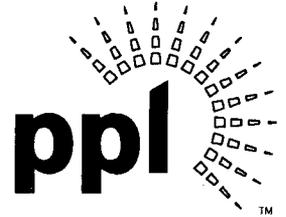


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President and Chief Nuclear Officer

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**MAY 14 2009**

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Mail Stop OP1-17  
Washington, DC 20555

**SUSQUEHANNA STEAM ELECTRIC STATION  
UNIT 2 OPERATING LICENSE NO. NPF-22  
LICENSE CONDITIONS 2.C.(20)(b)8 and 2.C.(20)(c)  
PLA-6506**

**Docket No. 50-388**

- References: 1) PLA- 6481, Mr. W. H. Spence (PPL) to Document Control Desk (USNRC),  
"Susquehanna Steam Electric Station Unit 1 Operating License No. NPF-14  
License Conditions 2.C.(37)(a) and Unit 2 Operating License No. NPF-22  
License Conditions 2.C.(21)(a) and 2.C.(21)(b)," dated April 13, 2008.*
- 2) PLA-6510, Mr. W. H. Spence (PPL) to Document Control Desk (USNRC),  
"Susquehanna Steam Electric Station Unit 1 Operating License No. NPF-14 License  
Condition 2.C.(36)(b)8 and Unit 2 Operating License No. NPF-22  
License Condition 2.C.(20)(b)8," dated May 12, 2009.*

The purpose of this letter is to submit the information required by the subject License Conditions to the Nuclear Regulatory Commission (NRC).

License Condition 2.C.(20)(b)8 requires:

"PPL shall submit flow-induced vibration related portions of the CPPU startup test procedure to the NRC, including methodology for updating the limit curve, prior to initial power ascension above 3489 MWt."

License Condition 2.C.(20)(c) requires:

"PPL shall prepare the CPPU startup test procedure to include the following:

- (1) main steam line strain gauge limit curves to be used up to 114 % of CLTP;
- (2) specific hold points and their duration during CPPU power ascension;
- (3) activities to be accomplished during hold points;
- (4) plant parameters to be monitored;

JE26  
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NRC

- (5) inspections and walk-downs to be conducted for steam, feedwater, and condensate systems and components during the hold points;
- (6) methods to be used to trend plant parameters;
- (7) acceptance criteria for monitoring and trending plant parameters and conducting the walk-downs and inspections;
- (8) actions to be taken if acceptance criteria are not satisfied; and
- (9) verification of the completion of commitments and planned actions specified in its application and all supplements to the application in support of the CPPU license amendment request pertaining to the steam dryer prior to power increase above 3489 MWt. PPL shall provide the related CPPU startup test procedure sections to the NRC by facsimile or electronic transmission to the NRC project manager prior to increasing power above 3489 MWT."

The Attachment provides the following three procedures, which collectively include the topics required by License Conditions 2.C.(20)(b)8 (except for the limit curve update methodology which was provided by Reference 2) and 2.C.(20)(c):

- TP-299-010 – “Extended Power Uprate Master Test Procedure (SICT/E)”
- TP-262-033 – “Steam Dryer and Flow Induced Vibration Testing”
- OI-TA-008 - “Shift Technical Advisor Responsibilities” Attachment H.

PPL plans to increase Unit 2 power up to 3733 MWt (107% of CLTP) as previously described in Reference 1. The procedures will be submitted again for future power increases above 3733 MWt to fulfill the requirements of LC 2.C.(20)(c).

If you have any questions or require additional information, please contact Mr. Duane L. Filchner at (610) 774-7819.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on: 5-14-09

  
W. H. Spence

Attachment: Startup Test Procedures

Copy: NRC Region I  
Mr. R. R. Janati, DEP/BRP  
Mr. F. W. Jaxheimer, NRC Sr. Resident Inspector  
Mr. B. K. Vaidya, NRC Project Manager

---

**Attachment to PLA-6506**  
**Startup Test Procedures**

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PROCEDURE COVER SHEET

<b>PPL SUSQUEHANNA, LLC PROCEDURE</b>	
EXTENDED POWER UPRATE MASTER TEST PROCEDURE SPECIAL, INFREQUENT OR COMPLEX TEST/EVOLUTION (SICT/E)	TP-299-010 Revision 0 Page 1 of 61
ADHERENCE LEVEL: STEP-BY-STEP	
<u>QUALITY CLASSIFICATION:</u> ( X ) QA Program    (   ) Non-QA Program	<u>APPROVAL CLASSIFICATION:</u> ( X ) Plant            (   ) Non-Plant (   ) Instruction
EFFECTIVE DATE: <u>4/24/09</u>	
PERIODIC REVIEW FREQUENCY: <u>N/A</u>	
PERIODIC REVIEW DUE DATE: <u>N/A</u>	
<u>RECOMMENDED REVIEWS:</u> Operations, Reactor Engineering, EPU Engineering, Station Engineering	
Procedure Owner: <u>Robert G. Sheranko</u>	
Responsible Supervisor: <u>Dale F. Roth</u>	
Responsible FUM: <u>Manager-Station Engineering</u>	
Responsible Approver: <u>Vice President-Nuclear Operations</u>	

PROCEDURE REVISION SUMMARY

TITLE: EXTENDED POWER UPRATE MASTER TEST PROCEDURE SPECIAL,  
INFREQUENT OR COMPLEX TEST/EVOLUTION (SICT/E)

- 1) New issue – developed using TP-199-009 as a guide.

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1. PURPOSE/SCOPE

The purpose of this procedure is to provide a centralized mechanism for documenting completion of all items necessary to perform a successful Unit 2 Phase 1 Extended Power Uprate Test Program. Specifically, this procedure provides a method of:

- 1.1 Ensuring that requirements for commencing testing in each Test Condition are met. (Refer to Section 2 for a definition of Test Condition.)
- 1.2 Specifying testing to be completed during each Test Condition.
- 1.3 Tracking status of test implementation.
- 1.4 Controlling escalation of Test Conditions.

2. DISCUSSION

- 2.1 This procedure does not supersede or replace any existing plant procedure, process or program.
- 2.2 This procedure performs no active testing. It is used as a master checklist and guide for the overall Unit 2 Phase 1 Extended Power Uprate Test Program.
- 2.3 In compliance and in conjunction with NDAP-QA-0406, this procedure imposes Administrative Controls throughout the EPU Test Program to direct reactor startup, power escalation and the establishment of Test Conditions.
- 2.4 A Test Condition (TC) is a defined range of reactor power and core flow conditions at which testing is conducted. The Test Condition also includes the startup path to those ranges. The Test Conditions for the Unit 2 Phase 1 EPU Test Program are as follows:
  - 2.4.1 TC A - Reactor power less than 3489 MWt (88.2%) with any core flow within the safe operating region of the Power/Flow Map. (Percent reactor power is specified in percent of 3952 MWt throughout this procedure.)
  - 2.4.2 TC B - Reactor power between 3077 and 3140 MWt (77.9% and 79.4%) with any core flow within the safe operating region of the Power/Flow Map.
  - 2.4.3 TC C - Reactor power between 3419 and 3489 MWt (86.5% and 88.2%) with any core flow within the safe operating region of the Power/Flow Map.

- 2.4.4 TC D - Reactor power between 3539 and 3611 MWt (89.5% and 91.3%) with any core flow within the safe operating region of the Power/Flow Map.
- 2.4.5 TC E - Reactor power between 3658 and 3733 MWt (92.6% and 94.4%) with any core flow within the safe operating region of the Power/Flow Map.
- 2.5 A Test Plateau is an administrative grouping of one or more Test Conditions and/or plant conditions to support efficient control of test scheduling, results review and power escalation. The Test Plateaus for the Unit 2 Phase 1 EPU Test Program are as follows:
  - 2.5.1 88.2% Power Test Plateau - Includes startup and operation up to and including 88.2% power which includes TC A, TC B, and TC C.
  - 2.5.2 91.3% Power Test Plateau - Includes startup and operation up to and including 91.3% power which includes TC D.
  - 2.5.3 94.4% Power Test Plateau - Includes startup and operation up to and including 94.4% power which includes TC E.
- 2.6 Attachments C, E, F, I and K specify the minimum tests that are required to be implemented in TC A, TC B, TC C, TC D and TC E, respectively. The EPU Subtest number specified in these attachments has the format of *xy.z* where:
  - 2.6.1 *xy* is the "Test Number" specified in the test specification. *x* is a one to three digit number and is always present. *y* is an alphabetical character and is optional.
  - 2.6.2 *z* is an arbitrary number used to distinguish specific partial implementations of the test *xy* when the test as specified in the test specification is not fully implemented in a Test Condition, or when more than one implementing procedure is required.
- 2.7 M-1563 test specifications for Test 33 "Piping Steady State Vibration" and Test 100 "Main Steam and Feedwater Piping Vibration" overlap with each other. To clarify pipe vibration testing, Test 100 contains all testing required in M-1563 for both Tests 33 and 100.
- 2.8 This procedure is not intended to control the sequence of EPU testing activities within a Test Condition unless otherwise noted. It does, however, provide a method for ensuring that all testing within each Test Condition is completed and ensures that all required reviews and prerequisites are satisfied during the transition from one Test Condition to the next.

- 2.9 Those sections of this procedure that provide direction to initially increase power beyond 3489 MWt are classified as SICT/Es as these sections represent an expansion of station operation beyond current bounds of existing procedures or training and intensified test and evolution controls are required. Those sections contain SICT/E in their heading

### 3. REFERENCES

- 3.1 GO-200-002, Plant Startup, Heatup, and Power Operation
- 3.2 NDAP-QA-0320 "Special, Infrequent or Complex Test/Evolutions"
- 3.3 NDAP-QA-0008 "Procedure Writers Guide"
- 3.4 CH-SY-026 Moisture Carryover
- 3.5 TP-245-029 Feedwater Master Water Level Controller MWLC Tuneup (SICT/E)
- 3.6 TP-264-032, Core Flow Calibration
- 3.7 SR-278-012, LPRM Calibration Validation
- 3.8 M-1563, Nuclear Engineering Specification for Extended Power Uprate Startup Testing
- 3.9 NDAP-QA-0406, Extended Power Uprate Test Program
- 3.10 PLA-6076, Proposed License Amendment Numbers 285 for Unit 1 Operating License No. NPF-14 and 253 for Unit 2 Operating License No. NPF-22, Constant Pressure Power Uprate.
- 3.11 PLA-6242, "Susquehanna Steam Electric Station Proposed License Amendment No. 285 for Unit 1 Operating License No. NPF-14 and Proposed License Amendment No. 253 for Unit 2 Operating License No. NPF-22 Extended Power Uprate Application Regarding Steam Dryer and Flow Effects Request For Additional Information Responses."
- 3.12 TP-055-001 "CRD Stroke Time and Friction Measurement"
- 3.13 TP-293-041 "EPU EHC Pressure Regulator Testing"
- 3.14 SO-200-007 "Daily Surveillance Operating Log"
- 3.15 NDAP-QA-0450 "Extended Power Uprate Project Implementation"
- 3.16 RE-081-036 "Core Fuel Pool Verification"

- 3.17 RE-0TP-201 "TIP Uncertainty"
- 3.18 SC-233-101 "U2 TB Vent Weekly Iodine & Particulate Activity"
- 3.19 SC-233-102 "U2 TB Vent Monthly Tritium & Grab Sample Analysis"
- 3.20 SC-243-101 "U2 Main Condenser Air Ejector Monthly Noble Gas"
- 3.21 SC-276-101 "U2 Rx Coolant Conductivity Determination"
- 3.22 SC-276-102 "U2 Primary Coolant Specific Activity Dose Equivalent I-131"
- 3.23 SC-276-106 "U2 Rx Coolant Chloride and pH Determination"
- 3.24 SE-278-001 "APRM 1 Drive Flow Calibration"
- 3.25 SE-278-002 "APRM 2 Drive Flow Calibration"
- 3.26 SE-278-003 "APRM 3 Drive Flow Calibration"
- 3.27 SE-278-004 "APRM 4 Drive Flow Calibration"
- 3.28 SI-264-305 "Recirc MG Set Positioners High Speed Stops"
- 3.29 SR-200-008 "In Sequence Critical and Shutdown Margin Demo."
- 3.30 SR-255-004 "Scram Time Measurements of Control Rods"
- 3.31 TP-200-013 "EPU Data Collection and Extrapolation"
- 3.32 TP-244-042 "Condensate Pump Trip"
- 3.33 TP-262-033 "Steam Dryer Vibration Testing"
- 3.34 TP-299-011 "EPU Temperature Data Collection for Service Water"
- 3.35 SSES Unit 2 Operating License NPF-22 Amendment 253
- 3.36 AR CR 1075938
- 3.37 OI-TA-008 "Shift Technical Advisor Responsibilities"

4. TEST EQUIPMENT

No specific M&TE equipment is necessary to perform this procedure.

5. PRECAUTIONS/NOTES

- 5.1 Sections and steps within sections must be completed in the order listed unless otherwise specified.
- 5.2 Tests identified in the Test Condition Review Summary Attachments may be completed in any order unless otherwise specified.
- 5.3 Per Unit 2 Operating License Condition 2.C. (20) (d), the following key attributes of the PATP (Power Ascension Test Program) shall not be made less restrictive without prior NRC approval.
- 5.3.1 During initial power ascension testing above 3489 MWt, each test plateau increment shall be approximately 3.5% of 3489 MWt;
- 5.3.2 Level 1 performance criteria; and
- 5.3.3 The methodology for establishing the stress criteria used for the Level 1 and Level 2 performance criteria
- Changes to other aspects of the PATP may be made in accordance with the guidance of Nuclear Energy Institute (NEI) 99-04, "Guidelines for Managing NRC Commitments," issued July 1999.
- 5.4 Per Unit 2 Operating License Condition 2.C (20) (a) 4, "if any frequency peak from the MSL strain gauge data exceeds the Level 1 limit curve for dryer strains above 3489 MWt, PPL shall return the facility to a power level at which the acceptance criterion is not exceeded. PPL shall resolve the discrepancy, document the continued structural integrity of the steam dryer, and provide that documentation to the NRC Staff by facsimile or electronic transmission to the NRC project manager prior to further increases in reactor power."
- 5.5 Per Unit 2 Operating License Condition 2.C (21) (a), PPL will demonstrate through performance of transient testing on each SSES unit that the loss of one condensate pump will not result in a complete loss of reactor feedwater. The test shall be performed on each unit's CPPU (Constant Pressure Power Uprate) power ascension test program within 336 hours of achieving and prior to exceeding a nominal power level of 3733 MWt with feedwater and condensate flow rates stabilized. PPL shall confirm that the plant response to the transient is as expected in accordance with the acceptance criteria that are established. If a loss of all reactor feedwater occurs as a result of the test, the test failure shall be addressed in accordance with corrective action program requirements and the provisions of the power ascension test program prior to continued operation of the SSES unit above 3489 MWt.

