

WATTS BAR NUCLEAR PLANT  
UNIT 2 PREOPERATIONAL TEST

TITLE: ROD CONTROL - NON HFT

Instruction No: 2-PTI-085-02

Revision No: 0000

PREPARED BY: Nicholas C. Pipton / Nich C Pipton DATE: 11/01/12  
PRINT NAME / SIGNATURE

REVIEWED BY: David R. Wiggins / David R Wiggins DATE: 11/01/12  
PRINT NAME / SIGNATURE

INSTRUCTION APPROVAL

JTG MEETING No: 2-12-020

JTG CHAIRMAN: Thuf Welch

DATE: 11/8/12

APPROVED BY: Thuf Welch  
PREOPERATIONAL STARTUP MANAGER

DATE: 11/8/12

TEST RESULTS APPROVAL

JTG MEETING No: \_\_\_\_\_

JTG CHAIRMAN: \_\_\_\_\_

DATE: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

PREOPERATIONAL STARTUP MANAGER

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**Revision Log**

<b>Revision or Change Number</b>	<b>Effective Date</b>	<b>Affected Page Numbers</b>	<b>Description of Revision/Change</b>
0000	<i>11/8/12</i>	ALL	Based on PTI-085-02 for Unit 1.

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## **1.0 INTRODUCTION**

### **1.1 Test Objectives**

Demonstrate operability of the portions of the Rod Control System which do not require either the reactor vessel head installed or hot functional test conditions.

- A. Demonstrate proper operation of Rod Control interlocks using simulated input signals.
  - 1. Verify operation of automatic control interlocks using simulated input signals as applicable.
  - 2. Verify operation of manual control interlocks using simulated input signals as applicable.
- B. Demonstrate the control rod drive MG sets operate in accordance with vendor technical manuals and applicable design documents.
  - 1. Verify the control rod drive MG sets will operate independently and in synchronized mode using a simulated load.

### **1.2 Scope**

All Automatic and Manual Rod Blocks, Control Interlocks for the Motor and Generator Output Breakers, Individual and Synchronized Alarms, and Computer Points will be tested.

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## **2.0 REFERENCES**

### **2.1 Performance References**

- A. SMP-9.0, Conduct of Test
- B. GOI-7, Generic Equipment Operating Guidelines

### **2.2 Developmental References**

- A. Final Safety Analysis Report (FSAR)
  - 1. FSAR–Amendment 109
    - a. Table 14.2-1, Sheet 58 of 89, Rod Control System Test Summary
    - b. Section 7.7.1.2, Rod Control System
- B. Drawings
  - 1. Electrical Drawings
    - a. 2-45W600-57-14, Rev. 3, Wiring Diagram Separation & Misc Aux Relays Schematic Diagrams
    - b. 2-45W600-57-36, Rev. 3, Wiring Diagram Separation & Misc Aux Relays Schematic Diagrams
    - c. 2-45W760-85-1, Rev. 4, Wiring Diagram Control Rod Drive System Schematic Diagrams
    - d. 1-45W708-2, Rev. 36 Misc 120V AC Distribution Panels Connection Diagrams
    - e. 2-45W708-2, Rev. 2, Misc 120V AC Distribution Panels Connection Diagrams
    - f. 1-45W703-3, Rev. 46, 125V VBB III Single Line
    - g. 1-45W703-4, Rev. 39, 125V VBB IV Single Line
    - h. 45N2643-7, Rev. 10, 2-M-4 Connection Diagrams
    - i. 45N2624-6, Rev. 0, Wiring Diagrams Full Length Rod Control System Connection Diagrams -Sheet 6
    - j. 45N2624-7, Rev. 1, Wiring Diagrams Full Length Rod Control System Connection Diagrams -Sheet 7

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## 2.2 Developmental References (continued)

- k. 45N2624-9, Rev. 2, Wiring Diagrams Full Length Rod Control System Connection Diagrams -Sheet 9
- l. 45N2674-1, Rev. 0, Wiring Diagrams Rod Position Indication System Connection Diagrams Sheet 1
- m. 45N2674-2, Rev. 2, Wiring Diagrams Rod Position Indication System Connection Diagrams Sheet 2
- n. 45N2674-3, Rev. 0, Wiring Diagrams Rod Position Indication System Connection Diagrams Sheet 3
- o. 45N2674-4, Rev. 0, Wiring Diagrams Rod Position Indication System Connection Diagrams Sheet 4
- p. 45N2684-1, Rev. 7, Wiring Diagrams NSSS Aux Relay Panel 2-R-58 Connection Diagrams Sheet 1
- q. 45N2684-2, Rev. 1, Wiring Diagrams NSSS Aux Relay Panel 2-R-58 Connection Diagrams Sheet 2
- r. 45N2684-3, Rev. 5, Wiring Diagrams NSSS Aux Relay Panel 2-R-58 Connection Diagrams Sheet 3
- s. 45N2684-4, Rev. 4, Wiring Diagrams NSSS Aux Relay Panel 2-R-58 Connection Diagrams Sheet 4
- t. 2-47A615-0, Rev. 1, Integrated Computer System Termination and I/O List
- u. 2-54114-1-108D691-1, Rev. 0 (ANT), DRA 52323-74, Rev.0, TVA Watts Bar Unit 2 Full Length Rod Control
- v. 2-54114-1-108D691-2, Rev. 0 (ANT), DRA 52323-75, Rev. 0, TVA Watts Bar Unit 2 Full Length Rod Control
- w. 2-54114-1-108D691-3, Rev. 0 (ANT), DRA 52323-76, Rev. 0, TVA Watts Bar Unit 2 Full Length Rod Control
- x. 108D691-4, Rev. 2, TVA Watts Bar Units 1 & 2 Full Length Rod Control
- y. 2-45B655-4A, Rev. 0, MCR Annunciator Inputs Window Box 2-XA-55-4A
- z. 2-45B655-4B, Rev. 0, MCR Annunciator Inputs Window Box 2-XA-55-4B

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**2.2 Developmental References (continued)**

- aa. 2-45B655-E4A, Rev. 0, Annunciator Window Box 2-XA-55-4A Engraving
- bb. 2-45B655-E4B, Rev. 0, Annunciator Window Box 2-XA-55-4B Engraving
- 2. Vendor Drawings, Contract No. 71C62-54114-1
  - a. 3688C39-1, Rev. 1, MG set schematic diagrams
  - b. 3688C39-2, Rev. 1, MG set schematic diagrams
  - c. 3688C39-3, Rev. 2, MG set schematic diagrams
  - d. 3688C39-4, Rev. 3A, MG set schematic diagrams
  - e. 3688C39-5, Rev. 1, MG set schematic diagrams
  - f. 3688C39-6, Rev. 3, MG set schematic diagrams
  - g. 3688C39-7, Rev. 2, MG set schematic diagrams
  - h. 3688C39-8, Rev. 1, MG set schematic diagrams
  - i. 3688C39-8A, Rev. 1, MG set schematic diagrams
  - j. 3688C39-8B, Rev. 1, MG set schematic diagrams
  - k. 3688C39-9, Rev. 2, MG set schematic diagrams
  - l. 3688C39-10, Rev. 2, MG set schematic diagrams
  - m. 3688C39-11, Rev. 1, MG set schematic diagrams
  - n. 3688C39-12, Rev. 1, MG set schematic diagrams
  - o. 3688C39-13, Rev. 1, MG set schematic diagrams
  - p. 3688C39-14, Rev. 1, MG set schematic diagrams
  - q. 3688C39-14A, Rev. 1, MG set schematic diagrams
  - r. 3688C39-15, Rev. 1, MG set schematic diagrams
  - s. 3688C39-16, Rev. 2, MG set schematic diagrams
  - t. 3688C39-17, Rev. 3, MG set schematic diagrams

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## 2.2 Developmental References (continued)

- u. 3688C39-18, Rev. 3A, MG set schematic diagrams
  - v. 6056D01-1, Rev. U, Logic Cabinet Logic Flow Maximum System
  - w. 1191E03, Rev. 3, Watts Bar Unit No. 1 and 2 C.B. Rod Control Wiring Diagram
  - x. 1045F60, Rev. E, Wiring Diagram DC Hold Supply Cabinet SS Rod Control
3. Vendor Drawings, Contract No. 65717
- a. 6056D35-15, Rev. E, Functional Wiring Diagram Logic Cabinet General System
  - b. 6056D35-17, Rev. M, Functional Wiring Diagram Logic Cabinet General System
  - c. 6056D35-19, Rev. J, Functional Wiring Diagram Logic Cabinet General System
  - d. 6661E32-11, Rev. 3, CERPI A Wiring Assembly
  - e. 6661E32-15, Rev. 3, CERPI B Wiring Assembly
  - f. 1051E06-3, Rev. V, Wiring Diagram Main Line Power Circuitry SS Power Cabinet
  - g. 1051E06-6, Rev. X, Wiring Diagram Main Line Power Circuitry SS Power Cabinet
  - h. 6056D35-20, Rev. E, Functional Wiring Diagram Logic Cabinet General System
4. Vendor Drawings, Contract No. 69247
- a. 08F802403-FD-2205-1, Rev. 8, Rod Control System Total Error, Tref, Power Mismatch
  - b. 08F802403-FD-2205-2, Rev. 8, Rod Control System Rod Speed Demand, Rod Direction

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## **2.2 Developmental References (continued)**

5. Vendor Drawings, Contract No. 84647
  - a. 6948D28, Rev. 906, LVME "DS" SWGR 480 V Unit BD 2A
  - b. 6948D37, Rev. 908, LVME "DS" SWGR 480 V Unit BD 2B
6. Vendor Manuals
  - a. WBN-VTM-W120-2570, Rev 8, Vendor (Technical) Manual For Westinghouse Full Length Rod Control System
  - b. WBN-VTM-W120-0160, Rev. 32, Vendor (Technical) Manual For Westinghouse DS 480 Volt Switchgear

### **C. Documents**

1. N3-85-4003, Rev. 14, System Description for Control Rod Drive System
2. SMP-8.0, Rev. 9, Administration of Preoperational Test Instructions
3. 2-TSD-85-02, Rev. 0, Rod Control System

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### **3.0 PRECAUTIONS AND LIMITATIONS**

- A. Standard precautions shall be followed for working around energized electrical equipment in accordance with TVA Safety Manual Procedure 1021.
- B. Steps may be repeated if all components cannot be tested in a step. However, if the test has been exited, prerequisite steps must be re-verified and a Chronological Test Log (CTL) entry made.
- C. Discrepancies between component ID tags and the description in a procedure/instruction do not require a Test Deficiency Notice (TDN) in accordance with SMP-14.0, 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. 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. All wires removed/lifted from a terminal shall be identified and taped or covered with an insulator to prevent personnel or equipment hazard and possible spurious initiations. The wires should be grouped together and labeled with the work implementing document number that required them to be lifted if left unattended.
- E. All open problems are to be tracked by a corrective action document and entered on the appropriate system punchlist.
- F. Problems identified during the test shall be annotated on the CTL from SMP-9.0 including a description of the problem, the procedure step when/where the problem was identified, corrective action steps taken to resolve the problem, and the number of the corrective action document, if one was required.
- G. Observe all Radiation Protection (RP) requirements when working in or near radiological areas.
- H. Use electrostatic discharge protection equipment and handling practices to remove circuit cards from the panels. A circuit card pulling device and anti-static protection must be used when disconnecting/connecting and handling circuit cards.

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**4.0 PREREQUISITE ACTIONS**

**NOTE**

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

**4.1 Preliminary Actions**

- [1] **VERIFY** the test/performance copy of this Preoperational Test Instruction (PTI) is the current revision including any change notices and as needed, each test person assisting in this test has the current revision including any change notices. \_\_\_\_\_
- [2] **OBTAIN** copies of the applicable forms from the latest revision of SMP-9.0, **AND**  
**ATTACH** to this PTI for use during the performance of this PTI. \_\_\_\_\_
- [3] **ENSURE** changes to the references listed on Appendix A, have been reviewed, and determined **NOT** to adversely affect the test performance. \_\_\_\_\_
- [4] **VERIFY** current revisions and change paper for referenced drawings has been reviewed and determined **NOT** to adversely affect the test performance, **AND**  
**ATTACH** documentation of current drawing revision numbers and change paper that were reviewed to the data package. \_\_\_\_\_

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**4.1 Preliminary Actions (continued)**

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

**ENSURE** that they will NOT adversely affect the test performance and results.

- A. Subsection 6.1 \_\_\_\_\_
- B. Subsection 6.2 \_\_\_\_\_
- C. Subsection 6.3 \_\_\_\_\_
- D. Subsection 6.4 \_\_\_\_\_
- E. Subsection 6.5 \_\_\_\_\_
- F. Subsection 6.6 \_\_\_\_\_
- G. Subsection 6.7 \_\_\_\_\_
- H. Subsection 6.8 \_\_\_\_\_
- I. Subsection 6.9 \_\_\_\_\_
- J. Subsection 6.10 \_\_\_\_\_

Date \_\_\_\_\_

**4.1 Preliminary Actions (continued)**

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

- A. Subsection 6.1 \_\_\_\_\_
- B. Subsection 6.2 \_\_\_\_\_
- C. Subsection 6.3 \_\_\_\_\_
- D. Subsection 6.4 \_\_\_\_\_
- E. Subsection 6.5 \_\_\_\_\_
- F. Subsection 6.6 \_\_\_\_\_
- G. Subsection 6.7 \_\_\_\_\_
- H. Subsection 6.8 \_\_\_\_\_
- I. Subsection 6.9 \_\_\_\_\_
- J. Subsection 6.10 \_\_\_\_\_

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**4.1 Preliminary Actions (continued)**

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

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

- A. Subsection 6.1 \_\_\_\_\_
- B. Subsection 6.2 \_\_\_\_\_
- C. Subsection 6.3 \_\_\_\_\_
- D. Subsection 6.4 \_\_\_\_\_
- E. Subsection 6.5 \_\_\_\_\_
- F. Subsection 6.6 \_\_\_\_\_
- G. Subsection 6.7 \_\_\_\_\_
- H. Subsection 6.8 \_\_\_\_\_
- I. Subsection 6.9 \_\_\_\_\_
- J. Subsection 6.10 \_\_\_\_\_

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

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

Date \_\_\_\_\_

**4.1 Preliminary Actions (continued)**

[9] **VERIFY** Measuring and Test Equipment (M&TE) required for test performance has been placed in service and recorded on Measuring and Test Equipment Log.

- A. Subsection 6.1 \_\_\_\_\_
- B. Subsection 6.2 \_\_\_\_\_
- C. Subsection 6.3 \_\_\_\_\_
- D. Subsection 6.4 \_\_\_\_\_
- E. Subsection 6.5 \_\_\_\_\_
- F. Subsection 6.6 \_\_\_\_\_
- G. Subsection 6.7 \_\_\_\_\_
- H. Subsection 6.8 \_\_\_\_\_
- I. Subsection 6.9 \_\_\_\_\_
- J. Subsection 6.10 \_\_\_\_\_

Date \_\_\_\_\_

**4.1 Preliminary Actions (continued)**

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

- A. Subsection 6.1 \_\_\_\_\_
- B. Subsection 6.2 \_\_\_\_\_
- C. Subsection 6.3 \_\_\_\_\_
- D. Subsection 6.4 \_\_\_\_\_
- E. Subsection 6.5 \_\_\_\_\_
- F. Subsection 6.6 \_\_\_\_\_
- G. Subsection 6.7 \_\_\_\_\_
- H. Subsection 6.8 \_\_\_\_\_
- I. Subsection 6.9 \_\_\_\_\_
- J. Subsection 6.10 \_\_\_\_\_

[11] **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-55-4A-66A, [2-M-4]. (Subsection 6.9) \_\_\_\_\_
- B. 2-XA-55-4A-64F, [2-M-4]. (Subsection 6.9) \_\_\_\_\_
- C. 2-XA-55-4B-82B, [2-M-4]. (Subsection 6.9) \_\_\_\_\_
- D. 2-XA-55-4B-83A, [2-M-4]. (Subsection 6.9) \_\_\_\_\_
- E. 2-XA-55-4B-85A [2-M-4].  
(Subsections 6.1, 6.2, 6.3, 6.4, 6.6, 6.7, 6.8) \_\_\_\_\_
- F. 2-XA-55-4B-86B, [2-M-4]. (Subsection 6.9) \_\_\_\_\_

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**4.1 Preliminary Actions (continued)**

- [12] **ENSURE** these Unit 2 Integrated Computer System points are in scan with GOOD quality.
  - A. C0098D, CONT AND SD ROD (Subsection 6.9) \_\_\_\_\_
  - B. Y2815D, CRD MG SET A (Subsection 6.1) \_\_\_\_\_
  - C. Y2816D, CRD MG SET B (Subsection 6.2) \_\_\_\_\_
  - D. U0049, CONT ROD BNK A STEP COUNT (Subsection 6.10) \_\_\_\_\_
  - E. U0050, CONT ROD BNK B STEP COUNT (Subsection 6.10) \_\_\_\_\_
  - F. U0051, CONT ROD BNK C STEP COUNT (Subsection 6.10) \_\_\_\_\_
  - G. U0052, CONT ROD BNK D STEP COUNT (Subsection 6.10) \_\_\_\_\_
  - H. U0053, SD ROD BNK A STEP COUNT (Subsection 6.10) \_\_\_\_\_
  - I. U0054, SD ROD BNK B STEP COUNT (Subsection 6.10) \_\_\_\_\_
  - J. U0055, SD ROD BNK C STEP COUNT (Subsection 6.10) \_\_\_\_\_
  - K. U0056, SD ROD BNK D STEP COUNT (Subsection 6.10) \_\_\_\_\_
  
- [13] **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)**

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

**ENSURE** temporary lighting is available if existing lighting is not satisfactory.

- A. Subsection 6.1 \_\_\_\_\_
- B. Subsection 6.2 \_\_\_\_\_
- C. Subsection 6.3 \_\_\_\_\_
- D. Subsection 6.4 \_\_\_\_\_
- E. Subsection 6.5 \_\_\_\_\_
- F. Subsection 6.6 \_\_\_\_\_
- G. Subsection 6.7 \_\_\_\_\_
- H. Subsection 6.8 \_\_\_\_\_
- I. Subsection 6.9 \_\_\_\_\_
- J. Subsection 6.10 \_\_\_\_\_

Date \_\_\_\_\_

**4.1 Preliminary Actions (continued)**

[15] **ENSURE** all personnel who initial or sign test steps or data sheets log onto the Signature Log.

- A. Subsection 6.1 \_\_\_\_\_
- B. Subsection 6.2 \_\_\_\_\_
- C. Subsection 6.3 \_\_\_\_\_
- D. Subsection 6.4 \_\_\_\_\_
- E. Subsection 6.5 \_\_\_\_\_
- F. Subsection 6.6 \_\_\_\_\_
- G. Subsection 6.7 \_\_\_\_\_
- H. Subsection 6.8 \_\_\_\_\_
- I. Subsection 6.9 \_\_\_\_\_
- J. Subsection 6.10 \_\_\_\_\_

Date \_\_\_\_\_

**4.1 Preliminary Actions (continued)**

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

- A. Subsection 6.1 \_\_\_\_\_
- B. Subsection 6.2 \_\_\_\_\_
- C. Subsection 6.3 \_\_\_\_\_
- D. Subsection 6.4 \_\_\_\_\_
- E. Subsection 6.5 \_\_\_\_\_
- F. Subsection 6.6 \_\_\_\_\_
- G. Subsection 6.7 \_\_\_\_\_
- H. Subsection 6.8 \_\_\_\_\_
- I. Subsection 6.9 \_\_\_\_\_
- J. Subsection 6.10 \_\_\_\_\_

[17] **ENSURE** that communications are available for the following areas where testing is to be conducted.

- A. 480V Unit Board 2A \_\_\_\_\_
- B. 480V Unit Board 2B \_\_\_\_\_
- C. Main Control Room (MCR) \_\_\_\_\_
- D. Unit 2 Auxiliary Instrument Room \_\_\_\_\_
- E. Unit 2 Control Rod Drive Equipment Room \_\_\_\_\_

[18] **REVIEW** preventive maintenance for system/components covered by this test, **AND**

**VERIFY** no conditions exist that will impact test performance. \_\_\_\_\_

Date \_\_\_\_\_

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

[1] **ENSURE** the following M&TE or equivalent is available and within their calibration due dates, **AND**

**RECORD** the M&TE data on SMP-9.0, Measuring and Test Equipment Log.

- A. Two 0-100 VDC Keithley 197 ( $\pm 0.42\%$  of reading + 0.06% of range) or equivalent (Subsection 6.9) \_\_\_\_\_
- B. Phase Sequence Indicator, Knopp Model K-3, 60Hz, 60-600 VAC (M&TE 189330) or Model 46, 60Hz, 90-700 Volts (M&TE 33363) (Subsections 6.6, 6.7) \_\_\_\_\_
- C. Torque Wrench (1/4" hex head, 25-30 in-lbs) (Subsections 6.1, 6.2, and 6.5) \_\_\_\_\_

**NOTE**

The following three resistive loads will provide a total load of approximately 10 Kw for use in demonstrating the synchronizing of the two MG Sets.

