

WBN2Public Resource

From: Boyd, Desiree L [dlboyd@tva.gov]
Sent: Thursday, October 18, 2012 2:30 PM
To: Epperson, Dan; Wilson, George; Poole, Justin
Cc: Arent, Gordon; Hamill, Carol L; Boyd, Desiree L
Subject: TVA letter to NRC_10-18-12_2-PTI-099-05 transmittal to NRC
Attachments: 10-18-12_2-PTI-099-05 transmittal to NRC_Final.pdf

Please see attached TVA letter that was sent to the NRC today.

Thank You,

~*~*~*~*~*~*~*~*~*~

Desiree L. Boyd

WBN Unit 2 Licensing

dlboyd@tva.gov

423-365-8764

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October 18, 2012

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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Watts Bar Nuclear Plant, Unit 2
NRC Docket No. 50-391

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

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

PTI NUMBER	Rev.	TITLE
2-PTI-099-05	0	Overpower Delta-T and Overtemperature Delta-T Turbine Runback

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

Respectfully,

Raymond A. Hruby, Jr.
General Manager, Technical Services
Watts Bar Unit 2

Enclosure

U.S. Nuclear Regulatory Commission
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October 18, 2012

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U.S. Nuclear Regulatory Commission
Page 3
October 18, 2012

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

TITLE: Overpower Delta-T and Overtemperature Delta-T Turbine Runback

Instruction No: 2-PTI-099-05

Revision No: 0000

PREPARED BY: Nicholas C. Pipliza / Nichol C Pipliza
PRINT NAME / SIGNATURE

DATE: 8/28/12

REVIEWED BY: Mark D. Runion / Mark D. Runion
PRINT NAME / SIGNATURE

DATE: 8/28/12

INSTRUCTION APPROVAL

JTG MEETING No: 2-12-017

JTG CHAIRMAN: [Signature]

DATE: 8/30/12

APPROVED BY: [Signature]
PREOPERATIONAL STARTUP MANAGER

DATE: 8/30/12

TEST RESULTS APPROVAL

JTG MEETING No: _____

JTG CHAIRMAN: _____

DATE: _____

APPROVED BY: _____
PREOPERATIONAL STARTUP MANAGER

DATE: _____

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Revision Log

Revision or Change Number	Effective Date	Affected Page Numbers	Description of Revision/Change
0000	<i>08/30/12</i>	ALL	Initial issue based on 1-PTI-099-05 Rev. 0.

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1.0 INTRODUCTION

1.1 Test Objectives

The objective of this test is to demonstrate the C-3 and C-4 Control Permissive relay logic, alarms, and initiating of NSSS Turbine Runback Timing Relay including verification of the timing relay contacts. The C-3 and C-4 permissives are interlocks from the Overpower Delta-T (OP Δ T) and Overtemperature Delta-T (OT Δ T) setpoints, respectively, and a 2/4 loop logic.

1.2 Scope

- A. Demonstrate the OT Δ T and OP Δ T NSSS Turbine Runback alarm logic.
- B. Demonstrate OT Δ T and OP Δ T relay logic and initiation of NSSS Turbine Runback logic relays 2TX and 2PX.
- C. Demonstrate initiation of 2STD Δ X relay and NSSS Turbine Runback relay timing

2.0 REFERENCES

2.1 Performance References

- A. SMP-9.0, Rev. 2, Conduct of Test
- B. SMP-15.0, Rev. 3, Control of Isolation Devices

2.2 Developmental References

2.2.1 Flow Diagrams

None

2.2.2 Electrical

- A. 2-45W600-47-8, Rev. 1, Wiring Diagram Turbo-Generator Auxiliaries Schematic Diagram
- B. 2-45W600-57-2, Rev. 3, Wiring Diagram Separation & Misc Aux Relay Schematic Diagram
- C. 2-45W600-57-14, Rev. 2, Wiring Diagram Separation & Misc Aux Relay Schematic Diagram

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2.2.2 Electrical (continued)

- D. 2-45W600-57-36, Rev 3, Wiring Diagram Separation & Misc Aux Relay Schematic Diagram
- E. 45N2682-1, Rev. 4, Wiring Diagrams Turbine EHC Panel 2-R-56 Connection Diagrams
- F. 45N2684-1, Rev. 7, Wiring Diagrams NSSS Aux Relay Panel 2-R-58 Connection Diagrams
- G. 45N2684-2, Rev. 1, Wiring Diagrams NSSS Aux Relay Panel 2-R-58 Connection Diagrams
- H. 45N2684-3, Rev. 5, Wiring Diagrams NSSS Aux Relay Panel 2-R-58 Connection Diagrams
- I. 45N2684-4, Rev. 4, Wiring Diagrams NSSS Aux Relay Panel 2-R-58 Connection Diagrams
- J. 2-45B655-6B, Rev. 0, Main Control Room Annunciator Inputs Window Box XA-55-6B
- K. 2-45B655-E6B, Rev. 0, Electrical Annunciator Window Box XA-55-6B Engraving
- L. 2-47B601-55-70, Rev. 1 Electrical Inst Tabulation XX-55-5 Trip Status Lights
- M. 45N2661-2, Rev. 7, Wiring Diagram Reactor Protection Set I Connection Diagrams (2-R-2)
- N. 45N2662-2, Rev. 3, Wiring Diagram Reactor Protection Set II Connection Diagrams (2-R-6)
- O. 45N2663-2, Rev. 4, Wiring Diagram Reactor Protection Set III Connection Diagrams (2-R-10)
- P. 45N2664-2, Rev. 12, Wiring Diagram Reactor Protection Set IV Connection Diagrams (2-R-13)
- Q. 2-47W610-68-8, Rev. 1, Electrical Control Diagram Reactor Coolant System
- R. 2-47W610-68-9, Rev. 1, Electrical Control Diagram Reactor Coolant System
- S. 2-47W610-68-10, Rev. 1, Electrical Control Diagram Reactor Coolant System
- T. 2-47W610-68-11, Rev. 1, Electrical Control Diagram Reactor Coolant System
- U. 45N706-1, Rev. 20, 120V AC Vital Inst Power Bds 1-I & 2-I Connection Diagram

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2.2.2 Electrical (continued)

- V. 45N706-2, Rev. 21, 120V AC Vital Inst Power Bds 1-II & 2-II Connection Diagram

2.2.3 Vendor Drawings

- A. 2-65717-5D63347-5, Rev. 0 (ANT), DRA 52319-521, Rev. 1, External Connection Diagram - Protection Set I Rack 2
- B. 2-65717-5D63347-13, Rev. 0 (ANT), DRA 52319-529, Rev. 1, External Connection Diagram - Protection Set II Rack 6
- C. 2-65717-5D63347-21, Rev. 0 (ANT), DRA 52319-537, Rev. 1, External Connection Diagram - Protection Set III Rack 10
- D. 2-65717-5D63347-27, Rev. 0 (ANT), DRA 52319-543, Rev. 1, External Connection Diagram - Protection Set IV Rack 13
- E. 2-65717-108D408-7, Rev. 0 (ANT), DRA 52319-159, Rev. 2, Process Control Block Diagram - Loop 1 $\Delta T/TAVG$ - Protection Set I
- F. 2-65717-108D408-8, Rev. 0 (ANT), DRA 52319-160, Rev. 1, Process Control Block Diagram - Loop 2 $\Delta T/TAVG$ - Protection Set II
- G. 2-65717-108D408-9, Rev. 0 (ANT), DRA 52319-161, Rev. 1, Process Control Block Diagram - Loop 3 $\Delta T/TAVG$ - Protection Set III
- H. 2-65717-108D408-10, Rev. 0 (ANT), DRA 52319-162, Rev. 1, Process Control Block Diagram - Loop 4 $\Delta T/TAVG$ - Protection Set IV
- I. 2-65717-1856E58-5, Rev. 0 (ANT), DRA 52319-277, Rev. 1, Eagle 21 Internal Wiring Diagram - Rack 2 Protection Set I - Delta T/TAVG System Loop 1
- J. 2-65717-1856E62-5, Rev. 0 (ANT), DRA 52319-341, Rev. 1, Eagle 21 Internal Wiring Diagram - Rack 6 Protection Set II - Delta T/TAVG System Loop 2
- K. 2-65717-1856E66-5, Rev. 0 (ANT), DRA 52319-401, Rev. 1, Eagle 21 Internal Wiring Diagram - Rack 10 Protection Set III - Delta T/TAVG System Loop 3
- L. 2-65717-1856E69-5, Rev. 0 (ANT), DRA 52319-452, Rev. 1, Eagle 21 Internal Wiring Diagram - Rack 13 Protection Set IV - Delta T/TAVG System Loop 4
- M. 2-54114-1-5655D87-5, Rev. 0 (ANT), DRA 52328-744, Rev. 0, Functional Diagrams - Primary Coolant System Trip Signals
- N. 2-54114-1-5655D87-16, Rev. 0 (ANT), DRA 52328-755, Rev. 0, Functional Diagrams - Turbine Runback & Other Signals

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2.2.4 Final Safety Analysis Report (FSAR), Amendment 108

- A. WBNP FSAR Chapter 7, Section 7.7.1.4.2, Automatic Turbine Load Runback
- B. WBNP FSAR Chapter 14, Table 14.2-1, (Sheet 57 of 89) Reactor Protection System Test Summary

2.2.5 Documents

- A. 1-PTI-099-05, Rev. 0, (NSSS) Turbine Runback
- B. WBN2-99-4003, Rev. 0, System Description Document for Reactor Protection System
- C. WBN2-47-4002, Rev. 1, System Description Document for Turbogenerator System (Part 1) and Turbogenerator Control and Protection System (Part 2)
- D. 2-TSD-99-5, Rev. 0, Overpressure ΔT and Overtemperature ΔT Turbine Runback
- E. VR-WBC0898, Rev. 0, Installation and Operation Manual - Model X110 Controller Module - Serial Input Annunciator Network

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3.0 PRECAUTIONS AND LIMITATIONS

- A. Standard precautions shall be followed for working around energized electrical equipment in accordance with TVA Safety Procedure 1021.
- B. Steps may be repeated if all components cannot be tested in a step. However, if the test has been exited, prerequisite steps must be re-verified and a Chronological Test Log (CTL) entry made.
- C. Discrepancies between component ID tags and the description in a procedure/instruction 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-31-46 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. Turbine Generator shall not be in service. Performance of Subsections 6.2 and 6.3 may result in trip of the Electro-Hydraulic Control (EHC) function.
- I. Words "ALARM" and "CLEAR" will be used to describe a Main Control Room (MCR) Annunciator Window status relative to the state of the alarm signal from the system logic. Personnel in the MCR should be familiar with alarm sequence indications.
- J. Ensure there are no adverse effects to the operation of Unit 1 structures, systems, or components.
- K. Test Personnel will coordinate with Unit 1 Operations when manipulating Unit 1 equipment if required.

