



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

December 21, 2010

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 Instruction

The following approved WBN 2 Pre-op Test Instruction (PTI) is enclosed:

PTI NUMBER	Rev.	TITLE
2-PTI-031B-01	0	Incore Instrument Room Air Conditioning System

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

Sincerely,

Masoud Bajestani
Watts Bar Unit 2 Vice President

D030
NRC

U.S. Nuclear Regulatory Commission
Page 2
December 21, 2010

cc (Enclosure):

U. S. Nuclear Regulatory Commission
Region II
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Atlanta, Georgia 30303-1257

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

WATTS BAR NUCLEAR PLANT
UNIT 2 STARTUP

TITLE: Incore Instrument Room Air Conditioning System

Instruction No: 2-PTI-031B-01

Revision No: 0000

PREPARED BY: Bethany B Merriman

PRINT NAME/ SIGNATURE

DATE 9-20-10

REVIEWED BY: Keith Jones

PRINT NAME/ SIGNATURE

DATE 9-20-10

INSTRUCTION APPROVAL

JTG MEETING NO: 2-10-013

JTG CHAIRMAN: [Signature]

DATE

APPROVED BY: [Signature]

DATE

PREOPERATIONAL STARTUP MANAGER

TEST RESULTS APPROVAL

JTG MEETING NO: _____

JTG CHAIRMAN: _____

DATE

APPROVED BY: _____

DATE

PREOPERATIONAL STARTUP MANAGER

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Revision Log

Revision or Change Number	Effective Date	Affected Page Numbers	Description of Revision/Change
0	12/20/10	ALL	This procedure was written using the Unit 1 test procedure PTI-031G-01 Rev 1 as a guide with CN-2 incorporated.

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1.0 INTRODUCTION

1.1 Test Objectives

The object of this test is to demonstrate that the Incore Instrument Room Air Conditioning System functions in accordance with design requirements.

1.2 Scope

This test demonstrates the operability of the Incore Instrument Room Air Conditioning System to ensure the following:

- A. The Incore Instrument Room Air Conditioning System Containment Isolation Valves function in accordance with design requirements.
 1. The Incore Instrument Room Air Conditioning System Containment Isolation Valves stroke close time is equal to or less than design requirements.
 2. The Incore Instrument Room Air Conditioning System Containment Isolation Valve Control Room alarms and indicators operate in accordance with design requirements.
 3. The Incore Instrument Room Air Conditioning System Containment Isolation Valves close on a simulated Phase A Containment Isolation signal and remain closed after a simulated Phase A Containment Isolation signal reset.
 4. The Incore Instrument Room Air Conditioning System Containment Isolation Valves fail closed on loss of electrical power.
 5. The Incore Instrument Room Air Conditioning System Containment Isolation Valves fail closed on loss of control air.
- B. Incore Instrument Room Air Conditioning System Air Handling Units maintain desired air flow.
- C. Incore Instrument Room Air Conditioning System controls, interlocks, and alarms function in accordance with design requirements.
- D. Essential Raw Cooling Water Supply Valves automatic controls function in accordance with design requirements:

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2.0 REFERENCES

2.1 Performance References

- A. SMP-9.0, Conduct of Test
- B. GTM-05, HVAC Air Balance

2.2 Developmental References

- A. Final Safety Analysis Report
 - 1. FSAR, Amendment 100
 - a. SubSection 6.2.4, Containment Isolation System
 - b. Table 6.2.4-1, Pgs 38-39, Watts Bar Nuclear Plant Containment Penetrations and Barriers
 - c. SubSection 9.2.1, Essential Raw Cooling Water (ERCW)
 - d. SubSection 9.4.7, Containment Air Cooling System
 - e. Table 14.2-1, Sheets 4/5, Essential Raw Cooling Water System Test Summary
 - f. Table 14.2-1, Sheets 38/39, Containment Ventilation System Test Summary
 - g. Table 14.2-1, Sheet 83, Containment Isolation System Test Summary
- B. Drawings
 - 1. Flow Diagrams
 - a. 2-47W866-1, Rev 2, Flow Diagram Heating and Ventilation Air Flow
 - b. 2-47W865-5, Rev 0, Flow Diagram Air Conditioning Chilled Water, DRAs 53763-030, -032 Rev 1, and -034 Rev 0, DRAs 53764-002 & -031 Rev 0, DRAs 54923-027 & -028 Rev 0, -061 thru -066 Rev 0
 - c. 2-47W845-2, Rev 0, Flow Diagram Essential Raw Cooling Water System

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2.2 Developmental References (continued)

- d. 2-47W848-9, Rev 1, Mechanical Flow Diagram Control Air, DRA 53340-001 Rev 0

2. Electrical

- a. 2-45B655-5C, Rev 0, Main Control Room Annunciator Inputs Window Box XA-55-5C
- b. 2-45B655-E5C, Rev 0, Electrical Annunciator Window Box XA-55-5C Engraving
- c. 45N2635-15, Rev 11, Local Instrument Panels Connection Diagrams, DRAs 54172-314 & -315 Rev 0
- d. 45N2648-2, Rev 6, Unit Control Board Panel 2-M-9 Connection Diagrams
- e. 45N2648-3, Rev 7, Unit Control Board Panel 2-M-9 Connection Diagrams
- f. 45N2648-4, Rev 13, Unit Control Board Panel 2-M-9 Connection Diagram
- g. 45N2676-4, Rev 16, Solid State Protection Sys Train A Connection Diagram
- h. 45N2676-5, Rev 10, Solid State Protection Sys Train A Connection Diagram
- i. 45N2677-4, Rev 18, Solid State Protection Sys Train B Connection Diagram
- j. 45N2677-5, Rev 9, Solid State Protection Sys Train B Connection Diagram
- k. 45W2766-6, Rev 11, 480V Reactor MOV Board 2A1-A Connection Diagram, DRA 54172-310, Rev 0
- l. 45B2766-16A, Rev 8, 480V Reactor MOV Board 2A1 Conn Diag - Compt 16A
- m. 45B2766-18C, Rev 4, 480V Reactor MOV Board 2A1 Conn Diag - Compt 18C

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2.2 Developmental References (continued)

- n. 45W2768-9, Rev 5, 480V Reac MOV Board 2B1-B Connection Diagram,
DRA 54172-311, Rev 0
 - o. 45B2768-16A, Rev 8, 480V Reac MOV BD 2B1-B Conn Diag - Compt 16A
 - p. 45B2768-18C, Rev 3, 480V Reac MOV BD 2B1-B Conn Diag - Compt 18C
 - q. 2-45W600-31-1, Rev 0, Air Conditioning System Schematic Diagrams
 - r. 2-45W600-57-11, Rev 0, Separation and Misc Aux Relays Schematic Diagrams
 - s. 45W703-7, Rev 19, 125V Vital Battery Board III Panel 4 Connection Diagram
 - t. 45W703-8, Rev 20, 125V Vital Battery Board IV Panel 4 Connection Diagram
 - u. 2-45W751-1, Rev 1, 480V Reac MOV BD 2A1-A Single Line
 - v. 2-45W751-7, Rev 1, 480V Reac MOV BDS 2B1-B Single Line,
DRA 53292-092 Rev 0
 - w. 2-45W760-31-6, Rev 0, Air Conditioning System Schematic Diagrams,
DRAs 53287-086 & -088 Rev 0,
DRAs 53292-081 & -089 Rev 0
 - x. 45W2766-7, Rev 7, 480V Reactor MOV BD 2A1-A Connection Diagram
 - y. 2-47B601-55-3, [LATER], Electrical Instrument Tabulation,
DRA 52453-006 Rev 0
 - z. 2-47B601-55-4, [LATER], Electrical Instrument Tabulation,
DRA 52453-007 Rev 0
3. Mechanical
- a. 2-47W600-198, Rev 0, Electrical Instruments and Controls
 - b. 2-47W600-221, Rev 0, Electrical Instruments and Controls

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2.2 Developmental References (continued)

4. Logic/Control

- a. 2-47W610-31-5, Rev 2, Electrical Control Diagram Air Conditioning System
- b. 2-47W611-31-7, Rev 1, Electrical Logic Diagram Air Conditioning System
- c. 2-47W610-67-3, Rev 3, Electrical Control Diagram ERCW System
- d. 2-47W611-67-3, Rev 1, Electrical Logic Diagram Essential Raw Cooling Water

C. Vendor Documents

1. D02207-1, Rev 0, Schematic Wiring Diagram For PWC120S3-T4-Z (Contract Number 43993)

D. Documents

1. WBN2-30RB-4002, Rev 1, System Description - Reactor Building Ventilation System
2. WBN2-67-4002, Rev 1, Essential Raw Cooling Water System, System 67
3. WBNP Technical Specifications, Unit 2, SubSection 3.6.3, Containment Isolation Valves
4. 2-SOI-30.04, [DRAFT]
5. 2-TSD-31B-01, Rev 1, Containment Instrument Room Cooling System (31)
6. 2-TSD-88-05, Rev 1, Containment Isolation System
7. G-37, Rev 4, General Engineering Specification for Testing and Balancing of HVAC Systems During Installation, Modification, and Maintenance
8. 2-PTI-067-03, ERCW Valve Logic Test [LATER]

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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. Component tags and labels may differ slightly (abbreviations, punctuation, letter case, etc.) from the description given in this test. If this situation occurs, it shall not be considered a test deficiency or procedure deviation. It shall be documented in the CTL and reconciled by way of a plant labeling request, drawing discrepancy, or pen and ink procedure change, as appropriate.
- D. All wires removed/lifted from a terminal shall be identified, grouped together, and taped or covered with an insulator to prevent personnel or equipment hazard and possible spurious initiations. The wires should be labeled with the work implementing document number that required them to be lifted if left unattended.
- E. All open problems (including non Tech Spec testing acceptance criteria) are to be tracked by a corrective action document and entered on the appropriate system punchlist.
- F. Problems identified during the test shall be annotated on the Chronological Test Log (CTL) from SMP-9.0 including a description of the problem, the procedure step when/where the problem was identified, corrective action steps taken to resolve the problem, and the number of the corrective action document, if one was required.
- G. Observe all Radiation Protection (RP) requirements when working in or near contaminated areas.
- H. All terminal points and connections are to be considered energized. Instrumentation must be used to determine if the circuits are de-energized.
- I. Retermination of lifted leads requires that their restored bend radius is equal to or greater than the as found condition.

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3.0 PRECAUTIONS AND LIMITATIONS (continued)

- J. Transients include pump starts and stops, water hammers or other fluid transients. Check valves should be observed for abnormal slam during startup or shutdown of pumps. Verification that transient conditions are NOT causing excessive vibration may be accomplished by observation during the transient or verification subsequent to the transient that resultant damage has NOT occurred.
- K. Steady-state conditions include verification that flow control valves and orifices do NOT produce excessive cavitation induced vibrations. Verification that excessive vibration from other flow induced phenomena does NOT occur is also required.
- L. The instrument room chilled water system expansion tank water level shall be inspected periodically. Water level should be above the tank midpoint. To prevent possible overpressurization of the chilled water pump discharge piping, makeup should NOT be added to the system when the chilled water pumps are running.
- M. 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.
- N. If vibration is determined to be excessive, the Startup Test Engineer (STE) shall initiate a Test Deficiency Notice (TDN).
- O. Portions of this test will simulate a high ambient room temperature using an electric heat gun. This activity shall be performed slowly to prevent damage to the temperature switch sensing bulb.
- P. During the performance of this procedure, ensure no adverse impacts to the operation of Unit 1 systems, structures, or components.

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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 and as needed, each test person assisting in this test has the current revision. _____
- [2] **OBTAIN** copies of the applicable forms from the latest revision of SMP-9.0, **AND**

ATTACH to this PTI for use during the performance of this PTI. _____
- [3] **ENSURE** changes to the references listed on "Test Procedures/Instructions Reference Review", Appendix A, have been reviewed, and determined NOT to adversely affect the test performance. _____
- [4] **VERIFY** current revisions and change papers 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 papers that were reviewed to data package. _____
- [5] **EVALUATE** open items in Watts Bar Integrated Task Equipment List (WITEL), **AND**

ENSURE that they will NOT adversely affect the test performance. _____
- [6] **ENSURE** required Component Testing has been completed prior to start of test. _____

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4.1 Preliminary Actions (continued)

- [7] **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. _____

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

IF items are found, **THEN**

RECORD in Appendix B, Temporary Condition Log. _____

- [9] **ENSURE** GTM-05, HVAC Air Balance, has been submitted to the JTG for concurrence that it adequately satisfies the requirements of this instruction.

JTG Meeting: _____

- [10] **ATTACH** completed GTM-05, HVAC Air Balance package for System 31B. _____

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

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

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

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

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4.1 Preliminary Actions (continued)

[16] **REVIEW** preventative maintenance for systems/components covered by this test, **AND**

VERIFY no conditions exist that will impact test performance. _____

4.2 Special Tools, Measuring and Test Equipment (M&TE), Parts, and Supplies

[1] **OBTAIN** the following M&TE, or equivalent, **AND**

COMPLETE the following table: _____

Digital Stopwatches [2]	0-60 min	60 minutes ± 0.1 sec		NA
				NA
Pocket Thermometer	0-100°F	± 2°F		
Ultrasonic Flowmeter and Transducers for 2 inch Sch 40 pipe	0-100 gpm	± 3% of reading		

[2] **VERIFY** M&TE calibration due dates will support the completion of this test performance. _____

[3] **OBTAIN** the following items:

A. electric heat gun (Subsections 6.5 and 6.6) _____

B. cardboard, approximately 3 ft x 6 ft (Subsection 6.8) _____

C. electrical jumper (Subsection 6.9) _____

D. plastic five gallon bucket (Subsection 6.9) _____

[4] **ENSURE** an ice bath is available for use. _____

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4.3 Field Preparations

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

- A. System 32, Control Air - Provides control air to valves, dampers, and controllers. _____
- B. System 67, Essential Raw Cooling Water - Provides cooling water to Incore Instrument Room Chillers. _____
- C. System 213, 480V AC Reactor MOV Boards - Provides electrical power to Incore Instrument Room Cooler Fans, Circulation Pumps, and Chiller Compressors. _____
- D. System 235, 120V AC Vital Power System - Provides power to instrumentation and controls. _____
- E. System 236, 125V DC Vital Power System - Provides power to isolation valves and dampers. _____

[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 Windows:

- A. 2-XA-55-5C/103-E, INSTR RM COOLER A/B FLOW LO _____
- B. 2-XA-55-5C/104-E, INSTR RM COOLING SURGE TANK A/B LEVEL LO _____

[3] **PERFORM** Electrical Lineup, Table 1. _____

[4] **PERFORM** Valve Lineup, Table 2. _____

[5] **PERFORM** Switch Lineup, Table 3. _____

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4.3 Field Preparations (continued)

[6] **VERIFY** system piping is properly filled and vented in accordance with 2-SOI-30.04.

A. Subsection 6.5 _____

B. Subsection 6.6 _____

C. Subsection 6.7 _____

D. Subsection 6.8 _____

E. Subsection 6.9 _____

[7] **ENSURE** required scaffold is in place. _____

[8] **VERIFY** Incore Instrument Room Chilled Water Surge Tank Level is greater than or equal to 75% for the following:

A. 2-LG-31-304, INCORE INSTRUMENT ROOM SURGE TANK 2A LEVEL [Pen Rm, EL 692, Col A12W] _____

B. 2-LG-31-325, INCORE INSTRUMENT ROOM SURGE TANK 2B LEVEL [Pen Rm, EL 692, Col A12W] _____

[9] **ENSURE** M&TE required for test performance has been (as required) filled, vented and placed in service, **AND**

RECORD data on Appendix E of SMP-9.0. _____

[10] **ENSURE** plant instruments required for test performance, listed on Appendix C, Permanent Plant Instrumentation Log, have been (as required) filled, vented and placed in service, and are within their calibration interval, **AND**

RECORD data on Appendix C. _____

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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

Refer to Appendix D, Backup Calculations, for discussion of instrumentation uncertainties.

A. Incore Instrument Room Air Conditioning System Containment Isolation Valves:

	Stroke close time is equal to or less than 10 seconds	Control Room alarms and indicators operate in accordance with design	Close on a simulated Phase A Containment Isolation signal	Remain closed after a simulated Phase A Containment Isolation signal reset	Fail closed on the loss of electrical power	Fail closed on the loss of control air
2-FCV-31-305, INCORE INSTR RM AHU 2A CWR ISOL	6.1.2[5]	6.1.2[3], 6.1.2[4], 6.1.2[7], 6.1.2[8]	6.2.2[3]	6.2.2[5]	6.3.2[2]	6.4.2[3]
2-FCV-31-306, INCORE INSTR RM AHU 2A CW PUMP 2A ISOL	6.1.3[5]	6.1.3[3], 6.1.3[4], 6.1.3[7], 6.1.3[8]	6.2.3[3]	6.2.3[5]	6.3.3[2]	6.4.3[3]
2-FCV-31-308, INCORE INSTR RM AHU 2A CWS ISOL	6.1.4[5]	6.1.4[3], 6.1.4[4], 6.1.4[7], 6.1.4[8]	6.2.4[3]	6.2.4[5]	6.3.4[2]	6.4.4[3]
2-FCV-31-309, INCORE INSTR RM AHU 2A CWS ISOL	6.1.5[5]	6.1.5[3], 6.1.5[4], 6.1.5[7], 6.1.5[8]	6.2.5[3]	6.2.5[5]	6.3.5[2]	6.4.5[3]
2-FCV-31-326, INCORE INSTR RM AHU 2B CWR ISOL	6.1.6[5]	6.1.6[3], 6.1.6[4], 6.1.6[7], 6.1.6[8]	6.2.6[3]	6.2.6[5]	6.3.6[2]	6.4.6[3]
2-FCV-31-327, INCORE INSTR RM AHU 2B CWR ISOL	6.1.7[5]	6.1.7[3], 6.1.7[4], 6.1.7[7], 6.1.7[8]	6.2.7[3]	6.2.7[5]	6.3.7[2]	6.4.7[3]
2-FCV-31-329, INCORE INSTR RM AHU 2B CWS ISOL	6.1.8[5]	6.1.8[3], 6.1.8[4], 6.1.8[7], 6.1.8[8]	6.2.8[3]	6.2.8[5]	6.3.8[2]	6.4.8[3]
2-FCV-31-330, INCORE INSTR RM AHU 2B CWS ISOL	6.1.9[5]	6.1.9[3], 6.1.9[4], 6.1.9[7], 6.1.9[8]	6.2.9[3]	6.2.9[5]	6.3.9[2]	6.4.9[3]

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5.0 ACCEPTANCE CRITERIA (continued)

- B. Incore Instrument Room Air Conditioning System Air Handling Units Maintain Desired Air Flow:
 - 1. Air Handling Unit 2-AHU-31-265, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2A, 5,200 CFM (minimum 4,680) (Step 6.5.4[6])
 - 2. Air Handling Unit 2-AHU-31-266, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2B, 5,200 CFM (minimum 4,680) (Step 6.5.5[6])
- C. Incore Instrument Room Air Conditioning System Chillers Recieve Desired Water Flowrate:
 - 1. Chiller 2-CHR-31-303, INCORE INSTR ROOM CHILLER 2A, minimum 22 GPM (Step 6.6.2[5])
 - 2. Chiller 2-CHR-31-324, INCORE INSTRUMENT ROOM CHILLER 2B, minimum 22 GPM (Step 6.6.3[5])
- D. Incore Instrument Room Air Conditioning System Manual Controls Function In Accordance With Design Requirements:
 - 1. Pump 2-PMP-31-303/1, INCORE INSTR ROOM CW PUMP 2A (Subsection 6.5.2)
 - 2. Pump 2-PMP-31-324/1, INCORE INSTRUMENT ROOM CW PUMP 2B (Subsection 6.5.3)
 - 3. Air Handling Unit 2-AHU-31-265, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2A (Subsection 6.5.4)
 - 4. Air Handling Unit 2-AHU-31-266, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2B (Subsection 6.5.5)
- E. Incore Instrument Room Air Conditioning System Automatic Controls Function In Accordance With Design Requirements:
 - 1. Damper 2-FCO-31-263, INCORE INSTR RM AHU 2A DISCHARGE (Subsection 6.6.2)
 - 2. Damper 2-FCO-31-264, INCORE INSTR RM AHU 2A DISCHARGE (Subsection 6.6.2)
 - 3. Damper 2-FCO-31-268, INCORE INSTR RM AHU 2B DISCHARGE (Subsection 6.6.3)

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5.0 ACCEPTANCE CRITERIA (continued)