[2] **ENSURE** Three States Ohm-Spun resistance loads, Catalogue # 35201 Type "WR" (or equivalent load bank), to be used as temporary, simulated loads for the rod control system M-G Sets are available (Subsections 4.3, 6.6, 6.7, 6.8, 6.9, and 6.10), **AND**

**ENSURE** The load banks are set up as follows:

- A. All load toggle switches placed in the DOWN (240V, ON) position \_\_\_\_\_
- B. Variable load control adjusted fully clockwise \_\_\_\_\_
- C. 120/240~ switch in the 240V position \_\_\_\_\_
- D. ON/OFF switch in the ON position \_\_\_\_\_
- E. Output Load terminal post (right side of load bank) shorted with copper bar \_\_\_\_\_
- F. Timer terminal post - no connections \_\_\_\_\_

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

[3] **VERIFY** the following are available:

- A. Eight jumpers adequate for use on secondary disconnects of Westinghouse type DS breakers (Subsections 6.1, 6.2, 6.3, 6.4, and 6.5) \_\_\_\_\_
- B. Ten special jumpers (Extender board with mating connector) to jumper Pins 1 and 3 at the J1 and I2 failure detector cards located in each of the rod control system power cabinets (Subsections 4.3 and all of 6.0) \_\_\_\_\_
- C. Electrostatic discharge protection equipment for removal/installation of failure detection cards (Subsections 4.3, all of 6.0, and 7.0) \_\_\_\_\_
- D. Circuit card pulling device to be used when disconnecting circuit cards (Subsection 4.3) \_\_\_\_\_
- E. Six 3/8 to 1/2 inch bolts with washers to connect load bank cables to the bus bars (Subsections 4.3 and all of 6.0) \_\_\_\_\_
- F. Three 30 foot lengths of 2 wire, Number 10 AWG, stranded copper cable to connect load banks to the bus bars. The load wires should be lugged for 3/8 to 1/2 inch bolts on one end (Subsections 4.3 and all of 6.0) \_\_\_\_\_
- G. Electricians standard tool pouch. (Subsections 4.3 and all of 6.0) \_\_\_\_\_
- H. Stopwatch (Subsections 6.6, 6.7, and 6.8) \_\_\_\_\_

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**4.3 Field Preparations**

[1] **ENSURE** the following breakers at 2-L-116 (Reactor Trip Switchgear) are DISCONNECTED:

A. 2-BKR-99-L116/1B \_\_\_\_\_

B. 2-BKR-99-L116/1C \_\_\_\_\_

C. 2-BKR-99-L116/2B \_\_\_\_\_

D. 2-BKR-99-L116/2C \_\_\_\_\_

[2] **ENSURE** Appendix C, PRE TEST BREAKER LINEUP, is COMPLETE. \_\_\_\_\_

[3] **ENSURE** Appendix E, FUSE INSTALLATION CHECKLIST, is COMPLETE. \_\_\_\_\_

Date \_\_\_\_\_

**4.3 Field Preparations (continued)**

<p><b>NOTE</b></p> <p>Figure 1 provides guidance for the performance of the following step.</p>
---

[4] **PERFORM** the following to provide minimum loading for MG Set 2A and MG Set 2B:

A. **CONNECT** a resistance load between the A phase and neutral bus bars behind the lower compartment of GENERATOR NO. 2, CONTROL ROD DRIVE Panel 2-L-115 ROD DRIVE M-G SET SWITCHGEAR CAB 2-PNL-85-L115.

\_\_\_\_\_

\_\_\_\_\_

CV

B. **CONNECT** a resistance load between the B phase and neutral bus bars behind the lower compartment of GENERATOR NO. 2, CONTROL ROD DRIVE PANEL 2-L-115 ROD DRIVE M-G SET SWITCHGEAR CAB 2-PNL-85-L115.

\_\_\_\_\_

\_\_\_\_\_

CV

C. **CONNECT** a resistance load between the C phase and neutral bus bars behind the lower compartment of GENERATOR NO. 2, CONTROL ROD DRIVE PANEL 2-L-115 ROD DRIVE M-G SET SWITCHGEAR CAB 2-PNL-85-L115.

\_\_\_\_\_

\_\_\_\_\_

CV

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**4.3 Field Preparations (continued)**

<b>NOTES</b>
<p>1) The following steps remove the Failure Detector cards from the Power Cabinets to allow logic cabinet operation with power removed from the Power Cabinets. The jumper across pins 1 and 3 allow the interlock circuit to remain intact; otherwise, there would be a standing alarm on "Control Rod Urgent Failure" .</p> <p>2) A circuit card pulling device and anti-static protection must be used when disconnecting and handling circuit cards.</p>

[5] **PERFORM** the following at 2-L-117 (Power Cabinet 2BD):

A. **REMOVE** Failure Detector Card J1. \_\_\_\_\_

CV

B. **INSTALL** special jumper across Pins 1 and 3 at Card J1. \_\_\_\_\_

CV

C. **REMOVE** Failure Detector Card I2. \_\_\_\_\_

CV

D. **INSTALL** special jumper across Pins 1 and 3 at Card I2. \_\_\_\_\_

CV

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**4.3 Field Preparations (continued)**

[6] **PERFORM** the following at 2-L-118 (Power Cabinet 2AC):

A. **REMOVE** Failure Detector Card J1. \_\_\_\_\_

\_\_\_\_\_  
CV

B. **INSTALL** special jumper across Pins 1 and 3 at Card J1. \_\_\_\_\_

\_\_\_\_\_  
CV

C. **REMOVE** Failure Detector Card I2. \_\_\_\_\_

\_\_\_\_\_  
CV

D. **INSTALL** special jumper across Pins 1 and 3 at Card I2. \_\_\_\_\_

\_\_\_\_\_  
CV

[7] **PERFORM** the following at 2-L-119 (Power Cabinet SCD):

A. **REMOVE** Failure Detector Card J1. \_\_\_\_\_

\_\_\_\_\_  
CV

B. **INSTALL** special jumper across Pins 1 and 3 at Card J1. \_\_\_\_\_

\_\_\_\_\_  
CV

C. **REMOVE** Failure Detector Card I2. \_\_\_\_\_

\_\_\_\_\_  
CV

D. **INSTALL** special jumper across Pins 1 and 3 at Card I2. \_\_\_\_\_

\_\_\_\_\_  
CV

Date \_\_\_\_\_

**4.3 Field Preparations (continued)**

[8] **PERFORM** the following at 2-L-120 (Power Cabinet 1AC):

A. **REMOVE** Failure Detector Card J1.

\_\_\_\_\_  
CV

B. **INSTALL** special jumper across Pins 1 and 3 at Card J1.

\_\_\_\_\_  
CV

C. **REMOVE** Failure Detector Card I2.

\_\_\_\_\_  
CV

D. **INSTALL** special jumper across Pins 1 and 3 at Card I2.

\_\_\_\_\_  
CV

[9] **PERFORM** the following at 2-L-121 (Power Cabinet 1BD):

A. **REMOVE** Failure Detector Card J1.

\_\_\_\_\_  
CV

B. **INSTALL** special jumper across Pins 1 and 3 at Card J1.

\_\_\_\_\_  
CV

C. **REMOVE** Failure Detector Card I2.

\_\_\_\_\_  
CV

D. **INSTALL** special jumper across Pins 1 and 3 at Card I2.

\_\_\_\_\_  
CV

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**4.3 Field Preparations (continued)**

**NOTE**

Synchronizer parameter control knobs are on the Synchronizer, which is inside 2-L-115 on the GENERATOR NO. 1 cabinet side.

[10] **ENSURE** the following controls are set on the MG Set Synchronizer: (Subsection 6.8)

**Synchronizer:**

- A. ADVANCE ANGLE, DEGREES: 35 \_\_\_\_\_
- B. BREAKER CLOSING TIME, SECONDS: 0.085 \_\_\_\_\_
- C. BREAKER CLOSING TIME, SECONDS MULTIPLIER: 2 \_\_\_\_\_

**Voltage Acceptor:**

- D. UPPER LIMITS, VOLTS: 120 \_\_\_\_\_
- E. LOWER LIMITS, VOLTS: 100 \_\_\_\_\_
- F. PERMISSIVE DIFFERENCE, VOLTS: 5 \_\_\_\_\_

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**4.4 Approvals and Notifications**

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

Preoperational Startup Manager Signature	Date
---	------

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

U2 US/SRO/SM Signature	Date
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## 5.0 ACCEPTANCE CRITERIA

The operability of the portions of the rod control system which do not require either the reactor vessel head installed or hot functional test conditions is demonstrated as follows:

- A. The control rod drive system functions in the manual and automatic modes in accordance with vendor manuals, applicable design documents, and as described in FSAR Section 7.7.1.2 as follows:
  1. The following interlocks will provide a rod block in automatic control using simulated input signals:
    - a. Power Range Overpower Rod Block (Steps 6.9[37]A, 6.9[37]B)
    - b. Overtemperature  $\Delta T$  Rod Block (Steps 6.9[47]A, 6.9[47]B)
    - c. Overpower  $\Delta T$  Rod Block (Steps 6.9[51]A, 6.9[51]B)
    - d. Intermediate Range Rod Block (Steps 6.9[61]A, 6.9[61]B)
    - e. Bank D Withdrawal Limit (Steps 6.9[68]A, 6.9[68]B, 6.9[68]C)
    - f. Low Turbine Impulse Chamber Pressure (Steps 6.9[32]A, 6.9[32]B, 6.9[107]A, 6.9[107]B)
  2. The following interlocks will provide a rod block in manual control using simulated input signals:
    - a. Power Range Overpower Rod Block (Steps 6.9[40]A, 6.9[40]B)
    - b. Overtemperature  $\Delta T$  Rod Block (Steps 6.9[44]A, 6.9[44]B)
    - c. Overpower  $\Delta T$  Rod Block (Steps 6.9[54]A, 6.9[54]B)
    - d. Intermediate Range Rod Block (Steps 6.9[58]A, 6.9[58]B)

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**5.0 ACCEPTANCE CRITERIA (continued)**

- B. The control rod drive MG sets operate in accordance with vendor technical manuals and applicable design documents as follows:
1. Each Control Rod Drive MG Set will operate independently or in synchronized mode using a simulated load.
    - a. MG Set 2A operates independently (Step 6.6[15])
    - b. MG Set 2A synchronizes with MG Set 2B (Steps 6.8[31]A, 6.8[31]B)
    - c. MG Set 2B operates independently (Step 6.7[16])
    - d. MG Set 2B synchronizes with MG Set 2A (Steps 6.8[22]A, 6.8[22]B)

Date \_\_\_\_\_

**6.0 PERFORMANCE**

**SECTION PERFORMANCE ORDER GUIDELINES**

The easiest way to perform this procedure is in numerical order (6.1, then 6.2, etc.)

However, certain sections can be performed out of order at Test Director's discretion using guidance from the table below.

Any section marked 1st is to be performed 1st.

Any section marked 2nd is to be performed AFTER 1st but BEFORE 3rd, etc.

perf order	1st	2nd	3rd	4th	5th	6th
6.1	X					
6.2	X					
6.3		X				
6.4		X				
6.5			X			
6.6				X		
6.7				X		
6.8					X	
6.9						X
6.10						X

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## 6.0 PERFORMANCE (continued)

### GENERAL PERFORMANCE NOTES

- 1) The "Breaker compt." green/red lights and test trip/close push buttons for the respective motor are present immediately above the breaker compartment at the 480V Unit Board Switchgear.
- 2) The "MG Set control panel" lights for the respective motor are immediately above the MOTOR CIRCUIT BREAKER CONTROL switch.
- 3) The "Breaker compt." green/red lights for the generator load breaker are immediately above the generator load breaker compartment at 2-L-115.
- 4) GENERATOR NO.1 cabinet controls MG Set 2A.
- 5) GENERATOR NO.2 cabinet controls MG Set 2B.
- 6) The MOTOR CIRCUIT BREAKER CONTROL hand switch for 2-MTR-85-A (motor 2A) will be denoted in this procedure as "Motor 2A hand switch". This hand switch is located immediately above 2-BKR-85-L115/1C on 2-L-115, GENERATOR NO.1 side of cabinet.
- 7) The MOTOR CIRCUIT BREAKER CONTROL hand switch for 2-MTR-85-B (motor 2B) will be denoted in this procedure as "Motor 2B hand switch". This hand switch is located immediately above 2-BKR-85-L115/2C on 2-L-115, GENERATOR NO.2 side of cabinet.
- 8) The GENERATOR CIRCUIT BREAKER CONTROL hand switch for 2-GEN-85-A (generator 2A) will be denoted in this procedure as "Gen 2A hand switch". This hand switch is located immediately above 2-BKR-85-L115/1C on 2-L-115, GENERATOR NO.1 side of cabinet.
- 9) The GENERATOR CIRCUIT BREAKER CONTROL hand switch for 2-GEN-85-B (generator 2B) will be denoted in this procedure as "Gen 2B hand switch". This hand switch is located immediately above 2-BKR-85-L115/2C on 2-L-115, GENERATOR NO.2 side of cabinet.
- 10) When reinstalling the secondary disconnect cover on a Westinghouse DS type breaker, the cover should be torqued in the range of 25 to 30 inch-pounds. Do not exceed 35 inch-pounds torque at any time. This procedure uses 30 inch-pounds as the nominal torque value.

Date \_\_\_\_\_

**6.1 Motor Breaker 2A Manual Control Logic**

- [1] **ENSURE** prerequisites listed in Section 4.0 for Section 6.1 are completed. \_\_\_\_\_
- [2] **ENSURE** nomenclature in GENERAL PERFORMANCE NOTES section of Section 6.0 is understood by all test performers before continuing. \_\_\_\_\_
- [3] **ENSURE** 2-XA-55-4B-85A; CRD MG SET TRIP/GROUND, [2-M-4] is CLEAR. \_\_\_\_\_
- [4] **RACK** 2-BKR-85-A, CRD MG SET 2A (2-GEN-85-A), motor supply breaker at compartment 4D of 480V UNIT BD 2A to the REMOVE position. \_\_\_\_\_

**NOTE**

The following step maintains the Motor Breaker logic in the Operating Position while the Motor Breaker is racked in the Test Position.

- [5] **REMOVE** the cover for the secondary disconnect contacts, **AND**  
  
**INSTALL** jumper across secondary disconnect contacts 11 and 12 on the back of breaker 2-BKR-85-A. \_\_\_\_\_  
  
\_\_\_\_\_ CV
- [6] **RE-INSTALL** the cover for the secondary disconnect contacts, **AND**  
  
**TORQUE** the cover screws to 30 inch-pounds. \_\_\_\_\_  
  
\_\_\_\_\_ CV
- [7] **ENSURE** 2-BKR-85-A is OPEN, **AND**  
  
**RACK** 2-BKR-85-A, 480V UNIT BD 2A, compt. 4D, to the TEST position. \_\_\_\_\_

Date \_\_\_\_\_

**6.1 Motor Breaker 2A Manual Control Logic (continued)**

- [8] **VERIFY** the following conditions:
  - A. 2-XA-55-4B-85A, CRD MG SET TRIP/GROUND [2-M-4], ALARMS. \_\_\_\_\_
  - B. Green flag on 2-BKR-85-A is visible. \_\_\_\_\_
  - C. Green Light at Breaker compt. LIT. \_\_\_\_\_
  - D. Red Light at Breaker compt. NOT LIT. \_\_\_\_\_
  - E. Green Light at MG Set control panel LIT. \_\_\_\_\_
  - F. Red Light at MG Set control panel NOT LIT. \_\_\_\_\_
  - G. Unit 2 Integrated Computer System (ICS) point Y2815D reads OFF. \_\_\_\_\_
  
- [9] **PLACE AND HOLD** Motor 2A hand switch in CLOSE position. \_\_\_\_\_
  
- [10] **VERIFY** the following:
  - A. Green flag on 2-BKR-85-A is still visible. \_\_\_\_\_
  - B. Green Light at MG Set control panel LIT. \_\_\_\_\_
  
- [11] **RELEASE** Motor 2A hand switch. \_\_\_\_\_
  
- [12] **PLACE AND HOLD** Motor 2A hand switch in TRIP position. \_\_\_\_\_
  
- [13] **VERIFY** Green Light at MG Set control panel LIT. \_\_\_\_\_
  
- [14] **PLACE** Motor 2A hand switch in PULL LAMP CUT OUT (TRIP-PULL-TO-LOCK) position. \_\_\_\_\_
  
- [15] **VERIFY** Green Light at MG Set control panel NOT LIT. \_\_\_\_\_

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**6.1 Motor Breaker 2A Manual Control Logic (continued)**

[16] **PRESS** Test CLOSE pushbutton at 480V UNIT BOARD 2A, compt. 4D **AND**

**VERIFY** the following:

- A. Breaker is CLOSED by observing Red flag \_\_\_\_\_
- B. Green Light at Breaker compt. NOT LIT. \_\_\_\_\_
- C. Red Light at Breaker compt. LIT. \_\_\_\_\_
- D. Green Light at MG Set control panel NOT LIT. \_\_\_\_\_
- E. Red Light at MG Set control panel NOT LIT. \_\_\_\_\_
- F. Unit 2 Integrated Computer System (ICS) point Y2815D reads ON. \_\_\_\_\_

[17] **PRESS** Test TRIP pushbutton at 480V UNIT BOARD 2A, compt. 4D **AND**

**VERIFY** Breaker OPENS by observing Green light LIT at Breaker compt. \_\_\_\_\_

[18] **VERIFY** Unit 2 Integrated Computer System (ICS) point Y2815D reads OFF. \_\_\_\_\_

[19] **VERIFY** Green Light at MG Set control panel NOT LIT. \_\_\_\_\_

[20] **PLACE** Motor 2A hand switch to center (OFF) position. \_\_\_\_\_

[21] **VERIFY** Green Light at MG Set control panel LIT. \_\_\_\_\_

[22] **REMOVE** 2-BKR-85-A, CRD MG SET 2A (2-GEN-85-A), motor supply breaker at compartment 4D of 480V UNIT BD 2A. \_\_\_\_\_

[23] **VERIFY** 2-XA-55-4B-85A, CRD MG SET TRIP/GROUND, CLEARS. \_\_\_\_\_

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**6.1 Motor Breaker 2A Manual Control Logic (continued)**

**NOTE**

The following step removes the Motor Breaker logic in the Operating Position while racked in the Test Position.

- [24] **REMOVE** the cover for the secondary disconnect contacts  
**AND**  
**REMOVE** jumper across secondary disconnect contacts 11  
and 12 on the back of breaker 2-BKR-85-A.

\_\_\_\_\_

CV
- [25] **INSTALL** a jumper across secondary disconnect contacts 3  
and 14 on the back of breaker 2-BKR-85-A.

\_\_\_\_\_

CV
- [26] **INSTALL** a jumper across secondary disconnect contacts 6  
and 9 on the back of breaker 2-BKR-85-A.

\_\_\_\_\_

CV
- [27] **RE-INSTALL** the cover for the secondary disconnect contacts  
**AND**  
**TORQUE** the cover screws to 30 inch-pounds.

\_\_\_\_\_

CV
- [28] **ENSURE** 2-BKR-85-A is OPEN.

\_\_\_\_\_

Date \_\_\_\_\_

**6.1 Motor Breaker 2A Manual Control Logic (continued)**

[29] **RACK 2-BKR-85-A, CRD MG SET 2A (2-GEN-85-A), motor supply breaker in compartment 4D of 480V UNIT BD 2A to the TEST position, AND**

**VERIFY:**

- A. Green Light at Breaker compt. LIT. \_\_\_\_\_
- B. Red Light at Breaker compt. NOT LIT. \_\_\_\_\_
- C. Green Light at MG Set control panel LIT. \_\_\_\_\_
- D. Red Light at MG Set control panel NOT LIT. \_\_\_\_\_

[30] **PLACE Motor 2A hand switch to CLOSE position, AND**

**RELEASE.** \_\_\_\_\_

[31] **VERIFY** the following:

- A. Green Light at Breaker compt. NOT LIT. \_\_\_\_\_
- B. Red Light at Breaker compt. LIT. \_\_\_\_\_
- C. Green Light at MG Set control panel NOT LIT. \_\_\_\_\_
- D. Red Light at MG Set control panel LIT. \_\_\_\_\_

**NOTE**

For the remainder of this test, it is adequate to determine the tripped/closed status of 2-BKR-85-A by observing red/green lights on either 480V Unit Board 2A, Compt. 4D or at 2-L-115.

[32] **PLACE Motor 2A hand switch to TRIP position, AND**

**RELEASE.** \_\_\_\_\_

[33] **VERIFY 2-BKR-85-A TRIPS.** \_\_\_\_\_

[34] **PLACE Motor 2A hand switch to CLOSE position AND**

**RELEASE.** \_\_\_\_\_

[35] **VERIFY 2-BKR-85-A CLOSSES.** \_\_\_\_\_

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**6.1 Motor Breaker 2A Manual Control Logic (continued)**

**NOTE**

The following step simulates a trip signal for the 2A Motor Breaker.

[36] **MOMENTARILY PLACE** a hand held jumper across Terminals 10 (wire 4DTP) and 16 (wire 4DT1) on Board Undervoltage Relay 27BX1 in 480V UNIT BD 2A, compt. 5, **AND**

**VERIFY 2-BKR-85-A TRIPS.** \_\_\_\_\_

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Date \_\_\_\_\_

**6.2 Motor Breaker 2B Manual Control Logic**

- [1] **ENSURE** prerequisites listed in Section 4.0 for Section 6.2 are completed. \_\_\_\_\_
- [2] **ENSURE** nomenclature in GENERAL PERFORMANCE NOTES section of Section 6.0 is understood by all test performers before continuing. \_\_\_\_\_
- [3] **ENSURE** 2-XA-55-4B-85A, CRD MG SET TRIP/GROUND, [2-M-4] is CLEAR. \_\_\_\_\_
- [4] **RACK** 2-BKR-85-B, CRD MG SET 2B (2-GEN-85-B), motor supply breaker in compartment 3B of 480V UNIT BD 2B to the REMOVE position. \_\_\_\_\_

**NOTE**

The following step maintains the Motor Breaker logic in the Operating Position while the Motor Breaker is racked in the Test Position.

