 2B-B is Running
2-BKD-30-581	OPEN: 6.7[23]	CLOSED: 6.8[23]
2-BKD-30-582	OPEN: 6.7[23]	CLOSED: 6.8[23]
2-BKD-30-583	OPEN: 6.7[23]	CLOSED: 6.8[23]
2-BKD-30-580	CLOSED: 6.7[23]	OPEN: 6.8[23]
2-BKD-30-584	CLOSED: 6.7[23]	OPEN: 6.8[23]
2-BKD-30-585	CLOSED: 6.7[23]	OPEN: 6.8[23]

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5.0 ACCEPTANCE CRITERIA (continued)

B. Air Return Fans

1. The Air Return Fans manual and automatic controls, interlocks, and indications operate correctly:

Fan	Controls and Indications (Main Control Room and/or remote)	Can be isolated from outside the Main Control Room
2-FAN-30-38	Section 6.3	6.3[17]
2-FAN-30-39	Section 6.4	6.4[17]

2. The Air Return Fans respond appropriately to Engineered Safety Feature Actuation System (ESFAS) signals:

Fan	Phase B (ØB) Containment Isolation Signal		
	Starts 9 min ± 1 min (8 to 10 min) after ØB	Remains on after ØB is reset	Motor Response Time is ≤ 9.5 seconds[2]
2-FAN-30-38	6.3[14]	6.3[15]	6.7[16.6]
2-FAN-30-39	6.4[14]	6.4[15]	6.8[16.6]

[2] Required value for motor response time is 10 seconds, reduced to 9.5 seconds to account for instrument inaccuracies.

3. The Air Return Fan motors can operate correctly during Design Basis Accident conditions:

Fan	Design Density Motor Horsepower is ≤ Motor Nameplate Horsepower[3]
2-FAN-30-38	6.5[11]
2-FAN-30-39	6.6[11]

[3] Nameplate HP = 100 HP, reduced to 94 HP to account for instrument inaccuracies

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5.0 ACCEPTANCE CRITERIA (continued)

4. The Air Return Fan motors operate correctly with their suction dampers closed:

Fan	Motor Running Amps are between 56 and 91 Amps[4]
2-FAN-30-38	6.7[20]
2-FAN-30-39	6.8[20]

[4] Required value is 54 to 94 Amps, margin reduced to 56 to 91 Amps to account for instrument inaccuracies

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5.0 ACCEPTANCE CRITERIA (continued)

5. With an unloaded Ice Condenser, Air Return Fan 2A-A provides the required minimum air flows:

Air Flow (CFM)		Step
Total:	41,885	6.5[4]A
Total Free:[5]	39,000	6.5[6]
Total from Upper to Lower Compartment:[6]	40,000	6.5[7]
Train A Containment Dome Hydrogen Collector:	1000	6.5[4]B
Train A Rx Cavity Hydrogen Collector:	275	6.5[4]C
Accumulator Room 1 Hydrogen Collector:	25	6.5[4]E
Accumulator Room 2 Hydrogen Collector:	25	6.5[4]G
Accumulator Room 3 Hydrogen Collector:	40	6.5[4]H
Accumulator Room 4 Hydrogen Collector:	60	6.5[4]D
Incore Instrument Room Hydrogen Collector:	85	6.5[4]F
Steam Generator 1 Enclosure Hydrogen Collector:	275	6.5[4]J
Steam Generator 2 Enclosure Hydrogen Collector:	275	6.5[4]M
Steam Generator 3 Enclosure Hydrogen Collector:	275	6.5[4]N
Steam Generator 4 Enclosure Hydrogen Collector:	275	6.5[4]I
Pressurizer Enclosure Hydrogen Collector:[7]	137.5	6.5[4]K, 6.5[4]L
Total from Dead-Ended Spaces:[8]	1885	6.5[5]

[5] Does not include air flow from any of the Hydrogen Collection Headers

[6] Confirms Backdraft Damper does not impede airflow

[7] The Pressurizer Enclosure has 2 Hydrogen Collection Header suctions, each with a design flow of 138 CFM.

[8] Sum of air flows from Reactor Cavity, Accumulator Rms, Incore Inst Rm, and S/G & Pzr Enclusures.

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

5.0 ACCEPTANCE CRITERIA (continued)

6. With an unloaded Ice Condenser, Air Return Fan 2B-B provides the required minimum air flows:

Air Flow (CFM)		Step
Total:	41,885	6.6[4]A
Total Free:[9]	39,000	6.6[6]
Total from Upper to Lower Compartment:[10]	40,000	6.6[7]
Train B Containment Dome Hydrogen Collector:	1000	6.6[4]B
Train B Rx Cavity Hydrogen Collector:	275	6.6[4]C
Accumulator Room 1 Hydrogen Collector:	25	6.6[4]E
Accumulator Room 2 Hydrogen Collector:	25	6.6[4]G
Accumulator Room 3 Hydrogen Collector:	40	6.6[4]H
Accumulator Room 4 Hydrogen Collector:	60	6.6[4]D
Incore Instrument Room Hydrogen Collector:	85	6.6[4]F
Steam Generator 1 Enclosure Hydrogen Collector:	275	6.6[4]J
Steam Generator 2 Enclosure Hydrogen Collector:	275	6.6[4]M
Steam Generator 3 Enclosure Hydrogen Collector:	275	6.6[4]N
Steam Generator 4 Enclosure Hydrogen Collector:	275	6.6[4]I
Pressurizer Enclosure Hydrogen Collector:[11]	137.5	6.6[4]K, 6.6[4]L
Total from Dead-Ended Spaces:[12]	1885	6.6[5]

[9] Does not include air flow from any of the Hydrogen Collection Headers

[10] Confirms Backdraft Damper does not impede airflow

[11] The Pressurizer Enclosure has 2 Hydrogen Collection Header suctions, each with a design flow of 138 CFM.

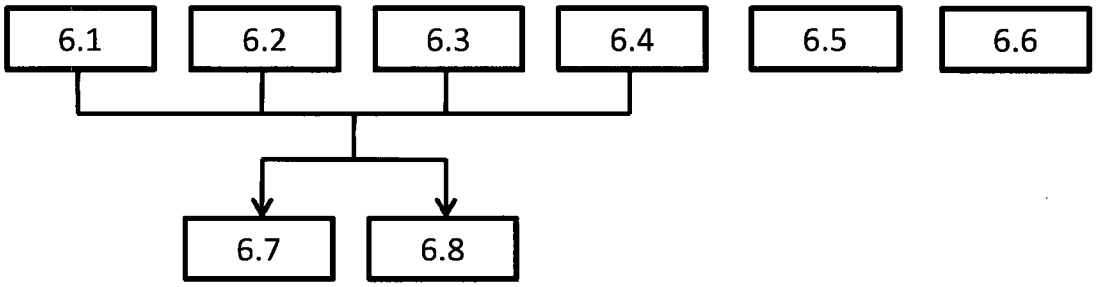
[12] Sum of air flows from Reactor Cavity, Accumulator Rms, Incore Inst Rm, and S/G & Pzr Enclusures..

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

6.0 PERFORMANCE

NOTES

1) The Sections of this test shall be performed per the flow chart below:



2) Sections 6.1 through 6.4 shall be performed first, and in any order, followed by Sections 6.7 and 6.8 (in any order). Sections 6.5 and 6.6 may be performed at any time during this instruction. Unless otherwise noted, steps within each section are to be performed in the order written.

3) Air Return Fan Handswitches in the Main Control Room spring return to A AUTO from START and STOP positions.

4) Air Return Fans and Dampers may have status indication lights at either or both of two locations in the Main Control Room

   - On 2-M-9 at/near their associated Handswitch
   - On 2-M-6, on Train A (2-XX-55-6E) or Train B (2-XX-55-6F) CONTAINMENT ISOL STATUS PNL, hereafter abbreviated in this instruction as CISP.

5) Time measurements are taken in minutes and seconds and recorded in "mm:ss" format, where "mm" represents minutes, and "ss" represents seconds.

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

6.1 Air Return Fan 2A-A Backdraft Damper Functional Test

WARNING

Access to Backdraft Damper 2-BKD-30-550, AIR RETURN FAN A-A BACKDRAFT DAMPER, may require entry into a confined space. Refer to TVA Safety Procedure 801.

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

[2] **VERIFY** the following (locally):

- Fan 2-FAN-30-38, CNTMT AIR RETURN FAN 2A-A, [Lwr Cntmt/734 AZ 250° (Acc Rm 3)], is NOT RUNNING _____
- Backdraft Damper 2-BKD-30-550, AIR RETURN FAN A-A BACKDRAFT DAMPER, [Upr Cntmt/745 AZ 250°], is CLOSED _____

[3] **ENSURE** no debris is present on top of Backdraft Damper 2-BKD-30-550, AIR RETURN FAN A-A BACKDRAFT DAMPER, which may fall through when damper is opened and impede fan operation. _____

[4] **ALIGN** force gauge perpendicular to center-punch mark on first blade arm of Backdraft Damper 2-BKD-30-550, AIR RETURN FAN A-A BACKDRAFT DAMPER. (Refer to Data Sheet 1.) _____

[5] **PUSH** force gauge with steady force, **AND**

RECORD the force required to unseat Backdraft Damper 2-BKD-30-550, AIR RETURN FAN A-A BACKDRAFT DAMPER, on Data Sheet 1. _____

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

6.1 Air Return Fan 2A-A Backdraft Damper Functional Test (continued)

[6] **CALCULATE** the torque required to unseat 2-BKD-30-550, AIR RETURN FAN A-A BACKDRAFT DAMPER, using Data Sheet 1, **AND**

VERIFY it meets acceptance criteria:

Unseating Torque: _____ in-lbs

Acc Crit: 89.0 in-lb maximum

_____

[7] **MANUALLY OPEN** Backdraft Damper 2-BKD-30-550, AIR RETURN FAN A-A BACKDRAFT DAMPER, **AND**

VERIFY Status Light 2-XI-30-72, DAMPER ZS-30-72, on 2-M-9: **(Acc Crit)**

- Green Light OFF _____
- Red Light ON _____

[8] **RELEASE** Backdraft Damper 2-BKD-30-550, AIR RETURN FAN A-A BACKDRAFT DAMPER, **AND**

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

A. Backdraft Damper 2-BKD-30-550 CLOSES _____

B. Status Light 2-XI-30-72, DAMPER ZS-30-72, on 2-M-9:

- Green Light ON _____
- Red Light OFF _____

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

6.2 Air Return Fan 2B-B Backdraft Damper Functional Test

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

[2] **VERIFY** the following (locally):

- Fan 2-FAN-30-39, CNTMT AIR RETURN FAN 2B-B, [Lwr Cntmt/742 AZ 297° (Acc Rm 4)], is NOT RUNNING. _____
- Backdraft Damper 2-BKD-30-543, AIR RETURN FAN B-B BACKDRAFT DAMPER, [Upr Cntmt/757 AZ 297°], is CLOSED. _____

[3] **ENSURE** no debris is present on top of Backdraft Damper 2-BKD-30-543, AIR RETURN FAN B-B BACKDRAFT DAMPER, which may fall through when damper is opened and impede fan operation. _____

[4] **ALIGN** force gauge perpendicular to center-punch mark on first blade arm of Backdraft Damper 2-BKD-30-543, AIR RETURN FAN B-B BACKDRAFT DAMPER. (Refer to Data Sheet 2.) _____

[5] **PUSH** force gauge with steady force, **AND**

RECORD the force required to unseat Backdraft Damper 2-BKD-30-543, AIR RETURN FAN B-B BACKDRAFT DAMPER, on Data Sheet 2. _____

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

6.2 Air Return Fan 2B-B Backdraft Damper Functional Test (continued)

[6] **CALCULATE** the torque required to unseat 2-BKD-30-543, AIR RETURN FAN B-B BACKDRAFT DAMPER, using Data Sheet 2, **AND**

VERIFY it meets acceptance criteria:

Unseating Torque: _____ in-lbs

Acc Crit: 89.0 in-lb maximum

_____

[7] **MANUALLY OPEN** Backdraft Damper 2-BKD-30-543, AIR RETURN FAN B-B BACKDRAFT DAMPER, **AND**

VERIFY Status Light 2-XI-30-73, DAMPER ZS-30-73, on 2-M-9: **(Acc Crit)**

- Green Light OFF _____
- Red Light ON _____

[8] **RELEASE** Backdraft Damper 2-BKD-30-543, AIR RETURN FAN B-B BACKDRAFT DAMPER, **AND**

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

A. Backdraft Damper 2-BKD-30-543 CLOSES _____

B. Status Light 2-XI-30-73, DAMPER ZS-30-73, on 2-M-9:

- Green Light ON _____
- Red Light OFF _____

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

6.3 Air Return Fan 2A-A Logic

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

[2] **RACK OUT** Breaker 2-BKR-30-38, AIR RETURN FAN 2A-A (2-FAN-30-38), [480V SHUTDOWN BOARD 2A1-A, Compartment 10C]. _____

[3] **REMOVE** secondary contact cover on the top rear of Breaker 2-BKR-30-38, AIR RETURN FAN 2A-A (2-FAN-30-38), **AND**

INSTALL temporary jumpers between the following stationary secondary contacts of Breaker 2-BKR-30-38. (Drawing 6947D61)

[3.1] Labeled J-1:
Between Pin 3TP (Wire A110CCC) and Pin 13. _____ 1st _____ CV

[3.2] Labeled J-2:
Between Pin 6TP (Wire A110CTT) and pin 9 (Wire A110CT1). _____ 1st _____ CV

[4] **REPLACE** secondary contact cover on the top rear of Breaker 2-BKR-30-38, AIR RETURN FAN 2A-A (2-FAN-30-38), **THEN**

TORQUE between 25 and 35 in-lbs.

M&TE: _____ _____ 1st _____ CV

[5] **RACK** Breaker 2-BKR-30-38, AIR RETURN FAN 2A-A (2-FAN-30-38), to the TEST position. _____

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

6.3 Air Return Fan 2A-A Logic (continued)

[6] **PRESS** the CNTMT AIR RTN FAN 2A-A TEST CLOSE switch at 480V SHUTDOWN BOARD 2A1-A, Compartment 10C, **AND**

VERIFY the following at Breaker 2-BKR-30-38, AIR RETURN FAN 2A-A (2-FAN-30-38):

- Green Light OFF _____
- Red Light ON _____
- Red Flag at Breaker Panel _____

[7] **PRESS** the CNTMT AIR RTN FAN 2A-A TEST TRIP switch at 480V SHUTDOWN BOARD 2A1-A, Compartment 10C, **AND**

VERIFY the following at Breaker 2-BKR-30-38, AIR RETURN FAN 2A-A (2-FAN-30-38):

- Green Light ON _____
- Red Light OFF _____
- Green Flag at Breaker Panel _____

[8] **ENSURE** Transfer Switch 2-XS-30-38A, CNTMT AIR RETURN FAN 2A-A, [480V SHUTDOWN BOARD 2A1-A, Compartment 6A], is in AVAIL. _____

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

6.3 Air Return Fan 2A-A Logic (continued)

[9] **PLACE** Handswitch 2-HS-30-38A, AIR RETURN FAN A-A, in START, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-38A:

- Green Light OFF _____
- Red Light ON _____
- White Light OFF _____

B. On 2-XX-55-6E, Train A CISP, Window 102, AIR RET A FAN-30-38, [2-M-6]:

- Green Light OFF _____
- Red Light ON _____

C. At 480V Shutdown Board 2A1-A, Compartment 10C:

- Breaker 2-BKR-30-38, Green Light OFF. _____
- Breaker 2-BKR-30-38, Red Light ON. _____

D. ICS Points:

- HD2030, VENT SYS HS-38A, 88A, 74A, 77A, 83A, is NOT P-L _____
- XD2036, CNTMT AIR RETURN FAN 2A, is PWR OFF _____
- XD2037, CNTMT AIR RETURN FAN 2A, is RUNNING _____
- XD9107, CNTMT AIR RETURN FAN 2A, is AVAIL _____

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

6.3 Air Return Fan 2A-A Logic (continued)

[10] **PLACE** Handswitch 2-HS-30-38A, AIR RETURN FAN A-A, in STOP, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-38A:

- Green Light ON _____
- Red Light OFF _____
- White Light OFF _____

B. On 2-XX-55-6E, Train A CISP, Window 102, AIR RET A FAN-30-38:

- Green Light ON _____
- Red Light OFF _____

C. At 480V Shutdown Board 2A1-A, Compartment 10C:

- Breaker 2-BKR-30-38, Green Light ON. _____
- Breaker 2-BKR-30-38, Red Light OFF. _____

D. ICS Points:

- HD2030, VENT SYS HS-38A, 88A, 74A, 77A, 83A, is NOT P-L _____
- XD2036, CNTMT AIR RETURN FAN 2A, is PWR OFF _____
- XD2037, CNTMT AIR RETURN FAN 2A, is NOT RUN _____
- XD9107, CNTMT AIR RETURN FAN 2A, is AVAIL _____

[11] **PLACE** Handswitch 2-HS-30-38A, AIR RETURN FAN A-A, [2-M-9], in A AUTO. _____

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

6.3 Air Return Fan 2A-A Logic (continued)

NOTE

The following steps will simulate a Train A Phase B Containment Isolation Signal and Phase B signal reset by closing and opening a test switch (TS-1) installed in Step 4.3[9.1] in SSPS Train-A Output Cabinet 2-R-48.

[12] **PLACE** Jumper Switch TS-1 in the CLOSED (ON) position, **AND**

START the stopwatch. _____

[13] **STOP** the stopwatch when Air Return Fan 2A-A starts, as indicated by Red Light ON at 2-HS-30-38A, AIR RETURN FAN A-A. _____

[14] **RECORD** the elapsed time indicated on the stopwatch, **AND**

VERIFY it meets Acceptance Criteria:

(mm:ss) _____ : _____

Acc Crit: 9:00 (8:00 - 10:00)

_____

[15] **PLACE** Jumper Switch TS-1 in the OPEN (OFF) position, **AND**

VERIFY on 2-HS-30-38A, AIR RETURN FAN A-A: **(Acc Crit)**

- Green Light OFF _____
- Red Light ON _____
- White Light OFF _____

[16] **PLACE** Transfer Switch 2-XS-30-38A, CNTMT AIR RETURN FAN 2A-A in ISOL. _____

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

6.3 Air Return Fan 2A-A Logic (continued)

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

A. On Handswitch 2-HS-30-38A, AIR RETURN FAN A-A:

- Green Light OFF _____
- Red Light OFF _____
- White Light OFF _____

B. On 2-XX-55-6E, Train A CISP, Window 102, AIR RET A FAN-30-38:

- Green Light OFF _____
- Red Light OFF _____

C. At 480V Shutdown Board 2A1-A, Compartment 10C:

- Breaker 2-BKR-30-38, Green Light ON. _____
- Breaker 2-BKR-30-38, Red Light OFF. _____

D. ICS Points:

- HD2030, VENT SYS HS-38A, 88A, 74A, 77A, 83A, is NOT P-L _____
- XD2036, CNTMT AIR RETURN FAN 2A, is PWR OFF _____
- XD2037, CNTMT AIR RETURN FAN 2A, is NOT RUN _____
- XD9107, CNTMT AIR RETURN FAN 2A, is ISOLATE _____

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

6.3 Air Return Fan 2A-A Logic (continued)

[18] **PLACE** Handswitch 2-HS-30-38A, AIR RETURN FAN A-A, to START, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-38A:

- Green Light OFF _____
- Red Light OFF _____
- White Light OFF _____

B. At 480V Shutdown Board 2A1-A, Compartment 10C:

- Breaker 2-BKR-30-38, Green Light ON. _____
- Breaker 2-BKR-30-38, Red Light OFF. _____

[19] **MOMENTARILY PLACE** a handheld jumper across Terminal Points T1 and M1 (wire A110CC2 and A110CC1) of Time Delay Relay 2-02-30-38, RELAY FOR CNTMT AIR RET FAN 2A-A, (TDCI), [480V SHUTDOWN BOARD 2A1-A, Compartment 6A]. (Drawing 618F938)

_____ 1st

_____ CV

[20] **VERIFY** the following on 480V Shutdown Board 2A1-A, Compartment 10C:

- Breaker 2-BKR-30-38, Green Light ON. _____
- Breaker 2-BKR-30-38, Red Light OFF. _____

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

6.3 Air Return Fan 2A-A Logic (continued)

[21] **PLACE** Transfer Switch 2-XS-30-38A, CNTMT AIR RETURN FAN 2A-A in AVAIL, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-38A, AIR RETURN FAN A-A:

- Green Light ON _____
- Red Light OFF _____
- White Light OFF _____

B. 2-XA-55-6E-138E, PANEL M-9 MOTOR TRIPOUT, is CLEAR. _____

C. Motor Tripout Buzzer [2-M-2] is OFF. _____

D. Unit 2 Alarm Events Display Screen indicates 138-E PANEL M-9 MOTOR TRIPOUT, is NORMAL (Green). _____

[22] **PLACE** Transfer Switch 2-XS-30-38A, CNTMT AIR RETURN FAN 2A-A in ISOL. _____

[23] **RACK OUT** Breaker 2-BKR-30-38, AIR RETURN FAN 2A-A (2-FAN-30-38). _____

[24] **REMOVE** front cover of Breaker 2-BKR-30-38, AIR RETURN FAN 2A-A (2-FAN-30-38). _____

[25] **PLACE** Breaker 2-BKR-30-38, AIR RETURN FAN 2A-A (2-FAN-30-38), Overload Trip Switch (OTS) mechanical lock-in lever (DTA plunger) to the TRIP position. _____

[26] **INSTALL** front cover of Breaker 2-BKR-30-38, AIR RETURN FAN 2A-A (2-FAN-30-38). _____

1st

_____

CV

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

6.3 Air Return Fan 2A-A Logic (continued)

[27] **RACK** Breaker 2-BKR-30-38, AIR RETURN FAN 2A-A (2-FAN-30-38), to the TEST position. _____

[28] **VERIFY** the following:

A. White Light on Handswitch 2-HS-30-38A, AIR RETURN FAN A-A, is OFF. _____

B. 2-XA-55-6E-138E, PANEL M-9 MOTOR TRIPOUT, is CLEAR. _____

C. Motor Tripout Buzzer is OFF. _____

D. Unit 2 Alarm Events Display Screen indicates 138-E PANEL M-9 MOTOR TRIPOUT, is NORMAL (Green). _____

[29] **PLACE** Transfer Switch 2-XS-30-38A, CNTMT AIR RETURN FAN 2A-A to AVAIL, **AND**

VERIFY the following:

A. White Light on Handswitch 2-HS-30-38A, AIR RETURN FAN A-A, is ON. _____

B. 2-XA-55-6E-138E, PANEL M-9 MOTOR TRIPOUT, is in ALARM. _____

C. Motor Tripout Buzzer is ON. _____

D. Unit 2 Alarm Events Display Screen indicates 138-E PANEL M-9 MOTOR TRIPOUT, is in ALARM (Red). _____

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

6.3 Air Return Fan 2A-A Logic (continued)

[30] **RESET** the OTS by:

PLACING Handswitch 2-HS-30-38A, AIR RETURN FAN A-A, in STOP, **OR**

PRESSING the OTS Reset button on the front of Breaker 2-BKR-30-38, AIR RETURN FAN 2A-A (2-FAN-30-38), **AND**

VERIFY the following:

A. White Light on Handswitch 2-HS-30-38A is OFF. _____

B. 2-XA-55-6E-138E, PANEL M-9 MOTOR TRIPOUT, is CLEAR. _____

C. Motor Tripout Buzzer is OFF. _____

D. Unit 2 Alarm Events Display Screen indicates 138-E PANEL M-9 MOTOR TRIPOUT, is NORMAL (Green). _____

[31] **RACK** Breaker 2-BKR-30-38, AIR RETURN FAN 2A-A (2-FAN-30-38), to the CONNECTED position, **AND**

VERIFY the following ICS Points:

- HD2030, VENT SYS HS-38A, 88A, 74A, 77A, 83A, is NOT P-L _____
- XD2036, CNTMT AIR RETURN FAN 2A, is PWR ON _____
- XD2037, CNTMT AIR RETURN FAN 2A, is NOT RUN _____
- XD9107, CNTMT AIR RETURN FAN 2A, is AVAIL _____

[32] **RACK** Breaker 2-BKR-30-38, AIR RETURN FAN 2A-A (2-FAN-30-38), to the TEST position. _____

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

6.3 Air Return Fan 2A-A Logic (continued)

[33] **PLACE** Handswitch 2-HS-30-38A, AIR RETURN FAN A-A, to START, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-38A:

- Green Light OFF _____
- Red Light ON _____

[34] **MOMENTARILY PLACE** a handheld jumper at TB 10C2, between Pt. 9 and Pt. 10 (wire A110CTP and A110CT1) in 480V SHUTDOWN BOARD 2A1-A, Compartment 10C. (Drawing 6947D61)

_____ 1st

_____ CV

[35] **VERIFY** at 480V Shutdown Board 2A1-A, Compartment 10C:

- Breaker 2-BKR-30-38, Green Light ON. _____
- Breaker 2-BKR-30-38, Red Light OFF. _____

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

6.3 Air Return Fan 2A-A Logic (continued)

[36] **RECORD** the As-Found Position of the following Handswitches on 2-M-9, **AND**

IF any of the following Handswitches are found in STOP PULL TO LOCK, **THEN**

PLACE that Handswitch in A AUTO.

A. 2-HS-30-74A, LWR CNTMT CLR A-A

As-Found: _____

As Left: _____ _____

B. 2-HS-30-77A, LWR CNTMT CLR C-A

As-Found: _____

As Left: _____ _____

C. 2-HS-30-83A, CRDM CLR A-A

As-Found: _____

As Left: _____ _____

D. 2-HS-30-88A, CRDM CLR C-A

As-Found: _____

As Left: _____ _____

[37] **PLACE** Handswitch 2-HS-30-38A, AIR RETURN FAN A-A, in STOP PULL TO LOCK, **AND**

VERIFY the following ICS Points:

- HD2030, VENT SYS HS-38A, 88A, 74A, 77A, 83A, is PULLT-L _____
- XD2036, CNTMT AIR RETURN FAN 2A, is PWR OFF _____
- XD2037, CNTMT AIR RETURN FAN 2A, is NOT RUN _____
- XD9107, CNTMT AIR RETURN FAN 2A, is AVAIL _____

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

6.3 Air Return Fan 2A-A Logic (continued)

[38] **ENSURE** the following Handswitches on 2-M-9 are returned to their As-Found position recorded in Step 6.3[36].
(The As-Left position recorded in this step should match the As-Found position recorded in step 6.3[36].)

A. 2-HS-30-74A, LWR CNTMT CLR A-A

As-Found: _____

As Left: _____ _____

B. 2-HS-30-77A, LWR CNTMT CLR C-A

As-Found: _____

As Left: _____ _____

C. 2-HS-30-83A, CRDM CLR A-A

As-Found: _____

As Left: _____ _____

D. 2-HS-30-88A, CRDM CLR C-A

As-Found: _____

As Left: _____ _____

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

6.3 Air Return Fan 2A-A Logic (continued)

[39] **RACK OUT** Breaker 2-BKR-30-38, AIR RETURN FAN 2A-A (2-FAN-30-38). _____

[40] **REMOVE** secondary contact cover on the top rear of Breaker 2-BKR-30-38, AIR RETURN FAN 2A-A (2-FAN-30-38), **AND**

REMOVE the temporary jumpers from the following stationary secondary contacts of Breaker 2-BKR-30-38, AIR RETURN FAN 2A-A (2-FAN-30-38). (Drawing 6947D61)

[40.1] Labeled J-1, installed in step 6.3[3.1]: from between Pin 3TP and Pin 13 _____ 1st _____ CV

[40.2] Labeled J-2, installed in step 6.3[3.2]: from between Pin 6TP and Pin 9 _____ 1st _____ CV

[41] **REPLACE** secondary contact cover on the top rear of Breaker 2-BKR-30-38, AIR RETURN FAN 2A-A (2-FAN-30-38), **THEN**

TORQUE between 25 and 35 in-lbs.

M&TE: _____ _____ 1st _____ CV

[42] **RACK** Breaker 2-BKR-30-38, AIR RETURN FAN 2A-A (2-FAN-30-38) to the DISCONNECTED position. _____

[43] **VERIFY** successful completion of this Section 6.3. **(Acc Crit)** _____

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

6.4 Air Return Fan 2B-B Logic

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

[2] **RACK OUT** Breaker 2-BKR-30-39, AIR RETURN FAN 2B-B (2-FAN-30-39), [480V SHUTDOWN BOARD 2B2-B, Compartment 9C]. _____

[3] **REMOVE** secondary contact cover on the top rear of Breaker 2-BKR-30-39, AIR RETURN FAN 2B-B (2-FAN-30-39), **AND**

INSTALL temporary jumpers between the following stationary secondary contacts of Breaker 2-BKR-30-39. (Drawing 6947D87)

[3.1] Labeled J-3:
Between Pin 3TP (Wire B29CCC) and Pin 13. _____ 1st _____ CV

[3.2] Labeled J-4:
Between Pin 6TP (Wire B29CTT) and Pin 9 (Wire B29CT1). _____ 1st _____ CV

[4] **REPLACE** secondary contact cover on the top rear of 2-BKR-30-39, AIR RETURN FAN 2B-B (2-FAN-30-39), **THEN**

TORQUE between 25 and 35 in-lbs.

M&TE: _____ _____ 1st _____ CV

[5] **RACK** Breaker 2-BKR-30-39, AIR RETURN FAN 2B-B (2-FAN-30-39), to the TEST position. _____

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

6.4 Air Return Fan 2B-B Logic (continued)

[6] **PRESS** the CNTMT AIR RETURN FAN 2B-B TEST CLOSE switch at 480V SHUTDOWN BOARD 2B2-B, Compartment 9C, **AND**

VERIFY the following at Breaker 2-BKR-30-39, AIR RETURN FAN 2B-B (2-FAN-30-39):

- Green Light OFF _____
- Red Light ON _____
- Red Flag at Breaker Panel _____

[7] **PRESS** the CNTMT AIR RETURN FAN 2B-B TEST TRIP switch at 480V SHUTDOWN BOARD 2B2-B, Compartment 9C, **AND**

VERIFY the following at Breaker 2-BKR-30-39, AIR RETURN FAN 2B-B (2-FAN-30-39):

- Green Light ON _____
- Red Light OFF _____
- Green Flag at Breaker Panel _____

[8] **ENSURE** Transfer Switch 2-XS-30-39A, CNTMT AIR RETURN FAN 2B-B, [480V SHUTDOWN BOARD 2B2-B, Compartment 6A], is in AVAIL. _____

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

6.4 Air Return Fan 2B-B Logic (continued)

[9] **PLACE** Handswitch 2-HS-30-39A, AIR RETURN FAN B-B, in START, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-39A:

- Green Light OFF _____
- Red Light ON _____
- White Light OFF _____

B. On 2-XX-55-6F, Train B CISP, Window 102, AIR RET B FAN-30-39, [2-M-6]:

- Green Light OFF _____
- Red Light ON _____

C. At 480V Shutdown Board 2B2-B, Compartment 9C:

- Breaker 2-BKR-30-39, Green Light OFF. _____
- Breaker 2-BKR-30-39, Red Light ON. _____

D. ICS Points:

- HD2064, VENT SYS HS-39A, 78A, 75A, 92A, 80A, is NOT P-L _____
- XD2091, CNTMT AIR RETURN FAN 2B, is PWR OFF _____
- XD2092, CNTMT AIR RETURN FAN 2B, is RUNNING _____
- XD9055, CNTMT AIR RETURN FAN 2B, is AVAIL _____

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

6.4 Air Return Fan 2B-B Logic (continued)

[10] **PLACE** Handswitch 2-HS-30-39A, AIR RETURN FAN B-B in STOP, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-39A:

- Green Light ON _____
- Red Light OFF _____
- White Light OFF _____

B. On 2-XX-55-6F, Train B CISP, Window 102, AIR RET B FAN-30-39, [2-M-6]:

- Green Light ON _____
- Red Light OFF _____

C. At 480V Shutdown Board 2B2-B, Compartment 9C:

- Breaker 2-BKR-30-39, Green Light ON. _____
- Breaker 2-BKR-30-39, Red Light OFF. _____

D. ICS Points:

- HD2064, VENT SYS HS-39A, 78A, 75A, 92A, 80A, is NOT P-L _____
- XD2091, CNTMT AIR RETURN FAN 2B, is PWR OFF _____
- XD2092, CNTMT AIR RETURN FAN 2B, is NOT RUN _____
- XD9055, CNTMT AIR RETURN FAN 2B, is AVAIL _____

[11] **PLACE** Handswitch 2-HS-30-39A, AIR RETURN FAN B-B, [2-M-9], in A AUTO. _____

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

6.4 Air Return Fan 2B-B Logic (continued)

NOTE

The following steps will simulate a Train B Phase B Containment Isolation Signal and Phase B signal reset by closing and opening a test switch (TS-2) installed in Step 4.3[9.2] in SSPS Train-B Output Cabinet 2-R-51.