4. Damper 2-FCO-31-269, INCORE INSTR RM AHU 2B DISCHARGE (Subsection 6.6.3)
 5. Temperature Control Valve 2-TCV-31-307, INCORE INSTR RM AHU 2A CW TEMP CNTL (Subsection 6.5.6)
 6. Temperature Control Valve 2-TCV-31-328, INCORE INSTR RM AHU 2B CW TEMP CONTROL (Subsection 6.5.7)
 7. Pump 2-PMP-31-303/1, INCORE INSTR ROOM CW PUMP 2A (Subsection 6.6.2)
 8. Pump 2-PMP-31-324/1, INCORE INSTRUMENT ROOM CW PUMP 2B (Subsection 6.6.3)
 9. Compressor 2-COMP-31-303B, INCORE INSTR RM CHILLER A COMPRESSOR (Subsection 6.6.2)
 10. Compressor 2-COMP-31-324B, INCORE INSTR RM CHILLER B COMPRESSOR (Subsection 6.6.3)
 11. Air Handling Unit 2-AHU-31-265, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2A (Subsection 6.6.2)
 12. Air Handling Unit 2-AHU-31-266, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2B (Subsection 6.6.3)
- F. Incore Instrument Room Air Conditioning System Interlocks and Alarms Function In Accordance With Design Requirements:
1. Air Handling Unit 2A Stop on Simulated Phase A Containment Isolation (Subsection 6.7.2)
 2. Air Handling Unit 2B Stop on Simulated Phase A Containment Isolation (Subsection 6.7.3)
 3. Redundant Unit Start on Low Air Flow (Subsection 6.8)
 4. Circulation Pump 2A Trip on Low Tank Level (Subsection 6.9.2)
 5. Circulation Pump 2B Trip on Low Tank Level (Subsection 6.9.3)

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5.0 ACCEPTANCE CRITERIA (continued)

G. Essential Raw Cooling Water Supply Valves Automatic Controls Function In Accordance With Design Requirements:

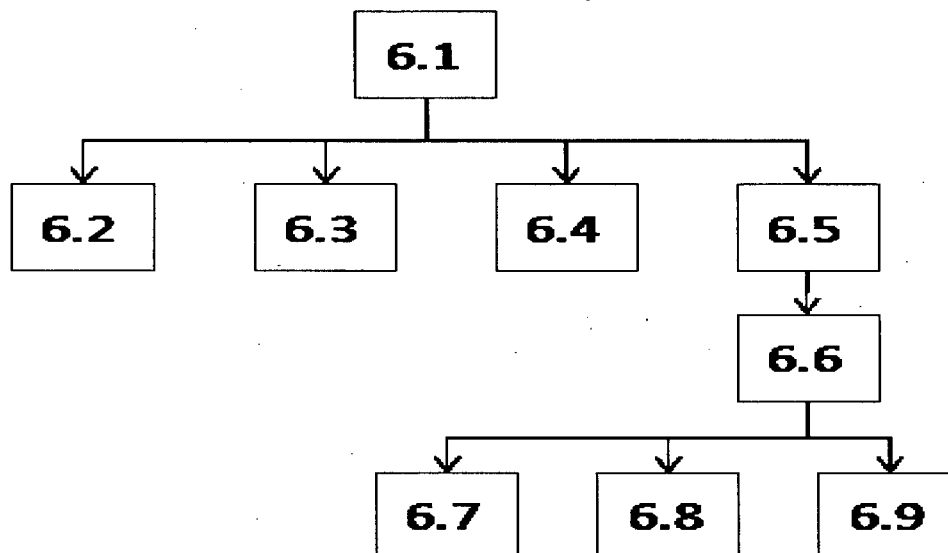
1. Temperature Control Valve 2-TCV-67-115, INSTR RM WATER CLR 2A
ERCW SUP TEMP CNTL (Subsection 6.6.2)
2. Temperature Control Valve 2-TCV-67-118, INSTR RM WATER CLR 2B
ERCW SUP TEMP CNTL (Subsection 6.6.3)

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6.0 PERFORMANCE

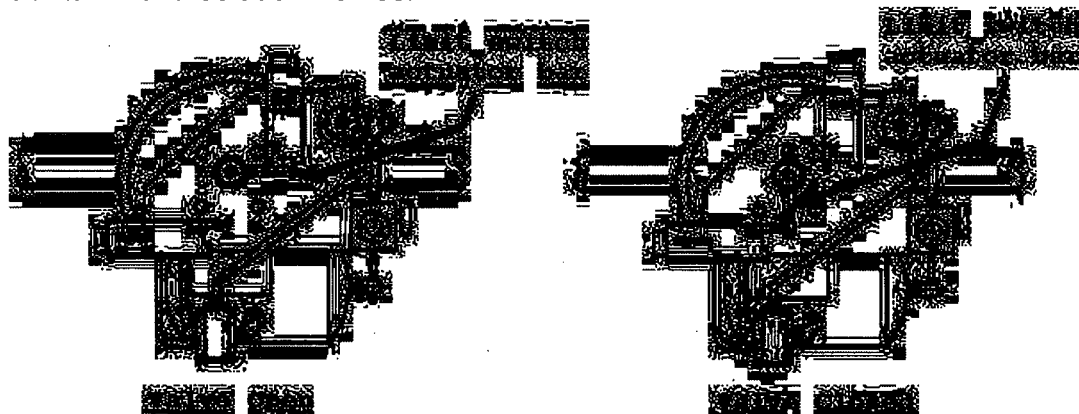
NOTES

- 1) Subsection 6.1 shall be performed first. Subsections 6.2, 6.3, 6.4, and 6.5 may be performed in any order after completion of subsection 6.1. Subsection 6.6 may be performed after completion of subsections 6.1 and 6.5. Subsections 6.7, 6.8, and 6.9 may be performed after completion of subsections 6.1, 6.5, and 6.6. Subsections of this test shall be performed per the flow diagram below:



- 2) When manipulating Containment Isolation Valve Handswitches, handswitches must be held in the OPEN position until valve is fully OPEN.

Refer to the following sketch depicting the respective open and closed orientations of Containment Isolation Valves:



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6.1 Incore Instrument Room Air Conditioning System Containment Isolation Valves Control Logic

6.1.1 Preliminary Actions

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

NOTES

- 1) Subsections 6.1.2 thru 6.1.9 may be performed in any order. Steps within these subsections must be performed in the order written.
- 2) Containment Isolation Valves will be stroke timed locally at the valve, and remotely at the control switch, in the close direction. Local stroke timing begins with the initiating signal, and is concluded with the completion of limit switch actuator movement. Remote stroke timing begins with the initiating signal, and is concluded with the position indication lights status change on 2-M-9. Stroke time acceptance criteria will be based on the movement to the safety function final position of the valve.

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6.1.2 2-FCV-31-305, INCORE INSTR RM AHU 2A CWR ISOL, Control Logic

[1] **ENSURE** 2-FCV-31-305, INCORE INSTR RM AHU 2A CWR ISOL [Annulus, EL 736, AZ 64], is CLOSED (local observation). _____

[2] **PLACE** Handswitch 2-HS-31-305, CIRC PMP A SUCT CIV-PHASE A [2-M-9], to the OPEN position, **AND**

VERIFY Valve 2-FCV-31-305, INCORE INSTR RM AHU 2A CWR ISOL, OPENS (local observation), **THEN**

RELEASE to A AUTO. _____

[3] **VERIFY** status lights on Handswitch 2-HS-31-305, CIRC PMP A SUCT CIV-PHASE A, are:

A. Red Light ON, 2-M-9 (**Acc Crit**) _____

B. Green Light OFF, 2-M-9 (**Acc Crit**) _____

[4] **VERIFY** status lights on 2-XX-55-6F, Window 19, CONTAINMENT ISOLATION STATUS PANEL (TRAIN-B), FCV-31-305 [2-M-6], are:

A. Red Light ON, 2-M-6 (**Acc Crit**) _____

B. Green Light OFF, 2-M-6 (**Acc Crit**) _____

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Date _____

**6.1.2 2-FCV-31-305, INCORE INSTR RM AHU 2A CWR ISOL, Control
Logic (continued)**

NOTE

The following step requires stroke timing both locally and in the Main Control Room. All M&TE (stopwatches) should be readied and personnel should agree on a countdown method.

- [5] **PLACE** Handswitch 2-HS-31-305, CIRC PMP A SUCT CIV-PHASE A, to the CLOSE position, **AND**

RECORD:

- A. Stroke CLOSE time of Valve 2-FCV-31-305, INCORE INSTR RM AHU 2A CWR ISOL (local observation)

_____ seconds M&TE: _____

Acc Crit: ≤ 10 sec

- B. Stroke CLOSE time of Valve 2-FCV-31-305, INCORE INSTR RM AHU 2A CWR ISOL (indication lights)

_____ seconds M&TE: _____

Acc Crit: ≤ 10 sec

- [6] **VERIFY** Valve 2-FCV-31-305, INCORE INSTR RM AHU 2A CWR ISOL, is CLOSED (local observation).

- [7] **VERIFY** status lights on Handswitch 2-HS-31-305, CIRC PMP A SUCT CIV-PHASE A, are:

A. Green Light ON, 2-M-9 (**Acc Crit**)

B. Red Light OFF, 2-M-9 (**Acc Crit**)

- [8] **VERIFY** status lights on 2-XX-55-6F, Window 19, CONTAINMENT ISOLATION STATUS PANEL (TRAIN-B), FCV-31-305, are:

A. Green Light ON, 2-M-6 (**Acc Crit**)

B. Red Light OFF, 2-M-6 (**Acc Crit**)

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6.1.2 2-FCV-31-305, INCORE INSTR RM AHU 2A CWR ISOL, Control Logic (continued)

[9] **PLACE** Handswitch 2-HS-31-305, CIRC PMP A SUCT CIV-PHASE A, to the OPEN position, **AND**

VERIFY 2-FCV-31-305, INCORE INSTR RM AHU 2A CWR ISOL, OPENS (local observation), **THEN**

RELEASE to A AUTO.

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**6.1.3 2-FCV-31-306, INCORE INSTR RM AHU 2A CW PUMP 2A ISOL,
Control Logic**

[1] **ENSURE** 2-FCV-31-306, INCORE INSTR RM AHU 2A CW
PUMP 2A ISOL [Inst Rm, EL 716, AZ 60], is CLOSED (local
observation). _____

[2] **PLACE** Handswitch 2-HS-31-306, CIRC PMP A SUCT
CIV-PHASE A [2-M-9], to the OPEN position, **AND**

VERIFY Valve 2-FCV-31-306, INCORE INSTR RM AHU 2A
CW PUMP 2A ISOL, OPENS (local observation), **THEN**

RELEASE to A AUTO. _____

[3] **VERIFY** status lights on Handswitch 2-HS-31-306, CIRC PMP
A SUCT CIV-PHASE A, are:

A. Red Light ON, 2-M-9 (**Acc Crit**) _____

B. Green Light OFF, 2-M-9 (**Acc Crit**) _____

[4] **VERIFY** status lights on 2-XX-55-6E, Window 19,
CONTAINMENT ISOLATION STATUS PANEL (TRAIN-A),
FCV-31-306 [2-M-6], are:

A. Red Light ON, on 2-M-6 (**Acc Crit**) _____

B. Green Light OFF, on 2-M-6 (**Acc Crit**) _____

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**6.1.3 2-FCV-31-306, INCORE INSTR RM AHU 2A CW PUMP 2A ISOL,
Control Logic (continued)**

NOTE

The following step requires stroke timing both locally and in the Main Control Room. All M&TE (stopwatches) should be readied and personnel should agree on a countdown method.

- [5] **PLACE** Handswitch 2-HS-31-306, CIRC PMP A SUCT CIV-PHASE A, to the CLOSE position, **AND**

RECORD:

- A. Stroke CLOSE time of Valve 2-FCV-31-306, INCORE INSTR RM AHU 2A CW PUMP 2A ISOL (local observation)

_____ seconds M&TE: _____
Acc Crit: ≤ 10 sec

- B. Stroke CLOSE time of Valve 2-FCV-31-306, INCORE INSTR RM AHU 2A CW PUMP 2A ISOL (indication lights)

_____ seconds M&TE: _____
Acc Crit: ≤ 10 sec

- [6] **VERIFY** Valve 2-FCV-31-306, INCORE INSTR RM AHU 2A CW PUMP 2A ISOL, is CLOSED (local observation).

- [7] **VERIFY** status lights on Handswitch 2-HS-31-306, CIRC PMP A SUCT CIV-PHASE A, are:

- A. Green Light ON, 2-M-9 (**Acc Crit**)
B. Red Light OFF, 2-M-9 (**Acc Crit**)

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6.1.3 2-FCV-31-306, INCORE INSTR RM AHU 2A CW PUMP 2A ISOL, Control Logic (continued)

[8] **VERIFY** status lights on 2-XX-55-6E, Window 19, CONTAINMENT ISOLATION STATUS PANEL (TRAIN-A), FCV-31-306, are:

A. Green Light ON, on 2-M-6 (**Acc Crit**) _____

B. Red Light OFF, on 2-M-6 (**Acc Crit**) _____

[9] **PLACE** Handswitch 2-HS-31-306, CIRC PMP A SUCT CIV-PHASE A, to the OPEN position, **AND**

VERIFY 2-FCV-31-306, INCORE INSTR RM AHU 2A CW PUMP 2A ISOL, OPENS (local observation), **THEN**

RELEASE to A AUTO. _____

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6.1.4 2-FCV-31-308, INCORE INSTR RM AHU 2A CWS ISOL, Control Logic

- [1] **ENSURE** 2-FCV-31-308, INCORE INSTR RM AHU 2A CWS ISOL [Inst Rm, EL 716, AZ 65], is CLOSED (local observation). _____
- [2] **PLACE** Handswitch 2-HS-31-308, CIRC PMP A DISCH CIV-PHASE A [2-M-9], to the OPEN position, **AND**

VERIFY Valve 2-FCV-31-308, INCORE INSTR RM AHU 2A CWS ISOL, OPENS (local observation), **THEN**

RELEASE to A AUTO. _____
- [3] **VERIFY** status lights on Handswitch 2-HS-31-308, CIRC PMP A DISCH CIV-PHASE A, are:
 - A. Red Light ON, 2-M-9 (**Acc Crit**) _____
 - B. Green Light OFF, 2-M-9 (**Acc Crit**) _____
- [4] **VERIFY** status lights on 2-XX-55-6E, Window 20, CONTAINMENT ISOLATION STATUS PANEL (TRAIN-A), FCV-31-308 [2-M-6] , are:
 - A. Red Light ON, on 2-M-6 (**Acc Crit**) _____
 - B. Green Light OFF, on 2-M-6 (**Acc Crit**) _____

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**6.1.4 2-FCV-31-308, INCORE INSTR RM AHU 2A CWS ISOL, Control
Logic (continued)**

NOTE

The following step requires stroke timing both locally and in the Main Control Room. All M&TE (stopwatches) should be readied and personnel should agree on a countdown method.

- [5] **PLACE** Handswitch 2-HS-31-308, CIRC PMP A DISCH CIV-PHASE A, to the CLOSE position, **AND**

RECORD:

- A. Stroke CLOSE time of Valve 2-FCV-31-308, INCORE INSTR RM AHU 2A CWS ISOL (local observation)

_____ seconds M&TE: _____
Acc Crit: ≤ 10 sec

- B. Stroke CLOSE time of Valve 2-FCV-31-308, INCORE INSTR RM AHU 2A CWS ISOL (indication lights)

_____ seconds M&TE: _____
Acc Crit: ≤ 10 sec

- [6] **VERIFY** Valve 2-FCV-31-308, INCORE INSTR RM AHU 2A CWS ISOL, is CLOSED (local observation).

- [7] **VERIFY** status lights on Handswitch 2-HS-31-308, CIRC PMP A DISCH CIV-PHASE A, are:

A. Green Light ON, 2-M-9 (**Acc Crit**)

B. Red Light OFF, 2-M-9 (**Acc Crit**)

- [8] **VERIFY** status lights on 2-XX-55-6E, Window 20, CONTAINMENT ISOLATION STATUS PANEL (TRAIN-A), FCV-31-308, are:

A. Green Light ON, 2-M-6 (**Acc Crit**)

B. Red Light OFF, 2-M-6 (**Acc Crit**)

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6.1.4 2-FCV-31-308, INCORE INSTR RM AHU 2A CWS ISOL, Control Logic (continued)

[9] **PLACE** Handswitch 2-HS-31-308, CIRC PMP A DISCH CIV-PHASE A, to the OPEN position, **AND**

VERIFY 2-FCV-31-308, INCORE INSTR RM AHU 2A CWS ISOL, OPENS (local observation), **THEN**

RELEASE to A AUTO.

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6.1.5 2-FCV-31-309, INCORE INSTR RM AHU 2A CWS ISOL, Control Logic

[1] **ENSURE** 2-FCV-31-309, INCORE INSTR RM AHU 2A CWS ISOL [Annulus, EL 737, AZ 65], is CLOSED (local observation). _____

[2] **PLACE** Handswitch 2-HS-31-309, CIRC PMP A DISCH CIV-PHASE A [2-M-9], to the OPEN position, **AND**

VERIFY Valve 2-FCV-31-309, INCORE INSTR RM AHU 2A CWS ISOL, OPENS (local observation), **THEN**

RELEASE to A AUTO. _____

[3] **VERIFY** status lights on Handswitch 2-HS-31-309, CIRC PMP A DISCH CIV-PHASE A, are:

A. Red Light ON, 2-M-9 (**Acc Crit**) _____

B. Green Light OFF, 2-M-9 (**Acc Crit**) _____

[4] **VERIFY** status lights on 2-XX-55-6F, Window 20, CONTAINMENT ISOLATION STATUS PANEL (TRAIN-B), FCV-31-309 [2-M-6], are:

A. Red Light ON, 2-M-6 (**Acc Crit**) _____

B. Green Light OFF, 2-M-6 (**Acc Crit**) _____

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**6.1.5 2-FCV-31-309, INCORE INSTR RM AHU 2A CWS ISOL, Control
Logic (continued)**

NOTE

The following step requires stroke timing both locally and in the Main Control Room. All M&TE (stopwatches) should be readied and personnel should agree on a countdown method.

- [5] **PLACE** Handswitch 2-HS-31-309, CIRC PMP A DISCH CIV-PHASE A, to the CLOSE position, **AND**

RECORD:

- A. Stroke CLOSE time of Valve 2-FCV-31-309, INCORE INSTR RM AHU 2A CWS ISOL (local observation)

_____ seconds M&TE: _____

Acc Crit: ≤ 10 sec

- B. Stroke CLOSE time of Valve 2-FCV-31-309, INCORE INSTR RM AHU 2A CWS ISOL (indication lights)

_____ seconds M&TE: _____

Acc Crit: ≤ 10 sec

- [6] **VERIFY** Valve 2-FCV-31-309, INCORE INSTR RM AHU 2A CWS ISOL, is CLOSED (local observation).

- [7] **VERIFY** status lights on Handswitch 2-HS-31-309, CIRC PMP A DISCH CIV-PHASE A, are:

A. Green Light ON, 2-M-9 (**Acc Crit**)

B. Red Light OFF, 2-M-9 (**Acc Crit**)

- [8] **VERIFY** status lights on 2-XX-55-6F, Window 20, CONTAINMENT ISOLATION STATUS PANEL (TRAIN-B), FCV-31-309, are:

A. Green Light ON, 2-M-6 (**Acc Crit**)

B. Red Light OFF, 2-M-6 (**Acc Crit**)

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**6.1.5 2-FCV-31-309, INCORE INSTR RM AHU 2A CWS ISOL, Control
Logic (continued)**

[9] **PLACE** Handswitch 2-HS-31-309, CIRC PMP A DISCH
CIV-PHASE A, to the OPEN position, **AND**

VERIFY 2-FCV-31-309, INCORE INSTR RM AHU 2A CWS
ISOL, OPENS (local observation), **THEN**

RELEASE to A AUTO. _____

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6.1.6 2-FCV-31-326, INCORE INSTR RM AHU 2B CWR ISOL, Control Logic

[1] **ENSURE** 2-FCV-31-326, INCORE INSTR RM AHU 2B CWR ISOL [Annulus, EL 737, AZ 104], is CLOSED (local observation). _____

[2] **PLACE** Handswitch 2-HS-31-326, CIRC PMP B SUCT CIV-PHASE A [2-M-9], to the OPEN position, **AND**

VERIFY Valve 2-FCV-31-326, INCORE INSTR RM AHU 2B CWR ISOL, OPENS (local observation), **THEN**

RELEASE to A AUTO. _____

[3] **VERIFY** status lights on Handswitch 2-HS-31-326, CIRC PMP B SUCT CIV-PHASE A, are:

A. Red Light ON, 2-M-9 (**Acc Crit**) _____

B. Green Light OFF, 2-M-9 (**Acc Crit**) _____

[4] **VERIFY** status lights on 2-XX-55-6E, Window 21, CONTAINMENT ISOLATION STATUS PANEL (TRAIN-A), FCV-31-326 [2-M-6], are:

A. Red Light ON, on 2-M-6 (**Acc Crit**) _____

B. Green Light OFF, on 2-M-6 (**Acc Crit**) _____

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**6.1.6 2-FCV-31-326, INCORE INSTR RM AHU 2B CWR ISOL, Control
Logic (continued)**

NOTE

The following step requires stroke timing both locally and in the Main Control Room. All M&TE (stopwatches) should be readied and personnel should agree on a countdown method.