- [5] **REMOVE** the cover for the secondary disconnect contacts, **AND**

**INSTALL** jumper across secondary disconnect contacts 11 and 12 on the back of breaker 2-BKR-85-B. \_\_\_\_\_

CV
- [6] **RE-INSTALL** the cover for the secondary disconnect contacts, **AND**

**TORQUE** the cover screws to 30 inch-pounds. \_\_\_\_\_

CV
- [7] **ENSURE** 2-BKR-85-B is OPEN, **AND**

**RACK** 2-BKR-85-B, 480V UNIT BD 2B, Compt. 3B, to the TEST position. \_\_\_\_\_

Date \_\_\_\_\_

**6.2 Motor Breaker 2B Manual Control Logic (continued)**

- [8] **VERIFY** the following conditions:
  - A. 2-XA-55-4B-85A, CRD MG SET TRIP/GROUND [2-M-4], ALARMS. \_\_\_\_\_
  - B. Green flag on 2-BKR-85-B is visible. \_\_\_\_\_
  - C. Green Light at Breaker compt. LIT. \_\_\_\_\_
  - D. Red Light at Breaker compt. NOT LIT. \_\_\_\_\_
  - E. Green Light at MG Set control panel LIT. \_\_\_\_\_
  - F. Red Light at MG Set control panel NOT LIT. \_\_\_\_\_
  - G. Unit 2 Integrated Computer System (ICS) point Y2816D reads OFF. \_\_\_\_\_
  
- [9] **PLACE AND HOLD** Motor 2B hand switch in CLOSE position. \_\_\_\_\_
  
- [10] **VERIFY** the following:
  - A. Green flag on 2-BKR-85-B is still visible. \_\_\_\_\_
  - B. Green Light at MG Set control panel LIT. \_\_\_\_\_
  
- [11] **RELEASE** Motor 2B hand switch. \_\_\_\_\_
  
- [12] **PLACE AND HOLD** Motor 2B hand switch in TRIP position. \_\_\_\_\_
  
- [13] **VERIFY** Green Light at MG Set control panel LIT. \_\_\_\_\_
  
- [14] **PLACE** Motor 2B hand switch in PULL LAMP CUT OUT (TRIP-PULL-TO-LOCK) position. \_\_\_\_\_
  
- [15] **VERIFY** Green Light at MG Set control panel NOT LIT. \_\_\_\_\_

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**6.2 Motor Breaker 2B Manual Control Logic (continued)**

[16] **PRESS** Test CLOSE pushbutton at 480V UNIT BOARD 2B, Compt. 3B, **AND**

**VERIFY** the following:

- A. Breaker is CLOSED by observing Red flag \_\_\_\_\_
- B. Green Light at Breaker compt. NOT LIT. \_\_\_\_\_
- C. Red Light at Breaker compt. LIT. \_\_\_\_\_
- D. Green Light at MG Set control panel NOT LIT. \_\_\_\_\_
- E. Red Light at MG Set control panel NOT LIT. \_\_\_\_\_
- F. Unit 2 Integrated Computer System (ICS) point Y2816D reads ON. \_\_\_\_\_

[17] **PRESS** Test TRIP pushbutton at 480V UNIT BOARD 2B, Compt. 3B, **AND**

**VERIFY** Breaker OPENS by observing Green light LIT at Breaker compt. \_\_\_\_\_

[18] **VERIFY** Unit 2 Integrated Computer System (ICS) point Y2816D reads OFF. \_\_\_\_\_

[19] **VERIFY** Green Light at MG Set control panel NOT LIT. \_\_\_\_\_

[20] **PLACE** Motor 2B hand switch to center (OFF) position. \_\_\_\_\_

[21] **VERIFY** Green Light at MG Set control panel LIT. \_\_\_\_\_

[22] **REMOVE** 2-BKR-85-B, CRD MG SET 2B (2-GEN-85-B), motor supply breaker at compartment 3B of 480V UNIT BD 2B. \_\_\_\_\_

[23] **VERIFY** 2-XA-55-4B-85A, CRD MG SET TRIP/GROUND, CLEARS. \_\_\_\_\_

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 44 of 135</b>
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Date \_\_\_\_\_

**6.2 Motor Breaker 2B Manual Control Logic (continued)**

**NOTE**

The following step removes the Motor Breaker logic in the Operating Position while the Motor Breaker is racked in the Test Position.

[24] **REMOVE** the cover for the secondary disconnect contacts  
**AND**

**REMOVE** jumper across secondary disconnect contacts 11  
and 12 on the back of breaker 2-BKR-85-B.

\_\_\_\_\_  
CV

[25] **INSTALL** a jumper across secondary disconnect contacts 3  
and 14 on the back of breaker 2-BKR-85-B.

\_\_\_\_\_  
CV

[26] **INSTALL** a jumper across secondary disconnect contacts 6  
and 9 on the back of breaker 2-BKR-85-B.

\_\_\_\_\_  
CV

[27] **RE-INSTALL** the cover for the secondary disconnect contacts  
**AND**

**TORQUE** the cover screws to 30 inch-pounds.

\_\_\_\_\_  
CV

[28] **ENSURE** 2-BKR-85-B is OPEN.

\_\_\_\_\_

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 45 of 135</b>
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**6.2 Motor Breaker 2B Manual Control Logic (continued)**

[29] **RACK 2-BKR-85-B, CRD MG SET 2B (2-GEN-85-B), motor supply breaker in compartment 3B of 480V UNIT BD 2B to the TEST position, AND**

**VERIFY:**

- A. Green Light at Breaker compt. LIT. \_\_\_\_\_
- B. Red Light at Breaker compt. NOT LIT. \_\_\_\_\_
- C. Green Light at MG Set control panel LIT. \_\_\_\_\_
- D. Red Light at MG Set control panel NOT LIT. \_\_\_\_\_

[30] **PLACE Motor 2B hand switch to CLOSE position, AND  
RELEASE.**

[31] **VERIFY** the following:

- A. Green Light at Breaker compt. NOT LIT. \_\_\_\_\_
- B. Red Light at Breaker compt. LIT. \_\_\_\_\_
- C. Green Light at MG Set control panel NOT LIT. \_\_\_\_\_
- D. Red Light at MG Set control panel LIT. \_\_\_\_\_

**NOTE**

For the remainder of this test, it is adequate to determine the tripped/closed status of 2-BKR-85-B by observing red/green lights on either 480V Unit Board 2B, Compt. 3B or at 2-L-115.

[32] **PLACE Motor 2B hand switch to TRIP position, AND  
RELEASE.**

[33] **VERIFY 2-BKR-85-B TRIPS.**

[34] **PLACE Motor 2B hand switch to CLOSE position, AND  
RELEASE.**

[35] **VERIFY 2-BKR-85-B CLOSSES.**

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 46 of 135</b>
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Date \_\_\_\_\_

**6.2 Motor Breaker 2B Manual Control Logic (continued)**

**NOTE**

The following step simulates a trip signal for the 2B Motor Breaker.

[36] **MOMENTARILY PLACE** a hand held jumper across Terminals  
10 (wire 3BTP) and 16 (wire 3BT1) on Board Undervoltage  
Relay 27BX1 in 480V UNIT BD 2B, compt. 6, **AND**

**VERIFY 2-BKR-85-B TRIPS.** \_\_\_\_\_

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 47 of 135</b>
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Date \_\_\_\_\_

**6.3 Generator Breaker 2A Manual Control Logic**

**NOTE**

The Synchronize switch handle may be moved to the opposite Synchronize switch as needed. Handle can only be removed when Synchronize switch is in OFF position.

- [1] **ENSURE** prerequisites listed in Section 4.0 for Section 6.3 are completed. \_\_\_\_\_
- [2] **ENSURE** nomenclature in NOTES section of Section 6.0 is understood by all test performers before continuing. \_\_\_\_\_
- [3] **ENSURE** 0-BKR-236-3/215-F (Breaker 215 on 125V DC Vital Battery Bd III) in the ON position. \_\_\_\_\_
- [4] **ENSURE** Synchronize switch on GENERATOR NO. 1 cabinet is in OFF position. \_\_\_\_\_
- [5] **ENSURE** Synchronize switch on GENERATOR NO. 2 cabinet is in OFF position. \_\_\_\_\_
- [6] **ENSURE** targets are RESET on the following relays on GENERATOR NO. 1 control panel:
  - A. GROUND PROTECTIVE RELAY \_\_\_\_\_
  - B. DIRECTIONAL OVERCURRENT A \_\_\_\_\_
  - C. DIRECTIONAL OVERCURRENT C \_\_\_\_\_
- [7] **ENSURE** ammeters 2-EI-85-A/A and 2-EI-85-A/C read  $0 \pm 2$  amps. \_\_\_\_\_
- [8] **RACK** 2-BKR-85-L115/1C, GENERATOR NO. 1 OUTPUT, at MG Set 2A control panel to the TEST position, **AND**

**ENSURE** it is OPEN and green flag on breaker is visible. \_\_\_\_\_
- [9] **VERIFY** the following for 2-BKR-85-L115/1C:
  - A. Green Light at Breaker compartment LIT. \_\_\_\_\_
  - B. Red Light at Breaker compartment NOT LIT. \_\_\_\_\_
- [10] **ENSURE** 2-BKR-85-L115/2C, GENERATOR NO. 2. OUTPUT, is OPEN and in TEST position. \_\_\_\_\_

Date \_\_\_\_\_

**6.3 Generator Breaker 2A Manual Control Logic (continued)**

- [11] **PLACE** Motor 2A hand switch to CLOSE position, **AND**  
**RELEASE.** \_\_\_\_\_
- [12] **VERIFY** 2-BKR-85-A CLOSES. \_\_\_\_\_
- [13] **PLACE** Gen 2A hand switch to CLOSE position, **AND**  
**RELEASE.** \_\_\_\_\_
- [14] **VERIFY** the following conditions:
  - A. 2-BKR-85-L115/1C CLOSES by observing red flag. \_\_\_\_\_
  - B. Green Light at Breaker compartment NOT LIT. \_\_\_\_\_
  - C. Red Light at Breaker compartment LIT. \_\_\_\_\_
- [15] **PLACE** Gen 2A hand switch to TRIP position, **AND**  
**RELEASE.** \_\_\_\_\_
- [16] **VERIFY** the following conditions:
  - A. 2-BKR-85-L115/1C TRIPS by observing green flag. \_\_\_\_\_
  - B. Green Light at Breaker compartment LIT. \_\_\_\_\_
  - C. Red Light at Breaker compartment NOT LIT. \_\_\_\_\_

**NOTE**

For the remainder of the test, it is adequate to determine status of 2-BKR-85-L115/1C by observing green/red lights above breaker compartment on 2-L-115.

- [17] **PLACE** Gen 2A hand switch to CLOSE position, **AND**  
**RELEASE.** \_\_\_\_\_
- [18] **VERIFY** 2-BKR-85-L115/1C CLOSES. \_\_\_\_\_
- [19] **PLACE** Motor 2A hand switch to TRIP position, **AND**  
**RELEASE.** \_\_\_\_\_

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 49 of 135</b>
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**6.3 Generator Breaker 2A Manual Control Logic (continued)**

- [20] **VERIFY** the following conditions:
  - A. 2-BKR-85-A TRIPS. \_\_\_\_\_
  - B. 2-BKR-85-L115/1C TRIPS. \_\_\_\_\_
- [21] **PLACE** Synchronize switch on GENERATOR NO. 1 cabinet to ON position. \_\_\_\_\_
- [22] **VERIFY** 2-BKR-85-A does NOT CLOSE. \_\_\_\_\_
- [23] **PLACE** Gen 2A hand switch to CLOSE position, **AND**  
**RELEASE.** \_\_\_\_\_
- [24] **VERIFY** the following conditions:
  - A. 2-BKR-85-L115/1C CLOSES. \_\_\_\_\_
  - B. 2-BKR-85-A CLOSES. \_\_\_\_\_
- [25] **REMOVE** 2-FU-203-A4/32 (CRD Motor 2A Close) at 2-BD-203-A, Compt. 5. \_\_\_\_\_  
\_\_\_\_\_
- CV
- [26] **PLACE** Motor 2A hand switch to TRIP position, **AND**  
**RELEASE.** \_\_\_\_\_
- [27] **VERIFY** the following conditions:
  - A. 2-BKR-85-A TRIPS. \_\_\_\_\_
  - B. 2-BKR-85-L115/1C remains CLOSED. \_\_\_\_\_

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 50 of 135</b>
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Date \_\_\_\_\_

**6.3 Generator Breaker 2A Manual Control Logic (continued)**

**NOTE**

The fuses referenced in the following step are the 2-BKR-85-L115/1C control power fuses, and they are located to the right of the synchronizer case in 2-L-115. The UNID for these fuses (Westinghouse 15FU) is 2-FU-85-11. Power is removed from the load breaker logic to prevent the load breaker from changing position.

- [28] **REMOVE** fuses 15FU (2-FU-85-11). \_\_\_\_\_  
\_\_\_\_\_

CV
- [29] **PLACE** Synchronize switch on GENERATOR NO. 1 cabinet to OFF position. \_\_\_\_\_
- [30] **INSTALL** 2-FU-203-A4/32 (CRD Motor 2A Close) at 2-BD-203-A, Compt. 5. \_\_\_\_\_  
\_\_\_\_\_

CV
- [31] **VERIFY** 2-BKR-85-A does NOT CLOSE. \_\_\_\_\_
- [32] **INSTALL** fuses 15FU (2-FU-85-11). \_\_\_\_\_  
\_\_\_\_\_

CV
- [33] **VERIFY** 2-BKR-85-L115/1C TRIPS. \_\_\_\_\_
- [34] **PLACE** Motor 2A hand switch to CLOSE position, **AND**  
**RELEASE.** \_\_\_\_\_
- [35] **VERIFY** 2-BKR-85-A CLOSES. \_\_\_\_\_
- [36] **PLACE** Gen 2A hand switch to CLOSE position, **AND**  
**RELEASE.** \_\_\_\_\_
- [37] **VERIFY** 2-BKR-85-L115/1C CLOSES. \_\_\_\_\_
- [38] **ENSURE** 2-XA-55-4B-85A, CRD MG SET TRIP/GROUND, [2-M-4] is CLEAR. \_\_\_\_\_

<b>WBN</b> <b>Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02</b> <b>Rev. 0000</b> <b>Page 51 of 135</b>
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**6.3 Generator Breaker 2A Manual Control Logic (continued)**

**NOTE**

The cover must be removed from the Ground Protective Relay for manual actuation.

- [39] **MANUALLY ACTUATE** and **RELEASE** the GROUND PROTECTIVE RELAY on GENERATOR NO. 1 cabinet. \_\_\_\_\_
- [40] **VERIFY** 2-XA-55-4B-85A, CRD MG SET TRIP/GROUND, [2-M-4], ALARMS. \_\_\_\_\_
- [41] **PRESS AND RELEASE** GENERATOR NO. 1 RELAY FLAG RESET Pushbutton, **AND**  
  
**VERIFY** 2-XA-55-4B-85A, CRD MG SET TRIP/GROUND, CLEARS. \_\_\_\_\_
- [42] **RESET** target on GROUND PROTECTIVE RELAY on GENERATOR NO. 1 cabinet. \_\_\_\_\_

**NOTE**

The cover must be removed from the Directional Overcurrent A Relay for manual actuation. Manual Actuation of the Directional Overcurrent Relays is performed by first actuating the Directional Unit and then actuating either the Time-Overcurrent Unit or the Instantaneous Overcurrent Unit.

- [43] **MANUALLY ACTUATE** and **RELEASE** the DIRECTIONAL OVERCURRENT A relay on GENERATOR NO. 1 cabinet. \_\_\_\_\_
- [44] **VERIFY** the following:
  - A. 2-XA-55-4B-85A, CRD MG SET TRIP/GROUND, [2-M-4], ALARMS. \_\_\_\_\_
  - B. 2-BKR-85-L115/1C TRIPS. \_\_\_\_\_

Date \_\_\_\_\_

**6.3 Generator Breaker 2A Manual Control Logic (continued)**

**NOTE**

In the following step the breaker may try to close but should immediately trip free. This will be called out by the procedure as "remains TRIPPED".

- [45] **PLACE** Gen 2A hand switch to CLOSE position, **AND**  
**RELEASE.** \_\_\_\_\_
- [46] **VERIFY** 2-BKR-85-L115/1C remains TRIPPED. \_\_\_\_\_
- [47] **PRESS AND RELEASE** GENERATOR NO. 1 RELAY FLAG  
RESET Pushbutton, **AND**  
**VERIFY** 2-XA-55-4B-85A, CRD MG SET TRIP/GROUND,  
CLEARS. \_\_\_\_\_
- [48] **RESET** target on DIRECTIONAL OVERCURRENT A relay on  
GENERATOR NO. 1. \_\_\_\_\_
- [49] **PLACE** Gen 2A hand switch to CLOSE position, **AND**  
**RELEASE.** \_\_\_\_\_
- [50] **VERIFY** 2-BKR-85-L115/1C CLOSES. \_\_\_\_\_

**NOTE**

The cover must be removed from the Directional Overcurrent C Relay for manual actuation. Manual Actuation of the Directional Overcurrent Relays is performed by first actuating the Directional Unit and then actuating either the Time-Overcurrent Unit or the Instantaneous Overcurrent Unit.

- [51] **MANUALLY ACTUATE** and **RELEASE** the DIRECTIONAL  
OVERCURRENT C relay on GENERATOR NO. 1 cabinet. \_\_\_\_\_
- [52] **VERIFY** the following:
  - A. 2-XA-55-4B-85A, CRD MG SET TRIP/GROUND,  
[2-M-4], ALARMS. \_\_\_\_\_
  - B. 2-BKR-85-L115/1C TRIPS. \_\_\_\_\_

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Date \_\_\_\_\_

**6.3 Generator Breaker 2A Manual Control Logic (continued)**

**NOTE**

In the following step the breaker may try to close but should immediately trip free. This will be called out by the procedure as "remains TRIPPED".

- [53] **PLACE** Gen 2A hand switch to CLOSE position, **AND**  
**RELEASE.** \_\_\_\_\_
- [54] **VERIFY** 2-BKR-85-L115/1C remains TRIPPED. \_\_\_\_\_
- [55] **PRESS AND RELEASE** GENERATOR NO. 1 RELAY FLAG  
RESET Pushbutton, **AND**  
**VERIFY** 2-XA-55-4B-85A, CRD MG SET TRIP/GROUND,  
CLEARS. \_\_\_\_\_
- [56] **RESET** the targets on DIRECTIONAL OVERCURRENT C  
relay on GENERATOR NO. 1. \_\_\_\_\_

Date \_\_\_\_\_

**6.4 Generator Breaker 2B Manual Control Logic**

**NOTE**

The Synchronize switch handle may be moved to the opposite Synchronize switch as needed. Handle can only be removed when Synchronize switch is in OFF position.

- [1] **ENSURE** prerequisites listed in Section 4.0 for Section 6.4 are completed. \_\_\_\_\_
- [2] **ENSURE** nomenclature in NOTES section of Section 6.0 is understood by all test performers before continuing. \_\_\_\_\_
- [3] **ENSURE** 0-BKR-236-4/215-G (Breaker 215 on 125V DC Vital Battery Bd IV) in the ON position. \_\_\_\_\_
- [4] **ENSURE** Synchronize switch on GENERATOR NO. 1 cabinet is in OFF position. \_\_\_\_\_
- [5] **ENSURE** Synchronize switch on GENERATOR NO. 2 cabinet is in OFF position. \_\_\_\_\_
- [6] **ENSURE** targets are RESET on the following relays on GENERATOR NO. 2 control panel:
  - A. DIRECTIONAL OVERCURRENT A \_\_\_\_\_
  - B. DIRECTIONAL OVERCURRENT C \_\_\_\_\_
- [7] **ENSURE** ammeters 2-EI-85-B/A and 2-EI-85-B/C read  $0 \pm 2$  amps. \_\_\_\_\_
- [8] **RACK** 2-BKR-85-L115/2C, GENERATOR NO. 2 OUTPUT, at MG Set 2B control panel to the TEST position, **AND** **ENSURE** it is OPEN and green flag on breaker is visible. \_\_\_\_\_
- [9] **VERIFY** the following for 2-BKR-85-L115/2C:
  - A. Green Light at Breaker compartment LIT. \_\_\_\_\_
  - B. Red Light at Breaker compartment NOT LIT. \_\_\_\_\_
- [10] **ENSURE** 2-BKR-85-L115/1C, GENERATOR NO. 1. OUTPUT, is OPEN and in TEST position. \_\_\_\_\_

Date \_\_\_\_\_

**6.4 Generator Breaker 2B Manual Control Logic (continued)**

- [11] **PLACE** Motor 2B hand switch to CLOSE position, **AND**  
**RELEASE.** \_\_\_\_\_
- [12] **VERIFY** 2-BKR-85-B CLOSES. \_\_\_\_\_
- [13] **PLACE** Gen 2B hand switch to CLOSE position, **AND**  
**RELEASE.** \_\_\_\_\_
- [14] **VERIFY** the following conditions:
  - A. 2-BKR-85-L115/2C CLOSES by observing red flag. \_\_\_\_\_
  - B. Green Light at Breaker compartment NOT LIT. \_\_\_\_\_
  - C. Red Light at Breaker compartment LIT. \_\_\_\_\_
- [15] **PLACE** Gen 2B hand switch to TRIP position, **AND**  
**RELEASE.** \_\_\_\_\_
- [16] **VERIFY** the following conditions:
  - A. 2-BKR-85-L115/2C TRIPS by observing green flag. \_\_\_\_\_
  - B. Green Light at Breaker compartment LIT. \_\_\_\_\_
  - C. Red Light at Breaker compartment NOT LIT. \_\_\_\_\_

**NOTE**

For the remainder of the test, it is adequate to determine status of 2-BKR-85-L115/2C by observing green/red lights above breaker compartment on 2-L-115.

- [17] **PLACE** Gen 2B hand switch to CLOSE position, **AND**  
**RELEASE.** \_\_\_\_\_
- [18] **VERIFY** 2-BKR-85-L115/2C CLOSES. \_\_\_\_\_
- [19] **PLACE** Motor 2B hand switch to TRIP position, **AND**  
**RELEASE.** \_\_\_\_\_

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**6.4 Generator Breaker 2B Manual Control Logic (continued)**

- [20] **VERIFY** the following conditions:
  - A. 2-BKR-85-B TRIPS. \_\_\_\_\_
  - B. 2-BKR-85-L115/2C TRIPS. \_\_\_\_\_
- [21] **PLACE** Synchronize switch on GENERATOR NO. 2 cabinet to ON position. \_\_\_\_\_
- [22] **VERIFY** 2-BKR-85-B does NOT CLOSE. \_\_\_\_\_
- [23] **PLACE** Gen 2B hand switch to CLOSE position, **AND**  
**RELEASE.** \_\_\_\_\_
- [24] **VERIFY** the following conditions:
  - A. 2-BKR-85-L115/2C CLOSES. \_\_\_\_\_
  - B. 2-BKR-85-B CLOSES. \_\_\_\_\_
- [25] **REMOVE** 2-FU-203-B3/12 (CRD Motor 2B Close) at 2-BD-203-B, Compt. 6. \_\_\_\_\_  
\_\_\_\_\_
- CV
- [26] **PLACE** Motor 2B hand switch to TRIP position, **AND**  
**RELEASE.** \_\_\_\_\_
- [27] **VERIFY** the following conditions:
  - A. 2-BKR-85-B TRIPS. \_\_\_\_\_
  - B. 2-BKR-85-L115/2C remains CLOSED. \_\_\_\_\_

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Date \_\_\_\_\_

**6.4 Generator Breaker 2B Manual Control Logic (continued)**

**NOTE**

The fuses referenced in the following step are the 2-BKR-85-L115/2C control power fuses, and they are located to the right of the knife switch in 2-L-115. The UNID for these fuses (Westinghouse 25FU) is 2-FU-85-21. Power is removed from the load breaker logic to prevent the load breaker from changing position.