[12] **PLACE** Jumper Switch TS-2 in the CLOSED (ON) position, **AND**

START the stopwatch. _____

[13] **STOP** the stopwatch when Air Return Fan 2B-B starts, as indicated by Red Light ON at 2-HS-30-39A, AIR RETURN FAN B-B. _____

[14] **RECORD** the elapsed time indicated on the stopwatch, **AND**

VERIFY it meets Acceptance Criteria:

(mm:ss) _____ : _____

Acc Crit: 9:00 (8:00 - 10:00)

_____

[15] **PLACE** Jumper Switch TS-2 in the OPEN (OFF) position, **AND**

VERIFY on 2-HS-30-39A, AIR RETURN FAN B-B: **(Acc Crit)**

- Green Light OFF _____
- Red Light ON _____
- White Light OFF _____

[16] **PLACE** Transfer Switch 2-XS-30-39A, CNTMT AIR RETURN FAN 2B-B in ISOL. _____

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

6.4 Air Return Fan 2B-B Logic (continued)

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

A. On Handswitch 2-HS-30-39A, AIR RETURN FAN B-B:

- Green Light OFF _____
- Red Light OFF _____
- White Light OFF _____

B. On 2-XX-55-6F, Train B CISP, Window 102, AIR RET B FAN-30-39, [2-M-6]:

- Green Light OFF _____
- Red Light OFF _____

C. At 480V Shutdown Board 2B2-B, Compartment 9C:

- Breaker 2-BKR-30-39, Green Light ON. _____
- Breaker 2-BKR-30-39, Red Light OFF. _____

D. ICS Points:

- HD2064, VENT SYS HS-39A, 78A, 75A, 92A, 80A, is NOT P-L _____
- XD2091, CNTMT AIR RETURN FAN 2B, is PWR OFF _____
- XD2092, CNTMT AIR RETURN FAN 2B, is NOT RUN _____
- XD9055, CNTMT AIR RETURN FAN 2B, is ISOLATE _____

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

6.4 Air Return Fan 2B-B Logic (continued)

[18] **PLACE** Handswitch 2-HS-30-39A, AIR RETURN FAN B-B, to START, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-39A:

- Green Light OFF _____
- Red Light OFF _____
- White Light OFF _____

B. At 480V Shutdown Board 2B2-B, Compartment 9C:

- Breaker 2-BKR-30-39, Green Light ON. _____
- Breaker 2-BKR-30-39, Red Light OFF. _____

[19] **MOMENTARILY PLACE** a handheld jumper across Terminal Points T1 and M1 (wire B29CC2 and B29CC1) of Time Delay Relay 2-02-30-39, RELAY FOR CNTMT AIR RET FAN 2B-B, (TDCI), [480V SHUTDOWN BOARD 2B2-B, Compartment 6A]. (Drawing 6947D85)

_____ 1st

_____ CV

[20] **VERIFY** the following on 480V Shutdown Board 2B2-B, Compartment 9C:

- Breaker 2-BKR-30-39, Green Light ON. _____
- Breaker 2-BKR-30-39, Red Light OFF. _____

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

6.4 Air Return Fan 2B-B Logic (continued)

[21] **PLACE** Transfer Switch 2-XS-30-39A, CNTMT AIR RETURN FAN 2B-B in AVAIL, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-39A, AIR RETURN FAN B-B:

- Green Light ON _____
- Red Light OFF _____
- White Light OFF _____

B. 2-XA-55-6E-138E, PANEL M-9 MOTOR TRIPOUT, is CLEAR. _____

C. Motor Tripout Buzzer [2-M-2] is OFF. _____

D. Unit 2 Alarm Events Display Screen indicates 138-E PANEL M-9 MOTOR TRIPOUT, is NORMAL (Green). _____

[22] **PLACE** Transfer Switch 2-XS-30-39A, CNTMT AIR RETURN FAN 2B-B in ISOL. _____

[23] **RACK** Breaker 2-BKR-30-39, AIR RETURN FAN 2B-B (2-FAN-30-39), to the REMOVED position. _____

[24] **REMOVE** front cover of Breaker 2-BKR-30-39, AIR RETURN FAN 2B-B (2-FAN-30-39). _____

[25] **PLACE** Breaker 2-BKR-30-39, AIR RETURN FAN 2B-B (2-FAN-30-39) Overload Trip Switch (OTS) mechanical lock-in lever (DTA plunger) to the TRIP position. _____

[26] **INSTALL** front cover of Breaker 2-BKR-30-39, AIR RETURN FAN 2B-B (2-FAN-30-39). _____

1st _____

CV

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

6.4 Air Return Fan 2B-B Logic (continued)

[27] **RACK** Breaker 2-BKR-30-39, AIR RETURN FAN 2B-B (2-FAN-30-39), to the TEST position. _____

[28] **VERIFY** the following:

A. White Light on Handswitch 2-HS-30-39A, AIR RETURN FAN B-B, is OFF. _____

B. 2-XA-55-6E-138E, PANEL M-9 MOTOR TRIPOUT, is CLEAR. _____

C. Motor Tripout Buzzer is OFF. _____

D. Unit 2 Alarm Events Display Screen indicates 138-E PANEL M-9 MOTOR TRIPOUT, is NORMAL (Green). _____

[29] **PLACE** Transfer Switch 2-XS-30-39A, CNTMT AIR RETURN FAN 2B-B to AVAIL, **AND**

VERIFY the following:

A. White Light on Handswitch 2-HS-30-39A, AIR RETURN FAN B-B, is ON. _____

B. 2-XA-55-6E-138E, PANEL M-9 MOTOR TRIPOUT, is in ALARM. _____

C. Motor Tripout Buzzer is ON. _____

D. Unit 2 Alarm Events Display Screen indicates 138-E PANEL M-9 MOTOR TRIPOUT, is in ALARM (Red). _____

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

6.4 Air Return Fan 2B-B Logic (continued)

[30] **RESET** the OTS by:

PLACING Handswitch 2-HS-30-39A, AIR RETURN FAN B-B, in STOP, **OR**

PRESSING the OTS Reset button on the front of Breaker 2-BKR-30-39, AIR RETURN FAN 2B-B (2-FAN-30-39), **AND**

VERIFY the following:

A. White Light on Handswitch 2-HS-30-39A is OFF. _____

B. 2-XA-55-6E-138E, PANEL M-9 MOTOR TRIPOUT, is CLEAR. _____

C. Motor Tripout Buzzer is OFF. _____

D. Unit 2 Alarm Events Display Screen indicates 138-E PANEL M-9 MOTOR TRIPOUT, is NORMAL (Green). _____

[31] **RACK** Breaker 2-BKR-30-39, AIR RETURN FAN 2B-B (2-FAN-30-39), to the CONNECTED position, **AND**

VERIFY the following ICS Points:

- HD2064, VENT SYS HS-39A, 78A, 75A, 92A, 80A, is NOT P-L _____
- XD2091, CNTMT AIR RETURN FAN 2B, is PWR ON _____
- XD2092, CNTMT AIR RETURN FAN 2B, is NOT RUN _____
- XD9055, CNTMT AIR RETURN FAN 2B, is AVAIL _____

[32] **RACK** Breaker 2-BKR-30-39, AIR RETURN FAN 2B-B (2-FAN-30-39), to the TEST position. _____

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

6.4 Air Return Fan 2B-B Logic (continued)

[33] **PLACE** Handswitch 2-HS-30-39A, AIR RETURN FAN B-B, to START, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-38A:

- Green Light OFF _____
- Red Light ON _____

[34] **MOMENTARILY PLACE** a handheld jumper at TB 9C2, between Pt. 9 and Pt. 10 (wire B29CTP and B29CT1) in 480V SHUTDOWN BOARD 2B2-B, Compartment 9C. (Drawing 6947D87)

_____ 1st

_____ CV

[35] **VERIFY** at 480V Shutdown Board 2B2-B, Compartment 9C:

- Breaker 2-BKR-30-39, Green Light ON. _____
- Breaker 2-BKR-30-39, Red Light OFF. _____

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

6.4 Air Return Fan 2B-B Logic (continued)

[36] **RECORD** the As-Found Position of the following Handswitches on 2-M-9, **AND**

IF any of the following Handswitches are found in STOP PULL TO LOCK, **THEN**

PLACE that Handswitch in A AUTO.

A. 2-HS-30-75A, LWR CNTMT CLR B-B

As-Found: _____

As Left: _____ _____

B. 2-HS-30-78A, LWR CNTMT CLR D-B

As-Found: _____

As Left: _____ _____

C. 2-HS-30-92A, CRDM CLR B-B

As-Found: _____

As Left: _____ _____

D. 2-HS-30-80A, CRDM CLR D-B

As-Found: _____

As Left: _____ _____

[37] **PLACE** Handswitch 2-HS-30-39A, AIR RETURN FAN B-B, in STOP PULL TO LOCK, **AND**

VERIFY the following ICS Points:

- HD2064, VENT SYS HS-39A, 78A, 75A, 92A, 80A, is PULLT-L _____
- XD2091, CNTMT AIR RETURN FAN 2B, is PWR OFF _____
- XD2092, CNTMT AIR RETURN FAN 2B, is NOT RUN _____
- XD9055, CNTMT AIR RETURN FAN 2B, is AVAIL _____

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

6.4 Air Return Fan 2B-B Logic (continued)

[38] **RETURN** the following Handswitches on 2-M-9 to their As-Found position recorded in Step 6.4[36].
(The As-Left position recorded in this step should match the As-Found position recorded in step 6.4[36].)

A. 2-HS-30-75A, LWR CNTMT CLR B-B

As-Found: _____

As Left: _____ _____

B. 2-HS-30-78A, LWR CNTMT CLR D-B

As-Found: _____

As Left: _____ _____

C. 2-HS-30-92A, CRDM CLR B-B

As-Found: _____

As Left: _____ _____

D. 2-HS-30-80A, CRDM CLR D-B

As-Found: _____

As Left: _____ _____

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

6.4 Air Return Fan 2B-B Logic (continued)

[39] **RACK OUT** Breaker 2-BKR-30-39, AIR RETURN FAN 2B-B (2-FAN-30-39). _____

[40] **REMOVE** secondary contact cover on the top rear of 2-BKR-30-39, AIR RETURN FAN 2B-B (2-FAN-30-39), **AND**

REMOVE the temporary jumpers from the following stationary secondary contacts of Breaker 2-BKR-30-39, AIR RETURN FAN 2B-B (2-FAN-30-39). (Drawing 6947D87)

[40.1] Labeled J-3, installed in Step **Error! Reference source not found.**:
from between Pin 3TP and Pin 13. _____ 1st _____ CV

[40.2] Labeled J-4, installed in Step **Error! Reference source not found.**:
from between Pin 6TP and Pin 9. _____ 1st _____ CV

[41] **REPLACE** secondary contact cover on the top rear of Breaker 2-BKR-30-39, AIR RETURN FAN 2B-B (2-FAN-30-39), **THEN**

TORQUE between 25 and 35 in-lbs.

M&TE: _____ _____ 1st _____ CV

[42] **RACK** Breaker 2-BKR-30-39, AIR RETURN FAN 2B-B (2-FAN-30-39) to the DISCONNECTED position. _____

[43] **VERIFY** successful completion of this Section 6.4. **(Acc Crit)** _____

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

6.5 Air Return Fan 2A-A Performance

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

[2] **ENSURE** motor operating data and air flow measurements (including Hydrogen Collection Headers) for Fan 2-FAN-30-38, CNTMT AIR RETURN FAN 2A-A, has been performed using GTM-05, HVAC Air Balance. _____

[3] **ENSURE** completed GTM-05 data sheets are attached. _____

NOTE

The remaining steps in Section 6.5 record and verify data from the completed GTM-05, HVAC Air Balance Package for system 30E and use that data to perform calculations.

[4] **RECORD** the following air flow measurements, **AND**

VERIFY they meet acceptance criteria

A. Air Return Fan 2A-A total air flow:

_____ CFM

Acc Crit: 41,885 CFM minimum _____

B. Train A Containment Dome Hydrogen Collection Header air flow:

_____ CFM

Acc Crit: 1000 CFM minimum _____

C. Train A Reactor Cavity Hydrogen Collection Header air flow (2-THV-30-542):

_____ CFM

Acc Crit: 275 CFM minimum _____

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

6.5 Air Return Fan 2A-A Performance (continued)

D. Accumulator Room 4 Hydrogen Collection Header air flow (2-OR-30-1112):

_____ CFM

Acc Crit: 60 CFM minimum _____

E. Accumulator Room 1 Hydrogen Collection Header air flow (2-OR-30-1113):

_____ CFM

Acc Crit: 25 CFM minimum _____

F. Incore Instrument Room Hydrogen Collection Header air flow (2-OR-30-1114):

_____ CFM

Acc Crit: 85 CFM minimum _____

G. Accumulator Room 2 Hydrogen Collection Header air flow (2-OR-30-1115):

_____ CFM

Acc Crit: 25 CFM minimum _____

H. Accumulator Room 3 Hydrogen Collection Header air flow (2-OR-30-1116):

_____ CFM

Acc Crit: 40 CFM minimum _____

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

6.5 Air Return Fan 2A-A Performance (continued)

I. Steam Generator 4 Enclosure Hydrogen Collection Header air flow (2-OR-30-1117):

_____ CFM

Acc Crit: 275 CFM minimum _____

J. Steam Generator 1 Enclosure Hydrogen Collection Header air flow (2-OR-30-1118):

_____ CFM

Acc Crit: 275 CFM minimum _____

K. Pressurizer Enclosure Hydrogen Collection Header air flow (2-OR-30-1119):

_____ CFM

Acc Crit: 137.5 CFM minimum _____

L. Pressurizer Enclosure Hydrogen Collection Header air flow (2-OR-30-1120):

_____ CFM

Acc Crit: 137.5 CFM minimum _____

M. Steam Generator 2 Enclosure Hydrogen Collection Header air flow (2-OR-30-1121):

_____ CFM

Acc Crit: 275 CFM minimum _____

N. Steam Generator 3 Enclosure Hydrogen Collection Header air flow (2-OR-30-1122):

_____ CFM

Acc Crit: 275 CFM minimum _____

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

6.5 Air Return Fan 2A-A Performance (continued)

[5] **DETERMINE** the total air flow circulated from the Lower Compartment dead end spaces by summing the measured flow totals recorded in Step 6.5[4]C through Step 6.5[4]N using Data Sheet 5 (ΣH_{DE}), **AND**

VERIFY it meets acceptance criteria

_____ CFM

Acc Crit: 1885 CFM minimum _____

[6] **DETERMINE** the total free air flow transferred from the Upper Compartment to the Lower Compartment (not including the Train-A Containment Dome Hydrogen Collection Header) using Data Sheet 5, (F_F), **AND**

VERIFY it meets acceptance criteria:

_____ CFM

Acc Crit: 39,000 CFM minimum _____

[7] **DETERMINE** the total air flow transferred from the Upper Compartment to the Lower Compartment (including the Train-A Containment Dome Hydrogen Collection Header) using Data Sheet 5, (ΣF_{UL}), **AND**

VERIFY it meets acceptance criteria:

_____ CFM

Acc Crit: 40,000 CFM minimum _____

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

6.5 Air Return Fan 2A-A Performance (continued)

[8] **RECORD** motor current and voltage readings for Motor 2-MTR-30-38, CNTMT AIR RETURN FAN 2A-A, from completed GTM-05, HVAC Air Balance package for system 30E in Data Sheet 5. _____

[9] **RECORD** atmospheric conditions during testing of Air Return Fan 2A-A from the completed GTM-05, HVAC Air Balance package for system 30E in Data Sheet 5. _____

[10] **CALCULATE** the Air Return Fan 2A-A Motor Horsepower at Design Density (HPDD) using Data Sheet 5. _____

[11] **RECORD** the Air Return Fan 2A-A HPDD, **AND**

VERIFY it is less than or equal to the Air Return Fan 2A-A Motor Nameplate Horsepower.

_____ HP

Acc Crit: 94 HP maximum _____

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

6.6 Air Return Fan 2B-B Performance

[1] **ENSURE** prerequisites listed in Section 4.0 for SubSection 6.6 have been completed. _____

[2] **ENSURE** motor operating data and air flow measurements (including Hydrogen Collection Headers) for Fan 2-FAN-30-39, CNTMT AIR RETURN FAN 2B-B, has been performed using GTM-05, HVAC Air Balance. _____

[3] **ENSURE** completed GTM-05 data sheets are attached. _____

NOTE

The remaining steps in Section 6.6 record and verify data from the completed GTM-05, HVAC Air Balance Package for system 30E and use that data to perform calculations.

[4] **RECORD** the following air flow measurements, **AND**

VERIFY they meet acceptance criteria

A. Air Return Fan 2B-B total air flow:

_____ CFM

Acc Crit: 41,885 CFM minimum _____

B. Train B Containment Dome Hydrogen Collection Header air flow:

_____ CFM

Acc Crit: 1000 CFM minimum _____

C. Train B Reactor Cavity Hydrogen Collection Header air flow (2-THV-30-541):

_____ CFM

Acc Crit: 275 CFM minimum _____

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

6.6 Air Return Fan 2B-B Performance (continued)

D. Accumulator Room 4 Hydrogen Collection Header air flow (2-OR-30-1112):

_____ CFM

Acc Crit: 60 CFM minimum _____

E. Accumulator Room 1 Hydrogen Collection Header air flow (2-OR-30-1113):

_____ CFM

Acc Crit: 25 CFM minimum _____

F. Incore Instrument Room Hydrogen Collection Header air flow (2-OR-30-1114):

_____ CFM

Acc Crit: 85 CFM minimum _____

G. Accumulator Room 2 Hydrogen Collection Header air flow (2-OR-30-1115):

_____ CFM

Acc Crit: 25 CFM minimum _____

H. Accumulator Room 3 Hydrogen Collection Header air flow (2-OR-30-1116):

_____ CFM

Acc Crit: 40 CFM minimum _____

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

6.6 Air Return Fan 2B-B Performance (continued)

I. Steam Generator 4 Enclosure Hydrogen Collection Header air flow (2-OR-30-1117):

_____ CFM

Acc Crit: 275 CFM minimum _____

J. Steam Generator 1 Enclosure Hydrogen Collection Header air flow (2-OR-30-1118):

_____ CFM

Acc Crit: 275 CFM minimum _____

K. Pressurizer Enclosure Hydrogen Collection Header air flow (2-OR-30-1119):

_____ CFM

Acc Crit: 137.5 CFM minimum _____

L. Pressurizer Enclosure Hydrogen Collection Header air flow (2-OR-30-1120):

_____ CFM

Acc Crit: 137.5 CFM minimum _____

M. Steam Generator 2 Enclosure Hydrogen Collection Header air flow (2-OR-30-1121):

_____ CFM

Acc Crit: 275 CFM minimum _____

N. Steam Generator 3 Enclosure Hydrogen Collection Header air flow (2-OR-30-1122):

_____ CFM

Acc Crit: 275 CFM minimum _____

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

6.6 Air Return Fan 2B-B Performance (continued)

[5] **DETERMINE** the total air flow circulated from the Lower Compartment dead end spaces by summing the measured flow totals recorded in Step 6.6[4]C through Step 6.6[4]N using Data Sheet 6 (ΣH_{DE}), **AND**

VERIFY it meets acceptance criteria

_____ CFM

Acc Crit: 1885 CFM minimum _____

[6] **DETERMINE** the total free air flow transferred from the Upper Compartment to the Lower Compartment (not including the Train-B Containment Dome Hydrogen Collection Header) using Data Sheet 6, (F_F), **AND**

VERIFY it meets acceptance criteria:

_____ CFM

Acc Crit: 39,000 CFM minimum _____

[7] **DETERMINE** the total air flow transferred from the Upper Compartment to the Lower Compartment (including the Train-B Containment Dome Hydrogen Collection Header) using Data Sheet 6, (ΣF_{UL}), **AND**

VERIFY it meets acceptance criteria:

_____ CFM

Acc Crit: 40,000 CFM minimum _____

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

6.6 Air Return Fan 2B-B Performance (continued)

[8] **RECORD** motor current and voltage readings for Motor 2-MTR-30-39, CNTMT AIR RETURN FAN 2B-B, from completed GTM-05, HVAC Air Balance package for system 30E in Data Sheet 6. _____

[9] **RECORD** atmospheric conditions during testing of Air Return Fan 2B-B from the completed GTM-05, HVAC Air Balance package for system 30E in Data Sheet 6. _____

[10] **CALCULATE** the Air Return Fan 2B-B Motor Horsepower at Design Density (HPDD) using Data Sheet 6. _____

[11] **RECORD** the Air Return Fan 2B-B HPDD, **AND**

VERIFY it is less than or equal to the Air Return Fan 2B-B Motor Nameplate Horsepower.

_____ HP

Acc Crit: 94 HP maximum _____

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

6.7 Operation of Air Return Fan 2A-A with Backdraft Damper Blocked Closed

[1] **ENSURE** prerequisites listed in Section 4.0 for SubSection 6.7 have been completed. _____

[2] **ENSURE** Handswitch 2-HS-30-38A, AIR RETURN FAN A-A, [2-M-9], is in STOP PULL TO LOCK. _____

[3] **RACK** Breaker 2-BKR-30-38, AIR RETURN FAN 2A-A (2-FAN-30-38), [480V SHUTDOWN BOARD 2A1-A, Compartment 10C], to the CONNECTED position. _____

WARNING

Access to Backdraft Damper 2-BKD-30-550, AIR RETURN FAN A-A BACKDRAFT DAMPER, may require entry into a confined space. Refer to TVA Safety Procedure 801.

[4] **VERIFY** the following:

- Fan 2-FAN-30-38, CNTMT AIR RETURN FAN 2A-A, is NOT RUNNING _____
- Backdraft Damper 2-BKD-30-550, AIR RETURN FAN A-A BACKDRAFT DAMPER, is CLOSED _____

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

6.7 Operation of Air Return Fan 2A-A with Backdraft Damper Blocked Closed (continued)

[5] **VERIFY** the following Hydrogen collector Backdraft Damper positions:

- Backdraft Damper 2-BKD-30-581, REACTOR CAVITY H2 COLLECTION HEADER A-A, [Lwr Cntmt/736 AZ 249° (Acc Rm 3)], is CLOSED _____
- Backdraft Damper 2-BKD-30-582, AIR RETURN FAN CROSSTIE HEADER A-A, [Lwr Cntmt/741 AZ 249° (Acc Rm 3)], is CLOSED _____
- Backdraft Damper 2-BKD-30-583, UPPER COMPARTMENT H2 COLLECTION HEADER A-A, [Lwr Cntmt/741 AZ 249° (Acc Rm 3)], is CLOSED _____
- Backdraft Damper 2-BKD-30-580, REACTOR CAVITY H2 COLLECTION HEADER B-B, [Lwr Cntmt/744 AZ 295° (Acc Rm 4)], is CLOSED _____
- Backdraft Damper 2-BKD-30-584, AIR RETURN CROSSTIE HEADER B-B, [Lwr Cntmt/753 AZ 298° (Acc Rm 4)], is CLOSED _____
- Backdraft Damper 2-BKD-30-585, UPPER COMPARTMENT H2 COLLECTION HEADER B-B, [Lwr Cntmt/753 AZ 298° (Acc Rm 4)], is CLOSED _____

[6] **BLOCK** Backdraft Damper 2-BKD-30-550, AIR RETURN FAN A-A BACKDRAFT DAMPER in the CLOSED position by placing wood wedges (Figure 1) between the damper counterweights and the grating lip. _____

[7] **COVER** the damper opening with a 7' x 7' tarp, **AND**

SECURE the tarp in place with duct tape. _____

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

6.7 Operation of Air Return Fan 2A-A with Backdraft Damper Blocked Closed (continued)

WARNING

The following steps require taking current readings in close proximity to energized equipment.

[8] **OPEN** the back of Panel 10 on 480V Shutdown Board 2A1-A to access Compartment 10C. _____

[9] **ENSURE** clamp-on current probe is connected to recorder. _____

[10] **ATTACH** clamp-on current probe and recorder to A-Phase power lead of Cable 2PL4875A. _____ 1st

_____ CV

[11] **ENSURE** chart recorder is set to a chart speed of 20mm/second or greater. _____

[12] **NOTIFY** Personnel in Accumulator Room 3 of expected Air Return Fan 2A-A start. _____

[13] **ENSURE** that personnel and loose equipment are clear of Fan 2-FAN-30-38, CNTMT AIR RETURN FAN 2A-A, suction and discharge. _____

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

6.7 Operation of Air Return Fan 2A-A with Backdraft Damper Blocked Closed (continued)

NOTE

Step 6.7[14] and 6.7[15] are to be performed concurrently

[14] **START** the recorder. _____

[15] **PLACE** Handswitch 2-HS-30-38A, AIR RETURN FAN A-A to START, **AND**

START Stopwatch. _____

[16] **WHEN** current indications stabilize, **THEN**

[16.1] **STOP** the recorder. _____

[16.2] **LABEL** the point where Air Return Fan 2A-A started. _____

[16.3] **LABEL** the point where amperage stabilized. _____

[16.4] **LABEL** the recording as:

2-PTI-030E-01
Air Return Fan 2A-A Motor Response Time
Chart Speed: _____ mm/sec
Time: _____ Date_____ _____

[16.5] **ATTACH** recording to this instruction. _____

[16.6] **DETERMINE** the response time for Motor 2-MTR-30-38, CONTAINMENT AIR RETURN FAN 2A-A, using Data Sheet 3.

Response Time: _____ seconds

Acc Crit: 9.5 seconds maximum

_____

[17] **REMOVE** the clamp-on current probe and recorder from Cable 2PL4875A. _____

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

6.7 Operation of Air Return Fan 2A-A with Backdraft Damper Blocked Closed (continued)

[18] **ATTACH** clamp-on ammeter to A-Phase power lead of Cable 2PL4875A.

_____ 1st

_____ CV

[19] **MEASURE** current through each of the three phase power leads on Cable 2PL4875A using a clamp-on ammeter, **AND**

RECORD current readings on Data Sheet 3. _____

[20] **CALCULATE** the average motor current for Motor 2-MTR-30-38, CONTAINMENT AIR RETURN FAN 2A-A, using Data Sheet 3 (I_{AVG}), **AND**

VERIFY it meets acceptance criteria:

Average Current: _____ Amps

Acc Crit: 56.0 - 91.0 Amps

_____

[21] **REMOVE** the clamp-on ammeter from Cable 2PL4875A.

_____ 1st

_____ CV

[22] **CLOSE** the back of Panel 10 on 480V Shutdown Board 2A1-A.

_____ 1st

_____ CV

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

6.7 Operation of Air Return Fan 2A-A with Backdraft Damper Blocked Closed (continued)

[23] **VERIFY** the following Hydrogen collector Backdraft Damper positions: **(Acc Crit)**

- Backdraft Damper 2-BKD-30-581, REACTOR CAVITY H2 COLLECTION HEADER A-A, is OPEN _____
- Backdraft Damper 2-BKD-30-582, AIR RETURN FAN CROSSTIE HEADER A-A, is OPEN _____
- Backdraft Damper 2-BKD-30-583, UPPER COMPARTMENT H2 COLLECTION HEADER A-A, is OPEN _____
- Backdraft Damper 2-BKD-30-580, REACTOR CAVITY H2 COLLECTION HEADER B-B, is CLOSED _____
- Backdraft Damper 2-BKD-30-584, AIR RETURN CROSSTIE HEADER B-B, is CLOSED _____
- Backdraft Damper 2-BKD-30-585, UPPER COMPARTMENT H2 COLLECTION HEADER B-B, is CLOSED _____

[24] **WHEN** Fan 2-FAN-30-38, CNTMT AIR RETURN FAN 2A-A, has operated continuously for at least 15 minutes as indicated on Stopwatch, **THEN**

[24.1] **STOP** Stopwatch. _____

[24.2] **PLACE** 2-HS-30-38A, AIR RETURN FAN A-A to STOP. _____

[24.3] **RECORD** Air Return Fan 2A-A run time indicated on Stopwatch.

Fan 2A-A Run Time (mm:ss) : _____ : _____

_____

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

6.7 Operation of Air Return Fan 2A-A with Backdraft Damper Blocked Closed (continued)

[25] **WHEN** Fan 2-FAN-30-38, CNTMT AIR RETURN FAN 2A-A, has coasted to a stop, **THEN**

REMOVE Duct tape, tarp and wedges from Backdraft Damper 2-BKD-30-550, AIR RETURN FAN A-A BACKDRAFT DAMPER.

_____ 1st

_____ CV

[26] **REMOVE** temporary test switch labeled TS-1 (installed in step 4.3[9.1]) from between Terminals 5 and 6 at Terminal Strip TB615, located at Panel 2-R-48, SSPS TRAIN A OUTPUT CABINET.

_____ 1st

_____ CV

[27] **CALCULATE** the total response time for Air Return Fan 2A-A (t_{RA}) using Data Sheet 7.

(mm:ss) _____ : _____

_____

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

6.8 Operation of Air Return Fan 2B-B with Backdraft Damper Blocked Closed

[1] **ENSURE** prerequisites listed in Section 4.0 for SubSection 6.8 have been completed. _____

[2] **ENSURE** Handswitch 2-HS-30-39A, AIR RETURN FAN B-B, [2-M-9], is in STOP PULL TO LOCK. _____

[3] **RACK** Breaker 2-BKR-30-39, AIR RETURN FAN 2B-B (2-FAN-30-39), [480V SHUTDOWN BOARD 2A1-A, Compartment 9C], to the CONNECTED position. _____

[4] **VERIFY** the following:

- Fan 2-FAN-30-39, CNTMT AIR RETURN FAN 2B-B, is NOT RUNNING _____
- Backdraft Damper 2-BKD-30-543, AIR RETURN FAN B-B BACKDRAFT DAMPER, is CLOSED _____

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

6.8 Operation of Air Return Fan 2B-B with Backdraft Damper Blocked Closed (continued)

[5] **VERIFY** the following Hydrogen collector Backdraft Damper positions:

- Backdraft Damper 2-BKD-30-581, REACTOR CAVITY H2 COLLECTION HEADER A-A, [Lwr Cntmt/736 AZ 249° (Acc Rm 3)], is CLOSED _____
- Backdraft Damper 2-BKD-30-582, AIR RETURN FAN CROSSTIE HEADER A-A, [Lwr Cntmt/741 AZ 249° (Acc Rm 3)], is CLOSED _____
- Backdraft Damper 2-BKD-30-583, UPPER COMPARTMENT H2 COLLECTION HEADER A-A, [Lwr Cntmt/741 AZ 249° (Acc Rm 3)], is CLOSED _____
- Backdraft Damper 2-BKD-30-580, REACTOR CAVITY H2 COLLECTION HEADER B-B, [Lwr Cntmt/744 AZ 295° (Acc Rm 4)], is CLOSED _____
- Backdraft Damper 2-BKD-30-584, AIR RETURN CROSSTIE HEADER B-B, [Lwr Cntmt/753 AZ 298° (Acc Rm 4)], is CLOSED _____
- Backdraft Damper 2-BKD-30-585, UPPER COMPARTMENT H2 COLLECTION HEADER B-B, [Lwr Cntmt/753 AZ 298° (Acc Rm 4)], is CLOSED _____

[6] **BLOCK** Backdraft Damper 2-BKD-30-543, AIR RETURN FAN B-B BACKDRAFT DAMPER, in the CLOSED position by placing wood wedges (Figure 1) between the damper counterweights and the grating lip. _____

[7] **COVER** the damper opening with a 7' x 7' tarp, **AND**

SECURE the tarp in place with duct tape. _____

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

6.8 Operation of Air Return Fan 2B-B with Backdraft Damper Blocked Closed (continued)

WARNING

The following steps require taking current readings in close proximity to energized equipment.