5.6 Per Unit 2 Operating License Condition 2.C.(20) (a) 3, PPL shall hold the facility at each 3.5% ascension step to collect data from License Condition 2.C.(20)(a) and conduct plant inspections and walk-downs, and evaluate steam dryer performance based on the data; shall provide the evaluation to the NRC staff by facsimile or electronic transmission to the NRC project manager upon completion of the evaluation; and shall not increase power above each hold point until 96 hours after the NRC project manager confirms receipt of transmission.

6. PREREQUISITES

6.1 **Complete AND Attach SICT/E Analysis Form for this TP.**

\_\_\_\_\_  
Attached By

\_\_\_\_\_  
Date

7. PROCEDURE

<p>NOTE (1): Sections and steps within sections must be completed in the order listed unless otherwise specified.</p> <p>NOTE (2): Tests identified in an Attachment may be completed in any order unless otherwise specified.</p>
--

7.1 Mode 5 / Mode 4 Testing

7.1.1 **Perform** following steps concerning this Administrative Hold Condition: Mode 2 may not be entered until this Administrative Hold Condition is lifted by step 7.2.5 in this TP or as otherwise notified by the Vice President-Nuclear Operations.

- a. **Issue** ZWO specifying Administrative Hold Condition.
- b. **Record** ZWO number: \_\_\_\_\_
- c. **Inform** Shift Supervision of Administrative Hold Condition.
- d. **Confirm** that the Administrative Hold Condition and ZWO number have been added to the Unit 2 Unit Supervisor Turnover Sheet.

- e. **Inform** Work Week Management to add the Administrative Hold Condition and associated ZWO number as a Log Line to the appropriate activity in the station schedule.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date

- 7.1.2 **Confirm** that Shift Supervision is aware that testing identified in Attachment C for Mode 5 or Mode 4 may commence.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date  
Shift Supervision

- 7.1.3 **Perform** tests listed in Attachment C that are specified for Mode 5 and Mode 4.

7.2 Preparations for entering Mode 2.

**NOTE:** Steps 7.2.1 through 7.2.3 may be completed in any order.

7.2.1 **Confirm** the following:

- a. All testing listed in Attachment C with additional plant condition requirements of Mode 4 or Mode 5 with the exception of ST 5.2 has been successfully completed **OR** Test Exception Reports have been written. ST 5.2 may be completed anytime prior to exceeding 1580 MWt (40%) when reactor pressure is greater than or equal to 800 psig.
- b. All EPU Test Results Summaries for completed Startup Tests listed in Attachment C have been reviewed by the Shift Test Coordinator or EPU Test Program Director **OR** Test Exception Reports have been written.
- c. All Test Exception Reports have been dispositioned.
- d. There are no open Test Exceptions or Subsequent Action items related to Test Exceptions that are required to be completed and closed prior to entering Mode 2.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date  
EPU Test Program Director

- 7.2.2 **Confirm** that Partial 1 of EC 690276 "Extended Power Uprate Implementation" is closed.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By / Date

- 7.2.3 **Confirm** that all items in GO-200-002 Attachment A "Unit 2 Station Verification of Activities for Entering Mode 2" have been signed off.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By / Date  
Shift Supervision

7.2.4 **Permission is granted to:**

- a. **Enter** Mode 2.
- b. **Increase** reactor thermal power with plant conditions not to exceed 3489 MWt (88.2%) or 108 Mibm/Hr core flow. Reactor thermal power may briefly exceed 3489 MWt during minor power transients inherent to approved test procedures.
- c. **Perform** all remaining tests listed in Attachment C.
- d. **Perform** all tests listed in Attachments E and F.

\_\_\_\_\_/\_\_\_\_\_  
VP - Nuclear Operation / Date

7.2.5 **Perform** following steps concerning the Administrative Hold Condition issued in step 7.1.1 that Mode 2 may not be entered:

- a. **Inform** Shift Supervision that the Administrative Hold Condition has been lifted.
- b. **Confirm** that the ZWO has been closed.
- c. **Confirm** that the Administrative Hold Condition and ZWO number have been removed from the Unit 2 Unit Supervisor Turnover Sheet.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By / Date  
Shift Supervision

7.3 Startup to 77% Power

7.3.1 Enter Mode 2

7.3.2 Perform following steps concerning this Administrative Hold Condition: Reactor power may not exceed 3489 MWt (88.2%) until this Administrative Hold Condition is lifted by step 7.7.2 in this TP or as otherwise notified by the Vice President-Nuclear Operations. Reactor thermal power may briefly exceed 3489 MWt during minor power transients inherent to approved test procedures.

a. Issue ZWO specifying Administrative Hold Condition.

b. Record ZWO number: \_\_\_\_\_

c. Inform Shift Supervision of Administrative Hold Condition.

d. Confirm that the Administrative Hold Condition and ZWO number have been added to the Unit 2 Unit Supervisor Turnover Sheet.

e. Inform Work Week Management to add the Administrative Hold Condition and associated ZWO number as a Log Line to the appropriate activity in the station schedule.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By Date

7.3.3 Confirm that Shift Supervision is aware that all tests listed in Attachment C can be performed in any order at reactor power levels not to exceed 3077 MWt (77.9%) or at lower power levels as specified in Attachment C. Reactor thermal power may briefly exceed 3077 MWt during minor power transients inherent to approved test procedures.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By Date  
Shift Supervision

7.3.4 DURING approach to Initial Criticality, perform ST-4, In Sequence Critical and Shutdown Margin Demonstration.

7.3.5 FOLLOWING breaker closure, Commence collection of Pressure Regulator Incremental Regulation and Control Valve data per ST-22.1. This data should be collected at intervals not to exceed 3% (of scale) reactor power.

**NOTE:** **IF** Reactor Power is ever reduced below 16%, **AND** the Reactor Mode is changed from Mode 1 to Mode 2, **THEN** ST-10.2 IRM/APRM overlap is required to be performed.

- 7.3.6 **Perform** ST-22.1 Scram Bypass Setpoint Verification during power ascension.
  - 7.3.7 **Continue** power ascension to 60% power.
  - 7.3.8 **Perform** Feedwater and Pressure Regulator testing.
    - a. **Complete** TP-299-010 Attachment V Section I to satisfy requirements for ST-22.1 performance up to and including 60% power.
    - b. **Confirm** that Reactor Engineering has performed an assessment of margin to APRM Rod Block and Scram setpoints as well as margin to fuel thermal and preconditioning limits **AND Deems** margins to be acceptable for performance of ST-22.2, Pressure Regulator Step Changes and Pressure Regulator Failure.
- \_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date  
Reactor Engineering
- c. **Perform** TP-245-029, Feedwater Master Water Level Controller Tuneup.
  - d. **Perform** ST-22.2, Pressure Regulator Step Changes and Pressure Regulator Failure.
  - 7.3.9 **Continue** power ascension to 65% power.

**NOTE:** Steps 7.3.10 and 7.3.11 may be performed in parallel or in any sequence.

- 7.3.10 **Perform** the following in any order or combination:
  - a. **Record** a dataset of vibrations as required to be taken with Local Vibration Monitoring Instrumentation in accordance with TP-262-033
  - b. **Perform** Walkdown of accessible areas in accordance with TP-262-033

- c. **Perform** Remote Walkdown of inaccessible areas in accordance with TP-262-033

7.3.11 **Perform** MSL vibration testing.

- a. **Maintain** reactor power within a tolerance of +/- 12 MWt as displayed on PICSY point NBA01.
- b. **Record** reactor operating conditions at the time MSL data is recorded.
- c. **Record** two 3-minute segment datasets of MSL Strain Gauges in accordance with TP-262-033.
- d. **AFTER** the datasets are recorded, evaluate the measured data to ensure the instrumentation is operating properly. Correct and repeat the data recording if necessary.
- e. **Record** a dataset of MSL and FW accelerometers in accordance with TP-262-033
- f. **Record** a dataset of Recirculation and RHR Strain Gauges in accordance with TP-262-033
- g. **Inform** Operations that the tolerance of +/- 12 MWt on reactor power is no longer in effect.
- h. **Evaluate** dataset **AND Confirm** that results are within the Level 1 and Level 2 Acceptance Criteria.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date  
EPU

- i. **Confirm** that it is acceptable to proceed to the next vibration testing test point.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date  
EPU

- 7.3.12 **Inform** Operations that vibration test results are acceptable and that reactor power level may be increased.

- 7.3.13 **Perform** remaining tests listed in Attachment C.

7.3.14 **Confirm the following:**

- a. All testing listed in Attachment C has been successfully completed **OR** Test Exception Reports have been written.
- b. All EPU Test Results Summaries for completed Startup Tests listed in Attachment C have been reviewed by the Shift Test Coordinator or EPU Test Program Director **OR** Test Exception Reports have been written.
- c. All Test Exception Reports have been dispositioned.
- d. There are no open Test Exceptions or Subsequent Action items related to Test Exceptions that are required to be completed and closed prior to entering Test Condition B.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date  
EPU Test Program Director

7.4 Test Condition B Testing

- 7.4.1 **Inform** Shift Supervision to **Establish** reactor conditions within those defined as EPU Test Condition B in Attachment D.
- 7.4.2 **Confirm** that Shift Supervision is aware that all tests listed in Attachment E can be performed in any order at reactor power levels in the range of 3077 to 3140 MWt (77.9% to 79.4%) or at lower power levels as specified in Attachment E. Reactor thermal power may briefly exceed 3140 MWt during minor power transients inherent to approved test procedures.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date  
Shift Supervision

- 7.4.3 **Perform** tests listed in Attachment E.

7.4.4 **Confirm the following:**

- a. All testing listed in Attachment E has been successfully completed **OR** Test Exception Reports have been written.
- b. All EPU Test Results Summaries for completed Startup Tests listed in Attachment E have been reviewed by the Shift Test Coordinator or EPU Test Program Director **OR** Test Exception Reports have been written.

- c. All Test Exception Reports have been dispositioned.
- d. There are no open Test Exceptions or Correct Condition action items related to Test Exceptions that are required to be completed and closed prior to entering Test Condition C.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By / Date  
EPU Test Program Director

7.5 Test Condition C Testing

- 7.5.1 **Confirm** that Shift Supervision is aware that all tests listed in Attachment F can be performed in any order at reactor power levels in the range of 3419 to 3489 MWt (86.5% to 88.2%) or at lower power levels as specified in Attachment F. Reactor thermal power may briefly exceed 3489 MWt during minor power transients inherent to approved test procedures.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By / Date  
Shift Supervision

- 7.5.2 **Inform** Shift Supervision that reactor power may be increased to 3293 MWt.
- 7.5.3 **Perform** the following steps in parallel:
  - a. **Maintain** reactor power between 3284 MWt and 3300 MWt (83.3% +/-0.25%).
  - b. **Record** reactor operating conditions at the time the dryer data is recorded.
  - c. **Record** two 3-minute segment datasets of MSL Strain Gauges in accordance with TP-262-033.
  - d. **AFTER** the datasets are recorded, evaluate the measured data to ensure the instrumentation is operating properly. Correct and repeat the data recording if necessary.
  - e. **Record** a dataset of MSL and FW accelerometers in accordance with TP-262-033.
  - f. **Record** a dataset of Recirculation and RR Strain Gauges in accordance with TP-262-033.

7.5.4 **Inform** shift Supervision to **Establish** reactor conditions within those defined as EPU Test Condition C in Attachment D.

7.5.5 **Inform** Shift Supervision to **Establish AND Maintain** reactor power between 3471 MWt and 3489 MWt.

<b>NOTE:</b> Step 7.5.6 may be performed at any time in parallel with Steps 7.5.7 through 7.5.9 or postponed until after Step 7.5.9.
--

7.5.6 **Perform** the following in any order or combination:

a. **Record** a dataset of vibrations as required to be taken with Local Vibration Monitoring Instrumentation in accordance with TP-262-033.

b. **Perform** Walkdown of accessible areas in accordance with TP-262-033.

c. **Perform** Remote Walkdown of inaccessible areas in accordance with TP-262-033.

d. **Record** a dataset of MSL and FW accelerometers in accordance with TP-262-033.

e. **Record** a dataset of Recirculation and RR Strain Gauges in accordance with TP-262-033.

7.5.7 **Perform** the following steps in any order or combination:

a. **Record** reactor operating conditions at the time the MSL data is recorded.

b. **Record** two 3-minute segment datasets of MSL Strain Gauges in accordance with TP-262-033.

c. **AFTER** the datasets are recorded, evaluate the measured data to ensure the instrumentation is operating properly. Correct and repeat the data recording if necessary.

7.5.8 **AFTER** completion of Step 7.5.7, **Inform** Operations that the minimum power level of 3471 MWt is no longer in effect.

7.5.9 **Request** Reactor Engineering to **Determine** if an LPRM Calibration is required during Test Condition C. If yes, then perform ST 11 as listed in Attachment F. If not required, then document justification for not performing ST 11 in a Test Exception Report.

7.5.10 **Perform** remaining tests listed in Attachment F.

7.5.11 **Confirm** the following:

a. All testing listed in Attachment F has been successfully completed **OR** Test Exception Reports have been written.

b. All EPU Test Results Summaries for completed Startup Tests listed in Attachment F have been reviewed by the Shift Test Coordinator or EPU Test Program Director **OR** Test Exception Reports have been written.

c. All Test Exception Reports have been dispositioned.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By Date  
EPU Test Program Director

7.5.12 **Prepare** a Test Plateau Review Record, Attachment O, to the extent practical for submittal to the TRC, PORC and VP-Nuclear Operations for review and approval.

7.6 Preparation for Power Ascension Above 3489 MWt (88.2%)

**NOTE:** Steps 7.6.1 through 7.6.8 may be completed in any order.

7.6.1 **Confirm** that all CRs and CRAs necessary for power ascension above 3489 MWt (88.2%) up to a maximum of 3611 MWt (91.3%) are resolved and Responsible Supervisor certifies that all required work is completed.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By Date  
Supervisor – Corrective  
Action and Assessment

7.6.2 **Confirm** that Partial 2 of EC 690276 "Extended Power Uprate Implementation" is closed.

\_\_\_\_\_ / \_\_\_\_\_  
Confirmed By Date

7.6.3 **Confirm** that at least 45 days have elapsed since PPL provided the NRC with the as-built dryer stress reconciliation and load limit curves as required by License Condition 2.C.(20)(b)1.

a. Date information was provided to NRC. \_\_\_\_\_

b. Line a plus 45 days. \_\_\_\_\_

\_\_\_\_\_ / \_\_\_\_\_  
Confirmed By Date

7.6.4 **Confirm** that PPL has provided the NRC with the flow-induced vibration related portions of the CPPU startup test procedure including methodology for updating the limit curve as required by License Condition 2.C.(20)(b)8.

\_\_\_\_\_ / \_\_\_\_\_  
Confirmed By Date

7.6.5 **Confirm** that PPL has notified the NRC project manager that all appropriate actions required to assure consistency between the CPPU containment analysis and SSES Unit 1 and Unit 2 operating and emergency procedures have been completed as required by License Condition 2.C.(23).