- [28] **REMOVE** fuses 25FU (2-FU-85-21). \_\_\_\_\_
- CV
- [29] **PLACE** Synchronize switch on GENERATOR NO. 2 cabinet to OFF position. \_\_\_\_\_
- [30] **INSTALL** 2-FU-203-B3/12 (CRD Motor 2B Close) at 2-BD-203-B, Compt. 6. \_\_\_\_\_
- CV
- [31] **VERIFY** 2-BKR-85-B does NOT CLOSE. \_\_\_\_\_
- [32] **INSTALL** fuses 25FU (2-FU-85-21). \_\_\_\_\_
- CV
- [33] **VERIFY** 2-BKR-85-L115/2C TRIPS. \_\_\_\_\_
- [34] **PLACE** Motor 2B hand switch to CLOSE position, **AND**  
**RELEASE.** \_\_\_\_\_
- [35] **VERIFY** 2-BKR-85-B CLOSES. \_\_\_\_\_
- [36] **PLACE** Gen 2B hand switch to CLOSE position, **AND**  
**RELEASE.** \_\_\_\_\_
- [37] **VERIFY** 2-BKR-85-L115/2C CLOSES. \_\_\_\_\_
- [38] **ENSURE** 2-XA-55-4B-85A, CRD MG SET TRIP/GROUND, [2-M-4] is CLEAR. \_\_\_\_\_

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 58 of 135</b>
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**6.4 Generator Breaker 2B Manual Control Logic (continued)**

**NOTE**

The cover must be removed from the Directional Overcurrent A Relay for manual actuation. Manual Actuation of the Directional Overcurrent Relays is performed by first actuating the Directional Unit and then actuating either the Time-Overcurrent Unit or the Instantaneous Overcurrent Unit.

- [39] **MANUALLY ACTUATE** and **RELEASE** the **DIRECTIONAL OVERCURRENT A** relay on **GENERATOR NO. 2** cabinet. \_\_\_\_\_
- [40] **VERIFY** the following:
  - A. 2-XA-55-4B-85A, CRD MG SET TRIP/GROUND, [2-M-4], ALARMS. \_\_\_\_\_
  - B. 2-BKR-85-L115/2C TRIPS. \_\_\_\_\_

**NOTE**

In the following step the breaker may try to close but should immediately trip free. This will be called out by the procedure as "remains TRIPPED".

- [41] **PLACE** Gen 2B hand switch to **CLOSE** position, **AND RELEASE**. \_\_\_\_\_
- [42] **VERIFY** 2-BKR-85-L115/2C remains **TRIPPED**. \_\_\_\_\_
- [43] **PRESS AND RELEASE** **GENERATOR NO. 2 RELAY FLAG RESET** Pushbutton, **AND VERIFY** 2-XA-55-4B-85A, CRD MG SET TRIP/GROUND, **CLEAR**S. \_\_\_\_\_
- [44] **RESET** target on **DIRECTIONAL OVERCURRENT A** relay on **GENERATOR NO. 2**. \_\_\_\_\_
- [45] **PLACE** Gen 2B hand switch to **CLOSE** position, **AND RELEASE**. \_\_\_\_\_
- [46] **VERIFY** 2-BKR-85-L115/2C **CLOSES**. \_\_\_\_\_

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 59 of 135</b>
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**6.4 Generator Breaker 2B Manual Control Logic (continued)**

**NOTE**

The cover must be removed from the Directional Overcurrent C Relay for manual actuation. Manual Actuation of the Directional Overcurrent Relays is performed by first actuating the Directional Unit and then actuating either the Time-Overcurrent Unit or the Instantaneous Overcurrent Unit.

- [47] **MANUALLY ACTUATE** and **RELEASE** the **DIRECTIONAL OVERCURRENT C** relay on **GENERATOR NO. 2** cabinet. \_\_\_\_\_
- [48] **VERIFY** the following:
  - A. 2-XA-55-4B-85A, CRD MG SET TRIP/GROUND, [2-M-4], ALARMS. \_\_\_\_\_
  - B. 2-BKR-85-L115/2C TRIPS. \_\_\_\_\_

**NOTE**

In the following step the breaker may try to close but should immediately trip free. This will be called out by the procedure as "remains TRIPPED".

- [49] **PLACE** Gen 2B hand switch to **CLOSE** position, **AND RELEASE**. \_\_\_\_\_
- [50] **VERIFY** 2-BKR-85-L115/2C remains **TRIPPED**. \_\_\_\_\_

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 60 of 135</b>
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**6.4 Generator Breaker 2B Manual Control Logic (continued)**

[51] **PRESS AND RELEASE GENERATOR NO. 2 RELAY FLAG  
RESET Pushbutton, AND**

**VERIFY 2-XA-55-4B-85A, CRD MG SET TRIP/GROUND,  
CLEARS.**

[52] **RESET target on DIRECTIONAL OVERCURRENT C relay on  
GENERATOR NO. 2.**

\_\_\_\_\_

\_\_\_\_\_

<b>WBN</b> <b>Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02</b> <b>Rev. 0000</b> <b>Page 61 of 135</b>
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**6.5 MG Set 2A and 2B Breaker Interlock / Synchronize Logic**

**NOTE**

The Synchronize switch handle may be moved to the opposite Synchronize switch as needed. Handle can only be removed when Synchronize switch is in OFF position.

- [1] **ENSURE** prerequisites listed in Section 4.0 for Section 6.5 are completed. \_\_\_\_\_
- [2] **ENSURE** nomenclature in NOTES section of Section 6.0 is understood by all test performers before continuing. \_\_\_\_\_
- [3] **ENSURE** Synchronize switch on GENERATOR NO. 1 cabinet is in OFF position. \_\_\_\_\_
- [4] **ENSURE** Synchronize switch on GENERATOR NO. 2 cabinet is in OFF position. \_\_\_\_\_
- [5] **ENSURE** the following breakers are in the TEST position and OPEN:
  - A. 2-BKR-85-A \_\_\_\_\_
  - B. 2-BKR-85-B \_\_\_\_\_
  - C. 2-BKR-85-L115/1C \_\_\_\_\_
  - D. 2-BKR-85-L115/2C \_\_\_\_\_
- [6] **ENSURE** targets are RESET on the following relays on GENERATOR NO. 1 control panel:
  - A. GROUND PROTECTIVE RELAY \_\_\_\_\_
  - B. DIRECTIONAL OVERCURRENT A \_\_\_\_\_
  - C. DIRECTIONAL OVERCURRENT C \_\_\_\_\_

Date \_\_\_\_\_

**6.5 MG Set 2A and 2B Breaker Interlock / Synchronize Logic  
(continued)**

- [7] **ENSURE** targets are RESET on the following relays on GENERATOR NO. 2 control panel:
  - A. DIRECTIONAL OVERCURRENT A \_\_\_\_\_
  - B. DIRECTIONAL OVERCURRENT C \_\_\_\_\_
- [8] **PLACE** Motor 2A hand switch to CLOSE position, **AND**  
**RELEASE.** \_\_\_\_\_
- [9] **VERIFY** 2-BKR-85-A CLOSSES. \_\_\_\_\_
- [10] **PLACE** Motor 2B hand switch to CLOSE position, **AND**  
**RELEASE.** \_\_\_\_\_
- [11] **VERIFY** 2-BKR-85-B CLOSSES. \_\_\_\_\_

**NOTES**

- 1) Terminals on Synchronizer are on the back of the Synchronizer in the rear of 2-L-115.
- 2) The following step simulates the synchronizer contact closing in the Load Breaker closure logic.

- [12] **MOMENTARILY PLACE** a jumper on Synchronizer terminal 11 (wire 818) and terminal 12 (wire 819), **AND**  
**VERIFY** the following:
  - A. 2-BKR-85-L115/1C does NOT CLOSE. \_\_\_\_\_
  - B. 2-BKR-85-L115/2C does NOT CLOSE. \_\_\_\_\_
- [13] **PLACE** Motor 2B hand switch to TRIP position, **AND**  
**RELEASE.** \_\_\_\_\_
- [14] **VERIFY** 2-BKR-85-B TRIPS. \_\_\_\_\_
- [15] **PLACE** Synchronize switch on GENERATOR NO. 1 cabinet to ON position. \_\_\_\_\_
- [16] **VERIFY** 2-BKR-85-L115/1C does NOT CLOSE. \_\_\_\_\_

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Date \_\_\_\_\_

**6.5 MG Set 2A and 2B Breaker Interlock / Synchronize Logic  
(continued)**

**NOTE**

The following step simulates the synchronizer contact closing in the Load Breaker closure logic.

- [17] **MOMENTARILY PLACE** a jumper on Synchronizer terminal 11 (wire 818) and terminal 12 (wire 819), **AND**
- VERIFY 2-BKR-85-L115/1C CLOSES.** \_\_\_\_\_

**NOTE**

In the following steps with Gen 2A hand switch in TRIP and TRIP-PULL-OUT, 2-BKR-85-L115/1C may try to close (upon receipt of close signal) but should immediately trip free. This will be called out by the procedure as "VERIFY 2-BKR-85-L115/1C remains TRIPPED".

- [18] **PLACE AND HOLD** Gen 2A hand switch to TRIP position. \_\_\_\_\_
- [19] **VERIFY 2-BKR-85-L115/1C TRIPS.** \_\_\_\_\_

**NOTE**

The following step simulates the synchronizer contact closing in the Load Breaker closure logic.

- [20] **MOMENTARILY PLACE** a jumper on Synchronizer terminal 11 (wire 818) and terminal 12 (wire 819), **AND**
- VERIFY 2-BKR-85-L115/1C remains TRIPPED.** \_\_\_\_\_
- [21] **RELEASE** Gen 2A hand switch. \_\_\_\_\_
- [22] **PLACE** Gen 2A hand switch to TRIP-PULL-OUT position. \_\_\_\_\_
- [23] **MOMENTARILY PLACE** a jumper on Synchronizer terminal 11 (wire 818) and terminal 12 (wire 819), **AND**
- VERIFY 2-BKR-85-L115/1C remains TRIPPED.** \_\_\_\_\_
- [24] **PLACE** Synchronize switch on GENERATOR NO. 1 cabinet to OFF position. \_\_\_\_\_

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 64 of 135</b>
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Date \_\_\_\_\_

**6.5 MG Set 2A and 2B Breaker Interlock / Synchronize Logic  
(continued)**

- [25] **PLACE** Gen 2A hand switch to CLOSE position, **AND**  
**RELEASE.** \_\_\_\_\_
- [26] **VERIFY** 2-BKR-85-L115/1C CLOSES. \_\_\_\_\_
- [27] **MOMENTARILY PLACE** a jumper on Synchronizer terminal  
11 (wire 818) and terminal 12 (wire 819) **AND**  
**VERIFY** 2-BKR-85-L115/2C does NOT CLOSE. \_\_\_\_\_
- [28] **PLACE** Synchronize switch on GENERATOR NO. 2 cabinet to  
ON position. \_\_\_\_\_
- [29] **VERIFY** 2-BKR-85-L115/2C does NOT CLOSE. \_\_\_\_\_
- [30] **PLACE** Gen 2B hand switch to CLOSE position, **AND**  
**RELEASE.** \_\_\_\_\_
- [31] **VERIFY** 2-BKR-85-L115/2C does NOT CLOSE. \_\_\_\_\_

**NOTE**

The following step simulates the synchronizer contact closing in the Load Breaker closure logic.

- [32] **MOMENTARILY PLACE** a jumper on Synchronizer terminal  
11 (wire 818) and terminal 12 (wire 819) **AND**  
**VERIFY** the following:  
A. 2-BKR-85-L115/2C CLOSES. \_\_\_\_\_  
B. 2-BKR-85-B CLOSES. \_\_\_\_\_
- [33] **PLACE** Gen 2A hand switch to TRIP position **AND**  
**RELEASE.** \_\_\_\_\_
- [34] **VERIFY** 2-BKR-85-L115/1C TRIPS. \_\_\_\_\_

<b>WBN</b> <b>Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02</b> <b>Rev. 0000</b> <b>Page 65 of 135</b>
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Date \_\_\_\_\_

**6.5 MG Set 2A and 2B Breaker Interlock / Synchronize Logic (continued)**

[35] **PLACE** Gen 2A hand switch to CLOSE position, **AND**  
**RELEASE.** \_\_\_\_\_

[36] **VERIFY** 2-BKR-85-L115/1C does NOT CLOSE. \_\_\_\_\_

**NOTE**

In the following steps with Gen 2B hand switch in TRIP and TRIP-PULL-OUT, 2-BKR-85-L115/2C may try to close (upon receipt of close signal) but should immediately trip free. This will be called out by the procedure as "VERIFY 2-BKR-85-L115/2C remains TRIPPED".

[37] **PLACE AND HOLD** Gen 2B hand switch to TRIP position \_\_\_\_\_

[38] **VERIFY** 2-BKR-85-L115/2C TRIPS. \_\_\_\_\_

**NOTE**

The following step simulates the synchronizer contact closing in the Load Breaker closure logic.

[39] **MOMENTARILY PLACE** a jumper on Synchronizer terminal 11 (wire 818) and terminal 12 (wire 819), **AND**  
**VERIFY** 2-BKR-85-L115/2C remains TRIPPED. \_\_\_\_\_

[40] **RELEASE** Gen 2B hand switch. \_\_\_\_\_

[41] **PLACE** Gen 2B hand switch to TRIP-PULL-OUT position. \_\_\_\_\_

[42] **MOMENTARILY PLACE** a jumper on Synchronizer terminal 11 (wire 818) and terminal 12 (wire 819), **AND**  
**VERIFY** 2-BKR-85-L115/2C remains TRIPPED. \_\_\_\_\_

[43] **PLACE** SYNCHRONIZE switch on GENERATOR NO. 2 cabinet to OFF position. \_\_\_\_\_

[44] **PLACE** Gen 2B hand switch to CLOSE position, **AND**  
**RELEASE.** \_\_\_\_\_

[45] **VERIFY** 2-BKR-85-L115/2C CLOSES. \_\_\_\_\_

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Date \_\_\_\_\_

**6.5 MG Set 2A and 2B Breaker Interlock / Synchronize Logic  
(continued)**

[46] **PLACE** Gen 2A hand switch to CLOSE position, **AND**  
**RELEASE.** \_\_\_\_\_

[47] **VERIFY** 2-BKR-85-L115/1C does NOT CLOSE. \_\_\_\_\_

[48] **PLACE** Motor 2A hand switch to TRIP position, **AND**  
**RELEASE.** \_\_\_\_\_

[49] **VERIFY** 2-BKR-85-A TRIPS. \_\_\_\_\_

[50] **PLACE** Motor 2B hand switch to TRIP position, **AND**  
**RELEASE.** \_\_\_\_\_

[51] **VERIFY** 2-BKR-85-B and 2-BKR-85-L115/2C both TRIP. \_\_\_\_\_

[52] **RACK** 2-BKR-85-A, CRD MG SET 2A (2-GEN-85-A), to the  
REMOVE position. \_\_\_\_\_

[53] **REMOVE** the cover for the secondary disconnect contacts. \_\_\_\_\_

[54] **REMOVE** jumper across secondary disconnect contacts 3 and  
14 on the back of breaker 2-BKR-085-A in compartment 4D of  
480V UNIT BD 2A. \_\_\_\_\_

CV

[55] **REMOVE** jumper across secondary disconnect contacts 6 and  
9 on the back of breaker 2-BKR-085-A in compartment 4D of  
480V UNIT BD 2A. \_\_\_\_\_

CV

[56] **RE-INSTALL** the cover for the secondary disconnect contacts,  
**AND**

**TORQUE** the cover screws to 30 inch-pounds. \_\_\_\_\_

CV

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 67 of 135</b>
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Date \_\_\_\_\_

**6.5 MG Set 2A and 2B Breaker Interlock / Synchronize Logic  
(continued)**

[57] **RACK** 2-BKR-85-B, CRD MG SET 2B (2-GEN-85-B), motor supply breaker, to the REMOVE position. \_\_\_\_\_

[58] **REMOVE** the cover for the secondary disconnect contacts. \_\_\_\_\_

[59] **REMOVE** jumper across secondary disconnect contacts 3 and 14 on the back of breaker 2-BKR-85-B, CRD MG SET 2B (2-GEN-85-B), motor supply breaker. \_\_\_\_\_

\_\_\_\_\_  
CV

[60] **REMOVE** jumper across secondary disconnect contacts 6 and 9 on the back of breaker 2-BKR-85-B, CRD MG SET 2B (2-GEN-85-B), motor supply breaker. \_\_\_\_\_

\_\_\_\_\_  
CV

[61] **RE-INSTALL** the cover for the secondary disconnect contacts, **AND**

**TORQUE** the cover screws to 30 inch-pounds. \_\_\_\_\_

\_\_\_\_\_  
CV

<b>WBN</b> <b>Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02</b> <b>Rev. 0000</b> <b>Page 68 of 135</b>
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Date \_\_\_\_\_

**6.6 MG Set 2A Generator Test**

- [1] **ENSURE** prerequisites listed Section 4.0 for Section 6.6 are completed. \_\_\_\_\_
- [2] **ENSURE** 1KS (the three pole knife switch in GENERATOR NO. 2 cabinet) is OPEN. \_\_\_\_\_
- [3] **ENSURE** targets are RESET on the following relays on GENERATOR NO. 1 control panel:
  - A. GROUND PROTECTIVE RELAY \_\_\_\_\_
  - B. DIRECTIONAL OVERCURRENT A \_\_\_\_\_
  - C. DIRECTIONAL OVERCURRENT C \_\_\_\_\_
- [4] **ENSURE** 2-BKR-85-A is OPEN. \_\_\_\_\_
- [5] **RACK** 2-BKR-85-A, CRD MG SET 2A (2-GEN-85-A), to the CONNECT position. \_\_\_\_\_
- [6] **ENSURE** 2-BKR-85-L115/1C is OPEN. \_\_\_\_\_
- [7] **RACK** 2-BKR-85-L115/1C, GENERATOR NO. 1 OUTPUT BREAKER, to the CONNECT position. \_\_\_\_\_

<p><b>NOTE</b></p> <p>The voltage adjust control has a locking mechanism.</p>
---

- [8] **ADJUST** GENERATOR NO. 1 Voltage Adjust potentiometer to the mid position. \_\_\_\_\_

<b>WBN</b> <b>Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02</b> <b>Rev. 0000</b> <b>Page 69 of 135</b>
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Date \_\_\_\_\_

**6.6 MG Set 2A Generator Test (continued)**

<p><b>NOTE</b></p> <p>Double hearing protection is required with one or more MG Sets are operating.</p>
---

<p><b>CAUTION</b></p> <p>Visually inspect the MG set for excessive vibration. Excessive vibration could lead to equipment damage.</p>
---

[9] **PLACE** Motor 2A hand switch to CLOSE, **AND**  
**RELEASE.** \_\_\_\_\_

[10] **VERIFY** visually 2-MTR-85-A starts running. \_\_\_\_\_

<p><b>NOTE</b></p> <p>Do not perform the following step until 2-MTR-85-A reaches full speed (approximately 15 seconds after the breaker closes).</p>
--

[11] **PRESS AND HOLD** the GEN. FIELD FLASH pushbutton on  
GENERATOR NO. 1 cabinet. \_\_\_\_\_

[12] **RELEASE** the GEN. FIELD FLASH pushbutton when  
GENERATOR LINE VOLTS (on GENERATOR NO. 1 cabinet)  
indicates voltage has STOPPED rising. \_\_\_\_\_

Date \_\_\_\_\_

**6.6 MG Set 2A Generator Test (continued)**

**NOTE**

Voltage adjust potentiometer has a locking mechanism.

[13] **ROTATE** the GENERATOR NO. 1 Voltage Adjust potentiometer to the minimum and maximum positions, **AND**

**RECORD** the GENERATOR LINE VOLTS readings.

A. Minimum Voltage \_\_\_\_\_

\_\_\_\_\_ V<sub>AC</sub>

B. Maximum Voltage \_\_\_\_\_

\_\_\_\_\_ V<sub>AC</sub>

[14] **VERIFY** that 260V is within the Minimum and Maximum voltage range RECORDED in the previous step. \_\_\_\_\_

[15] **ADJUST** GENERATOR NO. 1 Voltage Adjust potentiometer until GENERATOR LINE VOLTS reads approximately 260V AC. (**Acc Crit**) \_\_\_\_\_

[16] **PLACE** VOLTMETER switch (on GENERATOR NO. 1 cabinet) to the following positions, **AND**

**RECORD** volts:

A. 1-2 \_\_\_\_\_

\_\_\_\_\_ V<sub>AC</sub>

B. 2-3 \_\_\_\_\_

\_\_\_\_\_ V<sub>AC</sub>

C. 3-1 \_\_\_\_\_

\_\_\_\_\_ V<sub>AC</sub>

[17] **VERIFY** VOLTAGES RECORDED in the previous step are approximately 260V (258 to 262V). \_\_\_\_\_

Date \_\_\_\_\_

**6.6 MG Set 2A Generator Test (continued)**

**NOTE**

Begin watching GENERATOR LINE VOLTS on GENERATOR NO. 1 immediately after placing Motor 2A hand switch to TRIP.

- [18] **PLACE** Motor 2A hand switch to TRIP, **AND**  
**RELEASE.** \_\_\_\_\_
- [19] **VERIFY** GENERATOR LINE VOLTS (on GENERATOR NO. 1)  
indicates decreasing voltage after approximately 2 seconds. \_\_\_\_\_

**NOTE**

Do not perform the next instruction until Motor 2A has stopped rotating.

- [20] **PLACE** Motor 2A hand switch to CLOSE, **AND**  
**RELEASE.** \_\_\_\_\_
- [21] **VERIFY** 2-BKR-85-A CLOSES. \_\_\_\_\_
- [22] **PRESS AND HOLD** the GEN. FIELD FLASH pushbutton on  
GENERATOR NO. 1 cabinet. \_\_\_\_\_
- [23] **RELEASE** the GEN. FIELD FLASH pushbutton when  
GENERATOR LINE VOLTS (on GENERATOR NO. 1 cabinet)  
indicates voltage has STOPPED rising. \_\_\_\_\_
- [24] **RECORD** voltage reading with VOLTMETER switch (on  
GENERATOR NO. 1 cabinet) in the following position:  
Phase 1-2 \_\_\_\_\_  
  
\_\_\_\_\_ V<sub>AC</sub>
- [25] **PLACE** SYNCHRONIZE switch on GENERATOR NO. 1  
cabinet to ON position. \_\_\_\_\_

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Date \_\_\_\_\_

**6.6 MG Set 2A Generator Test (continued)**

**NOTE**

Begin watching GENERATOR LINE VOLTS on GENERATOR NO. 1 immediately after placing Motor 2A hand switch to TRIP.