[8] **OPEN** the back of Panel 9 on 480V Shutdown Board 2B2-B to access Compartment 9C. _____

[9] **ENSURE** clamp-on current probe is connected to recorder. _____

[10] **ATTACH** clamp-on current probe and recorder to A-Phase power lead of Cable 2PL4885B. _____ 1st _____ CV

[11] **ENSURE** chart recorder is set to a chart speed of 20mm/second or greater. _____

[12] **NOTIFY** Personnel in Accumulator Room 4 of expected Air Return Fan 2B-B start. _____

[13] **ENSURE** that personnel and loose equipment are clear of Fan 2-FAN-30-39, CNTMT AIR RETURN FAN 2B-B, suction and discharge. _____

NOTE

Step 6.8[14] and 6.8[15] are to be performed concurrently

[14] **START** the recorder. _____

[15] **PLACE** Handswitch 2-HS-30-39A, AIR RETURN FAN B-B to START, **AND**

START Stopwatch. _____

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

6.8 Operation of Air Return Fan 2B-B with Backdraft Damper Blocked Closed (continued)

[16] **WHEN** current indications stabilize, **THEN**

[16.1] **STOP** the recorder. _____

[16.2] **LABEL** the point where Air Return Fan 2B-B started. _____

[16.3] **LABEL** the point where amperage stabilized. _____

[16.4] **LABEL** the recording as:

2-PTI-030E-01
Air Return Fan 2B-B Motor Response Time
Chart Speed: _____ mm/sec
Time: _____ Date_____ _____

[16.5] **ATTACH** recording to this instruction. _____

[16.6] **DETERMINE** the response time for Motor 2-MTR-30-39, CONTAINMENT AIR RETURN FAN 2B-B, using Data Sheet 4.

Response Time: _____ seconds

Acc Crit: 9.5 seconds maximum

_____

[17] **REMOVE** the clamp on current probe and recorder from Cable 2PL4885B. _____

[18] **ATTACH** clamp-on ammeter to A-Phase power lead of Cable 2PL4885B. _____
1st

_____
CV

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

6.8 Operation of Air Return Fan 2B-B with Backdraft Damper Blocked Closed (continued)

[19] **MEASURE** current through each of the three phase power leads on Cable 2PL4885B using a clamp-on ammeter, **AND**

RECORD current readings on Data Sheet 4. _____

[20] **CALCULATE** the average motor current for Motor 2-MTR-30-39, CONTAINMENT AIR RETURN FAN 2B-B, using Data Sheet 4 (I_{AVG}), **AND**

VERIFY it meets acceptance criteria :

Average Current: _____ Amps

Acc Crit: 56.0 - 91.0 Amps

_____

[21] **REMOVE** the clamp-on ammeter from Cable 2PL4885B. _____ 1st _____ CV

[22] **CLOSE** the back of Panel 9 on 480V Shutdown Board 2B2-B. _____ 1st _____ CV

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

6.8 Operation of Air Return Fan 2B-B with Backdraft Damper Blocked Closed (continued)

[23] **VERIFY** the following Hydrogen collector Backdraft Damper positions: **(Acc Crit)**

- Backdraft Damper 2-BKD-30-581, REACTOR CAVITY H2 COLLECTION HEADER A-A, is CLOSED _____
- Backdraft Damper 2-BKD-30-582, AIR RETURN FAN CROSSTIE HEADER A-A, is CLOSED _____
- Backdraft Damper 2-BKD-30-583, UPPER COMPARTMENT H2 COLLECTION HEADER A-A, is CLOSED _____
- Backdraft Damper 2-BKD-30-580, REACTOR CAVITY H2 COLLECTION HEADER B-B, is OPEN _____
- Backdraft Damper 2-BKD-30-584, AIR RETURN CROSSTIE HEADER B-B, is OPEN _____
- Backdraft Damper 2-BKD-30-585, UPPER COMPARTMENT H2 COLLECTION HEADER B-B, is OPEN _____

[24] **WHEN** Fan 2-FAN-30-39, CNTMT AIR RETURN FAN 2B-B, has operated continuously for at least 15 minutes as indicated on Stopwatch, **THEN**

[24.1] **STOP** Stopwatch. _____

[24.2] **PLACE** 2-HS-30-39A, AIR RETURN FAN B-B to STOP. _____

[24.3] **RECORD** Air Return Fan 2B-B run time indicated on Stopwatch.

Fan 2B-B Run Time (mm:ss) : _____ : _____

_____

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

6.8 Operation of Air Return Fan 2B-B with Backdraft Damper Blocked Closed (continued)

[25] **WHEN** Fan 2-FAN-30-39, CNTMT AIR RETURN FAN 2B-B, has coasted to a stop, **THEN**

REMOVE Duct tape, tarp and wedges from Backdraft Damper 2-BKD-30-543, AIR RETURN FAN B-B BACKDRAFT DAMPER.

_____ 1st

_____ CV

[26] **REMOVE** temporary test switch labeled TS-2 (installed in step 4.3[9.2]) between Terminals 5 and 6 at Terminal Strip TB615 located at Panel 2-R-51, SSPS TRAIN B OUTPUT CABINET.

_____ 1st

_____ CV

[27] **CALCULATE** the total response time for Air Return Fan 2B-B (t_{RB}) using Data Sheet 7.

(mm:ss) _____ : _____

_____

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

7.0 POST PERFORMANCE ACTIVITY

NOTE

Post-performance steps may be performed in any order unless otherwise stated and should be completed as close in time as practicable to the end of the instruction performance.

[1] **REMOVE** the switched jumpers installed in step 4.3[9] at the following locations:

[1.1] Labeled TS-1:
In SSPS Train-A Output Cabinet 2-R-48, at TB615, between Pt. 5 (Wire A110CC3) and Pt. 6 (Wire A110CCP). (45N2676-4)

_____ 1st

_____ CV

[1.2] Labeled TS-2:
In SSPS Train-B Output Cabinet 2-R-51, at TB615, between Pt. 5 (Wire B29CC3) and Pt. 6 (Wire B29CCP). (45N2677-4)

_____ 1st

_____ CV

[2] **VERIFY** that Post-test calibration of the M&TE used to record quantitative acceptance criteria has been satisfactorily performed, **AND**

RECORD the results on Measuring and Test Equipment (M&TE) Log. _____

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

[4] **NOTIFY** the Unit 1 US/SRO/SM of the test completion and system alignment. _____

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

8.0 RECORDS

A. QA Records

Completed Test Package.

B. Non-QA Records

None

Appendix A
(Page 1 of 1)

TEST PROCEDURES/INSTRUCTIONS REFERENCE REVIEW

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

NOTES

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

PROCEDURE/ INSTRUCTION	REVISION/CHANGES	IMPACT Yes/No	INITIAL AND DATE. (N/A for no change)
GTM-05			
FSAR Section 6.8 Table 14.2-1 Sh 38 & 39			
2-TSD-30E-1			
Unit 2 Tech Specs Section 3.3.2 Section 3.6.10			
Unit 2 Tech Reqs Manual Section 3.3.2			
2-SI-99-200			
WBN2-30RB-4002			
G-37			
MI-57.002			

Appendix B
(Page 1 of 1)

TEMPORARY CONDITION LOG

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

NOTES

1) Additional Copies of this table may be made as necessary.
2) These steps will be N/A'd if no temporary condition existed.

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)
ELECTRICAL LINEUP

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

IDENTIFICATION	LOCATION	NOMENCLATURE	POSITION	VERIFIED BY: INITIAL
2-HS-30-38A	2-M-9	CNTMT AIR RETURN FAN 2A-A	STOP PULL TO LOCK	
2-HS-30-39A	2-M-9	CNTMT AIR RETURN FAN 2B-B	STOP PULL TO LOCK	
2-XS-30-38A	480V SD BD 2A1-A Compt 6A	CNTMT AIR RETURN FAN 2A-A	AVAIL	
2-XS-30-39A	480V SD BD 2B2-B Compt 6A	CNTMT AIR RETURN FAN 2B-B	AVAIL	
2-BKR-30-38	480V SD BD 2A1-A Compt 10C	AIR RETURN FAN 2A-A (2-FAN-30-38)	DISCONNECTED	
2-BKR-30-39	480V SD BD 2B2-B Compt 9C	AIR RETURN FAN 2B-B (2-FAN-30-39)	DISCONNECTED	
2-FU-275-R76/I9 2-FU-275-R76/I10	2-R-76 Row I, Fuses 9 & 10	PNL M-9 MTR TRIPOUT ANN SEP RELAY	INSTALLED*	
2-FU-275-R76/I13 2-FU-275-R76/I14	2-R-76 Row I, Fuses 13 & 14	PNL M-9 MTR TRIPOUT ANN SEP RELAY	INSTALLED*	
2-BKR-238-1/19	120V AC PREFERRED POWER BOARD 2, BKR 19	PANEL 2-M-9 IND LIGHTS	ON	
2-BKR-235-1/7	120V AC VITAL INSTR POWER BOARD 2-I BKR 7	AUX RELAY RACK 2-R-76 BUS A	ON	
2-BKR-235-1/8	120V AC VITAL INSTR POWER BOARD 2-I BKR 8	AUX RELAY RACK C BUS TO PNL 2-R-76	ON	
2-BKR-235-2/6	120V AC VITAL INSTR POWER BOARD 2-II BKR 6	AUX RELAY RACK 2-R-76 BUS B	ON	

* When installing fuses with actuators, ensure that the actuating rod is oriented correctly to provide for proper alarm initiation and visual indication.

Appendix D
(Page 1 of 7)

Background Calculations

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

Measurement uncertainties for parameters measured in this test must be incorporated into the test acceptance criteria.

1.0 Backdraft Damper Opening Torque

From reference 2.2C.3 the maximum unseating torque for 2-BKD-30-550 and 2-BKD-30-543 is no greater than 92.4 in-lbs.

Assuming the measured Force is within ±1% of range (0-50lb) and the measured distance is within ± 1/64", then the adjusted Torque value can be calculated:

$$T = F \times D \qquad F = F_M + .01(50) = F_M + 0.5 \qquad D = D_M + 1/64$$

F_M = Measured Force $\qquad$ D_M = Measured Distance

$$T = (F_M + 0.5) \cdot (D_M + 1/64) = F_M \times D_M + F_M/64 + 0.5/64 + 0.5D_M = F_M \times D_M + \frac{D_M}{2} + \frac{F_M + 0.5}{64}$$

Therefore:

$$F_M \times D_M = T - \frac{D_M}{2} - \frac{F_M + 0.5}{64}$$

Given that:
T=92.4 in-lbs
F_M cannot be greater than 50 lb due to force gauge scale
D_M cannot be greater than 5 inches due to the physical length of the damper arm where the force is being applied.

$$F_M \times D_M = (92.4) - \left(\frac{5}{2}\right) - \left(\frac{50 + 0.5}{64}\right) = 89.11$$

Therefore the Acceptance Criteria for Backdraft Damper Opening Torque will be adjusted to **89 in-lbs** to conservatively account for instrument inaccuracies.

Appendix D
(Page 2 of 7)

Background Calculations

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

2.0 Motor Running Current

From Reference 2.2C.3, the Air Return Fan Motor Operating current with the Fans' Backdraft Dampers closed must be between 54 and 94 Amps.

Assuming each measured current values are within ±2.4%, then the adjusted Operating Current can be calculated:

$$\text{Operating Current}\left(I_{AVG}\right)=\frac{\Sigma I}{3}=\frac{I_A+I_B+I_C}{3}$$

$$I_A = I_{AM} \pm 0.024 I_{AM} = I_{AM}(1 \pm 0.024) \qquad I_A = 1.024 I_{AM} \text{ or } 0.976 I_{AM}$$

$$I_B = I_{BM} \pm 0.024 I_{BM} = I_{BM}(1 \pm 0.024) \qquad I_B = 1.024 I_{BM} \text{ or } 0.976 I_{BM}$$

$$I_C = I_{CM} \pm 0.024 I_{CM} = I_{CM}(1 \pm 0.024) \qquad I_C = 1.024 I_{CM} \text{ or } 0.976 I_{CM}$$

Where I_{AM}, I_{BM}, and I_{CM} are measured currents in A, B, and C phases, respectively.

$$I_{AVG}=\frac{I_{AM}(1\pm0.024)+I_{BM}(1\pm0.024)+I_{CM}(1\pm0.024)}{3}=\frac{(1\pm0.024)\cdot(I_{AM}+I_{BM}+I_{CM})}{3}$$

Therefore:

$$\frac{(I_{AM}+I_{BM}+I_{CM})}{3}=\frac{I_{AVG}}{1.024}=\frac{94}{1.024}=91.797 \text{ Amps}$$

$$\frac{(I_{AM}+I_{BM}+I_{CM})}{3}=\frac{I_{AVG}}{0.976}=\frac{54}{0.976}=55.329 \text{ Amps}$$

Therefore the Acceptance Criteria for Motor Operating current with closed Backdraft Dampers will be adjusted to **between 91 and 56 Amps** to conservatively account for instrument inaccuracies.

Appendix D
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Background Calculations

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

3.0 Motor Design Density Horsepower

From Reference 2.2C.3, the Air Return Fan Motor Nameplate Horsepower is 100 HP and the Motor Horsepower at Design Density conditions cannot exceed the Nameplate Horsepower.

Assuming each measured current and voltage values are within ±2.4%, then the adjusted Motor Horsepower and Design Density (HPDD) can be calculated:

$$HPDD = HPTD \times \frac{D_D}{D_T}$$

$$\text{Test Density}\,(D_T) = \left(\frac{530}{460+T}\right) \times \left(\frac{B}{29.92}\right) \times 0.075\,{}^{lb}/_{ft^3} \qquad D_D = \text{Design Density}$$

Where T = Temperature (°F) and B = Barometric Pressure (inHg) at time of test.

$$HPTD = \frac{I_{AVG} \times V_{AVG} \times PF \times E}{431} \qquad \text{Power}\,(P) = V_{AVG} \times I_{AVG} \qquad \frac{PF \times E}{431} = \text{Constant}\,(C)$$

Where PF = Power Factor and E = Efficiency, which are both constants.

Therefore:

$$HPDD = P \times C \times \frac{D_D}{D_T}$$

Recall from Section 2.0 of this Appendix:

$$I_{AVG} = \frac{I_{AM}(1 \pm 0.024) + I_{BM}(1 \pm 0.024) + I_{CM}(1 \pm 0.024)}{3} = \frac{(1 \pm 0.024) \cdot (I_{AM} + I_{BM} + I_{CM})}{3}$$

And by applying that same logic to the measured Voltage (V):

$$V_{AVG} = \frac{V_{ABM}(1 \pm 0.024) + V_{ACM}(1 \pm 0.024) + V_{BCM}(1 \pm 0.024)}{3} = \frac{(1 \pm 0.024) \cdot (V_{ABM} + V_{ACM} + V_{BCM})}{3}$$

Appendix D
(Page 4 of 7)

Background Calculations

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

3.0 Motor Design Density Horsepower (continued)

Assuming that the Barometric Pressure (B) and Temperature (T) are within ±0.4% of range (27-31 inHg) and ± 2°F, respectively, as given in Reference 2.2C.1:

0.4% of 4 inHg = 0.016 inHg

The Maximum percent error for the Barometric Pressure would occur at the lower end of the scale with an indicated Barometric Pressure of 27.00 inHg and an actual Barometric Pressure of 27.016 inHg.

$$1-\left(\frac{27.00}{27.16}\right)=0.00059$$

This equates to a maximum error of 0.059%

The Maximum percent error for the Temperature would occur would occur at the lower end of the scale with an indicated Temperature of 32°F and an actual Temperature of 34°F

$$1-\left(\frac{32}{34}\right)=0.0588$$

This equates to a maximum error of 5.88%

Looking at the equation for Test Density (D_T):

Assuming that the numerator has an error equal to that of Barometric Pressure (B), and the denominator has an error equal to that of Temperature (T), the total maximum error of Test Density will be:

$$\frac{0.059\%}{5.88\%}=1.00\%$$

Therefore, D_T may only be 99.0% of its actual value.

Appendix D
(Page 5 of 7)

Background Calculations

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

3.0 Motor Design Density Horsepower (continued)

$$HPDD = P \times C \times \frac{D_D}{D_T}$$

D_D is also a constant and can be accounted for in C, so:

$$HPDD = P \times C \times \frac{1}{D_T} = \frac{P \times C}{D_T}$$

Maximum calculated Power would be:

$$\frac{V_{AVG}}{0.976} \times \frac{I_{AVG}}{0.976} = \frac{P}{0.9526}$$

$$HPDD = \frac{P \times C}{0.9526 \times 0.990 D_T} = \frac{P \times C}{0.9431 D_T}$$

Therefore:

$$\frac{P \times C}{D_T} = 0.9431 \times HPDD$$

and since HPDD cannot be greater than 100 HP:

$$\frac{P \times C}{D_T} = 0.9431 \times HPDD = 0.9431 \times (100) = 94.31$$

Therefore the Acceptance Criteria for Motor Horsepower at Design Density will be adjusted to **less than or equal to 94 HP** to conservatively account for instrument inaccuracies.

Appendix D
(Page 6 of 7)

Background Calculations

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

4.0 Motor Response Time

From Reference 2.2C.3, the Air Return Fan motor response time no greater than 10 seconds for the motor to come up to speed.

Using a chart recorder with a chart speed accuracy of ±5%, the adjusted motor response time can be calculated:

$$\text{Motor Response Time}\,(t_R) = \frac{\text{Chart Distance}\,(D)}{\text{Chart Speed}\,(S)}$$

$S = S_S - 0.05S_S = 0.95S_S$ Where: S_S = Chart Speed Setting

$$t_R = \frac{D}{0.95S_S}$$

Therefore:

$$\frac{D}{S_S} = t_R \times 0.95 = 10 \times 0.95 = 9.5$$

Therefore the Acceptance Criteria for Motor Response Time will be adjusted to **9.5 seconds maximum** to account for instrument inaccuracies.

Appendix D
(Page 7 of 7)

Background Calculations

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

5.0 Air Flow Measurements

This instruction does not perform any air flow measurements; these are done in GTM-05, HVAC Air Balance. The uncertainties associated with taking Air Flow measurements will be handled within GTM-05 and will not be calculated in this instruction.

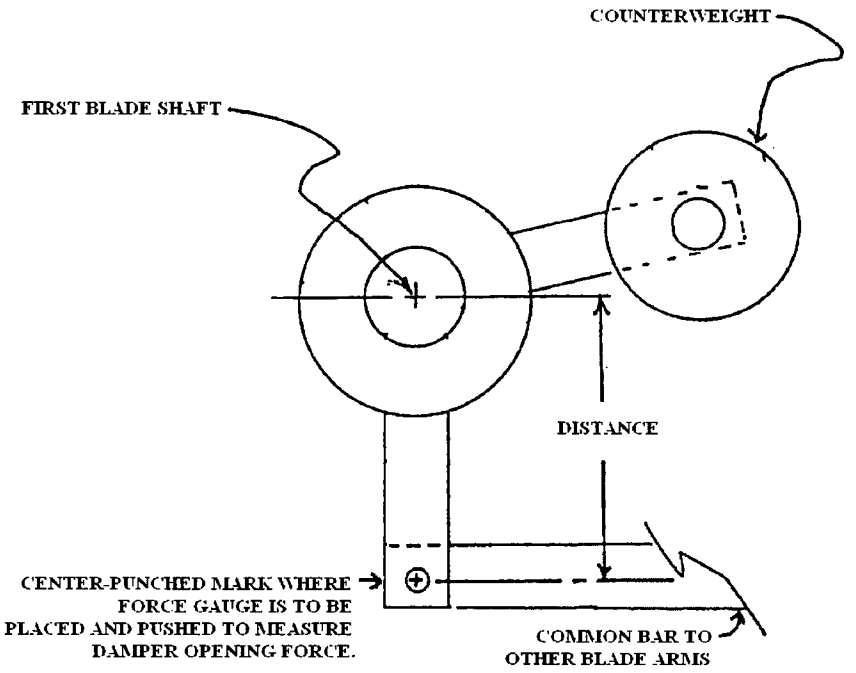
6.0 Stopwatch Use

Handheld digital stopwatches are used in several places in this instruction. Digital stopwatches have an accuracy of ±0.1 sec. This instrument error is negligible compared to the inherent human error involved in using a handheld stopwatch. Stopwatch timing uncertainties will not be calculated in this instruction under the assumption that any instrument uncertainty will be insignificant compared to the human uncertainty.

Data Sheet 1
(Page 1 of 1)

Air Return Fan 2A-A Backdraft Damper Opening Torque

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



Distance from center line of shaft (D): _____ inches

Step 6.1[5]: Measured unseating force (F): _____ lbs

Opening Torque = Force (F) × Distance (D)

Opening Torque = _____ lbs × _____ in = _____ in-lb
(F) (D)

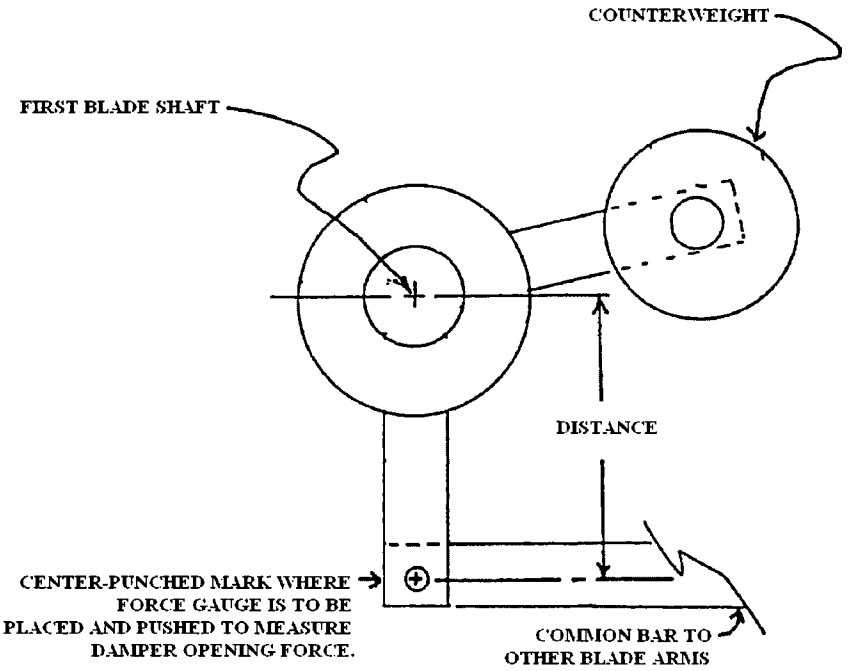
Data Taken By: _____

Calculations Performed By: _____ Calculations Verified By: _____

Data Sheet 2
(Page 1 of 1)

Air Return Fan 2B-B Backdraft Damper Opening Torque

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



Distance from center line of shaft (D): _____ inches

Step 6.2[5]: Measured unseating force (F): _____ lbs

Opening Torque = Force (F) × Distance (D)

Opening Torque = _____ (F) lbs × _____ (D) in = _____ in-lb

Data Taken By: _____

Calculations Performed By: _____ Calculations Verified By: _____

Data Sheet 3
(Page 1 of 1)

Air Return Fan 2A-A Motor Data with Backdraft Damper Blocked Closed

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

Air Return Fan 2A-A Motor Response Time:

Recorder Chart Speed (S): _____ mm/sec

Distance from Fan Start to Amperage Stabilization (D): _____ mm

Motor Response Time (t_M) = D ÷ S = _____ ÷ _____ = _____ sec

Measured Air Return Fan 2A-A Motor Current (Cable 2PL4875A):

PHASE	CURRENT (Amps)
A	
B	
C	

Sum of Currents (ΣI) = _____

Average Current (I_{AVG}) = $\frac{\Sigma I}{3}$ = _____ = _____ Amps

Data Taken By: _____

Calculations Performed By: _____ Calculations Verified By: _____

Data Sheet 4
(Page 1 of 1)

Air Return Fan B-B Motor Data with Backdraft Damper Blocked Closed

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

Air Return Fan 2B-B Motor Response Time:

Recorder Chart Speed (S): _____ mm/sec

Distance from Fan Start to Amperage Stabilization (D): _____ mm

Motor Response Time (t_M) = D ÷ S = _____ ÷ _____ = _____ sec

Measured Air Return Fan 2B-B Motor Current (Cable 2PL4885B):

PHASE	CURRENT (Amps)
A	
B	
C	

Sum of Currents (ΣI) = _____

Average Current (I_{AVG}) = $\frac{\Sigma I}{3}$ = $\frac{\quad}{3}$ = _____ Amps

Data Taken By: _____

Calculations Performed By: _____ Calculations Verified By: _____

Data Sheet 5
(Page 1 of 3)

Air Return Fan 2A-A Performance

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

AIR RETURN FAN 2A-A AIR FLOW DATA:

Air Return Fan 2A-A Total air flow (ΣF): _____ CFM

Hydrogen Collector Air Flows

Tr-A Cntmt Dome (F_D): _____ CFM

Tr-A Rx Cavity: _____ CFM

Acc Rm 4: _____ CFM

Acc Rm 1: _____ CFM

Incore Inst Rm: _____ CFM

Acc Rm 2: _____ CFM

Acc Rm 3: _____ CFM

S/G 4 Enclosure: _____ CFM

S/G 1 Enclosure: _____ CFM

Pzr Enclosure: _____ CFM

Pzr Enclosure: _____ CFM

S/G 2 Enclosure: _____ CFM

S/G 3 Enclosure: _____ CFM

Total Hydrogen Collector air flow (ΣH): _____ CFM

Total Lower Compartment dead-end spaces* recirculation air flow (ΣH_{DE}): _____ CFM

* Rx Cavity
*Accumulator Rms
*Incore Inst Rm
*S/G Enclosures
*Pzr Enclosure

Free air flow from Upper Compartment to Lower Compartment (F_F):

$$F_F = \Sigma F - \Sigma H = \_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_ CFM$$

Total air flow from Upper Compartment to Lower Compartment (ΣF_{UL}):

$$\Sigma F_{UL} = F_F + F_D = \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_ CFM$$

Data Sheet 5
(Page 2 of 3)

Air Return Fan 2A-A Performance

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

AIR RETURN FAN 2A-A MOTOR OPERATING DATA

PHASE	CURRENT (Amps)
A	
B	
C	

PHASE	VOLTAGE (Volts)
A to B	
A to C	
B to C	

Sum of Currents (ΣI) = _____ Sum of Voltages (ΣV) = _____

TEST CONDITIONS

Design Density (D_D) = 0.104 lb/ft^3 Barometric Pressure (B) = _____ inHg

Power Factor (PF) = 86% Ambient Temperature (T) = _____ °F

Efficiency (E) = 94%

Average Current (I_{AVG}) = $\frac{\Sigma I}{3}$ = $\frac{\quad}{3}$ = _____ Amps

Average Voltage (V_{AVG}) = $\frac{\Sigma V}{3}$ = $\frac{\quad}{3}$ = _____ Volts

Data Sheet 5
(Page 3 of 3)

Air Return Fan 2A-A Performance

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

Calculate the Air Density during the test:

$$\text{Test Density}\,(D_T) = \left(\frac{530}{460+T}\right)\times\left(\frac{B}{29.92}\right)\times 0.075\,{}^{lb}/_{ft^3}$$

$$D_T = \left(\frac{530}{460+\_\_\_\_}\right)\times\left(\frac{\_\_\_\_}{29.92}\right)\times 0.075 = \_\_\_\_\_\,{}^{lb}/_{ft^3}$$

Calculate the Motor Horsepower at Test Density (HPTD)

$$HPDTD = \frac{I_{AVG}\times V_{AVG}\times PF\times E}{431}$$

$$HPTD = \frac{\_\_\_\_\times\_\_\_\_\times 0.86\times 0.94}{431} = \_\_\_\_\_\ HP$$

Calculate the Motor Horsepower at Design Density (HPDD)

$$HPDD = HPTD\times\frac{D_D}{D_T}$$

$$HPDD = \_\_\_\_\_\times\frac{0.104\,{}^{lb}/_{ft^3}}{\_\_\_\_\_\,{}^{lb}/_{ft^3}} = \_\_\_\_\_\ HP$$

Calculations Performed By: _____ Calculations Verified By: _____

Data Sheet 6
(Page 1 of 3)

Air Return Fan 2B-B Performance

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

AIR RETURN FAN 2B-B AIR FLOW DATA:

Air Return Fan 2B-B Total air flow (ΣF): _____ CFM

Hydrogen Collector Air Flows

Tr-B Cntmt Dome (F_D): _____ CFM

Tr-B Rx Cavity: _____ CFM

Acc Rm 4: _____ CFM

Acc Rm 1: _____ CFM

Incore Inst Rm: _____ CFM

Acc Rm 2: _____ CFM

Acc Rm 3: _____ CFM

S/G 4 Enclosure: _____ CFM

S/G 1 Enclosure: _____ CFM

Pzr Enclosure: _____ CFM

Pzr Enclosure: _____ CFM

S/G 2 Enclosure: _____ CFM

S/G 3 Enclosure: _____ CFM

Total Lower Compartment dead-end spaces* recirculation air flow (ΣH_{DE}): _____ CFM

* Rx Cavity
*Accumulator Rms
*Incore Inst Rm
*S/G Enclosures
*Pzr Enclosure

Total Hydrogen Collector air flow (ΣH): _____ CFM

Free air flow from Upper Compartment to Lower Compartment (F_F):

$$F_F = \Sigma F - \Sigma H = \_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_ CFM$$

Total air flow from Upper Compartment to Lower Compartment (ΣF_{UL}):

$$\Sigma F_{UL} = F_F + F_D = \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_ CFM$$

Data Sheet 6
(Page 2 of 3)

Air Return Fan 2B-B Performance

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

AIR RETURN FAN 2B-B MOTOR OPERATING DATA

PHASE	CURRENT (Amps)
A	
B	
C	

PHASE	VOLTAGE (Volts)
A to B	
A to C	
B to C	

Sum of Currents (ΣI) = _____ Sum of Voltages (ΣV) = _____

TEST CONDITIONS

Design Density (D_D) = 0.104 lb/ft^3 Barometric Pressure (B) = _____ inHg

Power Factor (PF) = 86% Ambient Temperature (T) = _____ °F

Efficiency (E) = 94%

Average Current (I_{AVG}) = $\frac{\Sigma I}{3}$ = $\frac{\quad}{3}$ = _____ Amps

Average Voltage (V_{AVG}) = $\frac{\Sigma V}{3}$ = $\frac{\quad}{3}$ = _____ Volts

Data Sheet 6
(Page 3 of 3)

Air Return Fan 2B-B Performance

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

Calculate the Air Density during the test:

$$\text{Test Density } (D_T) = \left(\frac{530}{460+T}\right) \times \left(\frac{B}{29.92}\right) \times 0.075\,{}^{lb}/_{ft^3}$$

$$D_T = \left(\frac{530}{460+\_\_\_\_}\right) \times \left(\frac{\_\_\_\_}{29.92}\right) \times 0.075 = \_\_\_\_\_\,{}^{lb}/_{ft^3}$$

Calculate the Motor Horsepower at Test Density (HPTD)

$$HPDTD = \frac{I_{AVG} \times V_{AVG} \times PF \times E}{431}$$

$$HPTD = \frac{\_\_\_\_ \times \_\_\_\_ \times 0.86 \times 0.94}{431} = \_\_\_\_\_ \text{ HP}$$

Calculate the Motor Horsepower at Design Density (HPDD)

$$HPDD = HPTD \times \frac{D_D}{D_T}$$

$$HPDD = \_\_\_\_\_ \times \frac{0.104\,{}^{lb}/_{ft^3}}{\_\_\_\_\_\,{}^{lb}/_{ft^3}} = \_\_\_\_\_ \text{ HP}$$

Calculations Performed By: _____ Calculations Verified By: _____

Data Sheet 7
(Page 1 of 1)

Air Return Fan Total Response Times

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

AIR RETURN FAN 2A-A RESPONSE TIME

Time Delay Relay Response (t_{TDA}) = _____ : _____
(from Step 6.3[14]) (mm:ss)

Motor Response (t_{MA}) = _____ : _____
(from Step 6.7[16.6]) (mm:ss)

Total Response Time (t_{RA}):

$t_{RA} = t_{TDA} + t_{MA}$ = _____ : _____ + _____ : _____ = _____ : _____
(mm:ss) (mm:ss) (mm:ss)

Calculations Performed By: _____ Calculations Verified By: _____

AIR RETURN FAN 2B-B RESPONSE TIME

Time Delay Relay Response (t_{TDB}) = _____ : _____
(from Step 6.4[14]) (mm:ss)

Motor Response (t_{MB}) = _____ : _____
(from Step 6.8[16.6]) (mm:ss)

Total Response Time (t_{RB}):

$t_{RB} = t_{TDB} + t_{MB}$ = _____ : _____ + _____ : _____ = _____ : _____
(mm:ss) (mm:ss) (mm:ss)

Calculations Performed By: _____ Calculations Verified By: _____

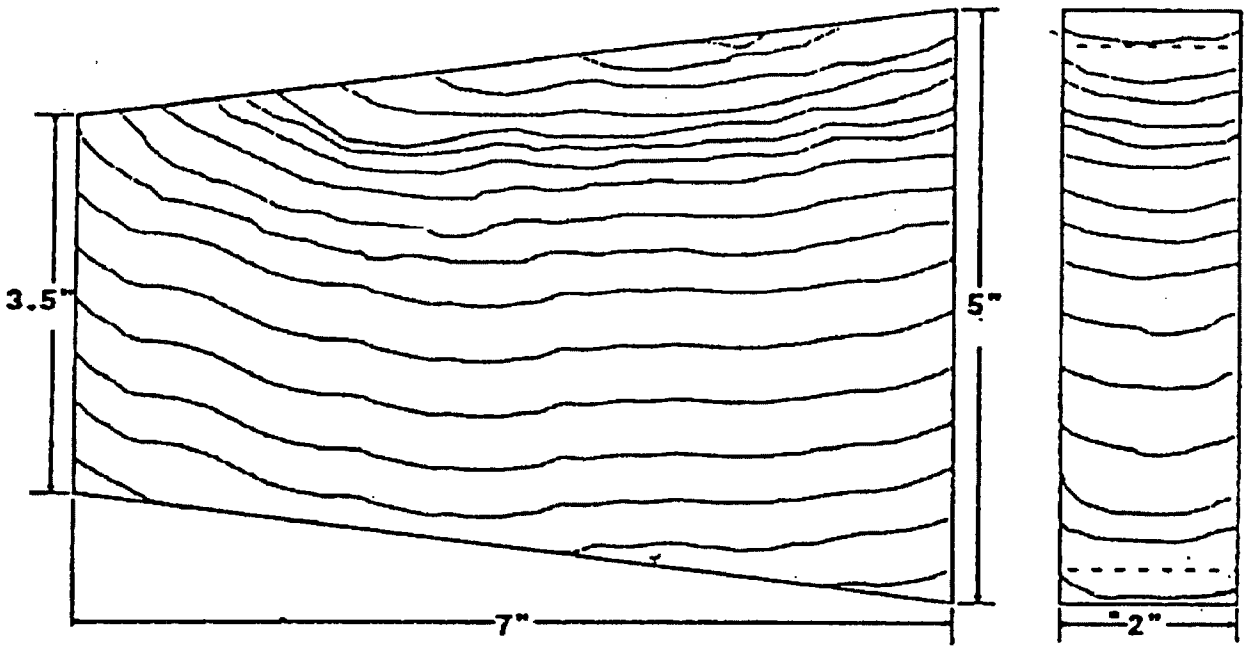
Figure 1
(Page 1 of 1)

Wedges for Blocking Backdraft Dampers

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

NOTES

1) Four wedges required, each approximately 2" thick.
2) Standard 2" x 6" finished lumber is acceptable. Thickness may be 1" to 1-1/2" if finished lumber is used.