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3.0 PRECAUTIONS AND LIMITATIONS (continued)

- L. Eagle-21 instrumentation shall be energized and operating for a minimum of 12 hours before this test is performed.

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Date _____

4.0 PREREQUISITE ACTIONS

NOTE

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

4.1 Preliminary Actions

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

ENSURE they will NOT adversely affect the test performance and results.
 - A. Subsection 6.1 _____
 - B. Subsection 6.2 _____
 - C. Subsection 6.3 _____

- [2] **ENSURE** changes to the references listed on Appendix A, have been reviewed, and determined NOT to adversely affect the test performance. _____

- [3] **VERIFY** current revisions and change paper for referenced drawings has been reviewed and determined NOT to adversely affect the test performance, **AND**

ATTACH documentation of current drawing revision numbers and change paper that were reviewed to the data package. _____

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

- [5] **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. _____

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Date _____

4.1 Preliminary Actions (continued)

- [6] **ENSURE** required Component Testing has been completed prior to start of test. _____
- [7] **CONDUCT** a pretest briefing with Test and Operations personnel in accordance with SMP-9.0. _____
- [8] **ENSURE** communications between the Auxiliary Instrumentation Room (Panels 2-R-2, -6, -10, -13, -56, and -58) and the MCR. _____
- [9] **VERIFY** plant instruments, listed on Appendix C, Permanent Plant Instrumentation Log, are placed in service and are within their calibration interval. _____
- [10] **VERIFY** 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-55-6B/122-D _____
 - B. 2-XA-55-6B/123-D _____
- [11] **ENSURE** components contained within the boundaries of this test are under the jurisdictional control of Preoperational Startup Engineering (PSE) and/or Plant Operations. _____
- [12] **ENSURE** a review of outstanding Clearances has been coordinated with Operations for impact to the test performance, **AND**

RECORD in Appendix B, Temporary Condition Log. _____
- [13] **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. _____
- [14] **VERIFY** Measuring and Test Equipment (M&TE) required for test performance has been (as required) filled, vented, place in service and recorded on Measuring and Test Equipment Log, Appendix D.

 - A. Subsection 6.2 _____
 - B. Subsection 6.3 _____

WBN Unit 2	Overpower Delta-T and Overtemperature Delta-T Turbine Runback	2-PTI-099-05 Rev. 0000 Page 13 of 75
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Date _____

4.1 Preliminary Actions (continued)

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

 - A. Subsection 6.2 _____
 - B. Subsection 6.3 _____
- [16] **VERIFY** the following systems are operational and have been placed in service to the extent necessary to perform this test.

 - A. System 099 - Eagle Racks 2-R-2, 2-R-6, 2-R-10 and 2-R-13 are energized. _____
 - B. System 235 - 120V AC Vital Instrument Power Boards 2-I & II. _____
- [17] **PERFORM** a pretest walkdown on equipment to be tested to ensure no conditions exist that will impact test performance. _____
- [18] **REVIEW** preventive maintenance for system/components covered by this test, **AND**

VERIFY no conditions exist that will impact test performance. _____
- [19] **ENSURE** Eagle-21 System Engineer or a qualified individual is available for portions of this test that require the use of the Man-Machine Interface (MMI) Cart.

 - A. Subsection 6.1 _____
 - B. Subsection 6.2 _____
 - C. Subsection 6.3 _____

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Date _____

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

4.2.1 Test Equipment

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

RECORD the following M&TE on Appendix D, Measurement and Test Equipment Log:

A. Voltmeter (continuity checks) (Subsections 6.2 and 6.3). _____

B. Trace Recorder or Data Acquisition Hardware (at least one channel/input) (Subsection 6.3). _____

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

A. Two - Switched jumpers (Subsection 6.3). _____

B. MMI Cart (Subsection 6.1, 6.2, and 6.3). _____

4.3 Field Preparations

4.3.1 Field Preparations for Subsection 6.1 and Section 6.2

[1] **ENSURE** the Breaker and Fuse Lineup listed in Table 1. _____

[2] **ENSURE** the Switch Lineup listed in Table 3. _____

[3] **ENSURE** Field Cables listed in Table 4 are on Metal in accordance with SMP-15.0. _____

[4] **ENSURE** Channel Bypass Lineup listed in Table 5. _____

4.3.2 Field Preparations for Subsection 6.3

[1] **ENSURE** the Breaker and Fuse Lineup listed in Table 2. _____

[2] **ENSURE** the Switch Lineup listed in Table 3. _____

[3] **ENSURE** Field Cables listed in Table 4 are on Metal in accordance with SMP-15.0. _____

[4] **ENSURE** the Channel Bypass Lineup listed in Table 5. _____

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Date _____

4.3.3 Approvals and Notifications

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

Preoperational Startup Manager Signature

Date

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

U2 US/SRO/SM Signature

Date

WBN Unit 2	Overpower Delta-T and Overtemperature Delta-T Turbine Runback	2-PTI-099-05 Rev. 0000 Page 16 of 75
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5.0 ACCEPTANCE CRITERIA

NOTES

- 1) Actual runback of the Turbine Analog Hydraulic System shall be performed as part of the System 47 testing.
- 2) Tolerance for 2STDY Relay Timing is $\pm 10\%$ of specified time in seconds.
- 3) Paragraph/sentences/tables which determine acceptance criteria will be designated by **(Acc Crit)**.

[1] The MCR annunciator windows on 2-M-5 and 2-M-6 annunciate. (Steps 6.1[5], 6.1[9], 6.1[13], 6.1[17], 6.1[21], 6.1[25], 6.1[29], and 6.1[33])

[2] Turbine runback Relay 2STDY shall energize, when 2TX and 2PX relays are de-energized. (Steps 6.3[14] and 6.3[26])

[3] Turbine Runback Relay 2STDY shall be initiated by a 2/4 Logic. (Steps 6.3[32] and 6.3[36])

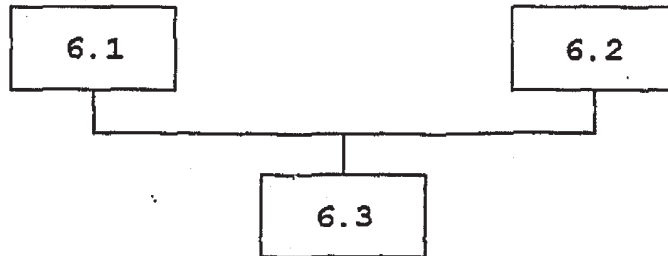
Date _____

6.0 PERFORMANCE

NOTES

1) The subsections of this test shall be performed per the Flow Diagram below.

2) Subsections 6.1 and 6.2 can be performed in any order.



6.1 Verification of NSSS Runback Alarms

- [1] **VERIFY** prerequisites listed in Section 4.0 for Subsection 6.1 have been completed. _____
- [2] **ENSURE** the following alarm and status windows in the MCR are CLEAR:
 - A. XA-55-6B-122D, OVERPOWER Δ T TURB RUNBACK & C-4 ROD BLOCK, at Panel 2-M-6. _____
 - B. XA-55-6B-123D, OVERTEMP Δ T TURB RUNBACK & C-3 ROD BLOCK, at Panel 2-M-6. _____
 - C. XX-55-5-15, LOOP 1 OT Δ T RUN BACK TS-68-2E, at Panel 2-M-5. _____
 - D. XX-55-5-16, LOOP 1 OP Δ T RUN BACK TS-68-2F, at Panel 2-M-5. _____
 - E. XX-55-5-35, LOOP 2 OT Δ T RUN BACK TS-68-25E, at Panel 2-M-5. _____
 - F. XX-55-5-36, LOOP 2 OP Δ T RUN BACK TS-68-25F, at Panel 2-M-5. _____
 - G. XX-55-5-55, LOOP 3 OT Δ T RUN BACK TS-68-44E, at Panel 2-M-5. _____

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Date _____

6.1 Verification of NSSS Runback Alarms (continued)

H. XX-55-5-56, LOOP 3 OPΔT RUN BACK TS-68-44F, at Panel 2-M-5. _____

I. XX-55-5-75, LOOP 4 OTΔT RUN BACK TS-68-67E, at Panel 2-M-5. _____

J. XX-55-5-76, LOOP 4 OPΔT RUN BACK TS-68-67F, at Panel 2-M-5. _____

[3] **ENSURE** the Unit 2 Events Display Legend shows the following as RETURN TO NORMAL:

A. 122-D OVERPOWER DT TURB RUNBACK & C-4 ROD BLOCK. _____

B. 123-D OVERTEMP DT TURB RUNBACK & C-3 ROD BLOCK. _____

[4] **PLACE** TS/411D, MANUAL TRIP SW Slot TF09, Panel 2-R-2, Reactor Protection Set I, to the RIGHT. _____

[5] **VERIFY** the status of the following alarms (**Acc Crit 5.0[1]**):