- [26] **PLACE** Motor 2A hand switch to TRIP, **AND**  
**RELEASE.** \_\_\_\_\_
- [27] **VERIFY** GENERATOR LINE VOLTS (on GENERATOR NO. 1) indicates decreasing voltage after approximately 30 seconds. \_\_\_\_\_
- [28] **PLACE** SYNCHRONIZE switch on GENERATOR NO. 1 cabinet to OFF position. \_\_\_\_\_
- [29] **PLACE** Motor 2A hand switch to CLOSE, **AND**  
**RELEASE.** \_\_\_\_\_
- [30] **VERIFY** 2-BKR-85-A CLOSES. \_\_\_\_\_
- [31] **PRESS AND HOLD** the GEN. FIELD FLASH pushbutton on GENERATOR NO. 1 cabinet. \_\_\_\_\_
- [32] **RELEASE** the GEN. FIELD FLASH pushbutton when GENERATOR LINE VOLTS (on GENERATOR NO. 1 cabinet) indicates voltage has STOPPED rising. \_\_\_\_\_
- [33] **PLACE** Gen 2A hand switch to CLOSE, **AND**  
**RELEASE.** \_\_\_\_\_
- [34] **VERIFY** 2-BKR-85-L115/1C CLOSES. \_\_\_\_\_

Date \_\_\_\_\_

**6.6 MG Set 2A Generator Test (continued)**

**NOTE**

Junction covers must be removed to access the wire terminals in the following step.

- [35] **CONNECT** the Phase Sequence Indicator to transformers 11PT and 12PT, Phase A to Wire 511, Phase B to Wire 514, and Phase C to Wire 516, **AND**

**RECORD** MG Set 2A Generator Phase Sequence.

\_\_\_\_\_

\_\_\_\_\_

CV

\_\_\_\_\_  $\phi$  Sequence

- [36] **VERIFY** MG Set 2A Generator Phase Sequence is ABC.

\_\_\_\_\_

- [37] **REMOVE** the Phase Sequence Indicator installed to transformers 11PT and 12PT.

\_\_\_\_\_

\_\_\_\_\_

CV

- [38] **PLACE** GENERATOR NO. 1 AMMETER switch to the following positions, **AND**

**RECORD** GENERATOR LINE AMPS:

A. A

\_\_\_\_\_ Amps

\_\_\_\_\_

B. B

\_\_\_\_\_ Amps

\_\_\_\_\_

C. C

\_\_\_\_\_ Amps

\_\_\_\_\_

- [39] **VERIFY** GENERATOR LINE AMPS are approximately 0 V (0 - 2V).

\_\_\_\_\_

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 74 of 135</b>
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Date \_\_\_\_\_

**6.6 MG Set 2A Generator Test (continued)**

[40] **RECORD** amperage reading on the following ammeters:

A. 2-EI-85-A/A \_\_\_\_\_  
Amps

B. 2-EI-85-A/C \_\_\_\_\_  
Amps

[41] **MANUALLY ACTUATE** MG Set 2A Field Current Relay 1H (to right of Volt Reg for Gen. No. 1 inside 2-L-115), **AND**

**VERIFY** 2-BKR-85-L115/1C, GENERATOR NO. 1 OUTPUT, remains CLOSED. \_\_\_\_\_

[42] **MANUALLY ACTUATE AND HOLD** Bus Overvoltage Relay BOV (to right of Volt Reg for Gen. No. 2 inside 2-L-115), **AND**

**VERIFY** 2-BKR-85-L115/1C, GENERATOR NO. 1 OUTPUT, remains CLOSED. \_\_\_\_\_

[43] **MANUALLY ACTUATE AND HOLD** MG Set 2A Field Current Relay 1H for approximately 5 seconds, **AND**

**VERIFY:**

A. 2-BKR-85-L115/1C TRIPS. \_\_\_\_\_

B. 2-XA-55-4B-85A, CRD MG SET TRIP/GROUND, ALARMS. \_\_\_\_\_

[44] **RELEASE** Bus Overvoltage Relay BOV, **AND**

**VERIFY** 2-XA-55-4B-85A, CRD MG SET TRIP/GROUND, CLEARS. \_\_\_\_\_

[45] **PLACE** Motor 2A hand switch to TRIP-PULL LAMP CUT OUT. \_\_\_\_\_

[46] **PLACE** Gen 2A hand switch to TRIP-PULL OUT. \_\_\_\_\_

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 75 of 135</b>
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Date \_\_\_\_\_

**6.7 MG Set 2B Generator Test**

- [1] **ENSURE** prerequisites listed in Section 4.0 for Section 6.7 are completed. \_\_\_\_\_
- [2] **ENSURE** 1KS (the three pole knife switch in GENERATOR NO. 2 cabinet) is OPEN. \_\_\_\_\_
- [3] **ENSURE** target is RESET on GROUND PROTECTIVE RELAY on GENERATOR NO. 1 control panel. \_\_\_\_\_
- [4] **ENSURE** targets are RESET on the following relays on GENERATOR NO. 2 control panel:
  - A. DIRECTIONAL OVERCURRENT A \_\_\_\_\_
  - B. DIRECTIONAL OVERCURRENT C \_\_\_\_\_
- [5] **ENSURE** 2-BKR-85-B is OPEN. \_\_\_\_\_
- [6] **RACK** 2-BKR-85-B, CRD MG SET 2B (2-GEN-85-B), to the CONNECT position. \_\_\_\_\_
- [7] **ENSURE** 2-BKR-85-L115/2C is OPEN. \_\_\_\_\_
- [8] **RACK** 2-BKR-85-L115/2C, GENERATOR NO. 2 OUTPUT BREAKER, to the CONNECT position. \_\_\_\_\_

<p><b>NOTE</b></p> <p>The voltage adjust control has a locking mechanism.</p>
---

- [9] **ADJUST** GENERATOR NO. 2 Voltage Adjust potentiometer to the mid position. \_\_\_\_\_

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 76 of 135</b>
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Date \_\_\_\_\_

**6.7 MG Set 2B Generator Test (continued)**

<b>NOTE</b> Double hearing protection is required with one or more MG Sets are operating.
--

<b>CAUTION</b> Visually inspect the MG set for excessive vibration. Excessive vibration could lead to equipment damage.
--

[10] **PLACE** Motor 2B hand switch to CLOSE, **AND**  
**RELEASE.** \_\_\_\_\_

[11] **VERIFY** visually 2-MTR-85-B starts running. \_\_\_\_\_

<b>NOTE</b> Do not perform the following step until 2-MTR-85-B reaches full speed (approximately 15 seconds after the breaker closes).
---

[12] **PRESS AND HOLD** the GEN. FIELD FLASH pushbutton on GENERATOR NO. 2 cabinet. \_\_\_\_\_

[13] **RELEASE** the GEN. FIELD FLASH pushbutton when GENERATOR LINE VOLTS (on GENERATOR NO. 2 cabinet) indicates voltage has STOPPED rising. \_\_\_\_\_

Date \_\_\_\_\_

**6.7 MG Set 2B Generator Test (continued)**

**NOTE**

Voltage adjust potentiometer has a locking mechanism.

- [14] **ROTATE** the GENERATOR NO. 2 Voltage Adjust potentiometer to the minimum and maximum positions, **AND**

**RECORD** the GENERATOR LINE VOLTS readings.

A. Minimum Voltage

\_\_\_\_\_ V<sub>AC</sub>

\_\_\_\_\_

B. Maximum Voltage

\_\_\_\_\_ V<sub>AC</sub>

\_\_\_\_\_

- [15] **VERIFY** that 260V is within the Minimum and Maximum voltage range **RECORDED** in the previous step.

\_\_\_\_\_

- [16] **ADJUST** GENERATOR NO. 2 Voltage Adjust potentiometer until GENERATOR LINE VOLTS reads approximately 260V AC. (**Acc Crit**)

\_\_\_\_\_

- [17] **PLACE** VOLTMETER switch (on GENERATOR NO. 2 cabinet) to the following positions, **AND**

**RECORD** volts:

A. 1-2

\_\_\_\_\_ V<sub>AC</sub>

\_\_\_\_\_

B. 2-3

\_\_\_\_\_ V<sub>AC</sub>

\_\_\_\_\_

C. 3-1

\_\_\_\_\_ V<sub>AC</sub>

\_\_\_\_\_

- [18] **VERIFY** VOLTAGES **RECORDED** in the previous step are approximately 260V (258 to 262V).

\_\_\_\_\_

Date \_\_\_\_\_

**6.7 MG Set 2B Generator Test (continued)**

**NOTE**

Begin watching GENERATOR LINE VOLTS on GENERATOR NO. 2 immediately after placing Motor 2B hand switch to TRIP.

- [19] **PLACE** Motor 2B hand switch to TRIP, **AND**  
**RELEASE.** \_\_\_\_\_
- [20] **VERIFY** GENERATOR LINE VOLTS (on GENERATOR NO. 2)  
indicates decreasing voltage after approximately 2 seconds. \_\_\_\_\_
- [21] **PLACE** Motor 2B hand switch to CLOSE, **AND**  
**RELEASE.** \_\_\_\_\_
- [22] **VERIFY** 2-BKR-85-B CLOSES. \_\_\_\_\_
- [23] **PRESS AND HOLD** the GEN. FIELD FLASH pushbutton on  
GENERATOR NO. 2 cabinet. \_\_\_\_\_
- [24] **RELEASE** the GEN. FIELD FLASH pushbutton when  
GENERATOR LINE VOLTS (on GENERATOR NO. 2 cabinet)  
indicates voltage has STOPPED rising. \_\_\_\_\_
- [25] **RECORD** voltage reading with VOLTMETER switch (on  
GENERATOR NO. 2 cabinet) in the following position:  
Phase 1-2 \_\_\_\_\_  
  
\_\_\_\_\_ V<sub>AC</sub>
- [26] **PLACE** SYNCHRONIZE switch on GENERATOR NO. 2  
cabinet to ON position. \_\_\_\_\_

**NOTE**

Begin watching GENERATOR LINE VOLTS on GENERATOR NO. 2 immediately after placing Motor 2B hand switch to TRIP.

- [27] **PLACE** Motor 2B hand switch to TRIP, **AND**  
**RELEASE.** \_\_\_\_\_

Date \_\_\_\_\_

**6.7 MG Set 2B Generator Test (continued)**

- [28] **VERIFY GENERATOR LINE VOLTS** (on GENERATOR NO. 2) indicates decreasing voltage after approximately 30 seconds. \_\_\_\_\_
- [29] **PLACE SYNCHRONIZE** switch on GENERATOR NO. 2 cabinet to OFF position. \_\_\_\_\_
- [30] **PLACE Motor 2B hand switch to CLOSE, AND RELEASE.** \_\_\_\_\_
- [31] **VERIFY 2-BKR-85-B CLOSSES.** \_\_\_\_\_
- [32] **PRESS AND HOLD** the GEN. FIELD FLASH pushbutton on GENERATOR NO. 2 cabinet. \_\_\_\_\_
- [33] **RELEASE** the GEN. FIELD FLASH pushbutton when GENERATOR LINE VOLTS (on GENERATOR NO. 2 cabinet) indicates voltage has STOPPED rising. \_\_\_\_\_
- [34] **PLACE Gen 2B hand switch to CLOSE, AND RELEASE.** \_\_\_\_\_
- [35] **VERIFY 2-BKR-85-L115/2C CLOSSES.** \_\_\_\_\_

**NOTE**

Junction covers must be removed to access the wire terminals in the following step.

- [36] **CONNECT** the Phase Sequence Indicator to transformer 21PT and 22PT, Phase A to wire 711, Phase B to wire 714, and Phase C to wire 716, **AND RECORD** MG Set 2B Generator Phase Sequence. \_\_\_\_\_

CV

\_\_\_\_\_  $\phi$  Sequence

- [37] **VERIFY** MG Set 2B Generator Phase Sequence is ABC. \_\_\_\_\_

Date \_\_\_\_\_

**6.7 MG Set 2B Generator Test (continued)**

[38] **REMOVE** the Phase Sequence Indicator installed to transformers 21PT and 22PT. \_\_\_\_\_

\_\_\_\_\_ CV

[39] **PLACE GENERATOR NO. 2 AMMETER** switch to the following positions, **AND**

**RECORD GENERATOR LINE AMPS:**

A. A \_\_\_\_\_ Amps \_\_\_\_\_

B. B \_\_\_\_\_ Amps \_\_\_\_\_

C. C \_\_\_\_\_ Amps \_\_\_\_\_

[40] **VERIFY GENERATOR LINE AMPS** are approximately 0 V (0 - 2V). \_\_\_\_\_

[41] **RECORD** amperage reading on the following ammeters:

A. 2-EI-85-B/A \_\_\_\_\_ Amps \_\_\_\_\_

B. 2-EI-85-B/C \_\_\_\_\_ Amps \_\_\_\_\_

[42] **MANUALLY ACTUATE** MG Set 2B Field Current Relay 2H (to right of Volt Reg for Gen. No. 2 inside 2-L-115), **AND**

**VERIFY 2-BKR-85-L115/2C, GENERATOR NO. 2 OUTPUT,** remains CLOSED. \_\_\_\_\_

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Date \_\_\_\_\_

**6.7 MG Set 2B Generator Test (continued)**

[43] **MANUALLY ACTUATE AND HOLD** Bus Overvoltage Relay BOV (to right of Volt Reg for Gen. No. 2 inside 2-L-115), **AND**

**VERIFY** 2-BKR-85-L115/2C, GENERATOR NO. 2 OUTPUT, remains CLOSED. \_\_\_\_\_

[44] **MANUALLY ACTUATE AND HOLD** approximately 5 seconds MG Set 2B Field Current Relay 2H, **AND**

**VERIFY:**

A. 2-BKR-85-L115/2C TRIPS. \_\_\_\_\_

B. 2-XA-55-4B-85A, CRD MG SET TRIP/GROUND, ALARMS \_\_\_\_\_

[45] **RELEASE** Bus Overvoltage Relay BOV, **AND**

**VERIFY** 2-XA-55-4B-85A, CRD MG SET TRIP/GROUND, CLEARS. \_\_\_\_\_

[46] **PLACE** Motor 2B hand switch to TRIP-PULL LAMP CUT OUT. \_\_\_\_\_

[47] **PLACE** Gen 2B hand switch to TRIP-PULL OUT. \_\_\_\_\_

Date \_\_\_\_\_

**6.8 MG Set Parallel Operation**

- [1] **ENSURE** prerequisites listed in Section 4.0 for Section 6.8 are completed. \_\_\_\_\_
- [2] **ENSURE** 1KS (the three pole knife switch in GENERATOR NO. 2 cabinet) is OPEN. \_\_\_\_\_
- [3] **ENSURE** targets are RESET on the following relays on GENERATOR NO. 1 control panel:
  - A. GROUND PROTECTIVE RELAY \_\_\_\_\_
  - B. DIRECTIONAL OVERCURRENT A \_\_\_\_\_
  - C. DIRECTIONAL OVERCURRENT C \_\_\_\_\_
- [4] **ENSURE** targets are RESET on the following relays on GENERATOR NO. 2 control panel:
  - A. DIRECTIONAL OVERCURRENT A \_\_\_\_\_
  - B. DIRECTIONAL OVERCURRENT C \_\_\_\_\_
- [5] **ENSURE** the following breakers are OPEN and in the CONNECT position:
  - A. 2-BKR-85-A \_\_\_\_\_
  - B. 2-BKR-85-B \_\_\_\_\_
  - C. 2-BKR-85-L115/1C \_\_\_\_\_
  - D. 2-BKR-85-L115/2C \_\_\_\_\_
- [6] **ENSURE** SYNCHRONIZE switch on GENERATOR NO. 1 cabinet is in OFF position. \_\_\_\_\_
- [7] **ENSURE** SYNCHRONIZE switch on GENERATOR NO. 2 cabinet is in OFF position. \_\_\_\_\_

Date \_\_\_\_\_

**6.8 MG Set Parallel Operation (continued)**

**NOTE**

Double hearing protection is required when one or both MG Sets are operating.

**CAUTIONS**

- 1) Visually inspect the MG set for excessive vibration. Excessive vibration could lead to equipment damage.
- 2) MG Sets should be synchronized promptly to avoid periods of elevated vibration.

[8] **PLACE** Motor 2A hand switch to CLOSE, **AND**  
**RELEASE.** \_\_\_\_\_

[9] **VERIFY** visually 2-MTR-85-A starts running. \_\_\_\_\_

**NOTE**

Do not perform the following step until 2-MTR-85-A reaches full speed (approximately 15 seconds after the breaker closes).

[10] **PRESS AND HOLD** the GEN. FIELD FLASH pushbutton on GENERATOR NO. 1 cabinet. \_\_\_\_\_

[11] **RELEASE** the GEN. FIELD FLASH pushbutton when GENERATOR LINE VOLTS (on GENERATOR NO. 1 cabinet) indicates voltage has STOPPED rising. \_\_\_\_\_

**NOTE**

In the following step, 258-262V AC is an acceptable value.

[12] **ADJUST** GENERATOR NO. 1 Voltage Adjust potentiometer until GENERATOR LINE VOLTS reads approximately 260V AC. \_\_\_\_\_

[13] **PLACE** Gen 2A hand switch to CLOSE, **AND**  
**RELEASE.** \_\_\_\_\_

[14] **VERIFY** 2-BKR-85-L115/1C CLOSES. \_\_\_\_\_

Date \_\_\_\_\_

**6.8 MG Set Parallel Operation (continued)**

- [15] **ADJUST** GENERATOR NO. 2 Voltage Adjust potentiometer to the mid position. \_\_\_\_\_
- [16] **PLACE** Motor 2B hand switch to CLOSE, **AND**  
**RELEASE.** \_\_\_\_\_
- [17] **VERIFY** visually 2-MTR-85-B starts running. \_\_\_\_\_

**NOTE**

Do not perform the following step until 2-MTR-85-B reaches full speed (approximately 15 seconds after the breaker closes).

- [18] **PRESS AND HOLD** the GEN. FIELD FLASH pushbutton on GENERATOR NO. 2 cabinet. \_\_\_\_\_
- [19] **RELEASE** the GEN. FIELD FLASH pushbutton when GENERATOR LINE VOLTS (on GENERATOR NO. 2 cabinet) indicates voltage has STOPPED rising. \_\_\_\_\_

**NOTE**

The difference in the following step should be less than 5V.

- [20] **ADJUST** GENERATOR NO. 2 Voltage Adjust potentiometer until GENERATOR LINE VOLTS reads approximately the same as GENERATOR NO. 1 voltage. \_\_\_\_\_
- [21] **PLACE** SYNCHRONIZE switch on GENERATOR NO. 2 cabinet to ON position. \_\_\_\_\_

**NOTE**

It may take 10-15 seconds for the generators to parallel after SYNCHRONIZE switch is placed to ON.

- [22] **VERIFY** the following:
  - A. 2-BKR-85-L115/2C CLOSES. (**Acc Crit**) \_\_\_\_\_
  - B. 2-BKR-85-L115/1C remains CLOSED. (**Acc Crit**) \_\_\_\_\_

Date \_\_\_\_\_

**6.8 MG Set Parallel Operation (continued)**

- [23] **PLACE SYNCHRONIZE** switch on GENERATOR NO. 2 cabinet to OFF position. \_\_\_\_\_

**NOTE**

In the following step, observe 2-EI-85-A/A and 2-EI-85-A/C for Generator 1, observe 2-EI-85-B/A and 2-EI-85-B/C for Generator 2, and ensure voltage remains in the range of 258-262 volts.

- [24] **IF** necessary, **ADJUST** Voltage Adjust potentiometers on each generator cabinet until Gen 2A and Gen 2B are balanced (all four digital ammeters are within 3 amps of each other and voltage approximately 260 V). \_\_\_\_\_

**NOTE**

Manual actuation of 1H causes 2-XA-55-4B-85A, CRD MG SET TRIP/GROUND [2-M-4] to ALARM. Alarm will clear when 1H is released.

- [25] **MANUALLY ACTUATE AND HOLD** approximately 5 seconds MG Set 2A Field Current Relay 1H, **AND**

**VERIFY:**

A. 2-BKR-85-L115/1C TRIPS. \_\_\_\_\_

B. 2-BKR-85-L115/2C remains CLOSED. \_\_\_\_\_

- [26] **ADJUST** GENERATOR NO. 1 Voltage Adjust potentiometer to the mid position. \_\_\_\_\_

**NOTE**

Ensure at least 30 seconds have passed since 2-BKR-85-L115/1C has tripped before performing next step.

- [27] **PRESS AND HOLD** the GEN. FIELD FLASH pushbutton on GENERATOR NO. 1 cabinet. \_\_\_\_\_

- [28] **RELEASE** the GEN. FIELD FLASH pushbutton when GENERATOR LINE VOLTS (on GENERATOR NO. 1 cabinet) indicates voltage has STOPPED rising. \_\_\_\_\_

Date \_\_\_\_\_

**6.8 MG Set Parallel Operation (continued)**

**NOTE**

The difference in the following step should be less than 5V.

- [29] **ADJUST** GENERATOR NO. 1 Voltage Adjust potentiometer until GENERATOR LINE VOLTS reads approximately the same as GENERATOR NO. 2 voltage. \_\_\_\_\_
- [30] **PLACE** SYNCHRONIZE switch on GENERATOR NO. 1 cabinet to ON position. \_\_\_\_\_

**NOTE**

It may take 10-15 seconds for the generators to parallel after SYNCHRONIZE switch is placed to ON.

- [31] **VERIFY** the following:
  - A. 2-BKR-85-L115/1C CLOSES. (**Acc Crit**) \_\_\_\_\_
  - B. 2-BKR-85-L115/2C remains CLOSED. (**Acc Crit**) \_\_\_\_\_
- [32] **PLACE** SYNCHRONIZE switch on GENERATOR NO. 1 cabinet to OFF position. \_\_\_\_\_

**NOTE**

In the following step, observe 2-EI-85-A/A and 2-EI-85-A/C for Generator 1, observe 2-EI-85-B/A and 2-EI-85-B/C for Generator 2, and ensure voltage remains in the range of 258-262 volts.

