



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

April 19, 2011

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

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

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

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

PTI NUMBER	Rev.	TITLE
2-PTI-030H-01	0	Lower Compartment Coolers

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

Respectfully,

David Stinson
Watts Bar Unit 2 Vice President

Enclosure
cc (Enclosure):

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

D030
NRP

**WATTS BAR NUCLEAR PLANT
UNIT 2 PREOPERATIONAL TEST**

TITLE: Lower Compartment Coolers

Instruction No: 2-PTI-030H-01

Revision No: 0000

PREPARED BY: Keith Jones *Keith Jones* **DATE:** 2-10-11
PRINT NAME / SIGNATURE

REVIEWED BY: Bethany Merriman *Bethany Merriman* **DATE:** 2-14-11
PRINT NAME / SIGNATURE

INSTRUCTION APPROVAL

JTG MEETING No: 2-11-008

JTG CHAIRMAN: *[Signature]* **DATE:** 4/14/11

APPROVED BY: *[Signature]* **DATE:** 4/14/11
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
0000	04/14/2011	ALL	This procedure is written using the Unit 1 PTI-030J-01 Rev 0 as a guide.

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1.0 INTRODUCTION

1.1 Test Objectives

- A. Demonstrate the proper operation of the Reactor Building Lower Compartment Cooling Units.
- B. Demonstrate the proper operation of the Essential Raw Cooling Water (ERCW) control valves associated with each Lower Compartment Cooler (LCC).

1.2 Scope

NOTES

- 1) 2-PTI-030L-01, HFT Containment Temperature Survey, will demonstrate the Lower Compartment Coolers' ability to maintain design temperatures.
- 2) ERCW flowrates are verified during performance of 2-PTI-067-02-A and 2-PTI-067-02-B, ERCW System Flow Balance Train A and Train B.
- 3) ERCW Temperature Control Valves' logic is tested during performance of 2-PTI-067-03, ERCW Valve Logic Test.
- 4) System vibration testing will be performed during performance of GTM-05, HVAC Air Balance for this system.

This test demonstrates the operability of the Unit 2 Lower Compartment Coolers to ensure the following:

- A. The LCC Units operate correctly from their respective handswitches in the Main Control Room and on the 480V Shutdown Boards, and their indicating lights indicate correct status.
- B. Each LCC Unit stops on a simulated Phase B Containment Isolation Signal, and remains off when the signal is reset
- C. Each LCC Unit stops on a simulated Bus Undervoltage condition (Loss of Offsite Power).
- D. The air inlet and outlet temperatures for each LCC can be monitored on the Plant Computer System.
- E. LCC Units' backdraft dampers open and close upon start and stop of their respective LCC.

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1.2 Scope (continued)

- F. The LCC Units maintain design air flows.
- G. The LCC Units will operate correctly during accident conditions.
- H. Each ERCW control valve modulates open upon start and closes upon stop of its associated LCC.
- I. The following features function only when the LCC Units' Transfer Switch is in AUX:
 - 1. Each LCC Unit can be started manually while a simulated Phase B Containment Isolation Signal is present.
 - 2. Each LCC Unit restarts after a time delay when a simulated Loss of Offsite Power (LOOP) is restored.
 - 3. Each LCC unit starts on low flow condition from any other LCC to maintain 3 of 4 coolers in operation.

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2.0 REFERENCES

2.1 Performance References

- A. SMP-9.0, Conduct of Test
- B. GTM-05, HVAC Air Balance
- C. 0-SOI-67.01, Essential Raw Cooling Water System
- D. 2-SOI-30.03, Containment HVAC and Pressure Control

2.2 Developmental References

- A. Final Safety Analysis Report, Amendment 102
 - 1. Section 9.2.1, Essential Raw Cooling Water (ERCW)
 - 2. Section 9.4.7, Containment Air Cooling System
 - 3. Table 14.2-1, Sheets 4 & 5, Essential Raw Cooling Water System Test Summary
 - 4. Table 14.2-1, Sheets 38 & 39, Containment Ventilation System Test Summary
- B. Drawings
 - 1. Flow Diagrams
 - a. 2-47W866-1, Rev 2, HEATING AND VENTILATION AIR FLOW
DRA 52861-06, Rev 0
DRA 52861-15, Rev 0
DRA 52861-16, Rev 0
DRA 52861-17, Rev 0
DRA 54923-42, Rev 0
DRA 54923-43, Rev 0
 - b. 2-47W845-3, Rev 1, ESSENTIAL RAW COOLING WATER

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2.2 Developmental References (continued)

2. Electrical

- a. 2-45W760-30-9, Rev 1, VENTILATING SYSTEM SCHEMATIC DIAGRAMS
- b. 2-45W760-30-10, Rev 1, VENTILATING SYSTEM SCHEMATIC DIAGRAMS
- c. 45W760-30-21, Rev 11, VENTILATING SYSTEM SCHEMATIC DIAGRAMS
- d. 45W760-55-1, Rev 6, ANNUNCIATOR SYSTEM SCHEMATIC DIAGRAMS
- e. 45W760-55-2, Rev 7, ANNUNCIATOR SYSTEM SCHEMATIC DIAGRAMS
DRA 52639-76, Rev 0
- f. 2-45W600-57-9, Rev 0, SEPARATION & MISC AUX RELAYS SCHEMATIC DIAGRAMS
- g. 2-45W600-57-18, Rev 1, SEPARATION & MISC AUX RELAYS SCHEMATIC DIAGRAMS
- h. 2-45W600-57-20, Rev 0, SEPARATION MISC AUX RELAYS SCHEMATIC DIAGRAMS
- i. 2-45W600-57-21, Rev 0, SEPARATION & MISC AUX RELAYS SCHEMATIC DIAGRAMS
- j. 2-45W600-67-1, Rev 0, ESSENTIAL RAW COOLING WATER SYS SCHEMATIC DIAGRAM
- k. 2-45W600-67-2, Rev 0, ESSENTIAL RAW COOLING WATER SCHEMATIC DIAGRAM
- l. 1-45W760-212-4, Rev 16, 480V SHUTDOWN POWER SCHEMATIC DIAGRAMS
- m. 2-45W749-1, Rev 1, 480V SHUTDOWN BD 2A1-A SINGLE LINE
DRA 54172-01, Rev 0
- n. 2-45W749-2, Rev 1, 480V SHUTDOWN BD 2A2-A SINGLE LINE
DRA 54172-02, Rev 0

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2.2 Developmental References (continued)

- o. 2-45W749-3, Rev 1, 480V SHUTDOWN BD 2B1-B SINGLE LINE
DRA 54172-03, Rev 0
- p. 2-45W749-4, Rev 2, 480V SHUTDOWN BD 2B2-B SINGLE LINE
DRA 54172-04, Rev 0
- q. 45N2676-4, Rev 16, SOLID STATE PROTECTION SYS TRAIN A
CONNECTION DIAGRAM
- r. 45N2677-4, Rev 18, SOLID STATE PROTECTION SYS TRAIN B
CONNECTION DIAGRAM
- s. 6947D02 (AC), Rev G, LVME 'DS' SWGR 480V 3PH 60HZ
SUBSTATION INTERNALS
- t. 618F938, Rev 913, LVME 'DS' SWGR 480V SHUTDOWN BD 2A1-A
480V 3PH 60HZ SUBSTATION CONN DIAG UNIT 6
- u. 6947D67, Rev 915, LVME 'DS' SWGR 480V SHUTDOWN BD 2A2-A
480V 3PH 60HZ SUBSTATION CONN DIAG UNIT 6
- v. 618F941, Rev 913 LVME 'DS' SWGR 480V SHUTDOWN BD 2B1-B
480V 3Ø 60HZ SUBSTATION CONN DIAG UNIT 6
- w. 6947D85, Rev 915, LVME 'DS' SWGR 480V SHUTDOWN BD 2B2-B
480V 3Ø 60HZ SUBSTATION CONN DIAG UNIT 6

3. Logic/Control

- a. 2-47W610-30-2, Rev 1, CONTROL DIAGRAM VENTILATION
SYSTEM
DRA 54172-283, Rev 0
DRA 54172-284, Rev 0
DRA 54172-285, Rev 0
DRA 54172-286, Rev 0
- b. 2-47W611-30-4, Rev 1, LOGIC DIAGRAM VENTILATION SYSTEM
DRA 53788-032, Rev 0
DRA 54172-281, Rev 0
- c. 2-47W610-67-2, Rev 1, CONTROL DIAGRAM ERCW SYSTEM
- d. 2-47W611-67-3, Rev 1, LOGIC DIAGRAM ESSENTIAL RAW
COOLING WATER

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2.2 Developmental References (continued)

4. Other

- a. 2-47W600-171, Rev 0, ELECTRICAL INSTRUMENTS AND CONTROLS
DRA 53630-04, Rev 0
DRA 53630-46, Rev 1
- b. 2-47B601-55-1, ELECTRICAL INSTRUMENT TABULATION, [Later]
DRA 52453-04, Rev 0
- c. 2-47B601-55-2, ELECTRICAL INSTRUMENT TABULATION, [Later]
DRA 52453-05, Rev 0
- d. 2-47B601-55-3, ELECTRICAL INSTRUMENT TABULATION, [Later]
DRA 52453-06, Rev 0
- e. 2-47B601-55-4, ELECTRICAL INSTRUMENT TABULATION, [Later]
DRA 52453-07, Rev 0
- f. 2-45B655-5C, Rev 0, ANNUNCIATOR INPUTS WINDOW BOX
XA-55-5C
- g. 2-45B655-E5C, Rev 0. ANNUNCIATOR WINDOW BOX XA-55-5C
ENGRAVING
- h. 2-45B655-6E, Rev 0, ANNUNCIATOR INPUTS WINDOW BOX
XA-55-6E
DCA 52630-91, Rev 0
- i. 2-45B655-E6E, Rev 0. ANNUNCIATOR WINDOW BOX XA-55-6E
ENGRAVING
- j. 2-45B655-6F, Rev 0, ANNUNCIATOR INPUTS WINDOW BOX
XA-55-6F
DCA 52630-92, Rev 0
- k. 2-45B655-E6F, Rev 0. ANNUNCIATOR WINDOW BOX XA-55-6F
ENGRAVING

5. Vendor Manuals

- a. VM-F180-3066, Rev 0, Foxboro Instruction Book 3473 743CB Field
Station Micro Controller

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2.2 Developmental References (continued)

C. Documents

1. GTM-05, HVAC Air Balance (Draft)
2. WBN2-30RB-4002, Rev 1, Reactor Building Ventilation System
3. G-37, Rev 4, Testing and Balancing of HVAC Systems During Installation, Modification, and Maintenance
4. 2-TSD-30H-1, Rev 1, Containment Air Cooling System - Lower Compartment Coolers
5. 2-PTI-030L-01, HFT Containment Temperature Survey (Draft)
6. 2-PTI-067-02-A, Rev 0, ERCW System Flow Balance - Train A
7. 2-PTI-067-02-B, Rev 0, ERCW System Flow Balance - Train B
8. 2-PTI-067-03, ERCW Valve Logic Test (Draft)
9. MI-57.002, Rev 39, Westinghouse DS Circuit Breaker Routine Maintenance, Inspection and Testing
10. SSD-2-LPT-67-84, Rev 0, Lower Cntmt Vent Cooler A Temp
11. SSD-2-LPT-67-100, Rev 0, Lower Cntmt Vent Cooler B Temp
12. SSD-2-LPT-67-92, Rev 0, Lower Cntmt Vent Cooler C Temp
13. SSD-2-LPT-67-108, Rev 0, Lower Cntmt Vent Cooler D Temp

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3.0 PRECAUTIONS AND LIMITATIONS

- A. Standard precautions shall be followed for working around energized electrical equipment in accordance with TVA Safety Procedure 1021.
- B. Steps may be repeated if all components cannot be tested in a step. However, if the test has been exited, prerequisite steps must be re-verified and a Chronological Test Log (CTL) entry made.
- C. Discrepancies between component ID tags and the description in a procedure/instruction if the UNIDs match, exclusive of place keeping zeros and train designators (e.g.; 2-HS-31-468 vs. 2-HS-031-0468) and the noun description is sufficient to identify the component. This condition does not require a TDN in accordance SMP-14.0. If the component label needs to be changed, a Tag Request Form (TR Card) should be processed in accordance with TI-12.14. Make an entry in the CTL and continue testing.
- D. IF/THEN steps may be marked N/A if stated condition does not exist.
- E. All wires removed/lifted from a terminal shall be identified and taped or covered with an insulator to prevent personnel or equipment hazard and possible spurious initiations. The wires should be grouped together and labeled with the work implementing document number that required them to be lifted if left unattended.
- F. All terminal points and connections are to be considered energized. Instrumentation must be used to determine if the circuits are de-energized.
- G. Retermination of lifted leads requires that their restored bend radius is equal to or greater than the as-found condition.
- H. LCC Circuit Breakers have Overload Trip Switch (OTS) reset coils. Placing the Handswitch to STOP will energize the OTS Reset Coil and reset the OTS. The OTS Reset Coil should only be energized momentarily; the OTS contact in series with the coil should open to de-energize the coil. To avoid overheating the coil, do not hold Handswitch in STOP if the coil does not de-energize.
- I. When installing fuses with actuators, ensure that the actuating rod is oriented correctly to provide for proper alarm initiation and visual indication.
- J. All open problems are to be tracked by a corrective action document and entered on the appropriate system punchlist.

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3.0 PRECAUTIONS AND LIMITATIONS (continued)

- K. Problems identified during the test shall be annotated on the Chronological Test Log from SMP-9.0, including a description of the problem, the procedure step when/where the problem was identified, corrective action steps taken to resolve the problem, and the number of the corrective action document, if one was required.
- L. Observe all Radiation Protection requirements when working in or near radiological areas.
- M. Ensure there are no adverse effects to the operation of Unit 1 structures, systems, or components.
- N. Vibration testing of this system is performed during the GTM-05, HVAC Air Balance for this system.
- O. During the performance of this procedure, visual observation of fans and ductwork is required. This includes steady-state and transient operations (fan starts and stops) with visual confirmation that vibration is not excessive.
- P. To verify that transient conditions are not causing excessive vibration, observe components (duct, dampers, fans, etc) during the transient, to the extent practical. If not practical to observe during the transient, verify after the transient that no damage has occurred.
- Q. If the vibration is determined to be excessive, the Test Engineer shall initiate a Test Deficiency Notice.
- R. LCC control switches in the Main Control Room may NOT be placed in PULL A-P AUTO. Auto-start features enabled by this switch position are disabled and are not tested in this instruction.
- S. The Setpoint and Scaling Documents for the Time Delay Relays that cause the LCCs to automatically start after bus voltage is restored (after a Loss of Offsite Power) have been voided and these relays are no longer calibrated. Therefore, their response times will be described as approximately 1 minute in this instruction. Reference EDC 50345 and EDC 50330 for further information.

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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 Appendix A have been reviewed and determined NOT to adversely affect the test performance. _____
- [4] **VERIFY** current revisions and change paper for referenced drawings have been reviewed and determined NOT to adversely affect the test performance, **AND**

ATTACH documentation of the current drawing revision numbers and change papers that were reviewed to the data package. _____
- [5] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) and/or Plant Operations. _____

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4.1 Preliminary Actions (continued)

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

ENSURE that they will NOT adversely affect the test performance.

- A. SubSection 6.1 _____
- B. SubSection 6.2 _____
- C. SubSection 6.3 _____
- D. SubSection 6.4 _____
- E. SubSection 6.5 _____

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

- A. SubSection 6.1 _____
- B. SubSection 6.2 _____
- C. SubSection 6.3 _____
- D. SubSection 6.4 _____
- E. SubSection 6.5 _____

- [8] **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. _____

- [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 Number: _____

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

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4.1 Preliminary Actions (continued)

- [11] **ENSURE** a review of outstanding Clearances has been coordinated with Unit 2 Operations for impact to the test performance, **AND**

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

- [12] **VERIFY** plant instruments required for test performance have been placed in service and are within their calibration interval, **AND**

RECORD on Appendix C, Permanent Plant Instrumentation Log.

A. SubSection 6.1 _____

B. SubSection 6.4 _____

- [13] **REVIEW** preventive maintenance records for equipment within the scope of this test, **AND**

VERIFY no conditions exist that will impact test performance.

A. SubSection 6.1 _____

B. SubSection 6.2 _____

C. SubSection 6.3 _____

D. SubSection 6.4 _____

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

A. SubSection 6.1 _____

B. SubSection 6.2 _____

C. SubSection 6.3 _____

D. SubSection 6.4 _____

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

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

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

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

A. Switched jumpers [2]

B. Handheld jumper [1]

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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 support this test:

- A. System 32, Control Air System _____
- B. System 55, Annunciator and Sequential Events Recording System _____
- C. System 67, Essential Raw Cooling Water System _____
- D. System 99, Reactor Protection System _____
- E. System 212, 480V Shutdown Power _____
- F. System 235, 120V AC Vital Power System _____
- G. System 236, 125V DC Vital Power System _____
- H. System 261, Integrated Computer System (ICS) _____

NOTES

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

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

- A. 2-XA-55-5C-104A, LWR CNTMT CLR FLOW LO _____
- B. 2-XA-55-6E-138E, PANEL M-9 MOTOR TRIP OUT _____
- C. 2-XA-55-6F-149B, 480 SD BD 2A1-A/2A2-A/CA VT BD 2A1-A _____
- D. 2-XA-55-6F-150B, 480 SD BD 2B1-B/2B2-B/CA VT BD 2B1-B _____

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4.3 Field Preparations (continued)

[3] **ENSURE** Essential Raw Cooling Water Temperature Control Valves (TCVs) and Temperature Indicating Controllers (TICs) are available to support test activities.

A. 2-TCV-67-84, LWR CNTMT VENT CLR 2A-A
OUT TEMP CNTL (SubSection 6.1.1)

B. 2-TIC-67-84, LOWER CNTMT VENT CLR 2A
TEMP CNTL (SubSection 6.1.1)

C. 2-TCV-67-100, LWR CNTMT VENT CLR 2B-B
OUT TEMP CNTL (SubSection 6.1.2)

D. 2-TIC-67-100, LOWER CNTMT VENT CLR 2B
TEMP CNTL (SubSection 6.1.2)

E. 2-TCV-60-92, LWR CNTMT VENT CLR 2C-A
OUT TEMP CNTL (SubSection 6.1.3)

F. 2-TIC-67-92, LOWER CNTMT VENT CLR 2C
TEMP CNTL (SubSection 6.1.3)

G. 2-TCV-67-108, LWR CNTMT VENT CLR 2D-B
OUT TEMP CNTL (SubSection 6.1.4)

H. 2-TIC-67-108, LOWER CNTMT VENT CLR 2D
TEMP CNTL (SubSection 6.1.4)

[4] **ENSURE** ERCW system is aligned per 0-SOI-67.01 and/or 2-SOI-30.03, as applicable to support test performance (SubSection 6.1).