\_\_\_\_\_ / \_\_\_\_\_  
Confirmed By Date

7.6.6 **Confirm** the following:

a. There are no open Test Exceptions or Correct Condition action items related to Test Exceptions that are required to be completed and closed prior to increasing power above 3489 MWt (88.2%) to a maximum of 3611 MWt (91.3%).

- b. There are no open Test Exceptions or Subsequent Action items related to Test Exceptions that are required to be completed and closed prior to entering Test Condition D.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date  
EPU Test Program Director

- 7.6.7 **Complete** Attachment H, "Unit 2 Station Verification of Activities for power ascension."

- 7.6.8 **Confirm** that Reactor Engineering is aware that the initial power increase from 3489 MWt to 3611 MWt shall be made using recirculation flow along a constant rod line at an average power ascension rate not to exceed 1%/hr.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date  
Reactor Engineering

7.6.9 **Permission is granted to:**

- a. **Increase** reactor thermal power with plant conditions not to exceed 3611 MWt (91.3%) or 108 Mlbm/Hr core flow. Reactor thermal power may briefly exceed 3611 MWt during minor transients inherent to approved test procedures.
- b. **Perform** all tests listed in Attachment I.

\_\_\_\_\_/\_\_\_\_\_  
VP - Nuclear Operation                      Date

7.7 **(Start of SICT/E Section) Initial power ascension above 3489 MWt.**

**NOTE:** The initial power ascension above 3489 MWt will be from 3489 MWt (88.2%) to 3611 MWt (91.3%) using recirculation flow along a constant rod line at an average power ascension rate not to exceed 1%/hr.

- 7.7.1 **Confirm** that SICT/E Briefing is complete **AND** that Form NDAP-QA-0320-2 has been signed by the briefers **AND** that Form NDAP-QA-0320-3 has been signed by the attendees.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date

7.7.2 **Perform** following steps concerning the Administrative Hold Condition issued in Step 7.3.2 that Reactor power may not exceed 3489 MWt (88.2%):

- a. **Inform** Shift Supervision that the Administrative Hold Condition has been lifted.
- b. **Confirm** that the ZWO has been closed.
- c. **Confirm** that the Administrative Hold Condition and ZWO number have been removed from the Unit 2 Unit Supervisor Turnover Sheet.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By / Date  
Shift Supervision

7.7.3 **Perform** following steps concerning this Administrative Hold Condition: Reactor power may not exceed 3611 MWt (91.3%) until this Administrative Hold Condition is lifted by Step 7.10.2 in this TP or as otherwise notified by the Vice President-Nuclear Operations. Reactor thermal power may briefly exceed 3611 MWt during minor power transients inherent to approved test procedures.

- a. **Issue** ZWO specifying Administrative Hold Condition.
- b. **Record** ZWO number: \_\_\_\_\_
- c. **Inform** Shift Supervision of Administrative Hold Condition.
- d. **Confirm** that the Administrative Hold Condition and ZWO number have been added to the Unit 2 Unit Supervisor Turnover Sheet.
- e. **Inform** Work Week Management to add the Administrative Hold Condition and associated ZWO number as a Log Line to the appropriate activity in the station schedule.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By / Date

- 7.7.4 **Confirm** that Shift Supervision is aware that all tests listed in Attachment I can be performed in any order at reactor power levels in the range of 3539 to 3611 MWt (89.5% to 91.3%) or at lower power levels as specified in Attachment I.

\_\_\_\_\_/\_\_\_\_\_  
 Confirmed By / Date  
 Shift Supervision

- 7.7.5 **Inform** TP-262-033 Test Director that we are about to commence the initial power ascension from 3489 MWt (88.2%) to 3611 MWt (91.3%) **AND Confirm** that all test personnel are prepared to perform assigned duties.

7.7.6 All thermal power ascension ramps above previously attained thermal power levels must meet the following requirements and be recorded in Attachment J:

- a. SICT/E Controls must be established in accordance with NDAP-QA-0320.
- b. TP-262-033 and OI-TA-008 test personnel must be in place and ready to monitor and record data.
- c. **Record** the following data at plant conditions prior to starting ramp: reactor MWt and main generator gross MWe and MVARs.
- d. **Inform** Shift Supervision or delegated personnel to increase power.
- e. **Record** time at start of power ramp.
- f. **Record** time at end of power ramp.
- g. **Record** the following data at plant conditions following the power ramp: reactor MWt and main generator gross MWe and MVARs.
- h. **Calculate** the earliest time at which the next power ramp may occur in order to maintain a thermal power ascension ramp of less than or equal to 1% / hour.

- 7.7.7 **(End of SICT/E Section)**

7.8 Test Condition D Testing

- 7.8.1 **Perform** testing listed in Attachment I while completing the remaining steps in this section.
- 7.8.2 **Inform** Shift Supervision to Maintain reactor power between 3593 MWt and 3611 MWt as displayed on PICSY point NBA01 during vibration testing data collection.

**NOTE:** Step 7.8.3 may be performed in parallel with Steps 7.8.4 through 7.8.6 or postponed until after Step 7.8.6.

- 7.8.3 **Perform** the following in any order or combination:
  - a. **Record** vibration datasets in accordance with TP-262-033
  - b. **Perform** walkdowns in accordance with TP-262-033
- 7.8.4 **Perform** the following steps in any order or combination:
  - a. **Record** reactor operating conditions at the time the dryer data is recorded.
  - b. **Record two** 3 minute segment datasets of MSLL Strain Gauges in accordance with TP-262-033.
  - c. **Evaluate** the measured data to ensure the instrumentation is operating properly. **Correct** and **Repeat** the data recording if necessary.
- 7.8.5 **AFTER** completion of Step 7.8.4, **Inform** Operations that the minimum power level of 3593 MWt is no longer in effect.

**NOTE:** **IF** data analysis shows that dryer strain gauge data exceeds any Level 1 Acceptance Criterion, **THEN Reduce** reactor power to a level at which the acceptance criterion is not exceeded.

- 7.8.6 **Perform** a full Limit Evaluation of the recorded dataset **AND** **Confirm** that results are within the Level 1 and Level 2 Acceptance Criteria.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date  
EPU

- 7.8.7 **Confirm** that it is acceptable to proceed to the next vibration testing test point.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date  
EPU

NOTE:            Remaining steps in this section may be completed in any order.
---

- 7.8.8 **Prepare** a steam dryer performance evaluation for 3611 MWt as required by License Condition 2.C.(20)(a)3.
- 7.8.9 **Record** date and time that information was provided to the NRC Project Manager.

\_\_\_\_\_/\_\_\_\_\_  
Date                      Time                      Confirmed By                      Date

- 7.8.10 **Confirm** the following:
  - a. All testing listed in Attachment I has been successfully completed **OR** Test Exception Reports have been written.
  - b. All EPU Test Results Summaries for completed Startup Tests listed in Attachment I have been reviewed by the Shift Test Coordinator or EPU Test Program Director **OR** Test Exception Reports have been written.
  - c. All Test Exception Reports have been dispositioned.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date  
EPU Test Program Director

- 7.8.11 **Prepare** a Test Plateau Review Record, Attachment O, to the extent practical for submittal to the TRC, PORC and VP-Nuclear Operations for review and approval.

7.9 Preparation for Power Ascension Above 3611 MWt (91.3%)

**NOTE:** Steps 7.9.1 through 7.9.6 may be completed in any order.

- 7.9.1 **Confirm** that all CRs and CRAs necessary for power ascension above 3611 MWt (91.3%) are resolved and Responsible Supervisor certifies that all required work is completed.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date  
Manager – Corrective  
Action and Assessment

- 7.9.2 **Confirm** that at least 96 hours have elapsed since the NRC Project Manager confirmed receipt of the steam dryer performance evaluation for 3611 MWt as required by License Condition 2.C.(20)(a)3.

- a. Date and time that NRC Project Manager confirmed receipt of information \_\_\_\_\_
- b. Line b plus 96 hours. \_\_\_\_\_
- c. Date and time this step is signed off. \_\_\_\_\_

\_\_\_\_\_  
Confirmed By

- 7.9.3 **Confirm** the following:

- a. There are no open Test Exceptions or Subsequent Action items related to Test Exceptions that are required to be completed and closed prior to increasing power above 3611 MWt (91.3%).
- b. There are no open Test Exceptions or Subsequent Action items related to Test Exceptions that are required to be completed and closed prior to entering Test Condition E.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date  
EPU Test Program Director

- 7.9.4 **Complete** Attachment H, "Unit 2 Station Verification of Activities for Power Ascension".
- 7.9.5 **Confirm** that Reactor Engineering is aware that the initial power increase from 3611 MWt to 3733 MWt shall be made using recirculation flow along a constant rod line at an average rate not to exceed 1%/hr.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By / Date  
Reactor Engineering

- 7.9.6 **Permission is granted to:**
  - a. **Increase** reactor thermal power with plant conditions not to exceed 3733 MWt.
  - b. **Perform** all tests listed in Attachment K.

\_\_\_\_\_/\_\_\_\_\_  
VP - Nuclear Operation / Date

7.10 (Start of SICT/E Section) Initial power ascension above 3611 MWt (91.3%).

**NOTE:** The initial power ascension above 3611 MWt will be from 3611 MWt (91.3%) to 3733 MWt (94.4%) using recirculation flow along a constant rod line at an average power ascension rate not to exceed 1%/hr.

- 7.10.1 **Confirm** that SICT/E Briefing is complete **AND** that Form NDAP-QA-0320-2 has been signed by the briefers **AND** that Form NDAP-QA-0320-3 has been signed by the attendees.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By / Date

- 7.10.2 **Perform** following steps concerning the Administrative Hold Condition issued in step 7.7.3 that Reactor power may not exceed 3611 MWt (91.3%):
  - a. **Inform** Shift Supervision that the Administrative Hold Condition has been lifted.
  - b. **Confirm** that the ZWO has been closed.

- c. **Confirm** that the Administrative Hold Condition and ZWO number have been removed from the Unit 2 Unit Supervisor Turnover Sheet.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date  
Shift Supervision

7.10.3

**Perform** following steps concerning this Administrative Hold Condition: Reactor power may not exceed 3733 MWt (94.4%) until this Administrative Hold Condition is lifted by Step 7.11.14 in this TP or as otherwise notified by the Vice President-Nuclear Operations. Reactor thermal power may briefly exceed 3733 MWt during minor power transients inherent to approved test procedures.

- a. **Issue** ZWO specifying Administrative Hold Condition.

- b. **Record** ZWO number: \_\_\_\_\_

- c. **Inform** Shift Supervision of Administrative Hold Condition.

- d. **Confirm** that the Administrative Hold Condition and ZWO number have been added to the Unit 2 Unit Supervisor Turnover Sheet.

- e. **Inform** Work Week Management to add the Administrative Hold Condition and associated ZWO number as a Log Line to the appropriate activity in the station schedule.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date

7.10.4

**Confirm** that Shift Supervision is aware that all tests listed in Attachment K can be performed in any order at reactor power levels in the range of 3658 to 3733 MWt (92.6% to 94.4%) or at lower power levels as specified in Attachment K.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date  
Shift Supervision

- 7.10.5 **Inform** TP-262-033 Test Director that we are about to commence the initial power ascension from 3611 MWt (91.3%) to 3733 MWt (94.4%) **AND Confirm** that all test personnel are prepared to perform assigned duties.
  
- 7.10.6 All thermal power ascension ramps above previously attained thermal power levels must meet the following requirements and be recorded in Attachment J:
  - a. SICT/E Controls must be established in accordance with NDAP-QA-0320.
  - b. TP-262-033 and OI-TA-008 test personnel must be in place and ready to monitor and record data.
  - c. **Record** the following data at plant conditions prior to starting ramp: reactor MWt and main generator gross MWe and MVARs.
  - d. **Inform** Shift Supervision or delegated personnel to increase power.
  - e. **Record** time at start of power ramp.
  - f. **Record** time at end of power ramp.
  - g. **Record** the following data at plant conditions following the power ramp: reactor MWt and main generator gross MWe and MVARs.
  - h. **Calculate** the earliest time at which the next power ramp may occur in order to maintain a thermal power ascension ramp of less than or equal to 1% / hour.
  
- 7.10.7 **(End of SICT/E Section)**

7.11 Test Condition E Testing

- 7.11.1 **Perform** testing listed in Attachment K while completing the remaining steps in this section.
- 7.11.2 **Calculate AND Record** date and time by which ST-103 Condensate Pump Trip must be completed by adding 336 hours (14 days) onto the time and date of initially achieving 3733 MWt as recorded in Attachment J.

\_\_\_\_\_/\_\_\_\_\_  
DATE            TIME

- 7.11.3 **Perform** following steps concerning this Administrative Hold Condition: ST-103 Condensate Pump Trip must be completed by the date and time recorded in Step 7.11.2. This Administrative Hold Condition is lifted by Step 7.11.14.
  - a. **Issue** ZWO specifying Administrative Hold Condition.
  - b. **Record** ZWO number: \_\_\_\_\_
  - c. **Inform** Shift Supervision of Administrative Hold Condition.
  - d. **Confirm** that the Administrative Hold Condition and ZWO number have been added to the Unit 2 Unit Supervisor Turnover Sheet.
  - e. **Inform** Work Week Management to add the Administrative Hold Condition and associated ZWO number as a Log Line to the appropriate activity in the station schedule.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By            Date

- 7.11.4 **Inform** shift Supervision to **Maintain** reactor power between 3715 MWt and 3733 MWt as displayed on PICSY point NBA01 during vibration data collection.

**NOTE:** Step 7.11.5 may be performed at any time in parallel with Steps 7.11.6 through 7.11.7 or postponed until after Step 7.11.7.

- 7.11.5 **Perform** the following in any order or combination:
  - a. **Record** vibration datasets in accordance with TP-262-033

- b. **Perform** walkdowns in accordance with TP-262-033
- 7.11.6 **Perform** the following steps in any order or combination:
  - a. **Record** reactor operating conditions at the time the dryer data is recorded.
  - b. **Record** two 3-minute segment datasets of MSL Strain Gauges in accordance with TP-262-033.
  - c. **Evaluate** the measured data to ensure the instrumentation is operating properly. **Correct** and **Repeat** the data recording if necessary.

- 7.11.7 **AFTER** completion of Step 7.11.6, **Inform** Operations that the minimum power level of 3715 MWt is no longer in effect.

**NOTE:** Steps 7.11.8 through 7.11.10 may be performed in parallel with Steps 7.11.11 through 7.11.16.

- 7.11.8 **Evaluate** recorded dataset **AND Confirm** that results are within the Level 1 and Level 2 Acceptance Criteria.

\_\_\_\_\_ / \_\_\_\_\_  
 Confirmed By                      Date  
 EPU

- 7.11.9 **Prepare** a steam dryer performance evaluation for 3733 MWt as required by License Condition 2.C.(20)(a)3.