A. XA-55-6B-122D, OVERPOWER ΔT TURB RUNBACK & C-4 ROD BLOCK, CLEAR. _____

B. XX-55-5-16, LOOP 1 OPΔT RUN BACK TS-68-2F, CLEAR. _____

C. XA-55-6B-123D, OVERTEMP ΔT TURB RUNBACK & C-3 ROD BLOCK, ALARM. _____

D. XX-55-5-15, LOOP 1 OTΔT RUN BACK TS-68-2E, ALARM. _____

E. Unit 2 Events Display Legend shows 123-D OVERTEMP DT TURB RUNBACK & C-3 ROD BLOCK in ALARM. _____

[6] **PLACE** TS/411D (MANUAL TRIP SW Slot TF09, Panel 2-R-2, Reactor Protection Set I) to the LEFT. _____

WBN Unit 2	Overpower Delta-T and Overtemperature Delta-T Turbine Runback	2-PTI-099-05 Rev. 0000 Page 19 of 75
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Date _____

6.1 Verification of NSSS Runback Alarms (continued)

- [7] **VERIFY** the status of the following alarms:
 - A. XA-55-6B-122D, OVERPOWER ΔT TURB RUNBACK & C-4 ROD BLOCK, CLEAR. _____
 - B. XX-55-5-16, LOOP 1 OPΔT RUN BACK TS-68-2F, CLEAR. _____
 - C. XA-55-6B-123D, OVERTEMP ΔT TURB RUNBACK & C-3 ROD BLOCK, CLEAR. _____
 - D. XX-55-5-15, LOOP 1 OTΔT RUN BACK TS-68-2E, CLEAR. _____
 - E. Unit 2 Events Display Legend shows 123-D OVERTEMP DT TURB RUNBACK & C-3 ROD BLOCK as RETURN TO NORMAL. _____

- [8] **PLACE** TS/411H (MANUAL TRIP SW Slot TF09, Panel 2-R-2, Reactor Protection Set I) to the RIGHT. _____

- [9] **VERIFY** the status of the following alarms (**Acc Crit 5.0[1]**):
 - A. XA-55-6B-122D, OVERPOWER ΔT TURB RUNBACK & C-4 ROD BLOCK, ALARM. _____
 - B. XX-55-5-16, LOOP 1 OPΔT RUN BACK TS-68-2F, ALARM. _____
 - C. XA-55-6B-123D, OVERTEMP ΔT TURB RUNBACK & C-3 ROD BLOCK, CLEAR. _____
 - D. XX-55-5-15, LOOP 1 OTΔT RUN BACK TS-68-2E, CLEAR. _____
 - E. Unit 2 Events Display Legend shows 122-D OVERPOWER DT TURB RUNBACK & C-4 ROD BLOCK in ALARM. _____

- [10] **PLACE** TS/411H (MANUAL TRIP SW Slot TF09, Panel 2-R-2, Reactor Protection Set I) to the LEFT. _____

WBN Unit 2	Overpower Delta-T and Overtemperature Delta-T Turbine Runback	2-PTI-099-05 Rev. 0000 Page 20 of 75
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Date _____

6.1 Verification of NSSS Runback Alarms (continued)

[11] **VERIFY** the status of the following alarms:

- A. XA-55-6B-122D, OVERPOWER Δ T TURB RUNBACK & C-4 ROD BLOCK, CLEAR. _____
- B. XX-55-5-16, LOOP 1 OP Δ T RUN BACK TS-68-2F, CLEAR. _____
- C. XA-55-6B-123D, OVERTEMP Δ T TURB RUNBACK & C-3 ROD BLOCK, CLEAR. _____
- D. XX-55-5-15, LOOP 1 OT Δ T RUN BACK TS-68-2E, CLEAR. _____
- E. Unit 2 Events Display Legend shows 122-D OVERPOWER DT TURB RUNBACK & C-4 ROD BLOCK as RETURN TO NORMAL. _____
- F. XX-55-5-36, LOOP 2 OP Δ T RUN BACK TS-68-25F, CLEAR. _____
- G. XX-55-5-35, LOOP 2 OT Δ T RUN BACK TS-68-25E, CLEAR. _____

[12] **PLACE** TS/421D (MANUAL TRIP SW Slot TF09, Panel 2-R-6, Reactor Protection Set II) to the RIGHT. _____

[13] **VERIFY** the status of the following alarms (**Acc Crit 5.0[1]**):

- A. XA-55-6B-122D, OVERPOWER Δ T TURB RUNBACK & C-4 ROD BLOCK, CLEAR. _____
- B. XX-55-5-36, LOOP 2 OP Δ T RUN BACK TS-68-25F, CLEAR. _____
- C. XA-55-6B-123D, OVERTEMP Δ T TURB RUNBACK & C-3 ROD BLOCK, ALARM. _____
- D. XX-55-5-35, LOOP 2 OT Δ T RUN BACK TS-68-25E, ALARM. _____

[14] **PLACE** TS/421D (MANUAL TRIP SW Slot TF09, Panel 2-R-6, Reactor Protection Set II) to the LEFT. _____

WBN Unit 2	Overpower Delta-T and Overtemperature Delta-T Turbine Runback	2-PTI-099-05 Rev. 0000 Page 21 of 75
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Date _____

6.1 Verification of NSSS Runback Alarms (continued)

[15] **VERIFY** the status of the following alarms:

A. XA-55-6B-122D, OVERPOWER ΔT TURB RUNBACK & C-4 ROD BLOCK, CLEAR. _____

B. XX-55-5-36, LOOP 2 OPΔT RUN BACK TS-68-25F, CLEAR. _____

C. XA-55-6B-123D, OVERTEMP ΔT TURB RUNBACK & C-3 ROD BLOCK, CLEAR. _____

D. XX-55-5-35, LOOP 2 OTΔT RUN BACK TS-68-25E, CLEAR. _____

[16] **PLACE** TS/421H (MANUAL TRIP SW Slot TF09, Panel 2-R-6, Reactor Protection Set II) to the RIGHT. _____

[17] **VERIFY** the status of the following alarms (**Acc Crit 5.0[1]**):

A. XA-55-6B-122D, OVERPOWER ΔT TURB RUNBACK & C-4 ROD BLOCK, ALARM. _____

B. XX-55-5-36, LOOP 2 OPΔT RUN BACK TS-68-25F, ALARM. _____

C. XA-55-6B-123D, OVERTEMP ΔT TURB RUNBACK & C-3 ROD BLOCK, CLEAR. _____

D. XX-55-5-35, LOOP 2 OTΔT RUN BACK TS-68-25E, CLEAR. _____

[18] **PLACE** TS/421H (MANUAL TRIP SW Slot TF09, Panel 2-R-6, Reactor Protection Set II) to the LEFT. _____

WBN Unit 2	Overpower Delta-T and Overtemperature Delta-T Turbine Runback	2-PTI-099-05 Rev. 0000 Page 22 of 75
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Date _____

6.1 Verification of NSSS Runback Alarms (continued)

- [19] **VERIFY** the status of the following alarms:
 - A. XA-55-6B-122D, OVERPOWER ΔT TURB RUNBACK & C-4 ROD BLOCK, CLEAR. _____
 - B. XX-55-5-36, LOOP 2 OPΔT RUN BACK TS-68-25F, CLEAR. _____
 - C. XA-55-6B-123D, OVERTEMP ΔT TURB RUNBACK & C-3 ROD BLOCK, CLEAR. _____
 - D. XX-55-5-35, LOOP 2 OTΔT RUN BACK TS-68-25E, CLEAR. _____
 - E. XX-55-5-56, LOOP 3 OPΔT RUN BACK TS-68-44F, CLEAR. _____
 - F. XX-55-5-55, LOOP 3 OTΔT RUN BACK TS-68-44E, CLEAR. _____

- [20] **PLACE** TS/431D (MANUAL TRIP SW Slot TF09, Panel 2-R-10, Reactor Protection Set III) to the RIGHT. _____

- [21] **VERIFY** the status of the following alarms (**Acc Crit 5.0[1]**):
 - A. XA-55-6B-122D, OVERPOWER ΔT TURB RUNBACK & C-4 ROD BLOCK, CLEAR. _____
 - B. XX-55-5-56, LOOP 3 OPΔT RUN BACK TS-68-44F, CLEAR. _____
 - C. XA-55-6B-123D, OVERTEMP ΔT TURB RUNBACK & C-3 ROD BLOCK, ALARM. _____
 - D. XX-55-5-55, LOOP 3 OTΔT RUN BACK TS-68-44E, ALARM. _____

- [22] **PLACE** TS/431D (MANUAL TRIP SW Slot TF09, Panel 2-R-10, Reactor Protection Set III) to the LEFT. _____

WBN Unit 2	Overpower Delta-T and Overtemperature Delta-T Turbine Runback	2-PTI-099-05 Rev. 0000 Page 23 of 75
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Date _____

6.1 Verification of NSSS Runback Alarms (continued)

[23] **VERIFY** the status of the following alarms:

A. XA-55-6B-122D, OVERPOWER ΔT TURB RUNBACK & C-4 ROD BLOCK, CLEAR. _____

B. XX-55-5-56, LOOP 3 OPΔT RUN BACK TS-68-44F, CLEAR. _____

C. XA-55-6B-123D, OVERTEMP ΔT TURB RUNBACK & C-3 ROD BLOCK, CLEAR. _____

D. XX-55-5-55, LOOP 3 OTΔT RUN BACK TS-68-44E, CLEAR. _____

[24] **PLACE** TS/431H (MANUAL TRIP SW Slot TF09, Panel 2-R-10, Reactor Protection Set III) to the RIGHT. _____

[25] **VERIFY** the status of the following alarms (**Acc Crit 5.0[1]**):

A. XA-55-6B-122D, OVERPOWER ΔT TURB RUNBACK & C-4 ROD BLOCK, ALARM. _____

B. XX-55-5-56, LOOP 3 OPΔT RUN BACK TS-68-44F, ALARM. _____

C. XA-55-6B-123D, OVERTEMP ΔT TURB RUNBACK & C-3 ROD BLOCK, CLEAR. _____

D. XX-55-5-55, LOOP 3 OTΔT RUN BACK TS-68-44E, CLEAR. _____

[26] **PLACE** TS/431H (MANUAL TRIP SW Slot TF09, Panel 2-R-10, Reactor Protection Set III) to the LEFT. _____