WATTS BAR NUCLEAR PLANT

UNIT 2 STARTUP

TITLE: Ice Condenser System

Instruction No: 2-PTI-061-01

Revision No: 0000

PREPARED BY: Kurt McCormack / Kurt McCormack DATE 12/21/10

PRINT NAME/ SIGNATURE

REVIEWED BY: Daniel D Orr / Daniel D Orr DATE 12/21/10

PRINT NAME/ SIGNATURE

INSTRUCTION APPROVAL

JTG MEETING NO: 2-11-006

JTG CHAIRMAN: _____ DATE 3/31/11

APPROVED BY: _____ DATE 3/31/11

PREOPERATIONAL STARTUP MANAGER

TEST RESULTS APPROVAL

JTG MEETING NO: _____

JTG CHAIRMAN: _____ DATE _____

APPROVED BY: _____ DATE _____

PREOPERATIONAL STARTUP MANAGER

Revision Log

Revision or Change Number	Effective Date	Affected Page Numbers	Description of Revision/Change
0000	3/3/11	ALL	Created using 1-PTI-061-01 Rev 1.

Table of Contents

Table of Contents (continued)

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

1.0 INTRODUCTION

1.1 Test Objectives

This Preoperational Test Instruction (PTI) will demonstrate the capability of the Ice Condenser Lower Inlet Doors to properly annunciate in the Main Control Room in a Loss of Coolant Accident. It will also demonstrate the capability of associated containment isolation valves to properly respond to a Phase A Containment Isolation Signal. Valve controls, interlocks, alarms, indication, and fail-safe position on loss of control air will also be verified.

1.2 Scope

A. Containment Isolation Valves:

1. 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL
2. 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL
3. 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL
4. 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL
5. 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION
6. 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION
7. 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION
8. 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION

B. Lower Inlet Doors:

2-DOOR-61-LI01 through 2-DOOR-61-LI24,
ICE COND LOWER INLET DOOR

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

1.2 Scope (continued)

C. Main Control Room Alarms

1. 2-XA-55-6E

a. 143A, GLYCOL EXP TNK LEVEL HI/HI-HI

b. 143B, GLYCOL EXP TNK LEVEL LO/LO-LO

c. 143C, GLYCOL HS-191B,193B MISALIGNED WITH FCV

d. 144A, ICE COND INLET DOOR OPEN

2. XI-61-187, ICE CONDENSER DOOR STATUS

2.0 REFERENCES

2.1 Performance References

A. SMP-9.0, Conduct of Test

2.2 Developmental References

A. Final Safety Analysis Report

1. FSAR-Amendment 102

a. Section 6.2.1, CONTAINMENT FUNCTIONAL DESIGN

b. Section 6.2.4, CONTAINMENT ISOLATION SYSTEM

c. Section 6.7, ICE CONDENSER SYSTEM

d. Table 14.2-1, PREOPERATIONAL TESTS SUMMARIES

(1) (SHEET 83 OF 89) CONTAINMENT ISOLATION SYSTEM TEST SUMMARY

(2) (SHEET 87 OF 89) ICE CONDENSER SYSTEM TEST SUMMARY

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

2.2 Developmental References (continued)

B. Drawings

1. Flow Diagrams

a. 2-47W814-2 Rev 5, Flow Diagram Ice Condenser System

b. 2-47W848-7 Rev 1, Flow Diagram Control Air

c. 2-47W848-9 Rev 1, Flow Diagram Control Air

2. Electrical

a. 2-45W600-61-1 Rev 0, Wiring Diagram Ice Condenser System Schematic Diagrams

b. 2-45W600-61-2 Rev 1, Wiring Diagrams Ice Condenser System Schematic Diagrams

c. 2-45N2676-4, Wiring Diagrams Solid State Protection Sys Train A Connection Diagram SH-4
ANTICIPATED, USED AS DESIGNED VERSION

d. 2-45N2676-5, Wiring Diagrams Solid State Protection Sys Train A Connection Diagram SH-5
ANTICIPATED, USED AS DESIGNED VERSION

e. 2-45N2677-4, Wiring Diagrams Solid State Protection Sys Train B Connection Diagram SH-4
ANTICIPATED, USED AS DESIGNED VERSION

f. 2-45N2677-5, Wiring Diagrams Solid State Protection Sys Train B Connection Diagram SH-5
ANTICIPATED, USED AS DESIGNED VERSION

g. 2-47B601-55-3, Electrical Instrument Tabulation
ANTICIPATED

(1) DRA 52453-06 Rev 0

h. 2-47B601-55-4, Electrical Instrument Tabulation
ANTICIPATED

(1) DRA 52453-07 Rev 0

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

2.2 Developmental References (continued)

i. 2-47B601-55-64, Electrical Instrument Tabulation
ANTICIPATED, use Unit 1 AD

j. 2-45B640-155, Contact Development of Selector Switches and Pushbuttons
ANTICIPATED, USED AS DESIGNED VERSION

k. 2-45B640-233, Contact Development of Selector Switches and Pushbuttons
ANTICIPATED

(1) DRA 52366-23 Rev 0

l. 2-45W760-61-1 Rev 0, Wiring Diagram Ice Condenser System Schematic Diagrams

m. 45N2632-2 Rev 0, Wiring Diagrams Miscellaneous Control Connection Diagrams - Sheet 2

n. 45N2632-9 Rev 1, Wiring Diagrams Miscellaneous Controls Connection Diagram - SHEET 9

o. 45W2649-1 Rev 14, Wiring Diagrams Unit Control Board - Panel 2-M-10 Connection Diagrams - Sheet 1

p. 45W2649-2 Rev 10, Wiring Diagrams Unit Control Board - Panel 2-M-10 Connection Diagrams - Sheet 2

q. 45N2684-3 Rev 5, Wiring Diagrams NSSS Aux Relay Panel 2-R-58 Connection Diagram SH-3

r. 45W2755-2 Rev 6, Wiring Diagram 480V Reactor Vent Bd 2A-A Connection Diagram

s. 45W2756-2 Rev 8, Wiring Diagram 480V Reactor Vent Bd 2B-B Connection Diagram

t. 2-45B655-E6E Rev 0, Electrical Annunciator Window Box XA-55-6E Engraving

(1) DRA 53228-107 Rev 0

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

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

2.2 Developmental References (continued)

(1) DRA 53228-108 Rev 0

3. Logic/Control

   a. 2-47W610-61-1 Rev 1, Electrical Control Diagram Ice Condenser System

   b. 2-47W610-61-2 Rev 1, Electrical Control Diagram Ice Condenser System

   c. 2-47W610-61-3, Rev 1, Electrical Control Diagram Ice Condenser System

   d. 2-47W611-61-1 Rev 0, Electrical Logic Diagram Ice Condenser System

   e. 2-47W611-61-2 Rev 1, Electrical Logic Diagram Ice Condenser System

4. Vendor Drawings

   a. 7248D85 Rev 3, Contract # TIC82-54114-1, Watts Bar Units No. 1&2 Ice Condenser Doors Indicating Lights Wiring Diagram

C. Documents

1. 2-TSD-61, Ice Condenser System Testing, Rev 0.

2. 2-TSD-88-5, Containment Isolation System, Rev 1.

3. WB-DC-40-31.16, Rev 2, "Displacement Criteria for Vibration Qualification of Piping" Appendix A.

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

3.0 PRECAUTIONS AND LIMITATIONS

A. Test should be coordinated with Unit 1 Operations to mitigate any adverse impact to Unit 1.

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

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

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

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

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

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

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

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

J. Test personnel will coordinate with Unit 1 Operations when manipulating Unit 1 equipment if required.

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

3.0 PRECAUTIONS AND LIMITATIONS (continued)

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

L. During the performance of this procedure visual observation of piping and components is required. This includes steady state and transient operations with visual confirmation that vibration is not excessive.

M. If the vibration is determined to be excessive the Test Engineer shall initiate a Test Deficiency Notice (TDN).

N. Locking in of cold glycol solution between two valves must be avoided.

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

4.0 PREREQUISITE ACTIONS

NOTE

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

4.1 Preliminary Actions

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

ENSURE that they will **NOT** adversely affect the test performance. _____

[2] **ENSURE** changes to the references listed on Appendix A, have been reviewed, and determined **NOT** to adversely affect the test performance _____

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

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

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

[5] **OBTAIN** copies of the applicable forms from the current revision in BSL, **AND**

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

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

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

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

4.1 Preliminary Actions (continued)

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

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

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

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

A. 2-XA-55-6E-143A (Subsection 6.1) _____

B. 2-XA-55-6E-143B (Subsection 6.1) _____

C. 2-XA-55-6E-143C (Subsection 6.1) _____

D. 2-XA-55-6E-144A (Subsection 6.9) _____

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

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

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

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

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

4.2 Special Tools, Measuring and Test Equipment (M&TE), Parts, and Supplies

[1] **ENSURE** the following M&TE or Equivalent is available, within its calibration due dates **AND**

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

- 0-60 minute Stopwatch (± 0.1 sec) 2 required (Subsections 6.1, 6.2, 6.3, 6.3[21], 6.5, 6.6, 6.7, & 6.8)

[2] **ENSURE** the following equipment is available:

A. 9 Test Switches _____

B. 9 Grabber Style Jumpers with insulated boots _____

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

4.3 Field Preparations

[1] **ENSURE** The following systems are operational and have been placed in service to the extent necessary to perform this test:

A. System 32, Control Air. _____

B. System 55, Annunciator System. _____

C. System 236, 125V DC Vital Power. _____

D. System 235, 120V AC Vital Power. _____

E. System 278, Main & Auxiliary Control Board. _____

F. System 232, Reactor Vent Power. _____

[2] **ENSURE** switches are aligned per Appendix C, "Switch Lineup." _____

[3] **ENSURE** breakers are aligned per Appendix E, "Electrical Breaker Lineup." _____

[4] **PERFORM** the switch lineup listed in Appendix C. _____

[5] **PERFORM** the electrical breaker lineup listed in Appendix E. _____

[6] **ENSURE** scaffolding has been constructed in MG SET RM/EL 782 to reach 2-ISV-32-3359 CONTROL AIR ISOLATION VALVE TO 2-FCV-61-191-A and 2-ISV-32-3361 CONTROL AIR ISOLATION VALVE TO 2-FCV-61-193-A. _____

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

4.3 Field Preparations (continued)

[7] **PERFORM** the following:

A. **ENSURE** 2-ISV-32-3359 CONTROL AIR ISOLATION VALVE TO 2-FCV-61-191-A is OPEN (EL 783/MG SET RM) _____

B. **ENSURE** 2-ISV-32-3361 CONTROL AIR ISOLATION VALVE TO 2-FCV-61-193-A is OPEN (EL 783/MG SET RM) _____

C. **ENSURE** 2-ISV-32-3552 CONTROL AIR ISOLATION VALVE TO 2-FCV-61-192-B is OPEN (EL 803/AZ 294) _____

D. **ENSURE** 2-ISV-32-3553 CONTROL AIR ISOLATION VALVE TO 2-FCV-61-194-B is OPEN (EL 803/AZ 297) _____

E. **ENSURE** 2-ISV-32-3411 CONTROL AIR ISOLATION VALVE TO 2-FCV-61-96-A is OPEN (EL 768/A12W) _____

F. **ENSURE** 2-ISV-32-3550 CONTROL AIR ISOLATION VALVE TO 2-FCV-61-97-B is OPEN (EL 775/AZ 303) _____

G. **ENSURE** 2-ISV-32-3412 CONTROL AIR ISOLATION VALVE TO 2-FCV-61-110-A is OPEN (EL 768/A12W) _____

H. **ENSURE** 2-ISV-32-3551 CONTROL AIR ISOLATION VALVE TO 2-FCV-61-122-B is OPEN (EL 772/AZ 303) _____

NOTE

Test Switch TS-1 will simulate a Normal level in the Glycol Expansion Tank when placed into the ON position.

[8] **INSTALL** a jumper with test switch TS-1 in the ON (Closed) position between Terminals Points 1 (Wire 8791) and 2 (Wire 879X), at TB309, in Panel 2-R-58 (C10P, EL708). (Subsection 6.1)

_____ 1st

_____ CV

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

4.3 Field Preparations (continued)

[9] **LIFT** Wire G1C4 from Terminal Point 7 on Terminal Board TB 618 in Panel 2-R-48.

_____ 1st

_____ CV

NOTE

Test Switch TS-2 will simulate a Phase A Containment Isolation Signal for 2-FCV-61-191-A when placed to the OFF position.

[10] **INSTALL** a jumper with test switch in the ON position, labeled TS-2, between Wire G1C4 and Terminal Point 8 on Terminal Board TB 618 in Panel 2-R-48 (Subsection 6.1).

_____ 1st

_____ CV

[11] **LIFT** Wire G1D4 from Terminal Point 9 on Terminal Board TB 618 in Panel 2-R-48.

_____ 1st

_____ CV

NOTE

Test Switch TS-3 will simulate a Phase A Containment Isolation Signal for 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION when placed to the OFF position.

[12] **INSTALL** a jumper with test switch in the ON position, labeled TS-3, between Wire G1D4 and Terminal Point 9 on Terminal Board TB 618 in Panel 2-R-48.(Subsection 6.2)

_____ 1st

_____ CV

[13] **LIFT** Wire G1A4 from Terminal Point 5 on Terminal Board TB 618 in Panel 2-R-51.

_____ 1st

_____ CV

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

4.3 Field Preparations (continued)

NOTE

Test Switch TS-4 will simulate a Phase A Containment Isolation Signal for 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION when placed to the OFF position.

[14] **INSTALL** a jumper with test switch in the ON position, labeled TS-4, between Wire G1A4 and Terminal Point 6 on Terminal Board TB 618 in Panel 2-R-51.(Subsection 6.3)

_____ 1st

_____ CV

[15] **LIFT** Wire G1B4 from Terminal Point 7 on Terminal Board TB 618 in Panel 2-R-51.

_____ 1st

_____ CV

NOTE

Test Switch TS-5 will simulate a Phase A Containment Isolation Signal for 2-FCV-61-194-B when placed to the OFF position.

[16] **INSTALL** a jumper with test switch in the ON position, labeled TS-5, between Wire G1B4 and Terminal Point 8 on Terminal Board TB 618 in Panel 2-R-51.(Subsection 6.3[21])

_____ 1st

_____ CV

[17] **LIFT** Wire G1H5 from Terminal Point 9 on Terminal Board TB 646 in Panel 2-R-48.

_____ 1st

_____ CV

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4.3 Field Preparations (continued)

NOTE

Test Switch TS-6 will simulate a Phase A Containment Isolation Signal for 2-FCV-61-96-A when placed to the OFF position.

[18] **INSTALL** a jumper with test switch in the ON position, labeled TS-6, between Wire G1H5 and Terminal Point 10 on Terminal Board TB 646 in Panel 2-R-48.(Subsection 6.5)

_____ 1st

_____ CV

[19] **LIFT** Wire G1J5 from Terminal Point 9 on Terminal Board TB 646 in Panel 2-R-51.

_____ 1st

_____ CV

NOTE

Test Switch TS-7 will simulate a Phase A Containment Isolation Signal for 2-FCV-61-97-B when placed to the OFF position.

[20] **INSTALL** a jumper with test switch in the ON position, labeled TS-7, between Wire G1J5 and Terminal Point 10 on Terminal Board TB 646 in Panel 2-R-51.(Subsection 6.6)

_____ 1st

_____ CV

[21] **LIFT** Wire G1K5 from Terminal Point 7 on Terminal Board TB 646 in Panel 2-R-48.

_____ 1st

_____ CV

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

4.3 Field Preparations (continued)

NOTE

Test Switch TS-8 will simulate a Phase A Containment Isolation Signal for 2-FCV-61-110-A when placed to the OFF position.

[22] **INSTALL** a jumper with test switch in the ON position, labeled TS-8, between Wire G1K5 and Terminal Point 8 on Terminal Board TB 646 in Panel 2-R-48.(Subsection 6.7)

_____ 1st

_____ CV

[23] **LIFT** Wire G1L5 from Terminal Point 7 on Terminal Board TB 646 in Panel 2-R-51.

_____ 1st

_____ CV

NOTE

Test Switch TS-9 will simulate a Phase A Containment Isolation Signal for 2-FCV-61-122-B when placed to the OFF position.

[24] **INSTALL** a jumper with test switch in the ON position, labeled TS-9, between Wire G1L5 and Terminal Point 8 on Terminal Board TB 646 in Panel 2-R-51.(Subsection 6.8)

_____ 1st

_____ CV

[25] **LIFT** Wire 2M736B from Terminal Point 3, at 2-LS-61-197A/B (AZ305, EL 820). (Subsection 6.1)

_____ 1st

_____ CV

[26] **VERIFY** the following annunciators are CLEAR:

A. 2-XA-55-6E-143A, GLYCOL EXP TNK LEVEL HI/HI-HI _____

B. 2-XA-55-6E-143B, GLYCOL EXP TNK LEVEL LO/LO-LO _____

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4.4 Approvals and Notifications

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

_____ _____
Preoperational Startup Manager Signature — Date

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

_____ _____
U2 US/SRO/SM Signature — Date

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5.0 ACCEPTANCE CRITERIA

[1] Automatic controls and interlocks function properly in response to normal simulated input signals:

A. 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION (Step 6.1[58])

B. 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION (Step 6.2[42])

C. 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION (Step 6.3[23])

D. 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION (Step 6.4[23])

E. 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL (Step 6.5[24])

F. 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL (Step 6.6[24])

G. 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL (Step 6.7[24])

H. 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL (Step 6.8[24])

[2] The glycol expansion tank annunciator annunciates in the MCR:

A. LO-LO Level (Steps 6.1[30]A, 6.1[30]B)

B. LO Level (Steps 6.1[37], 6.1[38])

C. HI Level (Steps 6.1[43], 6.1[44])

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5.0 ACCEPTANCE CRITERIA (continued)

D. HI-HI Level (Steps 6.1[49], 6.1[50])

[3] The following valves close upon receipt of glycol expansion tank LO-LO level signal:

A. 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION (Step 6.1[30]C)

B. 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION (Step 6.2[30]B)

[4] Annunciator window 143C "GLYCOL HS-61-191B, 193B MISALIGNED WITH FCV" Annunciates in the MCR while Glycol Expansion Tank level is LO-LO and one of the following valves is OPEN:

A. 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION (Step 6.1[32])

B. 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION (Step 6.2[32])

[5] The following valves can be operated from the MCR. Indicating lights indicate the correct valve position in the MCR:

A. 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION (Step 6.1[58])

B. 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION (Step 6.2[42])

C. 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION (Step 6.3[23])

D. 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION (Step 6.4[23])

E. 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL (Step 6.5[24])

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5.0 ACCEPTANCE CRITERIA (continued)

F. 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL
(Step 6.6[24])

G. 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL
(Step 6.7[24])

H. 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL
(Step 6.8[24])

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5.0 ACCEPTANCE CRITERIA (continued)

[6] The following Containment Isolation Valves close on receipt of a simulated Phase A Containment Isolation Signal:

A. 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION
(Step 6.1[7])

B. 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION
(Step 6.2[7])

C. 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION
(Step 6.3[5])

D. 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION
(Step 6.4[5])

E. 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL
(Step 6.5[6])

F. 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL
(Step 6.6[6])

G. 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL
(Step 6.7[6])

H. 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL
(Step 6.8[6])

[7] The following Containment Isolation Valves remain in the closed position after reset of the simulated Phase A Containment Isolation Signal:

A. 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION
(Step 6.1[8])

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5.0 ACCEPTANCE CRITERIA (continued)

B. 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION
(Step 6.2[8])

C. 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION
(Step 6.3[6])

D. 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION
(Step 6.4[6])

E. 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL
(Step 6.5[7])

F. 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL
(Step 6.6[7])

G. 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL
(Step 6.7[7])

H. 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL
(Step 6.8[7])

[8] The Containment Isolation Status Panel Train A or B indicates that each of the following valves close upon receipt of a Phase A Containment Isolation Signal and remain closed upon signal reset:

A. 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION
(Steps 6.1[7] and 6.1[8])

B. 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION
(Steps 6.2[7] and 6.2[8])

C. 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION
(Steps 6.3[5] and 6.3[6])

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5.0 ACCEPTANCE CRITERIA (continued)

D. 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION
(Steps 6.4[5] and 6.4[6])

E. 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL
(Steps 6.5[6] and 6.5[7])

F. 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL
(Steps 6.6[6] and 6.6[7])

G. 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL
(Steps 6.7[6] and 6.7[7])

H. 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL
(Steps 6.8[6] and 6.8[7])

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5.0 ACCEPTANCE CRITERIA (continued)

[9] The following Containment Isolation Valves close in ≤ 30 seconds:

A. 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION
(Steps 6.1[13.1] and 6.1[13.2])

B. 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION
(Steps 6.2[13.1] and 6.2[13.2])

C. 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION
(Steps 6.3[9.1] and 6.3[9.2])

D. 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION
(Steps 6.4[9.1] and 6.4[9.2]) I

E. 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL
(Steps 6.5[10.1] and 6.5[10.2])

F. 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL
(Steps 6.6[10.1] and 6.6[10.2])

G. 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL
(Steps 6.7[10.1] and 6.7[10.2])

H. 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL
(Steps 6.8[10.1] and 6.8[10.2])

[10] The following Containment Isolation Valves fail in the closed position upon a loss of control air:

A. 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION
(Step 6.1[22])

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5.0 ACCEPTANCE CRITERIA (continued)

B. 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION
(Step 6.2[22])

C. 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION
(Step 6.3[13])

D. 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION
(Step 6.4[13])

E. 2-FCV-61,-96, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL
(Step 6.5[14])

F. 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL
(Step 6.6[14])

G. 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL
(Step 6.7[14])

H. 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL
(Step 6.8[14])

[11] The lower inlet door status position monitor and annunciator properly alarm in the Main Control Room (Subsection 6.9).

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6.0 PERFORMANCE

NOTE

Stroke timing of valves will be measured from the handswitch actuation to GREEN light OFF upon opening and RED light OFF upon closing.

6.1 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION Functional Test

NOTES

1) This subsection will test 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION from its control station and verify operability of all interlocks, indicating lights, and annunciators.
2) During the performance of this subsection, visual observation of transient and steady state vibrations is required.

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

[2] **ENSURE** 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION, is CLOSED by Green Light ON at 2-HS-61-191A, GLYCOL TO AHU OUTSIDE CIV-ØA, at 2-M-9. _____

[3] **PLACE** 2-HS-61-191B, GLYCOL TO AHU OUTSIDE CIV-ØA, at 2-M-9, in the OPEN position. _____

[4] **PLACE** 2-HS-61-191A, GLYCOL TO AHU OUTSIDE CIV-ØA, at 2-M-9, in the OPEN position until 2-FCV-61-191-A is FULLY OPEN, **THEN**

RELEASE to A-AUTO, **AND**

VERIFY:

A. Red Light, at 2-HS-61-191A, GLYCOL TO AHU OUTSIDE CIV-ØA ON _____

B. Green Light, at 2-HS-61-191A, GLYCOL TO AHU OUTSIDE CIV-ØA OFF _____

[5] **PLACE** 2-HS-61-191B, GLYCOL TO AHU OUTSIDE CIV-ØA in the P-AUTO position. _____

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6.1 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION Functional Test (continued)

[6] **VERIFY** the following for 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION:

A. 2-HS-61-191A, GLYCOL TO AHU OUTSIDE CIV-ØA Red Light ON _____

B. 2-HS-61-191A, GLYCOL TO AHU OUTSIDE CIV-ØA Green Light OFF _____

C. 2-XX-55-6E Window 61, FCV-61-191, Red Light ON _____

D. 2-XX-55-6E Window 61, FCV-61-191, Green Light OFF _____

E. 2-FCV-61-191-A GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION OPEN (EL 783/MG SET RM). _____

NOTE

Steps 6.1[7] and 6.1[8] will verify that 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION closes on a simulated Phase A Containment Isolation Signal and stays closed upon resetting the signal.

[7] **PLACE** Test Switch TS-2 at Terminal Board TB 618 in Panel 2-R-48 to the OFF position, **AND**

VERIFY:

A. 2-XX-55-6E Window 61, FCV-61-191, Green Light ON (**ACC CRIT**) _____

B. 2-XX-55-6E Window 61, FCV-61-191, Red Light OFF (**ACC CRIT**) _____

C. 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION is CLOSED.(Local) (**ACC CRIT**) _____

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6.1 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION Functional Test (continued)

[8] **PLACE** Test Switch TS-2 at Terminal Board TB 618 in Panel 2-R-48 to the ON position, **AND**

VERIFY:

A. 2-XX-55-6E Window 61, FCV-61-191, Green Light ON (**ACC CRIT**) _____

B. 2-XX-55-6E Window 61, FCV-61-191, Red Light OFF (**ACC CRIT**) _____

C. 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION is CLOSED.(Local) (**ACC CRIT**) _____

[9] **PLACE** 2-HS-61-191B, GLYCOL TO AHU OUTSIDE CIV-ØA, at 2-M-9, in the OPEN position. _____

[10] **PLACE** 2-HS-61-191A, GLYCOL TO AHU OUTSIDE CIV-ØA, at 2-M-9, in the OPEN position until 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION is FULLY OPEN, **THEN**

RELEASE to A-AUTO _____

[11] **PLACE** 2-HS-61-191B, GLYCOL TO AHU OUTSIDE CIV-ØA in the P-AUTO position. _____

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6.1 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION Functional Test (continued)

[12] **VERIFY** the following for 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION:

A. 2-HS-61-191A, GLYCOL TO AHU OUTSIDE CIV-ØA Red Light ON _____

B. 2-HS-61-191A, GLYCOL TO AHU OUTSIDE CIV-ØA Green Light OFF _____

C. 2-XX-55-6E Window 61, FCV-61-191, Red Light ON _____

D. 2-XX-55-6E Window 61, FCV-61-191, Green Light OFF _____

E. 2-FCV-61-191-A GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION OPEN (Local) _____

NOTES

1) Steps 6.1[13] and 6.1[16] require valve stroke timing locally at the valve and remotely at the Control Switch in both the Open and Closed positions.
2) Local timing begins with the initiating signal and is concluded with the completion of valve stem movement. Remote timing begins with the initiating signal and is concluded with the position indication lights status change. Stroke time acceptance criteria will be based on the movement to the safety function final position of the valve.

[13] **PLACE** 2-HS-61-191A, GLYCOL TO AHU OUTSIDE CIV-ØA in the CLOSE position **AND**

SIMULTANEOUSLY TIME the valve stroke, **THEN**

RELEASE to A-AUTO. _____

[13.1] **RECORD** remote closing time at 2-HS-61-191A, GLYCOL TO AHU OUTSIDE CIV-ØA. (**ACC CRIT**) _____

_____ seconds (≤ 30 seconds) _____

M&TE _____ Cal Due Date _____ _____

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6.1 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION Functional Test (continued)

[13.2] **RECORD** local closing time at 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION.
(**ACC CRIT**)

_____ seconds (≤ 30 seconds) _____

M&TE _____ Cal Due Date _____ _____

[14] **VERIFY** the following for 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION:

A. 2-HS-61-191A, GLYCOL TO AHU OUTSIDE CIV-ØA Red Light OFF _____

B. 2-HS-61-191A, GLYCOL TO AHU OUTSIDE CIV-ØA Green Light ON _____

C. 2-XX-55-6E Window 61, FCV-61-191, Red Light OFF _____

D. 2-XX-55-6E Window 61, FCV-61-191, Green Light ON _____

E. 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION CLOSED (Local) _____

NOTE

Time the valve stroke from 2-HS-61-191A, GLYCOL TO AHU OUTSIDE CIV-ØA and locally at the valve.

[15] **PLACE** 2-HS-61-191B, GLYCOL TO AHU OUTSIDE CIV-ØA in the OPEN position. _____

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6.1 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION Functional Test (continued)

[16] **PLACE** 2-HS-61-191A, GLYCOL TO AHU OUTSIDE CIV-ØA in the OPEN position, **AND**

SIMULTANEOUSLY TIME the valve stroke, **THEN**

RELEASE to A-AUTO.

[16.1] **RECORD** remote opening time at 2-HS-61-191A, GLYCOL TO AHU OUTSIDE CIV-ØA.

_____ seconds _____

M&TE _____ Cal Due Date _____ _____

[16.2] **RECORD** local opening time at 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION.

_____ seconds _____

M&TE _____ Cal Due Date _____ _____

[17] **PLACE** 2-HS-61-191B, GLYCOL TO AHU OUTSIDE CIV-ØA in the P-AUTO position. _____

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6.1 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION Functional Test (continued)

NOTE

Time the valve stroke from 2-HS-61-191B, GLYCOL TO AHU OUTSIDE CIV-ØA and locally at the valve. Use light indication at 2-HS-61-191A, GLYCOL TO AHU OUTSIDE CIV-ØA.