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4.3 Field Preparations (continued)

[5] **RECORD** the As-Found position of the following ERCW Temperature Indicating Controllers' Auto/Manual (A/M) Status, Setpoints and Outputs on Panel 2-L-26, [A15U/692 (Pent Rm)]:

- A. 2-TIC-67-84, LOWER CNTMT VENT CLR 2A
TEMP CNTL (SubSection 6.1.1)

Auto/Manual Status: _____

Indicated Controller Setpoint: _____

Indicated Controller Output: _____

- B. 2-TIC-67-100, LOWER CNTMT VENT CLR 2B
TEMP CNTL (SubSection 6.1.2)

Auto/Manual Status: _____

Indicated Controller Setpoint: _____

Indicated Controller Output: _____

- C. 2-TIC-67-92, LOWER CNTMT VENT CLR 2C
TEMP CNTL (SubSection 6.1.3)

Auto/Manual Status: _____

Indicated Controller Setpoint: _____

Indicated Controller Output: _____

- D. 2-TIC-67-108, LOWER CNTMT VENT CLR 2D
TEMP CNTL (SubSection 6.1.4)

Auto/Manual Status: _____

Indicated Controller Setpoint: _____

Indicated Controller Output: _____

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4.3 Field Preparations (continued)

[6] **ENSURE** the following system 67, ERCW Temperature Indicating Controllers on Panel 2-L-26, Auto/Manual Status is in Manual (M) and outputs are adjusted for maximum cooling (valve full open):

A. 2-TIC-67-84, LOWER CNTMT VENT CLR 2A
TEMP CNTL (SubSection 6.1.1) _____

B. 2-TIC-67-100, LOWER CNTMT VENT CLR 2B
TEMP CNTL (SubSection 6.1.2) _____

C. 2-TIC-67-92, LOWER CNTMT VENT CLR 2C
TEMP CNTL (SubSection 6.1.3) _____

D. 2-TIC-67-108, LOWER CNTMT VENT CLR 2D
TEMP CNTL (SubSection 6.1.4) _____

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

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

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

C. T1110A, LOWR COMPT COOL UNIT A-A EXHAUST _____

D. T1111A, LOWR COMPT COOL UNIT B-B EXHAUST _____

E. T1112A, LOWR COMPT COOL UNIT C-A EXHAUST _____

F. T1113A, LOWR COMPT COOL UNIT D-B EXHAUST _____

G. T1114A, LOWER COMPT COOL UNIT A-A INTAKE _____

H. T1115A, LOWER COMPT COOL UNIT B-B INTAKE _____

I. T1116A, LOWER COMPT COOL UNIT C-A INTAKE _____

J. T1117A, LOWER COMPT COOL UNIT D-B INTAKE _____

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4.3 Field Preparations (continued)

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

[9] **ENSURE** system is configured in accordance with Appendix D, Electrical Lineup.

[10] **VERIFY** that the Reactor Coolant System (RCS) is NOT filled and vented. (SubSection 6.4)

[11] **INSTALL** switched jumpers at the following locations, **AND**
ENSURE that the jumper test switches are OPEN (OFF).

[11.1] Labeled TS-1:
In SSPS Train-A Output Cabinet 2-R-48, at TB615, between Pt. 11 (Wire 2340VL) and Pt. 12 (Wire CNA1).
(Drawing 45N2676-4)

A. Jumper Installed

1st

CV

B. Test Switch OPEN (OFF)

[11.2] Labeled TS-2:
In SSPS Train-B Output Cabinet 2-R-51, at TB615, between Pt. 11 (Wire 2435VL) and Pt. 12 (Wire CNB1).
(Drawing 45N2677-4)

A. Jumper Installed

1st

CV

B. Test Switch OPEN (OFF)

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4.3 Field Preparations (continued)

NOTE

The following step will disable the Train A LCCs' Auto-start on Low Flow function.

- [12] **LIFT** Wire A17C2 from point 8 of Terminal Block 65B5, inside the front panel of 480V SHUTDOWN BOARD 2A1-A, Compartment 6A. (Drawing 618F938)

1st

CV

NOTE

The following step will disable the Train B LCCs' Auto-start on Low Flow function.

- [13] **LIFT** Wire B17D2 from point 5 of Terminal Block 65B2, inside the front panel of 480V SHUTDOWN BOARD 2B1-B Compartment 6A. (Drawing 618F941)

1st

CV

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4.4 Approvals and Notifications

- [1] **OBTAIN** permission of the Preoperational Startup Manager to perform this test.

Preoperational Startup Manager
Signature

Date

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

Unit 2 US/SRO/SM Signature

Date

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

Unit 1 US/SRO/SM Signature

Date

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5.0 ACCEPTANCE CRITERIA

NOTE

Acceptance Criteria values have been adjusted as necessary to account for instrument inaccuracies. See Appendix E for calculation bases.

- A. The Lower Compartment Coolers' manual and automatic controls, interlocks, annunciations, alarms, and indications operate correctly.

LCC	Controls and Indications (Main Control Room)	Controls and Indications (remote)
LCC 2A-A (2-CCU-30-74)	SubSection 6.1.1	SubSection 6.1.1
LCC 2B-B (2-CCU-30-75)	SubSection 6.1.2	SubSection 6.1.2
LCC 2C-A (2-CCU-30-77)	SubSection 6.1.3	SubSection 6.1.3
LCC 2D-B (2-CCU-30-78)	SubSection 6.1.4	SubSection 6.1.4

- B. The Backdraft Dampers associated with each Lower Compartment Cooler operate correctly.

Damper	Opens/Closes when associated LCC Unit starts/stops
2-BKD-30-514 (LCC 2A-A)	6.1.1[9]F 6.1.1[12]E
2-BKD-30-507 (LCC 2B-B)	6.1.2[9]F 6.1.2[12]E
2-BKD-30-503 (LCC 2C-A)	6.1.3[9]F 6.1.3[12]E
2-BKD-30-518 (LCC 2D-B)	6.1.4[9]F 6.1.4[12]E

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5.0 ACCEPTANCE CRITERIA (continued)

- C. Lower Compartment Cooler intake and exhaust air temperatures output to the Plant Computer (ICS) properly.

ICS Points	ICS Point Qualities are GOOD
LCC 2A-A: T1114A T1110A	6.1.1[10]
LCC 2B-B: T1115A T1111A	6.1.2[10]
LCC 2C-A: T1116A T1112A	6.1.3[10]
LCC 2D-B: T1117A T1113A	6.1.4[10]

- D. The ERCW Control Valves associated with each Lower Compartment Cooler operate correctly.

Valve	Valve modulates open/closes when LCC Unit starts/stops	
	XS in NOR	XS in AUX
2-TCV-67-84 (LCC 2A-A)	6.1.1[9]F 6.1.1[12]E	6.1.1[16]C 6.1.1[17]C
2-TCV-67-100 (LCC 2B-B)	6.1.2[9]F 6.1.2[12]E	6.1.2[16]C 6.1.2[17]C
2-TCV-67-92 (LCC 2C-A)	6.1.3[9]F 6.1.3[12]E	6.1.3[16]C 6.1.3[17]C
2-TCV-67-108 (LCC 2D-B)	6.1.4[9]F 6.1.4[12]E	6.1.4[16]C 6.1.4[17]C

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5.0 ACCEPTANCE CRITERIA (continued)

- E. The Lower Compartment Coolers respond appropriately to Engineered Safety Feature Actuation System (ESFAS) signals:

LCC	Phase B (ØB) Containment Isolation Signal		
	XS in NORMAL		XS in AUX
	Stops on ØB	Remains stopped after ØB reset	Can be manually started and run with ØB signal in effect
LCC 2A-A (2-CCU-30-74)	6.2.1[7]A	6.2.1[9]A	6.2.1[13]
LCC 2B-B (2-CCU-30-75)	6.2.2[7]A	6.2.2[9]A	6.2.2[13]
LCC 2C-A (2-CCU-30-77)	6.2.1[7]B	6.2.1[9]B	6.2.1[15]
LCC 2D-B (2-CCU-30-78)	6.2.2[7]B	6.2.2[9]B	6.2.2[15]

- F. The Lower Compartment Coolers respond appropriately to a Bus Undervoltage condition (LOOP).

LCC	XS in NORMAL		XS in AUX	
	Stops on LOOP	Remains stopped after bus voltage is restored	Stops on LOOP	Restarts after bus voltage is restored
LCC 2A-A (2-CCU-30-74)	6.3.1[6]	6.3.1[8]	6.3.1[12]	6.3.1[14]
LCC 2B-B (2-CCU-30-75)	6.3.2[6]	6.3.2[8]	6.3.2[12]	6.3.2[14]
LCC 2C-A (2-CCU-30-77)	6.3.3[6]	6.3.3[8]	6.3.3[12]	6.3.3[14]
LCC 2D-B (2-CCU-30-78)	6.3.4[6]	6.3.4[8]	6.3.4[12]	6.3.4[14]

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5.0 ACCEPTANCE CRITERIA (continued)

- G. The Lower Compartment Coolers can operate correctly during Design Basis Accident conditions

LCC Motor	Design Density Motor Horsepower is ≤ Motor Nameplate Horsepower of 56 HP*
LCC 2A-A (2-MTR-30-74)	6.5[10]A
LCC 2B-B (2-MTR-30-75)	6.5[10]B
LCC 2C-A (2-MTR-30-77)	6.5[10]C
LCC 2D-B (2-MTR-30-78)	6.5[10]D

* Nameplate HP = 60 HP, reduced to 56 HP to account for instrument inaccuracies

- H. The Lower Compartment Coolers respond appropriately to a Low Flow condition in another Lower Compartment Cooler. (Only when XS is in AUX)

Auto-start on Low Flow in 2/4 LCCs to maintain 3/4 LCCs in operation.					
Running LCCs			LCC with Low Flow	LCC that Auto-Starts	Step
C-A	&	D-B	B-B	A-A	6.4[11]
C-A	&	D-B	A-A	B-B	6.4[14]
B-B	&	D-B	C-A	A-A	6.4[17]
B-B	&	D-B	A-A	C-A	6.4[20]
B-B	&	C-A	D-B	A-A	6.4[23]
B-B	&	C-A	A-A	D-B	6.4[26]
A-A	&	D-B	C-A	B-B	6.4[31]
A-A	&	D-B	B-B	C-A	6.4[34]
A-A	&	C-A	D-B	B-B	6.4[37]
A-A	&	C-A	B-B	D-B	6.4[40]
A-A	&	B-B	D-B	C-A	6.4[45]
A-A	&	B-B	C-A	D-B	6.4[48]

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5.0 ACCEPTANCE CRITERIA (continued)

- I. The Lower Compartment Coolers provide the required minimum air flows in the following configurations:

1. Each LCC Operating Individually:

LCC	Total per cooler: 48,700 CFM
LCC 2A-A	6.5[4]A
LCC 2B-B	6.5[4]B
LCC 2C-A	6.5[4]C
LCC 2D-B	6.5[4]D

2. Any Three LCCs Operating Together:

Running LCCs	Total: 146,000 CFM	Each S/G Enclosure: 5,625 CFM	Pressurizer Enclosure: 3,700 CFM	Reactor Cavity: 10,000 CFM
LCC 2A-A LCC 2B-B LCC 2C-A	6.5[5]A	6.5[5]A	6.5[5]A	6.5[5]A
LCC 2A-A LCC 2C-A LCC 2D-B	6.5[5]B	6.5[5]B	6.5[5]B	6.5[5]B
LCC 2A-A LCC 2B-B LCC 2D-B	6.5[5]C	6.5[5]C	6.5[5]C	6.5[5]C
LCC 2B-B LCC 2C-A LCC 2D-B	6.5[5]D	6.5[5]D	6.5[5]D	6.5[5]D

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5.0 ACCEPTANCE CRITERIA (continued)

3. Each Train of LCCs Operating Together

Running LCCs	Total: 105,000 CFM	Pressurizer Enclosure: 2,400 CFM	Reactor Cavity: 6,700 CFM
Train A: LCC 2A-A LCC 2C-A	6.5[6]A	6.5[6]A	6.5[6]A
Train B: LCC 2B-B LCC 2D-B	6.5[6]B	6.5[6]B	6.5[6]B

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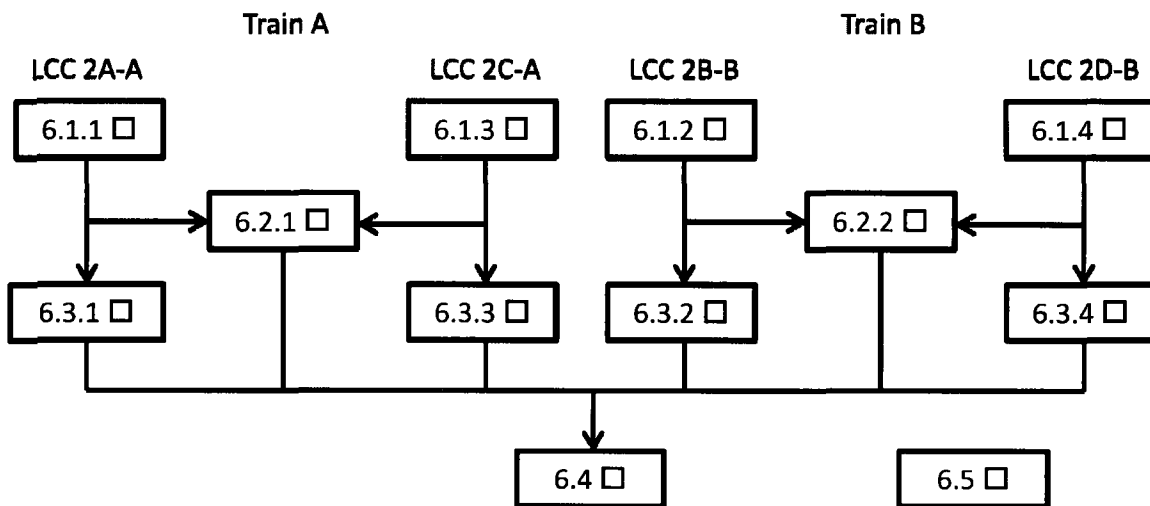
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6.0 PERFORMANCE

NOTES

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



- 2) The Subsections of Sections 6.1, 6.2, and 6.3 may be performed in any order provided that each Subsection's applicable predecessor Subsection(s) are completed. Section 6.4 is to be performed last and Section 6.5 may be performed at any time during this instruction. Unless otherwise noted, steps within each section are to be performed in the order written. The flowchart above may be used as a placekeeping tool throughout the performance of this instruction.
- 3) Lower Compartment Cooler (LCC) Handswitches in the Main Control Room spring return to A AUTO from START and STOP positions.
- 4) LCC Handswitches on the 480V Shutdown Boards spring return to AUTO from CLOSE and TRIP positions.
- 5) LCC Units have status indication lights at two locations in the Main Control Room:
 - On 2-M-9 at their associated Handswitch
 - On 2-M-6, on Train A (2-XX-55-6E) or Train B (2-XX-55-6F) CONTAINMENT ISOL STATUS PNL, hereafter abbreviated in this instruction as CISP.
- 6) LCC Units are located in the Fan Rooms above the Raceway in Lower Containment.
 - LCC 2A-A and 2D-B are located together in the South Fan Room (Fan Room 1).
 - LCC 2B-B and 2C-A are located together in the North Fan Room (Fan Room 2).

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6.1 Lower Compartment Cooler Logic Test

NOTE

Unless otherwise noted, SubSections 6.1.1 through 6.1.4 may be performed in any order. Unless otherwise noted, the steps within each SubSection shall be performed in the order written. The diagram at the beginning of Section 6.0 may be used as a placekeeping tool throughout the performance of this Section.

6.1.1 Lower Compartment Cooler 2A-A Logic

- [1] **ENSURE** all prerequisites listed in Section 4.0 for Section 6.1 and SubSection 6.1.1 have been completed. _____
- [2] **RACK** Breaker 2-BKR-30-74, LOWER COMPT COOLER 2A-A (2-CCU-30-74), [480V SHUTDOWN BOARD 2A1-A, Compartment 7C], to the TEST position. _____
- [3] **VERIFY** 2-XA-55-5C-104A, LWR CNTMT CLR FLOW LO, is CLEAR. _____
- [4] **PRESS** the REAC LWR COMPT CLR FAN 2A-A BKR TEST CLOSE switch at Breaker 2-BKR-30-74, LOWER COMPT COOLER 2A-A (2-CCU-30-74), **AND**

VERIFY the following:

A. At Breaker 2-BKR-30-74:

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

B. 2-XA-55-5C-104A, LWR CNTMT CLR FLOW LO, is in ALARM (after approximately 30 seconds). _____

C. Unit 2 Alarm Events Display Screen indicates 104-A LOWER CNTMT CLR A-A FLOW LO (FS-30-74), is in ALARM (Red). _____

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6.1.1 Lower Compartment Cooler 2A-A Logic (continued)

- [5] **PRESS** the REAC LWR COMPT CLR FAN 2A-A BKR TEST TRIP switch at Breaker 2-BKR-30-74, LOWER COMPT COOLER 2A-A (2-CCU-30-74), **AND**

VERIFY the following:

A. At Breaker 2-BKR-30-74:

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

B. 2-XA-55-5C-104A, LWR CNTMT CLR FLOW LO, is CLEAR. _____

C. Unit 2 Alarm Events Display Screen indicates 104-A LOWER CNTMT CLR A-A FLOW LO (FS-30-74), is NORMAL (Green). _____

- [6] **ENSURE** Transfer Switch 2-XS-30-74, LOWER COMPT COOLER 2A-A, [480V SHUTDOWN BOARD 2A1-A, Compartment 5A], is in NORMAL. _____

- [7] **RACK** Breaker 2-BKR-30-74, LOWER COMPT COOLER 2A-A (2-CCU-30-74) to the CONNECTED position. _____

- [8] **VERIFY** the following:

A. Cooler 2-CCU-30-74, CNTMT LOWER COMPARTMENT COOLER 2A-A, [Lwr Cntmt/716 AZ 21° (S Fan Rm)], is OFF. _____

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

C. 2-XA-55-6F-149B, 480 SD BD 2A1-A/2A2-A/CA VT BD 2A1-A, is CLEAR. _____

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6.1.1 Lower Compartment Cooler 2A-A Logic (continued)

[9] **PLACE** Handswitch 2-HS-30-74A, LWR CNTMT CLR A-A, [2-M-9], to START, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-74A:

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

B. On 2-XX-55-6E, Train A CISP, Window 103, LWR CNTMT A FAN-30-74, [2-M-6]:

- Green Light OFF _____
- Red Light ON _____

C. 2-XA-55-5C-104A, LWR CNTMT CLR FLOW LO, remains CLEAR (after approximately 30 seconds). _____

D. On Handswitch 2-HS-30-74C, LOWER COMPT COOLER 2A-A, [480V SHUTDOWN BOARD 2A1-A, Compartment 5A]:

- Green Light OFF _____
- Red Light ON _____

E. At Breaker 2-BKR-30-74, LOWER COMPT COOLER 2A-A (2-CCU-30-74):

- Green Light OFF _____
- Red Light ON _____

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6.1.1 Lower Compartment Cooler 2A-A Logic (continued)

F. Locally:

- Cooler 2-CCU-30-74, CNTMT LOWER COMPARTMENT COOLER 2A-A, is ON. _____
- Backdraft Damper 2-BKD-30-514, LOWER COMPT CLR SUP, [Lwr Cntmt/731 AZ 21° (S Fan Rm)], is OPEN. **(Acc Crit)** _____
- Valve 2-TCV-67-84, LWR CNTMT VENT CLR 2A-A OUT TEMP CNTL, [Lwr Cntmt/721 AZ 10° (S Fan Rm)], modulates OPEN. **(Acc Crit)** _____

[10] **VERIFY** that the LCC 2A-A intake and exhaust air temperature ICS Point Qualities are GOOD (Green). **(Acc Crit)**

- Point T1114A,
LOWER COMPT COOL UNIT A-A INTAKE _____
- Point T1110A,
LOWER COMPT COOL UNIT A-A EXHAUST _____

[11] **RECORD** LCC 2A-A intake and exhaust air temperatures as indicated by the ICS points:

T1114A,
LOWER COMPT COOL UNIT A-A INTAKE: _____ °F

T1110A,
LOWER COMPT COOL UNIT A-A EXHAUST: _____ °F

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6.1.1 Lower Compartment Cooler 2A-A Logic (continued)

[12] **PLACE** Handswitch 2-HS-30-74A, LWR CNTMT CLR A-A,
to STOP, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-74A:

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

B. On 2-XX-55-6E, Train A CISP, Window 103,
LWR CNTMT A FAN-30-74:

- Green Light ON _____
- Red Light OFF _____

C. On Handswitch 2-HS-30-74C, LOWER COMPT
COOLER 2A-A:

- Green Light ON _____
- Red Light OFF _____

D. At Breaker 2-BKR-30-74, LOWER COMPT
COOLER 2A-A (2-CCU-30-74):

- Green Light ON _____
- Red Light OFF _____

E. Locally:

- Cooler 2-CCU-30-74, CNTMT LOWER
COMPARTMENT COOLER 2A-A, is OFF. _____
- Backdraft Damper 2-BKD-30-514, LOWER COMPT
CLR SUP, is CLOSED. **(Acc Crit)** _____
- Valve 2-TCV-67-84, LWR CNTMT VENT CLR 2A-A
OUT TEMP CNTL, is CLOSED. **(Acc Crit)** _____

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6.1.1 Lower Compartment Cooler 2A-A Logic (continued)

[13] **ENSURE** 2-XA-55-6F-149B,
480 SD BD 2A1-A/2A2-A/CA VT BD 2A1-A, is CLEAR. _____

[14] **PLACE** the following Transfer Switches to AUX: _____

A. 2-XS-30-74, LOWER COMPT COOLER 2A-A. _____

B. 2-XS-67-84, LWR CNTMT CLR A-A ERCW
OUTLET TCV, [2-L-11A]. _____

[15] **VERIFY** the following: _____

A. On Handswitch 2-HS-30-74A, LWR CNTMT CLR A-A: _____

• Green Light OFF _____

• Red Light OFF _____

• White Light OFF _____

B. On 2-XX-55-6E, Train A CISP, Window 103,
LWR CNTMT A FAN-30-74: _____

• Green Light OFF _____

• Red Light OFF _____

C. Annunciation and Alarms: _____

• 2-XA-55-6F-149B,
480 SD BD 2A1-A/2A2-A/CA VT BD 2A1-A,
is in ALARM. _____

• Unit 2 Alarm Events Display Screen indicates
149-B 480 SD BD 2A1-A/2A2-A XS IN AUX,
is in ALARM (Red). _____

D. On Handswitch 2-HS-30-74C, LOWER COMPT
COOLER 2A-A: _____

• Green Light ON _____

• Red Light OFF _____

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6.1.1 Lower Compartment Cooler 2A-A Logic (continued)

E. At Breaker 2-BKR-30-74, LOWER COMPT COOLER 2A-A (2-CCU-30-74):

- Green Light ON _____
- Red Light OFF _____

[16] **PLACE** Handswitch 2-HS-30-74C, LOWER COMPT COOLER 2A-A, to CLOSE, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-74C, LOWER COMPT COOLER 2A-A:

- Green Light OFF _____
- Red Light ON _____

B. At Breaker 2-BKR-30-74, LOWER COMPT COOLER 2A-A (2-CCU-30-74):

- Green Light OFF _____
- Red Light ON _____

C. Locally:

- Cooler 2-CCU-30-74, CNTMT LOWER COMPARTMENT COOLER 2A-A, is ON. _____
- Valve 2-TCV-67-84, LWR CNTMT VENT CLR 2A-A OUT TEMP CNTL, modulates OPEN. **(Acc Crit)** _____

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6.1.1 Lower Compartment Cooler 2A-A Logic (continued)

[17] **PLACE** Handswitch 2-HS-30-74C, LOWER COMPT COOLER 2A-A, to TRIP, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-74C, LOWER COMPT COOLER 2A-A:

- Green Light ON _____
- Red Light OFF _____

B. At Breaker 2-BKR-30-74, LOWER COMPT COOLER 2A-A (2-CCU-30-74):

- Green Light ON _____
- Red Light OFF _____

C. Locally:

- Cooler 2-CCU-30-74, CNTMT LOWER COMPARTMENT COOLER 2A-A, is OFF. _____
- Valve 2-TCV-67-84, LWR CNTMT VENT CLR 2A-A OUT TEMP CNTL, is CLOSED. **(Acc Crit)** _____

[18] **PLACE** Transfer Switch 2-XS-30-74, LOWER COMPT COOLER 2A-A, to NORMAL. _____

[19] **PLACE** Transfer Switch 2-XS-67-84, LWR CNTMT CLR A-A ERCW OUTLET TCV to NOR. _____

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Date _____

6.1.1 Lower Compartment Cooler 2A-A Logic (continued)

[20] VERIFY the following:

A. On Handswitch 2-HS-30-74A, LWR CNTMT CLR A-A:

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

B. On 2-XX-55-6E, Train A CISP, Window 103, LWR CNTMT A FAN-30-74:

- Green Light ON _____
- Red Light OFF _____

C. Annunciation and Alarms:

- 2-XA-55-6E-138E, PANEL M-9 MOTOR TRIPOUT, is CLEAR. _____
- Motor Tripout Buzzer, [2-M-2], is OFF. _____
- 2-XA-55-6F-149B, 480 SD BD 2A1-A/2A2-A/CA VT BD 2A1-A, is CLEAR. _____
- Unit 2 Alarm Events Display Screen indicates 149-B 480 SD BD 2A1-A/2A2-A XS IN AUX, is NORMAL (Green). _____

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Date _____

6.1.1 Lower Compartment Cooler 2A-A Logic (continued)

[21] **RACK** Breaker 2-BKR-30-74, LOWER COMPT COOLER 2A-A (2-CCU-30-74), to the REMOVED position.

[22] **REMOVE** front cover of Breaker 2-BKR-30-74, LOWER COMPT COOLER 2A-A (2-CCU-30-74).

1st

CV

[23] **PLACE** Breaker 2-BKR-30-74, LOWER COMPT COOLER 2A-A (2-CCU-30-74), Overload Trip Switch (OTS) mechanical lever (DTA plunger) to the TRIP position.

[24] **INSTALL** front cover of Breaker 2-BKR-30-74, LOWER COMPT COOLER 2A-A (2-CCU-30-74).

1st

CV

[25] **RACK** Breaker 2-BKR-30-74, LOWER COMPT COOLER 2A-A (2-CCU-30-74), to the CONNECTED position.

[26] **VERIFY** the following:

A. On Handswitch 2-HS-30-74A, LWR CNTMT CLR A-A:

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

B. Annunciation and Alarms:

- 2-XA-55-6E-138E, PANEL M-9 MOTOR TRIPOUT, is in ALARM.
- Unit 2 Alarm Events Display Screen indicates 138-E PANEL M-9 MOTOR TRIPOUT, is in ALARM (Red).
- Motor Tripout Buzzer is ON.

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6.1.1 Lower Compartment Cooler 2A-A Logic (continued)

NOTES

- 1) The following step will electrically reset the Overload Trip Switch (OTS) for Breaker 2-BKR-30-74. Refer to Precaution 3.0H for further details.
- 2) If the following step does not reset the OTS, then the OTS may be reset manually by pressing the OTS Reset button on the front of the Breaker, and a Test Deficiency Notice shall be initiated.

[27] **RESET** the OTS by

PLACING Handswitch 2-HS-30-74A, LWR CNTMT CLR A-A,
to STOP, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-74A, LWR CNTMT CLR A-A:

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

B. Annunciation and Alarms:

- 2-XA-55-6E-138E, PANEL M-9 MOTOR TRIPOUT,
is CLEAR. _____
- Unit 2 Alarm Events Display Screen indicates
138-E PANEL M-9 MOTOR TRIPOUT,
is NORMAL (Green). _____
- Motor Tripout Buzzer is OFF. _____

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6.1.1 Lower Compartment Cooler 2A-A Logic (continued)

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

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

PLACE that Handswitch in A AUTO.

A. 2-HS-30-38A, AIR RETURN FAN A-A

As-Found: _____

As Left: _____

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

As-Found: _____

As Left: _____

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

As-Found: _____

As Left: _____

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

As-Found: _____

As Left: _____

[29] **VERIFY** ICS Point HD2030, VENT SYS HS-38A, 88A, 74A, 77A, 83A, displays NOT P-L.

[30] **PLACE** Handswitch 2-HS-30-74A, LWR CNTMT CLR A-A, in STOP PULL TO LOCK, **AND**

VERIFY ICS Point HD2030, VENT SYS HS-38A, 88A, 74A, 77A, 83A, displays PULLT-L.

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6.1.1 Lower Compartment Cooler 2A-A Logic (continued)

- [31] **ENSURE** the following Handswitches are returned to their As-Found position recorded in Step 6.1.1[28].
(The As-Left position recorded in this step should match the As-Found position recorded in Step 6.1.1[28].)

A. 2-HS-30-38A, AIR RETURN FAN A-A

As-Found: _____

As Left: _____

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

As-Found: _____

As Left: _____

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

As-Found: _____

As Left: _____

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

As-Found: _____

As Left: _____

- [32] **ENSURE** ERCW Temperature Indicating Controller 2-TIC-67-84, LOWER CNTMT VENT CLR 2A TEMP CNTL, is returned to its As-Found positions recorded in Step 4.3[5]A.

Auto/Manual Status: _____

Indicated Controller Setpoint: _____

Indicated Controller Output: _____

1st

CV

- [33] **VERIFY** successful completion of this SubSection 6.1.1.
(Acc Crit)

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6.1.2 Lower Compartment Cooler 2B-B Logic

- [1] **ENSURE** all prerequisites listed in Section 4.0 for Section 6.1 and SubSection 6.1.2 have been completed. _____
- [2] **RACK** Breaker 2-BKR-30-75, LOWER COMPT COOLER 2B-B (2-CCU-30-75), [480V SHUTDOWN BOARD 2B1-B, Compartment 7D], to the TEST position. _____
- [3] **VERIFY** 2-XA-55-5C-104A, LWR CNTMT CLR FLOW LO, is CLEAR. _____
- [4] **PRESS** the REAC LWR COMPT CLR FAN 2B-B BKR TEST CLOSE switch at Breaker 2-BKR-30-75, LOWER COMPT COOLER 2B-B (2-CCU-30-75), **AND**

VERIFY the following:
 - A. At Breaker 2-BKR-30-75:
 - Green Light OFF _____
 - Red Light ON _____
 - Red Flag at Breaker Panel _____
 - B. 2-XA-55-5C-104A, LWR CNTMT CLR FLOW LO, is in ALARM (after approximately 30 seconds). _____
 - C. Unit 2 Alarm Events Display Screen indicates 104-A LOWER CNTMT CLR B-B FLOW LO (FS-30-75), is in ALARM (Red). _____

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6.1.2 Lower Compartment Cooler 2B-B Logic (continued)

- [5] **PRESS** the REAC LWR COMPT CLR FAN 2B-B BKR TEST TRIP switch at Breaker 2-BKR-30-75, LOWER COMPT COOLER 2B-B (2-CCU-30-75), **AND**

VERIFY the following:

A. At Breaker 2-BKR-30-75:

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

B. 2-XA-55-5C-104A, LWR CNTMT CLR FLOW LO, is CLEAR. _____

C. Unit 2 Alarm Events Display Screen indicates 104-A LOWER CNTMT CLR B-B FLOW LO (FS-30-75), is NORMAL (Green). _____

- [6] **ENSURE** Transfer Switch 2-XS-30-75, LOWER COMPT COOLER 2B-B, [480V SHUTDOWN BOARD 2B1-B, Compartment 5A], is in NORMAL. _____

- [7] **RACK** Breaker 2-BKR-30-75, LOWER COMPT COOLER 2B-B (2-CCU-30-75) to the CONNECTED position. _____

- [8] **VERIFY** the following:

A. Cooler 2-CCU-30-75, CNTMT LOWER COMPARTMENT COOLER 2B-B, [Lwr Cntmt/716 AZ 159° (N Fan Rm)], is OFF. _____

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

C. 2-XA-55-6F-150B, 480 SD BD 2B1-B/2B2-B/CA VT BD 2B1-B, is CLEAR. _____

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6.1.2 Lower Compartment Cooler 2B-B Logic (continued)

[9] **PLACE** Handswitch 2-HS-30-75A, LWR CNTMT CLR B-B, [2-M-9], to START, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-75A:

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

B. On 2-XX-55-6F, Train B CISP, Window 103, LWR CNTMT B FAN-30-75, [2-M-6]:

- Green Light OFF _____
- Red Light ON _____

C. 2-XA-55-5C-104A, LWR CNTMT CLR FLOW LO, remains CLEAR (after approximately 30 seconds). _____

D. On Handswitch 2-HS-30-75C, LOWER COMPT COOLER 2B-B, [480V SHUTDOWN BOARD 2B1-B, Compartment 5A]:

- Green Light OFF _____
- Red Light ON _____

E. At Breaker 2-BKR-30-75, LOWER COMPT COOLER 2B-B (2-CCU-30-75):

- Green Light OFF _____
- Red Light ON _____

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6.1.2 Lower Compartment Cooler 2B-B Logic (continued)

F. Locally:

- Cooler 2-CCU-30-75, CNTMT LOWER COMPARTMENT COOLER 2B-B, is ON. _____
- Backdraft Damper 2-BKD-30-507, LOWER COMPT CLR SUP, [Lwr Cntmt/731 AZ 159° (N Fan Rm)], is OPEN. **(Acc Crit)** _____
- Valve 2-TCV-67-100, LWR CNTMT VENT CLR 2B-B OUT TEMP CNTL, [Lwr Cntmt/721 AZ 170° (N Fan Rm)], modulates OPEN. **(Acc Crit)** _____

[10] **VERIFY** that the LCC 2B-B intake and exhaust air temperature ICS Point Qualities are GOOD (Green). **(Acc Crit)**

- Point T1115A,
LOWER COMPT COOL UNIT B-B INTAKE _____
- Point T1111A,
LOWER COMPT COOL UNIT B-B EXHAUST _____

[11] **RECORD** LCC 2B-B intake and exhaust air temperatures as indicated by the ICS points:

T1115A,
LOWER COMPT COOL UNIT B-B INTAKE: _____ °F

T1111A,
LOWER COMPT COOL UNIT B-B EXHAUST: _____ °F

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6.1.2 Lower Compartment Cooler 2B-B Logic (continued)

[12] **PLACE** Handswitch 2-HS-30-75A, LWR CNTMT CLR B-B,
to STOP, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-75A:

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

B. On 2-XX-55-6F, Train B CISP, Window 103,
LWR CNTMT B FAN-30-75:

- Green Light ON _____
- Red Light OFF _____

C. On Handswitch 2-HS-30-75C, LOWER COMPT
COOLER 2B-B:

- Green Light ON _____
- Red Light OFF _____

D. At Breaker 2-BKR-30-75, LOWER COMPT
COOLER 2B-B (2-CCU-30-75):

- Green Light ON _____
- Red Light OFF _____

E. Locally:

- Cooler 2-CCU-30-75, CNTMT LOWER
COMPARTMENT COOLER 2B-B, is OFF. _____
- Backdraft Damper 2-BKD-30-507, LOWER COMPT
CLR SUP, is CLOSED. **(Acc Crit)** _____
- Valve 2-TCV-67-100, LWR CNTMT VENT CLR 2B-B
OUT TEMP CNTL, is CLOSED. **(Acc Crit)** _____

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6.1.2 Lower Compartment Cooler 2B-B Logic (continued)

[13] **ENSURE** 2-XA-55-6F-150B,
480 SD BD 2B1-B/2B2-B/CA VT BD 2B1-B, is CLEAR. _____

[14] **PLACE** the following Transfer Switches to AUX: _____

A. 2-XS-30-75, LOWER COMPT COOLER 2B-B. _____

B. 2-XS-67-100, LWR CNTMT CLR B-B ERCW
OUTLET TCV, [2-L-11B]. _____

[15] **VERIFY** the following:

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

- Green Light OFF _____

- Red Light OFF _____

- White Light OFF _____

B. On 2-XX-55-6F, Train B CISP, Window 103,
LWR CNTMT A FAN-30-75:

- Green Light OFF _____

- Red Light OFF _____

C. Annunciation and Alarms:

- 2-XA-55-6F-150B,
480 SD BD 2B1-B/2B2-B/CA VT BD 2B1-B,
is in ALARM. _____

- Unit 2 Alarm Events Display Screen indicates
150-B 480 SD BD 2B1-B/2B2-B XS IN AUX,
is in ALARM (Red). _____

D. On Handswitch 2-HS-30-75C, LOWER COMPT
COOLER 2B-B:

- Green Light ON _____

- Red Light OFF _____

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6.1.2 Lower Compartment Cooler 2B-B Logic (continued)

E. At Breaker 2-BKR-30-75, LOWER COMPT COOLER 2B-B (2-CCU-30-75):

- Green Light ON _____
- Red Light OFF _____

[16] **PLACE** Handswitch 2-HS-30-75C, LOWER COMPT COOLER 2B-B, to CLOSE, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-75C, LOWER COMPT COOLER 2B-B:

- Green Light OFF _____
- Red Light ON _____

B. At Breaker 2-BKR-30-75, LOWER COMPT COOLER 2B-B (2-CCU-30-75):

- Green Light OFF _____
- Red Light ON _____

C. Locally:

- Cooler 2-CCU-30-75, CNTMT LOWER COMPARTMENT COOLER 2B-B, is ON. _____
- Valve 2-TCV-67-100, LWR CNTMT VENT CLR 2B-B OUT TEMP CNTL, modulates OPEN. **(Acc Crit)** _____

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6.1.2 Lower Compartment Cooler 2B-B Logic (continued)

[17] **PLACE** Handswitch 2-HS-30-75C, LOWER COMPT COOLER 2B-B, to TRIP, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-75C, LOWER COMPT COOLER 2B-B:

- Green Light ON _____
- Red Light OFF _____

B. At Breaker 2-BKR-30-75, LOWER COMPT COOLER 2B-B (2-CCU-30-75):

- Green Light ON _____
- Red Light OFF _____

C. Locally:

- Cooler 2-CCU-30-75, CNTMT LOWER COMPARTMENT COOLER 2B-B, is OFF. _____
- Valve 2-TCV-67-100, LWR CNTMT VENT CLR 2B-B OUT TEMP CNTL, is CLOSED. **(Acc Crit)** _____

[18] **PLACE** Transfer Switch 2-XS-30-75, LOWER COMPT COOLER 2B-B, to NORMAL. _____

[19] **PLACE** Transfer Switch 2-XS-67-100, LWR CNTMT CLR B-B ERCW OUTLET TCV to NOR. _____

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6.1.2 Lower Compartment Cooler 2B-B Logic (continued)

[20] VERIFY the following:

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

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

**B. On 2-XX-55-6F, Train B CISP, Window 103,
LWR CNTMT B FAN-30-75:**

- Green Light ON _____
- Red Light OFF _____

C. Annunciation and Alarms:

- 2-XA-55-6E-138E, PANEL M-9 MOTOR TRIPOUT,
is CLEAR. _____
- Motor Tripout Buzzer, [2-M-2], is OFF. _____
- 2-XA-55-6F-150B,
480 SD BD 2B1-B/2B2-B/CA VT BD 2B1-B,
is CLEAR. _____
- Unit 2 Alarm Events Display Screen indicates
150-B 480 SD BD 2B1-B/2B2-B XS IN AUX,
is NORMAL (Green). _____

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6.1.2 Lower Compartment Cooler 2B-B Logic (continued)

- [21] **RACK** Breaker 2-BKR-30-75, LOWER COMPT COOLER 2B-B (2-CCU-30-75), to the REMOVED position. _____
- [22] **REMOVE** front cover of Breaker 2-BKR-30-75, LOWER COMPT COOLER 2B-B (2-CCU-30-75). _____
1st
CV
- [23] **PLACE** Breaker 2-BKR-30-75, LOWER COMPT COOLER 2B-B (2-CCU-30-75), Overload Trips Switch (OTS) mechanical lever (DTA plunger) to the TRIP position. _____
- [24] **INSTALL** front cover of Breaker 2-BKR-30-75, LOWER COMPT COOLER 2B-B (2-CCU-30-75). _____
1st
CV
- [25] **RACK** Breaker 2-BKR-30-75, LOWER COMPT COOLER 2B-B (2-CCU-30-75), to the CONNECTED position. _____
- [26] **VERIFY** the following:
- A. On Handswitch 2-HS-30-75A, LWR CNTMT CLR B-B:
- Green Light ON _____
 - Red Light OFF _____
 - White Light ON _____
- B. Annunciation and Alarms:
- 2-XA-55-6E-138E, PANEL M-9 MOTOR TRIPOUT, is in ALARM. _____
 - Unit 2 Alarm Events Display Screen indicates 138-E PANEL M-9 MOTOR TRIPOUT, is in ALARM (Red). _____
 - Motor Tripout Buzzer is ON. _____

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6.1.2 Lower Compartment Cooler 2B-B Logic (continued)

NOTES

- 1) The following step will electrically reset the Overload Trip Switch (OTS) for Breaker 2-BKR-30-75. Refer to Precaution 3.0H for further details.
- 2) If the following step does not reset the OTS, then the OTS may be reset manually by pressing the OTS Reset button on the front of the Breaker, and a Test Deficiency Notice shall be initiated.