- [5] **PLACE** Handswitch 2-HS-31-326, CIRC PMP B SUCT CIV-PHASE A, to the CLOSE position, **AND**

RECORD:

- A. Stroke CLOSE time of Valve 2-FCV-31-326, INCORE INSTR RM AHU 2B CWR ISOL (local observation)

_____ seconds M&TE: _____

Acc Crit: ≤ 10 sec

- B. Stroke CLOSE time of Valve 2-FCV-31-326, INCORE INSTR RM AHU 2B CWR ISOL (indication lights)

_____ seconds M&TE: _____

Acc Crit: ≤ 10 sec

- [6] **VERIFY** Valve 2-FCV-31-326, INCORE INSTR RM AHU 2B CWR ISOL, is CLOSED (local observation).

- [7] **VERIFY** status lights on Handswitch 2-HS-31-326, CIRC PMP B SUCT CIV-PHASE A, are:

A. Green Light ON, 2-M-9 (**Acc Crit**)

B. Red Light OFF, 2-M-9 (**Acc Crit**)

- [8] **VERIFY** status lights on 2-XX-55-6E, Window 21, CONTAINMENT ISOLATION STATUS PANEL (TRAIN-A), FCV-31-326, are:

A. Green Light ON, 2-M-6 (**Acc Crit**)

B. Red Light OFF, 2-M-6 (**Acc Crit**)

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6.1.6 2-FCV-31-326, INCORE INSTR RM AHU 2B CWR ISOL, Control Logic (continued)

[9] **PLACE** Handswitch 2-HS-31-326, CIRC PMP B SUCT CIV-PHASE A, to the OPEN position, **AND**

VERIFY 2-FCV-31-326, INCORE INSTR RM AHU 2B CWR ISOL, OPENS (local observation), **THEN**

RELEASE to A AUTO.

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6.1.7 2-FCV-31-327, INCORE INSTR RM AHU 2B CWR ISOL, Control Logic

[1] **ENSURE** 2-FCV-31-327, INCORE INSTR RM AHU 2B CWR ISOL [Inst Rm, EL 716, AZ 104], is CLOSED (local observation). _____

[2] **PLACE** Handswitch 2-HS-31-327, CIRC PMP B SUCT CIV-PHASE A [2-M-9], to the OPEN position, **AND**

VERIFY Valve 2-FCV-31-327, INCORE INSTR RM AHU 2B CWR ISOL, OPENS (local observation), **THEN**

RELEASE to A AUTO. _____

[3] **VERIFY** status lights on Handswitch 2-HS-31-327, CIRC PMP B SUCT CIV-PHASE A, are: _____

A. Red Light ON, 2-M-9 (**Acc Crit**) _____

B. Green Light OFF, 2-M-9 (**Acc Crit**) _____

[4] **VERIFY** status lights on 2-XX-55-6F, Window 21, CONTAINMENT ISOLATION STATUS PANEL (TRAIN-B), FCV-31-327 [2-M-6], are: _____

A. Red Light ON, 2-M-6 (**Acc Crit**) _____

B. Green Light OFF, 2-M-6 (**Acc Crit**) _____

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**6.1.7 2-FCV-31-327, INCORE INSTR RM AHU 2B CWR ISOL, Control
Logic (continued)**

NOTE

The following step requires stroke timing both locally and in the Main Control Room. All M&TE (stopwatches) should be readied and personnel should agree on a countdown method.

- [5] **PLACE** Handswitch 2-HS-31-327, CIRC PMP B SUCT CIV-PHASE A, to the CLOSE position, **AND**

RECORD:

- A. Stroke CLOSE time of Valve 2-FCV-31-327, INCORE INSTR RM AHU 2B CWR ISOL (local observation)

_____ seconds M&TE: _____

Acc Crit: ≤ 10 sec

- B. Stroke CLOSE time of Valve 2-FCV-31-327, INCORE INSTR RM AHU 2B CWR ISOL (indication lights)

_____ seconds M&TE: _____

Acc Crit: ≤ 10 sec

- [6] **VERIFY** Valve 2-FCV-31-327, INCORE INSTR RM AHU 2B CWR ISOL, is CLOSED (local observation).

- [7] **VERIFY** status lights on Handswitch 2-HS-31-327, CIRC PMP B SUCT CIV-PHASE A, are:

A. Green Light ON, 2-M-9 (**Acc Crit**)

B. Red Light OFF, 2-M-9 (**Acc Crit**)

- [8] **VERIFY** status lights on 2-XX-55-6F, Window 21, CONTAINMENT ISOLATION STATUS PANEL (TRAIN-B), FCV-31-327, are:

A. Green Light ON, 2-M-6 (**Acc Crit**)

B. Red Light OFF, 2-M-6 (**Acc Crit**)

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**6.1.7 2-FCV-31-327, INCORE INSTR RM AHU 2B CWR ISOL, Control
Logic (continued)**

[9] **PLACE** Handswitch 2-HS-31-327, CIRC PMP B SUCT
CIV-PHASE A, to the OPEN position, **AND**

VERIFY 2-FCV-31-327, INCORE INSTR RM AHU 2B CWR
ISOL, OPENS (local observation), **THEN**

RELEASE to A AUTO. _____

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6.1.8 2-FCV-31-329, INCORE INSTR RM AHU 2B CWS ISOL, Control Logic

[1] **ENSURE** 2-FCV-31-329, INCORE INSTR RM AHU 2B CWS ISOL [Inst Rm, EL 716, AZ 105], is CLOSED (local observation). _____

[2] **PLACE** Handswitch 2-HS-31-329, CIRC PMP B DISCH CIV-PHASE A [2-M-9], to the OPEN position, **AND**

VERIFY Valve 2-FCV-31-329, INCORE INSTR RM AHU 2B CWS ISOL, OPENS (local observation), **THEN**

RELEASE to A AUTO. _____

[3] **VERIFY** status lights on Handswitch 2-HS-31-329, CIRC PMP B DISCH CIV-PHASE A, are:

A. Red Light ON, 2-M-9 (**Acc Crit**) _____

B. Green Light OFF, 2-M-9 (**Acc Crit**) _____

[4] **VERIFY** status lights on 2-XX-55-6F, Window 31, CONTAINMENT ISOLATION STATUS PANEL (TRAIN-B), FCV-31-329 [2-M-6], are:

A. Red Light ON, 2-M-6 (**Acc Crit**) _____

B. Green Light OFF, 2-M-6 (**Acc Crit**) _____

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6.1.8 2-FCV-31-329, INCORE INSTR RM AHU 2B CWS ISOL, Control Logic (continued)

NOTE

The following step requires stroke timing both locally and in the Main Control Room. All M&TE (stopwatches) should be readied and personnel should agree on a countdown method.

- [5] **PLACE** Handswitch 2-HS-31-329, CIRC PMP B DISCH CIV-PHASE A, to the CLOSE position, **AND**

RECORD:

- A. Stroke CLOSE time of Valve 2-FCV-31-329, INCORE INSTR RM AHU 2B CWS ISOL (local observation)

_____ seconds M&TE: _____
Acc Crit: ≤ 10 sec

- B. Stroke CLOSE time of Valve 2-FCV-31-329, INCORE INSTR RM AHU 2B CWS ISOL (indication lights)

_____ seconds M&TE: _____
Acc Crit: ≤ 10 sec

- [6] **VERIFY** Valve 2-FCV-31-329, INCORE INSTR RM AHU 2B CWS ISOL, is CLOSED (local observation).

- [7] **VERIFY** status lights on Handswitch 2-HS-31-329, CIRC PMP B DISCH CIV-PHASE A, are:

A. Green Light ON, 2-M-9 (**Acc Crit**)

B. Red Light OFF, 2-M-9 (**Acc Crit**)

- [8] **VERIFY** status lights on 2-XX-55-6F, Window 31, CONTAINMENT ISOLATION STATUS PANEL (TRAIN-B), FCV-31-329, are:

A. Green Light ON, 2-M-6 (**Acc Crit**)

B. Red Light OFF, 2-M-6 (**Acc Crit**)

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6.1.8 2-FCV-31-329, INCORE INSTR RM AHU 2B CWS ISOL, Control Logic (continued)

[9] **PLACE** Handswitch 2-HS-31-329, CIRC PMP B DISCH CIV-PHASE A, to the OPEN position, **AND**

VERIFY 2-FCV-31-329, INCORE INSTR RM AHU 2B CWS ISOL, OPENS (local observation), **THEN**

RELEASE to A AUTO.

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6.1.9 2-FCV-31-330, INCORE INSTR RM AHU 2B CWS ISOL, Control Logic

[1] **ENSURE** 2-FCV-31-330, INCORE INSTR RM AHU 2B CWS ISOL [Annulus, EL 738, AZ 105], is CLOSED (local observation). _____

[2] **PLACE** Handswitch 2-HS-31-330, CIRC PMP B DISCH CIV-PHASE A [2-M-9], to the OPEN position, **AND**

VERIFY Valve 2-FCV-31-330, INCORE INSTR RM AHU 2B CWS ISOL, OPENS (local observation), **THEN**

RELEASE to A AUTO. _____

[3] **VERIFY** status lights on Handswitch 2-HS-31-330, CIRC PMP B DISCH CIV-PHASE A, are:

A. Red Light ON, 2-M-9 (**Acc Crit**) _____

B. Green Light OFF, 2-M-9 (**Acc Crit**) _____

[4] **VERIFY** status lights on 2-XX-55-6E, Window 31, CONTAINMENT ISOLATION STATUS PANEL (TRAIN-A), FCV-31-330 [2-M-6], are:

A. Red Light ON, 2-M-6 (**Acc Crit**) _____

B. Green Light OFF, 2-M-6 (**Acc Crit**) _____

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**6.1.9 2-FCV-31-330, INCORE INSTR RM AHU 2B CWS ISOL, Control
Logic (continued)**

NOTE

The following step requires stroke timing both locally and in the Main Control Room. All M&TE (stopwatches) should be readied and personnel should agree on a countdown method.

- [5] **PLACE** Handswitch 2-HS-31-330, CIRC PMP B DISCH CIV-PHASE A, to the CLOSE position, **AND**

RECORD:

- A. Stroke CLOSE time of Valve 2-FCV-31-330, INCORE INSTR RM AHU 2B CWS ISOL (local observation)

_____ seconds M&TE: _____

Acc Crit: ≤ 10 sec

- B. Stroke CLOSE time of Valve 2-FCV-31-330, INCORE INSTR RM AHU 2B CWS ISOL (indication lights)

_____ seconds M&TE: _____

Acc Crit: ≤ 10 sec

- [6] **VERIFY** Valve 2-FCV-31-330, INCORE INSTR RM AHU 2B CWS ISOL, is CLOSED (local observation).

- [7] **VERIFY** status lights on Handswitch 2-HS-31-330, CIRC PMP B DISCH CIV-PHASE A, are:

A. Green Light ON, 2-M-9 (**Acc Crit**)

B. Red Light OFF, 2-M-9 (**Acc Crit**)

- [8] **VERIFY** status lights on 2-XX-55-6E, Window 31, CONTAINMENT ISOLATION STATUS PANEL (TRAIN-A), FCV-31-330, are:

A. Green Light ON, 2-M-6 (**Acc Crit**)

B. Red Light OFF, 2-M-6 (**Acc Crit**)

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6.1.9 2-FCV-31-330, INCORE INSTR RM AHU 2B CWS ISOL, Control Logic (continued)

[9] **PLACE** Handswitch 2-HS-31-330, CIRC PMP B DISCH CIV-PHASE A, to the OPEN position, **AND**

VERIFY 2-FCV-31-330, INCORE INSTR RM AHU 2B CWS ISOL, OPENS (local observation), **THEN**

RELEASE to A AUTO.

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6.2 Incore Instrument Room Air Conditioning System Containment Isolation Valves Close on Simulated Phase A Containment Isolation

6.2.1 Preliminary Actions

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

CAUTION

Work in Solid State Protection System cabinets 2-R-48 and 2-R-51 involves energized circuits.

NOTE

Subsections 6.2.2 thru 6.2.9 may be performed in any order. Steps within these subsections must be performed in the order written.

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6.2.2 2-FCV-31-305, INCORE INSTR RM AHU 2A CWR ISOL, Simulated Phase A

- [1] **ENSURE** status lights on Handswitch 2-HS-31-305, CIRC PMP A SUCT CIV-PHASE A [2-M-9], are:

A. Green Light OFF, 2-M-9

B. Red Light ON, 2-M-9

- [2] **LIFT** Wire VBK5 from Terminal Point 8 on TB 637 in 2-R-51 to simulate a Phase A Containment Isolation.

1st

CV

- [3] **VERIFY** status lights on Handswitch 2-HS-31-305, CIRC PMP A SUCT CIV-PHASE A, are:

A. Green Light ON, 2-M-9 (**Acc Crit**)

B. Red Light OFF, 2-M-9 (**Acc Crit**)

- [4] **LAND** Wire VBK5 on Terminal Point 8 on TB 637 in 2-R-51 to simulate a Phase A Containment Isolation reset.

1st

CV

- [5] **VERIFY** status lights on Handswitch 2-HS-31-305, CIRC PMP A SUCT CIV-PHASE A, are:

A. Green Light ON, 2-M-9 (**Acc Crit**)

B. Red Light OFF, 2-M-9 (**Acc Crit**)

- [6] **PLACE** Handswitch 2-HS-31-305, CIRC PMP A SUCT CIV-PHASE A, to the OPEN position, **AND**

VERIFY status lights on Handswitch 2-HS-31-305, CIRC PMP A SUCT CIV-PHASE A, Green Light OFF and Red Light ON, **THEN**

RELEASE to A AUTO.

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**6.2.3 2-FCV-31-306, INCORE INSTR RM AHU 2A CW PUMP 2A ISOL,
Simulated Phase A**

- [1] **ENSURE** status lights on Handswitch 2-HS-31-306, CIRC PMP A SUCT CIV-PHASE A [2-M-9], are:

A. Green Light OFF, 2-M-9 _____

B. Red Light ON, 2-M-9 _____

- [2] **LIFT** Wire VBL5 from Terminal Point 8 on TB 637 in 2-R-48 to simulate a Phase A Containment Isolation.

1st

CV

- [3] **VERIFY** status lights on Handswitch 2-HS-31-306, CIRC PMP A SUCT CIV-PHASE A, are:

A. Green Light ON, 2-M-9 (**Acc Crit**) _____

B. Red Light OFF, 2-M-9 (**Acc Crit**) _____

- [4] **LAND** Wire VBL5 on Terminal Point 8 on TB 637 in 2-R-48 to simulate a Phase A Containment Isolation reset.

1st

CV

- [5] **VERIFY** status lights on Handswitch 2-HS-31-306, CIRC PMP A SUCT CIV-PHASE A, are:

A. Green Light ON, 2-M-9 (**Acc Crit**) _____

B. Red Light OFF, 2-M-9 (**Acc Crit**) _____

- [6] **PLACE** Handswitch 2-HS-31-306, CIRC PMP A SUCT CIV-PHASE A, to the OPEN position, **AND**

VERIFY status lights on Handswitch 2-HS-31-306, CIRC PMP A SUCT CIV-PHASE A, Green Light OFF and Red Light ON, **THEN**

RELEASE to A AUTO. _____

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6.2.4 2-FCV-31-308, INCORE INSTR RM AHU 2A CWS ISOL, Simulated Phase A

- [1] **ENSURE** status lights on Handswitch 2-HS-31-308, CIRC PMP A DISCH CIV-PHASE A [2-M-9], are:

A. Green Light OFF, 2-M-9 _____

B. Red Light ON, 2-M-9 _____

- [2] **LIFT** Wire VBN5 from Terminal Point 10 on TB 637 in 2-R-48 to simulate a Phase A Containment Isolation.

1st

CV

- [3] **VERIFY** status lights on Handswitch 2-HS-31-308, CIRC PMP A DISCH CIV-PHASE A, are:

A. Green Light ON, 2-M-9 (**Acc Crit**) _____

B. Red Light OFF, 2-M-9 (**Acc Crit**) _____

- [4] **LAND** Wire VBN5 on Terminal Point 10 on TB 637 in 2-R-48 to simulate a Phase A Containment Isolation reset.

1st

CV

- [5] **VERIFY** status lights on Handswitch 2-HS-31-308, CIRC PMP A DISCH CIV-PHASE A, are:

A. Green Light ON, 2-M-9 (**Acc Crit**) _____

B. Red Light OFF, 2-M-9 (**Acc Crit**) _____

- [6] **PLACE** Handswitch 2-HS-31-308, CIRC PMP A DISCH CIV-PHASE A, to the OPEN position, **AND**

VERIFY status lights on Handswitch 2-HS-31-308, CIRC PMP A DISCH CIV-PHASE A, Green Light OFF and Red Light ON, **THEN**

RELEASE to A AUTO. _____

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6.2.5 2-FCV-31-309, INCORE INSTR RM AHU 2A CWS ISOL, Simulated Phase A

- [1] **ENSURE** status lights on Handswitch 2-HS-31-309, CIRC PMP A DISCH CIV-PHASE A [2-M-9], are:

A. Green Light OFF, 2-M-9 _____

B. Red Light ON, 2-M-9 _____

- [2] **LIFT** Wire VBM5 from Terminal Point 10 on TB 637 in 2-R-51 to simulate a Phase A Containment Isolation.

1st

CV

- [3] **VERIFY** status lights on Handswitch 2-HS-31-309, CIRC PMP A DISCH CIV-PHASE A, are:

A. Green Light ON, 2-M-9 (**Acc Crit**) _____

B. Red Light OFF, 2-M-9 (**Acc Crit**) _____

- [4] **LAND** Wire VBM5 on Terminal Point 10 on TB 637 in 2-R-51 to simulate a Phase A Containment Isolation reset.

1st

CV

- [5] **VERIFY** status lights on Handswitch 2-HS-31-309, CIRC PMP A DISCH CIV-PHASE A, are:

A. Green Light ON, 2-M-9 (**Acc Crit**) _____

B. Red Light OFF, 2-M-9 (**Acc Crit**) _____

- [6] **PLACE** Handswitch 2-HS-31-309, CIRC PMP A DISCH CIV-PHASE A, to the OPEN position, **AND**

VERIFY status lights on Handswitch 2-HS-31-309, CIRC PMP A DISCH CIV-PHASE A, Green Light OFF and Red Light ON, **THEN**

RELEASE to A AUTO. _____

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6.2.6 2-FCV-31-326, INCORE INSTR RM AHU 2B CWR ISOL, Simulated Phase A

- [1] **ENSURE** status lights on Handswitch 2-HS-31-326, CIRC PMP B SUCT CIV-PHASE A [2-M-9], are:

A. Green Light OFF, 2-M-9 _____

B. Red Light ON, 2-M-9 _____

- [2] **LIFT** Wire VHG5 from Terminal Point 12 on TB 637 in 2-R-48 to simulate a Phase A Containment Isolation.

1st

CV

- [3] **VERIFY** status lights on Handswitch 2-HS-31-326, CIRC PMP B SUCT CIV-PHASE A, are:

A. Green Light ON, 2-M-9 (**Acc Crit**) _____

B. Red Light OFF, 2-M-9 (**Acc Crit**) _____

- [4] **LAND** Wire VHG5 on Terminal Point 12 on TB 637 in 2-R-48 to simulate a Phase A Containment Isolation reset.

1st

CV

- [5] **VERIFY** status lights on Handswitch 2-HS-31-326, CIRC PMP B SUCT CIV-PHASE A, are:

A. Green Light ON, 2-M-9 (**Acc Crit**) _____

B. Red Light OFF, 2-M-9 (**Acc Crit**) _____

- [6] **PLACE** Handswitch 2-HS-31-326, CIRC PMP B SUCT CIV-PHASE A, to the OPEN position, **AND**

VERIFY status lights on Handswitch 2-HS-31-326, CIRC PMP B SUCT CIV-PHASE A, Green Light OFF and Red Light ON, **THEN**

RELEASE to A AUTO. _____

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6.2.7 2-FCV-31-327, INCORE INSTR RM AHU 2B CWR ISOL, Simulated Phase A

- [1] **ENSURE** status lights on Handswitch 2-HS-31-327, CIRC PMP B SUCT CIV-PHASE A [2-M-9], are:

A. Green Light OFF, 2-M-9 _____

B. Red Light ON, 2-M-9 _____

- [2] **LIFT** Wire VHH5 from Terminal Point 12 on TB 637 in 2-R-51 to simulate a Phase A Containment Isolation.