WBN Unit 2	Overpower Delta-T and Overtemperature Delta-T Turbine Runback	2-PTI-099-05 Rev. 0000 Page 24 of 75
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Date _____

6.1 Verification of NSSS Runback Alarms (continued)

[27] **VERIFY** the status of the following alarms:

A. XA-55-6B-122D, OVERPOWER Δ T TURB RUNBACK & C-4 ROD BLOCK, CLEAR. _____

B. XX-55-5-56, LOOP 3 OP Δ T RUN BACK TS-68-44F, CLEAR. _____

C. XA-55-6B-123D, OVERTEMP Δ T TURB RUNBACK & C-3 ROD BLOCK, CLEAR. _____

D. XX-55-5-55, LOOP 3 OT Δ T RUN BACK TS-68-44E, CLEAR. _____

E. XX-55-5-76, LOOP 4 OP Δ T RUN BACK TS-68-67F, CLEAR. _____

F. XX-55-5-75, LOOP 4 OT Δ T RUN BACK TS-68-67E, CLEAR. _____

[28] **PLACE** TS/441D (MANUAL TRIP SW Slot TF09, Panel 2-R-13, Reactor Protection Set IV) to the RIGHT. _____

[29] **VERIFY** the status of the following alarms (**Acc Crit 5.0[1]**):

A. XA-55-6B-122D, OVERPOWER Δ T TURB RUNBACK & C-4 ROD BLOCK, CLEAR. _____

B. XX-55-5-76, LOOP 4 OP Δ T RUN BACK TS-68-67F, CLEAR. _____

C. XA-55-6B-123D, OVERTEMP Δ T TURB RUNBACK & C-3 ROD BLOCK, ALARM. _____

D. XX-55-5-75, LOOP 4 OT Δ T RUN BACK TS-68-67E, ALARM. _____

[30] **PLACE** TS/441D (MANUAL TRIP SW Slot TF09, Panel 2-R-13, Reactor Protection Set IV) to the LEFT. _____

WBN Unit 2	Overpower Delta-T and Overtemperature Delta-T Turbine Runback	2-PTI-099-05 Rev. 0000 Page 25 of 75
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Date _____

6.1 Verification of NSSS Runback Alarms (continued)

[31] **VERIFY** the status of the following alarms:

A. XA-55-6B-122D, OVERPOWER ΔT TURB RUNBACK & C-4 ROD BLOCK, CLEAR. _____

B. XX-55-5-76, LOOP 4 OPΔT RUN BACK TS-68-67F, CLEAR. _____

C. XA-55-6B-123D, OVERTEMP ΔT TURB RUNBACK & C-3 ROD BLOCK, CLEAR. _____

D. XX-55-5-75, LOOP 4 OTΔT RUN BACK TS-68-67E, CLEAR. _____

[32] **PLACE** TS/441H (MANUAL TRIP SW Slot TF09, Panel 2-R-13, Reactor Protection Set IV) to the RIGHT. _____

[33] **VERIFY** the status of the following alarms (**Acc Crit 5.0[1]**):

A. XA-55-6B-122D, OVERPOWER ΔT TURB RUNBACK & C-4 ROD BLOCK, ALARM. _____

B. XX-55-5-76, LOOP 4 OPΔT RUN BACK TS-68-67F, ALARM. _____

C. XA-55-6B-123D, OVERTEMP ΔT TURB RUNBACK & C-3 ROD BLOCK, CLEAR. _____

D. XX-55-5-75, LOOP 4 OTΔT RUN BACK TS-68-67E, CLEAR. _____

[34] **PLACE** TS/441H (MANUAL TRIP SW Slot TF09, Panel 2-R-13, Reactor Protection Set IV) to the LEFT. _____

WBN Unit 2	Overpower Delta-T and Overtemperature Delta-T Turbine Runback	2-PTI-099-05 Rev. 0000 Page 26 of 75
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Date _____

6.1 Verification of NSSS Runback Alarms (continued)

[35] **VERIFY** the status of the following alarms:

A. XA-55-6B-122D, OVERPOWER Δ T TURB RUNBACK & C-4 ROD BLOCK, CLEAR. _____

B. XX-55-5-76, LOOP 4 OP Δ T RUN BACK TS-68-67F, CLEAR. _____

C. XA-55-6B-123D, OVERTEMP Δ T TURB RUNBACK & C-3 ROD BLOCK, CLEAR. _____

D. XX-55-5-75, LOOP 4 OT Δ T RUN BACK TS-68-67E, CLEAR. _____

Date _____

6.2 Verification of 2TX and 2PX Relay Logic

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

CAUTION

Caution should be used when performing continuity checks in energized electrical cabinets.

NOTES

1) This Section requires the visual determination of the energized/deenergized condition of Type "AR" Relays in Panel 2-R-58. This may be determined by the position of the moveable contact block in relation to the relay surface. When deenergized, the moveable contact block projects above the relay surface. When energized, the movable contact block is recessed below the relay surface.

2) The following steps verify 2TX Relay (OTΔT) logic.

- [2] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the ENERGIZED position. _____
- [3] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the ENERGIZED position. _____
- [4] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	RIGHT	_____
B.	TS/421D	2-R-6	TF09	LEFT	_____
C.	TS/431D	2-R-10	TF09	LEFT	_____
D.	TS/441D	2-R-13	TF09	LEFT	_____

Date _____

6.2 Verification of 2TX and 2PX Relay Logic (continued)

[5] **VERIFY** the following conditions of Relay 2TX at Panel 2-R-58:

A. Relay visually in ENERGIZED position. _____

B. CONTINUITY across Relay Terminals 3 and 4. _____

CV

M&TE _____ Cal Due Date _____

C. CONTINUITY across Relay Terminals 7 and 8. _____

CV

M&TE _____ Cal Due Date _____

D. NO CONTINUITY across Relay Terminals 9 and 10. _____

CV

M&TE _____ Cal Due Date _____

[6] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the ENERGIZED position. _____

[7] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	LEFT	_____
B.	TS/421D	2-R-6	TF09	LEFT	_____
C.	TS/431D	2-R-10	TF09	LEFT	_____
D.	TS/441D	2-R-13	TF09	LEFT	_____

[8] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the ENERGIZED position. _____

Date _____

6.2 Verification of 2TX and 2PX Relay Logic (continued)

[9] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	LEFT	_____
B.	TS/421D	2-R-6	TF09	RIGHT	_____
C.	TS/431D	2-R-10	TF09	LEFT	_____
D.	TS/441D	2-R-13	TF09	LEFT	_____

[10] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the ENERGIZED position. _____

[11] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	LEFT	_____
B.	TS/421D	2-R-6	TF09	LEFT	_____
C.	TS/431D	2-R-10	TF09	LEFT	_____
D.	TS/441D	2-R-13	TF09	LEFT	_____

[12] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the ENERGIZED position. _____

[13] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	RIGHT	_____
B.	TS/421D	2-R-6	TF09	RIGHT	_____
C.	TS/431D	2-R-10	TF09	LEFT	_____
D.	TS/441D	2-R-13	TF09	LEFT	_____

Date _____

6.2 Verification of 2TX and 2PX Relay Logic (continued)

[14] **VERIFY** the following conditions of Relay 2TX at Panel 2-R-58:

A. Relay visually in DEENERGIZED position. _____

B. NO CONTINUITY across Relay Terminals 3 and 4. _____

CV

M&TE _____ Cal Due Date _____

C. NO CONTINUITY across Relay Terminals 7 and 8. _____

CV

M&TE _____ Cal Due Date _____

D. CONTINUITY across Relay Terminals 9 and 10. _____

CV

M&TE _____ Cal Due Date _____

[15] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the ENERGIZED position. _____

[16] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	LEFT	_____
B.	TS/421D	2-R-6	TF09	LEFT	_____
C.	TS/431D	2-R-10	TF09	LEFT	_____
D.	TS/441D	2-R-13	TF09	LEFT	_____

[17] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the ENERGIZED position. _____

Date _____

6.2 Verification of 2TX and 2PX Relay Logic (continued)

[18] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	LEFT	_____
B.	TS/421D	2-R-6	TF09	LEFT	_____
C.	TS/431D	2-R-10	TF09	RIGHT	_____
D.	TS/441D	2-R-13	TF09	LEFT	_____

[19] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the ENERGIZED position. _____

[20] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	LEFT	_____
B.	TS/421D	2-R-6	TF09	LEFT	_____
C.	TS/431D	2-R-10	TF09	LEFT	_____
D.	TS/441D	2-R-13	TF09	LEFT	_____

[21] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the ENERGIZED position. _____

[22] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	RIGHT	_____
B.	TS/421D	2-R-6	TF09	LEFT	_____
C.	TS/431D	2-R-10	TF09	RIGHT	_____
D.	TS/441D	2-R-13	TF09	LEFT	_____

[23] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the DEENERGIZED position. _____

Date _____

6.2 Verification of 2TX and 2PX Relay Logic (continued)

[24] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411D	2-R-2	TF09	LEFT	_____
B.	TS/421D	2-R-6	TF09	LEFT	_____
C.	TS/431D	2-R-10	TF09	LEFT	_____
D.	TS/441D	2-R-13	TF09	LEFT	_____

[25] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the ENERGIZED position. _____

[26] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411D	2-R-2	TF09	LEFT	_____
B.	TS/421D	2-R-6	TF09	RIGHT	_____
C.	TS/431D	2-R-10	TF09	RIGHT	_____
D.	TS/441D	2-R-13	TF09	LEFT	_____

[27] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the DEENERGIZED position. _____

[28] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411D	2-R-2	TF09	LEFT	_____
B.	TS/421D	2-R-6	TF09	LEFT	_____
C.	TS/431D	2-R-10	TF09	LEFT	_____
D.	TS/441D	2-R-13	TF09	LEFT	_____

[29] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the ENERGIZED position. _____

Date _____

6.2 Verification of 2TX and 2PX Relay Logic (continued)

[30] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	RIGHT	_____
B.	TS/421D	2-R-6	TF09	RIGHT	_____
C.	TS/431D	2-R-10	TF09	RIGHT	_____
D.	TS/441D	2-R-13	TF09	LEFT	_____