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

PLACING Handswitch 2-HS-30-75A, LWR CNTMT CLR B-B,
to STOP, **AND**

VERIFY the following:

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

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

B. Annunciation and Alarms:

- 2-XA-55-6E-138E, PANEL M-9 MOTOR TRIPOUT,
is CLEAR. _____
- Unit 2 Alarm Events Display Screen indicates
138-E PANEL M-9 MOTOR TRIPOUT,
is NORMAL (Green). _____
- Motor Tripout Buzzer is OFF. _____

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6.1.2 Lower Compartment Cooler 2B-B Logic (continued)

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

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

PLACE that Handswitch in A AUTO.

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

As-Found: _____

As Left: _____

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

As-Found: _____

As Left: _____

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

As-Found: _____

As Left: _____

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

As-Found: _____

As Left: _____

[29] **VERIFY** ICS Point HD2064, VENT SYS HS-39A, 78A, 75A, 92A, 80A, displays NOT P-L.

[30] **PLACE** Handswitch 2-HS-30-75A, LWR CNTMT CLR B-B, in STOP PULL TO LOCK, **AND**

VERIFY ICS Point HD2064, VENT SYS HS-39A, 78A, 75A, 92A, 80A, displays PULLT-L.

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6.1.2 Lower Compartment Cooler 2B-B Logic (continued)

- [31] **ENSURE** the following Handswitches are returned to their As-Found position recorded in Step 6.1.2[28].
(The As-Left position recorded in this step should match the As-Found position recorded in Step 6.1.2[28].)

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

As-Found: _____

As Left: _____

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

As-Found: _____

As Left: _____

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

As-Found: _____

As Left: _____

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

As-Found: _____

As Left: _____

- [32] **ENSURE** ERCW Temperature Indicating Controller 2-TIC-67-100, LOWER CNTMT VENT CLR 2B TEMP CNTL, is returned to its As-Found positions recorded in Step 4.3[5]B.

Auto/Manual Status: _____

Indicated Controller Setpoint: _____

Indicated Controller Output: _____

1st

CV

- [33] **VERIFY** successful completion of this SubSection 6.1.2.
(Acc Crit)

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6.1.3 Lower Compartment Cooler 2C-A Logic

[1] **ENSURE** all prerequisites listed in Section 4.0 for Section 6.1 and SubSection 6.1.3 have been completed. _____

[2] **RACK** Breaker 2-BKR-30-77, LOWER COMPT COOLER 2C-A (2-CCU-30-77), [480V SHUTDOWN BOARD 2A2-A, Compartment 7D], to the TEST position. _____

[3] **VERIFY** 2-XA-55-5C-104A, LWR CNTMT CLR FLOW LO, is CLEAR. _____

[4] **PRESS** the REAC LWR COMPT CLR FAN 2C-A BKR TEST CLOSE switch at Breaker 2-BKR-30-77, LOWER COMPT COOLER 2C-A (2-CCU-30-77), **AND**

VERIFY the following:

A. At Breaker 2-BKR-30-77:

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

B. 2-XA-55-5C-104A, LWR CNTMT CLR FLOW LO, is in ALARM (after approximately 30 seconds). _____

C. Unit 2 Alarm Events Display Screen indicates 104-A LOWER CNTMT CLR C-A FLOW LO (FS-30-77), is in ALARM (Red). _____

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6.1.3 Lower Compartment Cooler 2C-A Logic (continued)

- [5] **PRESS** the REAC LWR COMPT CLR FAN 2C-A BKR TEST TRIP switch at Breaker 2-BKR-30-77, LOWER COMPT COOLER 2C-A (2-CCU-30-77), **AND**

VERIFY the following:

A. At Breaker 2-BKR-30-77:

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

B. 2-XA-55-5C-104A, LWR CNTMT CLR FLOW LO, is CLEAR. _____

C. Unit 2 Alarm Events Display Screen indicates 104-A LOWER CNTMT CLR C-A FLOW LO (FS-30-77), is NORMAL (Green). _____

- [6] **ENSURE** Transfer Switch 2-XS-30-77, LOWER COMPT COOLER 2C-A, [480V SHUTDOWN BOARD 2A2-A, Compartment 5A], is in NORMAL. _____

- [7] **RACK** Breaker 2-BKR-30-77, LOWER COMPT COOLER 2C-A (2-CCU-30-77) to the CONNECTED position. _____

- [8] **VERIFY** the following:

A. Cooler 2-CCU-30-77, CNTMT LOWER COMPARTMENT COOLER 2C-A, [Lwr Cntmt/716 AZ 201° (N Fan Rm)], is OFF. _____

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

C. 2-XA-55-6F-149B, 480 SD BD 2A1-A/2A2-A/CA VT BD 2A1-A, is CLEAR. _____

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6.1.3 Lower Compartment Cooler 2C-A Logic (continued)

[9] **PLACE** Handswitch 2-HS-30-77A, LWR CNTMT CLR C-A, [2-M-9], to **START, AND**

VERIFY the following:

A. On Handswitch 2-HS-30-77A:

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

B. On 2-XX-55-6E, Train A CISP, Window 104, LWR CNTMT C FAN-30-77, [2-M-6]:

- Green Light OFF _____
- Red Light ON _____

C. 2-XA-55-5C-104A, LWR CNTMT CLR FLOW LO, remains CLEAR (after approximately 30 seconds). _____

D. On Handswitch 2-HS-30-77C, LOWER COMPT COOLER 2C-A, [480V SHUTDOWN BOARD 2A2-A, Compartment 5A]:

- Green Light OFF _____
- Red Light ON _____

E. At Breaker 2-BKR-30-77, LOWER COMPT COOLER 2C-A (2-CCU-30-77):

- Green Light OFF _____
- Red Light ON _____

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6.1.3 Lower Compartment Cooler 2C-A Logic (continued)

F. Locally:

- Cooler 2-CCU-30-77, CNTMT LOWER COMPARTMENT COOLER 2C-A, is ON. _____
- Backdraft Damper 2-BKD-30-503, LOWER COMPT CLR SUP, [Lwr Cntmt/731 AZ 201° (N Fan Rm)], is OPEN. **(Acc Crit)** _____
- Valve 2-TCV-67-92, LWR CNTMT VENT CLR 2C-A OUT TEMP CNTL, [Lwr Cntmt/721 AZ 190° (N Fan Rm)], modulates OPEN. **(Acc Crit)** _____

[10] **VERIFY** that the LCC 2C-A intake and exhaust air temperature ICS Point Qualities are GOOD (Green). **(Acc Crit)**

- Point T1116A,
LOWER COMPT COOL UNIT C-A INTAKE _____
- Point T1112A,
LOWER COMPT COOL UNIT C-A EXHAUST _____

[11] **RECORD** LCC 2C-A intake and exhaust air temperatures as indicated by the ICS points:

T1116A,
LOWER COMPT COOL UNIT C-A INTAKE: _____ °F

T1112A,
LOWER COMPT COOL UNIT C-A EXHAUST: _____ °F

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6.1.3 Lower Compartment Cooler 2C-A Logic (continued)

[12] **PLACE** Handswitch 2-HS-30-77A, LWR CNTMT CLR C-A,
to STOP, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-77A:

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

B. On 2-XX-55-6E, Train A CISP, Window 104,
LWR CNTMT C FAN-30-77:

- Green Light ON _____
- Red Light OFF _____

C. On Handswitch 2-HS-30-77C, LOWER COMPT
COOLER 2C-A:

- Green Light ON _____
- Red Light OFF _____

D. At Breaker 2-BKR-30-77, LOWER COMPT
COOLER 2C-A (2-CCU-30-77):

- Green Light ON _____
- Red Light OFF _____

E. Locally:

- Cooler 2-CCU-30-77, CNTMT LOWER
COMPARTMENT COOLER 2C-A, is OFF. _____
- Backdraft Damper 2-BKD-30-503, LOWER COMPT
CLR SUP, is CLOSED. **(Acc Crit)** _____
- Valve 2-TCV-67-92, LWR CNTMT VENT CLR 2C-A
OUT TEMP CNTL, is CLOSED. **(Acc Crit)** _____

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6.1.3 Lower Compartment Cooler 2C-A Logic (continued)

[13] **ENSURE** 2-XA-55-6F-149B,
480 SD BD 2A1-A/2A2-A/CA VT BD 2A1-A, is CLEAR. _____

[14] **PLACE** the following Transfer Switches to AUX: _____

A. 2-XS-30-77, LOWER COMPT COOLER 2C-A. _____

B. 2-XS-67-92, LWR CNTMT CLR C-A ERCW
OUTLET TCV, [2-L-11A]. _____

[15] **VERIFY** the following: _____

A. On Handswitch 2-HS-30-77A, LWR CNTMT CLR C-A: _____

• Green Light OFF _____

• Red Light OFF _____

• White Light OFF _____

B. On 2-XX-55-6E, Train A CISP, Window 104,
LWR CNTMT C FAN-30-77: _____

• Green Light OFF _____

• Red Light OFF _____

C. Annunciation and Alarms: _____

• 2-XA-55-6F-149B,
480 SD BD 2A1-A/2A2-A/CA VT BD 2A1-A,
is in ALARM. _____

• Unit 2 Alarm Events Display Screen indicates
149-B 480 SD BD 2A1-A/2A2-A XS IN AUX,
is in ALARM (Red). _____

D. On Handswitch 2-HS-30-77C, LOWER COMPT
COOLER 2C-A: _____

• Green Light ON _____

• Red Light OFF _____

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6.1.3 Lower Compartment Cooler 2C-A Logic (continued)

E. At Breaker 2-BKR-30-77, LOWER COMPT COOLER 2C-A (2-CCU-30-77):

- Green Light ON _____
- Red Light OFF _____

[16] **PLACE** Handswitch 2-HS-30-77C, LOWER COMPT COOLER 2C-A, to CLOSE, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-77C, LOWER COMPT COOLER 2C-A:

- Green Light OFF _____
- Red Light ON _____

B. At Breaker 2-BKR-30-77, LOWER COMPT COOLER 2C-A (2-CCU-30-77):

- Green Light OFF _____
- Red Light ON _____

C. Locally:

- Cooler 2-CCU-30-77, CNTMT LOWER COMPARTMENT COOLER 2C-A, is ON. _____
- Valve 2-TCV-67-92, LWR CNTMT VENT CLR 2C-A OUT TEMP CNTL, modulates OPEN. **(Acc Crit)** _____

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6.1.3 Lower Compartment Cooler 2C-A Logic (continued)

[17] **PLACE** Handswitch 2-HS-30-77C, LOWER COMPT COOLER 2C-A, to TRIP, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-77C, LOWER COMPT COOLER 2C-A:

- Green Light ON _____
- Red Light OFF _____

B. At Breaker 2-BKR-30-77, LOWER COMPT COOLER 2C-A (2-CCU-30-77):

- Green Light ON _____
- Red Light OFF _____

C. Locally:

- Cooler 2-CCU-30-77, CNTMT LOWER COMPARTMENT COOLER 2C-A, is OFF. _____
- Valve 2-TCV-67-92, LWR CNTMT VENT CLR 2C-A OUT TEMP CNTL, is CLOSED. **(Acc Crit)** _____

[18] **PLACE** Transfer Switch 2-XS-30-77, LOWER COMPT COOLER 2C-A, to NORMAL. _____

[19] **PLACE** Transfer Switch 2-XS-67-92, LWR CNTMT CLR C-A ERCW OUTLET TCV to NOR. _____

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6.1.3 Lower Compartment Cooler 2C-A Logic (continued)

[20] **VERIFY** the following:

A. On Handswitch 2-HS-30-77A, LWR CNTMT CLR C-A:

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

B. On 2-XX-55-6E, Train A CISP, Window 104,
LWR CNTMT C FAN-30-77:

- Green Light ON _____
- Red Light OFF _____

C. Annunciation and Alarms:

- 2-XA-55-6E-138E, PANEL M-9 MOTOR TRIPOUT,
is CLEAR. _____
- Motor Tripout Buzzer, [2-M-2], is OFF. _____
- 2-XA-55-6F-149B,
480 SD BD 2A1-A/2A2-A/CA VT BD 2A1-A,
is CLEAR. _____
- Unit 2 Alarm Events Display Screen indicates
149-B 480 SD BD 2A1-A/2A2-A XS IN AUX,
is NORMAL (Green). _____

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6.1.3 Lower Compartment Cooler 2C-A Logic (continued)

[21] **RACK** Breaker 2-BKR-30-77, LOWER COMPT COOLER 2C-A (2-CCU-30-77), to the REMOVED position.

[22] **REMOVE** front cover of Breaker 2-BKR-30-77, LOWER COMPT COOLER 2C-A (2-CCU-30-77).

1st

CV

[23] **PLACE** Breaker 2-BKR-30-77, LOWER COMPT COOLER 2C-A (2-CCU-30-77), Overload Trips Switch (OTS) mechanical lever (DTA plunger) to the TRIP position.

[24] **INSTALL** front cover of Breaker 2-BKR-30-77, LOWER COMPT COOLER 2C-A (2-CCU-30-77).

1st

CV

[25] **RACK** Breaker 2-BKR-30-77, LOWER COMPT COOLER 2C-A (2-CCU-30-77), to the CONNECTED position.

[26] **VERIFY** the following:

A. On Handswitch 2-HS-30-77A, LWR CNTMT CLR C-A:

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

B. Annunciation and Alarms:

- 2-XA-55-6E-138E, PANEL M-9 MOTOR TRIPOUT, is in ALARM.
- Unit 2 Alarm Events Display Screen indicates 138-E PANEL M-9 MOTOR TRIPOUT, is in ALARM (Red).
- Motor Tripout Buzzer is ON.

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6.1.3 Lower Compartment Cooler 2C-A Logic (continued)

NOTES

- 1) The following step will electrically reset the Overload Trip Switch (OTS) for Breaker 2-BKR-30-77. Refer to Precaution 3.0H for further details.
- 2) If the following step does not reset the OTS, then the OTS may be reset manually by pressing the OTS Reset button on the front of the Breaker, and a Test Deficiency Notice shall be initiated.

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

PLACING Handswitch 2-HS-30-77A, LWR CNTMT CLR C-A,
to STOP, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-77A, LWR CNTMT CLR C-A:

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

B. Annunciation and Alarms:

- 2-XA-55-6E-138E, PANEL M-9 MOTOR TRIPOUT,
is CLEAR. _____
- Unit 2 Alarm Events Display Screen indicates
138-E PANEL M-9 MOTOR TRIPOUT,
is NORMAL (Green). _____
- Motor Tripout Buzzer is OFF. _____

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6.1.3 Lower Compartment Cooler 2C-A Logic (continued)

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

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

PLACE that Handswitch in A AUTO.

A. 2-HS-30-38A, AIR RETURN FAN A-A

As-Found: _____

As Left: _____

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

As-Found: _____

As Left: _____

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

As-Found: _____

As Left: _____

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

As-Found: _____

As Left: _____

[29] **VERIFY** ICS Point HD2030, VENT SYS HS-38A, 88A, 74A, 77A, 83A, displays NOT P-L.

[30] **PLACE** Handswitch 2-HS-30-77A, LWR CNTMT CLR A-A, in STOP PULL TO LOCK, **AND**

VERIFY ICS Point HD2030, VENT SYS HS-38A, 88A, 74A, 77A, 83A, displays PULLT-L.

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6.1.3 Lower Compartment Cooler 2C-A Logic (continued)

[31] **ENSURE** the following Handswitches are returned to their As-Found position recorded in Step 6.1.3[28].
(The As-Left position recorded in this step should match the As-Found position recorded in Step 6.1.3[28].)

A. 2-HS-30-38A, AIR RETURN FAN A-A

As-Found: _____

As Left: _____

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

As-Found: _____

As Left: _____

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

As-Found: _____

As Left: _____

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

As-Found: _____

As Left: _____

[32] **ENSURE** ERCW Temperature Indicating Controller 2-TIC-67-92, LOWER CNTMT VENT CLR 2C TEMP CNTL, is returned to its As-Found positions recorded in Step 4.3[5]C.