1st

CV

- [3] **VERIFY** status lights on Handswitch 2-HS-31-327, CIRC PMP B SUCT CIV-PHASE A, are:

A. Green Light ON, 2-M-9 (**Acc Crit**) _____

B. Red Light OFF, 2-M-9 (**Acc Crit**) _____

- [4] **LAND** Wire VHH5 on Terminal Point 12 on TB 637 in 2-R-51 to simulate a Phase A Containment Isolation reset.

1st

CV

- [5] **VERIFY** status lights on Handswitch 2-HS-31-327, CIRC PMP B SUCT CIV-PHASE A, are:

A. Green Light ON, 2-M-9 (**Acc Crit**) _____

B. Red Light OFF, 2-M-9 (**Acc Crit**) _____

- [6] **PLACE** Handswitch 2-HS-31-327, CIRC PMP B SUCT CIV-PHASE A, to the OPEN position, **AND**

VERIFY status lights on Handswitch 2-HS-31-327, CIRC PMP B SUCT CIV-PHASE A, Green Light OFF and Red Light ON,
THEN

RELEASE to A AUTO. _____

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6.2.8 2-FCV-31-329, INCORE INSTR RM AHU 2B CWS ISOL, Simulated Phase A

- [1] **ENSURE** status lights on Handswitch 2-HS-31-329, CIRC PMP B DISCH CIV-PHASE A [2-M-9], are:

A. Green Light OFF, 2-M-9 _____

B. Red Light ON, 2-M-9 _____

- [2] **LIFT** Wire VHK5 from Terminal Point 2 on TB 638 in 2-R-51 to simulate a Phase A Containment Isolation.

1st

CV

- [3] **VERIFY** status lights on Handswitch 2-HS-31-329, CIRC PMP B DISCH CIV-PHASE A, are:

A. Green Light ON, 2-M-9 (**Acc Crit**) _____

B. Red Light OFF, 2-M-9 (**Acc Crit**) _____

- [4] **LAND** Wire VHK5 on Terminal Point 2 on TB 638 in 2-R-51 to simulate a Phase A Containment Isolation reset.

1st

CV

- [5] **VERIFY** status lights on Handswitch 2-HS-31-329, CIRC PMP B DISCH CIV-PHASE A, are:

A. Green Light ON, 2-M-9 (**Acc Crit**) _____

B. Red Light OFF, 2-M-9 (**Acc Crit**) _____

- [6] **PLACE** Handswitch 2-HS-31-329, CIRC PMP B DISCH CIV-PHASE A, to the OPEN position, **AND**

VERIFY status lights on Handswitch 2-HS-31-329, CIRC PMP B DISCH CIV-PHASE A, Green Light OFF and Red Light ON, **THEN**

RELEASE to A AUTO. _____

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6.2.9 2-FCV-31-330, INCORE INSTR RM AHU 2B CWS ISOL, Simulated Phase A

- [1] **ENSURE** status lights on Handswitch 2-HS-31-330, CIRC PMP B DISCH CIV-PHASE A [2-M-9], are:

A. Green Light OFF, 2-M-9 _____

B. Red Light ON, 2-M-9 _____

- [2] **LIFT** Wire VHJ5 from Terminal Point 2 on TB 638 in 2-R-48 to simulate a Phase A Containment Isolation.

1st

CV

- [3] **VERIFY** status lights on Handswitch 2-HS-31-330, CIRC PMP B DISCH CIV-PHASE A, are:

A. Green Light ON, 2-M-9 (**Acc Crit**) _____

B. Red Light OFF, 2-M-9 (**Acc Crit**) _____

- [4] **LAND** Wire VHJ5 on Terminal Point 2 on TB 638 in 2-R-48 to simulate a Phase A Containment Isolation reset.

1st

CV

- [5] **VERIFY** status lights on Handswitch 2-HS-31-330, CIRC PMP B DISCH CIV-PHASE A, are:

A. Green Light ON, 2-M-9 (**Acc Crit**) _____

B. Red Light OFF, 2-M-9 (**Acc Crit**) _____

- [6] **PLACE** Handswitch 2-HS-31-330, CIRC PMP B DISCH CIV-PHASE A, to the OPEN position, **AND**

VERIFY status lights on Handswitch 2-HS-31-330, CIRC PMP B DISCH CIV-PHASE A, Green Light OFF and Red Light ON, **THEN**

RELEASE to A AUTO. _____

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6.3 Incore Instrument Room Air Conditioning System Containment Isolation Valves Close on Loss of Electrical Power

6.3.1 Preliminary Actions

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

CAUTION

Work in 125V DC Vital Battery Boards III and IV involves energized circuits.

NOTES

- 1) Subsections 6.3.2 thru 6.3.9 may be performed in any order. Steps within these subsections must be performed in the order written.
- 2) Removal of fuses in this section will disable handswitch indication (Red & Green Lights).
- 3) Each fuse in this section has a blown fuse indicator which must be oriented towards the annunciator circuit.
- 4) While working in 125V DC Vital Battery Boards III and IV, proceed with caution as to not impact U1 structures, systems, or components.

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6.3.2 2-FCV-31-305, INCORE INSTR RM AHU 2A CWR ISOL, Loss of Electrical Power

[1] **ENSURE** 2-FCV-31-305, INCORE INSTR RM AHU 2A CWR ISOL [Annulus, EL 736, AZ 64], is OPEN (local observation). _____

[2] **PULL** Fuse 0-FU-236-4/C3, INSTR RM COOLANT UNIT A VLV [125V DC Vital Batt Bd IV, Ckt C3, EL 757 A12/Q], **AND**

VERIFY Valve 2-FCV-31-305, INCORE INSTR RM AHU 2A CWR ISOL, CLOSES (local observation) (**Acc Crit**). _____

1st

CV

[3] **INSTALL** Fuse 0-FU-236-4/C3, INSTR RM COOLANT UNIT A VLV. _____

1st

CV

[4] **PLACE** Handswitch 2-HS-31-305, CIRC PMP A SUCT CIV-PHASE A, to the OPEN position, **AND**

VERIFY status lights on Handswitch 2-HS-31-305, CIRC PMP A SUCT CIV-PHASE A, Green Light OFF and Red Light ON, **THEN**

RELEASE to A AUTO. _____

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**6.3.3 2-FCV-31-306, INCORE INSTR RM AHU 2A CW PUMP 2A ISOL,
Loss of Electrical Power**

[1] **ENSURE** 2-FCV-31-306, INCORE INSTR RM AHU 2A CW PUMP 2A ISOL [Inst Rm, EL 716, AZ 60], is OPEN (local observation).

[2] **PULL** Fuse 0-FU-236-3/C3, INSTR RM COOLANT UNIT A VLV [125V DC Vital Batt Bd III, Ckt C3, EL 757 A11/Q], **AND**

VERIFY Valve 2-FCV-31-306, INCORE INSTR RM AHU 2A CW PUMP 2A ISOL, CLOSES (local observation) (**Acc Crit**).

1st

CV

[3] **INSTALL** Fuse 0-FU-236-3/C3, INSTR RM COOLANT UNIT A VLV.

1st

CV

[4] **PLACE** Handswitch 2-HS-31-306, CIRC PMP A SUCT CIV-PHASE A, to the OPEN position, **AND**

VERIFY status lights on Handswitch 2-HS-31-306, CIRC PMP A SUCT CIV-PHASE A, Green Light OFF and Red Light ON, **THEN**

RELEASE to A AUTO.

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**6.3.4 2-FCV-31-308, INCORE INSTR RM AHU 2A CWS ISOL, Loss of
Electrical Power**

[1] **ENSURE** 2-FCV-31-308, INCORE INSTR RM AHU 2A CWS
ISOL [Inst Rm, EL 716, AZ 65], is OPEN (local observation). _____

[2] **PULL** Fuse 0-FU-236-3/C4, INSTR RM COOLANT UNIT A
VLV [125V DC Vital Batt Bd III, Ckt C4], **AND**

VERIFY Valve 2-FCV-31-308, INCORE INSTR RM AHU 2A
CWS ISOL, CLOSES (local observation) (**Acc Crit**). _____

1st

CV

[3] **INSTALL** Fuse 0-FU-236-3/C4, INSTR RM COOLANT UNIT A
VLV. _____

1st

CV

[4] **PLACE** Handswitch 2-HS-31-308, CIRC PMP A DISCH
CIV-PHASE A, to the OPEN position, **AND**

VERIFY status lights on Handswitch 2-HS-31-308, CIRC PMP
A DISCH CIV-PHASE A, Green Light OFF and Red Light ON,
THEN

RELEASE to A AUTO. _____

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6.3.5 2-FCV-31-309, INCORE INSTR RM AHU 2A CWS ISOL, Loss of Electrical Power

[1] **ENSURE** 2-FCV-31-309, INCORE INSTR RM AHU 2A CWS ISOL [Annulus, EL 737, AZ 65], is OPEN (local observation). _____

[2] **PULL** Fuse 0-FU-236-4/C4, INSTR RM COOLANT UNIT A VLV [125V DC Vital Batt Bd IV, Ckt C4], **AND**

VERIFY Valve 2-FCV-31-309, INCORE INSTR RM AHU 2A CWS ISOL, CLOSES (local observation) (**Acc Crit**). _____

1st

CV

[3] **INSTALL** Fuse 0-FU-236-4/C4, INSTR RM COOLANT UNIT A VLV. _____

1st

CV

[4] **PLACE** Handswitch 2-HS-31-309, CIRC PMP A DISCH CIV-PHASE A, to the OPEN position, **AND**

VERIFY status lights on Handswitch 2-HS-31-309, CIRC PMP A DISCH CIV-PHASE A, Green Light OFF and Red Light ON, **THEN**

RELEASE to A AUTO. _____

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6.3.6 2-FCV-31-326, INCORE INSTR RM AHU 2B CWR ISOL, Loss of Electrical Power

[1] **ENSURE** 2-FCV-31-326, INCORE INSTR RM AHU 2B CWR ISOL [Annulus, EL 737, AZ 104], is OPEN (local observation). _____

[2] **PULL** Fuse 0-FU-236-3/C5, INSTR RM COOLANT UNIT B VLV [125V DC Vital Batt Bd III, Ckt C5], **AND**

VERIFY Valve 2-FCV-31-326, INCORE INSTR RM AHU 2B CWR ISOL, CLOSES (local observation) (**Acc Crit**). _____

1st

CV

[3] **INSTALL** Fuse 0-FU-236-3/C5, INSTR RM COOLANT UNIT B VLV. _____

1st

CV

[4] **PLACE** Handswitch 2-HS-31-326, CIRC PMP B SUCT CIV-PHASE A, to the OPEN position, **AND**

VERIFY status lights on Handswitch 2-HS-31-326, CIRC PMP B SUCT CIV-PHASE A, Green Light OFF and Red Light ON, **THEN**

RELEASE to A AUTO. _____

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6.3.7 2-FCV-31-327, INCORE INSTR RM AHU 2B CWR ISOL, Loss of Electrical Power

[1] **ENSURE** 2-FCV-31-327, INCORE INSTR RM AHU 2B CWR ISOL [Inst Rm, EL 716, AZ 104], is OPEN (local observation). _____

[2] **PULL** Fuse 0-FU-236-4/C5, INSTR RM COOLANT UNIT B VLV [125V DC Vital Batt Bd IV, Ckt C5], **AND**

VERIFY Valve 2-FCV-31-327, INCORE INSTR RM AHU 2B CWR ISOL, CLOSES (local observation) (**Acc Crit**). _____

1st

CV

[3] **INSTALL** Fuse 0-FU-236-4/C5, INSTR RM COOLANT UNIT B VLV. _____

1st

CV

[4] **PLACE** Handswitch 2-HS-31-327, CIRC PMP B SUCT CIV-PHASE A, to the OPEN position, **AND**

VERIFY status lights on Handswitch 2-HS-31-327, CIRC PMP B SUCT CIV-PHASE A, Green Light OFF and Red Light ON, **THEN**

RELEASE to A AUTO. _____

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6.3.8 2-FCV-31-329, INCORE INSTR RM AHU 2B CWS ISOL, Loss of Electrical Power

[1] **ENSURE** 2-FCV-31-329, INCORE INSTR RM AHU 2B CWS ISOL [Inst Rm, EL 716, AZ 105], is OPEN (local observation). _____

[2] **PULL** Fuse 0-FU-236-4/C6, INSTR RM COOLANT UNIT B VLV [125V DC Vital Batt Bd IV, Ckt C6], **AND**

VERIFY Valve 2-FCV-31-329, INCORE INSTR RM AHU 2B CWS ISOL, CLOSES (local observation) (**Acc Crit**). _____

1st

CV

[3] **INSTALL** Fuse 0-FU-236-4/C6, INSTR RM COOLANT UNIT B VLV. _____

1st

CV

[4] **PLACE** Handswitch 2-HS-31-329, CIRC PMP B DISCH CIV-PHASE A, to the OPEN position, **AND**

VERIFY status lights on Handswitch 2-HS-31-329, CIRC PMP B DISCH CIV-PHASE A, Green Light OFF and Red Light ON, **THEN**

RELEASE to A AUTO. _____

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6.3.9 2-FCV-31-330, INCORE INSTR RM AHU 2B CWS ISOL, Loss of Electrical Power

[1] **ENSURE** 2-FCV-31-330, INCORE INSTR RM AHU 2B CWS ISOL [Annulus, EL 738, AZ 105], is OPEN (local observation). _____

[2] **PULL** Fuse 0-FU-236-3/C6, INSTR RM COOLANT UNIT B VLV [125V DC Vital Batt Bd III, Ckt C6], **AND**

VERIFY Valve 2-FCV-31-330, INCORE INSTR RM AHU 2B CWS ISOL, CLOSES (local observation) (**Acc Crit**). _____

1st

CV

[3] **INSTALL** Fuse 0-FU-236-3/C6, INSTR RM COOLANT UNIT B VLV. _____

1st

CV

[4] **PLACE** Handswitch 2-HS-31-330, CIRC PMP B DISCH CIV-PHASE A, to the OPEN position, **AND**

VERIFY status lights on Handswitch 2-HS-31-330, CIRC PMP B DISCH CIV-PHASE A, Green Light OFF and Red Light ON, **THEN**

RELEASE to A AUTO. _____

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6.4 Incore Instrument Room Air Conditioning System Containment Isolation Valves Close on Loss of Control Air

6.4.1 Preliminary Actions

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

WARNING

Control Air system pressure could be as high as 115 psig. Exercise care while venting Control Air at pressure regulators.

NOTE

Subsections 6.4.2 thru 6.4.9 may be performed in any order. Steps within these subsections must be performed in the order written.

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6.4.2 2-FCV-31-305, INCORE INSTR RM AHU 2A CWR ISOL, Loss of Control Air

[1] **ENSURE** Valve 2-FCV-31-305, INCORE INSTR RM AHU 2A CWR ISOL [Annulus, EL 736, AZ 64], is OPEN (local observation). _____

[2] **CLOSE** the Control Air Valve 2-ISV-32-3492, CONTROL AIR ISOLATION VALVE TO 2-FCV-31-305 [Annulus, EL 736, AZ 64]. _____

[3] SLOWLY **OPEN** the petcock on the bottom of Pressure Regulator 2-PREG-31-305, CONTROL AIR PRESSURE REG FOR 2-FCV-31-305 [Annulus, EL 736, AZ 64], **AND**

VERIFY Valve 2-FCV-31-305 INCORE INSTR RM AHU 2A CWR ISOL, CLOSES (local observation) (**Acc Crit**). _____

[4] **CLOSE** the petcock on the bottom of Pressure Regulator 2-PREG-31-305, CONTROL AIR PRESSURE REG FOR 2-FCV-31-305. _____

[5] SLOWLY **OPEN** the Control Air Valve 2-ISV-32-3492, CONTROL AIR ISOLATION VALVE TO 2-FCV-31-305, **AND**

ENSURE there is no leakage from the petcock on the bottom of Pressure Regulator 2-PREG-31-305, CONTROL AIR PRESSURE REG FOR 2-FCV-31-305. _____

[6] **PLACE** Handswitch 2-HS-31-305, CIRC PMP A SUCT CIV-PHASE A, to the OPEN position, **AND**

VERIFY status lights on Handswitch 2-HS-31-305, CIRC PMP A SUCT CIV-PHASE A, Green Light OFF and Red Light ON, **THEN**

RELEASE to A AUTO. _____

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**6.4.3 2-FCV-31-306, INCORE INSTR RM AHU 2A CW PUMP 2A ISOL,
Loss of Control Air**

- [1] **ENSURE** Valve 2-FCV-31-306, INCORE INSTR RM AHU 2A CW PUMP 2A ISOL [Inst Rm, EL 716, AZ 60], is OPEN (local observation). _____
- [2] **CLOSE** the Control Air Valve 2-ISV-32-3637, CONTROL AIR ISOLATION VALVE TO 2-FCV-31-306 [Inst Rm, EL 716, AZ 60]. _____
- [3] SLOWLY **OPEN** the petcock on the bottom of Pressure Regulator 2-PREG-31-306, CONTROL AIR PRESSURE REG FOR 2-FCV-31-306 [Inst Rm, EL 716, AZ 60], **AND**

VERIFY Valve 2-FCV-31-306, INCORE INSTR RM AHU 2A CW PUMP 2A ISOL, CLOSES (local observation) (**Acc Crit**). _____
- [4] **CLOSE** the petcock on the bottom of Pressure Regulator 2-PREG-31-306, CONTROL AIR PRESSURE REG FOR 2-FCV-31-306. _____
- [5] SLOWLY **OPEN** the Control Air Valve 2-ISV-32-3637, CONTROL AIR ISOLATION VALVE TO 2-FCV-31-306, **AND**

ENSURE there is no leakage from the petcock on the bottom of Pressure Regulator 2-PREG-31-306, CONTROL AIR PRESSURE REG FOR 2-FCV-31-306. _____
- [6] **PLACE** Handswitch 2-HS-31-306, CIRC PMP A SUCT CIV-PHASE A, to the OPEN position, **AND**

VERIFY status lights on Handswitch 2-HS-31-306, CIRC PMP A SUCT CIV-PHASE A, Green Light OFF and Red Light ON, **THEN**

RELEASE to A AUTO. _____

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6.4.4 2-FCV-31-308, INCORE INSTR RM AHU 2A CWS ISOL, Loss of Control Air

- [1] **ENSURE** Valve 2-FCV-31-308, INCORE INSTR RM AHU 2A CWS ISOL [Inst Rm, EL 716, AZ 65], is OPEN (local observation). _____
- [2] **CLOSE** the Control Air Valve 2-ISV-32-3638, CONTROL AIR ISOLATION VALVE TO 2-FCV-31-308 [Inst Rm, EL 716, AZ 65]. _____
- [3] SLOWLY **OPEN** the petcock on the bottom of Pressure Regulator 2-PREG-31-308, CONTROL AIR PRESSURE REG FOR 2-FCV-31-308 [Inst Rm, EL 716, AZ 65], **AND**

VERIFY Valve 2-FCV-31-308, INCORE INSTR RM AHU 2A CWS ISOL, CLOSES (local observation) (**Acc Crit**). _____
- [4] **CLOSE** the petcock on the bottom of Pressure Regulator 2-PREG-31-308, CONTROL AIR PRESSURE REG FOR 2-FCV-31-308. _____
- [5] SLOWLY **OPEN** the Control Air Valve 2-ISV-32-3638, CONTROL AIR ISOLATION VALVE TO 2-FCV-31-308, **AND**

ENSURE there is no leakage from the petcock on the bottom of Pressure Regulator 2-PREG-31-308, CONTROL AIR PRESSURE REG FOR 2-FCV-31-308. _____
- [6] **PLACE** Handswitch 2-HS-31-308, CIRC PMP A DISCH CIV-PHASE A, to the OPEN position, **AND**

VERIFY status lights on Handswitch 2-HS-31-308, CIRC PMP A DISCH CIV-PHASE A, Green Light OFF and Red Light ON, **THEN**

RELEASE to A AUTO. _____

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6.4.5 2-FCV-31-309, INCORE INSTR RM AHU 2A CWS ISOL, Loss of Control Air

- [1] **ENSURE** Valve 2-FCV-31-309, INCORE INSTR RM AHU 2A CWS ISOL [Annulus, EL 737, AZ 65], is OPEN (local observation). _____
- [2] **CLOSE** the Control Air Valve 2-ISV-32-3493, CONTROL AIR ISOLATION VALVE TO 2-FCV-31-309 [Annulus, EL 737, AZ 65]. _____
- [3] SLOWLY **OPEN** the petcock on the bottom of Pressure Regulator 2-PREG-31-309, CONTROL AIR PRESSURE REG FOR 2-FCV-31-309 [Annulus, EL 737, AZ 65], **AND**