[31] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the DEENERGIZED position. _____

[32] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	LEFT	_____
B.	TS/421D	2-R-6	TF09	LEFT	_____
C.	TS/431D	2-R-10	TF09	LEFT	_____
D.	TS/441D	2-R-13	TF09	LEFT	_____

[33] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the ENERGIZED position. _____

[34] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	LEFT	_____
B.	TS/421D	2-R-6	TF09	LEFT	_____
C.	TS/431D	2-R-10	TF09	LEFT	_____
D.	TS/441D	2-R-13	TF09	RIGHT	_____

[35] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the ENERGIZED position. _____

Date _____

6.2 Verification of 2TX and 2PX Relay Logic (continued)

[36] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	LEFT	_____
B.	TS/421D	2-R-6	TF09	LEFT	_____
C.	TS/431D	2-R-10	TF09	LEFT	_____
D.	TS/441D	2-R-13	TF09	LEFT	_____

[37] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the ENERGIZED position. _____

[38] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	RIGHT	_____
B.	TS/421D	2-R-6	TF09	LEFT	_____
C.	TS/431D	2-R-10	TF09	LEFT	_____
D.	TS/441D	2-R-13	TF09	RIGHT	_____

[39] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the DEENERGIZED position. _____

[40] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	LEFT	_____
B.	TS/421D	2-R-6	TF09	LEFT	_____
C.	TS/431D	2-R-10	TF09	LEFT	_____
D.	TS/441D	2-R-13	TF09	LEFT	_____

Date _____

6.2 Verification of 2TX and 2PX Relay Logic (continued)

[41] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the ENERGIZED position. _____

[42] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	LEFT	_____
B.	TS/421D	2-R-6	TF09	RIGHT	_____
C.	TS/431D	2-R-10	TF09	LEFT	_____
D.	TS/441D	2-R-13	TF09	RIGHT	_____

[43] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the DEENERGIZED position. _____

[44] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	LEFT	_____
B.	TS/421D	2-R-6	TF09	LEFT	_____
C.	TS/431D	2-R-10	TF09	LEFT	_____
D.	TS/441D	2-R-13	TF09	LEFT	_____

[45] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the ENERGIZED position. _____

[46] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	RIGHT	_____
B.	TS/421D	2-R-6	TF09	RIGHT	_____
C.	TS/431D	2-R-10	TF09	LEFT	_____
D.	TS/441D	2-R-13	TF09	RIGHT	_____

Date _____

6.2 Verification of 2TX and 2PX Relay Logic (continued)

[47] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the DEENERGIZED position. _____

[48] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	LEFT	_____
B.	TS/421D	2-R-6	TF09	LEFT	_____
C.	TS/431D	2-R-10	TF09	LEFT	_____
D.	TS/441D	2-R-13	TF09	LEFT	_____

[49] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the ENERGIZED position. _____

[50] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	LEFT	_____
B.	TS/421D	2-R-6	TF09	LEFT	_____
C.	TS/431D	2-R-10	TF09	RIGHT	_____
D.	TS/441D	2-R-13	TF09	RIGHT	_____

[51] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the DEENERGIZED position. _____

[52] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	LEFT	_____
B.	TS/421D	2-R-6	TF09	LEFT	_____
C.	TS/431D	2-R-10	TF09	LEFT	_____
D.	TS/441D	2-R-13	TF09	LEFT	_____

Date _____

6.2 Verification of 2TX and 2PX Relay Logic (continued)

[53] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the ENERGIZED position. _____

[54] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	RIGHT	_____
B.	TS/421D	2-R-6	TF09	LEFT	_____
C.	TS/431D	2-R-10	TF09	RIGHT	_____
D.	TS/441D	2-R-13	TF09	RIGHT	_____

[55] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the DEENERGIZED position. _____

[56] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	LEFT	_____
B.	TS/421D	2-R-6	TF09	LEFT	_____
C.	TS/431D	2-R-10	TF09	LEFT	_____
D.	TS/441D	2-R-13	TF09	LEFT	_____

[57] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the ENERGIZED position. _____

Date _____

6.2 Verification of 2TX and 2PX Relay Logic (continued)

[58] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411D	2-R-2	TF09	LEFT	_____
B.	TS/421D	2-R-6	TF09	RIGHT	_____
C.	TS/431D	2-R-10	TF09	RIGHT	_____
D.	TS/441D	2-R-13	TF09	RIGHT	_____

[59] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the DEENERGIZED position. _____

[60] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411D	2-R-2	TF09	LEFT	_____
B.	TS/421D	2-R-6	TF09	LEFT	_____
C.	TS/431D	2-R-10	TF09	LEFT	_____
D.	TS/441D	2-R-13	TF09	LEFT	_____

[61] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the ENERGIZED position. _____

[62] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411D	2-R-2	TF09	RIGHT	_____
B.	TS/421D	2-R-6	TF09	RIGHT	_____
C.	TS/431D	2-R-10	TF09	RIGHT	_____
D.	TS/441D	2-R-13	TF09	RIGHT	_____

[63] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the DEENERGIZED position. _____

Date _____

6.2 Verification of 2TX and 2PX Relay Logic (continued)

NOTE

The following steps verify 2PX Relay (OPΔT) logic.

[64] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	LEFT	_____
B.	TS/421D	2-R-6	TF09	LEFT	_____
C.	TS/431D	2-R-10	TF09	LEFT	_____
D.	TS/441D	2-R-13	TF09	LEFT	_____
E.	TS/411H	2-R-2	TF09	LEFT	_____
F.	TS/421H	2-R-6	TF09	LEFT	_____
G.	TS/431H	2-R-10	TF09	LEFT	_____
H.	TS/441H	2-R-13	TF09	LEFT	_____

[65] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the ENERGIZED position. _____

[66] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the ENERGIZED position. _____

[67] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411H	2-R-2	TF09	RIGHT	_____
B.	TS/421H	2-R-6	TF09	LEFT	_____
C.	TS/431H	2-R-10	TF09	LEFT	_____
D.	TS/441H	2-R-13	TF09	LEFT	_____

Date _____

6.2 Verification of 2TX and 2PX Relay Logic (continued)

[68] **VERIFY** the following conditions of Relay 2PX at Panel 2-R-58:

A. Relay visually in ENERGIZED position. _____

B. CONTINUITY across Relay Terminals 3 and 4. _____

CV

M&TE _____ Cal Due Date _____

C. CONTINUITY across Relay Terminals 7 and 8. _____

CV

M&TE _____ Cal Due Date _____

D. NO CONTINUITY across Relay Terminals 9 and 10. _____

CV

M&TE _____ Cal Due Date _____

[69] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the ENERGIZED position. _____

[70] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411H	2-R-2	TF09	LEFT	_____
B.	TS/421H	2-R-6	TF09	LEFT	_____
C.	TS/431H	2-R-10	TF09	LEFT	_____
D.	TS/441H	2-R-13	TF09	LEFT	_____

[71] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the ENERGIZED position. _____

Date _____

6.2 Verification of 2TX and 2PX Relay Logic (continued)

[72] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411H	2-R-2	TF09	LEFT	_____
B.	TS/421H	2-R-6	TF09	RIGHT	_____
C.	TS/431H	2-R-10	TF09	LEFT	_____
D.	TS/441H	2-R-13	TF09	LEFT	_____

[73] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the ENERGIZED position. _____

[74] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411H	2-R-2	TF09	LEFT	_____
B.	TS/421H	2-R-6	TF09	LEFT	_____
C.	TS/431H	2-R-10	TF09	LEFT	_____
D.	TS/441H	2-R-13	TF09	LEFT	_____

[75] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the ENERGIZED position. _____

[76] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411H	2-R-2	TF09	RIGHT	_____
B.	TS/421H	2-R-6	TF09	RIGHT	_____
C.	TS/431H	2-R-10	TF09	LEFT	_____
D.	TS/441H	2-R-13	TF09	LEFT	_____

Date _____

6.2 Verification of 2TX and 2PX Relay Logic (continued)

[77] **VERIFY** the following conditions of Relay 2PX at Panel 2-R-58:

A. Relay visually in DEENERGIZED position. _____

B. NO CONTINUITY across Relay Terminals 3 and 4. _____

CV

M&TE _____ Cal Due Date _____

C. NO CONTINUITY across Relay Terminals 7 and 8. _____

CV

M&TE _____ Cal Due Date _____

D. CONTINUITY across Relay Terminals 9 and 10. _____

CV

M&TE _____ Cal Due Date _____

[78] **VERIFY** visually that Relay 2TX at Panel 2-R-58 is in the ENERGIZED position. _____

[79] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411H	2-R-2	TF09	LEFT	_____
B.	TS/421H	2-R-6	TF09	LEFT	_____
C.	TS/431H	2-R-10	TF09	LEFT	_____
D.	TS/441H	2-R-13	TF09	LEFT	_____

[80] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the ENERGIZED position. _____

Date _____

6.2 Verification of 2TX and 2PX Relay Logic (continued)

[81] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411H	2-R-2	TF09	LEFT	_____
B.	TS/421H	2-R-6	TF09	LEFT	_____
C.	TS/431H	2-R-10	TF09	RIGHT	_____
D.	TS/441H	2-R-13	TF09	LEFT	_____

[82] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the ENERGIZED position. _____

[83] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411H	2-R-2	TF09	LEFT	_____
B.	TS/421H	2-R-6	TF09	LEFT	_____
C.	TS/431H	2-R-10	TF09	LEFT	_____
D.	TS/441H	2-R-13	TF09	LEFT	_____

[84] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the ENERGIZED position. _____

[85] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411H	2-R-2	TF09	RIGHT	_____
B.	TS/421H	2-R-6	TF09	LEFT	_____
C.	TS/431H	2-R-10	TF09	RIGHT	_____
D.	TS/441H	2-R-13	TF09	LEFT	_____

[86] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the DEENERGIZED position. _____