Auto/Manual Status: _____

Indicated Controller Setpoint: _____

Indicated Controller Output: _____

1st

CV

[33] **VERIFY** successful completion of this SubSection 6.1.3.
(Acc Crit)

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6.1.4 Lower Compartment Cooler 2D-B Logic

[1] **ENSURE** all prerequisites listed in Section 4.0 for Section 6.1 and SubSection 6.1.4 have been completed. _____

[2] **RACK** Breaker 2-BKR-30-78, LOWER COMPT COOLER 2D-B (2-CCU-30-78), [480V SHUTDOWN BOARD 2B2-B, Compartment 7D], to the TEST position. _____

[3] **VERIFY** 2-XA-55-5C-104A, LWR CNTMT CLR FLOW LO, is CLEAR. _____

[4] **PRESS** the REAC LWR COMPT CLR FAN 2D-B BKR TEST CLOSE switch at Breaker 2-BKR-30-78, LOWER COMPT COOLER 2D-B (2-CCU-30-78), **AND**

VERIFY the following:

A. At Breaker 2-BKR-30-78:

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

B. 2-XA-55-5C-104A, LWR CNTMT CLR FLOW LO, is in ALARM (after approximately 30 seconds). _____

C. Unit 2 Alarm Events Display Screen indicates 104-A LOWER CNTMT CLR D-B FLOW LO (FS-30-78), is in ALARM (Red). _____

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6.1.4 Lower Compartment Cooler 2D-B Logic (continued)

- [5] **PRESS** the REAC LWR COMPT CLR FAN 2D-B BKR TEST TRIP switch at Breaker 2-BKR-30-78, LOWER COMPT COOLER 2D-B (2-CCU-30-78), **AND**

VERIFY the following:

A. At Breaker 2-BKR-30-78:

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

B. 2-XA-55-5C-104A, LWR CNTMT CLR FLOW LO, is CLEAR. _____

C. Unit 2 Alarm Events Display Screen indicates 104-A LWR CNTMT CLR D-B FLOW LO (FS-30-78), is NORMAL (Green). _____

- [6] **ENSURE** Transfer Switch 2-XS-30-78, LOWER COMPT COOLER 2D-B, [480V SHUTDOWN BOARD 2B2-B, Compartment 5A], is in NORMAL. _____

- [7] **RACK** Breaker 2-BKR-30-78, LOWER COMPT COOLER 2D-B (2-CCU-30-78) to the CONNECTED position. _____

- [8] **VERIFY** the following:

A. Cooler 2-CCU-30-78, CNTMT LOWER COMPARTMENT COOLER 2D-B, [Lwr Cntmt/716 AZ 339° (S Fan Rm)], is OFF. _____

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

C. 2-XA-55-6F-150B, 480 SD BD 2B1-B/2B2-B/CA VT BD 2B1-B, is CLEAR. _____

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6.1.4 Lower Compartment Cooler 2D-B Logic (continued)

[9] **PLACE** Handswitch 2-HS-30-78A, LWR CNTMT CLR D-B, [2-M-9], to START, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-78A:

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

B. On 2-XX-55-6F, Train B CISP, Window 104, LWR CNTMT D FAN-30-78, [2-M-6]:

- Green Light OFF _____
- Red Light ON _____

C. 2-XA-55-5C-104A, LWR CNTMT CLR FLOW LO, remains CLEAR (after approximately 30 seconds). _____

D. On Handswitch 2-HS-30-78C, LOWER COMPT COOLER 2D-B, [480V SHUTDOWN BOARD 2B2-B, Compartment 5A]:

- Green Light OFF _____
- Red Light ON _____

E. At Breaker 2-BKR-30-78, LOWER COMPT COOLER 2D-B (2-CCU-30-78):

- Green Light OFF _____
- Red Light ON _____

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6.1.4 Lower Compartment Cooler 2D-B Logic (continued)

F. Locally:

- Cooler 2-CCU-30-78, CNTMT LOWER COMPARTMENT COOLER 2D-B, is ON. _____
- Backdraft Damper 2-BKD-30-518, LOWER COMPT CLR SUP, [Lwr Cntmt/731 AZ 339° (S Fan Rm)], is OPEN. **(Acc Crit)** _____
- Valve 2-TCV-67-108, LWR CNTMT VENT CLR 2D-B OUT TEMP CNTL, [Lwr Cntmt/721 AZ 350° (S Fan Rm)], modulates OPEN. **(Acc Crit)** _____

[10] **VERIFY** that the LCC 2D-B intake and exhaust air temperature ICS Point Qualities are GOOD (Green). **(Acc Crit)**

- Point T1117A,
LOWER COMPT COOL UNIT D-B INTAKE _____
- Point T1113A,
LOWER COMPT COOL UNIT D-B EXHAUST _____

[11] **RECORD** LCC 2D-B intake and exhaust air temperatures as indicated by the ICS points:

T1117A,
LOWER COMPT COOL UNIT D-B INTAKE: _____ °F

T1113A,
LOWER COMPT COOL UNIT D-B EXHAUST: _____ °F

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6.1.4 Lower Compartment Cooler 2D-B Logic (continued)

[12] **PLACE** Handswitch 2-HS-30-78A, LWR CNTMT CLR D-B,
to STOP, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-78A:

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

B. On 2-XX-55-6F, Train B CISP, Window 104,
LWR CNTMT D FAN-30-78:

- Green Light ON _____
- Red Light OFF _____

C. On Handswitch 2-HS-30-78C, LOWER COMPT
COOLER 2D-B:

- Green Light ON _____
- Red Light OFF _____

D. At Breaker 2-BKR-30-78, LOWER COMPT
COOLER 2D-B (2-CCU-30-78):

- Green Light ON _____
- Red Light OFF _____

E. Locally:

- Cooler 2-CCU-30-78, CNTMT LOWER
COMPARTMENT COOLER 2D-B, is OFF. _____
- Backdraft Damper 2-BKD-30-518, LOWER COMPT
CLR SUP, is CLOSED. (**Acc Crit**) _____
- Valve 2-TCV-67-108, LWR CNTMT VENT CLR 2D-B
OUT TEMP CNTL, is CLOSED. (**Acc Crit**) _____

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6.1.4 Lower Compartment Cooler 2D-B Logic (continued)

[13] **ENSURE** 2-XA-55-6F-150B,
480 SD BD 2B1-B/2B2-B/CA VT BD 2B1-B, is CLEAR. _____

[14] **PLACE** the following Transfer Switches to AUX:

A. 2-XS-30-78, LOWER COMPT COOLER 2B-B. _____

B. 2-XS-67-108, LWR CNTMT CLR B-B ERCW
OUTLET TCV, [2-L-11B]. _____

[15] **VERIFY** the following:

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

• Green Light OFF _____

• Red Light OFF _____

• White Light OFF _____

B. On 2-XX-55-6F, Train B CISP, Window 104,
LWR CNTMT D FAN-30-78:

• Green Light OFF _____

• Red Light OFF _____

C. Annunciation and Alarms:

• 2-XA-55-6F-150B,
480 SD BD 2B1-B/2B2-B/CA VT BD 2B1-B,
is in ALARM. _____

• Unit 2 Alarm Events Display Screen indicates
150-B 480 SD BD 2B1-B/2B2-B XS IN AUX,
is in ALARM (Red). _____

D. On Handswitch 2-HS-30-78C, LOWER COMPT
COOLER 2D-B:

• Green Light ON _____

• Red Light OFF _____

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6.1.4 Lower Compartment Cooler 2D-B Logic (continued)

E. At Breaker 2-BKR-30-78, LOWER COMPT COOLER 2D-B (2-CCU-30-78):

- Green Light ON _____
- Red Light OFF _____

[16] **PLACE** Handswitch 2-HS-30-78C, LOWER COMPT COOLER 2D-B, to CLOSE, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-78C, LOWER COMPT COOLER 2D-B:

- Green Light OFF _____
- Red Light ON _____

B. At Breaker 2-BKR-30-78, LOWER COMPT COOLER 2D-B (2-CCU-30-78):

- Green Light OFF _____
- Red Light ON _____

C. Locally:

- Cooler 2-CCU-30-78, CNTMT LOWER COMPARTMENT COOLER 2D-B, is ON. _____
- Valve 2-TCV-67-108, LWR CNTMT VENT CLR 2D-B OUT TEMP CNTL, modulates OPEN. **(Acc Crit)** _____

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6.1.4 Lower Compartment Cooler 2D-B Logic (continued)

[17] **PLACE** Handswitch 2-HS-30-78C, LOWER COMPT COOLER 2D-B, to TRIP, **AND**

VERIFY the following:

A. On Handswitch 2-HS-30-78C, LOWER COMPT COOLER 2D-B:

- Green Light ON _____
- Red Light OFF _____

B. At Breaker 2-BKR-30-78, LOWER COMPT COOLER 2D-B (2-CCU-30-78):

- Green Light ON _____
- Red Light OFF _____

C. Locally:

- Cooler 2-CCU-30-78, CNTMT LOWER COMPARTMENT COOLER 2D-B, is OFF. _____
- Valve 2-TCV-67-108, LWR CNTMT VENT CLR 2D-B OUT TEMP CNTL, is CLOSED. **(Acc Crit)** _____

[18] **PLACE** Transfer Switch 2-XS-30-78, LOWER COMPT COOLER 2D-B, to NORMAL. _____

[19] **PLACE** Transfer Switch 2-XS-67-108, LWR CNTMT CLR D-B ERCW OUTLET TCV to NOR. _____

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6.1.4 Lower Compartment Cooler 2D-B Logic (continued)

[20] VERIFY the following:

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

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

**B. On 2-XX-55-6F, Train B CISP, Window 104,
LWR CNTMT D FAN-30-78:**

- Green Light ON _____
- Red Light OFF _____

C. Annunciation and Alarms:

- 2-XA-55-6E-138E, PANEL M-9 MOTOR TRIPOUT,
is CLEAR. _____
- Motor Tripout Buzzer, [2-M-2], is OFF. _____
- 2-XA-55-6F-150B,
480 SD BD 2B1-B/2B2-B/CA VT BD 2B1-B,
is CLEAR. _____
- Unit 2 Alarm Events Display Screen indicates
150-B 480 SD BD 2B1-B/2B2-B XS IN AUX,
is NORMAL (Green). _____

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6.1.4 Lower Compartment Cooler 2D-B Logic (continued)

[21] **RACK** Breaker 2-BKR-30-78, LOWER COMPT COOLER 2D-B (2-CCU-30-78), to the REMOVED position. _____

[22] **REMOVE** front cover of Breaker 2-BKR-30-78, LOWER COMPT COOLER 2D-B (2-CCU-30-78). _____

1st

CV

[23] **PLACE** Breaker 2-BKR-30-78, LOWER COMPT COOLER 2D-B (2-CCU-30-78), Overload Trips Switch (OTS) mechanical lever (DTA plunger) to the TRIP position. _____

[24] **INSTALL** front cover of Breaker 2-BKR-30-78, LOWER COMPT COOLER 2D-B (2-CCU-30-78). _____

1st

CV

[25] **RACK** Breaker 2-BKR-30-78, LOWER COMPT COOLER 2D-B (2-CCU-30-78), to the CONNECTED position. _____

[26] **VERIFY** the following:

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

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

B. Annunciation and Alarms:

- 2-XA-55-6E-138E, PANEL M-9 MOTOR TRIPOUT, is in ALARM. _____
- Unit 2 Alarm Events Display Screen indicates 138-E PANEL M-9 MOTOR TRIPOUT, is in ALARM (Red). _____
- Motor Tripout Buzzer is ON. _____

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6.1.4 Lower Compartment Cooler 2D-B Logic (continued)

NOTES

- 1) The following step will electrically reset the Overload Trip Switch (OTS) for Breaker 2-BKR-30-78. Refer to Precaution 3.0H for further details.
- 2) If the following step does not reset the OTS, then the OTS may be reset manually by pressing the OTS Reset button on the front of the Breaker, and a Test Deficiency Notice shall be initiated.

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

PLACING Handswitch 2-HS-30-78A, LWR CNTMT CLR D-B,
to STOP, **AND**

VERIFY the following:

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

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

B. Annunciation and Alarms:

- 2-XA-55-6E-138E, PANEL M-9 MOTOR TRIPOUT,
is CLEAR. _____
- Unit 2 Alarm Events Display Screen indicates
138-E PANEL M-9 MOTOR TRIPOUT,
is NORMAL (Green). _____
- Motor Tripout Buzzer is OFF. _____

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6.1.4 Lower Compartment Cooler 2D-B Logic (continued)

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

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

PLACE that Handswitch in A AUTO.

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

As-Found: _____

As Left: _____

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

As-Found: _____

As Left: _____

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

As-Found: _____

As Left: _____

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

As-Found: _____

As Left: _____

[29] **VERIFY** ICS Point HD2064, VENT SYS HS-39A, 78A, 75A, 92A, 80A, displays NOT P-L.

[30] **PLACE** Handswitch 2-HS-30-78A, LWR CNTMT CLR D-B, in STOP PULL TO LOCK, **AND**

VERIFY ICS Point HD2064, VENT SYS HS-39A, 78A, 75A, 92A, 80A, displays PULLT-L.

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6.1.4 Lower Compartment Cooler 2D-B Logic (continued)

- [31] **ENSURE** the following Handswitches are returned to their As-Found position recorded in Step 6.1.4[28].
(The As-Left position recorded in this step should match the As-Found position recorded in Step 6.1.4[28].)

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

As-Found: _____

As Left: _____

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

As-Found: _____

As Left: _____

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

As-Found: _____

As Left: _____

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

As-Found: _____

As Left: _____

- [32] **ENSURE** ERCW Temperature Indicating Controller 2-TIC-67-108, LOWER CNTMT VENT CLR 2D TEMP CNTL, is returned to its As-Found positions recorded in Step 4.3[5]D.

Auto/Manual Status: _____

Indicated Controller Setpoint: _____

Indicated Controller Output: _____

1st

CV

- [33] **VERIFY** successful completion of this SubSection 6.1.4.
(Acc Crit)

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6.2 Lower Compartment Coolers Response to Phase B Containment Isolation Signal

NOTE

SubSubsections 6.2.1 and 6.2.2 may be performed in any order, provided their applicable predecessor SubSections are completed. Unless otherwise noted, the steps within each SubSection shall be performed in the order written. The diagram at the beginning of Section 6.0 may be used as a placekeeping tool throughout the performance of this Section.

6.2.1 Train A Lower Compartment Coolers (2A-A and 2C-A)

- [1] **ENSURE** all prerequisites listed in Section 4.0 for SubSection 6.2 have been completed. _____
- [2] **ENSURE** SubSections 6.1.1 and 6.1.3 have been completed. _____
- [3] **PLACE** Handswitch 2-HS-30-74A, LWR CNTMT CLR A-A, to START, **AND**

VERIFY on Handswitch 2-HS-30-74A:
 - Green Light OFF _____
 - Red Light ON _____
- [4] **PLACE** Handswitch 2-HS-30-77A, LWR CNTMT CLR C-A, to START, **AND**

VERIFY on Handswitch 2-HS-30-77A:
 - Green Light OFF _____
 - Red Light ON _____
- [5] **ENSURE** the following Control Rod Drive Mechanism coolers are OFF:
 - 2-CLR-30-83, CRDM COOLER 2A-A _____
 - 2-CLR-30-88, CRDM COOLER 2C-A _____

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6.2.1 Train A Lower Compartment Coolers (2A-A and 2C-A) (continued)

NOTE

The following steps will simulate a Train A Phase B Containment Isolation Signal and Phase B signal reset by closing and opening a test switch (TS-1, installed in step 4.3[11.1]) in SSPS Train A Output Cabinet 2-R-48.

- [6] **PLACE** Test Switch TS-1 in the CLOSED (ON) position. _____
- [7] **VERIFY** the following:
 - A. On Handswitch 2-HS-30-74A, LWR CNTMT CLR A-A:
 - Green Light ON (**Acc Crit**) _____
 - Red Light OFF (**Acc Crit**) _____
 - B. On Handswitch 2-HS-30-77A, LWR CNTMT CLR C-A:
 - Green Light ON (**Acc Crit**) _____
 - Red Light OFF (**Acc Crit**) _____
- [8] **PLACE** Test Switch TS-1 in the OPEN (OFF) position. _____
- [9] **VERIFY** the following:
 - A. On Handswitch 2-HS-30-74A, LWR CNTMT CLR A-A:
 - Green Light ON (**Acc Crit**) _____
 - Red Light OFF (**Acc Crit**) _____
 - B. On Handswitch 2-HS-30-77A, LWR CNTMT CLR C-A:
 - Green Light ON (**Acc Crit**) _____
 - Red Light OFF (**Acc Crit**) _____
- [10] **PLACE** the following Transfer Switches in AUX:
 - A. 2-XS-30-74, LOWER COMPT COOLER 2A-A _____
 - B. 2-XS-30-77, LOWER COMPT COOLER 2C-A _____

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**6.2.1 Train A Lower Compartment Coolers (2A-A and 2C-A)
(continued)**

[11] **PLACE** Test Switch TS-1 in the CLOSED (ON) position. _____

[12] **VERIFY** the following:

A. On Handswitch 2-HS-30-74C, LOWER COMPT COOLER 2A-A:

- Green Light ON _____
- Red Light OFF _____

B. On Handswitch 2-HS-30-77C, LOWER COMPT COOLER 2C-A:

- Green Light ON _____
- Red Light OFF _____

[13] **PLACE** Handswitch 2-HS-30-74C, LOWER COMPT COOLER 2A-A, to CLOSE, **AND**

VERIFY the following on Handswitch 2-HS-30-74C:

- Green Light OFF (**Acc Crit**) _____
- Red Light ON (**Acc Crit**) _____

[14] **PLACE** Handswitch 2-HS-30-74C, LOWER COMPT COOLER 2A-A, to TRIP, **AND**

VERIFY the following on Handswitch 2-HS-30-74C:

- Green Light ON _____
- Red Light OFF _____

[15] **PLACE** Handswitch 2-HS-30-77C, LOWER COMPT COOLER 2C-A, to CLOSE, **AND**

VERIFY the following on Handswitch 2-HS-30-77C:

- Green Light OFF (**Acc Crit**) _____
- Red Light ON (**Acc Crit**) _____

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**6.2.1 Train A Lower Compartment Coolers (2A-A and 2C-A)
(continued)**

[16] **PLACE** Handswitch 2-HS-30-77C, LOWER COMPT COOLER 2C-A, to TRIP, **AND**

VERIFY the following on Handswitch 2-HS-30-77C:

- Green Light ON _____
- Red Light OFF _____

[17] **PLACE** Test Switch TS-1 in the OPEN (OFF) position. _____

[18] **VERIFY** the following:

A. On Handswitch 2-HS-30-74C, LOWER COMPT COOLER 2A-A:

- Green Light ON _____
- Red Light OFF _____

B. On Handswitch 2-HS-30-77C, LOWER COMPT COOLER 2C-A:

- Green Light ON _____
- Red Light OFF _____

[19] **PLACE** the following Transfer Switches in NORMAL:

- A. 2-XS-30-74, LOWER COMPT COOLER 2A-A _____
- B. 2-XS-30-77, LOWER COMPT COOLER 2C-A _____

[20] **PLACE** the following Handswitches in STOP PULL TO LOCK:

- A. 2-HS-30-74A, LWR CNTMT CLR A-A _____
- B. 2-HS-30-77A, LWR CNTMT CLR C-A _____

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6.2.2 Train B Lower Compartment Coolers (2B-B and 2D-B)

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

[2] **ENSURE** SubSections 6.1.2 and 6.1.4 have been completed. _____

[3] **PLACE** Handswitch 2-HS-30-75A, LWR CNTMT CLR B-B, to START, **AND**

VERIFY on Handswitch 2-HS-30-75A:

- Green Light OFF _____
- Red Light ON _____

[4] **PLACE** Handswitch 2-HS-30-78A, LWR CNTMT CLR D-B, to START, **AND**

VERIFY on Handswitch 2-HS-30-78A:

- Green Light OFF _____
- Red Light ON _____

[5] **ENSURE** the following Control Rod Drive Mechanism coolers are OFF:

- 2-CLR-30-92, CRDM COOLER 2B-B _____
- 2-CLR-30-80, CRDM COOLER 2D-B _____

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6.2.2 Train B Lower Compartment Coolers (2B-B and 2D-B) (continued)

NOTE

The following steps will simulate a Train B Phase B Containment Isolation Signal and Phase B signal reset by closing and opening a test switch (TS-2, installed in step 4.3[11.2]) in SSPS Train B Output Cabinet 2-R-51.