[18] **PLACE** 2-HS-61-191B, GLYCOL TO AHU OUTSIDE CIV-ØA in the CLOSE position **AND**

SIMULTANEOUSLY TIME the valve stroke, **THEN**

RELEASE to P-AUTO. _____

[18.1] **RECORD** remote closing time at 2-HS-61-191B, GLYCOL TO AHU OUTSIDE CIV-ØA.

_____ seconds _____

M&TE _____ Cal Due Date _____ _____

[18.2] **RECORD** local closing time at 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION.

_____ seconds _____

M&TE _____ Cal Due Date _____ _____

[19] **PLACE** 2-HS-61-191B, GLYCOL TO AHU OUTSIDE CIV-ØA in the OPEN position. _____

[20] **PLACE** 2-HS-61-191A, GLYCOL TO AHU OUTSIDE CIV-ØA in the OPEN position until 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION is FULLY OPEN, by light indication, **THEN**

RELEASE to A-AUTO. _____

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6.1 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION Functional Test (continued)

NOTE

A ladder or scaffold will be required to reach the Control Air Isolation Valve for 2-FCV-61-191-A.

[21] **CLOSE** 2-ISV-32-3359, CONTROL AIR ISOLATION VALVE TO 2-FCV-61-191-A. _____

[22] **OPEN** petcock to vent control air at 2-PREG-61-191, CONTROL AIR PRESSURE REG FOR 2-FCV-61-191-A, **AND**

VERIFY 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION CLOSES. (**ACC CRIT**) _____

[23] **CLOSE** petcock at 2-PREG-61-191, CONTROL AIR PRESSURE REG FOR 2-FCV-61-191-A. _____

[24] **OPEN** 2-ISV-32-3359, CONTROL AIR ISOLATION VALVE TO 2-FCV-61-191-A. _____

[25] **PLACE** 2-HS-61-191A, GLYCOL TO AHU OUTSIDE CIV-ØA in the OPEN position for several seconds to establish valve travel, **THEN**

RELEASE to A-AUTO, **AND**

VERIFY 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION returns to CLOSED. _____

[26] **PLACE** 2-HS-61-191A, GLYCOL TO AHU OUTSIDE CIV-ØA in the OPEN position until 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION is FULLY OPEN, by light indication, **THEN**

RELEASE to A-AUTO. _____

[27] **PLACE** 2-HS-61-191B, GLYCOL TO AHU OUTSIDE CIV-ØA in the P-AUTO position. _____

[28] **VERIFY** Annunciator window 2-XA-55-6E-143B, GLYCOL EXP TNK LEVEL LO/LO-LO, is CLEAR. _____

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6.1 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION Functional Test (continued)

[29] **PLACE** TS-1 at TB309, in Relay Panel 2-R-58, to OFF (Open) to simulate a glycol expansion tank LO-LO level. _____

[30] **VERIFY** the following:

A. Annunciator Window 2-XA-55-6E-143B, GLYCOL EXP TNK LEVEL LO/LO-LO, ALARMS (**ACC CRIT**). _____

B. Event Display Legend indicates 143B GLYCOL EXP TNK LEVEL LO-LO (2-LS-61-197B/A) is in ALARM (Red) (**ACC CRIT**). _____

C. By light indication at 2-HS-61-191A, GLYCOL TO AHU OUTSIDE CIV-ØA that 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION is CLOSED (**ACC CRIT**). _____

[31] **VERIFY** 2-XA-55-6E-143C, GLYCOL HS-61-191B, 193B MISALIGNED WITH FCV, is CLEAR. _____

[32] **PLACE** 2-HS-61-191B, GLYCOL TO AHU OUTSIDE CIV-ØA in the OPEN position, **AND**

VERIFY 2-XA-55-6E-143C, GLYCOL HS-61-191B, 193B MISALIGNED WITH FCV, ALARMS (**ACC CRIT**) _____

[33] **PLACE** test switch TS-1 at TB 309 in Relay Panel 2-R-58, to ON (Closed) to simulate normal level in the glycol expansion tank, **AND**

VERIFY Annunciator Window 143-C, GLYCOL HS-61-191B, 193B MISALIGNED WITH FCV, CLEARS. _____

[34] **PLACE** 2-HS-61-191B, GLYCOL TO AHU OUTSIDE CIV-ØA in the P-AUTO position. _____

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

6.1 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION Functional Test (continued)

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

A. 2-XA-55-6E-143B, GLYCOL EXP TNK LEVEL LO/LO-LO, is CLEAR. _____

B. Event Display Legend indicates 143B GLYCOL EXP TNK LEVEL LO-LO (2-LS-61-197B/A) is NORMAL (Blue). _____

C. By light indication at 2-HS-61-191A, GLYCOL TO AHU OUTSIDE CIV-ØA that 2-FCV-61-191-A remains CLOSED. _____

[36] **PLACE** a jumper between Terminal Points 4 (Wire 2M737A) and 5 (Wire 2NM6E) at 2-LIS-61-195B/A, GLYCOL EXPANSION TANK LOW LEVEL located at AZ305° EL 820 to simulate a LO level in the glycol expansion tank. _____ 1st _____ CV

[37] **VERIFY** 2-XA-55-6E-143B, GLYCOL EXP TNK LEVEL LO/LO-LO, ALARMS (**ACC CRIT**). _____

[38] **VERIFY** the Event Display Legend indicates 143-B, GLYCOL EXP TNK LEVEL LO (2-LS-61-195B), is in ALARM (Red) (**ACC CRIT**). _____

[39] **REMOVE** the jumper between Terminal Points 4 (Wire 2M737A) and 5 (Wire 2NM6E) at 2-LIS-61-195B/A, GLYCOL EXPANSION TANK LOW LEVEL. _____ 1st _____ CV

[40] **VERIFY** 2-XA-55-6E-143B, GLYCOL EXP TNK LEVEL LO/LO-LO, CLEARS. _____

[41] **VERIFY** the Event Display Legend indicates 143-B, GLYCOL EXP TNK LEVEL LO (2-LS-61-195B), is NORMAL (Blue). _____

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

6.1 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION Functional Test (continued)

[41.1] **LAND** Wire 2M736B at Terminal Point 3, at 2-LS-61-197A/B, GLYCOL EXPANSION TANK LEVEL (AZ305°, EL820).

_____ 1st

_____ CV

[41.2] **VERIFY** 2-XA-55-6E-143A, GLYCOL EXP TNK LEVEL HI/HI-HI, is CLEAR. _____

[42] **PLACE** a jumper between, Terminal Points 9 (Wire 2NM6E) and 10 (Wire 2M736A) at 2-LIS-61-195A/B GLYCOL EXPANSION TANK HIGH LEVEL, located at AZ305°, EL820 to simulate a HI level in the glycol expansion tank.

_____ 1st

_____ CV

[43] **VERIFY** 2-XA-55-6E-143A, GLYCOL EXP TNK LEVEL HI/HI-HI, ALARMS (**ACC CRIT**). _____

[44] **VERIFY** Event Display Legend indicates 143A, GLYCOL EXP TANK LEVEL HI (2-LS-61-195A), is in ALARM (Red) (**ACC CRIT**). _____

[45] **REMOVE** the jumper between Terminal Points 9 (Wire 2NM6E) and 10 (Wire 2M736A) at 2-LIS-61-195A/B GLYCOL EXPANSION TANK HIGH LEVEL.

_____ 1st

_____ CV

[46] **VERIFY** 2-XA-55-6E-143A, GLYCOL EXP TNK LEVEL HI/HI-HI, CLEARS. _____

[47] **VERIFY** the Event Display Legend indicates 143A, GLYCOL EXP TNK LEVEL HI (2-LS-61-195A), is NORMAL (Blue). _____

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

6.1 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION Functional Test (continued)

[48] **PLACE** a jumper between Terminal Points 2 (Wire 2NM6E) and 3 (Wire 2M736B) at 2-LS-61-197A/B, GLYCOL EXPANSION TANK LEVEL located at AZ305°, EL820 to simulate a HI-HI level in the glycol expansion tank.

_____ 1st

_____ CV

[49] **VERIFY** 2-XA-55-6E-143A, GLYCOL EXP TNK LEVEL HI/HI-HI, ALARMS (**ACC CRIT**). _____

[50] **VERIFY** the Event Display Legend indicates 143A, GLYCOL EXP TNK LEVEL HI-HI (2-LS-61-197A), is in ALARM (Red) (**ACC CRIT**). _____

[51] **REMOVE** Test Switch TS-2 at Terminal Board TB 618 in Panel 2-R-48.

_____ 1st

_____ CV

[52] **LAND** wire G1C4 onto Terminal Point 7 on TB 618 in Panel 2-R-48.

_____ 1st

_____ CV

[53] **REMOVE** the jumper between Terminal Points 2 (2NM6E) and 3 (Wire 2M736B) at 2-LS-61-197A/B, GLYCOL EXPANSION TANK LEVEL.

_____ 1st

_____ CV

[54] **VERIFY** 2-XA-55-6E-143A, GLYCOL EXP TNK LEVEL HI/HI-HI, CLEARS. _____

[55] **VERIFY** the Event Display Legend indicates 143A, GLYCOL EXP TNK LEVEL HI-HI (2-LS-61-197A) is NORMAL (Blue). _____

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

6.1 2-FCV-61-191-A, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION Functional Test (continued)

[56] **PLACE** 2-HS-61-191B, GLYCOL TO AHU OUTSIDE CIV-∅A, at 2-M-9, in the OPEN position until 2-FCV-61-191-A is FULLY OPEN, **THEN**

RELEASE to A-AUTO. _____

[57] **VERIFY** no excessive vibration of the piping system and components associated with the performance of this subsection was observed. _____

[58] **VERIFY** the successful completion of this Subsection 6.1 (**ACC CRIT**). _____

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

6.2 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION Functional Test

NOTES

1) This subsection will test 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION from its control station and verify operability of all interlocks, indicating lights, and annunciators.
2) During the performance of this subsection, visual observation of transient and steady state vibrations is required.

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

[2] **ENSURE** 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION is CLOSED by Green Light ON at 2-HS-61-193A, GLYCOL FRM AHU OUTSIDE CIV-ØA, at 2-M-9. _____

[3] **PLACE** 2-HS-61-193B, GLYCOL FRM AHU OUTSIDE CIV-ØA, at 2-M-9, in the OPEN position. _____

[4] **PLACE** 2-HS-61-193A, GLYCOL FRM AHU OUTSIDE CIV-ØA, at 2-M-9, in the OPEN position until 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION is FULLY OPEN, **THEN**

RELEASE to A-AUTO, **AND**

VERIFY:

A. Red Light, at 2-HS-61-193A, GLYCOL FRM AHU OUTSIDE CIV-ØA ON _____

B. Green Light, at 2-HS-61-193A, GLYCOL FRM AHU OUTSIDE CIV-ØA OFF _____

[5] **PLACE** 2-HS-61-193B, GLYCOL FRM AHU OUTSIDE CIV-ØA in the P-AUTO position. _____

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

6.2 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION Functional Test (continued)

[6] **VERIFY** the following for 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION:

A. 2-HS-61-193A, GLYCOL FRM AHU OUTSIDE CIV-ØA Red Light ON _____

B. 2-HS-61-193A, GLYCOL FRM AHU OUTSIDE CIV-ØA Green Light OFF _____

C. 2-XX-55-6E Window 62, FCV-61-193, Red Light ON _____

D. 2-XX-55-6E Window 62, FCV-61-193, Green Light OFF _____

E. 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION OPEN (EL 783/MG SET RM) _____

NOTE

Steps 6.2[7] and 6.2[8] will verify that 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION closes on a simulated Phase A Containment Isolation Signal and stays closed upon resetting the signal.

[7] **PLACE** Test Switch TS-3 at Terminal Board TB 618 in Panel 2-R-48 to the OFF position, **AND**

VERIFY:

A. 2-XX-55-6E Window 62, FCV-61-193, Green Light ON (**ACC CRIT**) _____

B. 2-XX-55-6E Window 61, FCV-61-193, Red Light OFF (**ACC CRIT**) _____

C. 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION is CLOSED.(Local) (**ACC CRIT**) _____

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

6.2 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION Functional Test (continued)

[8] **PLACE** Test Switch TS-2 at Terminal Board TB 618 in Panel 2-R-48 to the ON position, **AND**

VERIFY:

A. 2-XX-55-6E Window 62, FCV-61-193, Green Light ON (**ACC CRIT**) _____

B. 2-XX-55-6E Window 61, FCV-61-193, Red Light OFF (**ACC CRIT**) _____

C. 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION is CLOSED.(Local) (**ACC CRIT**) _____

[9] **PLACE** 2-HS-61-193B, GLYCOL FRM AHU OUTSIDE CIV-∅A, at 2-M-9, in the OPEN position. _____

[10] **PLACE** 2-HS-61-193A, GLYCOL FRM AHU OUTSIDE CIV-∅A, at 2-M-9, in the OPEN position until 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION is FULLY OPEN, **THEN**

RELEASE to A-AUTO _____

[11] **PLACE** 2-HS-61-193B, GLYCOL FRM AHU OUTSIDE CIV-∅A in the P-AUTO position. _____

[12] **VERIFY** the following for 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION:

A. 2-HS-61-193A, GLYCOL FRM AHU OUTSIDE CIV-∅A Red Light ON _____

B. 2-HS-61-193A, GLYCOL FRM AHU OUTSIDE CIV-∅A Green Light OFF _____

C. 2-XX-55-6E Window 62, FCV-61-193, Red Light ON _____

D. 2-XX-55-6E Window 62, FCV-61-193, Green Light OFF _____

E. 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION OPEN (Local) _____

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

6.2 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION Functional Test (continued)

NOTES

1) Steps 6.2[13] and 6.2[16] require valve stroke timing locally at the valve and remotely at the Control Switch in both the Open and Closed positions.
2) Local timing begins with the initiating signal and is concluded with the completion of valve stem movement. Remote timing begins with the initiating signal and is concluded with the position indication lights status change. Stroke time acceptance criteria will be based on the movement to the safety function final position of the valve.

[13] **PLACE** 2-HS-61-193A, GLYCOL FRM AHU OUTSIDE CIV-∅A in the CLOSE position, **AND**

SIMULTANEOUSLY TIME the valve stroke, **THEN**

RELEASE to A-AUTO. _____

[13.1] **RECORD** remote closing time at 2-HS-61-193A, GLYCOL FRM AHU OUTSIDE CIV-∅A. (**ACC CRIT**)

_____ seconds (≤ 30 seconds) _____

M&TE _____ Cal Due Date _____ _____

[13.2] **RECORD** local closing time at 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION. (**ACC CRIT**)

_____ seconds (≤ 30 seconds) _____

M&TE _____ Cal Due Date _____ _____

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

6.2 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION Functional Test (continued)

[14] **VERIFY** the following for 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION:

A. 2-HS-61-193A, GLYCOL FRM AHU OUTSIDE CIV-ØA Red Light OFF _____

B. 2-HS-61-193A, GLYCOL FRM AHU OUTSIDE CIV-ØA Green Light ON _____

C. 2-XX-55-6E Window 62, FCV-61-193, Red Light OFF _____

D. 2-XX-55-6E Window 62, FCV-61-193, Green Light ON _____

E. 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION CLOSED (Local) _____

NOTE

Time the valve stroke from 2-HS-61-193A, GLYCOL FRM AHU OUTSIDE CIV-ØA and locally at the valve.

[15] **PLACE** 2-HS-61-193B, GLYCOL FRM AHU OUTSIDE CIV-ØA in the OPEN position. _____

[16] **PLACE** 2-HS-61-193A, GLYCOL FRM AHU OUTSIDE CIV-ØA in the OPEN position, **AND**

SIMULTANEOUSLY TIME the valve stroke, **THEN**

RELEASE to A-AUTO.

[16.1] **RECORD** remote opening time at 2-HS-61-193A, GLYCOL FRM AHU OUTSIDE CIV-ØA.

_____ seconds (≤ 30 seconds) _____

M&TE _____ Cal Due Date _____ _____

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

6.2 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION Functional Test (continued)

[16.2] **RECORD** local opening time at 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION.

_____ seconds (≤ 30 seconds) _____

M&TE _____ Cal Due Date _____ _____

[17] **PLACE** 2-HS-61-193B, GLYCOL FRM AHU OUTSIDE CIV-∅A in the P-AUTO position. _____

NOTE

Time the valve stroke from 2-HS-61-193B, GLYCOL FRM AHU OUTSIDE CIV-∅A, and locally at the valve. Use light indication at 2-HS-61-193A, GLYCOL FRM AHU OUTSIDE CIV-∅A.

[18] **PLACE** 2-HS-61-193B, GLYCOL FRM AHU OUTSIDE CIV-∅A in the CLOSE position, **AND**

SIMULTANEOUSLY TIME the valve stroke, **THEN**

RELEASE to P-AUTO. _____

[18.1] **RECORD** remote closing time at 2-HS-61-193A, GLYCOL FRM AHU OUTSIDE CIV-∅A.

_____ seconds _____

M&TE _____ Cal Due Date _____ _____

[18.2] **RECORD** local closing time at 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION.

_____ seconds _____

M&TE _____ Cal Due Date _____ _____

[19] **PLACE** 2-HS-61-193B, GLYCOL FRM AHU OUTSIDE CIV-∅A in the OPEN position. _____

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

6.2 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION Functional Test (continued)

[20] **PLACE** 2-HS-61-193A, GLYCOL FRM AHU OUTSIDE CIV-∅A in the OPEN position until 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION is FULLY OPEN, by light indication, **THEN**

RELEASE to A-AUTO. _____

NOTE

A ladder or scaffold will be required to reach the Control Air Isolation Valve for 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION.

[21] **CLOSE** 2-ISV-32-3361, CONTROL AIR ISOLATION VALVE TO 2-FCV-61-193-A. _____

[22] **OPEN** petcock to vent control air at 2-PREG-61-193, CONTROL AIR PRESSURE REG FOR 2-FCV-61-193-A, **AND**

VERIFY 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION CLOSES. (**ACC CRIT**) _____

[23] **CLOSE** petcock at 2-PREG-61-193, CONTROL AIR PRESSURE REG FOR 2-FCV-61-193-A. _____

[24] **OPEN** 2-ISV-32-3361, CONTROL AIR ISOLATION VALVE TO 2-FCV-61-193-A. _____

[25] **PLACE** 2-HS-61-193A, GLYCOL FRM AHU OUTSIDE CIV-∅A in the OPEN position for several seconds to establish valve travel, **THEN**

RELEASE to A-AUTO, **AND**

VERIFY 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION returns to CLOSED. _____

[26] **PLACE** 2-HS-61-193A, GLYCOL FRM AHU OUTSIDE CIV-∅A in the OPEN position until 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION is FULLY OPEN, by light indication, **THEN**

RELEASE to A-AUTO. _____

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

6.2 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION Functional Test (continued)

[27] **PLACE** 2-HS-61-193B, GLYCOL FRM AHU OUTSIDE CIV-∅A in the P-AUTO position. _____

[28] **VERIFY** 2-XA-55-6E-143B, GLYCOL EXP TNK LEVEL LO/LO-LO, is CLEAR. _____

[29] **PLACE** TS-1 at TB 309 in 2-R-58, to OFF (Open) to simulate a glycol expansion tank LO-LO level. _____

[30] **VERIFY** the following:

A. 2-XA-55-6E-143B, GLYCOL EXP TNK LEVEL LO/LO-LO, ALARMS _____

B. By light indication at 2-HS-61-193A, GLYCOL FRM AHU OUTSIDE CIV-∅A, that 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION is CLOSED (**ACC CRIT**). _____

[31] **VERIFY** 2-XA-55-6E-143C, GLYCOL HS-61-191B, 193B MISALIGNED WITH FCV, is CLEAR. _____

[32] **PLACE** 2-HS-61-193B, GLYCOL FRM AHU OUTSIDE CIV-∅A in the OPEN position, **AND**

VERIFY 2-XA-55-6E-143C, GLYCOL HS-61-191B, 193B MISALIGNED WITH FCV, ALARMS (**ACC CRIT**). _____

[33] **PLACE** Test Switch TS-1 at TB 309 in Relay Panel 2-R-58, to ON (Closed) to simulate normal level in the glycol expansion tank, **AND**

VERIFY 2-XA-55-6E-143C, GLYCOL HS-61-191B, 193B MISALIGNED WITH FCV, CLEARS. _____

[34] **PLACE** 2-HS-61-193B, GLYCOL FRM AHU OUTSIDE CIV-∅A in the P-AUTO position. _____

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

6.2 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION Functional Test (continued)

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

A. 2-XA-55-6E-143B, GLYCOL EXP TNK LEVEL LO/LO-LO, is CLEAR. _____

B. By light indication at 2-HS-61-193A, that 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION remains CLOSED. _____

[36] **REMOVE** Test Switch TS-3 at Terminal Board TB 618 in Panel 2-R-48. _____ 1st _____ CV

[37] **LAND** wire G1D4 onto Terminal Point 9 on Terminal Board TB 618 in Panel 2-R-48. _____ 1st _____ CV

[38] **REMOVE** Test Switch TS-1 between Terminal Points 1 (Wire 8791) and 2 (Wire 879X) at TB 309, in Relay Panel 2-R-58. _____ 1st _____ CV

[39] **LAND** Wire 8791 at Terminal Point 1, at TB 309, in Relay Panel 2-R-58. _____ 1st _____ CV

[40] **PLACE** 2-HS-61-193A, GLYCOL FRM AHU OUTSIDE CIV-∅A, at 2-M-9, in the OPEN position until 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION is FULLY OPEN, **THEN**

RELEASE to A-AUTO _____

[41] **VERIFY** no excessive vibration of the piping system and components associated with the performance of this subsection was observed. _____

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

6.2 2-FCV-61-193-A, GLYCOL RETURN AUX BLDG ISOLATION Functional Test (continued)

[42] **VERIFY** the successful completion of this Subsection 6.2 (**ACC CRIT**). _____

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

6.3 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION Functional Testing

NOTES

1) This subsection will test 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION from its control station and verify operability of all interlocks, indicating lights, and annunciators.
2) During the performance of this subsection, visual observation of transient and steady state vibrations is required.

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

[2] **ENSURE** 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION, is CLOSED by Green Light ON at 2-HS-61-192, GLYCOL TO AHU INSIDE CIV-ØA. _____

[3] **PLACE** 2-HS-61-192, GLYCOL TO AHU INSIDE CIV-ØA, in the OPEN position until 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION is FULLY OPEN, **THEN**

RELEASE to A-AUTO. _____

[4] **VERIFY** the following for 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION:

A. 2-HS-61-192, GLYCOL TO AHU INSIDE CIV-ØA, Red Light, ON _____

B. 2-HS-61-192, GLYCOL TO AHU INSIDE CIV-ØA, Green Light, OFF _____

C. 2-XX-55-6F Window 61, FCV-61-192, Red Light ON. _____

D. 2-XX-55-6F Window 61, FCV-61-192, Green Light OFF. _____

E. 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION OPEN (EL 806/AZ 295). _____

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

6.3 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION Functional Testing (continued)

NOTE

Steps 6.3[5] and 6.3[6] will verify that 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION closes on a simulated Phase A Containment Isolation Signal and stays closed upon resetting the signal.

[5] **PLACE** Test Switch TS-4 at Terminal Board TB 618 in Panel 2-R-51 to the OFF position, **AND**

VERIFY:

A. 2-XX-55-6F Window 61, FCV-61-192, Green Light ON (**ACC CRIT**) _____

B. 2-XX-55-6F Window 61, FCV-61-192, Red Light OFF (**ACC CRIT**) _____

C. 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION is CLOSED.(Local) (**ACC CRIT**) _____

[6] **PLACE** Test Switch TS-4 at Terminal Board TB 618 in Panel 2-R-51 to the ON position, **AND**

VERIFY:

A. 2-XX-55-6F Window 61, FCV-61-192, Green Light ON (**ACC CRIT**) _____

B. 2-XX-55-6F Window 61, FCV-61-192, Red Light OFF (**ACC CRIT**) _____

C. 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION is CLOSED.(Local) (**ACC CRIT**) _____

[7] **PLACE** 2-HS-61-192, GLYCOL TO AHU INSIDE CIV-∅A, at 2-M-9, in the OPEN position until 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION is FULLY OPEN, **THEN**

RELEASE to A-AUTO _____

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

6.3 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION Functional Testing (continued)

[8] **VERIFY** the following for 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION:

A. 2-HS-61-192, GLYCOL TO AHU INSIDE CIV-ØA Red Light ON _____

B. 2-HS-61-192, GLYCOL TO AHU INSIDE CIV-ØA Green Light OFF _____

C. 2-XX-55-6F Window 61, FCV-61-192, Red Light ON _____

D. 2-XX-55-6F Window 61, FCV-61-192, Green Light OFF _____

E. 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION OPEN (Local) _____

NOTES

1) Steps 6.3[9] and 6.3[11] require valve stroke timing locally at the valve and remotely at the Control Switch in both the Open and Closed positions.
2) Local timing begins with the initiating signal and is concluded with the completion of valve stem movement. Remote timing begins with the initiating signal and is concluded with the position indication lights status change. Stroke time acceptance criteria will be based on the movement to the safety function final position of the valve.

[9] **PLACE** 2-HS-61-192, GLYCOL TO AHU INSIDE CIV-ØA, at 2-M-9 in the CLOSE position, **AND**

SIMULTANEOUSLY TIME the valve stroke, **THEN**

RELEASE to A-AUTO. _____

[9.1] **RECORD** remote closing time at 2-HS-61-192, GLYCOL TO AHU INSIDE CIV-ØA. (**ACC CRIT**)

_____ seconds (≤ 30 seconds) _____

M&TE _____ Cal Due Date _____ _____

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

6.3 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION Functional Testing (continued)

[9.2] **RECORD** local closing time at 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION.
(**ACC CRIT**)

_____ seconds (≤ 30 seconds) _____

M&TE _____ Cal Due Date _____ _____

[10] **VERIFY** the following for 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION:

A. 2-HS-61-192, GLYCOL TO AHU INSIDE CIV-ØA, Red Light OFF. _____

B. 2-HS-61-192, GLYCOL TO AHU INSIDE CIV-ØA, Green Light ON. _____

C. 2-XX-55-6F Window 61, FCV-61-192, Red Light OFF. _____

D. 2-XX-55-6F Window 62, FCV-61-192, Green Light ON. _____

E. 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION CLOSED (Local). _____

NOTE

Time the valve stroke from 2-HS-61-192 and locally at the valve.

[11] **PLACE** 2-HS-61-192 in the OPEN position, **AND**

SIMULTANEOUSLY TIME the valve stroke, **THEN**

RELEASE to A-AUTO. _____

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

6.3 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION Functional Testing (continued)

[11.1] **RECORD** remote opening time at 2-HS-61-192, GLYCOL TO AHU INSIDE CIV-ØA.

_____ seconds _____

M&TE _____ Cal Due Date _____ _____

[11.2] **RECORD** local opening time at 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION.

_____ seconds _____

M&TE _____ Cal Due Date _____ _____

[12] **CLOSE** 2-ISV-32-3552, CONTROL AIR ISOLATION VALVE TO 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION. _____

[13] **OPEN** petcock to vent control air at 2-PREG-61-192, CONTROL AIR PRESSURE REG FOR 2-FCV-61-192-B, **AND**

VERIFY 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION CLOSES. (**ACC CRIT**) _____

[14] **CLOSE** petcock at 2-PREG-61-192, CONTROL AIR PRESSURE REG FOR 2-FCV-61-192-B. _____

[15] **OPEN** 2-ISV-32-3552, CONTROL AIR ISOLATION VALVE TO 2-FCV-61-192-B. _____

[16] **PLACE** 2-HS-61-192, GLYCOL TO AHU INSIDE CIV-ØA in the OPEN position for several seconds to establish valve travel, **THEN**

RELEASE to A-AUTO, **AND**

VERIFY 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION returns to CLOSED. _____

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

6.3 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION Functional Testing (continued)

[17] **PLACE** 2-HS-61-192, GLYCOL TO AHU INSIDE CIV-ØA in the OPEN position until 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION is FULLY OPEN, by light indication, **THEN**

RELEASE to A-AUTO. _____

[18] **PLACE** 2-HS-61-192, GLYCOL TO AHU INSIDE CIV-ØA in the CLOSE position, **THEN**

RELEASE to A-AUTO, **AND**

VERIFY 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION CLOSES. _____

[19] **REMOVE** Test Switch TS-4 at Terminal Board TB 618 in Panel 2-R-51. _____ 1st _____ CV

[20] **LAND** wire G1A4 onto Terminal Point 5 on Terminal Board TB 618 in Panel 2-R-51. _____ 1st _____ CV

[21] **PLACE** 2-HS-61-192, GLYCOL TO AHU INSIDE CIV-ØA in the OPEN position, **THEN**

RELEASE to A-AUTO, **AND**

VERIFY 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION OPENS. _____

[22] **VERIFY** no excessive vibration of the piping system and components associated with the performance of this subsection was observed. _____

[23] **VERIFY** the successful completion of this Subsection 6.3 (**ACC CRIT**). _____

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

6.4 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION Functional Test

NOTES

1) This subsection will test 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION from its control station and verify operability of all interlocks, indicating lights, and annunciators.
2) During the performance of this subsection, visual observation of transient and steady state vibrations is required.

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

[2] **ENSURE** 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION, is CLOSED by Green Light ON at 2-HS-61-194, GLYCOL FRM AHU INSIDE CIV-ØA, at 2-M-9. _____

[3] **PLACE** 2-HS-61-194, GLYCOL FRM AHU INSIDE CIV-ØA, at 2-M-9, in the OPEN position until 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION is FULLY OPEN, **THEN**

RELEASE to A-AUTO. _____

[4] **VERIFY** the following for 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION:

A. 2-HS-61-194, GLYCOL FRM AHU INSIDE CIV-ØA Red Light ON _____

B. 2-HS-61-194, GLYCOL FRM AHU INSIDE CIV-ØA Green Light OFF _____

C. 2-XX-55-6F Window 62, FCV-61-194, Red Light ON. _____

D. 2-XX-55-6F Window 62, FCV-61-194, Green Light OFF. _____

E. 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION OPEN (EL 806/AZ 295). _____

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

6.4 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION Functional Test (continued)

NOTE

Steps 6.4[5] and 6.4[6] will verify that 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION closes on a simulated Phase A Containment Isolation Signal and stays closed upon resetting the signal.

[5] **PLACE** Test Switch TS-5 at Terminal Board TB 618 in Panel 2-R-51 to the OFF position, **AND**

VERIFY:

A. 2-XX-55-6F Window 62, FCV-61-194, Green Light ON (**ACC CRIT**) _____

B. 2-XX-55-6F Window 62, FCV-61-194, Red Light OFF (**ACC CRIT**) _____

C. 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION is CLOSED.(Local) (**ACC CRIT**) _____

[6] **PLACE** Test Switch TS-5 at Terminal Board TB 618 in Panel 2-R-51 to the ON position, **AND**

VERIFY:

A. 2-XX-55-6F Window 62, FCV-61-194, Green Light ON (**ACC CRIT**) _____

B. 2-XX-55-6F Window 62, FCV-61-194, Red Light OFF (**ACC CRIT**) _____

C. 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION is CLOSED.(Local) (**ACC CRIT**) _____

[7] **PLACE** 2-HS-61-194, GLYCOL FRM AHU INSIDE CIV-∅A, at 2-M-9, in the OPEN position until 2-FCV-61-192-B, GLYCOL SUPPLY TO AHUS CONTAINMENT ISOLATION is FULLY OPEN, **THEN**

RELEASE to A-AUTO _____

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

6.4 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION Functional Test (continued)

[8] **VERIFY** the following for 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION:

A. 2-HS-61-194, GLYCOL FRM AHU INSIDE CIV-ØA Red Light ON _____

B. 2-HS-61-194, GLYCOL FRM AHU INSIDE CIV-ØA Green Light OFF _____

C. 2-XX-55-6F Window 62, FCV-61-194, Red Light ON _____

D. 2-XX-55-6F Window 62, FCV-61-194, Green Light OFF _____

E. 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION OPEN (Local) _____

NOTES

1) Steps 6.4[9] and 6.4[11] require valve stroke timing locally at the valve and remotely at the Control Switch in both the Open and Closed positions.
2) Local timing begins with the initiating signal and is concluded with the completion of valve stem movement. Remote timing begins with the initiating signal and is concluded with the position indication lights status change. Stroke time acceptance criteria will be based on the movement to the safety function final position of the valve.