- 7.11.10 **Record** date and time that information was provided to the NRC Project Manager.

\_\_\_\_\_ / \_\_\_\_\_  
 Date                      Time                      Confirmed By                      Date

- 7.11.11 **Perform** following steps concerning this Administrative Hold Condition: Reactor power may not exceed 3489 MWt (88.2%) following ST-103 Condensate Pump Trip until this Administrative Hold Condition is lifted by Step 7.11.14 in this TP or as otherwise notified by the Vice President-Nuclear Operations. The Administrative Hold Condition issued in Step 7.10.3 that reactor power may not exceed 3733 MWt (94.4%) remains in effect.

- a. **Issue** ZWO specifying Administrative Hold Condition.

- b. **Record** ZWO number: \_\_\_\_\_
- c. **Inform** Shift Supervision of Administrative Hold Condition.
- d. **Confirm** that the Administrative Hold Condition and ZWO number have been added to the Unit 2 Unit Supervisor Turnover Sheet.
- e. **Inform** Work Week Management to add the Administrative Hold Condition and associated ZWO number as a Log Line to the appropriate activity in the station schedule.

\_\_\_\_\_/\_\_\_\_\_  
 Confirmed By / Date

- 7.11.12 **Enter** date and time that ST-103 Condensate Pump Trip was performed. **Confirm** that test was performed prior to date and time listed in Step 7.11.2.

Date	Time	Confirmed By	Date
------	------	--------------	------

- 7.11.13 **Confirm** that ST-103 Condensate Pump Trip test results satisfy Level 1 Acceptance Criteria.

\_\_\_\_\_/\_\_\_\_\_  
 Confirmed By / Date

7.11.14 **Perform** following steps concerning Administrative Hold Conditions:

- a. **Inform** Shift Supervision that the Administrative Hold Condition issued in Step 7.11.11 that reactor power may not exceed 3489 MWt (88.2%) has been lifted.
- b. **Inform** Shift Supervision that the Administrative Hold Condition issued in Step 7.11.3 concerning the deadline for performing ST-103 Condensate Pump Trip is lifted.
- c. **Inform** Shift Supervision that the Administrative Hold Condition issued in Step 7.10.3 that reactor power may not exceed 3733 MWt (94.4%) has been lifted.
- d. **Confirm** that the appropriate ZWOs have been closed.

- e. **Confirm** that the appropriate Administrative Hold Conditions and ZWO numbers have been removed from the Unit 2 Unit Supervisor Turnover Sheet.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By / Date  
Shift Supervision

7.11.15 **Confirm** the following:

- a. All testing listed in Attachment K has been successfully completed **OR** Test Exception Reports have been written.
- b. All EPU Test Results Summaries for completed Startup Tests listed in Attachment K have been reviewed by the Shift Test Coordinator or EPU Test Program Director **OR** Test Exception Reports have been written.
- c. All Test Exception Reports have been dispositioned.

- 7.11.16 **Prepare** a Test Plateau Review Record, Attachment O, to the extent practical for submittal to the TRC, PORC and VP-Nuclear Operations for review and approval.

8. RESTORATION

- 8.1 **Prepare** a Final Test Program Review Record, Attachment Q, to the extent practical for submittal to the TRC, PORC and VP-Nuclear Operations for review and approval.
- 8.2 **Verify** that the Final Test Program Review has been approved.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By / Date  
EPU Test Program Director

9. ACCEPTANCE CRITERIA

There are no specific Acceptance Criteria associated with this test.

10. REVIEW

- 10.1 *Review of this procedure is complete.*

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By / Date

11. RECORDS

11.1 **Transmit** completed TP to DCS.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date

Attachment A  
TP-299-010  
Revision 0  
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TEST CONTROL DOCUMENTATION

Procedure No. TP-299-010

Page \_\_\_\_ of \_\_\_\_

EPU TEST 42  
REQUIRED SURVEILLANCES

Attachment B  
TP-299-010  
Revision 0.  
Page 37 of 61

**Confirm** that the following procedures have been successfully completed:

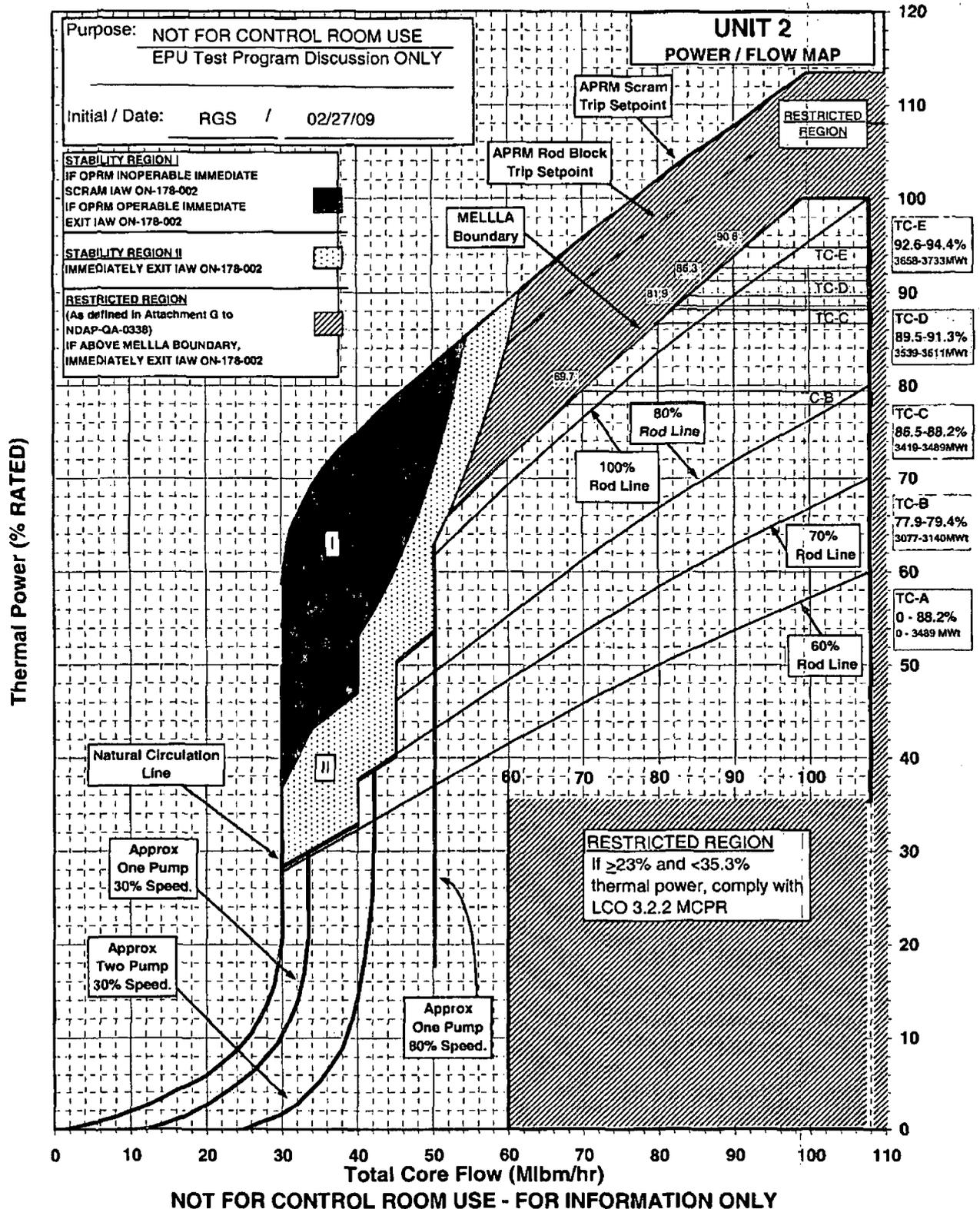
- \_\_\_ SI-283-304
- \_\_\_ SI-283-305
- \_\_\_ SI-283-306
- \_\_\_ SI-283-307

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date

## Test Condition A Review Summary

TP-299-010 Subtest Number	Additional Plant Conditions Requirements	Procedure Number	Description	Test Completed	Results Summary Reviewed	All TERs Dispositioned
3	Mode 5	RE-081-036	Core Fuel Pool Verification			
5.1	Mode 5 or Mode 4	TP-055-001	CRD Stroke Time			
12B	Mode 5 or Mode 4	TP-299-010 Attachment L	RBM Calibration			
42	Mode 5 or Mode 4	TP-299-010 Attachment B	I&C Surveillances			
10.1	Mode 5 or Mode 4	TP-299-010 Attachment T	IRM Surveillances			
5.2	Mode 4 AND/OR ≤ 1580 MWt (40%)	SR-255-004	Scram Time Measurements of Control Rods			
4	Mode 2	SR-200-008	In Sequence Critical and Shutdown Margin Demo.			
22.1	~ Every 120 MWt (3%) following gen sync up to 60%	TP-299-010 Attachment V Section I	Pressure Regulator Data Collection			
22.2	~2490 MWt (63%)	TP-299-010 Attachment V Section II	Pressure Regulator Testing and Data Collection			
100.SSW	~2569 MWt (65%)	TP-262-033	Steam Dryer Steady State Vibration Data and Plant Walkdown			
11	3039 MWt (76.9%) +/- 7MWt	SR-278-012	LPRM Calibration			
12A.2	3039 MWt (76.9%) +/- 7MWt After LPRM Cal	TP-299-010 Attachment M	APRM Calibration			
10.2	When switching from Mode 1 to Mode 2	GO-200-004	IRM/APRM Overlap			

EPU Test Condition Definitions



## Test Condition B Review Summary

TP-299-010 Subtest Number	Additional Plant Conditions Requirements	Procedure Number	Description	Test Completed	Results Summary Reviewed	All TERs Dispositioned
101		TP-200-013	Baseline Data Collection & Extrapolation			
12A.2		TP-299-010 Attachment M	APRM Calibration			
19		TP-299-010 Attachment N	Core Thermal Limits			
22.2		TP-299-010 Attachment V Section II	Pressure Regulator Testing and Data Collection			
23		TP-245-029	Feedwater Level Setpoint Changes			
24		TP-299-010 Attachment W TP-293-041	Turbine Valve Surveillance			

## Test Condition C Review Summary

TP-299-010 Subtest Number	Additional Plant Conditions Requirements	Procedure Number	Description	Test Completed	Results Summary Reviewed	All TERs Dispositioned
100.SS	3293 MWt (83.3%)	TP-262-033	Steam Dryer Steady State Vibration Data			
100.SSW	3489 MWt (88.2%)	TP-262-033	Steam Dryer Steady State Vibration Data and Plant Walkdown			
101		TP-200-013	Baseline Data Collection & Extrapolation			
11		SR-278-012	LPRM Calibration			
12A.2	3489 MWt (88.2%)	TP-299-010 Attachment M	APRM Calibration			
19		TP-299-010 Attachment N	Core Thermal Limits			
1A		TP-299-010 Attachment S	Chemical and Radiochemical			
1B		TP-299-010 Attachment G	Moisture Carryover			
2		TP-299-010 Attachment U	Radiation Measurements			
22.2		TP-299-010 Attachment V TP-293-041	Pressure Regulator Testing and Data Collection			
23		TP-045-001	Feedwater Level Setpoint Changes			
24		TP-299-010 Attachment W TP-293-041	Turbine Valve Surveillance			
32		SO-200-007 Attachment A Item 9	Drywell Cooling			

MOISTURE CARRYOVER SUPPORT DATA

**ST 1B Moisture Carryover Testing**

Test Condition \_\_\_\_\_ Core Flow \_\_\_\_\_

Completion of the following steps satisfies the requirement of ST 1B:

- \_\_\_ 1. **Instruct** Chemistry to perform CH-SY-026 "Moisture Carry Over."
- \_\_\_ 2. **Attach** copy of Core Performance Verification Printouts created during performance of ST-19 at same power/flow conditions.
- \_\_\_ 3. **Record** plant data listed in table below using specified PICSY points.
- \_\_\_ 4. **Inform** Shift Test Coordinator when sample has been collected.
- \_\_\_ 5. **Record** Main Steam Line moisture content: \_\_\_\_\_
- \_\_\_ 6. **Verify** Main Steam Line moisture content is not in excess of 0.1 wt% (Level 2 Acceptance Criterion)

\_\_\_\_\_/\_\_\_\_\_  
 Verified By / Date

Parameter	PICSY Point	Value
Reactor Water Level	NFL01	
	NFL02	
	NFL03	
MSL Flow	NFF01	
	NFF02	
	NFF03	
	NFF04	
Total Feedwater flow (Mlb/hr) 10 minute average	FPA10	
CRD flow (Mlb/hr)	NEF52	
Reactor Power	NBA01	

Unit 2 Station Verification of Activities for Power Ascension.

All action items required for power ascension above the current maximum power level of \_\_\_\_\_ MWt for which my group is responsible have been completed.