- [6] **PLACE** Test Switch TS-2 in the CLOSED (ON) position. _____
- [7] **VERIFY** the following:
- A. On Handswitch 2-HS-30-75A, LWR CNTMT CLR B-B:
- Green Light ON (**Acc Crit**) _____
 - Red Light OFF (**Acc Crit**) _____
- B. On Handswitch 2-HS-30-78A, LWR CNTMT CLR D-B:
- Green Light ON (**Acc Crit**) _____
 - Red Light OFF (**Acc Crit**) _____
- [8] **PLACE** Test Switch TS-2 in the OPEN (OFF) position. _____
- [9] **VERIFY** the following:
- A. On Handswitch 2-HS-30-75A, LWR CNTMT CLR B-B:
- Green Light ON (**Acc Crit**) _____
 - Red Light OFF (**Acc Crit**) _____
- B. On Handswitch 2-HS-30-78A, LWR CNTMT CLR D-B:
- Green Light ON (**Acc Crit**) _____
 - Red Light OFF (**Acc Crit**) _____
- [10] **PLACE** the following Transfer Switches in AUX:
- A. 2-XS-30-75, LOWER COMPT COOLER 2B-B _____
- B. 2-XS-30-78, LOWER COMPT COOLER 2D-B _____

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6.2.2 Train B Lower Compartment Coolers (2B-B and 2D-B) (continued)

[11] **PLACE** Test Switch TS-2 in the CLOSED (ON) position. _____

[12] **VERIFY** the following:

A. On Handswitch 2-HS-30-75C, LOWER COMPT COOLER 2B-B:

- Green Light ON _____
- Red Light OFF _____

B. On Handswitch 2-HS-30-78C, LOWER COMPT COOLER 2D-B:

- Green Light ON _____
- Red Light OFF _____

[13] **PLACE** Handswitch 2-HS-30-75C, LOWER COMPT COOLER 2B-B, to CLOSE, **AND**

VERIFY the following on Handswitch 2-HS-30-75C:

- Green Light OFF (**Acc Crit**) _____
- Red Light ON (**Acc Crit**) _____

[14] **PLACE** Handswitch 2-HS-30-75C, LOWER COMPT COOLER 2B-B, to TRIP, **AND**

VERIFY the following on Handswitch 2-HS-30-75C:

- Green Light ON _____
- Red Light OFF _____

[15] **PLACE** Handswitch 2-HS-30-78C, LOWER COMPT COOLER 2D-B, to CLOSE, **AND**

VERIFY the following on Handswitch 2-HS-30-78C:

- Green Light OFF (**Acc Crit**) _____
- Red Light ON (**Acc Crit**) _____

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**6.2.2 Train B Lower Compartment Coolers (2B-B and 2D-B)
(continued)**

[16] **PLACE** Handswitch 2-HS-30-78C, LOWER COMPT COOLER 2D-B, to TRIP, **AND**

VERIFY the following on Handswitch 2-HS-30-78C:

- Green Light ON _____
- Red Light OFF _____

[17] **PLACE** Test Switch TS-2 in the OPEN (OFF) position. _____

[18] **VERIFY** the following:

A. On Handswitch 2-HS-30-75C, LOWER COMPT COOLER 2B-B:

- Green Light ON _____
- Red Light OFF _____

B. On Handswitch 2-HS-30-78C, LOWER COMPT COOLER 2D-B:

- Green Light ON _____
- Red Light OFF _____

[19] **PLACE** the following Transfer Switches in NORMAL:

A. 2-XS-30-75, LOWER COMPT COOLER 2B-B _____

B. 2-XS-30-78, LOWER COMPT COOLER 2D-B _____

[20] **PLACE** the following Handswitches in STOP PULL TO LOCK:

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

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

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6.3 Lower Compartment Coolers Response to Bus Undervoltage

NOTE

SubSubsections 6.3.1 through 6.3.4 may be performed in any order, provided their applicable predecessor SubSection is completed. Unless otherwise noted, the steps within each SubSection shall be performed in the order written. The diagram at the beginning of Section 6.0 may be used as a placekeeping tool throughout the performance of this Section.

6.3.1 Lower Compartment Cooler 2A-A

- [1] **ENSURE** all prerequisites listed in Section 4.0 for SubSection 6.3 have been completed. _____
- [2] **ENSURE** SubSection 6.1.1 has been completed. _____
- [3] **ENSURE** Handswitch 2-HS-30-83A, CRDM CLR A-A, is in STOP PULL TO LOCK. _____
- [4] **PLACE** Handswitch 2-HS-30-74A, LWR CNTMT CLR A-A, to START, **AND**

VERIFY on Handswitch 2-HS-30-74A:

- Green Light OFF _____
- Red Light ON _____

NOTE

The following step will simulate a Loss of Offsite Power.

- [5] **MOMENTARILY PLACE** a handheld jumper between Terminal Point 7 (Wire A17CTP) and Point 8 (Wire A17CT1) of Relay 2A1Y1, [480V SHUTDOWN BOARD 2A1-A, Compartment 6A]. (Drawing 618F938)

1st

CV

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6.3.1 Lower Compartment Cooler 2A-A (continued)

[6] **VERIFY** on Handswitch 2-HS-30-74A, LWR CNTMT CLR A-A:

- Green Light ON (**Acc Crit**) _____
- Red Light OFF (**Acc Crit**) _____

NOTE

The following step will simulate a restoration of bus voltage.

[7] **MOMENTARILY PLACE** a handheld jumper between Terminal Point 3 (Wire DCE4) and Point 4 (Wire DCE5) of Relay 2A1X1, [480V SHUTDOWN BOARD 2A1-A, Compartment 6A].
(Drawing 618F938)

1st

CV

[8] **VERIFY** that LCC 2A-A remains OFF after approximately 1 minute, as indicated on Handswitch 2-HS-30-74A, LWR CNTMT CLR A-A:

- Green Light ON (**Acc Crit**) _____
- Red Light OFF (**Acc Crit**) _____

[9] **PLACE** Transfer Switch 2-XS-30-74, LOWER COMPT COOLER 2A-A in AUX. _____

[10] **PLACE** Handswitch 2-HS-30-74C, LOWER COMPT COOLER 2A-A, to CLOSE, **AND**

VERIFY the following on Handswitch 2-HS-30-74C:

- Green Light OFF _____
- Red Light ON _____

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6.3.1 Lower Compartment Cooler 2A-A (continued)

NOTE

The following step will simulate a Loss of Offsite Power.

- [11] **MOMENTARILY PLACE** a handheld jumper between Terminal Point 7 (Wire A17CTP) and Point 8 (Wire A17CT1) of Relay 2A1Y1. (Drawing 618F938)

1st

CV

- [12] **VERIFY** on Handswitch 2-HS-30-74C, LOWER COMPT COOLER 2A-A:

- Green Light ON (**Acc Crit**)
- Red Light OFF (**Acc Crit**)

NOTE

The following step will simulate a restoration of bus voltage.

- [13] **MOMENTARILY PLACE** a handheld jumper between Terminal Point 3 (Wire DCE4) and Point 4 (Wire DCE5) of Relay 2A1X1. (Drawing 618F938)

1st

CV

- [14] **VERIFY** that LCC 2A-A STARTS after approximately 1 minute, as indicated on Handswitch 2-HS-30-74C, LOWER COMPT COOLER 2A-A:

- Green Light OFF (**Acc Crit**)
- Red Light ON (**Acc Crit**)

- [15] **PLACE** Transfer Switch 2-XS-30-74, LOWER COMPT COOLER 2A-A in NORMAL.

- [16] **PLACE** Handswitch 2-HS-30-74A, LWR CNTMT CLR A-A, in STOP PULL TO LOCK.

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6.3.2 Lower Compartment Cooler 2B-B

- [1] **ENSURE** all prerequisites listed in Section 4.0 for SubSection 6.3 have been completed. _____
- [2] **ENSURE** SubSection 6.1.2 has been completed. _____
- [3] **ENSURE** Handswitch 2-HS-30-92A, CRDM CLR B-B, is in STOP PULL TO LOCK. _____
- [4] **PLACE** Handswitch 2-HS-30-75A, LWR CNTMT CLR B-B, to START, **AND**

VERIFY on Handswitch 2-HS-30-75A:
 - Green Light OFF _____
 - Red Light ON _____

NOTE

The following step will simulate a Loss of Offsite Power.

- [5] **MOMENTARILY PLACE** a handheld jumper between Terminal Point 7 (Wire B17DTP) and Point 8 (Wire B17DT1) of Relay 2B1Y1, [480V SHUTDOWN BOARD 2B1-B, Compartment 6A]. (Drawing 618F941)

1st

CV
- [6] **VERIFY** on Handswitch 2-HS-30-75A, LWR CNTMT CLR B-B:
 - Green Light ON (**Acc Crit**) _____
 - Red Light OFF (**Acc Crit**) _____

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6.3.2 Lower Compartment Cooler 2B-B (continued)

NOTE

The following step will simulate a restoration of bus voltage.

- [7] **MOMENTARILY PLACE** a handheld jumper between Terminal Point 3 (Wire DCE4) and Point 4 (Wire DCE5) of Relay 2B1X1, [480V SHUTDOWN BOARD 2B1-B, Compartment 6A].
(Drawing 618F941)

1st

CV

- [8] **VERIFY** that LCC 2B-B remains OFF after approximately 1 minute, as indicated on Handswitch 2-HS-30-75A, LWR CNTMT CLR 2B-B:

- Green Light ON **(Acc Crit)**
- Red Light OFF **(Acc Crit)**

- [9] **PLACE** Transfer Switch 2-XS-30-75, LOWER COMPT COOLER 2B-B in AUX.

- [10] **PLACE** Handswitch 2-HS-30-75C, LOWER COMPT COOLER 2B-B, to CLOSE, **AND**

VERIFY the following on Handswitch 2-HS-30-75C:

- Green Light OFF
- Red Light ON

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6.3.2 Lower Compartment Cooler 2B-B (continued)

NOTE

The following step will simulate a Loss of Offsite Power.

- [11] **MOMENTARILY PLACE** a handheld jumper between Terminal Point 7 (Wire B17DTP) and Point 8 (Wire B17DT1) of Relay 2B1Y1. (Drawing 618F941)

1st

CV

- [12] **VERIFY** on Handswitch 2-HS-30-75C, LOWER COMPT COOLER 2B-B:

- Green Light ON (**Acc Crit**)
- Red Light OFF (**Acc Crit**)

NOTE

The following step will simulate a restoration of bus voltage.

- [13] **MOMENTARILY PLACE** a handheld jumper between Terminal Point 3 (Wire DCE4) and Point 4 (Wire DCE5) of Relay 2B1X1. (Drawing 618F941)

1st

CV

- [14] **VERIFY** that LCC 2B-B STARTS after approximately 1 minute, as indicated on Handswitch 2-HS-30-75C, LOWER COMPT COOLER 2B-B:

- Green Light OFF (**Acc Crit**)
- Red Light ON (**Acc Crit**)

- [15] **PLACE** Transfer Switch 2-XS-30-75, LOWER COMPT COOLER 2B-B in NORMAL.

- [16] **PLACE** Handswitch 2-HS-30-75A, LWR CNTMT CLR B-B, in STOP PULL TO LOCK.

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6.3.3 Lower Compartment Cooler 2C-A

- [1] **ENSURE** all prerequisites listed in Section 4.0 for SubSection 6.3 have been completed. _____
- [2] **ENSURE** SubSection 6.1.3 has been completed. _____
- [3] **ENSURE** Handswitch 2-HS-30-88A, CRDM CLR C-A, is in STOP PULL TO LOCK. _____
- [4] **PLACE** Handswitch 2-HS-30-77A, LWR CNTMT CLR C-A, to START, **AND**

VERIFY on Handswitch 2-HS-30-77A:
 - Green Light OFF _____
 - Red Light ON _____

NOTE

The following step will simulate a Loss of Offsite Power.

- [5] **MOMENTARILY PLACE** a handheld jumper between Terminal Point 7 (Wire A27DTP) and Point 8 (Wire A27DT1) of Relay 2A2Y1, [480V SHUTDOWN BOARD 2A2-A, Compartment 6A]. (Drawing 6947D67)

1st

CV
- [6] **VERIFY** on Handswitch 2-HS-30-77A, LWR CNTMT CLR C-A:
 - Green Light ON (**Acc Crit**) _____
 - Red Light OFF (**Acc Crit**) _____

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6.3.3 Lower Compartment Cooler 2C-A (continued)

NOTE

The following step will simulate a restoration of bus voltage.

- [7] **MOMENTARILY PLACE** a handheld jumper between Terminal Point 3 (Wire DCE4) and Point 4 (Wire DCE5) of Relay 2A2X1, [480V SHUTDOWN BOARD 2A2-A, Compartment 6A].
(Drawing 6947D67)

1st

CV

- [8] **VERIFY** that LCC 2C-A remains OFF after approximately 1 minute, as indicated on Handswitch 2-HS-30-77A, LWR CNTMT CLR 2C-A:

- Green Light ON (**Acc Crit**)
- Red Light OFF (**Acc Crit**)

- [9] **PLACE** Transfer Switch 2-XS-30-77, LOWER COMPT COOLER 2C-A in AUX.

- [10] **PLACE** Handswitch 2-HS-30-77C, LOWER COMPT COOLER 2C-A, to CLOSE, **AND**

VERIFY the following on Handswitch 2-HS-30-77C:

- Green Light OFF
- Red Light ON

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6.3.3 Lower Compartment Cooler 2C-A (continued)

NOTE

The following step will simulate a Loss of Offsite Power.

- [11] **MOMENTARILY PLACE** a handheld jumper between Terminal Point 7 (Wire A27DTP) and Point 8 (Wire A27DT1) of Relay 2A2Y1. (Drawing 6947D67)

1st

CV

- [12] **VERIFY** on Handswitch 2-HS-30-77C, LOWER COMPT COOLER 2C-A:

- Green Light ON (**Acc Crit**)
- Red Light OFF (**Acc Crit**)

NOTE

The following step will simulate a restoration of bus voltage.

- [13] **MOMENTARILY PLACE** a handheld jumper between Terminal Point 3 (Wire DCE4) and Point 4 (Wire DCE5) of Relay 2A2X1. (Drawing 6947D67)

1st

CV

- [14] **VERIFY** that LCC 2C-A STARTS after approximately 1 minute, as indicated on Handswitch 2-HS-30-77C, LOWER COMPT COOLER 2C-A:

- Green Light OFF (**Acc Crit**)
- Red Light ON (**Acc Crit**)

- [15] **PLACE** Transfer Switch 2-XS-30-77, LOWER COMPT COOLER 2C-A in NORMAL.

- [16] **PLACE** Handswitch 2-HS-30-77A, LWR CNTMT CLR C-A, in STOP PULL TO LOCK.

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6.3.4 Lower Compartment Cooler 2D-B

- [1] **ENSURE** all prerequisites listed in Section 4.0 for SubSection 6.3 have been completed. _____
- [2] **ENSURE** SubSection 6.1.4 has been completed. _____
- [3] **ENSURE** Handswitch 2-HS-30-80A, CRDM CLR D-B, is in STOP PULL TO LOCK. _____
- [4] **PLACE** Handswitch 2-HS-30-78A, LWR CNTMT CLR D-B, to START, **AND**

VERIFY on Handswitch 2-HS-30-78A:
 - Green Light OFF _____
 - Red Light ON _____

NOTE

The following step will simulate a Loss of Offsite Power.

- [5] **MOMENTARILY PLACE** a handheld jumper between Terminal Point 7 (Wire B27DTP) and Point 8 (Wire B27DT1) of Relay 2B2Y1, [480V SHUTDOWN BOARD 2B2-B, Compartment 6A]. (Drawing 6947D85)

1st

CV
- [6] **VERIFY** on Handswitch 2-HS-30-78A, LWR CNTMT CLR D-B:
 - Green Light ON (**Acc Crit**) _____
 - Red Light OFF (**Acc Crit**) _____

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6.3.4 Lower Compartment Cooler 2D-B (continued)

NOTE

The following step will simulate a restoration of bus voltage.

- [7] **MOMENTARILY PLACE** a handheld jumper between Terminal Point 3 (Wire DCE4) and Point 4 (Wire DCE5) of Relay 2B2X1, [480V SHUTDOWN BOARD 2B2-B, Compartment 6A].
(Drawing 6947D85)

1st

CV

- [8] **VERIFY** that LCC 2D-B remains OFF after approximately 1 minute, as indicated on Handswitch 2-HS-30-78A, LWR CNTMT CLR 2D-B:

- Green Light ON **(Acc Crit)**
- Red Light OFF **(Acc Crit)**

- [9] **PLACE** Transfer Switch 2-XS-30-78, LOWER COMPT COOLER 2D-B in AUX.

- [10] **PLACE** Handswitch 2-HS-30-78C, LOWER COMPT COOLER 2D-B, to CLOSE, **AND**

VERIFY the following on Handswitch 2-HS-30-78C:

- Green Light OFF
- Red Light ON

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6.3.4 Lower Compartment Cooler 2D-B (continued)

NOTE

The following step will simulate a Loss of Offsite Power.

- [11] **MOMENTARILY PLACE** a handheld jumper between Terminal Point 7 (Wire B27DTP) and Point 8 (Wire B27DT1) of Relay 2B2Y1. (Drawing 6947D85)

1st

CV

- [12] **VERIFY** on Handswitch 2-HS-30-78C, LOWER COMPT COOLER 2D-B:

- Green Light ON (**Acc Crit**)
- Red Light OFF (**Acc Crit**)

NOTE

The following step will simulate a restoration of bus voltage.

- [13] **MOMENTARILY PLACE** a handheld jumper between Terminal Point 3 (Wire DCE4) and Point 4 (Wire DCE5) of Relay 2B2X1. (Drawing 6947D85)

1st

CV

- [14] **VERIFY** that LCC 2D-B STARTS after approximately 1 minute, as indicated on Handswitch 2-HS-30-78C, LOWER COMPT COOLER 2D-B:

- Green Light OFF (**Acc Crit**)
- Red Light ON (**Acc Crit**)

- [15] **PLACE** Transfer Switch 2-XS-30-78, LOWER COMPT COOLER 2D-B in NORMAL.

- [16] **PLACE** Handswitch 2-HS-30-78A, LWR CNTMT CLR D-B, in STOP PULL TO LOCK.

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6.4 Lower Compartment Coolers Auto-Start on Low Air Flow

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

[2] **ENSURE** SubSections 6.1, 6.2 and 6.3 have been completed. _____

NOTE

The following step will enable the Train A LCCs' Auto-start on Low Flow function.

[3] **LAND** Wire A17C2 (lifted in step 4.3[12]) on point 8 of Terminal Block 65B5, inside the front panel of 480V SHUTDOWN BOARD 2A1-A, Compartment 6A. (Drawing 618F938) _____

1st

CV

NOTE

The following step will enable the Train B LCCs' Auto-start on Low Flow function.