[9] **PLACE** 2-HS-61-194, GLYCOL FRM AHU INSIDE CIV-ØA in the CLOSE position, **AND**

SIMULTANEOUSLY TIME the valve stroke, **THEN**

RELEASE to A-AUTO. _____

[9.1] **RECORD** remote closing time at 2-HS-61-194, GLYCOL FRM AHU INSIDE CIV-ØA. (**ACC CRIT**)

_____ seconds (≤ 30 seconds) _____

M&TE _____ Cal Due Date _____ _____

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

6.4 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION Functional Test (continued)

[9.2] **RECORD** local closing time at 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION. (**ACC CRIT**)

_____ seconds (≤ 30 seconds) _____

M&TE _____ Cal Due Date _____ _____

[10] **VERIFY** the following for 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION:

A. 2-HS-61-194, GLYCOL FRM AHU INSIDE CIV-ØA Red Light OFF. _____

B. 2-HS-61-194, GLYCOL FRM AHU INSIDE CIV-ØA Green Light ON. _____

C. 2-XX-55-6F Window 62, FCV-61-194, Red Light OFF. _____

D. 2-XX-55-6F Window 62, FCV-61-194, Green Light ON. _____

E. 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION CLOSED (Local). _____

NOTE

Time the valve stroke from 2-HS-61-194, GLYCOL FRM AHU INSIDE CIV-ØA and locally at the valve.

[11] **PLACE** 2-HS-61-194, GLYCOL FRM AHU INSIDE CIV-ØA in the OPEN position **AND**

SIMULTANEOUSLY TIME the valve stroke, **THEN**

RELEASE to A-AUTO. _____

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

6.4 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION Functional Test (continued)

[11.1] **RECORD** remote opening time at 2-HS-61-194, GLYCOL FRM AHU INSIDE CIV-∅A.

_____ seconds _____

M&TE _____ Cal Due Date _____ _____

[11.2] **RECORD** local opening time at 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION.

_____ seconds _____

M&TE _____ Cal Due Date _____ _____

[12] **CLOSE** 2-ISV-32-3553, CONTROL AIR ISOLATION VALVE TO 2-FCV-61-194-B. _____

[13] **OPEN** petcock to vent control air at 2-PREG-61-194, CONTROL AIR PRESSURE REG FOR 2-FCV-61-194-B, **AND**

VERIFY 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION CLOSES. (**ACC CRIT**) _____

[14] **CLOSE** petcock at 2-PREG-61-194, CONTROL AIR PRESSURE REG FOR 2-FCV-61-194-B. _____

[15] **OPEN** 2-ISV-32-3553, CONTROL AIR ISOLATION VALVE TO 2-FCV-61-194-B. _____

[16] **PLACE** 2-HS-61-194, GLYCOL FRM AHU INSIDE CIV-∅A in the OPEN position for several seconds to establish valve travel, **THEN**

RELEASE to A-AUTO, **AND**

VERIFY 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION returns to CLOSED. _____

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

6.4 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION Functional Test (continued)

[17] **PLACE** 2-HS-61-194, GLYCOL FRM AHU INSIDE CIV-ØA in the OPEN position until 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION is FULLY OPEN, by light indication, **THEN**

RELEASE to A-AUTO. _____

[18] **PLACE** 2-HS-61-194, GLYCOL FRM AHU INSIDE CIV-ØA in the CLOSE position, **THEN**

RELEASE to A-AUTO, **AND**

VERIFY 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION CLOSES. _____

[19] **REMOVE** Test Switch TS-5 at Terminal Board TB 618 in Panel 2-R-51. _____ 1st _____ CV

[20] **LAND** wire G1B4 onto Terminal Point 7 on Terminal Board TB 618 in Panel 2-R-51. _____ 1st _____ CV

[21] **PLACE** 2-HS-61-194, GLYCOL FRM AHU INSIDE CIV-ØA in the OPEN position, **THEN**

RELEASE to A-AUTO, **AND**

VERIFY 2-FCV-61-194-B, GLYCOL RETURN CONTAINMENT ISOLATION OPENS. _____

[22] **VERIFY** no excessive vibration of the piping system and components associated with the performance of this subsection was observed. _____

[23] **VERIFY** the successful completion of this Subsection 6.4 (**ACC CRIT**). _____

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

6.5 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL Functional Testing

NOTES

1) This subsection will test 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL from its control station and verify operability of all interlocks, indicating lights, and annunciators.
2) During the performance of this subsection, visual observation of transient and steady state vibrations is required.

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

[2] **ENSURE** the following Glycol Floor Pump(s) are STOPPED

A. 2-PMP-61-51, GLYCOL COOLED FLOOR PUMP 2A _____

B. 2-PMP-61-61, GLYCOL COOLED FLOOR PUMP 2B _____

[3] **ENSURE** 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL, is CLOSED by Green Light ON at 2-HS-61-96, FLOOR CLG SUP OUTSIDE CIV-ØA, at 2-M-9. _____

[4] **PLACE** 2-HS-61-96, FLOOR CLG SUP OUTSIDE CIV-ØA, at 2-M-9, in the OPEN position until 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL is FULLY OPEN, **THEN**

RELEASE to A-AUTO. _____

[5] **VERIFY** the following for 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL:

A. 2-HS-61-96, FLOOR CLG SUP OUTSIDE CIV-ØA Red Light ON. _____

B. 2-HS-61-96, FLOOR CLG SUP OUTSIDE CIV-ØA Green Light OFF. _____

C. 2-XX-55-6E Window 50, FCV-61-96, Red Light ON. _____

D. 2-XX-55-6E Window 50, FCV-61-96, Green Light OFF. _____

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

6.5 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL Functional Testing (continued)

E. 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL OPEN (EL 768/A12W). _____

NOTE

Steps 6.5[6] and 6.5[7] will verify that 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL closes on a simulated Phase A Containment Isolation Signal and stays closed upon resetting the signal.

[6] **PLACE** Test Switch TS-6 at Terminal Board TB 646 in Panel 2-R-48 to the OFF position, **AND**

VERIFY:

A. 2-XX-55-6E Window 50, FCV-61-96, Green Light ON (**ACC CRIT**) _____

B. 2-XX-55-6E Window 50, FCV-61-96, Red Light OFF (**ACC CRIT**) _____

C. 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL is CLOSED.(Local) (**ACC CRIT**) _____

[7] **PLACE** Test Switch TS-6 at Terminal Board TB 646 in Panel 2-R-48 to the ON position, **AND**

VERIFY:

A. 2-XX-55-6E Window 50, FCV-61-96, Green Light ON (**ACC CRIT**) _____

B. 2-XX-55-6E Window 50, FCV-61-96, Red Light OFF (**ACC CRIT**) _____

C. 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL is CLOSED.(Local) (**ACC CRIT**) _____

[8] **PLACE** 2-HS-61-96, FLOOR CLG SUP OUTSIDE CIV-ØA, at 2-M-9, in the OPEN position until 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL is FULLY OPEN, **THEN**

RELEASE to A-AUTO _____

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

6.5 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL Functional Testing (continued)

[9] **VERIFY** the following for 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL:

A. 2-HS-61-96, FLOOR CLG SUP OUTSIDE CIV-ØA Red Light ON _____

B. 2-HS-61-96, FLOOR CLG SUP OUTSIDE CIV-ØA Green Light OFF _____

C. 2-XX-55-6E Window 50, FCV-61-96, Red Light ON _____

D. 2-XX-55-6E Window 50, FCV-61-96, Green Light OFF _____

E. 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL OPEN (Local) _____

NOTES

1) Steps 6.5[10] and 6.5[12] require valve stroke timing locally at the valve and remotely at the Control Switch in both the Open and Closed positions.
2) Local timing begins with the initiating signal and is concluded with the completion of valve stem movement. Remote timing begins with the initiating signal and is concluded with the position indication lights status change. Stroke time acceptance criteria will be based on the movement to the safety function final position of the valve.

[10] **PLACE** 2-HS-61-96, FLOOR CLG SUP OUTSIDE CIV-ØA in the CLOSE position, **AND**

SIMULTANEOUSLY TIME the valve stroke, **THEN**

RELEASE to A-AUTO. _____

[10.1] **RECORD** remote closing time at, 2-HS-61-96, FLOOR CLG SUP OUTSIDE CIV-ØA. (**ACC CRIT**)

_____ seconds (≤ 30 seconds) _____

M&TE _____ Cal Due Date _____ _____

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

6.5 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL Functional Testing (continued)

[10.2] **RECORD** local closing time at 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL. (**ACC CRIT**)

_____ seconds (≤ 30 seconds) _____

M&TE _____ Cal Due Date _____ _____

[11] **VERIFY** the following for 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL:

A. 2-HS-61-96, FLOOR CLG SUP OUTSIDE CIV-ØA Red Light OFF. _____

B. 2-HS-61-96, FLOOR CLG SUP OUTSIDE CIV-ØA Green Light ON. _____

C. 2-XX-55-6E Window 50, FCV-61-96, Red Light OFF. _____

D. 2-XX-55-6E Window 50, FCV-61-96, Green Light ON. _____

E. 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL CLOSED (Local). _____

NOTE

Time the valve stroke from 2-HS-61-96, FLOOR CLG SUP OUTSIDE CIV-ØA and locally at the valve.

[12] **PLACE** 2-HS-61-96, FLOOR CLG SUP OUTSIDE CIV-ØA in the OPEN position, **AND**

SIMULTANEOUSLY TIME the valve stroke, **THEN**

RELEASE to A-AUTO. _____

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

6.5 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL Functional Testing (continued)

[12.1] **RECORD** remote opening time at 2-HS-61-96, FLOOR CLG SUP OUTSIDE CIV-∅A.

_____ seconds _____

M&TE _____ Cal Due Date _____ _____

[12.2] **RECORD** local opening time at 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL.

_____ seconds _____

M&TE _____ Cal Due Date _____ _____

[13] **CLOSE** 2-ISV-32-3411, CONTROL AIR ISOLATION VALVE TO 2-FCV-61-96-A. _____

[14] **OPEN** petcock to vent control air at 2-PREG-61-96, CONTROL AIR PRESSURE REG FOR 2-FCV-61-96-A, **AND**

VERIFY 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL CLOSES. (**ACC CRIT**) _____

[15] **CLOSE** petcock at 2-PREG-61-96, CONTROL AIR PRESSURE REG FOR 2-FCV-61-96-A. _____

[16] **OPEN** 2-ISV-32-3411, CONTROL AIR ISOLATION VALVE TO 2-FCV-61-96-A. _____

[17] **PLACE** 2-HS-61-96, FLOOR CLG SUP OUTSIDE CIV-∅A in the OPEN position for several seconds to establish valve travel, **THEN**

RELEASE to A-AUTO, **AND**

VERIFY 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL returns to CLOSED. _____

[18] **PLACE** 2-HS-61-96, FLOOR CLG SUP OUTSIDE CIV-∅A in the OPEN position until 2-FCV-61-96-A is FULLY OPEN, by light indication, **THEN**

RELEASE to A-AUTO. _____

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

6.5 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL Functional Testing (continued)

[19] **PLACE** 2-HS-61-96, FLOOR CLG SUP OUTSIDE CIV-ØA in the CLOSE position, **THEN**

RELEASE to A-AUTO, **AND**

VERIFY 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL CLOSES. _____

[20] **REMOVE** Test Switch TS-6 at Terminal Board TB 646 in Panel 2-R-48. _____

1st _____

CV _____

[21] **LAND** wire G1H5 onto Terminal Point 9 on Terminal Board TB 646 in Panel 2-R-48. _____

1st _____

CV _____

[22] **PLACE** 2-HS-61-96, FLOOR CLG SUP OUTSIDE CIV-ØA in the OPEN position, **THEN**

RELEASE to A-AUTO, **AND**

VERIFY 2-FCV-61-96-A, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL OPENS. _____

[23] **VERIFY** no excessive vibration of the piping system and components associated with the performance of this subsection was observed. _____

[24] **VERIFY** the successful completion of this Subsection 6.5 (**ACC CRIT**). _____

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

6.6 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL Functional Test

NOTES

1) This subsection will test 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL from its control station and verify operability of all interlocks, indicating lights, and annunciators.
2) During the performance of this subsection, visual observation of transient and steady state vibrations is required.

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

[2] **ENSURE** the following Glycol Floor Pump(s) are STOPPED

A. 2-PMP-61-51, GLYCOL COOLED FLOOR PUMP 2A _____

B. 2-PMP-61-61, GLYCOL COOLED FLOOR PUMP 2B _____

[3] **ENSURE** 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL, is CLOSED by Green Light ON at 2-HS-61-97, FLOOR CLG SUP OUTSIDE CIV-ØA, at 2-M-9. _____

[4] **PLACE** 2-HS-61-97, FLOOR CLG SUP INSIDE CIV-ØA, at 2-M-9, in the OPEN position until 2-FCV-61-97-B is FULLY OPEN, **THEN**

RELEASE to A-AUTO. _____

[5] **VERIFY** the following for 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL:

A. 2-HS-61-97, FLOOR CLG SUP INSIDE CIV-ØA Red Light ON. _____

B. 2-HS-61-97, FLOOR CLG SUP INSIDE CIV-ØA Green Light OFF. _____

C. 2-XX-55-6F Window 50, FCV-61-97, Red Light ON. _____

D. 2-XX-55-6F Window 50, FCV-61-97, Green Light OFF. _____

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

6.6 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL Functional Test (continued)

E. 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL OPEN (EL 775/AZ 303). _____

NOTE

Steps 6.6[6] and 6.6[7] will verify that 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL closes on a simulated Phase A Containment Isolation Signal and stays closed upon resetting the signal.

[6] **PLACE** Test Switch TS-7 at Terminal Board TB 646 in Panel 2-R-51 to the OFF position, **AND**

VERIFY:

A. 2-XX-55-6F Window 50, FCV-61-97, Green Light ON (**ACC CRIT**) _____

B. 2-XX-55-6F Window 50, FCV-61-97, Red Light OFF (**ACC CRIT**) _____

C. 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL is CLOSED.(Local) (**ACC CRIT**) _____

[7] **PLACE** Test Switch TS-7 at Terminal Board TB 646 in Panel 2-R-51 to the ON position, **AND**

VERIFY:

A. 2-XX-55-6F Window 50, FCV-61-97, Green Light ON (**ACC CRIT**) _____

B. 2-XX-55-6F Window 50, FCV-61-97, Red Light OFF (**ACC CRIT**) _____

C. 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL is CLOSED.(Local) (**ACC CRIT**) _____

[8] **PLACE** 2-HS-61-97, FLOOR CLG SUP INSIDE CIV-ØA, at 2-M-9, in the OPEN position until 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL is FULLY OPEN, **THEN**

RELEASE to A-AUTO _____

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

6.6 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL Functional Test (continued)

[9] **VERIFY** the following for 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL:

A. 2-HS-61-97, FLOOR CLG SUP INSIDE CIV-∅A Red Light ON _____

B. 2-HS-61-97, FLOOR CLG SUP INSIDE CIV-∅A Green Light OFF _____

C. 2-XX-55-6F Window 50, FCV-61-97, Red Light ON _____

D. 2-XX-55-6F Window 50, FCV-61-97, Green Light OFF _____

E. 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL OPEN (Local) _____

NOTES

1) Steps 6.6[10] and 6.6[12] require valve stroke timing locally at the valve and remotely at the Control Switch in both the Open and Closed positions.
2) Local timing begins with the initiating signal and is concluded with the completion of valve stem movement. Remote timing begins with the initiating signal and is concluded with the position indication lights status change. Stroke time acceptance criteria will be based on the movement to the safety function final position of the valve.

[10] **PLACE** 2-HS-61-97, FLOOR CLG SUP INSIDE CIV-∅A in the CLOSE position, **AND**

SIMULTANEOUSLY TIME the valve stroke, **THEN**

RELEASE to A-AUTO. _____

[10.1] **RECORD** remote closing time at, 2-HS-61-97, FLOOR CLG SUP INSIDE CIV-∅A. (**ACC CRIT**)

_____ seconds (≤ 30 seconds) _____

M&TE _____ Cal Due Date _____ _____

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

6.6 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL Functional Test (continued)

[10.2] **RECORD** local closing time at 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL. (**ACC CRIT**)

_____ seconds (≤ 30 seconds) _____

M&TE _____ Cal Due Date _____ _____

[11] **VERIFY** the following for 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL:

A. 2-HS-61-97, FLOOR CLG SUP INSIDE CIV-∅A Red Light OFF. _____

B. 2-HS-61-97, FLOOR CLG SUP INSIDE CIV-∅A Green Light ON. _____

C. 2-XX-55-6F Window 50, FCV-61-97, Red Light OFF. _____

D. 2-XX-55-6F Window 50, FCV-61-97, Green Light ON. _____

E. 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL CLOSED (Local). _____

NOTE

Time the valve stroke from 2-HS-61-97, FLOOR CLG SUP INSIDE CIV-∅A and locally at the valve.

[12] **PLACE** 2-HS-61-97, FLOOR CLG SUP INSIDE CIV-∅A in the OPEN position, **AND**

SIMULTANEOUSLY TIME the valve stroke, **THEN**

RELEASE to A-AUTO. _____

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

6.6 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL Functional Test (continued)

[12.1] **RECORD** remote opening time at 2-HS-61-97, FLOOR CLG SUP INSIDE CIV-ØA.

_____ seconds _____

M&TE _____ Cal Due Date _____ _____

[12.2] **RECORD** local opening time at 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL.

_____ seconds _____

M&TE _____ Cal Due Date _____ _____

[13] **CLOSE** 2-ISV-32-3550, CONTROL AIR ISOLATION VALVE TO 2-FCV-61-97-B. _____

[14] **OPEN** petcock to vent control air at 2-PREG-61-97, CONTROL AIR PRESSURE REG FOR 2-FCV-61-97-B, **AND**

VERIFY 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL CLOSES. (**ACC CRIT**) _____

[15] **CLOSE** petcock at 2-PREG-61-97, CONTROL AIR PRESSURE REG FOR 2-FCV-61-97-B. _____

[16] **OPEN** 2-ISV-32-3550, CONTROL AIR ISOLATION VALVE TO 2-FCV-61-97-B. _____

[17] **PLACE** 2-HS-61-97, FLOOR CLG SUP INSIDE CIV-ØA in the OPEN position for several seconds to establish valve travel, **THEN**

RELEASE to A-AUTO, **AND**

VERIFY 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL returns to CLOSED. _____

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

6.6 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL Functional Test (continued)

[18] **PLACE** 2-HS-61-97, FLOOR CLG SUP INSIDE CIV-∅A in the OPEN position until 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL is FULLY OPEN, by light indication, **THEN**

RELEASE to A-AUTO. _____

[19] **PLACE** 2-HS-61-97, FLOOR CLG SUP INSIDE CIV-∅A in the CLOSE position, **THEN**

RELEASE to A-AUTO, **AND**

VERIFY 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL CLOSES. _____

[20] **REMOVE** Test Switch TS-7 at Terminal Board TB 646 in Panel 2-R-51. _____

1st _____

CV

[21] **LAND** wire G1J5 onto Terminal Point 9 on Terminal Board TB 646 in Panel 2-R-51. _____

1st _____

CV

[22] **PLACE** 2-HS-61-97, FLOOR CLG SUP INSIDE CIV-∅A in the OPEN position, **THEN**

RELEASE to A-AUTO, **AND**

VERIFY 2-FCV-61-97-B, GLYCOL COOLED FLOOR SUPPLY HEADER ISOL OPENS. _____

[23] **VERIFY** no excessive vibration of the piping system and components associated with the performance of this subsection was observed. _____

[24] **VERIFY** the successful completion of this Subsection 6.6 (**ACC CRIT**). _____

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

6.7 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL Functional Test

NOTES

1) This subsection will test 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL from its control station and verify operability of all interlocks, indicating lights, and annunciators.
2) During the performance of this subsection, visual observation of transient and steady state vibrations is required.

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

[2] **ENSURE** the following Glycol Floor Pump(s) are STOPPED

A. 2-PMP-61-51, GLYCOL COOLED FLOOR PUMP 2A _____

B. 2-PMP-61-61, GLYCOL COOLED FLOOR PUMP 2B _____

[3] **ENSURE** 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL, is CLOSED by Green Light ON at 2-HS-61-110, FLOOR CLG SUP OUTSIDE CIV-ØA, at 2-M-9. _____

[4] **PLACE** 2-HS-61-110, FLOOR CLG RET OUTSIDE CIV-ØA, at 2-M-9, in the OPEN position until 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL is FULLY OPEN, **THEN**

RELEASE to A-AUTO. _____

[5] **VERIFY** the following for 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL:

A. 2-HS-61-110, FLOOR CLG RET OUTSIDE CIV-ØA Red Light ON. _____

B. 2-HS-61-110, FLOOR CLG RET OUTSIDE CIV-ØA Green Light OFF. _____

C. 2-XX-55-6E Window 51, FCV-61-110, Red Light ON. _____

D. 2-XX-55-6E Window 51, FCV-61-110, Green Light OFF. _____

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

6.7 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL Functional Test (continued)

E. 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL OPEN (EL 768/A12W). _____

NOTE

Steps 6.7[6] and 6.7[7] will verify that 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL closes on a simulated Phase A Containment Isolation Signal and stays closed upon resetting the signal.

[6] **PLACE** Test Switch TS-8 at Terminal Board TB 646 in Panel 2-R-48 to the OFF position, **AND**

VERIFY:

A. 2-XX-55-6E Window 51, FCV-61-110, Green Light ON (**ACC CRIT**) _____

B. 2-XX-55-6E Window 51, FCV-61-110, Red Light OFF (**ACC CRIT**) _____

C. 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL is CLOSED.(Local) (**ACC CRIT**) _____

[7] **PLACE** Test Switch TS-6 at Terminal Board TB 646 in Panel 2-R-48 to the ON position, **AND**

VERIFY:

A. 2-XX-55-6E Window 51, FCV-61-110, Green Light ON (**ACC CRIT**) _____

B. 2-XX-55-6E Window 51, FCV-61-110, Red Light OFF (**ACC CRIT**) _____

C. 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL is CLOSED.(Local) (**ACC CRIT**) _____

[8] **PLACE** 2-HS-61-110, FLOOR CLG RET OUTSIDE CIV-ØA, at 2-M-9, in the OPEN position until 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL is FULLY OPEN, **THEN**

RELEASE to A-AUTO _____

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

6.7 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL Functional Test (continued)

[9] **VERIFY** the following for 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL:

A. 2-HS-61-110, FLOOR CLG RET OUTSIDE CIV-ØA Red Light ON _____

B. 2-HS-61-110, FLOOR CLG RET OUTSIDE CIV-ØA Green Light OFF _____

C. 2-XX-55-6E Window 51, FCV-61-110, Red Light ON _____

D. 2-XX-55-6E Window 51, FCV-61-110, Green Light OFF _____

E. 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL OPEN (Local) _____

NOTES

1) Steps 6.7[10] and 6.7[12] require valve stroke timing locally at the valve and remotely at the Control Switch in both the Open and Closed positions.
2) Local timing begins with the initiating signal and is concluded with the completion of valve stem movement. Remote timing begins with the initiating signal and is concluded with the position indication lights status change. Stroke time acceptance criteria will be based on the movement to the safety function final position of the valve.

[10] **PLACE** 2-HS-61-110, FLOOR CLG RET OUTSIDE CIV-ØA in the CLOSE position, **AND**

SIMULTANEOUSLY TIME the valve stroke, **THEN**

RELEASE to A-AUTO. _____

[10.1] **RECORD** remote closing time at, 2-HS-61-110, FLOOR CLG RET OUTSIDE CIV-ØA. (**ACC CRIT**)

_____ seconds (≤ 30 seconds) _____

M&TE _____ Cal Due Date _____ _____

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

6.7 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL Functional Test (continued)

[10.2] **RECORD** local closing time at 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL. (**ACC CRIT**)

_____ seconds (≤ 30 seconds) _____

M&TE _____ Cal Due Date _____ _____

[11] **VERIFY** the following for 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL:

A. 2-HS-61-110, FLOOR CLG RET OUTSIDE CIV-ØA Red Light OFF. _____

B. 2-HS-61-110, FLOOR CLG RET OUTSIDE CIV-ØA Green Light ON. _____

C. 2-XX-55-6E Window 51, FCV-61-110, Red Light OFF. _____

D. 2-XX-55-6E Window 51, FCV-61-110, Green Light ON. _____

E. 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL CLOSED (Local). _____

NOTE

Time the valve stroke from 2-HS-61-110, FLOOR CLG RET OUTSIDE CIV-ØA and locally at the valve.

[12] **PLACE** 2-HS-61-110, FLOOR CLG RET OUTSIDE CIV-ØA in the OPEN position, **AND**

SIMULTANEOUSLY TIME the valve stroke, **THEN**

RELEASE to A-AUTO. _____

[12.1] **RECORD** remote opening time at 2-HS-61-110, FLOOR CLG RET OUTSIDE CIV-ØA.

_____ seconds _____

M&TE _____ Cal Due Date _____ _____

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

6.7 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL Functional Test (continued)

[12.2] **RECORD** local opening time at 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL.

_____ seconds _____

M&TE _____ Cal Due Date _____ _____

[13] **CLOSE** 2-ISV-32-3412, CONTROL AIR ISOLATION VALVE TO 2-FCV-61-110-A. _____

[14] **OPEN** petcock to vent control air at 2-PREG-61-110, CONTROL AIR PRESSURE REG FOR 2-FCV-61-110-A, **AND**

VERIFY 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL CLOSES. (**ACC CRIT**) _____

[15] **CLOSE** petcock at 2-PREG-61-110, CONTROL AIR PRESSURE REG FOR 2-FCV-61-110-A. _____

[16] **OPEN** 2-ISV-32-3412, CONTROL AIR ISOLATION VALVE TO 2-FCV-61-110-A. _____

[17] **PLACE** 2-HS-61-110, FLOOR CLG RET OUTSIDE CIV-ØA in the OPEN position for several seconds to establish valve travel, **THEN**

RELEASE to A-AUTO, **AND**

VERIFY 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL returns to CLOSED. _____

[18] **PLACE** 2-HS-61-110, FLOOR CLG RET OUTSIDE CIV-ØA in the OPEN position until 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL is FULLY OPEN, by light indication, **THEN**

RELEASE to A-AUTO. _____

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

6.7 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL Functional Test (continued)

[19] **PLACE** 2-HS-61-110, FLOOR CLG RET OUTSIDE CIV-ØA in the CLOSE position, **THEN**

RELEASE to A-AUTO, **AND**

VERIFY 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL CLOSES. _____

[20] **REMOVE** Test Switch TS-8 at Terminal Board TB 646 in Panel 2-R-48. _____

1st _____

CV

[21] **LAND** wire G1K5 onto Terminal Point 7 on Terminal Board TB 646 in Panel 2-R-48. _____

1st _____

CV

[22] **PLACE** 2-HS-61-110, FLOOR CLG RET OUTSIDE CIV-ØA in the OPEN position, **THEN**

RELEASE to A-AUTO, **AND**

VERIFY 2-FCV-61-110-A, GLYCOL COOLED FLOOR RETURN HEADER ISOL OPENS. _____

[23] **VERIFY** no excessive vibration of the piping system and components associated with the performance of this subsection was observed. _____

[24] **VERIFY** the successful completion of this Subsection 6.7 (**ACC CRIT**). _____

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

6.8 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL Functional Test

NOTES

1) This subsection will test 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL from its control station and verify operability of all interlocks, indicating lights, and annunciators.
2) During the performance of this subsection, visual observation of transient and steady state vibrations is required.

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

[2] **ENSURE** the following Glycol Floor Pump(s) are STOPPED

A. 2-PMP-61-51, GLYCOL COOLED FLOOR PUMP 2A _____

B. 2-PMP-61-61, GLYCOL COOLED FLOOR PUMP 2B _____

[3] **ENSURE** 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL, is CLOSED by Green Light ON at 2-HS-61-122, FLOOR CLG RET OUTSIDE CIV-ØA, at 2-M-9. _____

[4] **PLACE** 2-HS-61-122, FLOOR CLG RET INSIDE CIV-ØA, at 2-M-9, in the OPEN position until 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL is FULLY OPEN, **THEN**

RELEASE to A-AUTO. _____

[5] **VERIFY** the following for 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL:

A. 2-HS-61-122, FLOOR CLG RET INSIDE CIV-ØA Red Light ON. _____

B. 2-HS-61-122, FLOOR CLG RET INSIDE CIV-ØA Green Light OFF. _____

C. 2-XX-55-6F Window 51, FCV-61-122, Red Light ON. _____

D. 2-XX-55-6F Window 51, FCV-61-122, Green Light OFF. _____

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

6.8 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL Functional Test (continued)

E. 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL OPEN (EL 772/AZ 303). _____

NOTE

Steps 6.8[6] and 6.8[7] will verify that 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL closes on a simulated Phase A Containment Isolation Signal and stays closed upon resetting the signal.

[6] **PLACE** Test Switch TS-9 at Terminal Board TB 646 in Panel 2-R-51 to the OFF position, **AND**

VERIFY:

A. 2-XX-55-6F Window 51, FCV-61-122, Green Light ON (**ACC CRIT**) _____

B. 2-XX-55-6F Window 51, FCV-61-122, Red Light OFF (**ACC CRIT**) _____

C. 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL is CLOSED.(Local) (**ACC CRIT**) _____

[7] **PLACE** Test Switch TS-9 at Terminal Board TB 646 in Panel 2-R-51 to the ON position, **AND**

VERIFY:

A. 2-XX-55-6F Window 51, FCV-61-122, Green Light ON (**ACC CRIT**) _____

B. 2-XX-55-6F Window 51, FCV-61-122, Red Light OFF (**ACC CRIT**) _____

C. 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL is CLOSED.(Local) (**ACC CRIT**) _____

[8] **PLACE** 2-HS-61-122, FLOOR CLG RET INSIDE CIV-∅A, at 2-M-9, in the OPEN position until 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL is FULLY OPEN, **THEN**

RELEASE to A-AUTO _____

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

6.8 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL Functional Test (continued)

[9] **VERIFY** the following for 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL:

A. 2-HS-61-122, FLOOR CLG RET INSIDE CIV-ØA Red Light ON _____

B. 2-HS-61-122, FLOOR CLG RET INSIDE CIV-ØA Green Light OFF _____

C. 2-XX-55-6F Window 51, FCV-61-122, Red Light ON _____

D. 2-XX-55-6F Window 51, FCV-61-122, Green Light OFF _____

E. 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL OPEN (Local) _____

NOTES

1) Steps 6.8[10] and 6.8[12] require valve stroke timing locally at the valve and remotely at the Control Switch in both the Open and Closed positions.
2) Local timing begins with the initiating signal and is concluded with the completion of valve stem movement. Remote timing begins with the initiating signal and is concluded with the position indication lights status change. Stroke time acceptance criteria will be based on the movement to the safety function final position of the valve.

[10] **PLACE** 2-HS-61-122, FLOOR CLG RET INSIDE CIV-ØA in the CLOSE position, **AND**

SIMULTANEOUSLY TIME the valve stroke, **THEN**

RELEASE to A-AUTO. _____

[10.1] **RECORD** remote closing time at, 2-HS-61-122, FLOOR CLG RET INSIDE CIV-ØA. (**ACC CRIT**)

_____ seconds (≤ 30 seconds) _____

M&TE _____ Cal Due Date _____ _____

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

6.8 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL Functional Test (continued)

[10.2] **RECORD** local closing time at 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL. (**ACC CRIT**)

_____ seconds (≤ 30 seconds) _____

M&TE _____ Cal Due Date _____ _____

[11] **VERIFY** the following for 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL:

A. 2-HS-61-122, FLOOR CLG RET INSIDE CIV-ØA Red Light OFF. _____

B. 2-HS-61-122, FLOOR CLG RET INSIDE CIV-ØA Green Light ON. _____

C. 2-XX-55-6F Window 51, FCV-61-122, Red Light OFF. _____

D. 2-XX-55-6F Window 51, FCV-61-122, Green Light ON. _____

E. 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL CLOSED (Local). _____

NOTE

Time the valve stroke from 2-HS-61-122, FLOOR CLG RET INSIDE CIV-ØA and locally at the valve.