\_\_\_\_\_/\_\_\_\_\_  
Manager – Nuclear Operations

\_\_\_\_\_/\_\_\_\_\_  
Manager – Nuclear Maintenance

\_\_\_\_\_/\_\_\_\_\_  
Supervisor – Reactor Engineering

\_\_\_\_\_/\_\_\_\_\_  
Supervisor – Health Physics

\_\_\_\_\_/\_\_\_\_\_  
Supervisor – Chemistry

\_\_\_\_\_/\_\_\_\_\_  
Manager – Nuclear Systems  
Engineering

\_\_\_\_\_/\_\_\_\_\_  
Manager – Special Projects

## Test Condition D Review Summary

TP-299-010 Subtest Number	Additional Plant Conditions Requirements	Procedure Number	Description	Test Completed	Results Summary Reviewed	All TERs Dispositioned
100.PA	Initial ascension to 3611 MWt (91.3%)	TP-262-033	Steam Dryer Vibe Monitoring During Ascension			
100.SSW	3611 MWt (91.3%)	TP-262-033	Steam Dryer Steady State Vibration Data and Plant Walkdown			
101		TP-200-013	Baseline Data Collection & Extrapolation			
12A.2		TP-299-010 Attachment M	APRM Calibration			
19		TP-299-010 Attachment N	Core Thermal Limits			
22.2		TP-299-010 Attachment V Section II	Pressure Regulator Testing and Data Collection			
23		TP-245-029	Feedwater Level Setpoint Changes			
24		TP-299-010 Attachment W TP-293-041	Turbine Valve Surveillance			
1B		TP-299-010 Attachment G	Moisture Carryover			

Attachment J  
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### EPU Test Program Power Ramp Data

<b>Date</b>						
<b>SICT/E Control In Effect</b>						
<b>Testing Personnel Ready</b>						
<b>Prior to Ramp - MWt</b>						
<b>Prior to Ramp - Gross MWe</b>						
<b>Prior to Ramp - MVAR</b>						
<b>Notified Shift Supervision</b>						
<b>Time at Start of Ramp</b>						
<b>Time at End of Ramp</b>						
<b>Post Ramp - MWt</b>						
<b>Post Ramp - Gross MWe</b>						
<b>Post Ramp - MVAR</b>						
<b>Earliest Time For Next Ramp</b>						

Sheet \_\_\_ of \_\_\_

# Test Condition E Review Summary

TP-299-010	Additional Plant	Procedure	Description	Test Completed	Results Summary Reviewed	All TERs Dispositioned
Subtest Number	Conditions Requirements	Number				
100.PA	Initial ascension to 3733 MWt (94.4%)	TP-262-033	Steam Dryer Vibe Monitoring During Ascension			
100.SSW	3733 MWt (94.4%)	TP-262-033	Steam Dryer Steady State Vibration Data and Plant Walkdown			
100.SS	92 Mib/hr Core Flow	TP-262-033	Steam Dryer Steady Stable Vibration Data			
100.SS	108 Mib/hr Core Flow	TP-262-033	Steam Dryer Steady Stable Vibration Data			
101			Baseline Data Collection & Extrapolation			
103		TP-244-042	Condensate Pump Trip			
11		SR-278-012	LPRM Calibration			
12A.2	3733 MWt (94.4%)	TP-299-010 Attachment M	APRM Calibration			
12A.3		SE-278-001(2)(3)(4)	APRM 1(2)(3)(4) Drive Flow Calibration			
19		TP-299-010 Attachment N	Core Thermal Limits			
1A		TP-299-010 Attachment S	Chemical and Radiochemical			
1B	92 Mib/Hr	TP-299-010 Attachment G	Moisture Carryover			
1B	108 Mib/Hr	TP-299-010 Attachment G	Moisture Carryover			
2		TP-299-010 Attachment U	Radiation Measurements			

## Test Condition E Review Summary

TP-299-010	Additional Plant	Procedure	Description	Test Completed	Results Summary Reviewed	All TERs Dispositioned
Subtest Number	Conditions Requirements	Number				
22.3	- Every 120 MWt (3%)	TP-299-010 Attachment V Section III	Pressure Regulator Testing and Data Collection			
32		SO-200-007 Attachment A Item 9	Drywell Cooling			
35	3733 MWt (94.4%) 100 Mlb/Hr	TP-264-032	Core Flow Calibration			
18		RE-0TP-201	TIP Uncertainty			
29.2		SI-264-305	Recirc M-G Set Positioners High Speed Stops			
36		TP-299-011	EPU Temperature Data Collection for Service Water			
49		SI-279-360	MSL Rad Monitor Adjustment			

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**ST 12B RBM TESTING**

**Completion** of the following steps satisfies the requirement for ST 12B testing:

1. **Level 1 Acceptance Criterion a, test 12B. Confirm** that the RBM setpoints reflect the appropriate EPU settings.
2. **Level 1 Acceptance Criterion b, test 12B. Confirm** that the RBM setpoints enable at the proper power levels for EPU settings.

\_\_\_\_\_  
Confirmed By  
Station Engineering

\_\_\_\_\_  
Date

ST 12A APRM TESTING

**Completion** of the following steps satisfies the requirement for ST 12A testing:

- \_\_\_ 1. **Perform SO-278-004.**
- \_\_\_ 2. **Level 1 Acceptance Criterion a, test 12A. Confirm** that the APRM system is calibrated consistent with Technical Specifications.
- \_\_\_ 3. **Level 1 Acceptance Criterion b, test 12A. Confirm** that Technical Specifications on APRM scram and rod block setpoints are not being exceeded.

\_\_\_\_\_  
Confirmed By  
Station Engineering

\_\_\_\_\_  
Date

ST-19 CORE PERFORMANCE

Enter Test Condition \_\_\_\_\_

Completion of the following steps satisfies the requirements for MELLLA ST 19.

- \_\_\_ 1. **Obtain and Attach** copy of SO-200-007, Attachment A, Item 11.
- \_\_\_ 2. **Level 1 Acceptance Criterion a, test 19. Confirm** that core thermal limits CMPRAT, CMFLCPR and CMFDLRX are less than 1.0. Refer to SO-200-007 item 11.
- \_\_\_ 3. **Level 1 Acceptance Criterion b, test 19. Confirm** that steady state reactor power is limited to the maximum value of the lesser of either 3952 MWt or the MELLLA Boundary as depicted on the Power / Flow map.
- \_\_\_ 4. **Level 1 Acceptance Criterion c, test 19. Confirm** that core flow does not exceed its maximum and minimum values as depicted on the Power / Flow map.
- \_\_\_ 5. **Obtain and Attach** Core Performance Verification printouts from Reactor Engineering.

\_\_\_\_\_  
Confirmed By  
Station Engineering

\_\_\_\_\_  
Date

TEST PLATEAU REVIEW RECORD

1. **Identify** current Test Plateau: \_\_\_\_\_
2. **List** all tests scheduled for this current Test Plateau which were not completed to the extent required and the related Test Exception Reports.
3. **List** all tests completed during the current Test Plateau for which EPU Test Results Summaries have not been reviewed and the related Test Exception Reports.
4. **List** all Test Exception Reports which remain open.

**SUMMARY:** All testing scheduled for the current Test Plateau has been successfully completed to the extent required, including related analysis, and EPU Test Results Summaries have been reviewed with the exception of the open items listed above. All Test Exception Reports have been resolved. The open items list can be carried without impacting the safe operation of the plant.

Test Plateau Review completed and recommended for approval:

\_\_\_\_\_/\_\_\_\_\_  
EPU Test Program Director      Date

TRC Meeting: \_\_\_\_\_ / \_\_\_\_\_

PORC Meeting: \_\_\_\_\_ / \_\_\_\_\_

Test Plateau Review Approved:

\_\_\_\_\_/\_\_\_\_\_  
VP – Nuclear Operations      Date

Attachment P  
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Deleted

**NOTE:** This attachment is not used for U2-14RIO but is being left in the TP to minimize risks associated with deleting an attachment from a procedure with many attachments.

### FINAL TEST PROGRAM REVIEW RECORD

1. List all tests scheduled for the EPU Test Program which were not completed to the extent required and the related Test Exception Reports.
2. List all tests completed during the EPU Test Program for which EPU Test Results Summaries have not been reviewed and the related Test Exception Reports.
3. List all Test Exception Reports which remain open.

**SUMMARY:** All testing scheduled for the EPU Test Program has been successfully completed to the extent required, including related analysis, and EPU Test Results Summaries have been reviewed with the exception of the open items listed above. All Test Exception Reports have been resolved. The open items list can be carried without impacting the safe operation of the plant.

Test Plateau Review completed and recommended for approval:

\_\_\_\_\_/\_\_\_\_\_  
EPU Test Program Director      Date

TRC Meeting: \_\_\_\_\_ / \_\_\_\_\_

PORC Meeting: \_\_\_\_\_ / \_\_\_\_\_

Test Plateau Review Approved:

\_\_\_\_\_/\_\_\_\_\_  
VP – Nuclear Operations      Date

**TP-299-010 SUBTEST NUMBERS**

<b>M-1563 Number</b>	<b>TP-299-010 Subtest Number</b>	<b>Description or Title</b>	<b>Implementing Procedure Number</b>
1	1A	Chemical and Radiochemical	TP-299-010 Attachment S
1	1B	Moisture Carryover	TP-299-010 Attachment G
2	2	Radiological Survey Program in Support of the Unit 2 EPU Modification	HP-TP-522
3	3	Core Fuel Pool Verification	RE-081-036
4	4	In Sequence Critical and Shutdown Margin Demo.	SR-200-008
5	5.1	CRD Stroke Time	TP-055-001
5	5.2	Scram Time Measurements of Control Rods	SR-255-004
10	10	IRM/APRM Overlap	GO-200-004
11	11	LPRM Calibration	SR-278-012
12	12A.1	Validation of Core Thermal Power Heat Balance	RE-2TP-026
12	12A.2	APRM Calibration	TP-299-010 Attachment P
12	12A.3	APRM 1(2)(3)(4) Drive Flow Calibration	SE-278-001 (2)(3)(4)
12	12B	RBM Calibration	TP-299-010 Attachment L
18	18	TIP Uncertainty	RE-0TP-201
19	19	Core Thermal Limits	TP-299-010 Attachment N
22	22.1	Pressure Regulator Incremental Regulation	TP-293-041
22	22.2	Scram Bypass Setpoint Verification	TP-293-041

<i>M-1563 Number</i>	<i>TP-299-010 Subtest Number</i>	<i>Description or Title</i>	<i>Implementing Procedure Number</i>
22	22.3	Pressure Regulator Step Changes and Ctrl Failures	TP-293-041
22	22.4	SLRC Eval and Incremental Regulation Evaluation	TP-293-041
23	23	Feedwater Master Water Level Controller Tuneup	TP-245-029
24	24	Turbine Valve Surveillance	TP-293-041
29	29.2	Recirc MG Set Positioners High Speed Stops	SI-264-305
32	32	Drywell Cooling	SO-200-007 Attachment A Item 9
33	NA	(Combined into ST 100)	
35	35	Core Flow Calibration	TP-264-032
36	36	EPU Temperature Data Collection for Service Water	TP-299-011
37	37	Gaseous Radwaste Systems (Combined with ST 1A)	TP-299-010 Attachment S
42	42	I&C Surveillances	TP-299-010 Attachment B
49	49	MSL Rad Monitor Adjustment	SI-279-360
100	100.1	Steam Dryer Steady State Vibration Data	TP-262-033
100	100.3	Steam Dryer Vibe Monitoring During Ascension	TP-262-033
100	100.4	Plant Walkdown	TP-262-033
101	101	Baseline Data Collection & Extrapolation	TP-200-013
103	103	Condensate Pump Trip	TP-244-042



ST-10 IRM PERFORMANCE

**Mode 4 or Mode 5 Testing: Completion** of the following steps satisfies ST 10 requirements that must be met prior to entering Mode 2.

- \_\_\_ 1. **Confirm** that 184DAY IRM CALIB CHANNEL A SI-278-301A is current (NIMS Activity #Z0852-01).
- \_\_\_ 2. **Confirm** that 184DAY IRM CALIB CHANNEL B SI-278-301B is current (NIMS Activity #Z0851-01).
- \_\_\_ 3. **Confirm** that 184DAY IRM CALIB CHANNEL C SI-278-301C is current (NIMS Activity #Z0850-01).
- \_\_\_ 4. **Confirm** that 184DAY IRM CALIB CHANNEL D SI-278-301D is current (NIMS Activity #Z0849-01).
- \_\_\_ 5. **Confirm** that 184DAY IRM CALIB CHANNEL E SI-278-301E is current (NIMS Activity #Z0848-01).
- \_\_\_ 6. **Confirm** that 184DAY IRM CALIB CHANNEL F SI-278-301F is current (NIMS Activity #Z0847-01).
- \_\_\_ 7. **Confirm** that 184DAY IRM CALIB CHANNEL G SI-278-301G is current (NIMS Activity #Z0846-01).
- \_\_\_ 8. **Confirm** that 184DAY IRM CALIB CHANNEL H SI-278-301H is current (NIMS Activity #Z0845-01)

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date

### ST-2 RADIATION MEASUREMENTS

Enter Test Condition \_\_\_\_\_

Completion of the following steps satisfies the requirements for ST 2.

- \_\_\_ 1. **Confirm** completion of HP-TP-522.
- \_\_\_ 2. **Confirm** that the following Level 1 Acceptance Criterion is satisfied: The radiation doses of plant origin and the occupancy times of personnel in radiation zones shall be controlled consistent with the guidelines of The Standard for Protection Against Radiation as outlined in 10CFR20.
- \_\_\_ 3. **Confirm** that the following Level 2 Acceptance Criterion is satisfied: The radiation doses of plant origin shall meet the following limits depending upon the Radiation Zone in which the radiation measurement point is located:

FSAR Radiation Zone	Limit (FSAR Table 12.3-1)
I	< 0.5 mRem/hr
II	≤ 2.5 mRem/hr
III	≤ 15 mRem/hr
IV	< 100 mRem/hr

Note: All areas designated Radiation Zone V have potential radiation doses of 100 mRem/hr. Readings taken in Zone V during the EPU Test Program may be less than 100 mRem/hr; however, since Zone V is defined in terms of potential levels, there are no Acceptance Criteria for Zone V survey points.

\_\_\_\_\_/\_\_\_\_\_  
Verified By / Date



- \_\_\_ 7. **Confirm** peak neutron flux remained below scram setting by at least 7.5% as required by Level 2 Acceptance Criterion.
- \_\_\_ 8. **Confirm** peak vessel pressure remained below scram setting by at least 10 psi as required by Level 2 Acceptance Criterion.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date

**SECTION III:**

**In Test Condition E**, Perform the following steps. N/A this section for Test Conditions A through D.

- \_\_\_ 1. **Confirm** Incremental Regulation data, Control Valve position data, and Main Steam Line harmonic data was collected as required.
- \_\_\_ 2. **Confirm** the variation in incremental regulation (ratio of the maximum to the minimum value of the quantity, "incremental change in pressure control signal/incremental change in steam flow," for each flow range) meets the following Level 2 Acceptance Criteria:

% of Valves Wide Open Steam Flow	Variation
0 to 85%	4:1
85% to 97%	2:1
85% to 99%	5:1

- \_\_\_ 3. **Confirm** actual Control Valve position is within +1% to -3% of predicted values as required by Level 2 Acceptance Criterion.
- \_\_\_ 4. **Confirm** that the 3<sup>rd</sup> harmonic steam line frequency does not exist with significant amplitude that would require tuning of the second SLRC card.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date

ST-24 TURBINE VALVE SURVEILLANCE

Enter Test Condition \_\_\_\_\_

**Completion** of the following steps satisfies the requirements for ST 24.

- \_\_\_ 1. **Confirm** reactor did not SCRAM because of the test as required by Level 2 Acceptance Criterion.
- \_\_\_ 2. **Confirm** peak neutron flux remained below scram trip setting by at least 7.5% as required by Level 2 Acceptance Criterion.
- \_\_\_ 3. **Confirm** peak vessel pressure remained below scram setting by at least 10 psi as required by Level 2 Acceptance Criterion.
- \_\_\_ 4. **Confirm** peak heat flux remained below scram trip setting by at least 5.0% as required by Level 2 Acceptance Criterion.
- \_\_\_ 5. **Confirm** reactor did not isolate because of the test as required by Level 2 Acceptance Criterion.
- \_\_\_ 6. **Confirm** peak steam flow in each line remained below the high flow isolation setting by at least 10% as required by Level 2 Acceptance Criterion.
- \_\_\_ 7. **Confirm** peak vessel pressure remained above the steam line low pressure isolation setting by at least 25 psi as required by Level 2 Acceptance Criterion.