VERIFY Valve 2-FCV-31-309, INCORE INSTR RM AHU 2A CWS ISOL, CLOSSES (local observation) (**Acc Crit**). _____
- [4] **CLOSE** the petcock on the bottom of Pressure Regulator 2-PREG-31-309, CONTROL AIR PRESSURE REG FOR 2-FCV-31-309. _____
- [5] SLOWLY **OPEN** the Control Air Valve 2-ISV-32-3493, CONTROL AIR ISOLATION VALVE TO 2-FCV-31-309, **AND**

ENSURE there is no leakage from the petcock on the bottom of Pressure Regulator 2-PREG-31-309, CONTROL AIR PRESSURE REG FOR 2-FCV-31-309. _____
- [6] **PLACE** Handswitch 2-HS-31-309, CIRC PMP A DISCH CIV-PHASE A, to the OPEN position, **AND**

VERIFY status lights on Handswitch 2-HS-31-309, CIRC PMP A DISCH CIV-PHASE A, Green Light OFF and Red Light ON, **THEN**

RELEASE to A AUTO. _____

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6.4.6 2-FCV-31-326, INCORE INSTR RM AHU 2B CWR ISOL, Loss of Control Air

- [1] **ENSURE** Valve 2-FCV-31-326, INCORE INSTR RM AHU 2B CWR ISOL [Annulus, EL 737, AZ 104], is OPEN (local observation). _____
- [2] **CLOSE** the Control Air Valve 2-ISV-32-3666, CONTROL AIR ISOLATION VALVE TO 2-FCV-31-326 [Annulus, EL 737, AZ 104]. _____
- [3] SLOWLY **OPEN** the petcock on the bottom of Pressure Regulator 2-PREG-31-326, CONTROL AIR PRESSURE REG FOR 2-FCV-31-326, Annulus, Elev 737, AZ 104, **AND**

VERIFY Valve 2-FCV-31-326, INCORE INSTR RM AHU 2B CWR ISOL, CLOSSES (local observation) (**Acc Crit**). _____
- [4] **CLOSE** the petcock on the bottom of Pressure Regulator 2-PREG-31-326, CONTROL AIR PRESSURE REG FOR 2-FCV-31-326. _____
- [5] SLOWLY **OPEN** the Control Air Valve 2-ISV-32-3666, CONTROL AIR ISOLATION VALVE TO 2-FCV-31-326, **AND**

ENSURE there is no leakage from the petcock on the bottom of Pressure Regulator 2-PREG-31-326, CONTROL AIR PRESSURE REG FOR 2-FCV-31-326. _____
- [6] **PLACE** Handswitch 2-HS-31-326, CIRC PMP B SUCT CIV-PHASE A, to the OPEN position, **AND**

VERIFY status lights on Handswitch 2-HS-31-326, CIRC PMP B SUCT CIV-PHASE A, Green Light OFF and Red Light ON, **THEN**

RELEASE to A AUTO. _____

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6.4.7 2-FCV-31-327, INCORE INSTR RM AHU 2B CWR ISOL, Loss of Control Air

- [1] **ENSURE** Valve 2-FCV-31-327, INCORE INSTR RM AHU 2B CWR ISOL [Inst Rm, EL 716, AZ 104], is OPEN (local observation). _____
- [2] **CLOSE** the Control Air Valve 2-ISV-32-3646, CONTROL AIR ISOLATION VALVE TO 2-FCV-31-327 [Inst Rm, EL 716, AZ 104]. _____
- [3] SLOWLY **OPEN** the petcock on the bottom of Pressure Regulator 2-PREG-31-327, CONTROL AIR PRESSURE REG FOR 2-FCV-31-327 [Inst Rm, EL 716, AZ 104], **AND**

VERIFY Valve 2-FCV-31-327, INCORE INSTR RM AHU 2B CWR ISOL, CLOSING (local observation) (**Acc Crit**). _____
- [4] **CLOSE** the petcock on the bottom of Pressure Regulator 2-PREG-31-327, CONTROL AIR PRESSURE REG FOR 2-FCV-31-327. _____
- [5] SLOWLY **OPEN** the Control Air Valve 2-ISV-32-3646, CONTROL AIR ISOLATION VALVE TO 2-FCV-31-327, **AND**

ENSURE there is no leakage from the petcock on the bottom of Pressure Regulator 2-PREG-31-327, CONTROL AIR PRESSURE REG FOR 2-FCV-31-327. _____
- [6] **PLACE** Handswitch 2-HS-31-327, CIRC PMP B SUCT CIV-PHASE A, to the OPEN position, **AND**

VERIFY status lights on Handswitch 2-HS-31-327, CIRC PMP B SUCT CIV-PHASE A, Green Light OFF and Red Light ON, **THEN**

RELEASE to A AUTO. _____

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6.4.8 2-FCV-31-329, INCORE INSTR RM AHU 2B CWS ISOL, Loss of Control Air

- [1] **ENSURE** Valve 2-FCV-31-329, INCORE INSTR RM AHU 2B CWS ISOL [Inst Rm, EL 716, AZ 105], is OPEN (local observation). _____
- [2] **CLOSE** the Control Air Valve 2-ISV-32-3647, CONTROL AIR ISOLATION VALVE TO 2-FCV-31-329 [Inst Rm, EL 716, AZ 105]. _____
- [3] SLOWLY **OPEN** the petcock on the bottom of Pressure Regulator 2-PREG-31-329, CONTROL AIR PRESSURE REG FOR 2-FCV-31-329 [Inst Rm, EL 716, AZ 105], **AND**

VERIFY Valve 2-FCV-31-329, INCORE INSTR RM AHU 2B CWS ISOL, CLOSES (local observation) (**Acc Crit**). _____
- [4] **CLOSE** the petcock on the bottom of Pressure Regulator 2-PREG-31-329, CONTROL AIR PRESSURE REG FOR 2-FCV-31-329. _____
- [5] SLOWLY **OPEN** the Control Air Valve 2-ISV-32-3647, CONTROL AIR ISOLATION VALVE TO 2-FCV-31-329, **AND**

ENSURE there is no leakage from the petcock on the bottom of Pressure Regulator 2-PREG-31-329, CONTROL AIR PRESSURE REG FOR 2-FCV-31-329. _____
- [6] **PLACE** Handswitch 2-HS-31-329, CIRC PMP B DISCH CIV-PHASE A, to the OPEN position, **AND**

VERIFY status lights on Handswitch 2-HS-31-329, CIRC PMP B DISCH CIV-PHASE A, Green Light OFF and Red Light ON, **THEN**

RELEASE to A AUTO. _____

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6.4.9 2-FCV-31-330, INCORE INSTR RM AHU 2B CWS ISOL, Loss of Control Air

- [1] **ENSURE** Valve 2-FCV-31-330, INCORE INSTR RM AHU 2B CWS ISOL [Annulus, EL 738, AZ 105], is OPEN (local observation). _____
- [2] **CLOSE** the Control Air Valve 2-ISV-32-3667, CONTROL AIR ISOLATION VALVE TO 2-FCV-31-330 [Annulus, EL 738, AZ 105]. _____
- [3] SLOWLY **OPEN** the petcock on the bottom of Pressure Regulator 2-PREG-31-330, CONTROL AIR PRESSURE REG FOR 2-FCV-31-330 [Annulus, EL 738, AZ 105], **AND**

VERIFY Valve 2-FCV-31-330, INCORE INSTR RM AHU 2B CWS ISOL, CLOSES (local observation) (**Acc Crit**). _____
- [4] **CLOSE** the petcock on the bottom of Pressure Regulator 2-PREG-31-330, CONTROL AIR PRESSURE REG FOR 2-FCV-31-330. _____
- [5] SLOWLY **OPEN** the Control Air Valve 2-ISV-32-3667, CONTROL AIR ISOLATION VALVE TO 2-FCV-31-330, **AND**

ENSURE there is no leakage from the petcock on the bottom of Pressure Regulator 2-PREG-31-330, CONTROL AIR PRESSURE REG FOR 2-FCV-31-330. _____
- [6] **PLACE** Handswitch 2-HS-31-330, CIRC PMP B DISCH CIV-PHASE A, to the OPEN position, **AND**

VERIFY status lights on Handswitch 2-HS-31-330, CIRC PMP B DISCH CIV-PHASE A, Green Light OFF and Red Light ON, **THEN**

RELEASE to A AUTO. _____

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6.5 Incore Instrument Room 2A/2B Pump and Air Handling Unit Local Operation

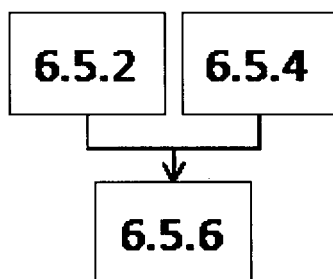
6.5.1 Preliminary Actions

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

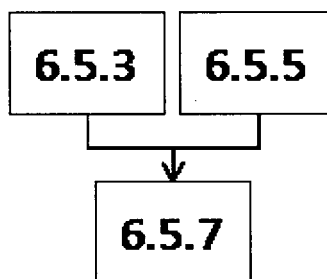
NOTE

- 1) Electrical power to Incore Instrument Room Chillers 2A and 2B was disconnected in Step 4.3[3] to prevent excessive chiller cycling.
- 2) Equipment status is to be visually verified from the field location.
- 3) Train A and Train B subsections may be performed in any order as shown in the flow diagram below:

Train A



Train B



Pump and Air Handling Unit testing for each respective Train must be completed before performing Temperature Control Valve testing for that Train. Steps within each subsection must be performed in the order written.

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6.5.2 2-PMP-31-303/1, INCORE INSTR ROOM CW PUMP 2A, Local Operation

- [1] **PRESS** and **HOLD** START pushbutton on Handswitch 2-HS-31-303, INCORE INSTR ROOM CW PUMP 2A [Pen Rm, EL 692, Col A12W], in 2-JB-292-835, **AND**

VERIFY:

- A. Pump 2-PMP-31-303/1, INCORE INSTR ROOM CW PUMP 2A [Pen Rm, EL 692, Col A12W], STARTS. _____
- B. Status light on Handswitch 2-HS-31-303, INCORE INSTR ROOM CW PUMP 2A, Red Light ON. _____
- C. Status light on Handswitch 2-HS-31-303, INCORE INSTR ROOM CW PUMP 2A, Green Light OFF. _____

- [2] **PRESS** and **HOLD** STOP pushbutton on Handswitch 2-HS-31-303, INCORE INSTR ROOM CW PUMP 2A, **AND**

VERIFY:

- A. Pump 2-PMP-31-303/1, INCORE INSTR ROOM CW PUMP 2A, STOPS. _____
- B. Status light on Handswitch 2-HS-31-303, INCORE INSTR ROOM CW PUMP 2A, Green Light ON. _____
- C. Status light on Handswitch 2-HS-31-303, INCORE INSTR ROOM CW PUMP 2A, Red Light OFF. _____

- [3] **RELEASE** STOP pushbutton on Handswitch 2-HS-31-303, INCORE INSTR ROOM CW PUMP 2A, **AND**

VERIFY Pump 2-PMP-31-303/1, INCORE INSTR ROOM CW PUMP 2A, STARTS. _____

- [4] **RELEASE** START pushbutton on Handswitch 2-HS-31-303, INCORE INSTR ROOM CW PUMP 2A, **AND**

VERIFY Pump 2-PMP-31-303/1, INCORE INSTR ROOM CW PUMP 2A, STOPS. _____

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**6.5.2 2-PMP-31-303/1, INCORE INSTR ROOM CW PUMP 2A, Local
Operation (continued)**

**[5] VERIFY successful completion of this Subsection 6.5.2.
(ACC CRIT)**

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6.5.3 2-PMP-31-324/1, INCORE INSTRUMENT ROOM CW PUMP 2B, Local Operation

- [1] **PRESS** and **HOLD** START pushbutton on Handswitch
2-HS-31-324, INCORE INSTRUMENT ROOM CW PUMP 2B
[Pen Rm, EL 692, Col A12W], in 2-JB-292-835, **AND**

VERIFY:

- A. Pump 2-PMP-31-324/1, INCORE INSTRUMENT ROOM
CW PUMP 2B [Pen Rm, EL 692, Col A12W], STARTS. _____
- B. Status light on Handswitch 2-HS-31-324, INCORE
INSTRUMENT ROOM CW PUMP 2B, Red Light ON. _____
- C. Status light on Handswitch 2-HS-31-324, INCORE
INSTRUMENT ROOM CW PUMP 2B, Green Light OFF. _____

- [2] **PRESS** and **HOLD** STOP pushbutton on Handswitch
2-HS-31-324, INCORE INSTRUMENT ROOM CW PUMP 2B,
AND

VERIFY:

- A. Pump 2-PMP-31-324/1, INCORE INSTRUMENT ROOM
CW PUMP 2B, STOPS. _____
- B. Status light on Handswitch 2-HS-31-324, INCORE
INSTRUMENT ROOM CW PUMP 2B, Green Light ON. _____
- C. Status light on Handswitch 2-HS-31-324, INCORE
INSTRUMENT ROOM CW PUMP 2B, Red Light OFF. _____

- [3] **RELEASE** STOP pushbutton on Handswitch 2-HS-31-324,
INCORE INSTRUMENT ROOM CW PUMP 2B, **AND**

VERIFY Pump 2-PMP-31-324/1, INCORE INSTRUMENT
ROOM CW PUMP 2B, STARTS. _____

- [4] **RELEASE** START pushbutton on Handswitch 2-HS-31-324,
INCORE INSTRUMENT ROOM CW PUMP 2B, **AND**

VERIFY Pump 2-PMP-31-324/1, INCORE INSTRUMENT
ROOM CW PUMP 2B, STOPS. _____

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**6.5.3 2-PMP-31-324/1, INCORE INSTRUMENT ROOM CW PUMP 2B,
Local Operation (continued)**

**[5] VERIFY successful completion of this Subsection 6.5.3.
(ACC CRIT)**

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6.5.4 2-AHU-31-265, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2A, Local Operation

NOTE

The electrical circuit for Air Handling Unit 2-AHU-31-265, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2A, contains a 50 second Time Delay Relay.

- [1] **PRESS** and **HOLD** START pushbutton on Handswitch 2-HS-31-265B, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2A [Inst Rm, EL 730, AZ 57], in 2-JB-293-806, **AND**

VERIFY Air Handling Unit 2-AHU-31-265, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2A [Inst Rm, EL 730, AZ 57], STARTS. _____
- [2] **PRESS** and **HOLD** STOP pushbutton on Handswitch 2-HS-31-265B, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2A, **AND**

VERIFY Air Handling Unit 2-AHU-31-265, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2A, STOPS. _____
- [3] **RELEASE** STOP pushbutton on Handswitch 2-HS-31-265B, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2A, **AND**

VERIFY Air Handling Unit 2-AHU-31-265, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2A, STARTS. _____
- [4] **RELEASE** START pushbutton on Handswitch 2-HS-31-265B, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2A, **AND**

VERIFY Air Handling Unit 2-AHU-31-265, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2A, STOPS. _____
- [5] **ENSURE** Air Handling Unit 2-AHU-31-265, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2A, air flow measurement has been performed using GTM-05, **AND**

ATTACH completed GTM-05 data sheets. _____

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Date _____

**6.5.4 2-AHU-31-265, INCORE INSTRUMENT ROOM AIR HANDLING
UNIT 2A, Local Operation (continued)**

[6] **RECORD** the air flow measurement below:

_____ CFM

Acc Crit: 5,200 CFM (min. 4,680)

AND

VERIFY the air flow measurement meets acceptance criteria. _____

[7] **VERIFY** successful completion of this Subsection 6.5.4.
(ACC CRIT) _____

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6.5.5 2-AHU-31-266, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2B, Local Operation

NOTE

The electrical circuit for Air Handling Unit 2-AHU-31-266, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2B, contains a 50 second Time Delay Relay.

- [1] **PRESS** and **HOLD** START pushbutton on Handswitch
2-HS-31-266B, INCORE INSTRUMENT ROOM CHILLER 2B
[Inst Rm, EL 730, AZ 112], in 2-JB-293-804, **AND**

VERIFY Air Handling Unit 2-AHU-31-266, INCORE
INSTRUMENT ROOM AIR HANDLING UNIT 2B [Inst Rm, EL
730, AZ 112], STARTS. _____

- [2] **PRESS** and **HOLD** STOP pushbutton on Handswitch
2-HS-31-266B, INCORE INSTRUMENT ROOM CHILLER 2B,
AND

VERIFY Air Handling Unit 2-AHU-31-266, INCORE
INSTRUMENT ROOM AIR HANDLING UNIT 2B, STOPS. _____

- [3] **RELEASE** STOP pushbutton on Handswitch 2-HS-31-266B,
INCORE INSTRUMENT ROOM CHILLER 2B, **AND**

VERIFY Air Handling Unit 2-AHU-31-266, INCORE
INSTRUMENT ROOM AIR HANDLING UNIT 2B, STARTS. _____

- [4] **RELEASE** START pushbutton on Handswitch 2-HS-31-266B,
INCORE INSTRUMENT ROOM CHILLER 2B, **AND**

VERIFY Air Handling Unit 2-AHU-31-266, INCORE
INSTRUMENT ROOM AIR HANDLING UNIT 2B, STOPS. _____

- [5] **ENSURE** Air Handling Unit 2-AHU-31-266, INCORE
INSTRUMENT ROOM AIR HANDLING UNIT 2B, air flow
measurement has been performed using GTM-05, **AND**

ATTACH completed GTM-05 data sheets. _____

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**6.5.5 2-AHU-31-266, INCORE INSTRUMENT ROOM AIR HANDLING
UNIT 2B, Local Operation (continued)**

[6] **RECORD** the air flow measurement below:

_____ CFM

Acc Crit: 5,200 CFM (min. 4,680)

AND

VERIFY the air flow measurement meets acceptance criteria. _____

[7] **VERIFY** successful completion of this Subsection 6.5.5.
(ACC CRIT) _____

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6.5.6 2-TCV-31-307, INCORE INSTR RM AHU 2A CW TEMP CNTL, Operation

NOTE

The determination of position for three-way Temperature Control Valves is:

- "O" indicates OPEN (air applied and spring retracted), or full flow through bypass.
- "S" indicates SHUT (air off and spring extended), or full flow through cooling coil.

- [1] **PRESS** START pushbutton on Handswitch 2-HS-31-303, INCORE INSTR ROOM CW PUMP 2A [Pen Rm, EL 692, Col A12W], in 2-JB-292-835, **AND**

VERIFY Pump 2-PMP-31-303/1, INCORE INSTR ROOM CW PUMP 2A [Pen Rm, EL 692, Col A12W], STARTS. _____

- [2] **APPLY** heat to the Temperature Indicating Controller 2-TIC-31-307, INCORE INSTR RM AHU 2A CW TEMP CNTL [Inst Rm, EL 730, AZ 70], sensing bulb with a heat gun. _____

- [3] **WHEN** Valve 2-TCV-31-307, INCORE INSTR RM AHU 2A CW TEMP CNTL [Inst Rm, EL 730, AZ 70], moves fully to the "S" position, **THEN**

STOP applying heat to the Temperature Indicating Controller 2-TIC-31-307, INCORE INSTR RM AHU 2A CW TEMP CNTL, sensing bulb. _____

- [4] **COOL** the Temperature Indicating Controller 2-TIC-31-307, INCORE INSTR RM AHU 2A CW TEMP CNTL, sensing bulb with an ice bath. _____

- [5] **WHEN** Valve 2-TCV-31-307, INCORE INSTR RM AHU 2A CW TEMP CNTL, moves fully to the "O" position, **THEN**

REMOVE the ice bath. _____

- [6] **APPLY** heat to the Temperature Indicating Controller 2-TIC-31-307, INCORE INSTR RM AHU 2A CW TEMP CNTL, sensing bulb with a heat gun. _____

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**6.5.6 2-TCV-31-307, INCORE INSTR RM AHU 2A CW TEMP CNTL,
Operation (continued)**

- [7] **WHEN** Valve 2-TCV-31-307, INCORE INSTR RM AHU 2A CW TEMP CNTL, moves AWAY from the "O" position, allowing normal coil flow, **THEN**

STOP applying heat to the Temperature Indicating Controller 2-TIC-31-307, INCORE INSTR RM AHU 2A CW TEMP CNTL, sensing bulb. _____

- [8] **PRESS** STOP pushbutton on Handswitch 2-HS-31-303, INCORE INSTR ROOM CW PUMP 2A, **AND**

VERIFY Pump 2-PMP-31-303/1, INCORE INSTR ROOM CW PUMP 2A, STOPS. _____

- [9] **VERIFY** successful completion of this Subsection 6.5.6. **(ACC CRIT)** _____

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6.5.7 2-TCV-31-328, INCORE INSTR RM AHU 2B CW TEMP CONTROL, Operation

NOTE

The determination of position for three-way Temperature Control Valves is:

- "O" indicates OPEN (air applied and spring retracted), or full flow through bypass.
- "S" indicates SHUT (air off and spring extended), or full flow through cooling coil.