[4] **LAND** Wire B17D2 (lifted in step 4.3[13]) on point 5 of Terminal Block 65B2, inside the front panel of 480V SHUTDOWN BOARD 2B1-B Compartment 6A. (Drawing 618F941) _____

1st

CV

[5] **PLACE** Handswitch 2-HS-30-74A, LWR CNTMT CLR A-A, to A AUTO, **AND**

VERIFY the following on Handswitch 2-HS-30-74A:

- Green Light ON _____
- Red Light OFF _____

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6.4 Lower Compartment Coolers Auto-Start on Low Air Flow (continued)

- [6] **PLACE** Handswitch 2-HS-30-75A, LWR CNTMT CLR B-B,
to START, **AND**

VERIFY the following on Handswitch 2-HS-30-75A:

- Green Light OFF _____
- Red Light ON _____

- [7] **PLACE** Handswitch 2-HS-30-77A, LWR CNTMT CLR C-A,
to START, **AND**

VERIFY the following on Handswitch 2-HS-30-77A:

- Green Light OFF _____
- Red Light ON _____

- [8] **PLACE** Handswitch 2-HS-30-78A, LWR CNTMT CLR D-B,
to START, **AND**

VERIFY the following on Handswitch 2-HS-30-78A:

- Green Light OFF _____
- Red Light ON _____

- [9] **PLACE** the following Transfer Switches to AUX:

- A. 2-XS-30-74, LOWER COMPT COOLER 2A-A _____
- B. 2-XS-30-75, LOWER COMPT COOLER 2B-B _____
- C. 2-XS-30-77, LOWER COMPT COOLER 2C-A _____
- D. 2-XS-30-78, LOWER COMPT COOLER 2D-B _____

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**6.4 Lower Compartment Coolers Auto-Start on Low Air Flow
(continued)**

- [10] **PLACE** and **HOLD** Handswitch 2-HS-30-75C, LOWER COMPT COOLER 2B-B, to TRIP, **AND**

VERIFY the following on Handswitch 2-HS-30-75C:

- Green Light ON _____
- Red Light OFF _____

- [11] **VERIFY** on Handswitch 2-HS-30-74C, LOWER COMPT COOLER 2A-A, that LCC 2A-A is ON. _____

- Green Light OFF (**Acc Crit**) _____
- Red Light ON (**Acc Crit**) _____

- [12] **RELEASE** Handswitch 2-HS-30-75C, LOWER COMPT COOLER 2B-B. _____

- [13] **PLACE** and **HOLD** Handswitch 2-HS-30-74C, LOWER COMPT COOLER 2A-A, to TRIP, **AND**

VERIFY the following on Handswitch 2-HS-30-74C:

- Green Light ON _____
- Red Light OFF _____

- [14] **VERIFY** on Handswitch 2-HS-30-75C, LOWER COMPT COOLER 2B-B, that LCC 2B-B is ON. _____

- Green Light OFF (**Acc Crit**) _____
- Red Light ON (**Acc Crit**) _____

- [15] **RELEASE** Handswitch 2-HS-30-74C, LOWER COMPT COOLER 2A-A, _____

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6.4 Lower Compartment Coolers Auto-Start on Low Air Flow (continued)

- [16] **PLACE** and **HOLD** Handswitch 2-HS-30-77C, LOWER COMPT COOLER 2C-A, to TRIP, **AND**

VERIFY the following on Handswitch 2-HS-30-77C:

- Green Light ON _____
- Red Light OFF _____

- [17] **VERIFY** on Handswitch 2-HS-30-74C, LOWER COMPT COOLER 2A-A, that LCC 2A-A is ON.

- Green Light OFF (**Acc Crit**) _____
- Red Light ON (**Acc Crit**) _____

- [18] **RELEASE** Handswitch 2-HS-30-77C, LOWER COMPT COOLER 2C-A. _____

- [19] **PLACE** and **HOLD** Handswitch 2-HS-30-74C, LOWER COMPT COOLER 2A-A, to TRIP, **AND**

VERIFY the following on Handswitch 2-HS-30-74C:

- Green Light ON _____
- Red Light OFF _____

- [20] **VERIFY** on Handswitch 2-HS-30-77C, LOWER COMPT COOLER 2C-A, that LCC 2C-A is ON.

- Green Light OFF (**Acc Crit**) _____
- Red Light ON (**Acc Crit**) _____

- [21] **RELEASE** Handswitch 2-HS-30-74C, LOWER COMPT COOLER 2A-A. _____

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6.4 Lower Compartment Coolers Auto-Start on Low Air Flow (continued)

[22] **PLACE** and **HOLD** Handswitch 2-HS-30-78C, LOWER COMPT COOLER 2D-B, to TRIP, **AND**

VERIFY the following on Handswitch 2-HS-30-78C:

- Green Light ON _____
- Red Light OFF _____

[23] **VERIFY** on Handswitch 2-HS-30-74C, LOWER COMPT COOLER 2A-A, that LCC 2A-A is ON.

- Green Light OFF (**Acc Crit**) _____
- Red Light ON (**Acc Crit**) _____

[24] **RELEASE** Handswitch 2-HS-30-78C, LOWER COMPT COOLER 2D-B. _____

[25] **PLACE** and **HOLD** Handswitch 2-HS-30-74C, LOWER COMPT COOLER 2A-A, to TRIP, **AND**

VERIFY the following on Handswitch 2-HS-30-74C:

- Green Light ON _____
- Red Light OFF _____

[26] **VERIFY** on Handswitch 2-HS-30-78C, LOWER COMPT COOLER 2D-B, that LCC 2D-B is ON.

- Green Light OFF (**Acc Crit**) _____
- Red Light ON (**Acc Crit**) _____

[27] **RELEASE** Handswitch 2-HS-30-74C, LOWER COMPT COOLER 2A-A. _____

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6.4 Lower Compartment Coolers Auto-Start on Low Air Flow (continued)

[28] **PLACE** Handswitch 2-HS-30-74C, LOWER COMPT COOLER 2A-A, to CLOSE, **AND**

VERIFY the following on Handswitch 2-HS-30-74C:

- Green Light OFF _____
- Red Light ON _____

[29] **PLACE** Handswitch 2-HS-30-75C, LOWER COMPT COOLER 2B-B, to TRIP, **AND**

VERIFY the following on Handswitch 2-HS-30-75C:

- Green Light ON _____
- Red Light OFF _____

[30] **PLACE** and **HOLD** Handswitch 2-HS-30-77C, LOWER COMPT COOLER 2C-A, to TRIP, **AND**

VERIFY the following on Handswitch 2-HS-30-77C:

- Green Light ON _____
- Red Light OFF _____

[31] **VERIFY** on Handswitch 2-HS-30-75C, LOWER COMPT COOLER 2B-B, that LCC 2B-B is ON.

- Green Light OFF (**Acc Crit**) _____
- Red Light ON (**Acc Crit**) _____

[32] **RELEASE** Handswitch 2-HS-30-77C, LOWER COMPT COOLER 2C-A. _____

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**6.4 Lower Compartment Coolers Auto-Start on Low Air Flow
(continued)**

[33] **PLACE** and **HOLD** Handswitch 2-HS-30-75C, LOWER COMPT COOLER 2B-B, to TRIP, **AND**

VERIFY the following on Handswitch 2-HS-30-75C:

- Green Light ON _____
- Red Light OFF _____

[34] **VERIFY** on Handswitch 2-HS-30-77C, LOWER COMPT COOLER 2C-A, that LCC 2C-A is ON.

- Green Light OFF (**Acc Crit**) _____
- Red Light ON (**Acc Crit**) _____

[35] **RELEASE** Handswitch 2-HS-30-75C, LOWER COMPT COOLER 2B-B. _____

[36] **PLACE** and **HOLD** Handswitch 2-HS-30-78C, LOWER COMPT COOLER 2D-B, to TRIP, **AND**

VERIFY the following on Handswitch 2-HS-30-78C:

- Green Light ON _____
- Red Light OFF _____

[37] **VERIFY** on Handswitch 2-HS-30-75C, LOWER COMPT COOLER 2B-B, that LCC 2B-B is ON.

- Green Light OFF (**Acc Crit**) _____
- Red Light ON (**Acc Crit**) _____

[38] **RELEASE** Handswitch 2-HS-30-78C, LOWER COMPT COOLER 2D-B. _____

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6.4 Lower Compartment Coolers Auto-Start on Low Air Flow (continued)

[39] **PLACE** and **HOLD** Handswitch 2-HS-30-75C, LOWER COMPT COOLER 2B-B, to TRIP, **AND**

VERIFY the following on Handswitch 2-HS-30-75C:

- Green Light ON _____
- Red Light OFF _____

[40] **VERIFY** on Handswitch 2-HS-30-78C, LOWER COMPT COOLER 2D-B, that LCC 2D-B is ON.

- Green Light OFF (**Acc Crit**) _____
- Red Light ON (**Acc Crit**) _____

[41] **RELEASE** Handswitch 2-HS-30-75C, LOWER COMPT COOLER 2B-B. _____

[42] **PLACE** Handswitch 2-HS-30-75C, LOWER COMPT COOLER 2B-B, to CLOSE, **AND**

VERIFY the following on Handswitch 2-HS-30-75C:

- Green Light OFF _____
- Red Light ON _____

[43] **PLACE** Handswitch 2-HS-30-77C, LOWER COMPT COOLER 2C-A, to TRIP, **AND**

VERIFY the following on Handswitch 2-HS-30-77C, LOWER COMPT COOLER 2C-A:

- Green Light ON _____
- Red Light OFF _____

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6.4 Lower Compartment Coolers Auto-Start on Low Air Flow (continued)

[44] **PLACE** and **HOLD** Handswitch 2-HS-30-78C, LOWER COMPT COOLER 2D-B, to TRIP, **AND**

VERIFY the following on Handswitch 2-HS-30-78C:

- Green Light ON _____
- Red Light OFF _____

[45] **VERIFY** on Handswitch 2-HS-30-77C, LOWER COMPT COOLER 2C-A, that LCC 2C-A is ON.

- Green Light OFF (**Acc Crit**) _____
- Red Light ON (**Acc Crit**) _____

[46] **RELEASE** Handswitch 2-HS-30-78C, LOWER COMPT COOLER 2D-B. _____

[47] **PLACE** and **HOLD** Handswitch 2-HS-30-77C, LOWER COMPT COOLER 2C-A, to TRIP, **AND**

VERIFY the following on Handswitch 2-HS-30-77C:

- Green Light ON _____
- Red Light OFF _____

[48] **VERIFY** on Handswitch 2-HS-30-78C, LOWER COMPT COOLER 2D-B, that LCC 2D-B is ON.

- Green Light OFF (**Acc Crit**) _____
- Red Light ON (**Acc Crit**) _____

[49] **RELEASE** Handswitch 2-HS-30-77C, LOWER COMPT COOLER 2C-A. _____

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**6.4 Lower Compartment Coolers Auto-Start on Low Air Flow
(continued)**

[50] **PLACE** the following Transfer Switches to NORMAL:

- A. 2-XS-30-74, LOWER COMPT COOLER 2A-A _____
- B. 2-XS-30-75, LOWER COMPT COOLER 2B-B _____
- C. 2-XS-30-77, LOWER COMPT COOLER 2C-A _____
- D. 2-XS-30-78, LOWER COMPT COOLER 2D-B _____

[51] **PLACE** the following Handswitches to STOP PULL TO LOCK:

- A. 2-HS-30-74A, LWR CNTMT CLR A-A _____
- B. 2-HS-30-75A, LWR CNTMT CLR B-B _____
- C. 2-HS-30-77A, LWR CNTMT CLR C-A _____
- D. 2-HS-30-78A, LWR CNTMT CLR D-B _____

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6.5 Lower Compartment Cooler Performance

- [1] **ENSURE** all prerequisites listed in Section 4.0 for SubSection 6.5 have been completed. _____
- [2] **ENSURE** motor operating data and air flow measurements for the following Lower Compartment Coolers have been performed using GTM-05, HVAC Air Balance:
 - A. 2-CCU-30-74, CNTMT LOWER COMPARTMENT COOLER 2A-A _____
 - B. 2-CCU-30-75, CNTMT LOWER COMPARTMENT COOLER 2B-B _____
 - C. 2-CCU-30-77, CNTMT LOWER COMPARTMENT COOLER 2C-A _____
 - D. 2-CCU-30-78, CNTMT LOWER COMPARTMENT COOLER 2D-B _____
- [3] **ENSURE** completed GTM-05 data sheets are attached to this instruction. _____

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6.5 Lower Compartment Cooler Performance (continued)

[4] **RECORD** the air flow measurement for each LCC individually,
AND

VERIFY it meets acceptance criteria:

A. 2-CCU-30-74, CNTMT LOWER COMPARTMENT
COOLER 2A-A

_____ CFM
Acc Crit: 48,700 CFM minimum

B. 2-CCU-30-75, CNTMT LOWER COMPARTMENT
COOLER 2B-B

_____ CFM
Acc Crit: 48,700 CFM minimum

C. 2-CCU-30-77, CNTMT LOWER COMPARTMENT
COOLER 2C-A

_____ CFM
Acc Crit: 48,700 CFM minimum

D. 2-CCU-30-78, CNTMT LOWER COMPARTMENT
COOLER 2D-B

_____ CFM
Acc Crit: 48,700 CFM minimum

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6.5 Lower Compartment Cooler Performance (continued)

[5] **RECORD** the air flow measurements for each combination of any three LCCs operating together, **AND**

VERIFY they meet acceptance criteria:

A. LCCs 2A-A, 2B-B, and 2C-A operating together:

- Total Air Flow to the Lower Compartment

CFM
Acc Crit: 146,000 CFM minimum

- Air flow to each Steam Generator Enclosure

S/G #1: _____ CFM

S/G #2: _____ CFM

S/G #3: _____ CFM

S/G #4: _____ CFM

Acc Crit: 5,625 CFM minimum
to each S/G enclosure

- Air Flow to the Pressurizer Cubicle

CFM
Acc Crit: 3,700 CFM minimum

- Air Flow to the Reactor Vessel Cavity

CFM
Acc Crit: 10,000 CFM minimum

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6.5 Lower Compartment Cooler Performance (continued)

B. LCCs 2A-A, 2C-A, and 2D-B operating together:

- Total Air Flow to the Lower Compartment

_____ CFM
Acc Crit: 146,000 CFM minimum

- Air flow to each Steam Generator Enclosure

S/G #1: _____ CFM

S/G #2: _____ CFM

S/G #3: _____ CFM

S/G #4: _____ CFM

Acc Crit: 5,625 CFM minimum
to each S/G enclosure

- Air Flow to the Pressurizer Cubicle

_____ CFM
Acc Crit: 3,700 CFM minimum

- Air Flow to the Reactor Vessel Cavity

_____ CFM
Acc Crit: 10,000 CFM minimum

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6.5 Lower Compartment Cooler Performance (continued)

C. LCCs 2A-A, 2B-B, and 2D-B operating together:

- Total Air Flow to the Lower Compartment

_____ CFM
Acc Crit: 146,000 CFM minimum

- Air flow to each Steam Generator Enclosure

S/G #1: _____ CFM

S/G #2: _____ CFM

S/G #3: _____ CFM

S/G #4: _____ CFM

Acc Crit: 5,625 CFM minimum
to each S/G enclosure

- Air Flow to the Pressurizer Cubicle

_____ CFM
Acc Crit: 3,700 CFM minimum

- Air Flow to the Reactor Vessel Cavity

_____ CFM
Acc Crit: 10,000 CFM minimum

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6.5 Lower Compartment Cooler Performance (continued)

D. LCCs 2B-B, 2C-A, and 2D-B operating together:

- Total Air Flow to the Lower Compartment

CFM
Acc Crit: 146,000 CFM minimum

- Air flow to each Steam Generator Enclosure

S/G #1: _____ CFM

S/G #2: _____ CFM

S/G #3: _____ CFM

S/G #4: _____ CFM

Acc Crit: 5,625 CFM minimum
to each S/G enclosure

- Air Flow to the Pressurizer Cubicle

CFM
Acc Crit: 3,700 CFM minimum

- Air Flow to the Reactor Vessel Cavity

CFM
Acc Crit: 10,000 CFM minimum

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6.5 Lower Compartment Cooler Performance (continued)

[6] **RECORD** the air flow measurements for each train of LCCs operating together, **AND**

VERIFY they meet acceptance criteria:

A. Train A:

LCCs 2A-A and 2C-A operating together:

- Total Air Flow to the Lower Compartment

_____ CFM
Acc Crit: 105,000 CFM minimum

- Air Flow to the Pressurizer Cubicle

_____ CFM
Acc Crit: 2,400 CFM minimum

- Air Flow to the Reactor Vessel Cavity

_____ CFM
Acc Crit: 6,700 CFM minimum

B. Train B:

LCCs 2B-B and 2D-B operating together:

- Total Air Flow to the Lower Compartment

_____ CFM
Acc Crit: 105,000 CFM minimum

- Air Flow to the Pressurizer Cubicle

_____ CFM
Acc Crit: 2,400 CFM minimum

- Air Flow to the Reactor Vessel Cavity

_____ CFM
Acc Crit: 6,700 CFM minimum

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6.5 Lower Compartment Cooler Performance (continued)

- [7] **RECORD** the following data obtained during operation of Train A LCCs (2A-A and 2C-A operating together) on Data Sheets 1 & 3:

- Motor Current _____
- Motor Voltage _____
- Atmospheric conditions _____

- [8] **RECORD** the following data obtained during operation of Train B LCCs (LCCs 2B-B and 2D-B operating together) on Data Sheets 2 & 4:

- Motor Current _____
- Motor Voltage _____
- Atmospheric conditions _____

- [9] **CALCULATE** the Motor Horsepower at Design Density (HPDD) for each LCC using Data Sheets 1 through 4. _____

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6.5 Lower Compartment Cooler Performance (continued)

[10] **RECORD** the HPDD of each LCC, **AND**

VERIFY they are less than or equal to the LCC Motor
Nameplate Horsepower:

- A. 2-CCU-30-74, CNTMT LOWER COMPARTMENT
COOLER 2A-A

HP
Acc Crit: 56 HP maximum

- B. 2-CCU-30-75, CNTMT LOWER COMPARTMENT
COOLER 2B-B

HP
Acc Crit: 56 HP maximum

- C. 2-CCU-30-77, CNTMT LOWER COMPARTMENT
COOLER 2C-A

HP
Acc Crit: 56 HP maximum

- D. 2-CCU-30-78, CNTMT LOWER COMPARTMENT
COOLER 2D-B

HP
Acc Crit: 56 HP maximum

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7.0 POST PERFORMANCE ACTIVITY

NOTE

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

- [1] **REMOVE** the switched jumpers installed in step 4.3[11] from the following locations:

- [1.1] Labeled TS-1:
In SSPS Train-A Output Cabinet 2-R-48, at TB615,
between Pt. 11 (2340VL) and Pt. 12 (Wire CNA1).
(Drawing 45N2676-4)

1st

CV

- [1.2] Labeled TS-2:
In SSPS Train-B Output Cabinet 2-R-51, at TB615,
between Pt. 11 (Wire 2435VL) and Pt. 12 (Wire CNB1).
(Drawing 45N2677-4)

1st

CV

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

- [3] **NOTIFY** the Unit 1 US/SRO/SM 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)
GTM-05			
FSAR Section 9.2.1 Section 9.4.7 Table 14.2-1, Sh 4 & 5 Table 14.2-1, Sh 38 & 39			
WBN2-30RB-4002			
G-37			
2-TSD-30H-1			
2-PTI-030L-01			
2-PTI-067-02-A			
2-PTI-067-02-B			
2-PTI-067-03			
MI-57.002			
SSD-2-LPT-67-84			
SSD-2-LPT-67-100			
SSD-2-LPT-67-92			
SSD-2-LPT-67-108			
VM-F180-3066			

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**Appendix C
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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 INITIAL/DATE
		INIT/DATE	INIT/DATE	YES	NO		
2-TE-30-211G		N/A			NO	N/A	N/A
2-TE-30-211H		N/A			NO	N/A	N/A
2-TE-30-211I		N/A			NO	N/A	N/A
2-TE-30-211J		N/A			NO	N/A	N/A
2-TE-30-211K		N/A			NO	N/A	N/A
2-TE-30-211L		N/A			NO	N/A	N/A
2-TE-30-211M		N/A			NO	N/A	N/A
2-TE-30-211N		N/A			NO	N/A	N/A
2-FS-30-74A/B		N/A			NO	N/A	N/A
2-FS-30-74C/D		N/A			NO	N/A	N/A
2-FS-30-75A/B		N/A			NO	N/A	N/A
2-FS-30-75C/D		N/A			NO	N/A	N/A

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**Appendix C
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PERMANENT PLANT INSTRUMENTATION LOG

Data Package: Page ____ of ____

Date _____

INSTRUMENT OR INSTRUMENT LOOP #	CAL DUE DATE	FILLED AND VENTED ¹	PLACED IN SERVICE ¹	USED FOR QUANTITATIVE ACC CRIT		POST-TEST CAL DATE ²	POST-TEST CALIBRATION ACCEPTABLE ² INITIAL/DATE
		INIT/DATE	INIT/DATE	YES	NO		
2-FS-30-77A/B		N/A			NO	N/A	N/A
2-FS-30-77C/D		N/A			NO	N/A	N/A
2-FS-30-78A/B		N/A			NO	N/A	N/A
2-FS-30-78C/D		N/A			NO	N/A	N/A
2-LPT-67-84		N/A			NO	N/A	N/A
2-LPT-67-92		N/A			NO	N/A	N/A
2-LPT-67-100		N/A			NO	N/A	N/A
2-LPT-67-108		N/A			NO	N/A	N/A

¹ These items may be initialed and dated by personnel performing the task. Instrumentation not required to be filled and vented may be identified as Not Applicable. (N/A)

² May be identified as Not Applicable (N/A) if instrument was not used to verify/record quantitative acceptance criteria data.