- [33] **IF** necessary, **ADJUST** Voltage Adjust potentiometers on each generator cabinet until Gen 2A and Gen 2B are balanced (all four digital ammeters are within 3 amps of each other and voltage approximately 260 V). \_\_\_\_\_

Date \_\_\_\_\_

**6.8 MG Set Parallel Operation (continued)**

**NOTE**

Manual actuation of 2H causes 2-XA-55-4B-85A, CRD MG SET TRIP/GROUND [2-M-4] to ALARM. Alarm will clear when 2H is released.

[34] **MANUALLY ACTUATE AND HOLD** approximately 5 seconds MG Set 2B Field Current Relay 2H, **AND**

**VERIFY** the following:

A. 2-BKR-85-L115/2C TRIPS. \_\_\_\_\_

B. 2-BKR-85-L115/1C remains CLOSED. \_\_\_\_\_

[35] **ADJUST GENERATOR NO. 2** Voltage Adjust potentiometer to the mid position. \_\_\_\_\_

**NOTE**

Wait at least 30 seconds after 2-BKR-85-L115/2C trips before performing the next step.

[36] **PRESS AND HOLD** the GEN. FIELD FLASH pushbutton on GENERATOR NO. 2 cabinet. \_\_\_\_\_

[37] **RELEASE** the GEN. FIELD FLASH pushbutton when GENERATOR LINE VOLTS (on GENERATOR NO. 2 cabinet) indicates voltage has STOPPED rising. \_\_\_\_\_

**NOTE**

The difference in the following step should be less than 5V.

[38] **ADJUST GENERATOR NO. 2** Voltage Adjust potentiometer until GENERATOR LINE VOLTS reads approximately the same as GENERATOR NO. 1 voltage. \_\_\_\_\_

[39] **PLACE SYNCHRONIZE** switch on GENERATOR NO. 2 cabinet to ON position. \_\_\_\_\_

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**6.8 MG Set Parallel Operation (continued)**

**NOTE**

It may take 10-15 seconds for the generators to parallel after SYNCHRONIZE switch is placed to ON.

- [40] **VERIFY** the following:
  - A. 2-BKR-85-L115/2C CLOSES. \_\_\_\_\_
  - B. 2-BKR-85-L115/1C remains CLOSED. \_\_\_\_\_
- [41] **PLACE SYNCHRONIZE** switch on GENERATOR NO. 2 cabinet to OFF position. \_\_\_\_\_

**NOTE**

In the following step, observe 2-EI-85-A/A and 2-EI-85-A/C for Generator 1, observe 2-EI-85-B/A and 2-EI-85-B/C for Generator 2, and ensure voltage remains in the range of 258-262 volts.

- [42] **IF** necessary, **ADJUST** Voltage Adjust potentiometers on each generator cabinet until Gen 2A and Gen 2B are balanced (all four digital ammeters are within 3 amps of each other and voltage approximately 260 V). \_\_\_\_\_
- [43] **PLACE** 2-BKR-85-L117A (2-BD-237-A, BKR 7) to ON. \_\_\_\_\_  
 \_\_\_\_\_  
 CV
- [44] **PLACE** Breaker 1CB, (CRD Logic and Power Cabinets Normal Control Power, inside GENERATOR NO. 2 cabinet) to ON. \_\_\_\_\_  
 \_\_\_\_\_  
 CV
- [45] **ENSURE** 2-SW-85-1 (DISCONNECT SW on AB wall behind MG sets) to the ON position, **AND**  
**VERIFY** 2-XA-55-4B-86B, CONTROL ROD NON-URGENT FAILURE, CLEARS. \_\_\_\_\_

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Date \_\_\_\_\_

**6.9 Rod Control System Rods-In-Motion and Withdrawal Block Tests**

**NOTE**

The performance of this section requires manual control rod motion. Step Counters may be jogged by using 2-FLRM, ROD MOTION CONTROL, in either direction as necessary to prevent overshooting a stopping point or a return to a stopping point which was inadvertently exceeded.

[1] **ENSURE** prerequisites listed in Section 4.0 for Section 6.9 are completed. \_\_\_\_\_

**NOTE**

Items A and B in the following step inhibits an input to the turbine runback circuit during this test section.

[2] **REMOVE** the following fuses in 2-R-58:

A. 2-FU-99-R58/M9, RED. LD REF. & DEFEAT REMOTE DISPATCHING. \_\_\_\_\_

CV

B. 2-FU-99-R58/M10, RED. LD REF. & DEFEAT REMOTE DISPATCHING. \_\_\_\_\_

CV

**NOTE**

If relays 2PRSX [2-R-58] and 2RSX [2-R-58] are as-found energized, they will de-energize when the following step is performed, and the following will alarm:

2-XA-55-4B-83A, POWER RANGE OVERPOWER ROD WD STOP [2-M-4] (alarms when 2PRSX de-energizes)

2-XA-55-4B-82B, INTERM RANGE HI FLUX ROD WD STOP [2-M-4] (alarms when 2RSX de-energizes)

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Date \_\_\_\_\_

**6.9 Rod Control System Rods-In-Motion and Withdrawal Block Tests  
(continued)**

[3] **REMOVE** the following fuses in 2-R-58:

A. 2-FU-99-R58/M5, POWER RANGE OVERPOWER ROD  
STOP SEP RELAY.

\_\_\_\_\_

CV

B. 2-FU-99-R58/M6, POWER RANGE OVERPOWER ROD  
STOP SEP RELAY.

\_\_\_\_\_

CV

**NOTES**

- 1) The following alarms can change state when the following step is performed:
- 2) If 2-XA-55-3C-58B, SG FEEDWATER FLOW HI [2-M-3] is in ALARM, it will CLEAR.
- 3) If 2TB411DX is energized, it will de-energize and  
  
2-XA-55-6B-123D, OVERTEMP ΔT TURB RUNBACK & C-3 ROD BLOCK [2-M-6], will ALARM, and  
  
2-XX-55-5-15, LOOP 1 OT ΔT RUN BACK TS-68-2E will be LIT.
- 4) If 2TB411HX is energized, it will de-energize and  
  
2-XA-55-6B-122D, OVERPOWER ΔT TURB RUNBACK & C-4 ROD BLOCK [2-M-6], will ALARM, and  
  
2-XX-55-5-15, LOOP 1 OP ΔT RUN BACK TS-68-2F will be LIT.
- 5) If 2PB505CX is energized, it will de-energize and  
  
2-XA-55-4A-66A, C-5 LO TURB IMPULSE PRESS ROD BLOCK [2-M-4], will ALARM.

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**6.9 Rod Control System Rods-In-Motion and Withdrawal Block Tests  
(continued)**

[4] **REMOVE** the following fuses in 2-R-58:

A. 2-FU-99-R58/L7. \_\_\_\_\_

CV

B. 2-FU-99-R58/L8. \_\_\_\_\_

CV

**NOTE**

In the following step, the Rod Drop Test Computer (flat panel display and computer chassis) serves no function on interlocks, and does not need to be powered up. Function Enable keyswitch must be in ACTIVE to access ALARM SELECTION screens at CERPI racks. Test performers have the latitude to navigate to/from screens and place Function Enable keyswitch in INACTIVE/ACTIVE as needed during performance of this test section.

[5] **ENSURE** CERPI racks/equipment [2-R-41, 2-R-42, 2-R-43, and 2-R-44] are powered up. \_\_\_\_\_

[6] **NAVIGATE** to ALARM SELECTION screen on MTP A [2-R-41] **AND**

**ENSURE** RWL Alarm is ENABLED. \_\_\_\_\_

[7] **NAVIGATE** to TUNABLE PARAMETERS screen on MTP A. \_\_\_\_\_

[8] **RECORD** Current Value for "RWL for Control Bank D" on MTP A.

Current Value \_\_\_\_\_

[9] **SET** "RWL for Control Bank D" Current Value to 15 on MTP A. \_\_\_\_\_

[10] **NAVIGATE** to ALARM SELECTION screen on MTP B [2-R-43] **AND**

**ENSURE** RWL Alarm is ENABLED. \_\_\_\_\_

[11] **NAVIGATE** to TUNABLE PARAMETERS screen on MTP B. \_\_\_\_\_

Date \_\_\_\_\_

**6.9 Rod Control System Rods-In-Motion and Withdrawal Block Tests  
(continued)**

[12] **RECORD** Current Value for "RWL for Control Bank D" on MTP B.

Current Value \_\_\_\_\_

[13] **SET** "RWL for Control Bank D" Current Value to 15 on MTP B.

[14] **VERIFY** the following CERPI output relays are energized (green LED is LIT):

A. A-KX18 [2-R-42]. \_\_\_\_\_

B. B-KX18 [2-R-44]. \_\_\_\_\_

**NOTE**

The following step is measuring the automatic rod speed signal from Foxboro I/A. (Positive lead) wire 20701 is grounded at 2-L-122 and is zero volts. (Negative lead) wire 20702 carries the speed signal from 2-R-25 to 2-L-122.

20701 is 2-R-25, TB 25J, point 9 and 2-L-122, TB7, point 1.

20702 is 2-R-25, TB 25J, point 11 and 2-L-122, TB7, point 2.

[15] **MEASURE AND RECORD** the DC voltage value on terminal block 25J, points 9 (+) and 11 (-), in the rear of 2-R-25.

DC voltage \_\_\_\_\_

[16] **IF** DC voltage measured in the previous step is not in the range of  $-2.13 \leq (\text{DC voltage measured}) \leq -9.5$ , **REQUEST** Foxboro I/A Startup Test Engineer (STE), or designee, to **SET** value of 2ISY0850412A to effect approximately -6.736 volts measured at terminal block 25J, points 9 (+) and 11 (-), in the rear of 2-R-25.

[17] **IF** step 6.9[16] was performed, **VERIFY** -5.0 ( $\pm 0.1$ ) volts DC at terminal block 7, points 1 (+) and 2 (-) at 2-L-122.

[18] **IF** step 6.9[16] was NOT performed, **VERIFY** DC voltage measured and recorded in step 6.9[15] (value  $\pm 0.1V$ ) is present at terminal block 7, points 1 (+) and 2(-) at 2-L-122.

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**6.9 Rod Control System Rods-In-Motion and Withdrawal Block Tests  
(continued)**

**NOTE**

The following step inhibits the rod AUTO IN and AUTO OUT signals from Foxboro I/A.

- [19] **REQUEST** Foxboro I/A STE, or designee, to SET Foxboro I/A points 2ISB0850412A and 2ISB0850412B to effect NO continuity at these terminal block points in 2-R-25:
  - A. 25N, points 1 (wire 21101) and 2 (wire 21102). \_\_\_\_\_
  - B. 25N, points 4 (wire 21104) and 5 (wire 21105). \_\_\_\_\_
  
- [20] **VERIFY NO** continuity at these terminal block points in 2-L-122:
  - A. TB11, points 1 (wire 21101) and 2 (wire 21102). \_\_\_\_\_
  - B. TB11, points 4 (wire 21104) and 5 (wire 21105). \_\_\_\_\_
  
- [21] **RECORD** values on the following Bank Overlap thumbwheel switches at 2-L-122:
  - A. S1 \_\_\_\_\_
  - B. S2 \_\_\_\_\_
  - C. S3 \_\_\_\_\_
  - D. S4 \_\_\_\_\_
  - E. S5 \_\_\_\_\_
  - F. S6 \_\_\_\_\_

Date \_\_\_\_\_

**6.9 Rod Control System Rods-In-Motion and Withdrawal Block Tests  
(continued)**

[22] **SET** the following values on the Bank Overlap thumbwheel switches at 2-L-122:

- A. S1: 5 \_\_\_\_\_
- B. S2: 10 \_\_\_\_\_
- C. S3: 15 \_\_\_\_\_
- D. S4: 20 \_\_\_\_\_
- E. S5: 25 \_\_\_\_\_
- F. S6: 30 \_\_\_\_\_

[23] **PLACE** 2-SUS, ROD CONTROL STARTUP [2-M-4], to START UP position, **AND**

**RELEASE.** \_\_\_\_\_

[24] **PLACE** 2-RBSS, ROD BANK SELECT [2-M-4], to MAN position. \_\_\_\_\_

[25] **VERIFY** U2 ICS point C0098D shows N MOVE. \_\_\_\_\_

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**6.9 Rod Control System Rods-In-Motion and Withdrawal Block Tests**  
**(continued)**

**NOTE**

During the remainder of this test section, several relays will be cycled multiple times by manual actuation. Notify MCR the following alarms will cycle several times:

2-XA-55-4A-66A, C-5 LO TURB IMPULSE PRESS ROD BLOCK [2-M-4], and

2-XA-55-4A-64F, C-11 BANK D AUTO WITHDRAWAL BLOCKED [2-M-4], and

2-XA-55-4B-83A, POWER RANGE OVERPOWER ROD WD STOP [2-M-4], and

2-XA-55-4B-82B, INTERM RANGE HI FLUX ROD WD STOP [2-M-4],

[26] **MANUALLY ACTUATE AND HOLD** the following relays at 2-R-58:

A. 2PRSX (position G-5). \_\_\_\_\_

B. 2TX (position G-6). \_\_\_\_\_

C. 2PX (position G-7). \_\_\_\_\_

D. 2RSX (position G-8). \_\_\_\_\_

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**6.9 Rod Control System Rods-In-Motion and Withdrawal Block Tests  
(continued)**

**NOTE**

Control Bank A Group 1 demand position is shown by step counter CONTROL BANK A1, 2-CBAG1 [2-M-4].

Control Bank A Group 2 demand position is shown by step counter CONTROL BANK A2, 2-CBAG2 [2-M-4].

A test performer should verify the RODS OUT lamp is LIT as the step counters are incrementing.

A test performer should coordinate with MCR to watch ICS during the performance of the next step. U2 ICS point C0098D should change to MOVE while 2-FLRM is held in OUT position.

If coordination problems arise in the following two steps, Operators may place and hold 2-FLRM until 2-CBAG1 and 2-CBAG2 show zero steps, then repeat the following two steps again to verify expected result.

- [27] **PLACE AND HOLD** 2-FLRM, ROD MOTION CONTROL [2-M-4] to OUT position until both 2-CBAG1 and 2-CBAG2 show 8 steps. \_\_\_\_\_
  
- [28] **VERIFY** the following occurred while 2-FLRM was held in OUT position:
  - A. RODS OUT lamp LIT [2-M-4]. \_\_\_\_\_
  - B. U2 ICS point C0098D shows MOVE. \_\_\_\_\_
  
- [29] **PLACE** 2-RBSS, ROD BANK SELECT [2-M-4], to AUTO position. \_\_\_\_\_
  
- [30] **VERIFY** U2 ICS point C0098D shows N MOVE. \_\_\_\_\_

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**6.9 Rod Control System Rods-In-Motion and Withdrawal Block Tests  
(continued)**

**NOTE**

The following step enables rods AUTO OUT in Foxboro I/A software. 2PB505CX is not actuated, so step counters should NOT increment and RODS OUT lamp should not be LIT.

- [31] **REQUEST** Foxboro I/A STE, or designee, to SET Foxboro I/A point 2ISB0850412A to effect continuity at 2-L-122, TB11, points 1 (wire 21101) and 2 (wire 21102). \_\_\_\_\_
- [32] **VERIFY** the following:
  - A. 2-CBAG1 and 2-CBAG2 do NOT MOVE OUT. (**Acc Crit**) \_\_\_\_\_
  - B. RODS OUT lamp is NOT LIT. (**Acc Crit**) \_\_\_\_\_

**NOTES**

- 1) Step counters will begin incrementing in the following step.
- 2) 2-CBAG1 and 2-CBAG2 will stop at 10 steps.
- 3) 2-CBBG1, CONTROL BANK B1, and 2-CBBG2, CONTROL BANK B2, will stop at 15 steps.
- 4) 2-CBCG1, CONTROL BANK C1, and 2-CBCG2, CONTROL BANK C2, will increment the amount of steps specified in the following step.
- 5) A test performer should verify the RODS OUT lamp is LIT as the step counters are incrementing.
- 6) A test performer should coordinate with MCR to watch ICS during the performance of the next step. U2 ICS point C0098D should change to MOVE while 2PB505CX is manually actuated.

- [33] **MANUALLY ACTUATE AND HOLD** 2PB505CX until 2-CBCG1 and 2-CBCG2 show greater than 6 steps but less than 12 steps (both step counters should be equal when releasing 2PB505CX). \_\_\_\_\_
- [34] **VERIFY** the following occurred while 2PB505CX was manually actuated:
  - A. RODS OUT lamp LIT [2-M-4]. \_\_\_\_\_
  - B. U2 ICS point C0098D shows MOVE. \_\_\_\_\_

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**6.9 Rod Control System Rods-In-Motion and Withdrawal Block Tests  
(continued)**

**NOTE**

The following step is performed after 2PB505CX is released.

[35] **VERIFY** after 2PB505CX is released:

- A. 2-CBCG1 and 2-CBCG2 do NOT MOVE OUT. \_\_\_\_\_
- B. RODS OUT lamp is NOT LIT. \_\_\_\_\_
- C. U2 ICS point C0098D shows N MOVE. \_\_\_\_\_

**NOTE**

Relays 2PRSX, 2TX, 2PX, and 2RSX will be released one at a time to verify rod motion cannot be allowed in the OUT direction if one of these four is not actuated.

[36] **RELEASE** relay 2PRSX. \_\_\_\_\_

[37] **MANUALLY ACTUATE AND HOLD** relay 2PB505CX, **AND**

**VERIFY** the following:

- A. 2-CBCG1 and 2-CBCG2 do NOT MOVE OUT. **(Acc Crit)** \_\_\_\_\_
- B. RODS OUT lamp is NOT LIT. **(Acc Crit)** \_\_\_\_\_

[38] **RELEASE** relay 2PB505CX. \_\_\_\_\_

[39] **PLACE** 2-RBSS, ROD BANK SELECT [2-M-4], to MAN. \_\_\_\_\_

[40] **PLACE AND HOLD** 2-FLRM, ROD MOTION CONTROL [2-M-4] in OUT position **AND**

**VERIFY** the following:

- A. 2-CBCG1 and 2-CBCG2 do NOT MOVE OUT. **(Acc Crit)** \_\_\_\_\_
- B. RODS OUT lamp is NOT LIT. **(Acc Crit)** \_\_\_\_\_

[41] **RELEASE** 2-FLRM, ROD MOTION CONTROL [2-M-4]. \_\_\_\_\_

[42] **RELEASE** relay 2TX. \_\_\_\_\_

Date \_\_\_\_\_

**6.9 Rod Control System Rods-In-Motion and Withdrawal Block Tests  
(continued)**

- [43] **MANUALLY ACTUATE AND HOLD** relay 2PRSX. \_\_\_\_\_
- [44] **PLACE AND HOLD** 2-FLRM, ROD MOTION CONTROL [2-M-4] in OUT position, **AND**  
**VERIFY** the following:
  - A. 2-CBCG1 and 2-CBCG2 do NOT MOVE OUT. **(Acc Crit)** \_\_\_\_\_
  - B. RODS OUT lamp is NOT LIT. **(Acc Crit)** \_\_\_\_\_
- [45] **RELEASE** 2-FLRM, ROD MOTION CONTROL [2-M-4]. \_\_\_\_\_
- [46] **PLACE** 2-RBSS, ROD BANK SELECT [2-M-4], in AUTO. \_\_\_\_\_
- [47] **MANUALLY ACTUATE AND HOLD** relay 2PB505CX, **AND**  
**VERIFY** the following:
  - A. 2-CBCG1 and 2-CBCG2 do NOT MOVE OUT. **(Acc Crit)** \_\_\_\_\_
  - B. RODS OUT lamp is NOT LIT. **(Acc Crit)** \_\_\_\_\_
- [48] **RELEASE** relay 2PB505CX. \_\_\_\_\_
- [49] **RELEASE** relay 2PX. \_\_\_\_\_
- [50] **MANUALLY ACTUATE AND HOLD** relay 2TX. \_\_\_\_\_
- [51] **MANUALLY ACTUATE AND HOLD** relay 2PB505CX, **AND**  
**VERIFY** the following:
  - A. 2-CBCG1 and 2-CBCG2 do NOT MOVE OUT. **(Acc Crit)** \_\_\_\_\_
  - B. RODS OUT lamp is NOT LIT. **(Acc Crit)** \_\_\_\_\_
- [52] **RELEASE** relay 2PB505CX. \_\_\_\_\_
- [53] **PLACE** 2-RBSS, ROD BANK SELECT [2-M-4], in MAN. \_\_\_\_\_

Date \_\_\_\_\_

**6.9 Rod Control System Rods-In-Motion and Withdrawal Block Tests  
(continued)**

- [54] **PLACE AND HOLD 2-FLRM, ROD MOTION CONTROL [2-M-4] in OUT position, AND**  
**VERIFY the following:**
  - A. 2-CBCG1 and 2-CBCG2 do NOT MOVE OUT. **(Acc Crit)** \_\_\_\_\_
  - B. RODS OUT lamp is NOT LIT. **(Acc Crit)** \_\_\_\_\_
- [55] **RELEASE 2-FLRM, ROD MOTION CONTROL [2-M-4].** \_\_\_\_\_
- [56] **RELEASE relay 2RSX.** \_\_\_\_\_
- [57] **MANUALLY ACTUATE AND HOLD relay 2PX.** \_\_\_\_\_
- [58] **PLACE AND HOLD 2-FLRM, ROD MOTION CONTROL [2-M-4] in OUT position, AND**  
**VERIFY the following:**
  - A. 2-CBCG1 and 2-CBCG2 do NOT MOVE OUT. **(Acc Crit)** \_\_\_\_\_
  - B. RODS OUT lamp is NOT LIT. **(Acc Crit)** \_\_\_\_\_
- [59] **RELEASE 2-FLRM, ROD MOTION CONTROL [2-M-4].** \_\_\_\_\_
- [60] **PLACE 2-RBSS, ROD BANK SELECT [2-M-4], in AUTO.** \_\_\_\_\_
- [61] **MANUALLY ACTUATE AND HOLD relay 2PB505CX, AND**  
**VERIFY the following:**
  - A. 2-CBCG1 and 2-CBCG2 do NOT MOVE OUT. **(Acc Crit)** \_\_\_\_\_
  - B. RODS OUT lamp is NOT LIT. **(Acc Crit)** \_\_\_\_\_
- [62] **RELEASE relay 2PB505CX.** \_\_\_\_\_
- [63] **MANUALLY ACTUATE AND HOLD relay 2RSX.** \_\_\_\_\_
- [64] **PLACE 2-RBSS, ROD BANK SELECT [2-M-4], in MAN.** \_\_\_\_\_

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**6.9 Rod Control System Rods-In-Motion and Withdrawal Block Tests  
(continued)**

**NOTE**

Step counters 2-CBDG1, CONTROL BANK D1, and 2-CBDG2, CONTROL BANK D2, will be monitored as part of performing the following step.