\_\_\_\_\_/\_\_\_\_\_  
Confirmed By                      Date

PROCEDURE COVER SHEET

<b>PPL SUSQUEHANNA, LLC PROCEDURE</b>	
<p style="text-align: center; font-weight: bold;">STEAM DRYER AND FLOW INDUCED VIBRATION TESTING</p>   <p>ADHERENCE LEVEL: STEP-BY-STEP</p>	<p>TP-262-033 Revision 1 Page 1 of 22</p>
<p><u>QUALITY CLASSIFICATION:</u> ( ) QA Program    (X) Non-QA Program</p>	<p><u>APPROVAL CLASSIFICATION:</u> (X) Plant            ( ) Non-Plant ( ) Instruction</p>
<p>EFFECTIVE DATE: <u>4/20/2009</u></p> <p>PERIODIC REVIEW FREQUENCY: <u>N/A</u></p> <p>PERIODIC REVIEW DUE DATE: <u>N/A</u></p>	
<p><u>RECOMMENDED REVIEWS:</u> SE, OPs, EPU Design Eng, GE</p>	
<p>Procedure Owner: <u>Jay Searfoss</u></p> <p>Responsible Supervisor: <u>SE Supervisor-Mechanical</u></p> <p>Responsible FUM: <u>Manager-Station Engineering</u></p> <p>Responsible Approver: <u>Manager-Station Engineering</u></p>	

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ATTACHMENTS

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1. PURPOSE

This TP collects and analyzes main steam line vibration and other vibration related data to ensure the new steam dryer is able to function within its design parameters at the new Extended Power Uprate (EPU) conditions. In addition, the piping that supplies make-up water to the Rx vessel and systems associated with the piping that carries the steam from the Rx vessel will also be analyzed to ensure EPU is not causing flow induced vibration to exceed the design limits of the piping installations.

The data collected on the Main Steam Lines and Feedwater systems will be compared to pre-established limits. The data collected from the Main Steam Lines (MSL) strain gages will also be compared to analytical limits, which will be used to confirm the Unit 2 non-instrumented steam dryer structural integrity.

2. DISCUSSION

Extended Power Uprate (EPU) is increasing the overall output of the Unit 2 Reactor by approximately 7% power. After attaining 3489 MWt power (original 100% power), output will be increased in increments of approximately 3.5% power to the new 94.4% power (3733 MWt). A new Rx vessel steam dryer has been installed to accommodate the increased steam flows and resultant increases in dryer loading. The Unit 2 power ascension program will ensure that the new steam dryer, existing associated water make-up systems to the Rx vessel and associated steam systems will function within their design limits during EPU. Data will be collected at specific power ascension test points and the data will be analyzed to ensure Unit 2 systems and components are functioning within their design parameters. When directed by other procedures, this TP will collect the data specified for the Test Point, and analyze the collected data. Strain gages, accelerometers, installed plant instrumentation and visual inspections will be employed to ensure the Unit 2 Systems and components are operating within their design limits. The level and amount of data collection will vary with each test point. This TP will identify the data that is to be collected at each of the required test points (See Attachment A). Other procedures will be used to set the required plant conditions. This TP only collects and analyzes data and does not manipulate or alter the status of any plant components. TP-299-010 will establish plant conditions and direct the implementation of this TP at the specified test conditions. Once a test condition has been established, then this TP will collect and analyze the data required for the specified test point.

Steam Dryer Instrumentation is not installed on the Unit 2 steam dryer. Data collected from the Unit 1 main steam lines strain gages was used as a bench mark to develop/validate the Main Steam Line (MSL) Limit Curves that will be used to confirm the structural integrity of the Unit 2 Rx vessel steam dryer. Unit 2 MSL strain gage data will be collected at specified power levels and used to confirm the steam dryer structural integrity against the MSL Limit Curves.

The Recirculation/RHR strain gages are included for data collection purposes only; since the piping is negligibly affected by EPU, these data reviews and analyses are not part of this procedure.

3. REFERENCES

- 3.1 EC-PUPC-2070, Rev 0, EPU Flow Induced Vibration Testing and Walkdown Criteria
- 3.2 EC-PUPC-2097, Rev. 0, Unit 2 Main Steam Line Strain Gauge Limit Curves
- 3.3 TP-299-010, EPU Master Test Procedure Special, Infrequent or Complex Test/Evolution (SIC/TE)
- 3.4 USNRC Letter, R.V. Guzman (NRC) to B.T. McKinney (PPL), "Susquehanna Steam Electric Station, Units 1 and 2 Issuance of Amendment Regarding the 13-Percent Extended Power Uprate (TAC Nos. MO-3309 and MO-3310)," dated January 12, 2008.
- 3.5 EWR 1052304 Unit 2 MSL Strain Gage Replacement
- 3.6 EC 770967, EPU-Steam Dryer Upgrade-Unit 2
- 3.7 EC 690276, EPU Phase Implementation
- 3.8 OI-TA-008, Rev. 12, Shift Technical Advisor Responsibilities

4. TEST EQUIPMENT

None

5. PRECAUTIONS

- 5.1 Provide notification to personnel involved in data collection and/or data analysis sufficiently ahead of scheduled testing to ensure personnel availability. Refer to Attachment B for a listing of personnel requirements for each type of data collection.
- 5.2 At each Test Point, a clean copy of this TP will be used to collect data and to direct the analysis/review of this data.
- 5.3 TP-299-010 Test Director and Shift Manager shall be notified immediately if Level 1 Criteria is exceeded; exceeding Level 1 criteria will require the Rx power and/or flow to be lowered to a level where Level 1 Acceptance Criteria is not being exceeded.

6. PREREQUISITES

- 6.1 **Identify** the test point that data will be taken and which parts of Section 7.0 will be performed (Refer to Attachment A).

Test Point: \_\_\_\_\_

Procedure sections to be performed: \_\_\_\_\_

Sample sets (# of and duration) Two (2) Sample Sets @ Three (3) Minute duration

\_\_\_\_\_  
Confirmed By

- 6.2 **Notify** those individuals required to support data collection and analysis at the specified Test Point. (Refer Attachment A for data collection types required at the specified Test Point and Attachment B for the personnel required for each type of data collection).

\_\_\_\_\_  
Confirmed By

- 6.3 **Confirm** a briefing has been completed for the performance of this TP.

\_\_\_\_\_  
Confirmed By

- 6.4 **Confirm** the following data collection systems are available to collect data in support of this TP:

- 6.4.1 PPL VDAS is functional

- 6.4.2 PPL VXI is functional

\_\_\_\_\_  
Confirmed By

- 6.5 Shift Supervision concurs with the start of this TP.

\_\_\_\_\_  
Shift Supervision

- 6.6 Test Personnel are on station to perform data collections per those sections of 7.0 specified in Step 6.1.

\_\_\_\_\_  
Confirmed By

7. PROCEDURE

NOTE (1): Data Collection types specified for each Test Point shall be worked in parallel.

NOTE (2): Data Collection type shall be repeated to obtain the required number of data sets specified in Step 6.1 and/or to obtain a Data Set adequate for analysis.

7.1 MSL Strain Gages (SGs)

- 7.1.1 **Collect** MSL SGs data set(s), using the VXI equipment, for specified time frame.

\_\_\_\_\_  
Confirmed By

- 7.1.2 **Confirm** data set is acceptable for submitting to EPU Engineering for analysis.

\_\_\_\_\_  
Confirmed By

- 7.1.3 EPU Engineering to **Analyze** and **Compare** data to the criteria defined in EC-PUPC-2097.

\_\_\_\_\_  
Confirmed By

- 7.1.4 **Incorporate** the data set(s) into Test Point Report.

\_\_\_\_\_  
Confirmed By

- 7.2 MSL Accelerometer Data Acquisition/Analysis (Line B & C)
  - 7.2.1 **Collect** MSL Accelerometer data set(s), using the VDAS equipment, for specified time frame.  

---

Confirmed By
  - 7.2.2 **Confirm** data set is acceptable for submitting to EPU Engineering for Analysis.  

---

Confirmed By
  - 7.2.3 EPU Engineering to **Analyze** and **Trend** data set(s) against criteria provided in Attachment C.  

---

Confirmed By
  - 7.2.4 **Submit** analyzed data set(s) for incorporation into Test Point Report.  

---

Confirmed By
- 7.3 Feedwater Loop A Accelerometer Data Acquisition/Analysis
  - 7.3.1 **Collect** FW Loop 'A' Accelerometer data set(s), using the VDAS equipment, for specified time frame.  

---

Confirmed By
  - 7.3.2 **Confirm** data set is acceptable for submitting to EPU Engineering for analysis.  

---

Confirmed By
  - 7.3.3 EPU Engineering to **Analyze** and **Trend** data set(s) against criteria provided in Attachment C.  

---

Confirmed By

- 7.3.4 **Submit** analyzed data set(s) for incorporation into Test Point Report.

\_\_\_\_\_  
Confirmed By

7.4 Recirculation/RHR Strain Gage Data Acquisition

- 7.4.1 **Collect** Recirculation/RHR strain gage data set(s), using the VXI equipment, for specified time frame.

\_\_\_\_\_  
Confirmed By

- 7.4.2 **Confirm** data set is acceptable for submitting to EPU Engineering.

\_\_\_\_\_  
Confirmed By

7.5 Recirculation Loop A & B Accelerometer Data Acquisition/Analysis

- 7.5.1 **Collect** Recirculation Loop A & B Accelerometer data set(s), using the VDAS equipment, for specified time frame.

\_\_\_\_\_  
Confirmed By

- 7.5.2 **Confirm** data set is acceptable for submitting to EPU Engineering for Analysis.

\_\_\_\_\_  
Confirmed By

- 7.5.3 EPU Engineering to **Analyze** data set(s) against criteria provided in Attachment C.

\_\_\_\_\_  
Confirmed By

- 7.5.4 **Submit** analyzed data set(s) for incorporation into Test Point Report.

\_\_\_\_\_  
Confirmed By

7.6 RHR Valve HV251F015A(B) and HV251F017A(B) Accelerometer Data Acquisition/Analysis

- 7.6.1 **Collect** RHR valves HV251F015A(B) and HV251F017A(B) accelerometer data set(s), using the VDAS equipment, for specified time frame.

\_\_\_\_\_  
Confirmed By

- 7.6.2 **Confirm** data set is acceptable for submitting to EPU Engineering for analysis.

\_\_\_\_\_  
Confirmed By

- 7.6.3 EPU Engineering to **Analyze** data set(s) against criteria provided in Attachment E.

\_\_\_\_\_  
Confirmed By

- 7.6.4 **Submit** analyzed data set(s) for incorporation into Test Point Report.

\_\_\_\_\_  
Confirmed By

7.7 Locally Monitored Acceleration Data Acquisition

- 7.7.1 **Collect** locally monitored acceleration data set(s), using the hand held equipment, for specified time frame.

\_\_\_\_\_  
Confirmed By

- 7.7.2 **Confirm** data set is acceptable for submitting to EPU Engineering for analysis.

\_\_\_\_\_  
Confirmed By

- 7.7.3 EPU Engineering to **Analyze** data set(s) against criteria provided in Attachment D.

\_\_\_\_\_  
Confirmed By

- 7.7.4 **Submit** analyzed data set(s) for incorporation into Test Point Report.

\_\_\_\_\_  
Confirmed By

7.8 Accessible Area Walkdowns

<b>NOTE:</b> Not all walkdowns identified in Part C, Table 1, of EC-PUPC-2070 must be performed each time.
--

- 7.8.1 **Perform** walkdowns of areas specified in Part C, Table 1, of EC-PUPC-2070.

\_\_\_\_\_  
Confirmed By

- 7.8.2 **Evaluate** walkdown results against criteria provide in Part C of EC-PUPC-2070.

\_\_\_\_\_  
Confirmed By

- 7.8.3 **Confirm** the specified area walkdowns are complete and results have been submitted for Test Point Report.

\_\_\_\_\_  
Confirmed By

7.9 In-Accessible Area Walkdown

**NOTE:** Not all walkdowns identified in Part D, Table 1, of EC-PUPC-2070 must be performed each time.

- 7.9.1 **Perform** walkdown of areas specified in Part D, Table 1, of EC-PUPC-2070 for this Test Point.

\_\_\_\_\_  
Confirmed By

- 7.9.2 **Evaluate** walkdown results against criteria provide in Part D of EC-PUPC- 2070.

\_\_\_\_\_  
Confirmed By

- 7.9.3 **Confirm** the specified area walkdowns are complete and results have been submitted for Test Point Report.

\_\_\_\_\_  
Confirmed By

7.10 Pi Data Sheet Acquisition

- 7.10.1 **Determine** start and finish times for the data set(s).

\_\_\_\_\_  
Confirmed By

- 7.10.2 **Enter** the start and finish times into Pi and **Obtain** print out containing data as specified in Attachment F for each time. (Do Not Fill Out Attachment F)

\_\_\_\_\_  
Confirmed By

- 7.10.3 **Submit** the Pi Data Sheet to EPU Engineering for analysis.

\_\_\_\_\_  
Confirmed By

- 7.10.4 **Submit** analyzed Pi Data Sheet for incorporation into Test Point Report.

\_\_\_\_\_  
Confirmed By

7.11 OI-TA-008 Data Acquisition

- 7.11.1 **Collect** data set in accordance with Attachment F of OI-TA-008 for the time frame(s) specified.

\_\_\_\_\_  
Confirmed By

- 7.11.2 EPU Engineering to review the OI-TA-008 data for abnormal instrument readings.

\_\_\_\_\_  
Confirmed By

- 7.11.3 **Submit** OI-TA-008 data for incorporation into Test Point Report.

\_\_\_\_\_  
Confirmed By

8. RESTORATION

None

9. ACCEPTANCE CRITERIA

NOTE (1): Acceptance Criteria shall be N/A'd if data collection type is not applicable for the specified Test Point identified in Step 6.1.

NOTE (2): Meeting of Level 2 Acceptance Criteria, by default, causes Level 1 Acceptance Criteria to be met.

- 9.1 MSL SGs data has been analyzed and has been benchmarked against the MSL Limit Curves for this Test Point and data meets the Level 1 and Level 2 Acceptance Criteria specified in EC-PUPC-2097.

\_\_\_\_\_  
Confirmed By

EC-PUPC-2097 may be required to be revised to establish MSL Limit Curves based on data collected at the power levels specified in Attachment A.

- 9.2 MSL B & C accelerations meet the Level 1 and Level 2 Acceptance Criteria specified in Attachment C for this Test Point.

Level 1 Met \_\_\_\_\_ (Yes/No)      Level 2 Met \_\_\_\_\_ (Yes/No)

\_\_\_\_\_  
Confirmed By

- 9.3 FW Loop A accelerations meet the Level 1 and Level 2 Acceptance Criteria specified in Attachment C for this Test Point.

Level 1 Met \_\_\_\_\_ (Yes/No)      Level 2 Met \_\_\_\_\_ (Yes/No)

\_\_\_\_\_  
Confirmed By

- 9.4 Recirculation Loop A & B accelerations meet the Level 2 Acceptance Criteria specified in Attachment C for this Test Point.