[12] **PLACE** 2-HS-61-122, FLOOR CLG RET INSIDE CIV-ØA in the OPEN position, **AND**

SIMULTANEOUSLY TIME the valve stroke, **THEN**

RELEASE to A-AUTO. _____

[12.1] **RECORD** remote opening time at 2-HS-61-122, FLOOR CLG RET INSIDE CIV-ØA.

_____ seconds _____

M&TE _____ Cal Due Date _____ _____

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

6.8 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL Functional Test (continued)

[12.2] **RECORD** local opening time at 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL.

_____ seconds _____

M&TE _____ Cal Due Date _____ _____

[13] **CLOSE** 2-ISV-32-3551, CONTROL AIR ISOLATION VALVE TO 2-FCV-61-122-B. _____

[14] **OPEN** petcock to vent control air at 2-PREG-61-122, CONTROL AIR PRESSURE REG FOR 2-FCV-61-122-B, **AND**

VERIFY 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL CLOSES. (**ACC CRIT**) _____

[15] **CLOSE** petcock at 2-PREG-61-122, CONTROL AIR PRESSURE REG FOR 2-FCV-61-122-B. _____

[16] **OPEN** 2-ISV-32-3551, CONTROL AIR ISOLATION VALVE TO 2-FCV-61-122-B. _____

[17] **PLACE** 2-HS-61-122, FLOOR CLG RET INSIDE CIV-∅A in the OPEN position for several seconds to establish valve travel, **THEN**

RELEASE to A-AUTO, **AND**

VERIFY 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL returns to CLOSED. _____

[18] **PLACE** 2-HS-61-122, FLOOR CLG RET INSIDE CIV-∅A in the OPEN position until 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL is FULLY OPEN, by light indication, **THEN**

RELEASE to A-AUTO. _____

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

6.8 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL Functional Test (continued)

[19] **PLACE** 2-HS-61-122, FLOOR CLG RET INSIDE CIV-ØA in the CLOSE position, **THEN**

RELEASE to A-AUTO, **AND**

VERIFY 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL CLOSES. _____

[20] **REMOVE** Test Switch TS-9 at Terminal Board TB 646 in Panel 2-R-51. _____

1st _____

CV

[21] **LAND** wire G1L5 onto Terminal Point 7 on Terminal Board TB 646 in Panel 2-R-51. _____

1st _____

CV

[22] **PLACE** 2-HS-61-122, FLOOR CLG RET INSIDE CIV-ØA in the OPEN position, **THEN**

RELEASE to A-AUTO, **AND**

VERIFY 2-FCV-61-122-B, GLYCOL COOLED FLOOR RETURN HEADER ISOL OPENS. _____

[23] **VERIFY** no excessive vibration of the piping system and components associated with the performance of this subsection was observed. _____

[24] **VERIFY** the successful completion of this Subsection 6.8 (**ACC CRIT**). _____

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

6.9 Lower Inlet Door Logic and Functional Testing

[1] **VERIFY** prerequisites listed in Section 4.0 for Subsection 6.9 have been completed. _____

[2] **VERIFY** the following light indications at 2-XI-61-187, ICE CONDENSER DOOR STATUS, on 2-M-10:

A. 2-XI-61-187 Window 5, INLET DOORS ZONE A CLOSED, Green Light ON. _____

B. 2-XI-61-187 Window 6, INLET DOORS ZONE B CLOSED, Green Light ON. _____

C. 2-XI-61-187 Window 7, INLET DOORS ZONE C CLOSED, Green Light ON. _____

D. 2-XI-61-187 Window 13, INLET DOORS ZONE D CLOSED, Green Light ON. _____

E. 2-XI-61-187 Window 14, INLET DOORS ZONE E CLOSED, Green Light ON. _____

F. 2-XI-61-187 Window 15, INLET DOORS ZONE F CLOSED, Green Light ON. _____

G. 2-XI-61-187 Window 1, INLET DOORS ZONE A OPEN, Red Light OFF. _____

H. 2-XI-61-187 Window 2, INLET DOORS ZONE B OPEN, Red Light OFF. _____

I. 2-XI-61-187 Window 3, INLET DOORS ZONE C OPEN, Red Light OFF.

J. 2-XI-61-187 Window 9, INLET DOORS ZONE D OPEN, Red Light OFF. _____

K. 2-XI-61-187 Window 10, INLET DOORS ZONE E OPEN, Red Light OFF. _____

L. 2-XI-61-187 Window 11, INLET DOORS ZONE F OPEN, Red Light OFF. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[3] **VERIFY** 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, is CLEAR. _____

NOTE

Steps 6.9[4] through 6.9[99] may be performed in any order to facilitate testing.

[4] **MANUALLY OPEN** Lower Inlet Door Panel 1 associated with 2-ZS-61-186A1/2-ZS-61-187A1, ICE COND CNTMT ZONE A LOWER PANEL 1 OPEN, at RB EL 746 AZ 316,**AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. Event Display Legend indicates 144-A ICE COND INLET DOOR OPEN is in ALARM (Red). _____

C. 2-XI-61-187 Window 1, INLET DOORS ZONE A OPEN, Red Light ON. _____

D. 2-XI-61-187 Window 5, INLET DOORS ZONE A CLOSED, Green Light OFF. _____

[5] **MANUALLY CLOSE** Lower Inlet Door Panel 1 associated with 2-ZS-61-186A1/2-ZS-61-187A1, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. Event Display Legend indicates 144-A ICE COND INLET DOOR OPEN is NORMAL (Blue). _____

C. 2-XI-61-187 Window 1, INLET DOORS ZONE A OPEN, Red Light OFF. _____

D. 2-XI-61-187 Window 5, INLET DOORS ZONE A CLOSED, Green Light ON. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

NOTE

Further demonstrations of the same annunciator to Alarm Printer signal will not be performed for the remaining "Open Door" inputs in this Subsection.

[6] **MANUALLY OPEN** Lower Inlet Door Panel 2 associated with 2-ZS-61-186A2/2-ZS-61-187A2, ICE COND CNTMT ZONE A LOWER PANEL 2 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 1, INLET DOORS ZONE A OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 5, INLET, DOORS ZONE A CLOSED, Green Light OFF. _____

[7] **MANUALLY CLOSE** Lower Inlet Door Panel 2 associated with 2-ZS-61-186A2/2-ZS-61-187A2, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 1, INLET DOORS ZONE A OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 5, INLET DOORS ZONE A CLOSED, Green Light ON. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[8] **MANUALLY OPEN** Lower Inlet Door Panel 3 associated with 2- ZS-61-186A3/2-ZS-61-187A3, ICE COND CNTMT ZONE A LOWER PANEL 3 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 1, INLET DOORS ZONE A OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 5, INLET DOORS ZONE A CLOSED, Green Light OFF. _____

[9] **MANUALLY CLOSE** Lower Inlet Door Panel 3 associated with 2-ZS-61-186A3/2-ZS-61-187A3, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 1, INLET DOORS ZONE A OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 5, INLET DOORS ZONE A CLOSED, Green Light ON. _____

[10] **MANUALLY OPEN** Lower Inlet Door Panel 4 associated with 2-ZS-61-186A4/2-ZS-61-187A4, ICE COND CNTMT ZONE A LOWER PANEL 4 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 1, INLET DOORS ZONE A OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 5, INLET DOORS ZONE A CLOSED, Green Light OFF. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[11] **MANUALLY CLOSE** Lower Inlet Door Panel 4 associated with 2-ZS-61-186A4/2-ZS-61-187A4, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 1, INLET DOORS ZONE A OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 5, INLET DOORS ZONE A CLOSED, Green Light ON. _____

[12] **MANUALLY OPEN** Lower Inlet Door 5 associated with 2-ZS-61-186A5/2-ZS-61-187A5 ICE COND CNTMT ZONE A LOWER PANEL 5 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 1, INLET DOORS ZONE A OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 5, INLET DOORS ZONE A CLOSED, Green Light OFF. _____

[13] **MANUALLY CLOSE** Lower Inlet Door Panel 5 associated with 2-ZS-61-186A5/2-ZS-61-187A5, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 1, INLET DOORS ZONE A OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 5, INLET DOORS ZONE A CLOSED, Green Light ON. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[14] **MANUALLY OPEN** Lower Inlet Door Panel 6 associated with 2-ZS-61-186A6/2-ZS-61-187A6, ICE COND CNTMT ZONE A LOWER PANEL 6 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 1, INLET DOORS ZONE A OPEN, Red a Light ON. _____

C. 2-XI-61-187 Window 5, INLET DOORS ZONE A CLOSED, Green Light OFF. _____

[15] **MANUALLY CLOSE** Lower Inlet Door Panel 6 associated with 2-ZS-61-186A6/2-ZS-61-187A6, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 1, INLET DOORS ZONE A OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 5. INLET DOORS ZONE A CLOSED, Green Light ON. _____

[16] **MANUALLY OPEN** Lower Inlet Door Panel 7 associated with 2-ZS-61-186A7/2-ZS-61-187A7, ICE COND CNTMT ZONE A LOWER PANEL 7 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 1, INLET DOORS ZONE A OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 5, INLET DOORS ZONE A CLOSED, Green Light OFF. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[17] **MANUALLY CLOSE** Lower Inlet Door Panel 7 associated with 2-ZS-61-186A7/2-ZS-61-187A7, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 1, INLET DOORS ZONE A OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 5, INLET DOORS ZONE A CLOSED, Green Light ON. _____

[18] **MANUALLY OPEN** Lower Inlet Door Panel 8 associated with 2-ZS-61-186A8/2-ZS-61-187A8, ICE COND CNTMT ZONE A LOWER PANEL 8 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 1, INLET DOORS ZONE A OPEN, Red Light ON. _____

C. 2-XI-62-187 Window 5, INLET DOORS ZONE A CLOSED, Green Light OFF. _____

[19] **MANUALLY CLOSE** Lower Inlet Door Panel 8 associated with 2-ZS-61-186A8/2-ZS-61-187A8, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 1, INLET DOORS ZONE A OPEN, Red Light OFF. _____

C. 2-XI-61-287 Window 5, INLET DOORS ZONE A CLOSED, Green Light ON. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[20] **MANUALLY OPEN** Lower Inlet Door Panel 1 associated with 2-ZS-61-186B1/2-ZS-61-187B1, ICE COND CNTMT ZONE B LOWER PANEL 1 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 2, INLET DOORS ZONE B OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 6, INLET DOORS ZONE B CLOSED, Green Light OFF. _____

[21] **MANUALLY CLOSE** Lower Inlet Door Panel 1 associated with 2-ZS-61-186B1/2-ZS-61-187B1, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 2, INLET DOORS ZONE B OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 6, INLET DOORS ZONE B CLOSED, Green Light ON. _____

[22] **MANUALLY OPEN** Lower Inlet Door Panel 2 associated with 2-ZS-61-186B2/2-ZS-61-187B2, ICE COND CNTMT ZONE B LOWER PANEL 2 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 2, INLET DOORS ZONE B OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 6, INLET DOORS ZONE B CLOSED, Green Light OFF. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[23] **MANUALLY CLOSE** Lower Inlet Door Panel 2 associated with 2-ZS-61-186B2/2-ZS-61-187B2, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 2, INLET DOORS ZONE B OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 6, INLET DOORS ZONE B CLOSED, Green Light ON. _____

[24] **MANUALLY OPEN** Lower Inlet Door Panel 3 associated with 2-ZS-61-186B3/2-ZS-61-187B3, ICE COND CNTMT ZONE B LOWER PANEL 3 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 2, INLET DOORS ZONE B OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 6, INLET DOORS ZONE B CLOSED, Green Light OFF. _____

[25] **MANUALLY CLOSE** Lower Inlet Door Panel 3 associated with 2-ZS-61-186B3/2-ZS-61-187B3 **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 2, INLET DOORS ZONE B OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 6, INLET DOORS ZONE B CLOSED, Green Light ON. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[26] **MANUALLY OPEN** Lower Inlet Door Panel 4 associated with 2-ZS-61-186B4/2-ZS-61-187B4 ICE, COND CNTMT ZONE B LOWER PANEL 4 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 2, INLET DOORS ZONE B OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 6, INLET DOORS ZONE B CLOSED, Green Light OFF. _____

[27] **MANUALLY CLOSE** Lower Inlet Door Panel 4 associated with 2-ZS-61-186B4/2-ZS-61-187B4, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 2, INLET DOORS ZONE B OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 6, INLET DOORS ZONE B CLOSED, Green Light ON. _____

[28] **MANUALLY OPEN** Lower Inlet Door Panel 5 associated with 2-ZS-61-186B5/2-ZS-61-187B5, ICE COND CNTMT ZONE B LOWER PANEL 5 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 2, 1NLET.DOORS ZONE B OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 6, INLET DOORS ZONE B CLOSED, Green Light OFF. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[29] **MANUALLY CLOSE** Lower Inlet Door Panel 5 associated with 2-ZS-61-186B5/2-ZS-61-187B5, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 2, INLET DOORS ZONE B OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 6, INLET DOORS ZONE B CLOSED, Green Light ON. _____

[30] **MANUALLY OPEN** Lower Inlet Door Panel 6 associated with 2-ZS-61-186B6/2-ZS-61-187B6, ICE COND CNTMT ZONE B LOWER PANEL 6 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 2, INLET DOORS ZONE B OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 6, INLET DOORS ZONE B CLOSED, Green Light OFF. _____

[31] **MANUALLY CLOSE** Lower Inlet Door Panel 6 associated with 2-ZS-61-186B6/2-ZS-61-187B6, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 2, INLET DOORS ZONE B OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 6, INLET DOORS ZONE B CLOSED, Green Light ON. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[32] **MANUALLY OPEN** Lower Inlet Door Panel 7 associated with 2-ZS-61-186B7/2-ZS-61-187B7. ICE COND CNTMT ZONE B LOWER PANEL 7 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 2, INLET DOORS ZONE B OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 6, INLET DOORS ZONE B CLOSED, Green Light OFF. _____

[33] **MANUALLY CLOSE** Lower Inlet Door Panel 7 associated with 2-ZS-61-186B7/2-ZS-61-187B7, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 2, INLET DOORS ZONE B OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 6, INLET DOORS ZONE B CLOSED, Green Light ON. _____

[34] **MANUALLY OPEN** Lower Inlet Door Panel 8 associated with 2-ZS-61-186B8/2-ZS-61-187B8, ICE COND CNTMT ZONE B LOWER PANEL 8 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 2, INLET DOORS ZONE B OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 6, INLET DOORS ZONE B CLOSED, Green Light OFF. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[35] **MANUALLY CLOSE** Lower Inlet Door Panel 8 associated with 2-ZS-61-186B8/2-ZS-61-187B8, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 2, INLET DOORS ZONE B OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 6, INLET DOORS ZONE B CLOSED, Green Light ON. _____

[36] **MANUALLY OPEN** Lower Inlet Door Panel 1 associated with 2-ZS-61-186C1/2-ZS-61-187C1, ICE COND CNTMT ZONE C LOWER PANEL 1 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 3, INLET DOORS ZONE C OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 7, INLET DOORS ZONE C CLOSED, Green Light OFF. _____

[37] **MANUALLY CLOSE** Lower Inlet Door Panel 1 associated with 2-ZS-61-186C1/2-ZS-61-187C1, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 3, INLET.DOORS ZONE C OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 7, INLET DOORS ZONE C CLOSED, Green Light ON. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[38] **MANUALLY OPEN** Lower Inlet Door Panel 2 associated with 2-ZS-61-186C2/2-ZS-61-187C2, ICE COND CNTMT ZONE C LOWER PANEL 2 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 3, INLET DOORS ZONE C OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 7, INLET DOORS ZONE C CLOSED, Green Light OFF. _____

[39] **MANUALLY CLOSE** Lower Inlet Door Panel 2 associated with 2-ZS-61-186C2/2-ZS-61-187C2, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 3, INLET DOORS ZONE C OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 7, INLET DOORS ZONE C CLOSED, Green Light ON. _____

[40] **MANUALLY OPEN** Lower Inlet Door Panel 3 associated with 2-ZS-61-186C3/2-ZS-61-187C3, ICE COND CNTMT ZONE C LOWER PANEL 3 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 3, INLET DOORS ZONE C OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 7, INLET DOORS ZONE C CLOSED, Green Light OFF. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[41] **MANUALLY CLOSE** Lower Inlet Door Panel 3 associated with 2-ZS-61-186C3/2-ZS-61-187C3, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 3, INLET-DOORS ZONE C OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 7, INLET DOORS ZONE C CLOSED, Green Light ON. _____

[42] **MANUALLY OPEN** Lower Inlet Door Panel 4 associated with 2-ZS-61-186C4/2-ZS-61-187C4, ICE COND CNTMT ZONE C LOWER PANEL 4 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 3, INLET DOORS ZONE C OPEN. Red Light ON. _____

C. 2-XI-61-187 Window 7, INLET DOORS ZONE C CLOSED, Green Light OFF. _____

[43] **MANUALLY CLOSE** Lower Inlet Door Panel 4 associated with 2-ZS-61-186C4/2-ZS-61-187C4, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 3, INLET DOORS ZONE C OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 7, INLET DOORS ZONE C CLOSED, Green Light ON. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[44] **MANUALLY OPEN** Lower Inlet Door Panel 5 associated with 2-ZS-61-186C5/2-ZS-61-187C5, ICE COND CNTMT ZONE C LOWER PANEL 5 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 3, INLET DOORS ZONE C OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 7, INLET DOORS ZONE C CLOSED, Green Light OFF. _____

[45] **MANUALLY CLOSE** Lower Inlet Door Panel 5 associated with 2-ZS-61-186C5/2-ZS-61-187C5, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 3, INLET DOORS ZONE C OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 7, INLET DOORS ZONE C CLOSED, Green Light ON. _____

[46] **MANUALLY OPEN** Lower Inlet Door Panel 6 associated with 2-ZS-61-186C6/2-ZS-61-187C6, ICE COND CNTMT ZONE C LOWER PANEL 6 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 3, INLET DOORS ZONE C OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 7, INLET DOORS ZONE C CLOSED, Green Light OFF. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[47] **MANUALLY CLOSE** Lower Inlet Door Panel 6 associated with 2-ZS-61-186C6/2-ZS-61-187C6, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 3, INLET DOORS ZONE C OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 7, INLET DOORS ZONE C CLOSED, Green Light ON. _____

[48] **MANUALLY OPEN** Lower Inlet Door Panel 7 associated with 2-ZS-61-186C7/2-ZS-61-187C7, ICE COND CNTMT ZONE C LOWER PANEL 7 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 3, INLET DOORS ZONE C OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 7, INLET DOORS ZONE C CLOSED, Green Light OFF. _____

[49] **MANUALLY CLOSE** Lower Inlet Door Panel 7 associated with 2-ZS-61-186C7/2-ZS-61-187C7, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 3, INLET DOORS ZONE C OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 7, INLET DOORS ZONE C CLOSED, Green Light ON. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[50] **MANUALLY OPEN** Lower Inlet Door Panel 8 associated with 2-ZS-61-186C8/2-ZS-61-187C8, ICE COND CNTMT ZONE C LOWER PANEL 8 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 3, INLET DOORS ZONE C OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 7, INLET DOORS ZONE C CLOSED, Green Light OFF. _____

[51] **MANUALLY CLOSE** Lower Inlet Door Panel 8 associated with 2-ZS-61-186C8/2-ZS-61-187C8, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 3, INLET DOORS ZONE C OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 7, INLET DOORS ZONE C CLOSED, Green Light ON. _____

[52] **MANUALLY OPEN** Lower Inlet Door Panel 1 associated with 2-ZS-61-186D1/2-ZS-61-187D1, ICE COND CNTMT ZONE D LOWER PANEL 1 OPEN. at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 9, INLET DOORS ZONE D OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 13, INLET DOORS ZONE D CLOSED, Green Light OFF. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[53] **MANUALLY CLOSE** Lower Inlet Door Panel 1 associated with 2-ZS-61-186D1/2-ZS-61-187D1, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 9, INLET DOORS ZONE D OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 13, INLET DOORS ZONE D CLOSED, Green Light ON. _____

[54] **MANUALLY OPEN** Lower Inlet Door Panel 2 associated with 2-ZS-61-186D2/2-ZS-61-187D2, ICE COND CNTMT ZONE D LOWER PANEL 2 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 9, INLET DOORS ZONE D OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 13, INLET DOORS ZONE D CLOSED, Green Light OFF. _____

[55] **MANUALLY CLOSE** Lower Inlet Door Panel 2 associated with 2-ZS-61-186D2/2-ZS-61-187D2, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 9, INLET DOORS ZONE D OPEN. Red Light OFF. _____

C. 2-XI-61-187 Window 13, INLET DOORS ZONE D CLOSED, Green Light ON. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[56] **MANUALLY OPEN** Lower Inlet Door Panel 3 associated with 2-ZS-61-186D3/2-ZS-61-187D3, ICE COND CNTMT ZONE D LOWER PANEL 3 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 9, INLET DOORS ZONE D OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 13, INLET DOORS ZONE D CLOSED, Green Light OFF. _____

[57] **MANUALLY CLOSE** Lower Inlet Door Panel 3 associated with 2-ZS-61-186D3/2-ZS-61-187D3, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 9, INLET DOORS ZONE D OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 13, INLET DOORS ZONE D CLOSED, Green Light ON. _____

[58] **MANUALLY OPEN** Lower Inlet Door Panel 4 associated with 2-ZS-61-186D4/2-ZS-61-187D4, ICE COND CNTMT ZONE D LOWER PANEL 4 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 9, INLET DOORS ZONE D OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 13, INLET DOORS ZONE D CLOSED, Green Light OFF. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[59] **MANUALLY CLOSE** Lower Inlet Door Panel 4 associated with 2-ZS-61-186D4/2-ZS-61-187D4, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 9, INLET DOORS ZONE D OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 13, INLET DOORS ZONE D CLOSED, Green Light ON. _____

[60] **MANUALLY OPEN** Lower Inlet Door Panel 5 associated with 2-ZS-61-186D5/2-ZS-61-187D5, ICE COND CNTMT ZONE D LOWER PANEL 5 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 9, INLET DOORS ZONE D OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 13, INLET DOORS ZONE D CLOSED, Green Light OFF. _____

[61] **MANUALLY CLOSE** Lower Inlet DOOR Panel 5 associated with 2-ZS-61-186D5/2-ZS-61-187D5, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 9, INLET DOORS ZONE D OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 13, INLET DOORS ZONE D CLOSED, Green Light ON. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[62] **MANUALLY OPEN** Lower Inlet Door Panel 6 associated with 2-ZS-61-186D6/2-ZS-61-187D6, ICE COND CNTMT ZONE D LOWER PANEL 6 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 9, INLET DOORS ZONE D OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 13, INLET DOORS ZONE D CLOSED, Green Light OFF. _____

[63] **MANUALLY CLOSE** Lower Inlet Door Panel 6 associated with 2-ZS-61-186D6/2-ZS-61-187D6, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 9, INLET DOORS ZONE D OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 13, INLET DOORS ZONE D CLOSED, Green Light ON. _____

[64] **MANUALLY OPEN** Lower Inlet Door Panel 7 associated with 2-ZS-61-186D7/2-ZS-61-187D7, ICE COND CNTMT ZONE D LOWER PANEL 7 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 9, INLET DOORS ZONE D OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 13, INLET DOORS ZONE D CLOSED, Green Light OFF. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[65] **MANUALLY CLOSE** Lower Inlet Door Panel 7 associated with 2-ZS-61-186D7/2-ZS-61-187D7, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 9, INLET DOORS ZONE D OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 13, INLET DOORS ZONE D CLOSED, Green Light ON. _____

[66] **MANUALLY OPEN** Lower Inlet Door Panel 8 associated with 2-ZS-61-186D8/2-ZS-61-187D8, ICE COND CNTMT ZONE D LOWER PANEL 8 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS _____

B. 2-XI-61-187 Window 9, INLET DOORS ZONE D OPEN, Red Light ON. _____

C. 2-XI-61-287 Window 13, INLET DOORS ZONE D CLOSED, Green Light OFF. _____

[67] **MANUALLY CLOSE** Lower Inlet Door Panel 8 associated with 2-ZS-61-186D8/2-ZS-61-187D8, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 9, INLET DOORS ZONE D OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 13, INLET DOORS ZONE D CLOSED, Green Light ON. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[68] **MANUALLY OPEN** Lower Inlet Door Panel 1 associated with 2-ZS-61-186E1/2-ZS-61-187E1, ICE COND CNTMT ZONE E LOWER PANEL 1 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 10, INLET DOORS ZONE E OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 14, INLET DOORS ZONE E CLOSED, Green Light OFF. _____

[69] **MANUALLY CLOSE** Lower Inlet Door Panel 1 associated with 2-ZS-61-186E1/2-ZS-61-187E1, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 10, INLET DOORS ZONE E OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 14, INLET DOORS ZONE E CLOSED, Green Light ON. _____

[70] **MANUALLY OPEN** Lower Inlet Door Panel 2 associated with 2-ZS-61-186E2/2-ZS-61-187E2, ICE COND CNTMT ZONE E LOWER PANEL 2 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 10, INLET DOORS ZONE E OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 14, INLET DOORS ZONE E CLOSED, Green Light OFF. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[71] **MANUALLY CLOSE** Lower Inlet Door Panel 2 associated with 2-ZS-61-186E2/2-ZS-61-187E2, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS _____

B. 2-XI-61-187 Window 10, INLET DOORS ZONE E OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 14, INLET DOORS ZONE E CLOSED, Green Light ON. _____

[72] **MANUALLY OPEN** Lower Inlet Door Panel 3 associated with 2-ZS-61-186E3/2-ZS-61-187E3, ICE COND CNTMT ZONE E LOWER PANEL 3 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 10, INLET DOORS ZONE E OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 14, INLET DOORS ZONE E CLOSED, Green Light OFF. _____

[73] **MANUALLY CLOSE** Lower Inlet Door Panel 3 associated with 2-ZS-61-186E3/2-ZS-61-187E3, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 10, INLET DOORS ZONE E OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 14, INLET DOORS ZONE E CLOSED, Green Light ON. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[74] **MANUALLY OPEN** Lower Inlet Door Panel 4 associated with 2-ZS-61-186E4/2-ZS-61-187E4, ICE COND CNTMT ZONE E LOWER PANEL 4 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 10, INLET DOORS ZONE E OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 14, INLET DOORS ZONE E CLOSED, Green Light OFF. _____

[75] **MANUALLY CLOSE** Lower Inlet Door Panel 4 associated with 2-ZS-61-186E4/2-ZS-61-187E4, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 10, INLET DOORS ZONE E OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 14, INLET DOORS ZONE E CL0SED, Green Light ON. _____

[76] **MANUALLY OPEN** Lower Inlet Door Panel 5 associated with 2-ZS-61-186E5/2-ZS-61-187E5, ICE, COND CNTMT ZONE E LOWER PANEL 5 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 10, INLET DOORS ZONE E OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 14, INLET DOORS ZONE E CLOSED, Green Light OFF. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[77] **MANUALLY CLOSE** Lower Inlet Door Panel 5 associated with 2-ZS-61-186E5/2-ZS-61-187E5, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 10, INLET DOORS ZONE E OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 14, INLET DOORS ZONE E CLOSED, Green Light ON. _____

[78] **MANUALLY OPEN** Lower Inlet Door Panel 6 associated with 2-ZS-61-186E6/2-ZS-61-187E6, ICE COND CNTMT ZONE E LOWER PANEL 6 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 10, INLET DOORS ZONE E OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 14, INLET DOORS ZONE E CLOSED, Green Light OFF. _____

[79] **MANUALLY CLOSE** Lower Inlet Door Panel 6 associated with 2-ZS-61-186E6/2-ZS-61-187E6, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 10, INLET DOORS ZONE E OPEN, Red Light OFF. _____

C. 2-XI-61-197 Window 14, INLET DOORS ZONE E CLOSED, Green Light ON. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[80] **MANUALLY OPEN** Lower Inlet Door Panel 7 associated with 2-ZS-61-186E7/2-ZS-61-187E7, ICE COND CNTMT ZONE E LOWER PANEL 7 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 10, INLET DOORS ZONE E OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 14, INLET DOORS ZONE E CLOSED, Green Light OFF. _____

[81] **MANUALLY CLOSE** Lower Inlet Door Panel 7 associated with 2-ZS-61-186E7/2-ZS-61-187E7, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 10, INLET DOORS ZONE E OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 14, INLET DOORS ZONE E CLOSED, Green Light ON. _____

[82] **MANUALLY OPEN** Lower Inlet Door Panel 8 associated with 2-ZS-61-186E8/2-ZS-61-187E8, ICE COND CNTMT ZONE E LOWER PANEL 8 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 10, INLET DOORS ZONE E OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 14, INLET DOORS ZONE E CLOSED, Green Light OFF. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[83] **MANUALLY CLOSE** Lower Inlet Door Panel 8 associated with 2-ZS-61-186E8/2-ZS-61-187E8, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 10, INLET DOORS ZONE E OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 14, INLET DOORS ZONE E CLOSED, Green Light ON. _____

[84] **MANUALLY OPEN** Lower Inlet Door Panel 1 associated with 2-ZS-61-186F1/2-ZS-61-187F1, ICE COND CNTMT ZONE F LOWER PANEL 1 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 11, INLET DOORS ZONE F OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 15, INLET DOORS ZONE F CLOSED, Green Light OFF. _____

[85] **MANUALLY CLOSE** Lower Inlet Door Panel 1 associated with 2-ZS-61-186F1/2-ZS-61-187F1, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 11 INLET DOORS ZONE F OPEN. Red Light OFF. _____

C. 2-XI-61-187 Window 15, INLET DOORS ZONE F CLOSED, Green Light ON. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[86] **MANUALLY OPEN** Lower Inlet Door Panel 2 associated with 2-ZS-61-186F2/2-ZS-61-187F2, ICE COND CNTMT ZONE F LOWER PANEL 2 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS _____

B. 2-XI-61-187 Window 11, INLET DOORS ZONE F OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 15, INLET DOORS ZONE F CLOSED, Green Light OFF. _____

[87] **MANUALLY CLOSE** Lower Inlet Door Panel 2 associated with 2-ZS-61-186F2/2-ZS-61-187F2, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 11, INLET DOORS ZONE F OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 15, INLET DOORS ZONE F CLOSED, Green Light ON. _____

[88] **MANUALLY OPEN** Lower Inlet Door Panel 3 associated with 2-ZS-61-186F3/2-ZS-61-187F3, ICE COND CNTMT ZONE F LOWER PANEL 3 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 11, INLET DOORS ZONE F OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 15, INLET DOORS ZONE F CLOSED, Green Light OFF. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[89] **MANUALLY CLOSE** Lower Inlet Door Panel 3 associated with 2-ZS-61-186F3/2-ZS-61-187F3, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 11, INLET DOORS ZONE F OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 15, INLET DOORS ZONE F CLOSED, Green Light ON. _____

[90] **MANUALLY OPEN** Lower Inlet Door Panel 4 associated with 2-ZS-61-186F4/2-ZS-61-187F4, ICE COND CNTMT ZONE F LOWER PANEL 4 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 11, INLET DOORS ZONE F OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 15, INLET DOORS ZONE F CLOSED, Green Light OFF. _____

[91] **MANUALLY CLOSE** Lower Inlet Door Panel 4 associated with 2-ZS-61-186F4/2-ZS-61-187F4, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 11, INLET DOORS ZONE F OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 15, INLET DOORS ZONE F CLOSED, Green Light ON. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[92] **MANUALLY OPEN** Lower Inlet Door Panel 5 associated with 2-ZS-61-186F5/2-ZS-61-187F5, ICE COND CNTMT ZONE F LOWER PANEL 5 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 11, INLET DOORS ZONE F OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 15, INLET DOORS ZONE F CLOSED, Green Light OFF. _____

[93] **MANUALLY CLOSE** Lower Inlet Door Panel 5 associated with 2-ZS-61-186F5/2-ZS-61-187F5, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 11, INLET DOORS ZONE F OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 15, INLET DOORS ZONE F CLOSED, Green Light ON. _____

[94] **MANUALLY OPEN** Lower Inlet Door Panel 6 associated with 2-ZS-61-186F6/2-ZS-61-187F6, ICE COND CNTMT ZONE F LOWER PANEL 6 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 11, INLET DOORS ZONE F OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 15, INLET DOORS ZONE F CLOSED, Green Light OFF. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[95] **MANUALLY CLOSE** Lower Inlet Door Panel 6 associated with 2-ZS-61-186F6/2-ZS-61-187F6, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 11, INLET DOORS ZONE F OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 15, INLET DOORS ZONE F CLOSED, Green Light ON. _____

[96] **MANUALLY OPEN** Lower Inlet Door Panel 7 associated with 2-ZS-61-186F7/2-ZS-61-187F7, ICE COND CNTMT ZONE F LOWER PANEL 7 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 11, INLET DOORS ZONE F OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 15, INLET DOORS ZONE F CLOSED, Green Light OFF. _____

[97] **MANUALLY CLOSE** Lower Inlet Door Panel 7 associated with 2-ZS-61-186F7/2-ZS-61-187F7, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS. _____

B. 2-XI-61-187 Window 11, INLET DOORS ZONE F OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 15, INLET DOORS ZONE F CLOSED, Green Light ON. _____

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

6.9 Lower Inlet Door Logic and Functional Testing (continued)

[98] **MANUALLY OPEN** Lower Inlet Door Panel 8 associated with 2-ZS-61-186F8/2-ZS-61-187F8, ICE COND CNTMT ZONE F LOWER PANEL 8 OPEN, at RB EL 746, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, ALARMS. _____

B. 2-XI-61-187 Window 11, INLET DOORS ZONE F OPEN, Red Light ON. _____

C. 2-XI-61-187 Window 15, INLET DOORS ZONE F CLOSED, Green Light OFF. _____

[99] **MANUALLY CLOSE** Lower Inlet Door Panel 8 associated with 2-ZS-61-186F8/2-ZS-61-187F8, **AND**

VERIFY the following:

A. 2-XA-55-6E-144A, ICE COND INLET DOOR OPEN, CLEARS _____

B. 2-XI-61-187 Window 11, INLET DOORS ZONE F OPEN, Red Light OFF. _____

C. 2-XI-61-187 Window 15, INLET DOORS ZONE F CLOSED, Green Light ON. _____

[100] **VERIFY** the successful completion of this Subsection 6.9 (**ACC CRIT**). _____

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

7.0 POST PERFORMANCE ACTIVITY

NOTE

Post-performance steps may be performed in any order unless otherwise stated and should be completed as close in time as practicable to the end of the instruction performance.