Operators should verify the RODS OUT lamp is LIT as the step counters are incrementing.

- [65] **PLACE AND HOLD 2-FLRM, ROD MOTION CONTROL [2-M-4]** in OUT position until both 2-CBDG1 and 2-CBDG2 show 8 steps. \_\_\_\_\_
- [66] **PLACE 2-RBSS, ROD BANK SELECT [2-M-4],** in AUTO. \_\_\_\_\_
- [67] **ENSURE 2-XA-55-4A-64F, C-11 BANK D AUTO WITHDRAWAL BLOCKED,** is CLEAR. \_\_\_\_\_

**NOTES**

- 1) In the following step, 2-CBDG1 and 2-CBDG2 will increment until both step counters are reading 15 steps (observe RODS OUT lamp LIT as step counters incrementing).
- 2) When both 2-CBDG1 and 2-CBDG2 are reading 15 steps, the step counters will stop incrementing and the RODS OUT lamp will be NOT LIT.
- 3) This verifies the C-11 BANK D AUTO WITHDRAWAL BLOCKED interlock.

- [68] **MANUALLY ACTUATE AND HOLD relay 2PB505CX, AND VERIFY** the following when C-11 Bank D Auto Withdrawal Block is actuated:
  - A. Both 2-CBDG1 and 2-CBDG2 show 15 steps. **(Acc Crit)** \_\_\_\_\_
  - B. RODS OUT lamp is NOT LIT. **(Acc Crit)** \_\_\_\_\_
  - C. 2-XA-55-4A-64F, C-11 BANK D AUTO WITHDRAWAL BLOCKED, ALARMS. **(Acc Crit)** \_\_\_\_\_
- [69] **RELEASE** relay 2PB505CX. \_\_\_\_\_
- [70] **PLACE 2-RBSS, ROD BANK SELECT [2-M-4],** in MAN. \_\_\_\_\_

Date \_\_\_\_\_

**6.9 Rod Control System Rods-In-Motion and Withdrawal Block Tests  
(continued)**

**NOTE**

2-XA-55-4A-64F, C-11 BANK D AUTO WITHDRAWAL BLOCKED, will CLEAR once 2-CBDG1 and 2-CBDG2 get below 15 steps.

Operators should verify the RODS IN lamp is LIT while 2-CBDG1 and 2-CBDG2 are decrementing.

- [71] **PLACE AND HOLD 2-FLRM, ROD MOTION CONTROL [2-M-4]** in the IN position until both 2-CBDG1 and 2-CBDG2 show 8 steps. \_\_\_\_\_
  
- [72] **NAVIGATE** to ALARM SELECTION screen on MTP A [2-R-41], **AND**  
  
**ENSURE RWL Alarm is DISABLED.** \_\_\_\_\_
  
- [73] **PLACE 2-RBSS, ROD BANK SELECT [2-M-4],** in AUTO. \_\_\_\_\_

**NOTE**

The following sequence of steps verifies the 2-XA-55-4A-64F, C-11 BANK D AUTO WITHDRAWAL BLOCKED for both CERPI channels. Each CERPI channel will be tested individually as both channels are in series.

- [74] **MANUALLY ACTUATE AND HOLD 2PB505CX** until the following occurs:
  - A. 2-CBDG1 and 2-CBDG2 show 15 steps (both step counters should be equal when releasing 2PB505CX). \_\_\_\_\_
  - B. RODS OUT lamp is NOT LIT. \_\_\_\_\_
  - C. 2-XA-55-4A-64F, C-11 BANK D AUTO WITHDRAWAL BLOCKED, is in ALARM. \_\_\_\_\_
  - D. CERPI output relay A-KX18 [2-R-42] green LED LIT. \_\_\_\_\_
  - E. CERPI output relay B-KX18 [2-R-44] green LED NOT LIT. \_\_\_\_\_
  
- [75] **RELEASE 2PB505CX.** \_\_\_\_\_
  
- [76] **PLACE 2-RBSS, ROD BANK SELECT [2-M-4],** in MAN. \_\_\_\_\_

Date \_\_\_\_\_

**6.9 Rod Control System Rods-In-Motion and Withdrawal Block Tests  
(continued)**

**NOTE**

2-XA-55-4A-64F, C-11 BANK D AUTO WITHDRAWAL BLOCKED, will CLEAR once 2-CBDG1 and 2-CBDG2 get below 15 steps.

Operators should verify the RODS IN lamp is LIT while 2-CBDG1 and 2-CBDG2 are decrementing.

- [77] **PLACE AND HOLD 2-FLRM, ROD MOTION CONTROL [2-M-4]** in the IN position until both 2-CBDG1 and 2-CBDG2 show 8 steps. \_\_\_\_\_
- [78] **NAVIGATE** to ALARM SELECTION screen on MTP A [2-R-41] **AND**  
**ENSURE** RWL Alarm is ENABLED. \_\_\_\_\_
- [79] **NAVIGATE** to ALARM SELECTION screen on MTP B [2-R-43] **AND**  
**ENSURE** RWL Alarm is DISABLED. \_\_\_\_\_
- [80] **PLACE 2-RBSS, ROD BANK SELECT [2-M-4],** in AUTO. \_\_\_\_\_
- [81] **MANUALLY ACTUATE AND HOLD 2PB505CX** until the following occurs: \_\_\_\_\_

  - A. 2-CBDG1 and 2-CBDG2 show 15 steps (both step counters should be equal when releasing 2PB505CX). \_\_\_\_\_
  - B. RODS OUT lamp is NOT LIT. \_\_\_\_\_
  - C. 2-XA-55-4A-64F, C-11 BANK D AUTO WITHDRAWAL BLOCKED, is in ALARM. \_\_\_\_\_
  - D. CERPI output relay A-KX18 [2-R-42] green LED NOT LIT. \_\_\_\_\_
  - E. CERPI output relay B-KX18 [2-R-44] green LED LIT. \_\_\_\_\_

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**6.9 Rod Control System Rods-In-Motion and Withdrawal Block Tests (continued)**

[82] **RELEASE** the following relays in 2-R-58:

- A. 2PRSX \_\_\_\_\_
- B. 2TX \_\_\_\_\_
- C. 2PX \_\_\_\_\_
- D. 2RSX \_\_\_\_\_

[83] **PLACE** 2-RBSS, ROD BANK SELECT [2-M-4], in MAN. \_\_\_\_\_

**NOTE**

2-XA-55-4A-64F, C-11 BANK D AUTO WITHDRAWAL BLOCKED, will CLEAR once 2-CBDG1 and 2-CBDG2 get below 15 steps.

Operators should verify the RODS IN lamp is LIT while 2-CBDG1 and 2-CBDG2 are decrementing.

[84] **PLACE AND HOLD** 2-FLRM, ROD MOTION CONTROL [2-M-4] in the IN position until both 2-CBDG1 and 2-CBDG2 show 8 steps. \_\_\_\_\_

[85] **NAVIGATE** to ALARM SELECTION screen on MTP B [2-R-43], **AND**

**ENSURE** RWL Alarm is ENABLED. \_\_\_\_\_

**NOTE**

The following step inhibits rods AUTO OUT in Foxboro I/A software.

[86] **REQUEST** Foxboro I/A STE, or designee, to SET Foxboro I/A point 2ISB0850412A to effect NO continuity at 2-L-122, TB11, points 1 (wire 21101) and 2 (wire 21102). \_\_\_\_\_

[87] **PLACE** 2-RBSS, ROD BANK SELECT [2-M-4], in AUTO. \_\_\_\_\_

Date \_\_\_\_\_

**6.9 Rod Control System Rods-In-Motion and Withdrawal Block Tests  
(continued)**

- NOTES**
- 1) A test performer should verify the RODS IN lamp is LIT while step counters are decrementing in the following steps.
  - 2) A test performer should coordinate with MCR to watch ICS during the performance of the next step. U2 ICS point C0098D should change to MOVE while the jumper in the next step is placed and held.
  - 3) The following step causes Auto insertion of rods until the jumper is removed.

[88] **PLACE AND HOLD** a handheld jumper at 2-R-25, terminal block 25N, points 4 (wire 21104) and 5 (wire 21105) until 2-CBBG1 and 2-CBBG2 show less than 10 steps but greater than 5 steps. \_\_\_\_\_

[89] **VERIFY** the following occurred while the jumper in the previous step was placed and held:

A. RODS IN lamp LIT [2-M-4]. \_\_\_\_\_

B. U2 ICS point C0098D shows MOVE. \_\_\_\_\_

[90] **PLACE** 2-RBSS, ROD BANK SELECT [2-M-4], in MAN. \_\_\_\_\_

- NOTE**
- A test performer should verify the RODS IN lamp is LIT while step counters are decrementing in the following steps.
- A test performer should coordinate with MCR to watch ICS during the performance of the next step. U2 ICS point C0098D should change to MOVE while 2-FLRM is held to IN position.

[91] **PLACE AND HOLD** 2-FLRM, ROD MOTION CONTROL [2-M-4] in the IN position until both 2-CBAG1 and 2-CBAG2 show 0 steps. \_\_\_\_\_

[92] **VERIFY** the following occurred while 2-FLRM was held to IN position:

A. RODS IN lamp LIT [2-M-4]. \_\_\_\_\_

B. U2 ICS point C0098D shows MOVE. \_\_\_\_\_

Date \_\_\_\_\_

**6.9 Rod Control System Rods-In-Motion and Withdrawal Block Tests (continued)**

- [93] **VERIFY** the following step counters show 0 steps.
  - A. 2-CBAG1. \_\_\_\_\_
  - B. 2-CBAG2. \_\_\_\_\_
  - C. 2-CBBG1. \_\_\_\_\_
  - D. 2-CBBG2. \_\_\_\_\_
  - E. 2-CBCG1. \_\_\_\_\_
  - F. 2-CBCG2. \_\_\_\_\_
  - G. 2-CBDG1. \_\_\_\_\_
  - H. 2-CBDG2. \_\_\_\_\_
  
- [94] **VERIFY** U2 ICS point C0098D shows N MOVE. \_\_\_\_\_
  
- [95] **NAVIGATE** to TUNABLE PARAMETERS screen on MTP A. \_\_\_\_\_
  
- [96] **SET** "RWL for Control Bank D" Current Value on MTP A to value recorded in step 6.9[8]. \_\_\_\_\_
  
- [97] **NAVIGATE** to TUNABLE PARAMETERS screen on MTP B. \_\_\_\_\_
  
- [98] **SET** "RWL for Control Bank D" Current Value on MTP B to value recorded in step 6.9[12]. \_\_\_\_\_
  
- [99] **VERIFY** the following CERPI output relays are energized (green LED is LIT):
  - A. A-KX18 [2-R-42]. \_\_\_\_\_
  - B. B-KX18 [2-R-44]. \_\_\_\_\_

Date \_\_\_\_\_

**6.9 Rod Control System Rods-In-Motion and Withdrawal Block Tests (continued)**

[100] **INSTALL** the following fuses in 2-R-58:

A. 2-FU-99-R58/M9, RED. LD REF. & DEFEAT REMOTE DISPATCHING.

\_\_\_\_\_

CV

B. 2-FU-99-R58/M10, RED. LD REF. & DEFEAT REMOTE DISPATCHING.

\_\_\_\_\_

CV

C. 2-FU-99-R58/M5, POWER RANGE OVERPOWER ROD STOP SEP RELAY.

\_\_\_\_\_

CV

D. 2-FU-99-R58/M6, POWER RANGE OVERPOWER ROD STOP SEP RELAY.

\_\_\_\_\_

CV

E. 2-FU-99-R58/L7.

\_\_\_\_\_

CV

F. 2-FU-99-R58/L8.

\_\_\_\_\_

CV

[101] **IF** step 6.9[16] was performed, **REQUEST** Foxboro I/A STE, or designee, to **REMOVE** value of 2ISY0850412A that was **SET** in step 6.9[16], and **ALLOW** value set by normal processing to be present.

\_\_\_\_\_

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**6.9 Rod Control System Rods-In-Motion and Withdrawal Block Tests  
(continued)**

[102] **IF** values recorded at Bank Overlap thumbwheel switches in step 6.9[21] **ARE NOT** equal to the values set in step 6.9[22], **SET** Bank Overlap Thumbwheel switches to values recorded in step 6.9[21].

**NOTE**

The following steps test 2PB505CX.

[103] **IF** 2PB505CX is energized, **REQUEST** assistance from Eagle 21 STE, or designee, to place PB-505C in a TRIP condition.

[104] **ENSURE** 2-XA-55-4A-66A, C-5 LO TURB IMPULSE PRESS ROD BLOCK [2-M-4], is in ALARM.

[105] **VERIFY NO** continuity across 2PB505CX terminals 3 (wire TB320-4) and 4 (wire TB319-11).

**NOTE**

The following step clears the normal operation of the C-5 LO TURB IMPULSE PRESS ROD BLOCK. The annunciator will clear and the Auto Rod Block contact will close during normal operation.

[106] **PLACE AND HOLD** a handheld jumper at 2-R-4, terminal block 4M, points 5 (wire 4M5) and 6 (wire PR1X).

[107] **VERIFY** the following:

A. 2-XA-55-4A-66A, C-5 LO TURB IMPULSE PRESS ROD BLOCK [2-M-4], **CLEARs**. (**Acc Crit**)

B. Continuity across 2PB505CX terminals 3 (wire TB320-4) and 4 (wire TB319-11). (**Acc Crit**)

[108] **REMOVE** the handheld jumper at 2-R-4, terminal block 4M, points 5 (wire 4M5) and 6 (wire PR1X).

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**6.9 Rod Control System Rods-In-Motion and Withdrawal Block Tests (continued)**

[109] **VERIFY** the following:

A. 2-XA-55-4A-66A, C-5 LO TURB IMPULSE PRESS ROD BLOCK [2-M-4], ALARMS. \_\_\_\_\_

B. NO continuity across 2PB505CX terminals 3 (wire TB320-4) and 4 (wire TB319-11). \_\_\_\_\_

[110] **IF** step 6.9[103] was performed, **REQUEST** assistance from Eagle 21 STE, or designee, to place PB-505C in its as-found non-TRIP condition. \_\_\_\_\_

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**6.10 Rod Control System Demand Position Computer Input Testing**

**NOTE**

The performance of this section requires manual control rod motion. Step Counters may be jogged by using 2-FLRM, ROD MOTION CONTROL, in either direction as necessary to prevent overshooting a stopping point or a return to a stopping point which was inadvertently exceeded.

- [1] **ENSURE** prerequisites listed in Section 4.0 for Section 6.10 are completed. \_\_\_\_\_

**NOTE**

The following step jumpers around the manual rod withdrawal permissive circuit.

- [2] **INSTALL** a jumper in the rear of 2-R-58 across TB320, points 1 (internal wire G8-7; external side wire 21210, cable 2RR1158, BK cond.) and 2 (internal wire G6-7; external side wire 21211, cable 2RR1158, W cond.). \_\_\_\_\_
- CV
- [3] **PLACE 2-SUS, ROD CONTROL STARTUP [2-M-4], to START UP position, AND RELEASE.** \_\_\_\_\_
- [4] **VERIFY** all 14 step counters on 2-M-4 are showing 0 steps. \_\_\_\_\_
- [5] **PLACE 2-RBSS, ROD BANK SELECT [2-M-4], to CBA position.** \_\_\_\_\_
- [6] **VERIFY** U2 ICS point U0049 reads 0 steps. \_\_\_\_\_
- [7] **PLACE AND HOLD 2-FLRM, ROD MOTION CONTROL [2-M-4] to OUT position until both 2-CBAG1 and 2-CBAG2 show 5 steps.** \_\_\_\_\_
- [8] **VERIFY** U2 ICS point U0049 reads 5 steps. \_\_\_\_\_
- [9] **PLACE AND HOLD 2-FLRM, ROD MOTION CONTROL [2-M-4] to IN position until both 2-CBAG1 and 2-CBAG2 show 0 steps.** \_\_\_\_\_
- [10] **VERIFY** U2 ICS point U0049 reads 0 steps. \_\_\_\_\_

Date \_\_\_\_\_

**6.10 Rod Control System Demand Position Computer Input Testing  
(continued)**

- [11] **PLACE 2-RBSS, ROD BANK SELECT [2-M-4], to CBB position.** \_\_\_\_\_
- [12] **VERIFY U2 ICS point U0050 reads 0 steps.** \_\_\_\_\_
- [13] **PLACE AND HOLD 2-FLRM, ROD MOTION CONTROL [2-M-4] to OUT position until both 2-CBBG1 and 2-CBBG2 show 5 steps.** \_\_\_\_\_
- [14] **VERIFY U2 ICS point U0050 reads 5 steps.** \_\_\_\_\_
- [15] **PLACE AND HOLD 2-FLRM, ROD MOTION CONTROL [2-M-4] to IN position until both 2-CBBG1 and 2-CBBG2 show 0 steps.** \_\_\_\_\_
- [16] **VERIFY U2 ICS point U0050 reads 0 steps.** \_\_\_\_\_
- [17] **PLACE 2-RBSS, ROD BANK SELECT [2-M-4], to CBC position.** \_\_\_\_\_
- [18] **VERIFY U2 ICS point U0051 reads 0 steps.** \_\_\_\_\_
- [19] **PLACE AND HOLD 2-FLRM, ROD MOTION CONTROL [2-M-4] to OUT position until both 2-CBCG1 and 2-CBCG2 show 5 steps.** \_\_\_\_\_
- [20] **VERIFY U2 ICS point U0051 reads 5 steps.** \_\_\_\_\_
- [21] **PLACE AND HOLD 2-FLRM, ROD MOTION CONTROL [2-M-4] to IN position until both 2-CBCG1 and 2-CBCG2 show 0 steps.** \_\_\_\_\_
- [22] **VERIFY U2 ICS point U0051 reads 0 steps.** \_\_\_\_\_
- [23] **PLACE 2-RBSS, ROD BANK SELECT [2-M-4], to CBD position.** \_\_\_\_\_
- [24] **VERIFY U2 ICS point U0052 reads 0 steps.** \_\_\_\_\_
- [25] **PLACE AND HOLD 2-FLRM, ROD MOTION CONTROL [2-M-4] to OUT position until both 2-CBDG1 and 2-CBDG2 show 5 steps.** \_\_\_\_\_
- [26] **VERIFY U2 ICS point U0052 reads 5 steps.** \_\_\_\_\_

Date \_\_\_\_\_

**6.10 Rod Control System Demand Position Computer Input Testing  
(continued)**

- [27] **PLACE AND HOLD 2-FLRM, ROD MOTION CONTROL**  
[2-M-4] to IN position until both 2-CBDG1 and 2-CBDG2 show  
0 steps. \_\_\_\_\_
- [28] **VERIFY U2 ICS point U0052 reads 0 steps.** \_\_\_\_\_
- [29] **PLACE 2-RBSS, ROD BANK SELECT [2-M-4], to SBA**  
position. \_\_\_\_\_
- [30] **VERIFY U2 ICS point U0053 reads 0 steps.** \_\_\_\_\_
- [31] **PLACE AND HOLD 2-FLRM, ROD MOTION CONTROL**  
[2-M-4] to OUT position until both 2-SBAG1 and 2-SBAG2  
show 5 steps. \_\_\_\_\_
- [32] **VERIFY U2 ICS point U0053 reads 5 steps.** \_\_\_\_\_
- [33] **PLACE AND HOLD 2-FLRM, ROD MOTION CONTROL**  
[2-M-4] to IN position until both 2-SBAG1 and 2-SBAG2 show  
0 steps. \_\_\_\_\_
- [34] **VERIFY U2 ICS point U0053 reads 0 steps.** \_\_\_\_\_
- [35] **PLACE 2-RBSS, ROD BANK SELECT [2-M-4], to SBB**  
position. \_\_\_\_\_
- [36] **VERIFY U2 ICS point U0054 reads 0 steps.** \_\_\_\_\_
- [37] **PLACE AND HOLD 2-FLRM, ROD MOTION CONTROL**  
[2-M-4] to OUT position until both 2-SBBG1 and 2-SBBG2  
show 5 steps. \_\_\_\_\_
- [38] **VERIFY U2 ICS point U0054 reads 5 steps.** \_\_\_\_\_
- [39] **PLACE AND HOLD 2-FLRM, ROD MOTION CONTROL**  
[2-M-4] to IN position until both 2-SBBG1 and 2-SBBG2 show  
0 steps. \_\_\_\_\_
- [40] **VERIFY U2 ICS point U0054 reads 0 steps.** \_\_\_\_\_
- [41] **PLACE 2-RBSS, ROD BANK SELECT [2-M-4], to SBC**  
position. \_\_\_\_\_
- [42] **VERIFY U2 ICS point U0055 reads 0 steps.** \_\_\_\_\_

Date \_\_\_\_\_

**6.10 Rod Control System Demand Position Computer Input Testing  
(continued)**

- [43] **PLACE AND HOLD** 2-FLRM, ROD MOTION CONTROL [2-M-4] to OUT position until both 2-SBCG1 and 2-SBCG2 show 5 steps. \_\_\_\_\_
- [44] **VERIFY** U2 ICS point U0055 reads 5 steps. \_\_\_\_\_
- [45] **PLACE AND HOLD** 2-FLRM, ROD MOTION CONTROL [2-M-4] to IN position until both 2-SBCG1 and 2-SBCG2 show 0 steps. \_\_\_\_\_
- [46] **VERIFY** U2 ICS point U0055 reads 0 steps. \_\_\_\_\_
- [47] **PLACE** 2-RBSS, ROD BANK SELECT [2-M-4], to SBD position. \_\_\_\_\_
- [48] **VERIFY** U2 ICS point U0056 reads 0 steps. \_\_\_\_\_
- [49] **PLACE AND HOLD** 2-FLRM, ROD MOTION CONTROL [2-M-4] to OUT position until both 2-SBDG1 and 2-SBDG2 show 5 steps. \_\_\_\_\_
- [50] **VERIFY** U2 ICS point U0056 reads 5 steps. \_\_\_\_\_
- [51] **PLACE AND HOLD** 2-FLRM, ROD MOTION CONTROL [2-M-4] to IN position until both 2-SBDG1 and 2-SBDG2 show 0 steps. \_\_\_\_\_
- [52] **VERIFY** U2 ICS point U0056 reads 0 steps. \_\_\_\_\_
- [53] **PLACE** 2-SUS, ROD CONTROL STARTUP [2-M-4], to START UP position, **AND**  
**RELEASE.** \_\_\_\_\_
- [54] **REMOVE** the jumper in the rear of 2-R-58 across TB320, points 1 (internal wire G8-7; external side wire 21210, cable 2RR1158, BK cond.) and 2 (internal wire G6-7; external side wire 21211, cable 2RR1158, W cond.). \_\_\_\_\_

CV

Date \_\_\_\_\_

**7.0 POST PERFORMANCE ACTIVITIES**

[1] **PERFORM** the following restoration actions:

A. **ENSURE** Appendix D, POST PERFORMANCE BREAKER LINEUP, is PERFORMED.

\_\_\_\_\_

CV

B. **REMOVE** the resistance load from the A phase and neutral bus bars behind the lower compartment of GENERATOR NO. 2, CONTROL ROD DRIVE PANEL 2-L-115 ROD DRIVE M-G SET SWITCHGEAR CAB, 2-PNL-85-L115.