Level 2 Met \_\_\_\_\_ (Yes/No)

\_\_\_\_\_  
Confirmed By

- 9.5 RHR Valves HV251F015A(B) and HV251F017A(B) accelerations meet the Screening Criteria specified in Attachment E for this Test Point.

Screening criteria met. \_\_\_\_\_ (Yes/No)

\_\_\_\_\_  
Confirmed By

- 9.6 Locally monitored acceleration data meet the Level 2 Acceptance Criteria specified in Attachment D for this Test Point.

Level 2 Met \_\_\_\_\_ (Yes/No)

\_\_\_\_\_  
Confirmed By

- 9.7 Walkdown of Accessible Areas specified in Part C, Table 1.0 of EC-PUPC-2070 are acceptable per the requirements specified in Part C of EC-PUPC-2070 for this Test Point.

\_\_\_\_\_  
Confirmed By

- 9.8 Walkdown of the In-Accessible Areas specified in Part D, Table 1.0 of EC-PUPC-2070 are acceptable per the requirements specified in Part D of EC-PUPC-2070 for this Test Point.

\_\_\_\_\_  
Confirmed By

- 9.9 Pi data Sheets have been analyzed and exhibit no signs of abnormal readings for the specified Test Point.

\_\_\_\_\_  
Confirmed By

- 9.10 Installed Plant Instrumentation indicates the steam dryer structural integrity is acceptable by review of data collected per Attachment F of OI-TA-008 at the specified Test Point.

\_\_\_\_\_  
Confirmed By

10. REVIEW

This TP has been reviewed by the Supervisor-SE-BOP and found to be acceptable.

\_\_\_\_\_  
Confirmed By

11. RECORDS

Transmit completed procedure to Document Control Services.

**REQUIRED TESTING**

Test Points NOTE 1	Types of Data Collection										Locally Monitored Accels Collection Note 2
	MSL SGs	MSL Accels	FW Accels	Recirc/ RHR SGs	Recirc Accels	Recirc/ RHR Vibs F015 & F017 Accels	Accessible Area Walkdown	In-accessible Area Walkdown	Pi Data Sheet	OI-TA-008	
-2569 MWt (65%); Start 3 <sup>rd</sup> RFP	YES	YES	YES	YES			YES	YES	YES		
-3293 MWt (83.3%):	YES	YES	YES	YES					YES		
-3489 MWt (88.2%)	YES	YES	YES	YES			YES	YES	YES		
Initial Power increases between 3489 and 3611 MWt (Hourly readings)	YES Note 3	YES Note 3	YES Note 3	YES Note 3	YES Note 3	YES Note 3			YES Note 3	YES Note 3	
-3611 MWt (91.3%)	YES	YES	YES	YES			YES	YES	YES		
Initial Power increases between 3611 and 3733 MWt (Hourly readings)	YES Note 3	YES Note 3	YES Note 3	YES Note 3	YES Note 3	YES Note 3			YES Note 3	YES Note 3	
3733 MWt (94.4%)	YES	YES	YES	YES			YES	YES	YES		
3733 MWt with 92 Mlb/Hr Core Flow	YES	YES	YES	YES	YES	YES			YES		
3733 MWt with 108 Mlb/Hr Core Flow	YES	YES	YES	YES	YES	YES			YES		

**Note 1:** Data Collection at each Test Point can be added, as deemed necessary, during the Start-up testing. Attachment identifies the minimum required.

**Note 2:** Enter a YES in this column if visual observation indicates the need for more quantitative analysis of a non-instrumented piping run.

**Note 3:** Data collection only during the increase in power to 3611 and 3733 MWt. Data collected during the increase will be included in the Test Point Report, along with the data collected and analyzed at Test Point 3611 and 3733 MWt.

**DATA COLLECTION/ANALYSIS SUPPORT**

<b>Data Collection Description</b>	<b>Responsible for Ready to Collect Data</b>	<b>Responsible for Data Collected</b>	<b>Responsible For Data Analyzed/ Reviewed</b>	<b>Responsible for Data Submitted</b>	<b>Comments</b>
MSL SGs	DAS OPERATORS	PPL PM & NSE	EPU Engineering	EPU Engineering	Used to evaluate Steam Dryer
MSL, FW Accelerometers	DAS OPERATORS	PPL PM & NSE	EPU Engineering	EPU Engineering	EC-PUPC-2070 Part A
Recirculation Sys Accelerometers	DAS OPERATORS	PPL PM & NSE	Design Engineering	Design Engineering	EC-PUPC-2070 Part A
Recirculation/RHR SGs	DAS OPERATORS	PPL PM	Design Engineering *	Design Engineering	No Acceptance Criteria
RHR Vibs HV251F015A(B) & HV251F017A(B) Accelerometers	DAS OPERATORS	PPL PM & NSE	Design Engineering *	Design Engineering	EC-PUPC-2070 Part E
Accessible Area Walkdown	EPU Engineering	EPU Engineering	EPU Engineering	EPU Engineering	EC-PUPC-2070 Part C
In-Accessible Area Walkdown	EPU Engineering	EPU Engineering	EPU Engineering	EPU Engineering	EC-PUPC-2070 Part D
Pi Data Sheet	EPU Engineering	EPU Engineering	EPU Engineering	EPU Engineering	No Acceptance Criteria
OI-TA-008	On Shift STA	On Shift STA	On-Shift STA	On-Shift STA	No Acceptance Criteria
Locally Monitored Acceleration Data	DAS OPERATORS	PPL PM & NSE	Design Engineering	Design Engineering	EC-PUPC-2070 Part B

Design Engineering is required if Acceptance Criteria is not met.

**Guidelines to Evaluate Data Set(s) for Accelerometers Located  
Inside the Drywell**

**NOTE:** Steps of Attachment C should be followed sequentially.

**A. MSL B, MSL C and FW Loop A**

1. **Refer** to Part A, Table 1.0 of EC-PUPC-2070 for quick reference Level C(D) and Level A(B) Acceptance Criteria for the following Accelerometers:
  - a. MSL B (Tables 1.0, 2.0 & 2.1) and MSL C (Tables 1.0, 3.0 & 3.1) Accelerometers
  - b. FW Loop A (Tables 1.0, 4.0 & 4.1) Accelerometers
2. **Evaluate** data set(s) against the quick reference Acceptance Criteria of Part A, Table 1.0 of EC-PUPC-2070.
3. If the data set(s) accelerometer values are less than the Level A(B) values specified in Table 1.0, **THEN** the data set(s) **MEET** the Level 2 Acceptance Criteria for this Test Point.
4. If the data set(s) contains accelerometer values greater than Level A(B) values specified in Table 1.0, **THEN Evaluate** the data set(s) values against the Level C(D) values.
5. If the data set(s) accelerometer values are less than the Level C(D) values specified in table 1.0, **THEN Evaluate** data set(s) against Part A, Table 2.0 (3.0, 4.0) of EC-PUPC-2070 for Level 2 acceptability.
6. If the data set(s) accelerometer values are less than the Level 2 values specified in Table 2.0 (3.0,4.0), **THEN** the data set(s) **MEET** the Level 2 acceptance criteria for this Test Point.
7. If the data set(s) contain accelerometer values greater than the Level 2 values, **THEN** data set(s) values **FAIL** Level 2 and **MEET** Level 1 Acceptance Criteria for this Test Point.
8. If the data set(s) accelerometer values are greater than the level C(D) values specified in Table 1.0, **THEN Evaluate** data set(s) against Part A, Table 2.1 (3.1, 4.1) of EC-PUPC-2070 for Level 1 acceptability.
9. If the data set(s) accelerometer values are less than the Level 1 values, **THEN** the data set(s) values **FAIL** Level 2 and **MEET** Level 1 Acceptance Criteria for this test point.

10. If the data set(s) accelerometer values are greater than the Level 1 values, **THEN** the data set(s) values **FAIL** Level 2 and **FAIL** Level 1 Acceptance Criteria for this Test Point.

B. Recirculation Loop A and B

1. **Refer** to Part A, Table 1.0 of EC-PUPC-2070 for quick reference B and D Acceptance Criteria.
2. **Evaluate** data set(s) against the quick reference Acceptance criteria of Part A, Table 1.0 of EC-PUPC-2070.
3. If the data set(s) accelerometer values are less than the Level B values specified in Table 1, **THEN** the data set(s) meet the Level 2 Acceptance criteria for this Test Point.
4. If the data set(s) accelerometer values are greater than the Level B values specified in Table 1, **THEN Evaluate** the data set(s) values against the Level D values.
5. If the data set(s) accelerometer values are less than the Level D values specified in Table 1, **THEN** data set(s) meet the Level 2 Acceptance criteria for this Test Point.
6. If the data set(s) accelerometer values are greater than the Level D values specified in Table 1, **THEN** data sets values must have a detailed evaluation by Design Engineering.
7. **Submit** results of Engineering results that show whether data set(s) values meet Level 2 Acceptance Criteria.

**Guidelines to Evaluate Data Set(s) for Accelerometers Located  
Outside the Drywell**

**NOTE:** Steps of Attachment D should be followed sequentially.

**A. Locally Monitored Acceleration Data:**

1. **Refer** to Part B, Table 1.0 of EC-PUPC-2070 for quick reference Level 2 Acceptance Criteria for the General Area Piping Accelerometers.
2. **Evaluate** data set(s) against the quick reference Acceptance Criteria of Part B, Table 1.0 of EC-PUPC-2070.
3. If the data set(s) accelerometer values are less than the Level 2 values specified in Table 1.0, **THEN** the data set(s) **MEET** the Level 2 Acceptance Criteria for this Test Point.
4. If the data set(s) contains accelerometer values greater than Level 2 values specified in Table 1.0, **THEN** EPU Engineering to **Evaluate** the data set(s) values and issue AR.

**Guidelines For Evaluation Of Data Set(s) For RHR HV251F015A(B) &  
HV251F017A(B) Accelerometers**

1. **Refer** to Part E, Table E.1, of EC-PUPC-2070 for Quick Look Screening Criteria for the RHR HV251F015A(B) & HV251F017A(B) valve accelerometers.
2. **Evaluate** data set(s) against the quick reference Acceptance Criteria of Part E, Table E.1, of EC-PUPC-2070.
3. If the data set(s) exceeds Quick Look Screening Criteria, **Contact** the Valve Design Engineer to perform a more detailed evaluation of the data set(s).
4. If the data sets are below the Quick Look Screening Criteria values specified in Part E, Table E.1, of EC-PUPC-2070, **THEN** the Screening Criteria data set(s) **MEET** the Acceptance Criteria for this Test Point.

**Pi STEAM DRYER DATA LOG SHEET**  
(Information to be contained in Pi Print-out)

Date/Time \_\_\_\_\_ Test Point \_\_\_\_\_

	COMPUTER ID	VALUE	UNITS
Thermal Power (Instantaneous)	μ02.nba01		MWth
Thermal Power (15 Min Ave.)	02.nba101		MWth
Electrical Power	μ02.tra178		MWe
Total Core Flow	μ02.tra026		Mlbm/hr
Recirc Loop Flow A	μ02.tra028		Mlbm/hr
Recirc Loop Flow B	μ02.tra029		Mlbm/hr
Core Plate D/P	μ02.tra027		PSI
Steam Flow Line A	μ02.tra153		Mlbm/hr
Steam Flow Line B	μ02.tra154		Mlbm/hr
Steam Flow Line C	μ02.tra155		Mlbm/hr
Steam Flow Line D	μ02.tra156		Mlbm/hr
Total Steam Flow	μ02.tra097		Mlbm/hr
Feedwater Flow	μ02.tra098		Mlbm/hr
Feedwater Temperature Line A	μ02.tra102		°F
Feedwater Temperature Line B	μ02.tra103		°F
Feedwater Temperature Line C	μ02.tra104		°F
Rx Dome Press Narrow Range	μ02.tra208		PSIG
Rx Dome Press Wide Range	μ02.tra209		PSIG
Steam Dome Temperature	μ02.nfa05		°F
Recirculation Pump A Speed	vm.2p401a/1a_rrp_tac		RPM
Recirculation Pump B Speed	vm.2p401b/1b_rrp_tac		RPM
Recirculation Pump A Power	μ02.nrj51		MWe
Recirculation Pump B Power	μ02.nrj52		MWe
CRD Cooling Header Flow	μ02.nef03		GPM
CRD System Flow	μ02.nef01		GPM
CRD System Temperature	μ02.ndt05		°F
Bottom head Drain Temperature	μ02.tra206		°F
Rx Water Level Narrow Range	μ02.tra142		Inches H2O
Rx Water Level Narrow Range	μ02.nfl02		Inches H2O
Rx Water Level Narrow Range	μ02.nfl03		Inches H2O
Rx Water Level Wide Range	μ02.tra143		Inches H2O
Recirc Pmp A vane passing Freq	n/a		Hz
Recirc Pmp B vane passing Freq	n/a		Hz
Recirc Pmp A Motor Freq	n/a		Hz
Recirc Pmp A Motor Freq	n/a		Hz

PROCEDURE COVER SHEET

PPL SUSQUEHANNA, LLC PROCEDURE		
SHIFT TECHNICAL ADVISOR RESPONSIBILITIES		OI-TA-008 Revision 12 Page 1 of 25
ADHERENCE LEVEL: INFORMATION USE		
<u>QUALITY CLASSIFICATION:</u> <input type="checkbox"/> QA Program <input checked="" type="checkbox"/> Non-QA Program	<u>APPROVAL CLASSIFICATION:</u> <input type="checkbox"/> Plant <input type="checkbox"/> Non-Plant <input checked="" type="checkbox"/> Instruction	
EFFECTIVE DATE: <u>4/7/2009</u>  PERIODIC REVIEW FREQUENCY: <u>N/A</u>  PERIODIC REVIEW DUE DATE: <u>N/A</u>		
<u>RECOMMENDED REVIEWS:</u>  		
Procedure Owner: <u>F Shift</u>  Responsible Supervisor: <u>Shift Manager-F Shift</u>  Responsible FUM: <u>Manager-Nuclear Operations</u>  Responsible Approver: <u>Manager-Nuclear Operations</u>		

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1. PURPOSE

The Shift Technical Advisor's (STA's) primary responsibility is to provide Technical Support in accordance with Technical Specification 5.2.2.g to the Shift Manager with regard to the safe operation of the units. When the STA is performing this primary responsibility, all STA routine activities, as described in this OI, become of secondary importance. In addition, this instruction provides a list of responsibilities and guidance for the STA in the performance of duties common to every shift, and specific duties assigned to various shifts.

2. RESPONSIBILITIES

2.1 Prior to assuming the on-shift STA responsibilities, the on-coming STA is responsible for ensuring that he is sufficiently aware of the plant status to allow his proficient performance in the STA position.