Date _____

6.2 Verification of 2TX and 2PX Relay Logic (continued)

[87] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411H	2-R-2	TF09	LEFT	_____
B.	TS/421H	2-R-6	TF09	LEFT	_____
C.	TS/431H	2-R-10	TF09	LEFT	_____
D.	TS/441H	2-R-13	TF09	LEFT	_____

[88] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the ENERGIZED position. _____

[89] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411H	2-R-2	TF09	LEFT	_____
B.	TS/421H	2-R-6	TF09	RIGHT	_____
C.	TS/431H	2-R-10	TF09	RIGHT	_____
D.	TS/441H	2-R-13	TF09	LEFT	_____

[90] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the DEENERGIZED position. _____

[91] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411H	2-R-2	TF09	LEFT	_____
B.	TS/421H	2-R-6	TF09	LEFT	_____
C.	TS/431H	2-R-10	TF09	LEFT	_____
D.	TS/441H	2-R-13	TF09	LEFT	_____

[92] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the ENERGIZED position. _____

Date _____

6.2 Verification of 2TX and 2PX Relay Logic (continued)

[93] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411H	2-R-2	TF09	RIGHT	_____
B.	TS/421H	2-R-6	TF09	RIGHT	_____
C.	TS/431H	2-R-10	TF09	RIGHT	_____
D.	TS/441H	2-R-13	TF09	LEFT	_____

[94] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the DEENERGIZED position. _____

[95] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411H	2-R-2	TF09	LEFT	_____
B.	TS/421H	2-R-6	TF09	LEFT	_____
C.	TS/431H	2-R-10	TF09	LEFT	_____
D.	TS/441H	2-R-13	TF09	LEFT	_____

[96] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the ENERGIZED position. _____

[97] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411H	2-R-2	TF09	LEFT	_____
B.	TS/421H	2-R-6	TF09	LEFT	_____
C.	TS/431H	2-R-10	TF09	LEFT	_____
D.	TS/441H	2-R-13	TF09	RIGHT	_____

[98] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the ENERGIZED position. _____

Date _____

6.2 Verification of 2TX and 2PX Relay Logic (continued)

[99] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411H	2-R-2	TF09	LEFT	_____
B.	TS/421H	2-R-6	TF09	LEFT	_____
C.	TS/431H	2-R-10	TF09	LEFT	_____
D.	TS/441H	2-R-13	TF09	LEFT	_____

[100] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the ENERGIZED position. _____

[101] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411H	2-R-2	TF09	RIGHT	_____
B.	TS/421H	2-R-6	TF09	LEFT	_____
C.	TS/431H	2-R-10	TF09	LEFT	_____
D.	TS/441H	2-R-13	TF09	RIGHT	_____

[102] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the DEENERGIZED position. _____

[103] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411H	2-R-2	TF09	LEFT	_____
B.	TS/421H	2-R-6	TF09	LEFT	_____
C.	TS/431H	2-R-10	TF09	LEFT	_____
D.	TS/441H	2-R-13	TF09	LEFT	_____

[104] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the ENERGIZED position. _____

Date _____

6.2 Verification of 2TX and 2PX Relay Logic (continued)

[105] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411H	2-R-2	TF09	LEFT	_____
B.	TS/421H	2-R-6	TF09	RIGHT	_____
C.	TS/431H	2-R-10	TF09	LEFT	_____
D.	TS/441H	2-R-13	TF09	RIGHT	_____

[106] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the DEENERGIZED position. _____

[107] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411H	2-R-2	TF09	LEFT	_____
B.	TS/421H	2-R-6	TF09	LEFT	_____
C.	TS/431H	2-R-10	TF09	LEFT	_____
D.	TS/441H	2-R-13	TF09	LEFT	_____

[108] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the ENERGIZED position. _____

[109] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411H	2-R-2	TF09	RIGHT	_____
B.	TS/421H	2-R-6	TF09	RIGHT	_____
C.	TS/431H	2-R-10	TF09	LEFT	_____
D.	TS/441H	2-R-13	TF09	RIGHT	_____

[110] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the DEENERGIZED position. _____

Date _____

6.2 Verification of 2TX and 2PX Relay Logic (continued)

[111] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411H	2-R-2	TF09	LEFT	_____
B.	TS/421H	2-R-6	TF09	LEFT	_____
C.	TS/431H	2-R-10	TF09	LEFT	_____
D.	TS/441H	2-R-13	TF09	LEFT	_____

[112] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the ENERGIZED position. _____

[113] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411H	2-R-2	TF09	LEFT	_____
B.	TS/421H	2-R-6	TF09	LEFT	_____
C.	TS/431H	2-R-10	TF09	RIGHT	_____
D.	TS/441H	2-R-13	TF09	RIGHT	_____

[114] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the DEENERGIZED position. _____

[115] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411H	2-R-2	TF09	LEFT	_____
B.	TS/421H	2-R-6	TF09	LEFT	_____
C.	TS/431H	2-R-10	TF09	LEFT	_____
D.	TS/441H	2-R-13	TF09	LEFT	_____

[116] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the ENERGIZED position. _____

Date _____

6.2 Verification of 2TX and 2PX Relay Logic (continued)

[117] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411H	2-R-2	TF09	RIGHT	_____
B.	TS/421H	2-R-6	TF09	LEFT	_____
C.	TS/431H	2-R-10	TF09	RIGHT	_____
D.	TS/441H	2-R-13	TF09	RIGHT	_____

[118] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the DEENERGIZED position. _____

[119] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411H	2-R-2	TF09	LEFT	_____
B.	TS/421H	2-R-6	TF09	LEFT	_____
C.	TS/431H	2-R-10	TF09	LEFT	_____
D.	TS/441H	2-R-13	TF09	LEFT	_____

[120] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the ENERGIZED position. _____

[121] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411H	2-R-2	TF09	LEFT	_____
B.	TS/421H	2-R-6	TF09	RIGHT	_____
C.	TS/431H	2-R-10	TF09	RIGHT	_____
D.	TS/441H	2-R-13	TF09	RIGHT	_____

[122] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the DEENERGIZED position. _____

Date _____

6.2 Verification of 2TX and 2PX Relay Logic (continued)

[123] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411H	2-R-2	TF09	LEFT	_____
B.	TS/421H	2-R-6	TF09	LEFT	_____
C.	TS/431H	2-R-10	TF09	LEFT	_____
D.	TS/441H	2-R-13	TF09	LEFT	_____

[124] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the ENERGIZED position. _____

[125] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411H	2-R-2	TF09	RIGHT	_____
B.	TS/421H	2-R-6	TF09	RIGHT	_____
C.	TS/431H	2-R-10	TF09	RIGHT	_____
D.	TS/441H	2-R-13	TF09	RIGHT	_____

[126] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the DEENERGIZED position. _____

[127] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411H	2-R-2	TF09	LEFT	_____
B.	TS/421H	2-R-6	TF09	LEFT	_____
C.	TS/431H	2-R-10	TF09	LEFT	_____
D.	TS/441H	2-R-13	TF09	LEFT	_____

[128] **VERIFY** visually that Relay 2PX at Panel 2-R-58 is in the ENERGIZED position. _____

Date _____

6.3 Relay 2STDX and Runback Timing Logic

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

CAUTION

Caution should be used when working in energized electrical cabinets.

- [2] **ENSURE** a switched jumper marked "TX" is in the OPEN position. _____

CV

- [3] **INSTALL** switched jumper marked "TX" across Terminals 9 and 10 of 2TX Relay (G6 position) in Panel 2-R-58. _____

CV

- [4] **ENSURE** a switched jumper marked "PX" is in the OPEN position. _____

CV

- [5] **INSTALL** switched jumper marked "PX" across Terminals 9 and 10 at 2PX Relay (G7 position) in Panel 2-R-58. _____

CV

- [6] **LIFT** black wire STD20 of cable 2G866 from TB1 Terminal 20 in Panel 2-R-56, **AND**

CONNECT the lifted black wire to the positive terminal of the DC Power Supply. _____

CV

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Date _____

6.3 Relay 2STDX and Runback Timing Logic (continued)

[7] **LIFT** white wire STD21 of cable 2G866 from TB1 Terminal 21 in Panel 2-R-56, **AND**

CONNECT the lifted white wire to the Trace Recorder / Data Acquisition Hardware Channel 1 positive terminal.

CV

[8] **CONNECT** the negative terminal of the DC Power Supply to the Trace Recorder / Data Acquisition Hardware Channel 1 negative terminal.

CV

[9] **ENERGIZE** the Trace Recorder / Data Acquisition Hardware.

[10] **CONFIGURE** the Trace Recorder / Data Acquisition Hardware to record an input signal that varies between 0 to 5 VDC and has a sampling rate of 0.1 seconds or less.

[11] **ENERGIZE** the DC Power Supply to 5 VDC (4.5 - 5.5 VDC).

NOTES

- 1) The operating cycle of the 2STDX Relay will repeat itself until the switched jumper TX is operated to the open position. The operating cycle may be permitted to continue until a full cycle is obtained.
- 2) The 2STDX Relay cycle is approximately 30 seconds with an initial contact closed state for approximately 1.5 seconds and a contact open state of approximately 28.5 seconds.

[12] **START** the Trace Recorder / Data Acquisition Hardware.

[13] **CLOSE** switched Jumper TX at Panel 2-R-58.

[14] **VERIFY** at least two completed 2STDX relay operating cycles are recorded (**Acc Crit 5.0[2]**), **THEN**

OPEN switched Jumper TX at Panel 2-R-58.

[15] **STOP** the Trace Recorder / Data Acquisition Hardware.

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Date _____

6.3 Relay 2STDX and Runback Timing Logic (continued)

[16] **RECORD** the Contact Closed time and the Contact Open time.