- [1] **PRESS** START pushbutton on Handswitch 2-HS-31-324, INCORE INSTRUMENT ROOM CW PUMP 2B [Pen Rm, EL 692, Col A12W], in 2-JB-292-835, **AND**

VERIFY Pump 2-PMP-31-324/1, INCORE INSTRUMENT ROOM CW PUMP 2B [Pen Rm, EL 692, Col A12W], STARTS. _____

- [2] **APPLY** heat to the Temperature Indicating Controller 2-TIC-31-328, INCORE INSTR RM AHU 2B CW TEMP CONTROL [Inst Rm, EL 731, AZ 116], sensing bulb with a heat gun. _____

- [3] **WHEN** Valve 2-TCV-31-328, INCORE INSTR RM AHU 2B CW TEMP CONTROL [Inst Rm, EL 731, AZ 116], moves fully to the "S" position, **THEN**

STOP applying heat to the Temperature Indicating Controller 2-TIC-31-328, INCORE INSTR RM AHU 2B CW TEMP CONTROL, sensing bulb. _____

- [4] **COOL** the Temperature Indicating Controller 2-TIC-31-328, INCORE INSTR RM AHU 2B CW TEMP CONTROL, sensing bulb with an ice bath. _____

- [5] **WHEN** Valve 2-TCV-31-328 INCORE INSTR RM AHU 2B CW TEMP CONTROL, moves fully to the "O" position, **THEN**

REMOVE the ice bath. _____

- [6] **APPLY** heat to the Temperature Indicating Controller 2-TIC-31-328, INCORE INSTR RM AHU 2B CW TEMP CONTROL, sensing bulb with a heat gun. _____

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**6.5.7 2-TCV-31-328, INCORE INSTR RM AHU 2B CW TEMP CONTROL,
Operation (continued)**

- [7] **WHEN** Valve 2-TCV-31-328, INCORE INSTR RM AHU 2B CW TEMP CONTROL, moves AWAY from the "O" position, allowing normal coil flow, **THEN**

STOP applying heat to the Temperature Indicating Controller 2-TIC-31-328, INCORE INSTR RM AHU 2B CW TEMP CONTROL, sensing bulb. _____

- [8] **PRESS** STOP pushbutton on Handswitch 2-HS-31-324, INCORE INSTRUMENT ROOM CW PUMP 2B, **AND**

VERIFY Pump 2-PMP-31-324/1, INCORE INSTRUMENT ROOM CW PUMP 2B, STOPS. _____

- [9] **VERIFY** successful completion of this Subsection 6.5.7. **(ACC CRIT)** _____

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6.6 Incore Instrument Room 2A/2B Air Handling Unit, Pump, Chiller, and Damper Normal Operation

6.6.1 Preliminary Actions

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

NOTES

- 1) Subsections 6.6.2 and 6.6.3 may be performed in any order. Steps within these subsections must be performed in the order written.
- 2) Equipment status is to be visually verified from the field location.

- [2] **PLACE** the following breakers in CLOSED:

- A. Breaker 2-BKR-31-303B, INCORE INSTR RM CHLR 2A COMPR (2-COMP-303/2) [480V Rx MOV Bd 2A1-A, Compt 16F2, EL 772 A12/T] _____
- B. Breaker 2-BKR-31-324B, INSTR RM A/C COMPR 2B (2-COMP-31-324/2) [480V Rx MOV Bd 2B1-B, Compt 17F2, EL 772 A12/T] _____

- [3] **ENSURE** the following valves are CLOSED:

- A. Valve 2-TCV-67-115, INSTR RM WATER CLR 2A ERCW SUP TEMP CNTL [Pen Rm, EL 692, Col A12W] _____
- B. Valve 2-TCV-67-118, INSTR RM WATER CLR 2B ERCW SUP TEMP CNTL [Pen Rm, EL 692, Col A12W] _____

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6.6.2 Incore Instrument Room 2A Air Handling Unit, Pump, Chiller, and Damper Normal Operation

- [1] **INSTALL** ultrasonic flowmeter onto 2 inch chilled water piping (Schedule 40 carbon steel, 2.38 inch OD, 0.15 inch wall thickness) immediately downstream of 2-CHR-31-303, INCORE INSTR ROOM CHILLER 2A [Pen Rm, EL 692, Col A12W].

NOTES

- 1) Temperature Indicating Controller 2-TIC-31-307, INCORE INSTR RM AHU 2A CW TEMP CNTL, sensing bulb is to be kept above 85°F to indirectly maintain chiller operation throughout the performance of this section.
 - Use heat guns as needed to maintain temperature.
 - Use pocket thermometer as needed to verify temperature.
- 2) The electrical circuit for Air Handling Unit 2-AHU-31-265, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2A, contains a 50 second Time Delay Relay.

NOTE

During the performance of Steps 6.6.2[2] and 6.6.2[3] visual observation of transient and steady state vibrations is required.

- [2] **PLACE** Handswitch 2-HS-31-265A, INCORE INST RM A/C A SW [2-M-9], to START, **AND**

VERIFY Air Handling Unit 2-AHU-31-265, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2A [Inst Rm, EL 730, AZ 57], STARTS, **AND**

RELEASE to A AUTO.

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6.6.2 Incore Instrument Room 2A Air Handling Unit, Pump, Chiller, and Damper Normal Operation (continued)

[3] VERIFY:

- A. Pump 2-PMP-31-303/1, INCORE INSTR ROOM CW PUMP 2A [Pen Rm, EL 692, Col A12W], STARTS. _____
- B. Compressor 2-COMP-31-303B, INCORE INSTR RM CHILLER A COMPRESSOR [Pen Rm, EL 692, Col A12W], STARTS. _____
- C. Damper 2-FCO-31-263, INCORE INSTR RM AHU 2A DISCHARGE [Inst Rm, EL 730, AZ 57], is OPEN. _____
- D. Damper 2-FCO-31-264, INCORE INSTR RM AHU 2A DISCHARGE [Inst Rm, EL 730, AZ 57], is OPEN. _____
- E. Valve 2-TCV-67-115, INSTR RM WATER CLR 2A ERCW SUP TEMP CNTL [Pen Rm, EL 692, Col A12W], is OPEN. _____
- F. Red Light ON, at Breaker 2-BKR-31-265, INCORE INSTR RM COOLER FAN 2A (2-MTR-31-265) [480V Rx MOV Bd 2A1-A, Compt 16A]. _____
- G. Red Light ON, at Breaker 2-BKR-31-303A, INCORE INSTR RM CW PMP 2A (2-PMP-31-303/1) [480V Rx MOV Bd 2A1-A, Compt 18C]. _____
- H. Red Light ON, at Handswitch 2-HS-31-265A, INCORE INST RM A/C A SW. _____
- I. Green Light OFF, at Handswitch 2-HS-31-265A, INCORE INST RM A/C A SW. _____
- J. Red Light ON, Status Indication Window, 2-XI-31-263, INCORE INST RM A/C ISOL DMPR STATUS [2-M-9]. _____
- K. Green Light OFF, Status Indication Window, 2-XI-31-263, INCORE INST RM A/C ISOL DMPR STATUS. _____
- L. Red Light ON, Status Indication Window, 2-XI-31-264, INCORE INST RM A/C ISOL DMPR STATUS [2-M-9]. _____
- M. Green Light OFF, Status Indication Window, 2-XI-31-264, INCORE INST RM A/C ISOL DMPR STATUS. _____

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6.6.2 Incore Instrument Room 2A Air Handling Unit, Pump, Chiller, and Damper Normal Operation (continued)

[4] **WAIT** approximately 15 minutes before performing next step. _____

[5] **RECORD** the chilled water flow rate from the ultrasonic flow meter:

_____ GPM

Acc Crit: min. 22 GPM

AND

VERIFY the chilled water flow rate meets acceptance criteria. _____

[6] **RECORD** chilled water inlet/return temperature setpoint from local control panel of 2-CHR-31-303, INCORE INSTR ROOM CHILLER 2A: _____

Inlet/Return _____ °F
Temp. Setpoint _____

[7] **RAISE** chilled water inlet/return temperature setpoint on local control panel of 2-CHR-31-303, INCORE INSTR ROOM CHILLER 2A, ABOVE current chilled water inlet/return temperature **UNTIL** Compressor 2-COMP-31-303B, INCORE INSTR RM CHILLER A COMPRESSOR, STOPS. _____

[8] **WAIT** approximately 15 minutes before performing next step. _____

[9] **RETURN** chilled water inlet/return temperature setpoint on local control panel of 2-CHR-31-303, INCORE INSTR ROOM CHILLER 2A, to the setpoint recorded in Step 6.6.2[6]. _____

[10] **VERIFY** Compressor 2-COMP-31-303B, INCORE INSTR RM CHILLER A COMPRESSOR, STARTS. _____

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6.6.2 Incore Instrument Room 2A Air Handling Unit, Pump, Chiller, and Damper Normal Operation (continued)

NOTE

During the performance of Step 6.6.2[11] visual observation of transient and steady state vibrations is required.

[11] **PLACE** Handswitch 2-HS-31-265A, INCORE INST RM A/C A SW, to STOP (PULL TO LOCK), **AND**

VERIFY:

- A. Air Handling Unit 2-AHU-31-265, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2A, STOPS. _____
- B. Pump 2-PMP-31-303/1, INCORE INSTR ROOM CW PUMP 2A, STOPS. _____
- C. Compressor 2-COMP-31-303B, INCORE INSTR RM CHILLER A COMPRESSOR, STOPS. _____
- D. Damper 2-FCO-31-263, INCORE INSTR RM AHU 2A DISCHARGE, CLOSES. _____
- E. Damper 2-FCO-31-264, INCORE INSTR RM AHU 2A DISCHARGE, CLOSES. _____
- F. Valve 2-TCV-67-115, INSTR RM WATER CLR 2A ERCW SUP TEMP CNTL, CLOSES. _____
- G. Red Light OFF, at Breaker 2-BKR-31-265, INCORE INSTR RM COOLER FAN 2A (2-MTR-31-265). _____
- H. Red Light OFF, at Breaker 2-BKR-31-303A, INCORE INSTR RM CW PMP 2A (2-PMP-31-303/1). _____
- I. Green Light ON, at Handswitch 2-HS-31-265A, INCORE INST RM A/C A SW. _____
- J. Red Light OFF, at Handswitch 2-HS-31-265A, INCORE INST RM A/C A SW. _____
- K. Green Light ON, Status Indication Window, 2-XI-31-263, INCORE INST RM A/C ISOL DMPR STATUS. _____

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6.6.2 Incore Instrument Room 2A Air Handling Unit, Pump, Chiller, and Damper Normal Operation (continued)

L. Red Light OFF, Status Indication Window, 2-XI-31-263,
INCORE INST RM A/C ISOL DMPR STATUS. _____

M. Green Light ON, Status Indication Window, 2-XI-31-264,
INCORE INST RM A/C ISOL DMPR STATUS. _____

N. Red Light OFF, Status Indication Window, 2-XI-31-264,
INCORE INST RM A/C ISOL DMPR STATUS. _____

[12] **VERIFY** no excessive vibration of the piping system and
components associated with the performance of this
subsection was observed. _____

[13] **REMOVE** ultrasonic flowmeter from 2 inch chilled water piping
immediately downstream of 2-CHR-31-303, INCORE INSTR
ROOM CHILLER 2A. _____

[14] **VERIFY** successful completion of this Subsection 6.6.2.
(ACC CRIT) _____

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6.6.3 Incore Instrument Room 2B Air Handling Unit, Pump, Chiller, and Damper Normal Operation

- [1] **INSTALL** ultrasonic flowmeter onto 2 inch chilled water piping (Schedule 40 carbon steel, 2.38 inch OD, 0.15 inch wall thickness) immediately downstream of 2-CHR-31-324, INCORE INSTRUMENT ROOM CHILLER 2B [Pen Rm, EL 692, Col A12W].

NOTES

- 1) Temperature Indicating Controller 2-TIC-31-328, INCORE INSTR RM AHU 2B CW TEMP CONTROL, sensing bulb is to be kept above 85°F to indirectly maintain chiller operation throughout the performance of this section.
 - Use heat guns as needed to maintain temperature.
 - Use pocket thermometer as needed to verify temperature.
- 2) The electrical circuit for Air Handling Unit 2-AHU-31-266, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2B, contains a 50 second Time Delay Relay.

NOTE

During the performance of Steps 6.6.3[2] and 6.6.3[3] visual observation of transient and steady state vibrations is required.

- [2] **PLACE** Handswitch 2-HS-31-266A, INCORE INST RM A/C B SW [2-M-9], to START, **AND**

VERIFY Air Handling Unit 2-AHU-31-266, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2B [Inst Rm, EL 730, AZ 112], STARTS, **AND**

RELEASE to A AUTO.

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6.6.3 Incore Instrument Room 2B Air Handling Unit, Pump, Chiller, and Damper Normal Operation (continued)

[3] VERIFY:

- A. Pump 2-PMP-31-324/1, INCORE INSTRUMENT ROOM CW PUMP 2B [Pen Rm, EL 692, Col A12W], STARTS. _____
- B. Compressor 2-COMP-31-324B, INCORE INSTR RM CHILLER B COMPRESSOR [Pen Rm, EL 692, Col A12W], STARTS. _____
- C. Damper 2-FCO-31-268, INCORE INSTR RM AHU 2B DISCHARGE [Inst Rm, EL 730, AZ 112], is OPEN. _____
- D. Damper 2-FCO-31-269, INCORE INSTR RM AHU 2B DISCHARGE [Inst Rm, EL 730, AZ 112], is OPEN. _____
- E. Valve 2-TCV-67-118, INSTR RM WATER CLR 2B ERCW SUP TEMP CNTL [Pen Rm, EL 692, Col A12W], is OPEN. _____
- F. Red Light ON, at Breaker 2-BKR-31-266, INCORE INSTR RM AHU 2B (2-AHU-31-266-B) [480V Rx MOV Bd 2B1-B, Compt 16A]. _____
- G. Red Light ON, at Breaker 2-BKR-31-324A, INCORE INSTR RM CW PMP 2B (2-MTR-31-324/1) [480V Rx MOV Bd 2B1-B, Compt 18C]. _____
- H. Red Light ON, at Handswitch 2-HS-31-266A, INCORE INST RM A/C B SW. _____
- I. Green Light OFF, at Handswitch 2-HS-31-266A, INCORE INST RM A/C B SW. _____
- J. Red Light ON, Status Indication Window, 2-XI-31-268, INCORE INST RM A/C ISOL DMPR STATUS [2-M-9]. _____
- K. Green Light OFF, Status Indication Window, 2-XI-31-268, INCORE INST RM A/C ISOL DMPR STATUS. _____
- L. Red Light ON, Status Indication Window, 2-XI-31-269, INCORE INST RM A/C ISOL DMPR STATUS [2-M-9]. _____
- M. Green Light OFF, Status Indication Window, 2-XI-31-269, INCORE INST RM A/C ISOL DMPR STATUS. _____

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6.6.3 Incore Instrument Room 2B Air Handling Unit, Pump, Chiller, and Damper Normal Operation (continued)

[4] **WAIT** approximately 15 minutes before performing next step. _____

[5] **RECORD** the chilled water flow rate from the ultrasonic flow meter:

_____ GPM

Acc Crit: min. 22 GPM

AND

VERIFY the chilled water flow rate meets acceptance criteria. _____

[6] **RECORD** chilled water inlet/return temperature setpoint from local control panel of 2-CHR-31-324, INCORE INSTRUMENT ROOM CHILLER 2B: _____

Inlet/Return °F
Temp. Setpoint _____

[7] **RAISE** chilled water inlet/return temperature setpoint on local control panel of 2-CHR-31-324, INCORE INSTRUMENT ROOM CHILLER 2B, ABOVE current chilled water inlet/return temperature **UNTIL** Compressor 2-COMP-31-324B, INCORE INSTR RM CHILLER B COMPRESSOR, STOPS. _____

[8] **WAIT** approximately 15 minutes before performing next step. _____

[9] **RETURN** chilled water inlet/return temperature setpoint on local control panel of 2-CHR-31-324, INCORE INSTRUMENT ROOM CHILLER 2B, to the setpoint recorded in Step 6.6.3[6]. _____

[10] **VERIFY** Compressor 2-COMP-31-324B, INCORE INSTR RM CHILLER B COMPRESSOR, STARTS. _____

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**6.6.3 Incore Instrument Room 2B Air Handling Unit, Pump, Chiller, and
Damper Normal Operation (continued)**

NOTE

During the performance of Step 6.6.3[11] visual observation of transient and steady state vibrations is required.

[11] **PLACE** Handswitch 2-HS-31-266A, INCORE INST RM A/C B
SW, to STOP (PULL TO LOCK), **AND**

VERIFY:

- A. Air Handling Unit 2-AHU-31-266, INCORE INSTRUMENT
ROOM AIR HANDLING UNIT 2B, STOPS. _____
- B. Pump 2-PMP-31-324/1, INCORE INSTRUMENT ROOM
CW PUMP 2B, STOPS. _____
- C. Compressor 2-COMP-31-324B, INCORE INSTR RM
CHILLER B COMPRESSOR, STOPS. _____
- D. Damper 2-FCO-31-268, INCORE INSTR RM AHU 2B
DISCHARGE, CLOSES. _____
- E. Damper 2-FCO-31-269, INCORE INSTR RM AHU 2B
DISCHARGE, CLOSES. _____
- F. Valve 2-TCV-67-118, INSTR RM WATER CLR 2B ERCW
SUP TEMP CNTL, CLOSES. _____
- G. Red Light ON, at Breaker 2-BKR-31-266, INCORE INSTR
RM AHU 2B (2-AHU-31-266-B). _____
- H. Red Light ON, at Breaker 2-BKR-31-324A, INCORE
INSTR RM CW PMP 2B (2-MTR-31-324/1). _____
- I. Green Light ON, at Handswitch 2-HS-31-266A, INCORE
INST RM A/C B SW. _____
- J. Red Light OFF, at Handswitch 2-HS-31-266A, INCORE
INST RM A/C B SW. _____
- K. Green Light ON, Status Indication Window, 2-XI-31-268,
INCORE INST RM A/C ISOL DMPR STATUS. _____

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6.6.3 Incore Instrument Room 2B Air Handling Unit, Pump, Chiller, and Damper Normal Operation (continued)

L. Red Light OFF, Status Indication Window, 2-XI-31-268,
INCORE INST RM A/C ISOL DMPR STATUS. _____

M. Green Light ON, Status Indication Window, 2-XI-31-269,
INCORE INST RM A/C ISOL DMPR STATUS. _____

N. Red Light OFF, Status Indication Window, 2-XI-31-269,
INCORE INST RM A/C ISOL DMPR STATUS. _____

[12] **VERIFY** no excessive vibration of the piping system and
components associated with the performance of this
subsection was observed. _____

[13] **REMOVE** ultrasonic flowmeter from 2 inch chilled water piping
immediately downstream of 2-CHR-31-324, INCORE
INSTRUMENT ROOM CHILLER 2B. _____

[14] **VERIFY** successful completion of this Subsection 6.6.3.
(ACC CRIT) _____

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6.7 Incore Instrument Room 2A/2B Air Handling Unit Stop on Simulated Phase A Containment Isolation

6.7.1 Preliminary Actions

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

CAUTION

Work in Solid State Protection System cabinets 2-R-48 and 2-R-51 involves energized circuits.

NOTES

- 1) Subsections 6.7.2 and 6.7.3 may be performed in any order. Steps within these subsections must be performed in the order written.
- 2) Equipment status is to be visually verified from the field location.