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**Appendix D
(Page 1 of 4)**

ELECTRICAL LINEUP

Data Package: Page ____ of ____

Date _____

IDENTIFICATION	LOCATION	NOMENCLATURE	POSITION	VERIFIED BY: INITIAL
Main Control Room				
2-HS-30-74A	2-M-9	LWR CNTMT CLR A-A	STOP PULL TO LOCK	
2-HS-30-75A	2-M-9	LWR CNTMT CLR B-B	STOP PULL TO LOCK	
2-HS-30-77A	2-M-9	LWR CNTMT CLR C-A	STOP PULL TO LOCK	
2-HS-30-78A	2-M-9	LWR CNTMT CLR D-B	STOP PULL TO LOCK	
2-HS-67-84A	0-M-27A	LWR CNTMT CLR A OUTLET TCV	P AUTO	
2-HS-67-92A	0-M-27A	LWR CNTMT CLR C OUTLET TCV	P AUTO	
2-HS-67-100A	0-M-27A	LWR CNTMT CLR B OUTLET TCV	P AUTO	
2-HS-67-108A	0-M-27A	LWR CNTMT CLR D OUTLET TCV	P AUTO	
Auxiliary Control Room				
2-XS-67-84	2-L-11A	LWR CNTMT CLR A-A ERCW OUTLET TCV	NOR	
2-XS-67-92	2-L-11A	LWR CNTMT CLR C-A ERCW OUTLET TCV	NOR	
2-XS-67-100	2-L-11B	LWR CNTMT CLR B-B ERCW OUTLET TCV	NOR	
2-XS-67-108	2-L-11B	LWR CNTMT CLR D-B ERCW OUTLET TCV	NOR	
2-HS-67-84C	2-L-10	LWR CNTMT CLR A-A ERCW OUTLET TCV	P AUTO	
2-XS-67-92C	2-L-10	LWR CNTMT CLR C-A ERCW OUTLET TCV	P AUTO	
2-HS-67-100C	2-L-10	LWR CNTMT CLR B-B ERCW OUTLET TCV	P AUTO	
2-HS-67-108C	2-L-10	LWR CNTMT CLR D-B ERCW OUTLET TCV	P AUTO	

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**Appendix D
(Page 2 of 4)**

ELECTRICAL LINEUP

Data Package: Page ____ of ____

Date _____

IDENTIFICATION	LOCATION	NOMENCLATURE	POSITION	VERIFIED BY: INITIAL
480V Shutdown Board Room 2A				
2-BKR-30-74	480V SHUTDOWN BOARD 2A1-A, Compartment 7C	LOWER COMPT COOLER 2A-A (2-CCU-30-74)	DISCONNECTED	
2-HS-30-74C	480V SHUTDOWN BOARD 2A1-A, Compartment 5A	LOWER COMPT COOLER 2A-A	AUTO	
2-XS-30-74	480V SHUTDOWN BOARD 2A1-A, Compartment 5A	LOWER COMPT COOLER 2A-A	NORMAL	
2-BKR-30-77	480V SHUTDOWN BOARD 2A2-A, Compartment 7D	LOWER COMPT COOLER 2C-A (2-CCU-30-77)	DISCONNECTED	
2-HS-30-77C	480V SHUTDOWN BOARD 2A2-A, Compartment 5A	LOWER COMPT COOLER 2C-A	AUTO	
2-XS-30-77	480V SHUTDOWN BOARD 2A2-A, Compartment 5A	LOWER COMPT COOLER 2C-A	NORMAL	
480V Shutdown Board Room 2B				
2-BKR-30-75	480V SHUTDOWN BOARD 2B1-B, Compartment 7D	LOWER COMPT COOLER 2B-B (2-CCU-30-75)	DISCONNECTED	
2-HS-30-75C	480V SHUTDOWN BOARD 2B1-B, Compartment 5A	LOWER COMPT COOLER 2B-B	AUTO	
2-XS-30-75	480V SHUTDOWN BOARD 2B1-B, Compartment 5A	LOWER COMPT COOLER 2B-B	NORMAL	
2-BKR-30-78	480V SHUTDOWN BOARD 2B2-B, Compartment 7D	LOWER COMPT COOLER 2D-B (2-CCU-30-78)	DISCONNECTED	
2-HS-30-78C	480V SHUTDOWN BOARD 2B2-B, Compartment 5A	LOWER COMPT COOLER 2D-B	AUTO	
2-XS-30-78	480V SHUTDOWN BOARD 2B2-B, Compartment 5A	LOWER COMPT COOLER 2D-B	NORMAL	

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ELECTRICAL LINEUP

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Date _____

IDENTIFICATION	LOCATION	NOMENCLATURE	POSITION	VERIFIED BY: INITIAL
Vital Battery Board Room I				
2-BKR-235-1/7	120V AC VITAL INSTR POWR BOARD 2-I BKR 7	AUX RELAY RACK 2-R-76 BUS A	ON	
2-BKR-235-1/8	120V AC VITAL INSTR POWR BOARD 2-I BKR 8	AUX RELAY RACK C BUS TO PNL 2-R-76	ON	
2-BKR-235-1/11	120V AC VITAL INSTR POWR BOARD 2-I BKR 11	AUX RELAY RACK A BUS TO PNL 2-R-75	ON	
Vital Battery Board Room II				
2-BKR-235-2/6	120V AC VITAL INSTR POWR BOARD 2-II BKR 6	AUX RELAY RACK 2-R-76 BUS B	ON	
2-BKR-235-2/9	120V AC VITAL INSTR POWR BOARD 2-II BKR 9	AUX RELAY RACK B BUS TO PNL 2-R-75	ON	
Vital Battery Board Room III				
0-FU-236-3/A21	125V DC BATT BD III CKT A21	LOWER CONTAINMENT VENT CLR A SUPPLY VALVE	INSTALLED*	
0-FU-236-3/A23	125V DC BATT BD III CKT A23	LOWER CONTAINMENT VENT CLR C SUPPLY VALVE	INSTALLED*	
2-BKR-235-3/26	120V AC VITAL INSTR POWR BOARD 2-III BKR 26	BOP INST RACK 1-R-141 1-R-144/146/147 BUS C	ON	
2-BKR-235-3/40	120V AC VITAL INSTR POWR BOARD 2-III BKR 40	AUX RELAY RACK SSPS AUX RELAYS	ON	
Vital Battery Board Room IV				
0-FU-236-4/A9	125V DC BATT BD IV CKT A9	LOWER CONTAINMENT VENT CLR B SUPPLY VALVE	INSTALLED*	
0-FU-236-4/A11	125V DC BATT BD IV CKT A11	LOWER CONTAINMENT VENT CLR D SUPPLY VALVE	INSTALLED*	
2-BKR-235-4/26	120V AC VITAL INSTR POWR BOARD 2-IV BKR 26	AUX BLD INSTR BUS B TO PNL 2-L-26	ON	
2-BKR-235-4/35	120V AC VITAL INSTR POWR BOARD 2-IV BKR 35	AUX RELAY RACK SSPS AUX RELAYS	ON	

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ELECTRICAL LINEUP

Data Package: Page ____ of ____

Date _____

IDENTIFICATION	LOCATION	NOMENCLATURE	POSITION	VERIFIED BY: INITIAL
Unit 2 Auxiliary Instrument Room				
2-FU-275-R75/L23 2-FU-275-R75/L24	2-R-75 Row L, Fuse 23 & 24	LOWER COMPARTMENT COOLER UNITS 2A-A, 2B-B, 2C-A & 2D-B ANNUNCIATION SEPERATION RELAYS	INSTALLED*	
2-FU-275-R75/M7 2-FU-275-R75/M8	2-R-75 Row M, Fuse 7 & 8	LOWER COMPARTMENT COOLER UNITS 2A-A, 2B-B, 2C-A & 2D-B ANNUNCIATION SEPERATION RELAYS	INSTALLED*	
2-FU-275-R75/M9 2-FU-275-R75/M10	2-R-75 Row M, Fuse 9 & 10	LOWER COMPARTMENT COOLER UNITS 2A-A, 2B-B, 2C-A & 2D-B ANNUNCIATION SEPERATION RELAYS	INSTALLED*	
2-FU-275-R75/M23 2-FU-275-R75/M24	2-R-75 Row M, Fuse 23 & 24	LOWER COMPARTMENT COOLER UNITS 2A-A, 2B-B, 2C-A & 2D-B ANNUNCIATION SEPERATION RELAYS	INSTALLED*	
2-FU-275-R76/I9 2-FU-275-R76/I10	2-R-76 Row I, Fuse 9 & 10	PANEL 2-M-9 MOTOR TRIPOUT ANNUNCIATION SEPERATION RELAY	INSTALLED*	
2-FU-275-R76/I13 2-FU-275-R76/I14	2-R-76 Row I, Fuse 13 & 14	PANEL 2-M-9 MOTOR TRIPOUT ANNUNCIATION SEPERATION RELAY	INSTALLED*	
2-FU-275-R76/N1 2-FU-275-R76/N2	2-R-76 Row N, Fuse 1 & 2	MOTOR TRIPOUT BUZZER FOR PANELS M-1 THROUGH M-6 AND M-9	INSTALLED*	

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

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**Appendix E
(Page 1 of 5)**

Background Calculations

Data Package: Page ____ of ____

Date _____

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

1.0 Motor Design Density Horsepower

From Reference 2.2C.4, the Lower Compartment Cooler Fan Motors' Nameplate Horsepower is 60 HP and the Motor Horsepower at Design Density conditions cannot exceed the Nameplate Horsepower.

Assuming each measured current and voltage values are within $\pm 2.4\%$ as given in Reference 2.2C.1, then the adjusted Motor Horsepower and Design Density (HPDD) can be calculated:

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

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

Where T = Temperature ($^{\circ}\text{F}$) and B = Barometric Pressure (inHg) at time of test.

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

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

Therefore:

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

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**Appendix E
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Background Calculations

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Date _____

1.0 Motor Design Density Horsepower (continued)

The Operating Current and Voltage can be calculated:

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

$$I_A = I_{AM} \pm 0.024 I_{AM} = I_{AM} (1 \pm 0.024)$$

$$I_A = 1.024 I_{AM} \quad \text{or} \quad 0.976 I_{AM}$$

$$I_B = I_{BM} \pm 0.024 I_{BM} = I_{BM} (1 \pm 0.024)$$

$$I_B = 1.024 I_{BM} \quad \text{or} \quad 0.976 I_{BM}$$

$$I_C = I_{CM} \pm 0.024 I_{CM} = I_{CM} (1 \pm 0.024)$$

$$I_C = 1.024 I_{CM} \quad \text{or} \quad 0.976 I_{CM}$$

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

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

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

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

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**Appendix E
(Page 3 of 5)**

Background Calculations

Data Package: Page ____ of ____

Date _____

1.0 Motor Design Density Horsepower (continued)

Assuming that the Barometric Pressure (B) and Temperature (T) are within $\pm 0.4\%$ of range (27-31 inHg) and $\pm 2^\circ\text{F}$, respectively, as given in Reference 2.2C.1:

0.4% of 4 inHg = 0.016 inHg

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

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

This equates to a maximum error of 0.059%

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

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

This equates to a maximum error of 5.88%

Looking at the equation for Test Density (D_T):

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

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

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

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**Appendix E
(Page 4 of 5)**

Background Calculations

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Date _____

1.0 Motor Design Density Horsepower (continued)

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

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

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

Maximum calculated Power would be:

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

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

Therefore:

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

and since HPDD cannot be greater than 60 HP:

$$\frac{P \times C}{D_T} = 0.9431 \times HPDD = 0.9431 \times (60) = 56.59$$

Therefore the Acceptance Criteria for Motor Horsepower at Design Density will be adjusted to **less than or equal to 56 HP** to conservatively account for instrument inaccuracies.

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**Appendix E
(Page 5 of 5)**

Background Calculations

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2.0 Air Flow Measurements

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

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**Data Sheet 1
(Page 1 of 2)**

Lower Compartment Cooler 2A-A Performance

Data Package: Page ____ of ____

Date _____

LOWER COMPARTMENT COOLER 2A-A MOTOR OPERATING DATA

PHASE	CURRENT (Amps)
A	
B	
C	

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

Sum of Currents (ΣI) = _____

Sum of Voltages (ΣV) = _____

TEST CONDITIONS

Design Density (D_D) = 0.078 lb/ft³

Barometric Pressure (B) = _____ inHg

Power Factor (PF) = 82.5%

Ambient Temperature (T) = _____ °F

Efficiency (E) = 94.7%

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

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

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**Data Sheet 1
(Page 2 of 2)**

Lower Compartment Cooler 2A-A Performance

Data Package: Page ____ of ____

Date _____

Calculate the Air Density during the test:

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

$$D_T = \left(\frac{530}{460 + \underline{\hspace{2cm}}} \right) \times \left(\frac{\underline{\hspace{2cm}}}{29.92} \right) \times 0.075 = \underline{\hspace{2cm}} \text{ lb/ft}^3$$

Calculate the Motor Horsepower at Test Density (HPTD)

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

$$\text{HPTD} = \frac{\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} \times 0.825 \times 0.947}{431} = \underline{\hspace{2cm}} \text{ HP}$$

Calculate the Motor Horsepower at Design Density (HPDD)

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

$$\text{HPDD} = \underline{\hspace{2cm}} \times \frac{0.078 \text{ lb/ft}^3}{\underline{\hspace{2cm}} \text{ lb/ft}^3} = \underline{\hspace{2cm}} \text{ HP}$$

Calculations Performed By: _____ Calculations Verified By: _____

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**Data Sheet 2
(Page 1 of 2)**

Lower Compartment Cooler 2B-B Performance

Data Package: Page ____ of ____

Date _____

LOWER COMPARTMENT COOLER 2B-B MOTOR OPERATING DATA

PHASE	CURRENT (Amps)
A	
B	
C	

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

Sum of Currents (ΣI) = _____

Sum of Voltages (ΣV) = _____

TEST CONDITIONS

Design Density (D_D) = 0.078 lb/ft³

Barometric Pressure (B) = _____ inHg

Power Factor (PF) = 82.5%

Ambient Temperature (T) = _____ °F

Efficiency (E) = 94.7%

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

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

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**Data Sheet 2
(Page 2 of 2)**

Lower Compartment Cooler 2B-B Performance

Data Package: Page ____ of ____

Date _____

Calculate the Air Density during the test:

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

$$D_T = \left(\frac{530}{460 + \underline{\hspace{2cm}}} \right) \times \left(\frac{\underline{\hspace{2cm}}}{29.92} \right) \times 0.075 = \underline{\hspace{2cm}} \text{ lb/ft}^3$$

Calculate the Motor Horsepower at Test Density (HPTD)

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

$$\text{HPTD} = \frac{\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} \times 0.825 \times 0.947}{431} = \underline{\hspace{2cm}} \text{ HP}$$

Calculate the Motor Horsepower at Design Density (HPDD)

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

$$\text{HPDD} = \underline{\hspace{2cm}} \times \frac{0.078 \text{ lb/ft}^3}{\underline{\hspace{2cm}} \text{ lb/ft}^3} = \underline{\hspace{2cm}} \text{ HP}$$

Calculations Performed By: _____ Calculations Verified By: _____

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**Data Sheet 3
(Page 1 of 2)**

Lower Compartment Cooler 2C-A Performance

Data Package: Page ____ of ____

Date _____

LOWER COMPARTMENT COOLER 2C-A MOTOR OPERATING DATA

PHASE	CURRENT (Amps)
A	
B	
C	

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

Sum of Currents (ΣI) = _____

Sum of Voltages (ΣV) = _____

TEST CONDITIONS

Design Density (D_D) = 0.078 lb/ft³

Barometric Pressure (B) = _____ inHg

Power Factor (PF) = 82.5%

Ambient Temperature (T) = _____ °F

Efficiency (E) = 94.7%

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

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

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**Data Sheet 3
(Page 2 of 2)**

Lower Compartment Cooler 2C-A Performance

Data Package: Page ____ of ____

Date _____

Calculate the Air Density during the test:

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

$$D_T = \left(\frac{530}{460 + \underline{\hspace{2cm}}} \right) \times \left(\frac{\underline{\hspace{2cm}}}{29.92} \right) \times 0.075 = \underline{\hspace{2cm}} \text{ lb/ft}^3$$

Calculate the Motor Horsepower at Test Density (HPTD)

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

$$\text{HPTD} = \frac{\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} \times 0.825 \times 0.947}{431} = \underline{\hspace{2cm}} \text{ HP}$$

Calculate the Motor Horsepower at Design Density (HPDD)

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

$$\text{HPDD} = \underline{\hspace{2cm}} \times \frac{0.078 \text{ lb/ft}^3}{\underline{\hspace{2cm}} \text{ lb/ft}^3} = \underline{\hspace{2cm}} \text{ HP}$$

Calculations Performed By: _____ Calculations Verified By: _____

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**Data Sheet 4
(Page 1 of 2)**

Lower Compartment Cooler 2D-B Performance

Data Package: Page ____ of ____

Date _____

LOWER COMPARTMENT COOLER 2D-B MOTOR OPERATING DATA

PHASE	CURRENT (Amps)
A	
B	
C	

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

Sum of Currents (ΣI) = _____

Sum of Voltages (ΣV) = _____

TEST CONDITIONS

Design Density (D_D) = 0.078 lb/ft³

Barometric Pressure (B) = _____ inHg

Power Factor (PF) = 82.5%

Ambient Temperature (T) = _____ °F

Efficiency (E) = 94.7%

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

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

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**Data Sheet 4
(Page 2 of 2)**

Lower Compartment Cooler 2D-B Performance

Data Package: Page ____ of ____

Date _____

Calculate the Air Density during the test:

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

$$D_T = \left(\frac{530}{460 + \underline{\hspace{2cm}}} \right) \times \left(\frac{\underline{\hspace{2cm}}}{29.92} \right) \times 0.075 = \underline{\hspace{2cm}} \text{ lb/ft}^3$$

Calculate the Motor Horsepower at Test Density (HPTD)

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

$$\text{HPTD} = \frac{\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} \times 0.825 \times 0.947}{431} = \underline{\hspace{2cm}} \text{ HP}$$

Calculate the Motor Horsepower at Design Density (HPDD)

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

$$\text{HPDD} = \underline{\hspace{2cm}} \times \frac{0.078 \text{ lb/ft}^3}{\underline{\hspace{2cm}} \text{ lb/ft}^3} = \underline{\hspace{2cm}} \text{ HP}$$

Calculations Performed By: _____ Calculations Verified By: _____