A. Contact closed (5 VDC).

_____ seconds _____

B. Contact open (0 VDC).

_____ seconds _____

M&TE _____ Cal Due Date _____

[17] **VERIFY** the Contact Closed (5 VDC) time is 1.5 sec (1.35 to 1.65 sec). _____

[18] **VERIFY** the Contact Open (0 VDC) time is 28.5 sec (25.7 to 31.4 sec). _____

[19] **ATTACH** a copy of the Recorded Data to this instruction. _____

[20] **DE-ENERGIZE** the Power Supply. _____

[21] **DE-ENERGIZE** the Trace Recorder / Data Acquisition Hardware. _____

[22] **DISCONNECT** the Power Supply and the Trace Recorder / Data Acquisition Hardware from the STD21 and STD20 wires. _____

[23] **CONNECT** black wire STD20 of cable 2G866 from TB1 Terminal 20 in Panel 2-R-56 to the continuity verification device (Voltmeter) positive terminal. _____

CV

[24] **CONNECT** white wire STD21 of cable 2G866 from TB1 Terminal 21 in Panel 2-R-56 to the continuity verification device (Voltmeter) negative terminal. _____

CV

[25] **CLOSE** switched Jumper PX at Panel 2-R-58. _____

WBN Unit 2	Overpower Delta-T and Overtemperature Delta-T Turbine Runback	2-PTI-099-05 Rev. 0000 Page 54 of 75
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Date _____

6.3 Relay 2STDX and Runback Timing Logic (continued)

[26] **VERIFY** 2STDX relay operating cycle as indicated by the continuity/no continuity condition of the 2STDX relay contact being monitored at the STD21 and STD20 wires in Panel 2-R-56: (No time record is necessary) (**Acc Crit 5.0[2]**)

A. Contact closed (continuity) _____

B. Contact open (no continuity) _____

M&TE _____ Cal Due Date _____

[27] **OPEN** switched Jumper PX at Panel 2-R-58. _____

[28] **VERIFY** 2STDX relay is not operating by the absence of continuity as shown by the continuity verification device (Voltmeter) installed at Panel 2-R-56. _____

M&TE _____ Cal Due Date _____

[29] **REMOVE** switched jumper marked "PX" across Terminals 9 and 10 at 2PX Relay (G7 position) in Panel 2-R-58. _____

CV

[30] **REMOVE** switched jumper marked "TX" across Terminals 9 and 10 at 2TX Relay (G6 position) in Panel 2-R-58. _____

CV

Date _____

6.3 Relay 2STDX and Runback Timing Logic (continued)

NOTE

The complete NSSS Turbine Runback circuitry is verified in the following steps.

[31] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	RIGHT	_____
B.	TS/421D	2-R-6	TF09	RIGHT	_____
C.	TS/431D	2-R-10	TF09	LEFT	_____
D.	TS/441D	2-R-13	TF09	LEFT	_____

[32] **VERIFY** 2STDX relay operating cycle as indicated by the continuity/no continuity condition of the 2STDX relay contact being monitored at the STD21 and STD20 wires in Panel 2-R-56: (No time record is necessary) **(Acc Crit 5.0[3])**

- A. Contact closed (continuity) _____
- B. Contact open (no continuity) _____

M&TE _____ Cal Due Date _____

[33] **VERIFY/PLACE** switch positions as follows:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	
A.	TS/411D	2-R-2	TF09	LEFT	_____
B.	TS/421D	2-R-6	TF09	LEFT	_____
C.	TS/431D	2-R-10	TF09	LEFT	_____
D.	TS/441D	2-R-13	TF09	LEFT	_____

Date _____

6.3 Relay 2STDX and Runback Timing Logic (continued)

[34] **VERIFY** 2STDX relay is not operating by the absence of continuity as shown by the continuity verification device (Voltmeter) installed at Panel 2-R-56.

M&TE _____ Cal Due Date _____

[35] **ENSURE** the following switch positions:

	<u>Switch</u>	<u>Location</u>	<u>Slot</u>	<u>Position</u>	_____
A.	TS/411H	2-R-2	TF09	RIGHT	_____
B.	TS/421H	2-R-6	TF09	RIGHT	_____
C.	TS/431H	2-R-10	TF09	LEFT	_____
D.	TS/441H	2-R-13	TF09	LEFT	_____

[36] **VERIFY** 2STDX relay operating cycle as indicated by the continuity/no continuity condition of the 2STDX relay contact being monitored at the STD21 and STD20 wires in Panel 2-R-56: (No time record is necessary) **(Acc Crit 5.0[3])**

- A. Contact closed (continuity) _____
- B. Contact open (no continuity) _____

M&TE _____ Cal Due Date _____

[37] **VERIFY/PLACE** switch positions as follows:

	Switch	Location	Slot	Position	_____
A.	TS/411H	2-R-2	TF09	LEFT	_____
B.	TS/421H	2-R-6	TF09	LEFT	_____
C.	TS/431H	2-R-10	TF09	LEFT	_____
D.	TS/441H	2-R-13	TF09	LEFT	_____

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Date _____

6.3 Relay 2STDX and Runback Timing Logic (continued)

[38] **VERIFY** 2STDX relay is not operating by the absence of continuity as shown by the continuity verification device (Voltmeter) installed at Panel 2-R-56.

M&TE _____ Cal Due Date _____

[39] **REMOVE** wire STD20 of cable 2G866 from the continuity verification device (Voltmeter) at 2-R-56, **AND**

LAND black wire STD20 of cable 2G866 to TB1 Terminal 20 at Panel 2-R-56.

CV

[40] **REMOVE** wire STD21 of cable 2G866 from the continuity verification device (Voltmeter) at 2-R-56, **AND**

LAND white wire STD21 of cable 2G866 to TB1 Terminal 21 at Panel 2-R-56.

CV

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Date _____

7.0 POST-PERFORMANCE ACTIVITIES

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

RECORD the results on Measuring and Test Equipment Log in Appendix D. _____
- [2] **PERFORM** the Post Performance Breaker/Fuse Lineup as listed in Table 1. _____
- [3] **PERFORM** the Post Performance Channel Bypass Lineup as listed in Table 6. _____
- [4] **PERFORM** the Post Performance Field Terminals on Plastic as listed in Table 7 in accordance with SMP-15.0. _____
- [5] **NOTIFY** the Unit 2 US/SRO of the test completion and system alignment. _____

8.0 RECORDS

- A. QA Records

Completed Test Package (PTI)
- B. Non-QA Records

None

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Table 1
(Page 1 of 3)
BREAKER/FUSE LINEUP FOR SUBSECTIONS 6.1, 6.2, and 7.0

Date _____

BREAKER/FUSE IDENTIFICATION	BREAKER/FUSE NOMENCLATURE	BREAKER/FUSE LOCATION	BREAKER/FUSE TEST POSITION	PERF INITIAL/ DATE	CV INITIAL/ DATE
2-BKR-235-0002/07-E	NSSS AUX RELAY RACK C BUS PNL 2-R-58	2-BD-235-2-E	ON		
2-BKR-235-0001/09-D	NSSS AUX RELAY RACK A BUS PANEL 2-R-58	2-BD-235-1-D	ON		
2-BKR-235-0002/08-E	NSSS AUX RELAY RACK B BUS TO PANEL 2-R-58	2-BD-235-2-E	ON		
2-FU-99-R58-M5	POWER RANGE OVERPOWER ROD STOP SEP RELAY	2-R-58	INSTALLED		
2-FU-99-R58-M6	POWER RANGE OVERPOWER ROD STOP SEP RELAY	2-R-58	INSTALLED		
2-FU-99-R58-L7	TURBINE RUNBACK AND BLOCK WITHDRAWAL AUX RELAYS	2-R-58	INSTALLED		

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Table 1
(Page 2 of 3)
BREAKER/FUSE LINEUP FOR SUBSECTIONS 6.1, 6.2, and 7.0

Date _____

BREAKER/FUSE IDENTIFICATION	BREAKER/FUSE NOMENCLATURE	BREAKER/FUSE LOCATION	BREAKER/FUSE TEST POSITION	PERF INITIAL/ DATE	CV INITIAL/ DATE
2-FU-99-R58-L8	TURBINE RUNBACK AND BLOCK WITHDRAWAL AUX RELAYS	2-R-58	INSTALLED		
2-FU-99-R58-L9	TURBINE RUNBACK AND BLOCK WITHDRAWAL AUX RELAYS	2-R-58	INSTALLED		
2-FU-99-R58-L10	TURBINE RUNBACK AND BLOCK WITHDRAWAL AUX RELAYS	2-R-58	INSTALLED		
2-FU-99-R58-L11	TURBINE RUNBACK AND BLOCK WITHDRAWAL AUX RELAYS	2-R-58	INSTALLED		
2-FU-99-R58-L12	TURBINE RUNBACK AND BLOCK WITHDRAWAL AUX RELAYS	2-R-58	INSTALLED		

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Table 1
(Page 3 of 3)
BREAKER/FUSE LINEUP FOR SUBSECTIONS 6.1, 6.2, and 7.0

Date _____

BREAKER/FUSE IDENTIFICATION	BREAKER/FUSE NOMENCLATURE	BREAKER/FUSE LOCATION	BREAKER/FUSE TEST POSITION	PERF INITIAL/ DATE	CV INITIAL/ DATE
2-FU-99-R58-L13	TURBINE RUNBACK AND BLOCK WITHDRAWAL AUX RELAYS	2-R-58	INSTALLED		
2-FU-99-R58-L14	TURBINE RUNBACK AND BLOCK WITHDRAWAL AUX RELAYS	2-R-58	INSTALLED		
2-FU-99-R58-M9	RED. LD REF. & DEFEAT REMOTE DISPATCHING	2-R-58	REMOVED		
2-FU-99-R58-M10	RED. LD REF. & DEFEAT REMOTE DISPATCHING	2-R-58	REMOVED		

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Table 2
(Page 1 of 3)
BREAKER/FUSE LINEUP FOR SUBSECTION 6.3