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6.7.2 Incore Instrument Room 2A Air Handling Unit Stop on Simulated Phase A Containment Isolation

- [1] **PLACE** Handswitch 2-HS-31-265A, INCORE INST RM A/C A SW [2-M-9], to START, **AND**

VERIFY Air Handling Unit 2-AHU-31-265, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2A [Inst Rm, EL 730, AZ 57], STARTS, **AND**

RELEASE to A AUTO. _____

- [2] **VERIFY:**

A. Pump 2-PMP-31-303/1, INCORE INSTR ROOM CW PUMP 2A [Pen Rm, EL 692, Col A12W], STARTS. _____

B. Damper 2-FCO-31-263, INCORE INSTR RM AHU 2A DISCHARGE [Inst Rm, EL 730, AZ 57], is OPEN. _____

C. Damper 2-FCO-31-264, INCORE INSTR RM AHU 2A DISCHARGE [Inst Rm, EL 730, AZ 57], is OPEN. _____

- [3] **LIFT** Wire 16A6 from Terminal Point 6 on TB 612 in 2-R-48 [U2 Aux Inst Room] to simulate a Phase A Containment Isolation. _____

1st

CV

- [4] **VERIFY:**

A. Air Handling Unit 2-AHU-31-265, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2A, STOPS. _____

B. Pump 2-PMP-31-303/1, INCORE INSTR ROOM CW PUMP 2A, STOPS. _____

C. Damper 2-FCO-31-263, INCORE INSTR RM AHU 2A DISCHARGE, CLOSES. _____

D. Damper 2-FCO-31-264, INCORE INSTR RM AHU 2A DISCHARGE, CLOSES. _____

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Date _____

**6.7.2 Incore Instrument Room 2A Air Handling Unit Stop on Simulated
Phase A Containment Isolation (continued)**

- [5] **LAND** Wire 16A6 on Terminal Point 6 on TB 612 in 2-R-48 to
simulate a Phase A Containment Isolation reset.

1st

CV

[6] **VERIFY:**

- A. Air Handling Unit 2-AHU-31-265, INCORE INSTRUMENT
ROOM AIR HANDLING UNIT 2A, is OFF. _____
- B. Pump 2-PMP-31-303/1, INCORE INSTR ROOM CW
PUMP 2A, is OFF. _____
- C. Damper 2-FCO-31-263, INCORE INSTR RM AHU 2A
DISCHARGE, is CLOSED. _____
- D. Damper 2-FCO-31-264, INCORE INSTR RM AHU 2A
DISCHARGE, is CLOSED. _____

- [7] **PLACE** Handswitch 2-HS-31-265A, INCORE INST RM A/C A
SW, to START, **AND**

VERIFY Air Handling Unit 2-AHU-31-265, INCORE
INSTRUMENT ROOM AIR HANDLING UNIT 2A, STARTS,
AND

RELEASE to A AUTO. _____

[8] **VERIFY:**

- A. Pump 2-PMP-31-303/1, INCORE INSTR ROOM CW
PUMP 2A, STARTS. _____
- B. Damper 2-FCO-31-263, INCORE INSTR RM AHU 2A
DISCHARGE, is OPEN. _____
- C. Damper 2-FCO-31-264, INCORE INSTR RM AHU 2A
DISCHARGE, is OPEN. _____

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Date _____

**6.7.2 Incore Instrument Room 2A Air Handling Unit Stop on Simulated
Phase A Containment Isolation (continued)**

- [9] **PLACE** Handswitch 2-HS-31-265A, INCORE INST RM A/C A
SW, to STOP (PULL TO LOCK), **AND**

VERIFY:

- A. Air Handling Unit 2-AHU-31-265, INCORE INSTRUMENT
ROOM AIR HANDLING UNIT 2A, STOPS. _____
- B. Pump 2-PMP-31-303/1, INCORE INSTR ROOM CW
PUMP 2A, STOPS. _____
- C. Damper 2-FCO-31-263, INCORE INSTR RM AHU 2A
DISCHARGE, CLOSES. _____
- D. Damper 2-FCO-31-264, INCORE INSTR RM AHU 2A
DISCHARGE, CLOSES. _____

- [10] **VERIFY** successful completion of this Subsection 6.7.2.
(ACC CRIT) _____

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Date _____

6.7.3 Incore Instrument Room 2B Air Handling Unit Stop on Simulated Phase A Containment Isolation

- [1] **PLACE** Handswitch 2-HS-31-266A, INCORE INST RM A/C B SW [2-M-9], to START, **AND**

VERIFY Air Handling Unit 2-AHU-31-266, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2B [Inst Rm, EL 730, AZ 112], STARTS, **AND**

RELEASE to A AUTO.

- [2] **VERIFY:**

A. Pump 2-PMP-31-324/1, INCORE INSTRUMENT ROOM CW PUMP 2B [Pen Rm, EL 692, Col A12W], STARTS.

B. Damper 2-FCO-31-268, INCORE INSTR RM AHU 2B DISCHARGE [Inst Rm, EL 730, AZ 112], is OPEN.

C. Damper 2-FCO-31-269, INCORE INSTR RM AHU 2B DISCHARGE [Inst Rm, EL 730, AZ 112], is OPEN.

- [3] **LIFT** Wire 16A6 from Terminal Point 6 on TB 612 in 2-R-51 [U2 Aux Inst Room] to simulate a Phase A Containment Isolation.

1st

CV

- [4] **VERIFY:**

A. Air Handling Unit 2-AHU-31-266, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2B, STOPS.

B. Pump 2-PMP-31-324/1, INCORE INSTRUMENT ROOM CW PUMP 2B, STOPS.

C. Damper 2-FCO-31-268, INCORE INSTR RM AHU 2B DISCHARGE, CLOSES.

D. Damper 2-FCO-31-269, INCORE INSTR RM AHU 2B DISCHARGE, CLOSES.

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6.7.3 Incore Instrument Room 2B Air Handling Unit Stop on Simulated Phase A Containment Isolation (continued)

- [5] **LAND** Wire 16A6 on Terminal Point 6 on TB 612 in 2-R-51 to simulate a Phase A Containment Isolation reset.

1st

CV

[6] **VERIFY:**

- A. Air Handling Unit 2-AHU-31-266, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2B, is OFF. _____
- B. Pump 2-PMP-31-324/1, INCORE INSTRUMENT ROOM CW PUMP 2B, is OFF. _____
- C. Damper 2-FCO-31-268, INCORE INSTR RM AHU 2B DISCHARGE, is CLOSED. _____
- D. Damper 2-FCO-31-269, INCORE INSTR RM AHU 2B DISCHARGE, is CLOSED. _____

- [7] **PLACE** Handswitch 2-HS-31-266A, INCORE INST RM A/C B SW, to START, **AND**

VERIFY Air Handling Unit 2-AHU-31-266, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2B, STARTS, **AND**

RELEASE to A AUTO. _____

[8] **VERIFY:**

- A. Pump 2-PMP-31-324/1, INCORE INSTRUMENT ROOM CW PUMP 2B, STARTS. _____
- B. Damper 2-FCO-31-268, INCORE INSTR RM AHU 2B DISCHARGE, is OPEN. _____
- C. Damper 2-FCO-31-269, INCORE INSTR RM AHU 2B DISCHARGE, is OPEN. _____

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Date _____

**6.7.3 Incore Instrument Room 2B Air Handling Unit Stop on Simulated
Phase A Containment Isolation (continued)**

[9] **PLACE** Handswitch 2-HS-31-266A, INCORE INST RM A/C B
SW, to STOP (PULL TO LOCK), **AND**

VERIFY:

- A. Air Handling Unit 2-AHU-31-266, INCORE INSTRUMENT
ROOM AIR HANDLING UNIT 2B, STOPS. _____
- B. Pump 2-PMP-31-324/1, INCORE INSTRUMENT ROOM
CW PUMP 2B, STOPS. _____
- C. Damper 2-FCO-31-268, INCORE INSTR RM AHU 2B
DISCHARGE, CLOSES. _____
- D. Damper 2-FCO-31-269, INCORE INSTR RM AHU 2B
DISCHARGE, CLOSES. _____

[10] **VERIFY** successful completion of this Subsection 6.7.3.
(ACC CRIT) _____

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Date _____

6.8 Incore Instrument Room Redundant Unit Start on Low Air Flow

- [1] **VERIFY** prerequisites listed in Section 4.0 for SubSection 6.8 have been completed. _____
- [2] **PLACE** Handswitch 2-HS-31-265A, INCORE INST RM A/C A SW [2-M-9], to START, **AND**

VERIFY status lights on Handswitch 2-HS-31-265A, INCORE INST RM A/C A SW, Green Light OFF and Red Light ON, **THEN**

RELEASE to A AUTO. _____
- [3] **ENSURE** Air Handling Unit 2-AHU-31-266, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2B [Inst Rm, EL 730, AZ 112], is OFF (local observation). _____
- [4] **VERIFY** Annunciator Window 2-XA-55-5C/103-E, INSTR RM COOLER A/B FLOW LO, is CLEAR. _____

NOTE

In the following step, if difficulties are encountered, the Air Handling Unit should be STOPPED immediately.

- [5] **COMPLETELY COVER** air inlet to Fan 2-FAN-31-265, INCORE INSTR RM AHU 2A FAN, Incore Inst Rm, Elev 730, AZ 57, with cardboard, **AND**

VERIFY:
 - A. Air Handling Unit 2-AHU-31-266, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2B, STARTS (local observation). _____
 - B. Annunciator Window 2-XA-55-5C/103-E, INSTR RM COOLER A/B FLOW LO, ALARMS. _____
 - C. Unit 2 Alarm Events Display Screen indicates 103-E INSTR RM COOLER A/B FLOW LO (FS-31-263) is in ALARM (Red). _____

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Data Package: Page ____ of ____

Date _____

**6.8 Incore Instrument Room Redundant Unit Start on Low Air Flow
(continued)**

[6] **REMOVE** cardboard from air inlet installed in Step 6.8[5]. _____

[7] **VERIFY:**

A. Annunciator Window 2-XA-55-5C/103-E, INSTR RM COOLER A/B FLOW LO, CLEARS. _____

B. Unit 2 Alarm Events Display Screen indicates 103-E, INSTR RM COOLER A/B FLOW LO (FS-31-263), is NORMAL (Green). _____

[8] **PLACE** Handswitch 2-HS-31-265A, INCORE INST RM A/C A SW, to STOP, **AND**

VERIFY status lights on Handswitch 2-HS-31-265A, INCORE INST RM A/C A SW, Green Light ON and Red Light OFF, **THEN**

RELEASE to A AUTO. _____

[9] **VERIFY** Annunciator Window 2-XA-55-5C/103-E, INSTR RM COOLER A/B FLOW LO, is CLEAR. _____

NOTE

In the following step, if difficulties are encountered, the Air Handling Unit should be STOPPED immediately.

[10] **COMPLETELY COVER** air inlet to Fan 2-FAN-31-266, INCORE INSTR RM AHU 2B FAN, Incore Inst Rm, Elev 730, AZ 112, with cardboard, **AND**

VERIFY:

A. Air Handling Unit 2-AHU-31-265, INCORE INSTRUMENT ROOM AIR HANDLING UNIT 2A [Inst Rm, EL 730, AZ 57], STARTS (local observation). _____

B. Annunciator Window 2-XA-55-5C/103-E, INST RM COOLER A/B FLOW LO, ALARMS. _____

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Date _____

**6.8 Incore Instrument Room Redundant Unit Start on Low Air Flow
(continued)**

- C. Unit 2 Alarm Events Display Screen indicates 103-E INST RM COOLER A/B FLOW LO (FS-31-263) is in ALARM (Red). _____

[11] **REMOVE** cardboard from air inlet installed in Step 6.8[10]. _____

[12] **VERIFY:**

- A. Annunciator Window 2-XA-55-5C/103-E, INST RM COOLER A/B FLOW LO, CLEARS. _____

- B. Unit 2 Alarm Events Display Screen indicates 103-E INSTR RM COOLER A/B FLOW LO (FS-31-263) is in NORMAL (Green). _____

[13] **PLACE** Handswitch, 2-HS-31-266A, INCORE INST RM A/C B SW [2-M-9], to STOP (PULL TO LOCK), **AND**

VERIFY status lights on Handswitch 2-HS-31-266A, INCORE INST RM A/C B SW, Green Light ON and Red Light OFF. _____

[14] **PLACE** Handswitch 2-HS-31-265A, INCORE INST RM A/C A SW, to STOP (PULL TO LOCK), **AND**

VERIFY status lights on Handswitch 2-HS-31-265A, INCORE INST RM A/C A SW, Green Light ON and Red Light OFF. _____

[15] **VERIFY** successful completion of this Subsection 6.8.
(ACC CRIT) _____

WBN Unit 2	Incore Instrument Room Air Conditioning System	2-PTI-031B-01 Rev. 0000 Page 109 of 128
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Data Package: Page ____ of ____

Date _____

6.9 Incore Instrument Room 2A/2B Circulation Pump Trip on Low Tank Level

6.9.1 Preliminary Actions

- [1] **VERIFY** prerequisites listed in Section 4.0 for SubSection 6.9 have been completed. _____

CAUTION

Work in 2-JB-292-835 involves energized circuits.

6.9.2 Incore Instrument Room Circulation Pump 2A Trip on Low Tank Level

- [1] **ENSURE** 2-LG-31-304, INCORE INSTRUMENT ROOM SURGE TANK 2A LEVEL [Pen Rm, EL 692, Col A12W], indicates 75-100% full. _____
- [2] **INSTALL** jumper at terminal block TA, across wire numbers 18CX and 18CLS2, in 2-JB-292-835 [Pen Rm, EL 692, Col A12W], to simulate the air handling unit fan starting. _____
1st

CV

- [3] **VERIFY** 2-PMP-31-303/1, INCORE INSTR ROOM CW PUMP 2A [Pen Rm, EL 692, Col A12W], STARTS. _____
- [4] **VERIFY** Annunciator Window 2-XA-55-5C/104-E, INSTR RM COOLING SURGE TANK A/B LEVEL LO, is CLEAR. _____
- [5] **CLOSE** the following valves:
- A. 2-RTV-31-1102A, 2-LS-31-303 ROOT [Pen Rm, EL 692, Col A12W] _____
- B. 2-RTV-31-1103A, 2-LS-31-303 ROOT [Pen Rm, EL 692, Col A12W] _____

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Date _____

6.9.2 Incore Instrument Room Circulation Pump 2A Trip on Low Tank Level (continued)

- [6] **DISCONNECT** the top test port connection between 2-RTV-31-1102A, 2-LS-31-303 ROOT, and 2-LS-31-303, INCORE INSTR ROOM SURGE TANK 2A [Pen Rm, EL 692, Col A12W].

1st

CV

NOTES

- 1) Step 6.9.2[7] requires a 5 gallon bucket to capture drain water from Level Switch instrument lines.
- 2) During the performance of Steps 6.9.2[7] and 6.9.2[8], monitor Level Gauge 2-LG-31-304, INCORE INSTRUMENT ROOM SURGE TANK 2A LEVEL, to prevent pump operation under dry conditions. If the level gauge indicates less than 25%, the pump should be STOPPED immediately.

- [7] **DISCONNECT** the bottom test port connection between 2-RTV-31-1103A, 2-LS-31-303 ROOT, and 2-LS-31-303, INCORE INSTR ROOM SURGE TANK 2A, (to drain line).

1st

CV

- [8] **VERIFY:**

- A. Pump 2-PMP-31-303/1, INCORE INSTR ROOM CW PUMP 2A, STOPS.
- B. Annunciator Window, 2-XA-55-5C/104-E, INSTR RM COOLING SURGE TANK A/B LEVEL LO, ALARMS.
- C. Unit 2 Alarm Events Display Screen indicates 104-E INSTR RM COOLING SURGE TANK A LEVEL LO (LS-31-303) is in ALARM (Red).

- [9] **REMOVE** jumper from terminal block TA, across wire numbers 18CX and 18CLS2, in 2-JB-292-835, to simulate the air handling unit fan stopping.

1st

CV

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Data Package: Page ____ of ____

Date _____

6.9.2 Incore Instrument Room Circulation Pump 2A Trip on Low Tank Level (continued)

[10] **RECONNECT** the following:

- A. Bottom test port connection between 2-RTV-31-1103A, 2-LS-31-303 ROOT, and 2-LS-31-303, INCORE INSTR ROOM SURGE TANK 2A

1st

CV

- B. Top test port connection between 2-RTV-31-1102A, 2-LS-31-303 ROOT, and 2-LS-31-303, INCORE INSTR ROOM SURGE TANK 2A

1st

CV

[11] **OPEN** 2-RTV-31-1102A, 2-LS-31-303 ROOT.

[12] **SLOWLY OPEN** 2-RTV-31-1103A, 2-LS-31-303 ROOT, to refill 2-LS-31-303, INCORE INSTR ROOM SURGE TANK 2A.

[13] **ENSURE** 2-LG-31-304, INCORE INSTRUMENT ROOM SURGE TANK 2A LEVEL, indicates 75 - 100% full.

[14] **VERIFY** the following:

- A. Annunciator Window, 2-XA-55-5C/104-E, INSTR RM COOLING SURGE TANK A/B LEVEL LO, CLEARS.

- B. Unit 2 Alarm Events Display Screen indicates 104-E INSTR RM COOLING SURGE TANK A LEVEL LO (LS-31-303) is NORMAL (Green).

[15] **VERIFY** successful completion of this Subsection 6.9.2. (ACC CRIT)

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Date _____

6.9.3 Incore Instrument Room Circulation Pump 2B Trip on Low Tank Level

- [1] **ENSURE** 2-LG-31-325, INCORE INSTRUMENT ROOM SURGE TANK 2B LEVEL [Pen Rm, EL 692, Col A12W] indicates 75-100% full.
- [2] **INSTALL** jumper at terminal block TB, across wire numbers 18CX and 18CLS2, in 2-JB-292-835, to simulate the air handling unit fan starting.
- [3] **VERIFY** 2-PMP-31-324/1, INCORE INSTRUMENT ROOM CW PUMP 2B [Pen Rm, EL 692, Col A12W], STARTS.
- [4] **VERIFY** Annunciator Window, 2-XA-55-5C/104-E, INSTR RM COOLING SURGE TANK A/B LEVEL LO, is CLEAR.
- [5] **CLOSE** the following valves:
 - A. 2-RTV-31-1112, INCORE INST RM CHILL B SURG TK LEVEL [Pen Rm, EL 692, Col A12W]
 - B. 2-RTV-31-1113A, 2-LS-31-324 ROOT [Pen Rm, EL 692, Col A12W]
- [6] **DISCONNECT** the top test port connection between 2-RTV-31-1112, INCORE INST RM CHILL B SURG TK LEVEL, and 2-LS-31-324, INCORE INSTRUMENT ROOM SURGE TANK 2B LEVEL [Pen Rm, EL 692, Col A12W].

1st

CV

1st

CV

WBN Unit 2	Incore Instrument Room Air Conditioning System	2-PTI-031B-01 Rev. 0000 Page 113 of 128
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Data Package: Page ____ of ____

Date _____

6.9.3 Incore Instrument Room Circulation Pump 2B Trip on Low Tank Level (continued)

NOTES

- 1) Step 6.9.3[7] requires a 5 gallon bucket to capture drain water from Level Switch instrument lines.
- 2) During the performance of Steps 6.9.3[7] and 6.9.3[8], monitor Level Gauge 2-LG-31-304, INCORE INSTRUMENT ROOM SURGE TANK 2A LEVEL, to prevent pump operation under dry conditions. If the level gauge indicates less than 25%, the pump should be STOPPED immediately.

- [7] **DISCONNECT** the bottom test port connection between 2-RTV-31-1113A, 2-LS-31-324 ROOT, and 2-LS-31-324, INCORE INSTRUMENT ROOM SURGE TANK 2B LEVEL, (to drain line).

1st

CV

- [8] **VERIFY:**

- A. Pump 2-PMP-31-324/1, INCORE INSTRUMENT ROOM CW PUMP 2B, STOPS.
- B. Annunciator Window, 2-XA-55-5C/104-E, INSTR RM COOLING SURGE TANK A/B LEVEL LO, ALARMS.
- C. Unit 2 Alarm Events Display Screen indicates 104-E INST RM COOLING SURGE TANK B LEVEL LO (LS-31-324) is in ALARM (Red).

- [9] **REMOVE** jumper from terminal block TB, across wire numbers 18CX and 18CLS2, in 2-JB-292-835, to simulate the air handling unit fan stopping.

1st

CV

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Data Package: Page ____ of ____

Date _____

6.9.3 Incore Instrument Room Circulation Pump 2B Trip on Low Tank Level (continued)

[10] **RECONNECT** the following:

- A. Bottom test port connection between 2-RTV-31-1113A, 2-LS-31-324 ROOT, and 2-LS-31-324, INCORE INSTRUMENT ROOM SURGE TANK 2B LEVEL

1st

CV

- B. Top test port connection between 2-RTV-31-1112, INCORE INST RM CHILL B SURG TK LEVEL, and 2-LS-31-324, INCORE INSTRUMENT ROOM SURGE TANK 2B LEVEL

1st

CV

[11] **OPEN** 2-RTV-31-1112, INCORE INST RM CHILL B SURG TK LEVEL ISOL VLV.

[12] **SLOWLY OPEN** 2-RTV-31-1113A, 2-LS-31-324 ROOT, to refill 2-LS-31-324, INCORE INSTRUMENT ROOM SURGE TANK 2B LEVEL.