\_\_\_\_\_

CV

C. **REMOVE** the resistance load from the B phase and neutral bus bars behind the lower compartment of GENERATOR NO. 2, CONTROL ROD DRIVE PANEL 2-L-115, ROD DRIVE M-G SET SWITCHGEAR CAB, 2-PNL-85-L115.

\_\_\_\_\_

CV

D. **REMOVE** the resistance load from the C phase and neutral bus bars behind the lower compartment of GENERATOR NO. 2, CONTROL ROD DRIVE PANEL 2-L-115 ROD DRIVE M-G SET SWITCHGEAR CAB, 2-PNL-85-L115.

\_\_\_\_\_

CV

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Date \_\_\_\_\_

**7.0 POST PERFORMANCE ACTIVITIES (continued)**

**NOTE**

Anti-static protection must be used when handling circuit cards.

[2] **PERFORM** the following at 2-L-117 (Power Cabinet 2BD):

A. **REMOVE** special jumper from Pins 1 and 3 at Card J1. \_\_\_\_\_

\_\_\_\_\_  
CV

B. **REINSTALL** Failure Detector Card J1. \_\_\_\_\_

\_\_\_\_\_  
CV

C. **REMOVE** special jumper from Pins 1 and 3 at Card I2. \_\_\_\_\_

\_\_\_\_\_  
CV

D. **REINSTALL** Failure Detector Card I2. \_\_\_\_\_

\_\_\_\_\_  
CV

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 116 of 135</b>
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Date \_\_\_\_\_

**7.0 POST PERFORMANCE ACTIVITIES (continued)**

[3] **PERFORM** the following at 2-L-118 (Power Cabinet 2AC):

A. **REMOVE** special jumper from Pins 1 and 3 at Card J1.

\_\_\_\_\_

CV

B. **REINSTALL** Failure Detector Card J1.

\_\_\_\_\_

CV

C. **REMOVE** special jumper from Pins 1 and 3 at Card I2.

\_\_\_\_\_

CV

D. **REINSTALL** Failure Detector Card I2.

\_\_\_\_\_

CV

[4] **PERFORM** the following at 2-L-119 (Power Cabinet SCD):

A. **REMOVE** special jumper from Pins 1 and 3 at Card J1.

\_\_\_\_\_

CV

B. **REINSTALL** Failure Detector Card J1.

\_\_\_\_\_

CV

C. **REMOVE** special jumper from Pins 1 and 3 at Card I2.

\_\_\_\_\_

CV

D. **REINSTALL** Failure Detector Card I2.

\_\_\_\_\_

CV

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 117 of 135</b>
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Date \_\_\_\_\_

**7.0 POST PERFORMANCE ACTIVITIES (continued)**

[5] **PERFORM** the following at 2-L-120 (Power Cabinet 1AC):

A. **REMOVE** special jumper from Pins 1 and 3 at Card J1.

\_\_\_\_\_  
\_\_\_\_\_  
CV

B. **REINSTALL** Failure Detector Card J1.

\_\_\_\_\_  
\_\_\_\_\_  
CV

C. **REMOVE** special jumper from Pins 1 and 3 at Card I2.

\_\_\_\_\_  
\_\_\_\_\_  
CV

D. **REINSTALL** Failure Detector Card I2.

\_\_\_\_\_  
\_\_\_\_\_  
CV

[6] **PERFORM** the following at 2-L-121 (Power Cabinet 1BD):

A. **REMOVE** special jumper from Pins 1 and 3 at Card J1.

\_\_\_\_\_  
\_\_\_\_\_  
CV

B. **REINSTALL** Failure Detector Card J1.

\_\_\_\_\_  
\_\_\_\_\_  
CV

C. **REMOVE** special jumper from Pins 1 and 3 at Card I2.

\_\_\_\_\_  
\_\_\_\_\_  
CV

D. **REINSTALL** Failure Detector Card I2.

\_\_\_\_\_  
\_\_\_\_\_  
CV

<b>WBN</b> <b>Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02</b> <b>Rev. 0000</b> <b>Page 118 of 135</b>
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Date \_\_\_\_\_

**7.0 POST PERFORMANCE ACTIVITIES (continued)**

[7] **REQUEST** Foxboro I/A STE, or designee, to SET Foxboro I/A points 2ISB0850412A and 2ISB0850412B to Automatic. \_\_\_\_\_

[8] **NOTIFY** the Unit 2 US/SRO of the test completion and system alignment. \_\_\_\_\_

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**8.0 RECORDS**

A. QA Records

Completed Test Package

B. Non-QA Records

None





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**Appendix C  
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**PRE TEST BREAKER LINEUP**

Date \_\_\_\_\_

**1.0 PRE TEST BREAKER LINEUP**

- [1] **ENSURE 2-BKR-85-A, CRD MG SET 2A (2-GEN-85-A), at 480V UNIT BD 2A, Compt. 3B (729/T4K), to the DISCONNECT and OPEN position.**

\_\_\_\_\_

CV
- [2] **ENSURE 2-BKR-85-B, CRD MG SET 2B (2-GEN-85-B), at 480V Unit BD 2B, Compt. 4D (708/T8F) to the DISCONNECT and OPEN position.**

\_\_\_\_\_

CV
- [3] **ENSURE 0-BKR-236-3/215 (Breaker 215 on 125V DC Vital Battery Bd III) in the OFF position.**

\_\_\_\_\_

CV
- [4] **ENSURE 0-BKR-236-4/215 (Breaker 215 on 125V DC Vital Battery Bd IV) in the OFF position.**

\_\_\_\_\_

CV
- [5] **ENSURE 2-BKR-85-L115/1C, GENERATOR NO. 1 OUTPUT BREAKER [2-L-115], to the DISCONNECT and OPEN position.**

\_\_\_\_\_

CV
- [6] **ENSURE 2-BKR-85-L115/2C, GENERATOR NO. 2 OUTPUT BREAKER [2-L-115], to the DISCONNECT and OPEN position.**

\_\_\_\_\_

CV

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 123 of 135</b>
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**Appendix C  
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**PRE TEST BREAKER LINEUP**

Date \_\_\_\_\_

**1.0 PRE TEST BREAKER LINEUP (continued)**

[7] **ENSURE 2-BKR-85-L115/1CB (1CB breaker inside 2-L-115, GENERATOR NO. 2 side, CRD Logic and Power Cabinets Main Control Power) to OFF.**

\_\_\_\_\_

CV

[8] **ENSURE 2-BKR-85-L117A (2-BKR-237-A, breaker 7 on 2-BD-237-A; CRD Logic and Power Cabinets Aux Control Power) to OFF.**

\_\_\_\_\_

CV

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 124 of 135</b>
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**Appendix D  
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**POST PERFORMANCE BREAKER LINEUP**

Date \_\_\_\_\_

**1.0 POST PERFORMANCE BREAKER LINEUP**

<p><b>NOTE</b></p> <p>Double hearing protection is required with one or more MG Set operating.</p>
--

- [1] **ENSURE 2-BKR-85-L117A (2-BKR-237-A, breaker 7 on 2-BD-237-A; CRD Logic and Power Cabinets Aux Control Power) to OFF.**

\_\_\_\_\_

CV
  
- [2] **ENSURE 2-SW-85-1, Fused Disconnect Switch, behind the MG Sets on the MG Set room wall, is OFF.**

\_\_\_\_\_

CV
  
- [3] **ENSURE 2-BKR-85-L115/1CB (1CB breaker inside 2-L-115, GENERATOR NO. 2 side, CRD Logic and Power Cabinets Main Control Power) to OFF.**

\_\_\_\_\_

CV
  
- [4] **ENSURE 2-BKR-85-L115/1C, GENERATOR NO. 1 OUTPUT BREAKER [2-L-115], to the DISCONNECT and OPEN position.**

\_\_\_\_\_

CV
  
- [5] **ENSURE 2-BKR-85-L115/2C, GENERATOR NO. 2 OUTPUT BREAKER [2-L-115], to the DISCONNECT and OPEN position.**

\_\_\_\_\_

CV

<b>WBN</b> <b>Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02</b> <b>Rev. 0000</b> <b>Page 125 of 135</b>
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**Appendix D**  
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**POST PERFORMANCE BREAKER LINEUP**

Date \_\_\_\_\_

**1.0 POST PERFORMANCE BREAKER LINEUP (continued)**

- [6] **ENSURE 2-BKR-85-A, CRD MG SET 2A (2-GEN-85-A), at 480V UNIT BD 2A, Compt. 3B (729/T4K), to the DISCONNECT and OPEN position.**

\_\_\_\_\_

CV
- [7] **ENSURE 2-BKR-85-B, CRD MG SET 2B (2-GEN-85-B), at 480V Unit BD 2B, Compt. 4D (708/T8F) to the DISCONNECT and OPEN position.**

\_\_\_\_\_

CV
- [8] **ENSURE 0-BKR-236-3/215 (Breaker 215 on 125V DC Vital Battery Bd III) in the OFF position.**

\_\_\_\_\_

CV
- [9] **ENSURE 0-BKR-236-4/215 (Breaker 215 on 125V DC Vital Battery Bd IV) in the OFF position.**

\_\_\_\_\_

CV

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 126 of 135</b>
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**Appendix E  
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**FUSE INSTALLATION CHECKLIST**

**NOTE**

Fuse UNIDs used for more than one fuse will be labeled with the number of fuses inside parenthesis. As an example, 11FU in Panel 2-L-115 has three fuses with the same UNID and will be labeled 11FU (3).

CABINET	FUSE	DRAWING	UNID, DESCRIPTION	INSTALLED: PERF / DATE	INSTALLED: CV / DATE
480V UB 2A	A4/31	6948D28	2-FU-203-A4/31, mtr 2A trip		
480V UB 2A	A4/32	6948D28	2-FU-203-A4/32, mtr 2A close		
480V UB 2B	B3/11	6948D37	2-FU-203-B3/11, mtr 2B trip		
480V UB 2B	B3/12	6948D37	2-FU-203-B3/12, mtr 2B close		
2-L-115	GGX(2)	3688C39-4	2-FU-85-13, feed to GGX circuit		
2-L-115	5A/1A (2)	45W760-85-1	2-FU-85-5A/1A, gen 1 ammeters		
2-L-115	11FU(3)	3688C39-5	none / hi side 11PT & 12PT xfms		
2-L-115	12FU(2)	3688C39-5	none / lo side 11PT & 12PT xfms		
2-L-115	13FU	3688C39-5	none / hi side 13PT xfmr		
2-L-115	14FU	3688C39-5	none / lo side 13PT xfmr		
2-L-115	5B/1B (2)	45W760-85-1	2-FU-85-5B/1B, gen 2 ammeters		

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 127 of 135</b>
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**FUSE INSTALLATION CHECKLIST**

CABINET	FUSE	DRAWING	UNID, DESCRIPTION	INSTALLED: PERF / DATE	INSTALLED: CV / DATE
2-L-115	21FU(3)	3688C39-7	none / hi side 21PT & 22PT xfms		
2-L-115	22FU(2)	3688C39-7	none / lo side 21PT & 22PT xfms		
2-L-115	23FU	3688C39-7	none / hi side 23PT xfmr		
2-L-115	24FU	3688C39-7	none / lo side 23PT xfmr		
2-L-115	15FU(2)	3688C39-8	2-FU-85-11, gen #1 trip,close		
2-L-115	25FU(2)	3688C39-8A	2-FU-85-21, gen #2 trip,close		
2-L-115	16FU	3688C39-9	none / hi side 14PT xfmr		
2-L-115	17FU	3688C39-9	none / lo side 14PT xfmr		
2-L-117	FU1A	1051E06-3	2-FU-85-L117/1A, pwr sup		
2-L-117	FU1B	1051E06-3	2-FU-85-L117/1B, pwr sup		
2-L-117	FU2A	1051E06-3	2-FU-85-L117/2A, pwr sup		
2-L-117	FU2B	1051E06-3	2-FU-85-L117/2B, pwr sup		
2-L-117	FU3A	1051E06-3	2-FU-85-L117/3A, pwr sup		

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 128 of 135</b>
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**Appendix E  
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**FUSE INSTALLATION CHECKLIST**

CABINET	FUSE	DRAWING	UNID, DESCRIPTION	INSTALLED: PERF / DATE	INSTALLED: CV / DATE
2-L-117	FU3B	1051E06-3	2-FU-85-L117/3B, pwr sup		
2-L-117	FU4A	1051E06-3	2-FU-85-L117/4A, pwr sup		
2-L-117	FU4B	1051E06-3	2-FU-85-L117/4B, pwr sup		
2-L-117	FU53	1051E06-6	2-FU-85-L117/53, main 120V AC		
2-L-117	FU54	1051E06-6	2-FU-85-L117/54, aux 120V AC		
2-L-117	FU59	1051E06-6	2-FU-85-L117/59, main 120V AC		
2-L-117	FU60	1051E06-6	2-FU-85-L117/60, aux 120V AC		
2-L-117	FU61	1051E06-6	2-FU-85-L117/61, multiplexing		
2-L-117	FU62	1051E06-6	2-FU-85-L117/62, multiplexing		
2-L-118	FU1A	1051E06-3	2-FU-85-L118/1A, pwr sup		
2-L-118	FU1B	1051E06-3	2-FU-85-L118/1B, pwr sup		
2-L-118	FU2A	1051E06-3	2-FU-85-L118/2A, pwr sup		
2-L-118	FU2B	1051E06-3	2-FU-85-L118/2B, pwr sup		

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 129 of 135</b>
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**FUSE INSTALLATION CHECKLIST**

CABINET	FUSE	DRAWING	UNID, DESCRIPTION	INSTALLED: PERF / DATE	INSTALLED: CV / DATE
2-L-118	FU3A	1051E06-3	2-FU-85-L118/3A, pwr sup		
2-L-118	FU3B	1051E06-3	2-FU-85-L118/3B, pwr sup		
2-L-118	FU4A	1051E06-3	2-FU-85-L118/4A, pwr sup		
2-L-118	FU4B	1051E06-3	2-FU-85-L118/4B, pwr sup		
2-L-118	FU53	1051E06-6	2-FU-85-L118/53, main 120V AC		
2-L-118	FU54	1051E06-6	2-FU-85-L118/54, aux 120V AC		
2-L-118	FU59	1051E06-6	2-FU-85-L118/59, main 120V AC		
2-L-118	FU60	1051E06-6	2-FU-85-L118/60, aux 120V AC		
2-L-118	FU61	1051E06-6	2-FU-85-L118/61, multiplexing		
2-L-119	FU1A	1051E06-3	2-FU-85-L119/1A, pwr sup		
2-L-119	FU1B	1051E06-3	2-FU-85-L119/1B, pwr sup		
2-L-119	FU2A	1051E06-3	2-FU-85-L119/2A, pwr sup		
2-L-119	FU2B	1051E06-3	2-FU-85-L119/2B, pwr sup		

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 130 of 135</b>
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**FUSE INSTALLATION CHECKLIST**

CABINET	FUSE	DRAWING	UNID, DESCRIPTION	INSTALLED: PERF / DATE	INSTALLED: CV / DATE
2-L-119	FU3A	1051E06-3	2-FU-85-L119/3A, pwr sup		
2-L-119	FU3B	1051E06-3	2-FU-85-L119/3B, pwr sup		
2-L-119	FU4A	1051E06-3	2-FU-85-L119/4A, pwr sup		
2-L-119	FU4B	1051E06-3	2-FU-85-L119/4B, pwr sup		
2-L-119	FU53	1051E06-6	2-FU-85-L119/53, main 120V AC		
2-L-119	FU54	1051E06-6	2-FU-85-L119/54, aux 120V AC		
2-L-119	FU59	1051E06-6	2-FU-85-L119/59, main 120V AC		
2-L-119	FU60	1051E06-6	2-FU-85-L119/60, aux 120V AC		
2-L-119	FU61	1051E06-6	2-FU-85-L119/61, multiplexing		
2-L-119	FU62	1051E06-6	2-FU-85-L119/62, multiplexing		
2-L-120	FU1A	1051E06-3	2-FU-85-L120/1A, pwr sup		
2-L-120	FU1B	1051E06-3	2-FU-85-L120/1B, pwr sup		
2-L-120	FU2A	1051E06-3	2-FU-85-L120/2A, pwr sup		

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 131 of 135</b>
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**FUSE INSTALLATION CHECKLIST**

CABINET	FUSE	DRAWING	UNID, DESCRIPTION	INSTALLED: PERF / DATE	INSTALLED: CV / DATE
2-L-120	FU2B	1051E06-3	2-FU-85-L120/2B, pwr sup		
2-L-120	FU3A	1051E06-3	2-FU-85-L120/3A, pwr sup		
2-L-120	FU3B	1051E06-3	2-FU-85-L120/3B, pwr sup		
2-L-120	FU4A	1051E06-3	2-FU-85-L120/4A, pwr sup		
2-L-120	FU4B	1051E06-3	2-FU-85-L120/4B, pwr sup		
2-L-120	FU53	1051E06-6	2-FU-85-L120/53, main 120V AC		
2-L-120	FU54	1051E06-6	2-FU-85-L120/54, aux 120V AC		
2-L-120	FU59	1051E06-6	2-FU-85-L120/59, main 120V AC		
2-L-120	FU60	1051E06-6	2-FU-85-L120/60, aux 120V AC		
2-L-120	FU61	1051E06-6	2-FU-85-L120/61, multiplexing		
2-L-120	FU62	1051E06-6	2-FU-85-L120/62, multiplexing		
2-L-121	FU1A	1051E06-3	2-FU-85-L121/1A, pwr sup		
2-L-121	FU1B	1051E06-3	2-FU-85-L121/1B, pwr sup		

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 132 of 135</b>
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**FUSE INSTALLATION CHECKLIST**

CABINET	FUSE	DRAWING	UNID, DESCRIPTION	INSTALLED: PERF / DATE	INSTALLED: CV / DATE
2-L-121	FU2A	1051E06-3	2-FU-85-L121/2A, pwr sup		
2-L-121	FU2B	1051E06-3	2-FU-85-L121/2B, pwr sup		
2-L-121	FU3A	1051E06-3	2-FU-85-L121/3A, pwr sup		
2-L-121	FU3B	1051E06-3	2-FU-85-L121/3B, pwr sup		
2-L-121	FU4A	1051E06-3	2-FU-85-L121/4A, pwr sup		
2-L-121	FU4B	1051E06-3	2-FU-85-L121/4B, pwr sup		
2-L-121	FU53	1051E06-6	2-FU-85-L121/53, main 120V AC		
2-L-121	FU54	1051E06-6	2-FU-85-L121/54, aux 120V AC		
2-L-121	FU59	1051E06-6	2-FU-85-L121/59, main 120V AC		
2-L-121	FU60	1051E06-6	2-FU-85-L121/60, aux 120V AC		
2-L-121	FU61	1051E06-6	2-FU-85-L121/61, multiplexing		
2-L-121	FU62	1051E06-6	2-FU-85-L121/62, multiplexing		
2-L-122	FU1	6056D35-20	none, 120V AC to main +15V sup		

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 133 of 135</b>
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**Appendix E  
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**FUSE INSTALLATION CHECKLIST**

CABINET	FUSE	DRAWING	UNID, DESCRIPTION	INSTALLED: PERF / DATE	INSTALLED: CV / DATE
2-L-122	FU2	6056D35-20	none, 120V AC to main +15V sup		
2-L-122	FU3	6056D35-20	none, 120V AC to main -15V sup		
2-L-122	FU4	6056D35-20	none, 120V AC to main -15V sup		
2-L-122	FU5	6056D35-20	none, 120V AC to main +100V sup		
2-L-122	FU6	6056D35-20	none, 120V AC to main +100V sup		
2-L-122	FU7	6056D35-20	none, 120V AC to aux +15V sup		
2-L-122	FU8	6056D35-20	none, 120V AC to aux +15V sup		
2-L-122	FU9	6056D35-20	none, 120V AC to aux -15V sup		
2-L-122	FU10	6056D35-20	none, 120V AC to aux -15V sup		
2-L-122	FU11	6056D35-20	none, 120V AC to aux +100V sup		
2-L-122	FU12	6056D35-20	none, 120V AC to aux +100V sup		
2-L-123	FU8	1045F60	2-FU-85-L123/8, start-reset ckts		
2-L-123	FU9	1045F60	2-FU-85-L123/9, start-reset ckts		

<b>WBN Unit 2</b>	<b>ROD CONTROL- NON HFT</b>	<b>2-PTI-085-02 Rev. 0000 Page 134 of 135</b>
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**Appendix E  
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**FUSE INSTALLATION CHECKLIST**

CABINET	FUSE	DRAWING	UNID, DESCRIPTION	INSTALLED: PERF / DATE	INSTALLED: CV / DATE
2-L-123	FU10	1045F60	2-FU-85-L123/10, start-reset ckts		
2-L-123	FU11	1045F60	2-FU-85-L123/11, start-reset ckts		

**Figure 1  
(Page 1 of 1)**

**RESISTANCE LOAD CONNECTION**