Date _____

BREAKER/FUSE IDENTIFICATION	BREAKER/FUSE NOMENCLATURE	BREAKER/FUSE LOCATION	BREAKER/FUSE TEST POSITION	PERF INITIAL/ DATE	CV INITIAL/ DATE
2-BKR-235-0002/07-E	NSSS AUX RELAY RACK C BUS PNL 2-R-58	2-BD-235-2-E	ON		
2-BKR-235-0001/09-D	NSSS AUX RELAY RACK A BUS PANEL 2-R-58	2-BD-235-1-D	ON		
2-BKR-235-0002/08-E	NSSS AUX RELAY RACK B BUS TO PANEL 2-R-58	2-BD-235-2-E	ON		
2-FU-99-R58-M5	POWER RANGE OVERPOWER ROD STOP SEP RELAY	2-R-58	INSTALLED		
2-FU-99-R58-M6	POWER RANGE OVERPOWER ROD STOP SEP RELAY	2-R-58	INSTALLED		
2-FU-99-R58-L7	TURBINE RUNBACK AND BLOCK WITHDRAWAL AUX RELAYS	2-R-58	INSTALLED		

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Table 2
(Page 2 of 3)
BREAKER/FUSE LINEUP FOR SUBSECTION 6.3

Date _____

BREAKER/FUSE IDENTIFICATION	BREAKER/FUSE NOMENCLATURE	BREAKER/FUSE LOCATION	BREAKER/FUSE TEST POSITION	PERF INITIAL/ DATE	CV INITIAL/ DATE
2-FU-99-R58-L8	TURBINE RUNBACK AND BLOCK WITHDRAWAL AUX RELAYS	2-R-58	INSTALLED		
2-FU-99-R58-L9	TURBINE RUNBACK AND BLOCK WITHDRAWAL AUX RELAYS	2-R-58	INSTALLED		
2-FU-99-R58-L10	TURBINE RUNBACK AND BLOCK WITHDRAWAL AUX RELAYS	2-R-58	INSTALLED		
2-FU-99-R58-L11	TURBINE RUNBACK AND BLOCK WITHDRAWAL AUX RELAYS	2-R-58	INSTALLED		
2-FU-99-R58-L12	TURBINE RUNBACK AND BLOCK WITHDRAWAL AUX RELAYS	2-R-58	INSTALLED		

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Table 2
(Page 3 of 3)
BREAKER/FUSE LINEUP FOR SUBSECTION 6.3

Date _____

BREAKER/FUSE IDENTIFICATION	BREAKER/FUSE NOMENCLATURE	BREAKER/FUSE LOCATION	BREAKER/FUSE TEST POSITION	PERF INITIAL/ DATE	CV INITIAL/ DATE
2-FU-99-R58-L13	TURBINE RUNBACK AND BLOCK WITHDRAWAL AUX RELAYS	2-R-58	INSTALLED		
2-FU-99-R58-L14	TURBINE RUNBACK AND BLOCK WITHDRAWAL AUX RELAYS	2-R-58	INSTALLED		
2-FU-99-R58-M9	RED. LD REF. & DEFEAT REMOTE DISPATCHING	2-R-58	INSTALLED		
2-FU-99-R58-M10	RED. LD REF. & DEFEAT REMOTE DISPATCHING	2-R-58	INSTALLED		

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Table 3
(Page 1 of 1)
SWITCH LINEUP FOR ALL SUBSECTIONS

Date _____

SWITCH	LOCATION	SLOT	POSITION	PERF INITIAL/ DATE	CV INITIAL/ DATE
TS/411D	2-R-2	TF09	LEFT		
TS/421D	2-R-6	TF09	LEFT		
TS/431D	2-R-10	TF09	LEFT		
TS/441D	2-R-13	TF09	LEFT		
TS/411H	2-R-2	TF09	LEFT		
TS/421H	2-R-6	TF09	LEFT		
TS/431H	2-R-10	TF09	LEFT		
TS/441H	2-R-13	TF09	LEFT		

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Table 4
(Page 1 of 2)
FIELD TERMINALS ON METAL FOR ALL SUBSECTIONS

Date _____

WIRE NUMBER	WIRE LOCATION	PANEL	CONDITION	PERF INITIAL/ DATE	CV INITIAL/ DATE
PRIX (2L4)	TB2L-4	2-R-2	METAL		
2L3	TB2L-3	2-R-2	METAL		
2L7	TB2L-7	2-R-2	METAL		
PRIX (2L8)	TB2L-8	2-R-2	METAL		
PRIIX (6L4)	TB6L-4	2-R-6	METAL		
6L3	TB6L-3	2-R-6	METAL		
6L7	TB6L-7	2-R-6	METAL		
PRIIX (6L8)	TB6L-8	2-R-6	METAL		
PRIIX (10L4)	TB10L-4	2-R-10	METAL		
10L3	TB10L-3	2-R-10	METAL		
10L7	TB10L-7	2-R-10	METAL		

WBN Unit 2	Overpower Delta-T and Overtemperature Delta-T Turbine Runback	2-PTI-099-05 Rev. 0000 Page 67 of 75
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Table 4
(Page 2 of 2)
FIELD TERMINALS ON METAL FOR ALL SUBSECTIONS

Date _____

WIRE NUMBER	WIRE LOCATION	PANEL	CONDITION	PERF INITIAL/ DATE	CV INITIAL/ DATE
PRIIX (10L8)	TB10L-8	2-R-10	METAL		
PRIVX (13L4)	TB13L-4	2-R-13	METAL		
13L3	TB13L-3	2-R-13	METAL		
13L7	TB13L-7	2-R-13	METAL		
PRIVX (13L8)	TB13L-8	2-R-13	METAL		

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Table 5
(Page 1 of 1)

CHANNEL BYPASS LINEUP FOR ALL SUBSECTIONS

Date _____

NOTE

The Eagle-21 MMI Cart will be required to place the listed Eagle-21 channels into a specified condition. Ensure Eagle-21 System Engineer or qualified individual is available for this lineup.

CHANNEL NUMBER	PANEL LOCATION	CONDITION	PERF INITIAL/ DATE	CV INITIAL/ DATE
T-411/412 DTTA LP1	2-R-2	BYPASS ALL		
T-421/422 DTTA LP2	2-R-6	BYPASS ALL		
T-431/432 DTTA LP3	2-R-10	BYPASS ALL		
T-441/442 DTTA LP4	2-R-13	BYPASS ALL		

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Table 6
(Page 1 of 1)

POST PERFORMANCE CHANNEL BYPASS LINEUP

Date _____

NOTE

The Eagle-21 MMI Cart will be required to place the listed Eagle-21 channels into a specified condition. Ensure Eagle-21 System Engineer or qualified individual is available for this lineup.

CHANNEL NUMBER	PANEL LOCATION	CONDITION	PERF INITIAL/ DATE	CV INITIAL/ DATE
T-411/412 DTTA LP1	2-R-2	REMOVE FROM BYPASS		
T-421/422 DTTA LP2	2-R-6	REMOVE FROM BYPASS		
T-431/432 DTTA LP3	2-R-10	REMOVE FROM BYPASS		
T-441/442 DTTA LP4	2-R-13	REMOVE FROM BYPASS		

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Table 7
(Page 1 of 2)
POST PERFORMANCE FIELD TERMINALS ON PLASTIC

Date _____

WIRE NUMBER	WIRE LOCATION	PANEL	CONDITION	PERF INITIAL/ DATE	CV INITIAL/ DATE
PRIX (2L4)	TB2L-4	2-R-2	PLASTIC		
2L3	TB2L-3	2-R-2	PLASTIC		
2L7	TB2L-7	2-R-2	PLASTIC		
PRIX (2L8)	TB2L-8	2-R-2	PLASTIC		
PRIIX (6L4)	TB6L-4	2-R-6	PLASTIC		
6L3	TB6L-3	2-R-6	PLASTIC		
6L7	TB6L-7	2-R-6	PLASTIC		
PRIIX (6L8)	TB6L-8	2-R-6	PLASTIC		
PRIIX (10L4)	TB10L-4	2-R-10	PLASTIC		
10L3	TB10L-3	2-R-10	PLASTIC		
10L7	TB10L-7	2-R-10	PLASTIC		

WBN Unit 2	Overpower Delta-T and Overtemperature Delta-T Turbine Runback	2-PTI-099-05 Rev. 0000 Page 71 of 75
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Table 7
(Page 2 of 2)
POST PERFORMANCE FIELD TERMINALS ON PLASTIC

Date _____

WIRE NUMBER	WIRE LOCATION	PANEL	CONDITION	PERF INITIAL/ DATE	CV INITIAL/ DATE
PRIII (10L8)	TB10L-8	2-R-10	PLASTIC		
PRIVX (13L4)	TB13L-4	2-R-13	PLASTIC		
13L3	TB13L-3	2-R-13	PLASTIC		
13L7	TB13L-7	2-R-13	PLASTIC		
PRIVX (13L8)	TB13L-8	2-R-13	PLASTIC		

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**Appendix C
(Page 1 of 1)**
PERMANENT PLANT INSTRUMENTATION LOG

Date _____

INSTRUMENT OR INSTRUMENT LOOP #	CAL DUE/ CAL DATE	PLACED IN SERVICE ¹ INIT/DATE	USED FOR QUANTITATIVE ACC CRIT		POST-TEST ² CAL DATE	POST-TEST 2 CALIBRATION ACCEPTABLE INITIAL/DATE
			YES	NO		
2-RLY-099-STDX						

1 These items may be initialed and dated by personnel performing the task.
 2 May be identified as NA if instrument was not used to verify/record quantitative acceptance criteria data.

WBN Unit 2	Overpower Delta-T and Overtemperature Delta-T Turbine Runback	2-PTI-099-05 Rev. 0000 Page 75 of 75
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**Appendix D
(Page 1 of 1)**

MEASUREMENT AND TEST EQUIPMENT LOG

Date _____

M&TE ID #	DESCRIPTION RANGE / ACCURACY	CAL DUE DATE		*FILLED & VENTED INIT/DATE		*PLACED IN-SERVICE INIT/DATE		USED FOR QUALITATIVE ACCEPT. CRIT.		**POST-TEST CAL DATE	**POST-TEST CAL ACCEPT INIT/DATE
				YES	NO	YES	NO	YES	NO		

* This item may be signed by person performing the task. This may be N/A'd if M&TE is not required to be filled and vented or placed in service.
 ** May be identified as not applicable (N/A) if M&TE was not used to verify/record quantitative acceptance criteria.
 SMP-9.0 R1, Conduct of Test, Appendix E