[13] **ENSURE** 2-LG-31-325, INCORE INSTRUMENT ROOM SURGE TANK 2B LEVEL, indicates 75 - 100% full.

[14] **VERIFY** the following:

- A. Annunciator Window, 2-XA-55-5C/104-E, INSTR RM COOLING SURGE TANK A/B LEVEL LO, CLEARS.

- B. Unit 2 Alarm Events Display Screen indicates 104-E INSTR RM COOLING SURGE TANK B LEVEL LO (LS-31-324) is NORMAL (Green).

[15] **VERIFY** successful completion of this Subsection 6.9.3. (ACC CRIT)

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Data Package: Page ____ of ____

Date _____

7.0 POST PERFORMANCE ACTIVITY

NOTE

Steps 7.0[1] and 7.0[2] may be identified as NA if the respective condition does not apply to this test.

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

RECORD the results on Measuring and Test Equipment Log, Appendix E in SMP-9.0 _____

- [2] **VERIFY** that post-test calibration of permanent plant instruments used to record quantitative acceptance criteria has been satisfactorily performed (as required), **AND**

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

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

8.0 RECORDS

A. QA Records

Completed Test Package

B. Non-QA Records

None

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**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)
SMP-9.0			
FSAR SubSection 6.2.4 Table 6.2.4-1, Pgs 38-39 SubSection 9.2.1 and 9.4.7 Table 14.2-1, Sheets 4/5, 38/39, and 83			
WBN2-30RB-4002			
WBN2-67-4002			
WBNP Tech Specs, Unit 2, SubSection 3.6.3			
2-SOI-30.04			
2-TSD-31B-01			
2-TSD-88-05			
G-37			
2-PTI-067-03			

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**Appendix C
(Page 1 of 1)**

PERMANENT PLANT INSTRUMENTATION LOG

Data Package: Page ____ of ____

Date _____

INSTRUMENT OR INSTRUMENT LOOP #	CAL DUE DATE	FILLED AND VENTED¹	PLACED IN SERVICE¹	USED FOR QUANTITATIVE ACC CRIT		POST-TEST CAL DATE²	POST-TEST CALIBRATION ACCEPTABLE²
		INIT/DATE	INIT/DATE	YES	NO		INIT/DATE²
2-TIC-31-307					X	NA	NA
2-FS-31-263					X	NA	NA
2-LS-31-303					X	NA	NA
2-TIC-31-328					X	NA	NA
2-FS-31-268					X	NA	NA
2-LS-31-324					X	NA	NA

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 (NA).

² May be identified as NA if instrument was NOT used to verify/record quantitative acceptance criteria data.

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**Table 1
(Page 1 of 2)**

ELECTRICAL LINEUP

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Date _____

COMPONENT IDENTIFICATION	COMPONENT NOMENCLATURE	COMPONENT LOCATION	COMP. POSITION	VERIFIED BY INITIAL
2-BKR-31-265-A	INCORE INSTR RM AHU 2A (2-AHU-31-265)	Unit 2 480V RX MOV BD 2A1-A, Compt. 16A	CLOSED	
2-BKR-31-303A-A	INCORE INSTR RM CW PMP 2A (2-PMP-31-303/1)	Unit 2 480V RX MOV BD 2A1-A, Compt. 18C	CLOSED	
2-BKR-31-303B-A	INCORE INSTR RM CHLR 2A COMPR (2-COMP-303/2)	Unit 2 480V RX MOV BD 2A1-A, Compt. 16F2	OPEN	
2-BKR-31-266-B	INCORE INSTR RM AHU 2B (2-AHU-31-266)	Unit 2 480V RX MOV BD 2B1-B, Compt. 16A	CLOSED	
2-BKR-31-324A-B	INCORE INSTR RM CW PMP 2B (2-PMP-31-324/1)	Unit 2 480V RX MOV BD 2B1-B, Compt. 18C	CLOSED	
2-BKR-31-324B-B	INSTR RM A/C COMPR 2B (2-COMP-31-324/2)	Unit 2 480V RX MOV BD 2B1-B, Compt. 17F2	OPEN	
2-BKR-235-1/07-D	AUX RELAY RACK 2-R-76 BUS A	120V AC Vital Inst Power Bd 2-I Bkr 7	CLOSED	
2-BKR-235-1/19-D	SYS 31 TR A ASSOCIATED FLOW SWITCHES	120V AC Vital Inst Power Bd 2-I Bkr 19	CLOSED	
2-BKR-235-2/06-E	AUX RELAY RACK 2-R-76 BUS B	120V AC Vital Inst Power Bd 2-II Bkr 6	CLOSED	
2-BRK-235-2/14-E	SYS 31 TR B ASSOCIATED FLOW SWITCHES	120V AC Vital Inst Power Bd 2-II Bkr 14	CLOSED	
0-FU-236-3/C3	INSTR RM COOLANT UNIT A VLV	125V VITAL BATT BD III, CKT# C/3	INSTALLED	
0-FU-236-3/C4	INSTRUMENT ROOM COOLANT UNIT A VLV	125V VITAL BATT BD III, CKT# C/4	INSTALLED	
0-FU-236-3/C5	INSTRUMENT ROOM COOLANT UNIT B VLV	125V VITAL BATT BD III, CKT# C/5	INSTALLED	
0-FU-236-3/C6	INSTRUMENT ROOM COOLANT UNIT B VLV	125V VITAL BATT BD III, CKT# C/6	INSTALLED	

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**Table 1
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ELECTRICAL LINEUP

Data Package: Page ____ of ____

Date _____

COMPONENT IDENTIFICATION	COMPONENT NOMENCLATURE	COMPONENT LOCATION	COMP. POSITION	VERIFIED BY INITIAL
0-FU-236-4/C3	INSTR RM COOLANT UNIT A VLV	125V VITAL BATT BD IV, CKT# C/3	INSTALLED	
0-FU-236-4/C4	INSTR RM COOLANT UNIT A VLV	125V VITAL BATT BD IV, CKT# C/4	INSTALLED	
0-FU-236-4/C5	INSTR RM COOLANT UNIT B VLV	125V VITAL BATT BD IV, CKT# C/5	INSTALLED	
0-FU-236-4/C6	INSTR RM COOLANT UNIT B VLV	125V VITAL BATT BD IV, CKT# C/6	INSTALLED	

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**Table 2
(Page 1 of 6)
VALVE LINEUP**

Data Package: Page ____ of ____

Date _____

VALVE NUMBER	VALVE NOMENCLATURE	VALVE LOCATION	VALVE POSITION	VERIFIED BY INITIALS
TRAIN A				
2-DRV-31-3422	INCORE INSTR RM CW AIR SEPARATOR 2A DRAIN	692 A12W	CLOSED	
2-DRV-31-3981	INCORE INSTR ROOM SURGE TANK 2A DRAIN	692 A12W	CLOSED	
2-VTV-31-3426	INCORE INSTR ROOM SURGE TANK 2A VENT	692 A12W	CLOSED	
2-RTV-31-3977A	2-LG-31-304 ROOT	692 A12W	OPEN	
2-RTV-31-3978A	2-LG-31-304 ROOT	692 A12W	OPEN	
2-RTV-31-1102A	2-LS-31-303 ROOT	692 A12W	OPEN	
2-RTV-31-1103A	2-LS-31-303 ROOT	692 A12W	OPEN	
2-ISV-31-3425	INCORE INSTR RM CHLR 2ACW MU CHECK	692 A12W	CLOSED	
2-VTV-31-3423	INCORE INSTR ROOM AIR SEPARATOR 2A VENT	692 A12W	CLOSED	
2-ISV-31-3427	INCORE INSTR ROOM CW PUMP 2A SUCTION	692 A12W	OPEN	
2-RTV-31-1101A	2-PI-31-302 ROOT	692 A12W	OPEN	
2-DRV-31-3428	INCORE INSTR ROOM CW PUMP 2A DRAIN	692 A12W	CLOSED	
2-RTV-31-1100A	2-PI-31-301 ROOT	692 A12W	OPEN	
2-ISV-31-3430	INCORE INSTR ROOM CW PUMP 2A DISCHARGE	692 A12W	OPEN	
2-VTV-31-3441	INCORE INSTR RM CHLR 2ACW IN VENT	692 A12W	CLOSED	
2-ISV-31-3431	INCORE INSTR ROOM CHLR 2A CW IN ISOL	692 A12W	OPEN	
2-RTV-31-3432A	INCORE INSTR RM CHLR 2ACW PRESS TEST	692 A12W	CLOSED	

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**Table 2
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VALVE LINEUP**

Data Package: Page ____ of ____

Date _____

VALVE NUMBER	VALVE NOMENCLATURE	VALVE LOCATION	VALVE POSITION	VERIFIED BY INITIALS
2-DRV-31-3414	INCORE INSTR RM CHLR 2ACW DRAIN	692 A12W	CLOSED	
2-RTV-31-1104A	2-PI-31-313 ROOT	692 A12W	OPEN	
2-ISV-31-3413	INCORE INSTR RM CHLR 2ACW OUT ISOL	692 A12W	OPEN	
2-RTV-31-3999A	2-FIS-31-311 ROOT	692 A12W	OPEN	
2-RTV-31-4000A	2-FIS-31-311 ROOT	692 A12W	OPEN	
2-FCV-31-305	INCORE INSTR RM AHU 2A CWR ISOL	OC 730 AZ 70	CLOSED	
2-VTV-31-3440	INCORE INSTR RM AHU 2A CWR VENT	OC 737 Q4	CLOSED	
2-FCV-31-309	INCORE INSTR RM AHU 2A CWS ISOL	OC 730 AZ 70	CLOSED	
2-VTV-31-3446	INCORE INSTR RM AHU 2A CWS VENT	OC 737 Q4	CLOSED	
2-FCV-31-306	INCORE INSTR RM AHU 2A CW PUMP 2A ISOL	730 AZ 70	CLOSED	
2-TV-31-3451	INCORE INSTR RM AHU 2A CWR TEST VENT	716 AZ 120	CLOSED	
2-VTV-31-3435	INCORE INSTR RM AHU 2A CWR VENT	716 AZ 120	CLOSED	
2-DRV-31-3447	INCORE INSTR RM AHU 2A CWR DRAIN	716 AZ 119	CLOSED	
2-BYV-31-3416	INCORE INSTR RM AHU 2A CW BYPASS	716 AZ 119	OPEN	
2-ISV-31-3417	INCORE INSTR RM AHU 2A CW TCV-31-307 U/S ISOL	716 AZ 119	OPEN	
2-BYV-31-3418	INCORE INSTR RM AHU 2A CW TCV-31-307 BYPASS	716 AZ 122	CLOSED	
2-ISV-31-3419	INCORE INSTR RM AHU 2A CW TCV-31-307 D/S ISOL	716 AZ 121	OPEN	

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**Table 2
(Page 3 of 6)
VALVE LINEUP**

Data Package: Page ____ of ____

Date _____

VALVE NUMBER	VALVE NOMENCLATURE	VALVE LOCATION	VALVE POSITION	VERIFIED BY INITIALS
2-TCV-31-307	INCORE INSTR RM AHU 2A CW TEMP CNTL	730 AZ 70	OPERABLE	
2-FCV-31-308	INCORE INSTR RM AHU 2A CWS ISOL	730 AZ 70	CLOSED	
2-TV-31-3450	INCORE INSTR RM AHU 2A CWS TEST VENT	716 AZ 120	CLOSED	
2-VTV-31-3436	INCORE INSTR RM AHU 2A CWS VENT	716 AZ 120	CLOSED	
2-DRV-31-3445	INCORE INSTR RM AHU 2A CWS DRAIN	716 AZ 118	CLOSED	
2-DRV-31-3404	INCORE INSTR RM AHU 2A CWS DRAIN	716 AZ 120	CLOSED	
2-ISV-31-3405	INCORE INSTR RM AHU 2A CWS ISOL	716 AZ 119	OPEN	
TRAIN B				
2-DRV-31-3393	INCORE INSTR ROOM AIR SEPARATOR 2B DRAIN	692 A12W	CLOSED	
2-DRV-31-3982	INCORE INSTR ROOM SURGE TANK 2B DRAIN	692 A12W	CLOSED	
2-VTV-31-3397	INCORE INSTR ROOM SURGE TANK 2B VENT	692 A12W	CLOSED	
2-RTV-31-3979A	2-LG-31-325 ROOT	692 A12W	OPEN	
2-RTV-31-3980A	2-LG-31-325 ROOT	692 A12W	OPEN	
2-RTV-31-1112	2-LS-31-324 ROOT	692 A12W	OPEN	
2-RTV-31-1113A	2-LS-31-324 ROOT	692 A12W	OPEN	
2-ISV-31-3396	INCORE INSTR RM CHLR 2BCW MU	692 A12W	CLOSED	
2-VTV-31-3394	INCORE INSTR ROOM AIR SEPARATOR 2B VENT	692 A12W	CLOSED	

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**Table 2
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VALVE LINEUP**

Data Package: Page ____ of ____

Date _____

VALVE NUMBER	VALVE NOMENCLATURE	VALVE LOCATION	VALVE POSITION	VERIFIED BY INITIALS
2-ISV-31-3398	INCORE INSTR ROOM CW PUMP 2B SUCTION	692 A12W	OPEN	
2-RTV-31-1111A	2-PI-31-323 ROOT	692 A12W	OPEN	
2-DRV-31-3399	INCORE INSTR ROOM CW PUMP 2B DRAIN	692 A12W	CLOSED	
2-RTV-31-1110A	2-PI-31-322 ROOT	692 A12W	OPEN	
2-ISV-31-3401	INCORE INSTR ROOM CW PUMP 2B DISCH	692 A12W	OPEN	
2-VTV-31-3438	INCORE INSTR RM CHLR 2BCW IN VENT	692 A12W	CLOSED	
2-ISV-31-3402	INCORE INSTR ROOM CHLR 2B CW IN ISOL	692 A12W	OPEN	
2-RTV-31-3403A	INCORE INSTR RM CHLR 2BCW IN TEST POINT	692 A12W	CLOSED	
2-DRV-31-3385	INCORE INSTR RM CHLR 2BCW DRAIN	692 A12W	CLOSED	
2-RTV-31-1114A	2-PI-31-334 ROOT	692 A12W	OPEN	
2-ISV-31-3384	INCORE INSTR RM CHLR 2BCW OUT ISOL	692 A12W	OPEN	
2-RTV-31-3997A	2-FIS-31-332 ROOT	692 A12W	OPEN	
2-RTV-31-3998A	2-FIS-31-332 ROOT	692 A12W	OPEN	
2-FCV-31-326	INCORE INSTR RM AHU 2B CWR ISOL	OC 735 AZ 104	CLOSED	
2-VTV-31-3437	INCORE INST RM AHU 2B CWR VENT	OC 737 Q4	CLOSED	
2-FCV-31-330	INCORE INSTR RM AHU 2B CWS ISOL	OC 734 AZ 105	CLOSED	
2-VTV-31-3434	INCORE INSTR RM AHU 2B CWS VENT	OC 737 Q4	CLOSED	

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**Table 2
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VALVE LINEUP**

Data Package: Page ____ of ____

Date _____

VALVE NUMBER	VALVE NOMENCLATURE	VALVE LOCATION	VALVE POSITION	VERIFIED BY INITIALS
2-FCV-31-327	INCORE INST RM AHU 2B CWR ISOL	731 AZ 107	CLOSED	
2-TV-31-3449	INCORE INSTR RM AHU 2B CWR TEST VENT	731 AZ 112	CLOSED	
2-DRV-31-3444	INCORE INSTR RM AHU 2B CWR DRAIN	731 AZ 120	CLOSED	
2-BYV-31-3387	INCORE INSTR RM AHU 2B CW BYPASS	735 AZ 90	OPEN	
2-ISV-31-3388	INCORE INSTR RM AHU 2B CW TCV-31-328 U/S ISOL	731 AZ 120	OPEN	
2-BYV-31-3389	INCORE INSTR RM AHU 2B CW TCV-31-328 BYPASS	731 AZ 120	CLOSED	
2-ISV-31-3390	INCORE INSTR RM AHU 2B CW TCV-31-328 D/S ISOL	731 Q2	OPEN	
2-TCV-31-328	INCORE INSTR RM AHU 2B CW TEMP CONTROL	731 AZ 116	OPERABLE	
2-VTV-31-3439	INCORE INSTR RM AHU 2B CWR VENT	731 AZ 123	CLOSED	
2-FCV-31-329	INCORE INSTR RM AHU 2B CWS ISOL	731 AZ 102	CLOSED	
2-TV-31-3433	INCORE INSTR RM AHU 2B CWS TEST VENT	731 AZ 112	CLOSED	
2-TV-31-3448	INCORE INSTR RM AHU 2B CWS TEST VENT	731 AZ 112	CLOSED	
2-DRV-31-3442	INCORE INSTR RM AHU 2B CWS DRAIN	731 AZ 117	CLOSED	
2-DRV-31-3375	INCORE INSTR RM AHU 2B CWS DRAIN	731 AZ 123	CLOSED	
2-ISV-31-3376	INCORE INSTR RM AHU 2B CWS ISOL	731 Q2	OPEN	
COMMON				
2-ISV-31-3986	INCORE INSTR ROOM CHEM TRTMT TANK A ISOL	692 A12W	CLOSED	

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**Table 2
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VALVE LINEUP**

Data Package: Page ____ of ____

Date _____

VALVE NUMBER	VALVE NOMENCLATURE	VALVE LOCATION	VALVE POSITION	VERIFIED BY INITIALS
2-ISV-31-3987	INCORE INSTR ROOM CHEM TRTMT TANK A ISOL	692 A12W	CLOSED	
2-VTV-31-3408	INCORE INSTR RM CW CHEM TRTMT TANK 2A VENT	692 A12W	CLOSED	
2-ISV-31-3409	INCORE INSTR RM CW CHEM TRTMT TANK 2A OUT	692 A12W	CLOSED	
2-DRV-31-3410	INCORE INSTR RM CW CHEM TRTMT TNK 2A DRAIN	692 A12W	CLOSED	
2-ISV-31-3411	INCORE INSTR RM CW CHEM TRTMT TANK 2A FILL	692 A12W	CLOSED	
2-ISV-31-3412	INCORE INSTR RM CW CHEM TRTMT TNK 2A INLET	692 A12W	CLOSED	

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**Table 3
(Page 1 of 1)
SWITCH LINEUP**

Data Package: Page ____ of ____

Date _____

SWITCH NUMBER	SWITCH LOCATION	SWITCH NOMENCLATURE	SWITCH POSITION	VERIFIED BY INITIAL
2-HS-31-265A	2-M-9	INCORE INST RM A/C A SW	STOP (PULL-TO-LOCK)	
2-HS-31-266A	2-M-9	INCORE INST RM A/C B SW	STOP (PULL-TO-LOCK)	
2-HS-31-305	2-M-9	CIRC PMP A SUCT CIV-ØA	CLOSE return to A AUTO	
2-HS-31-306	2-M-9	CIRC PMP A SUCT CIV-ØA	CLOSE return to A AUTO	
2-HS-31-308	2-M-9	CIRC PMP A DISCH CIV-ØA	CLOSE return to A AUTO	
2-HS-31-309	2-M-9	CIRC PMP A DISCH CIV-ØA	CLOSE return to A AUTO	
2-HS-31-326	2-M-9	CIRC PMP B SUCT CIV-ØA	CLOSE return to A AUTO	
2-HS-31-327	2-M-9	CIRC PMP B SUCT CIV-ØA	CLOSE return to A AUTO	
2-HS-31-329	2-M-9	CIRC PMP B DISCH CIV-ØA	CLOSE return to A AUTO	
2-HS-31-330	2-M-9	CIRC PMP B DISCH CIV-ØA	CLOSE return to A AUTO	
2-CHR-31-303	Chiller 2A Panel	CHILLER 2A CONTROL PANEL POWER SWITCH	ON (GREEN LIGHT ON)	
2-CHR-31-324	Chiller 2B Panel	CHILLER 2B CONTROL PANEL POWER SWITCH	ON (GREEN LIGHT ON)	

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**Appendix D
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Background Calculations

A. Water Flow Instrument Uncertainties

Design Flow Rate = 21 GPM

Flowmeter Uncertainty = $\pm 3\%$ of reading

$21 \text{ GPM} * 1.03 = 21.63 \text{ GPM} \Rightarrow 22 \text{ GPM}$

B. Air Flow Instrument Uncertainties

Air Flow Uncertainties are covered within GTM-05 and are not required to be calculated within this PTI.

C. Valve Stroke Timing Instrument Uncertainties

Design Valve Stroke Timing = 10 sec

Stopwatch Uncertainty = ± 0.1 sec

Uncertainty is negligible compared to the human error factor involved with use of a stopwatch.