[1] **ENSURE** switches are aligned per Appendix D, "Final Switch Lineup." _____

[2] **ENSURE** breakers are aligned per Appendix F, "Final Electrical Breaker Lineup." _____

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

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

8.0 RECORDS

A. QA Records

Completed Test Package

B. Non-QA Records

None

Appendix A
(Page 1 of 1)

TEST PROCEDURES/INSTRUCTIONS REFERENCE REVIEW

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

NOTES

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

PROCEDURE/ INSTRUCTION	REVISION/CHANGES	INITIAL AND DATE. (N/A for no change)
Unit 2 FSAR Section 6.2.1 Section 6.2.4 Section 6.7 Table 14.2-1 Sheets 83 & 87 of 89		
2-TSD-88-5, Containment Isolation System		
2-TSD-61, Ice Condenser System Testing		
2-45N2676-4		
2-45N2676-5		
2-45N2677-4		
2-45N2677-5		
47B601-55-3		
2-47B601-55-4		
2-47B601-55-64		
2-45B640-155		
2-45B640-233		

Appendix B
(Page 1 of 1)

TEMPORARY CONDITION LOG

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

NOTE

These steps will be N/A'd if no temporary condition existed. Additional copies of this table may be made as necessary.

ITEM No.	TEMPORARY CONDITION DESCRIPTION	PERFORMED		RETURNED TO NORMAL	
		Step No.	Performed By/Date CV By/Date	Step No.	Returned By/Date CV By/Date

[1] These items may be initialed and dated by personnel performing the task. Instrumentation not required to be filled and vented may be identified as Not Applicable. (N/A)

[2] May be identified as Not Applicable (N/A) if instrument was not used to verify/record quantitative acceptance criteria data.

Appendix C
(Page 1 of 1)

SWITCH LINEUP

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

SWITCH	LOCATION	DESCRIPTION	REQUIRED POSITION	INITIAL/DATE	CONCURRENT VERIFICATION INITIAL/DATE
2-HS-61-191A	2-M-9	GLYCOL TO AHU OUTSIDE CIV-ØA	A-AUTO		
2-HS-61-191B	2-M-9	GLYCOL TO AHU OUTSIDE CIV-ØA	P-AUTO		
2-HS-61-193A	2-M-9	GLYCOL FRM AHU OUTSIDE CIV-ØA	A-AUTO		
2-HS-61-193B	2-M-9	GLYCOL FRM AHU OUTSIDE CIV-ØA	P-AUTO		
2-HS-61-192	2-M-9	GLYCOL TO AHU INSIDE CIV-ØA	A-AUTO		
2-HS-61-194	2-M-9	GLYCOL TO AHU INSIDE CIV-ØA	A-AUTO		
2-HS-61-96	2-M-9	FLOOR CLG SUP OUTSIDE CIV-ØA	A-AUTO		
2-HS-61-97	2-M-9	FLOOR CLG SUP INSIDE CIV-ØA	A-AUTO		
2-HS-61-110	2-M-9	FLOOR CLG RET OUTSIDE CIV-ØA	A-AUTO		
2-HS-61-122	2-M-9	FLOOR CLG RET INSIDE CIV-ØA	A-AUTO		

Appendix D
(Page 1 of 1)

FINAL SWITCH LINEUP

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

SWITCH	LOCATION	DESCRIPTION	REQUIRED POSITION	INITIAL/DATE	INDEPENDENT VERIFICATION INITIAL/DATE
2-HS-61-191A	2-M-9	GLYCOL TO AHU OUTSIDE CIV-ØA	A-AUTO		
2-HS-61-191B	2-M-9	GLYCOL TO AHU OUTSIDE CIV-ØA	P-AUTO		
2-HS-61-193A	2-M-9	GLYCOL FRM AHU OUTSIDE CIV-ØA	A-AUTO		
2-HS-61-193B	2-M-9	GLYCOL FRM AHU OUTSIDE CIV-ØA	P-AUTO		
2-HS-61-192	2-M-9	GLYCOL TO AHU INSIDE CIV-ØA	A-AUTO		
2-HS-61-194	2-M-9	GLYCOL TO AHU INSIDE CIV-ØA	A-AUTO		
2-HS-61-96	2-M-9	FLOOR CLG SUP OUTSIDE CIV-ØA	A-AUTO		
2-HS-61-97	2-M-9	FLOOR CLG SUP INSIDE CIV-ØA	A-AUTO		
2-HS-61-110	2-M-9	FLOOR CLG RET OUTSIDE CIV-ØA	A-AUTO		
2-HS-61-122	2-M-9	FLOOR CLG RET INSIDE CIV-ØA	A-AUTO		

Appendix E
(Page 1 of 1)

ELECTRICAL BREAKER LINEUP

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

BREAKER IDENTIFICATION	BREAKER DESCRIPTION	BREAKER LOCATION	REQUIRED POSITION	INITIAL/DATE	CONCURRENT VERIFICATION INITIAL/DATE
2-BKR-278-M010/19	UNIT CNTL BD 2-M-7B BKR 19 TO 2-PNL-278-M010	2-M-7 INST PWR RACK B, BKR 19	ON		
2-BKR-235-4/6	NSSS AUX RELAY RACK 2-R-58 BUS C	120V AC VITAL INST POWER BOARD 2-IV, BKR 6	ON		
2-BKR-235-2/7	NSSS AUX RELAY RACK C BUS TO PNL 2-R-58	120V AC VITAL INST POWER BD 2-II, BKR 7	ON		
0-DPL-236-0001	125V VITAL BATT POWER I DISTRIBUTION PANEL	CIRCUITS C14 AND D22 GLYCOL SUPPLY FROM EXPANSION TANK	ON		

Appendix F
(Page 1 of 1)

FINAL ELECTRICAL BREAKER LINEUP

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

BREAKER IDENTIFICATION	BREAKER DESCRIPTION	BREAKER LOCATION	REQUIRED POSITION	INITIAL/DATE	INDEPENDENT VERIFICATION INITIAL/DATE
2-BKR-278-M010/19	UNIT CNTL BD 2-M-7B BKR 19 TO 2-PNL-278-M010	2-M-7 INST PWR RACK B, BKR 19	ON		
2-BKR-235-4/6	NSSS AUX RELAY RACK 2-R-58 BUS C	120V AC VITAL INST POWER BOARD 2-IV, BKR 6	ON		
2-BKR-235-2/7	NSSS AUX RELAY RACK C BUS TO PNL 2-R-58	120V AC VITAL INST POWER BD 2-II, BKR 7	ON		
0-DPL-236-0001	125V VITAL BATT POWER I DISTRIBUTION PANEL	CIRCUITS C14 AND D22 GLYCOL SUPPLY FROM EXPANSION TANK	ON		

WATTS BAR NUCLEAR PLANT

UNIT 2 STARTUP

TITLE: Gaseous Waste Disposal System

Instruction No: 2-PTI-077-02

Revision No: 0000

PREPARED BY: Kurt McCormack DATE 1/5/11

PRINT NAME/ SIGNATURE

REVIEWED BY: Ross Horvat DATE 1/5/11

PRINT NAME/ SIGNATURE

INSTRUCTION APPROVAL

JTG MEETING NO: 2-11-006

JTG CHAIRMAN _____ DATE 3/31/11

APPROVED BY: _____ DATE 3/31/11

PREOPERATIONAL STARTUP MANAGER

TEST RESULTS APPROVAL

JTG MEETING NO: _____

JTG CHAIRMAN: _____ DATE _____

APPROVED BY: _____ DATE _____

PREOPERATIONAL STARTUP MANAGER

Revision Log

Revision or Change Number	Effective Date	Affected Page Numbers	Description of Revision/Change
0000	3/3/11	ALL	Initial issue based on Rev. 1 of 1-PTI-077-02

Table of Contents

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

1.0 INTRODUCTION

1.1 Test Objectives

This Preoperational Test Instruction (PTI) will demonstrate the capability of the Gaseous Waste Disposal System (GWDS) to collect gaseous waste from specific Unit 2 tanks and discharge to the environment via the Unit 2 Shield Building.

1.2 Scope

Collection of gases from the following Unit 2 tanks:

1. Pressurizer Relief Tank (PRT)
2. Reactor Coolant Drain Tank (RCDT)
3. Volume Control Tank (VCT)

In addition to the above, this PTI also verifies flow of gases to the environment via the Unit 2 Shield Building Vent.

2.0 REFERENCES

2.1 Performance References

A. SMP-9.0, Conduct of Test

2.2 Developmental References

A. Final Safety Analysis Report

FSAR-Amendment 102

a. Section 11.3, GASEOUS WASTE SYSTEMS

b. Table 14.2-1, PREOPERATIONAL TESTS SUMMARIES

(SHEET 30 of 89) GASEOUS WASTE PROCESSING SYSTEM TEST SUMMARY

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

2.2 Developmental References (continued)

B. Drawings

1. Flow Diagrams

a. 2-47W830-1 Rev 2, Waste Disposal System

b. 2-47W830-4 Rev 1, Waste Disposal System

c. 2-47W830-6 Rev 4, Waste Disposal System

(1) DRA 53756-407 Rev 0

(2) DRA 53123-013 Rev 0

d. 2-47W809-1 Rev 3, Chemical and Volume Control System

e. 2-47W813-1 Rev 1, Reactor Coolant System

2. Electrical Control/Logic Diagrams

a. 2-47W-610-77-3 Rev 0, Control Diagram Waste Disposal System

b. 2-47W-610-77-4 Rev 2, Control Diagram Waste Disposal System

c. 47W610-77-5 Rev 14, Control Diagram Waste Disposal System

3. Electrical Wiring Diagrams

None

4. Vendor/Other Diagrams

a. 271C858-Sheet 1 Rev 12, Waste Disposal System-Index

b. 271C858-Sheet 11 Rev 1, Waste Disposal System-Gas Panel

C. Documents

1. 2-TSD-77-2 Rev 0, Gaseous Waste Disposal System

2. WB-DC-40-31.16, Rev 2, "Displacement Criteria for Vibration Qualification of Piping" Appendix A.

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

3.0 PRECAUTIONS AND LIMITATIONS

A. Test must be coordinated with Unit 1 Operations to mitigate any adverse impact to Unit 1.

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

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

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

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

I. Test personnel will coordinate with Unit 1 Operations when manipulating Unit 1 equipment.

J. If a pressure increase in the Gaseous Waste Vent Header makes venting necessary during the performance of this test, any steps that involve venting to detect a pressure increase will need to be repeated.

K. During the performance of this procedure visual observation of piping and components is required. This includes steady state and transient operations with visual confirmation that vibration is not excessive.

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

3.0 PRECAUTIONS AND LIMITATIONS (continued)

L. If the vibration is determined to be excessive the Test Engineer shall initiate a Test Deficiency Notice (TDN).

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

4.0 PREREQUISITE ACTIONS

NOTE

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

4.1 Preliminary Actions

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

ENSURE that they will **NOT** adversely affect the test performance. _____

[2] **ENSURE** changes to the references listed on Appendix A, have been reviewed, and determined **NOT** to adversely affect the test performance _____

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

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

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

[5] **OBTAIN** copies of the applicable forms from the current revision in BSL, **AND**

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

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

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

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

4.1 Preliminary Actions (continued)

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

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

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

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

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

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

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

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

A. System 32, Control Air. _____

B. System 30D, Auxiliary Building Gas Treatment System. _____

C. System 62, Chemical and Volume Control System. _____

D. System 68, Reactor Coolant System. _____

E. System 77, Auxiliary Building Nitrogen System. _____

[14] **ENSURE** the Gaseous Waste Disposal System is in service to the extent necessary to support performance of this test. _____

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

None

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

4.3 Field Preparations

[1] **ENSURE** 2-TANK-68-PRT, PRESSURIZER RELIEF TANK and associated gaseous waste disposal system piping has been flushed with Nitrogen, **AND**

RECORD WO#_____ _____

[2] **ENSURE** 2-TANK-77-1, REACTOR COOLANT DRAIN TANK and associated gaseous waste disposal system piping has been flushed with Nitrogen, **AND**

RECORD WO#_____ _____

[3] **ENSURE** 2-TANK-62-129, VOLUME CONTROL TANK and associated gaseous waste disposal system piping has been flushed with Nitrogen, **AND**

RECORD WO#_____ _____

[4] **ENSURE** 2-TANK-68-PRT, PRESSURIZER RELIEF TANK, is in service and available with level between 20% and 80%. _____

[5] **ENSURE** 2-TANK-77-1, REACTOR COOLANT DRAIN TANK, is in service and available with level between 20% and 80%. _____

[6] **ENSURE** 2-TANK-62-129, VOLUME CONTROL TANK, is in service and available with level between 20% and 80%. _____

[7] **ENSURE** 0-RE-90-118, WDS GAS EFFLUENT RADIATION MONITOR is operable and in service. _____

[8] **ENSURE** a ladder has been staged in the Unit 2 EL 713 Penetration room to access the mezzanine above the entrance to the Volume Control Tank Room. _____

[9] **ENSURE** switches are aligned per Appendix C, "Initial Switch Lineup." _____

[10] **ENSURE** valves are aligned per Appendix D, "Initial Valve Lineup." _____

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

4.4 Approvals and Notifications

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

_____ _____
Preoperational Startup Manager Date

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

_____ _____
Unit 1 US/SRO/SM Date

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

_____ _____
Unit 2 US/SRO/SM Date

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

5.0 ACCEPTANCE CRITERIA

None

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

6.0 PERFORMANCE

6.1 Waste Gas System Operational Tests

CAUTION

In the event of a HI or HI-HI Oxygen content alarm on Panel 0-L-2 or in the MCR during the performance of this subsection, the test shall be stopped immediately. Operating procedures will be relied upon to prevent the formation of a combustible gas mixture.

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

NOTES

1) During the performance of this subsection, visual observation of transient and steady state vibrations is required.
2) Steps 6.1[2] through 6.1[7] will demonstrate collecting waste gas from the PRT.

CAUTION

Gaseous Waste Vent Header pressure is maintained between 1.0 and 3.5 psig. If any observed header pressure is outside of that range, the test shall be stopped and Unit 1 Operations shall be notified.

[2] **PLACE** 2-HS-68-305A, N2 TO PRT CIV-ØA, to the CLOSE position (2-M-5). _____

[3] **RECORD** vent header pressure from 0-PIS-77-88A/B, VENT HDR PRESS HI ALARM SWITCH (0-L-2).

_____ psig _____

[4] **PLACE** 2-HS-68-305A, N2 TO PRT CIV-ØA, in the OPEN position (2-M-5). _____

[5] **CONTINUE** to purge PRT until a pressure increase is detected by 0-PIS-77-88A/B, VENT HDR PRESS HI ALARM SWITCH (0-L-2), **AND**

RECORD the pressure

_____ psig _____

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

6.1 Waste Gas System Operational Tests (continued)

[6] **PLACE** 2-HS-68-305A, N2 TO PRT CIV-ØA, to the CLOSE position (2-M-5). _____

[7] **PLACE** 2-HS-68-301A, PRT VENT TO WDS VENT HEADER, to the CLOSE position (2-M-5). _____

NOTE

Steps 6.1[8] through 6.1[18] will demonstrate collecting waste gas from the RCDT.

[8] **PLACE** 2-HS-77-19, RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT, to the CLOSE position (2-M-15). _____

[9] **ENSURE** 2-HS-77-18A, RCDT TO WDS VENT HDR CIV-ØA IN CNTMT, in the OPEN position (2-M-15). _____

CAUTION

Do not allow Reactor Coolant Drain Tank pressure to exceed 5 psig as read on 2-PI-77-2 (0-L-2).

[10] **PLACE** 2-HS-77-20, N2 to RCDT CIV-ØA OUT CNTMT, in the **OPEN** position (2-M-15). _____

[11] **MARK** the present setting on 2-PIC-77-158, RCDT N2 SUPPLY CONTROLLER, (692/A5W)

_____ psig _____

[12] **ADJUST** 2-PIC-77-158, RCDT N2 SUPPLY CONTROLLER, (692/A5W) to the OPEN position taking care to not exceed 5 psig as read on 2-PI-77-2, RCDT PRESS (0-L-2). _____

[13] **RECORD** vent header pressure from 0-PIS-77-88A/B, VENT HDR PRESS HI ALARM SWITCH, (0-L-2).

_____ psig _____

[14] **PLACE** 2-HS-77-19, RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT, in the OPEN position (2-M-15). _____

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

6.1 Waste Gas System Operational Tests (continued)

[15] **CONTINUE** to pressurize RCDT until a pressure increase is detected by 0-PIS-77-88A/B, VENT HDR PRESS HI ALARM SWITCH, (0-L-2), **AND**

RECORD the pressure

_____ psig _____

[16] **PLACE** 2-HS-77-20, N2 to RCDT CIV-∅A OUT CNTMT, in the **CLOSE** position (2-M-15). _____

[17] **RE-ADJUST** 2-PIC-77-158, RCDT N2 SUPPLY CONTROLLER (692/A11W) to its original setting. _____

[18] **PLACE** 2-HS-77-19, RCDT TO WDS VENT HDR CIV-∅A OUT CNTMT, in the CLOSE position (2-M-15). _____

NOTE

Steps 6.1[19] through 6.1[31] will demonstrate collecting waste gas from the VCT.

[19] **ENSURE** the following are OPEN :

A. 2-ISV-62-690, VOLUME CONTROL TANK WDS VENT HEADER ISOL (713/A12U). _____

B. 2-ISV-62-691, VOLUME CONTROL TANK WDS VENT HEADER ISOL (713/A12U). _____

[20] **MARK** the present setting on 2-PIC-62-119, VOL CNTL TANK N2 BLANKET (713/A12U)

_____ psig _____

[21] **ADJUST** 2-PIC-62-119, VOL CNTL TANK N2 BLANKET, to the **OPEN** position (713/A12U). _____

[22] **RECORD** vent header pressure from 0-PIS-77-88A/B, VENT HDR PRESS HI ALARM SWITCH (0-L-2).

_____ psig _____

[23] **PLACE** 2-HS-62-125, VCT VENT TO WDS VENT HDR, in the **OPEN** position (2-M-6). _____

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

6.1 Waste Gas System Operational Tests (continued)

[24] **OPEN** 2-ISV-62-692, VOLUME CONTROL TANK NITROGEN SUPPLY ISOL (713/A12U). _____

[25] **MARK** the present setting on 2-PIC-62-126, VCT PRESS CNTL TO VH (713/A12U)

_____ psig _____

[26] **ADJUST** 2-PIC-62-126, VCT PRESS CNTL TO VH, to the **OPEN** position (713/A12U). _____

[27] **CONTINUE** to purge VCT until a pressure increase is detected by 0-PIS-77-88A/B, VENT HDR PRESS HI ALARM SWITCH (0-L-2), **AND**

RECORD the pressure

_____ psig _____

[28] **PLACE** 2-HS-62-125, VCT VENT TO WDS VENT HDR, in the **CLOSE** position (2-M-6). _____

[29] **CLOSE** 2-ISV-62-692, VOLUME CONTROL TANK NITROGEN SUPPLY ISOL (713/A12U). _____

[30] **RE-ADJUST** 2-PIC-62-119, VOL CNTL TANK N2 BLANKET (713/A12U), to its original setting marked in step 6.1[20]. _____

[31] **RE-ADJUST** 2-PIC-62-126, VCT PRESS CNTL TO VH, to its original setting marked in step 6.1[25]. _____

NOTE

Steps 6.1[32] through 6.1[49] will verify flow to the environment via the Unit 2 Shield Bldg.

[32] **REQUEST** Chemistry Countroom to **PERFORM** 0-ODI-90-5. _____

[33] **NOTIFY** Radiation Protection of Gas Decay Tank (GDT) release intentions in consideration of any personnel work being performed on the Reactor Building roof. _____

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

6.1 Waste Gas System Operational Tests (continued)

CAUTION

ABGTS should NOT be operated for testing purposes or for releases of waste decay tank at the same time both containment purge exhaust fans are in operation. Operation of one purge exhaust fan with the ABGTS is acceptable.

[34] **ENSURE** "A" train ABGT System Fan available per SOI-30.06. _____

[35] **ENSURE** 2-RM-90-400, U2 SHIELD BUILDING VENT MONITOR and its associated isokinetic sampler are in service. _____

[36] **ENSURE** 2-RM-90-400, US SHIELD BUILDING VENT MONITOR isokinetic flow measurement is operable and in service. _____

[37] **OBTAIN** Decay Tank Release Permit (0-ODI-90-5) from Chemistry, **AND**

COMPLETE in conjunction with this instruction. _____

NOTE

IV for Step 6.1[37] may be performed by Chemistry.

[38] **ENSURE** 0-ODI-90-5 Release Permit approved by U1 SM/SRO.

_____ 1st

_____ IV

[39] **OBTAIN** U1 SRO approval and verification that release is authorized, and instructions are correct for release of Gas Decay Tank A.

_____ U1 SRO

[40] **START** ABGTS Fan A-A per SOI-30.06. _____

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

6.1 Waste Gas System Operational Tests (continued)

[41] **CLOSE** 0-FCV-77-119, PLANT VENT FLOW CONTROL, by **PLACING** 0-FIC-77-119, GDT DISCHARGE IND CONTROLLER, to 0% position, **AND**

VERIFY the following (0-L-2):

A. Green light ON. _____

B. Red light OFF. _____

C. White light OFF. _____

[42] **PLACE** 0-HS-77-245, WD PLANT VENT HEADER DIVERTER VALVE, to the UNIT 2 VENT position (0-L-2), **AND**

VERIFY valve OPEN by red indicating light ON (713/A11W). _____

NOTE

Gas Decay Tank A is normally charged with nitrogen and should be used to verify flow to the environment via the Unit 2 Shield Bldg.

[43] **RECORD** GDT A pressure from 0-PIS-77-115, GDT A PRESS HI PRESS ALARM SWITCH (0-L-2).

_____ psig _____

[44] **OPEN** the following manually operated valves:

A. 0-ISV-77-742A, GAS DECAY TANK A INLET ISOL. _____

B. 0-ISV-77-748A, GAS DECAY TANK A PLANT VENT HDR ISOL. _____

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

6.1 Waste Gas System Operational Tests (continued)

[45] **OPEN** 0-FCV-77-119, PLANT VENT FLOW CONTROL, by **PLACING** 0-FIC-77-119, GDT DISCHARGE IND CONTROLLER, to 100% position, **AND**

VERIFY the following (0-L-2):

A. Green light OFF. _____

B. Red light ON. _____

C. White light OFF. _____

[46] **ENSURE** 0-PCV-77-117, PLANT VENT FILTER PRESS CONTROL (0-L-2) is maintained between 4 and 8 psig on 0-PI-77-117 (0-L-269). _____

[47] **VERIFY** GDT A pressure decreasing, **AND**

RECORD GDT A pressure from 0-PIS-77-115, GDT A PRESS HI PRESS ALARM SWITCH (0-L-2).

_____ psig _____

[48] **CLOSE** 0-FCV-77-119, PLANT VENT FLOW CONTROL, by **PLACING** 0-FIC-77-119, GDT DISCHARGE IND CONTROLLER, to 0% position, **AND**

VERIFY the following (0-L-2):

A. Green light ON. _____

B. Red light OFF. _____

C. White light OFF. _____

[49] **CLOSE** the following manually operated valves:

A. 0-ISV-77-742A, GAS DECAY TANK A INLET ISOL. _____

B. 0-ISV-77-748A, GAS DECAY TANK A PLANT VENT HDR ISOL. _____

[50] **SHUTDOWN** ABGTS Fan per SOI-30.06. _____

[51] **RETURN** Release Permit to Chemistry for package closure. _____

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

6.1 Waste Gas System Operational Tests (continued)

[52] **VERIFY** no excessive vibration of the piping system and components associated with the performance of this subsection was observed. _____

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

7.0 POST PERFORMANCE ACTIVITY

NOTE

Post-performance steps may be performed in any order unless otherwise stated and should be completed as close in time as practicable to the end of the instruction performance.

[1] **ENSURE** switches are aligned per Appendix E, "Final Switch Lineup." _____

[2] **ENSURE** valves are aligned per Appendix F, "Final Valve Lineup." _____

[3] **NOTIFY** Unit 1 Operations of the test completion and system alignment. _____

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

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

8.0 RECORDS

A. QA Records

Completed Test Package

B. Non-QA Records

None

Appendix A
(Page 1 of 1)

TEST PROCEDURES/INSTRUCTIONS REFERENCE REVIEW

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

PROCEDURE/INSTRUCTION	REVISION/CHANGES	INITIAL AND DATE. (N/A FOR NO CHANGE)
FSAR Table 14.2 (Sheet 30 of 89)		
2-TSD-77-2		
WB-DC-40-31.16		

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 exists. Additional copies of this table may be made as necessary.

ITEM NUMBER	TEMPORARY CONDITION DESCRIPTION	PERFORMED		RETURNED TO NORMAL	
		Step Number	Perf. By/Date 2nd By/Date	Step Number	Returned By/Date 2nd By/Date

Appendix C
(Page 1 of 1)

INITIAL SWITCH LINEUP

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

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	REQUIRED POSITION	VERIFICATION INITIAL/DATE	CONCURRENT VERIFICATION INITIAL/DATE
2-HS-68-301A	2-M-5	PRT VENT TO WDS VENT HEADER	OPEN		
2-HS-77-18A	2-M-15	RCDT TO WDS VENT HDR CIV-ØA IN CNTMT	OPEN		
2-HS-77-19	2-M-15	RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT	OPEN		
2-HS-77-20	2-M-15	N2 TO RCDT CIV-ØA OUT CNTMT	CLOSE		

Appendix D
(Page 1 of 2)

INITIAL VALVE LINEUP

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

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	REQUIRED POSITION	VERIFICATION INITIAL/DATE	CONCURRENT VERIFICATION INITIAL/DATE
2-ISV-77-503	RCDT VENT HEADER ISOL	716/AZ281	CLOSE		
2-ISV-68-572	PRESSURIZER RELIEF TANK NITROGEN SUPPLY ISOL	702/AZ89	OPEN		
2-ISV-77-591	RCD TK VENT ISOLATION	716/AZ281	OPEN		
2-ISV-68-1115	PRESSURIZER RELIEF TANK NITROGEN SUPPLY ISOL	716/ICQ4	OPEN		
2-RTV-77-307A	2-PCV-68-304 ROOT	713/A4W	OPEN		
2-ISV-77-846	PRESSURIZER TANK N2 HDR ISOL	713/A11W	OPEN		
2-ISV-77-851	VOLUME CONTROL TANK N2 SUPPLY ISOL	713/A12U	OPEN		
2-ISV-62-686	VCT ISLN	713/A12U	CLOSE		
2-ISV-62-687	VOLUME CONTROL TANK WASTE GAS SAMPLE ISOL	713/A12U	CLOSE		

Appendix D
(Page 2 of 2)

INITIAL VALVE LINEUP

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

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	REQUIRED POSITION	VERIFICATION INITIAL/DATE	CONCURRENT VERIFICATION INITIAL/DATE
2-SMV-62-689	VCT SAMPLE	713/A12U	CLOSE		
2-RTV-62-412A	2-PCV-62-119 ROOT	713/A12U	OPEN		
2-ISV-62-593	VCT HYDROGEN ISLN	713/A12U	CLOSE		
2-ISV-77-593	RCDT VENT HEADER ISOL	713/A11W	OPEN		
2-ISV-77-854	RCDT N2 SUPPLY ISOL	692/A7W	OPEN		
2-RTV-77-872A	2-PCV-77-158 CNTL ISOL	692/A7W	OPEN		

Appendix E
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FINAL SWITCH LINEUP

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

SWITCH NUMBER	SWITCH LOCATION	DESCRIPTION	REQUIRED POSITION	VERIFICATION INITIAL/DATE	INDEPENDENT VERIFICATION INITIAL/DATE
2-HS-68-301A	2-M-5	PRT VENT TO WDS VENT HEADER	CLOSE		
2-HS-77-18A	2-M-15	RCDT TO WDS VENT HDR CIV-ØA IN CNTMT	OPEN		
2-HS-77-19	2-M-15	RCDT TO WDS VENT HDR CIV-ØA OUT CNTMT	OPEN		
2-HS-77-20	2-M-15	N2 TO RCDT CIV-ØA OUT CNTMT	CLOSE		

Appendix F
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FINAL VALVE LINEUP

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

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	REQUIRED POSITION	VERIFICATION INITIAL/DATE	INDEPENDENT VERIFICATION INITIAL/DATE
2-ISV-77-503	RCDT VENT HEADER ISOL	716/AZ281	OPEN		
2-ISV-68-572	PRESSURIZER RELIEF TANK NITROGEN SUPPLY ISOL	702/AZ89	OPEN		
2-ISV-77-591	RCD TK VENT ISOLATION	716/AZ281	OPEN		
2-ISV-68-1115	PRESSURIZER RELIEF TANK NITROGEN SUPPLY ISOL	716/ICQ4	OPEN		
2-RTV-77-307A	2-PCV-68-304 ROOT	713/A4W	OPEN		
2-ISV-77-846	PRESSURIZER TANK N2 HDR ISOL	713/A11W	OPEN		
2-ISV-77-851	VOLUME CONTROL TANK N2 SUPPLY ISOL	713/A12U	OPEN		
2-ISV-62-686	VCT ISLN	713/A12U	OPEN		

Appendix F
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FINAL VALVE LINEUP

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

VALVE NUMBER	DESCRIPTION	LOCATION EL/COL	REQUIRED POSITION	VERIFICATION INITIAL/DATE	INDEPENDENT VERIFICATION INITIAL/DATE
2-ISV-62-687	VOLUME CONTROL TANK WASTE GAS SAMPLE ISOL	713/A12U	OPEN		
2-SMV-62-689	VCT SAMPLE	713/A12U	CLOSE		
2-RTV-62-412A	2-PCV-62-119 ROOT	713/A12U	OPEN		
2-ISV-62-593	VCT HYDROGEN ISLN	713/A12U	CLOSE		
2-ISV-77-593	RCDT VENT HEADER ISOL	713/A11W	OPEN		
2-ISV-77-854	RCDT N2 SUPPLY ISOL	692/A7W	OPEN		
2-RTV-77-872A	2-PCV-77-158 CNTL ISOL	692/A7W	OPEN		