2.2 The off-going STA is responsible for assisting the on-coming STA in becoming aware of the plant status.

2.3 The Shift Technical Advisor's responsibilities include, but are not limited to:

2.3.1 Providing a diagnosis of plant conditions and advising control room personnel on the status of critical plant parameters during major tests, significant plant evolutions, transients and accidents, and advising Shift Supervision on the future course of actions necessary to terminate or mitigate the consequences of the transient or accident. Refer to Attachment D for Guidelines. In the broad spectrum, the STA fulfills this responsibility by continuously and INDEPENDENTLY assessing:

- The reactor core for establishment of shutdown conditions and for adequate cooling.
- The plant for continued integrity of the three primary fission product barriers - fuel cladding, reactor coolant pressure boundary, and the primary containment.
- The Emergency Plan for timely recognition of those abnormal plant occurrences which satisfy one or more of the Emergency Action Level descriptions.

Specific actions or activities an STA would be expected to perform during plant transient and/or accident conditions are listed below. The STA should perform these actions to the fullest extent practicable, giving consideration to the priorities of the individual situation.

- a. **Ensure** the transient monitoring system is recording the event.
- b. **Independently Evaluate** plant conditions *paying particular attention to the reactor for attainment and maintenance of adequate core cooling*. **Recommend** to Shift Supervision adjustments to the chosen crew response where appropriate.
- c. **Independently Status** core shutdown conditions or gauge success of rod drifting efforts during an ATWS by evaluating information available on the Full Core Display, the Rod Drive Control System, neutron monitoring instrumentation and/or by producing one or more OD-7's.
- d. **Independently Assess** the integrity of the primary fission product barriers as evidenced by plant radiological conditions. **Communicate** any suspected breach to Shift Supervision.
- e. **Independently Evaluate** the E-Plan level and input this assessment to the Shift Manager.
- f. **Ensure** that the Unit Supervisor is aware of Emergency Operating Procedure entry conditions or imminent violations of EOP curves.
- g. **Independently Assess** system and component isolations, initiations and diesel generator starts and **Communicate** these observations to Shift Supervision.
- h. **Identify and Inform** the Shift Manager of 1, 4, 8 and 24 hour ENS notifications which must be made in response to the event. **Prepare** these notifications for transmittal to the NRC.
- i. **Recognize and Communicate** the existence of abnormal trends or anticipated violations of parameter operating bands to Shift Supervision.

- j. **Forecast and Communicate** approaches to initiation and isolation setpoints.
- k. **Forecast and Communicate** approaches to Emergency Operating Procedure action levels (ex: 13 psig in the supp chamber and approach of 0 psig while spraying containment).
- l. **Review** expected plant and crew response to approaching initiation and isolation setpoints and EOP action levels with Shift Supervision if the rate of approach permits such dialogue.
- m. At the direction of Shift Supervision, **Provide** parameter status and trends when circumstances prevent the PCO from performing this responsibility. **Utilize** hard wire instrumentation, if necessary, when SPDS is unavailable.
- n. **Independently Assess** the accuracy of PCO trending on the power to flow map. **Communicate** any observed discrepancies to the PCO or Shift Supervision.
- o. **Independently Assess** the accuracy of PCO use of the corrected fuel zone table. **Communicate** any observed discrepancies to the PCO or Shift Supervision.
- p. **Independently Monitor** critical time limits which require operator action such as the time allowances for re-establishing water above top of active fuel (E-plan) or for closure of a stuck open SRV. Inform the Shift Manager prior to exhausting these limits.
- q. **Independently Monitor** RPV level, RPV pressure, Reactor power and containment parameter information. **Monitor** updates of these parameters from the PCO to the US and correct any erroneous communications which might occur.
- r. **Generate** (call-up) the appropriate PICSY format in response to any request for information. Attachment C provides a listing to assist in this activity.
- s. At the direction of Shift Supervision, **Contact** the appropriate outside agency to obtain confirmatory data on meteorological and seismological events.

- t. **Act** as the contact point for Pa. DEP BRP inquiries and requests for information.
- u. **Maintain** an awareness of the other unit's status.
- v. **Silence** and **Evaluate** (as applicable) SPING, Seismic Monitor, and SIMPLEX alarms when circumstances prevent the PCO from performing this responsibility. **Report** any potentially significant data to Shift Supervision. No other alarms may be silenced by the STA unless directed by Shift Supervision.
- w. **Assist** the crew by independently referencing OP's, ON's, AR's, EOP Basis, prints or other reference material without compromising other responsibilities. **Advise** the crew of any pertinent information obtained from these documents. Attachment E is a summary listing of ON's.
- x. **Independently Assess** the appropriateness of exceeding the 100°F/hr cool down limitation. **Assist** Shift Supervision in developing a plant cool down strategy within the limits designated in the Unit Technical Specifications (<100°F/hr) when appropriate.
- y. **Utilize** the STA Assessment Guide (Attachment A) to assist in the assessment of plant transient and/or accident conditions. The STA Assessment Guide is an aid. Completion of the STA Assessment Guide is not required.
- z. **Providing Guidance** to the ED-CR in severe accident conditions for cases where the TSC remains unmanned for several hours after the emergency declaration due to severe weather or other extreme circumstance.

2.3.2

**Collecting, Analyzing and Evaluating** data following a plant transient or scram to identify the cause of the event, **Ensuring** equipment and systems functioned as designed during the event and during subsequent recovery actions, **Determining** whether the event was bounded by events described in the FSAR, and **Comparing** plant response to previous similar events to identify abnormal or degrading trends in system performance. Data collection & retention shall be performed in accordance with OI-TA-001, "Event Report Data Collection and Retention". Data Analysis & Evaluation shall be in accordance with OP-AD-327, "Post Reactor Transient/Scram/Shutdown Evaluation."

- 2.3.3 **Providing** a technical review and analysis of plant operations from a nuclear safety viewpoint.
- 2.3.4 **Assisting** Shift Supervision in the interpretation and application of Technical Specifications and Technical Requirements.
- 2.3.5 **Identifying** and **Investigating** significant anomalies by technical evaluation of observed or monitored conditions.
- 2.3.6 **Performing** other engineering duties as assigned.
- 2.3.7 **Assisting** Operations Section personnel in researching prints, troubleshooting problems, monitoring equipment, or as otherwise requested.
- 2.3.8 **Performing** the items identified in the STA daily/shiftly routine as defined by Supervisor Operations Engineering-SSES. A sample listing of STA routine duties is shown in Attachment B.
- 2.3.9 **Assist** and **Advise** the Operations Shift Supervision involving the reporting of plant conditions as required by 10CFR 50.72, NDAP-QA-0702, NDAP-QA-0703, and NDAP-QA-0720.
- 2.3.10 **Assist** and **Advise** the Operations Shift Staff in the technical investigation/evaluation of operational conditions/evolutions as requested by the Operations Shift Staff, or as deemed appropriate by the STA to enhance plant safety or availability.
- 2.3.11 **Performing** Peer Checks when requested.
- 2.3.12 **Providing** a review of Reactor Engineering Instructions when a second qualified Reactor Engineer is not available.
- 2.3.13 **Providing** oversight to licensed operators in the areas of reactivity changes and core monitoring.
- 2.3.14 **Reviewing** Industry Operating Experience and providing information for use in conducting Pre-Job Briefs as requested by Operations Supervision and/or PCO's.
- 2.3.15 **Performing** weekly audits of clearance orders (type SC and PP) and preparation of applicability determinations or initiating EWR's for NSE to complete 50.59/72.48 screenings or evaluations as described in OI-AD-040.

2.3.16 **Monitoring** Plant Conditions for changes that have the potential to impact the Risk Calculation (Sentinel/EOOS) Status. When such changes occur, the STA will rerun the Risk Calculation Program, determine the impacts and make the necessary notifications as outlined in this instruction.

2.4 The Assistant Operations Manager-Shift Operations is responsible for assuring that the items of the STA daily/shiftly routine are completed satisfactorily by the STA, and for modifying the routine as necessary.

### 3. REFERENCES

- 3.1 NDAP-QA-0702, Action Request and Condition Report Process
- 3.2 10 CFR 50.72
- 3.3 NDAP-QA-300, Conduct of Operations
- 3.4 OP-AD-003, Shift Routine
- 3.5 NDAP-QA-0703, Operability Determinations
- 3.6 NDAP-QA-0720, Station Report Matrix and Reportability Evaluation Guidance
- 3.7 NDAP-QA-0002, Nuclear Department Procedure Program
- 3.8 NDAP-QA-0338, Reactivity Management and Controls Program
- 3.9 NDAP-QA-0006, Plant Operations Review Committee
- 3.10 OI-AD-001, Administrative Control of Operations Instructions
- 3.11 OI-AD-055, Operations Procedure Program
- 3.12 OI-AD-055, Procedure Writer's Guide
- 3.13 OI-AD-040, System Status File Audits
- 3.14 OI-AD-300, Work Control Center WCC Operating Instructions

4. DEFINITIONS

- 4.1 STA Assessment Guide (Attachment A) - A check off list of items to assist the STA in the assessment of the plant during transient and/or accident conditions. The STA Assessment Guide contains reference material such as trip/isolation setpoints and PICSY Displays to allow the STA to access information and assess the plant data in a time efficient manner. The STA Assessment Guide is an aid and is not a permanent record of the event.

5. INSTRUCTIONS

- 5.1 Each shift shall be preceded by an orderly, efficient turnover of information between the current on-shift STA and the on-coming STA. This turnover shall be of sufficient depth and scope to allow the on-coming STA to perform in a proficient manner. It is strongly recommended that this turnover of information include:

- 5.1.1 A written summary of the current plant status along with significant operational events which were completed during the previous shift(s), which are on-going, or which are planned for the coming shift. To fulfill this requirement, the following are provided:
- STA Turnover Sheet, Form OP-AD-003-16 - update shiftly
  - Station Status Report - update shiftly
- 5.1.2 A review of Action Requests (Condition Reports) processed during the past shifts.
- 5.1.3 A review of 72 hour or shorter term LCO's incurred during the previous shifts.
- 5.1.4 Significant changes in Control Room indication which have occurred during the past shifts.
- 5.1.5 A review of any other significant or unusual events or conditions which existed during the previous shifts (i.e., special tests in progress, NRC notifications made via the ENS, Emergency Plan Activities, etc.)
- 5.1.6 The Offgoing STA will check off each item on the STA Turnover Sheet (Form OP-AD-003-16) when items are completed.
- 5.1.7 Both the Offgoing and Oncoming STAs will sign the STA Turnover Sheet to document transfer of responsibilities.

5.2 The STA should **Perform** the following routine duties:

<b>NOTE:</b> The STA shift routine duties may be altered as appropriate to accommodate non-routine occurrences or conditions.
---

5.2.1 On each shift, the STA should:

- a. Periodically assess plant operation by:
  - (1) **Reviewing** the LCO/TRO logs.
  - (2) **Reviewing** the Unit logs.
  - (3) **Reviewing** SPING data or Rad Effluent Release Data from SPDS as required.
- b. **Review** the STA Log.
- c. **Ensure** the transient monitoring system is in the proper mode of operation to support current plant conditions.
- d. **Review** OPS Surveillance Procedures as appropriate.
- e. **Review** POWERPLEX III operation at the beginning of each shift to ensure:
  - (1) RDAS backup computer is up
  - (2) Core maximum parameters are less than specified limits. REF: SO-100/200-007.
- f. **Review** the STA's Plant Parameter PI Process Data Book to assist the STA in an understanding of Plant Status and to help identify potential adverse trends.
- g. **Check** SPDS operation and reset isolations as necessary.
- h. **Review** CR's processed by the Unit Supervisors. This review covers both the Unit Supervisor's Operability Determination as well as performance of a Reportability Evaluation in accordance with NDAP-QA-0720.

- i. As time permits, the STA will periodically **Review** the Unit Supervisor's CR Inbox in NIMS to determine if there are any CR's with immediate Operability/Reportability concerns and bring them to the attention of Shift Supervision.
- j. **Monitor** Plant Conditions for changes that have the potential to impact the Risk Calculation (Sentinel/EOOS) Status as determined for the week by the Work Week Manager (i.e., evaluate for emergent items) as described below:
  - (1) **Monitor** AR's/CR's as well as consider any information provided by Shift Supervision or other personnel for equipment related problems.
  - (2) If there are any potential impacts to the Risk profile for the week, the STA will **Recalculate** the profile to determine the impacts. Any recalculations that are done are to be logged in the applicable Units Log(s) (to either document the impacts or to document that there were no impacts).
  - (3) If a change to the Risk Status/profile is identified, the STA will **Notify** the following personnel to **Ensure** that work releases are re-evaluated and elements of the Protective Equipment Program are implemented:
    - Unit Supervisor
    - Work Control Center
    - Work Week Manager

5.2.2

In addition to the duties described above, the night shift STA should perform the following duties:

- a. **Start** a new STA Turnover Sheet.
- b. **Record** post midnight data on the STA Plant Status Form and update the Drywell Leakage Log (Excel Spread Sheet).

- c. **Provide** updates to the Station Status Report issued by Work Management. Additionally, **issue** an abbreviated Station Status Report on weekends and holidays when Work Management is not available to issue it. The abbreviated report will contain only the information relevant to Operations (i.e., it will exclude all information following the CR List and information normally provided by other departments, e.g., Health Physics, etc.).
- d. **Monitor** Unit 1 and Unit 2 Steam Dryer Structural Integrity via PI. Attachments G, H, and I contain background information and parameters to be monitored.

5.2.3 In addition, the on-duty STA should **Perform** the following items as applicable:

- a. Individual projects as assigned by the Assistant Operations Manager-Shift Operations.
- b. **Providing Assistance** to various organizations in obtaining transient monitoring and plant computer data.
- c. **Providing Assistance** to Operations in identification of unknown sources of drywell leakage.
- d. **Advising** operators on use of Spray Pond Sprays.

- 5.3 Routine duties may be changed periodically. Current duties are listed on the "STA ROUTINE LIST," a copy of which is included as Attachment B. This list may be revised as necessary by the appropriate supervision without immediately requiring a corresponding revision to this instruction. (Revision may follow at a later more convenient time.)
- 5.4 When the operations shift to which an STA is assigned is scheduled for training, the STA shall participate in the assigned training.
- 5.5 On days when the Screening Team is not scheduled to meet (typically weekends and holidays) the on-duty STA shall review AR's which are in 'Supervisory Review' status and document the last AR Number which was reviewed on the STA Turnover Sheet. If an AR has not been reviewed by the Control Room and is not administrative in nature, the STA shall ensure that it gets the appropriate Control Room Operability/Reportability reviews.

6. RECORDS

Completed STA Turnover Forms should be submitted to the Ops Clerk on a daily basis.

**STA ASSESSMENT GUIDE**  
**STA ASSESSMENT GUIDE SHEET 1**

INITIAL EVENT		PICSY DISPLAYS
<input type="checkbox"/> TRA Initiated		TRASTS, TRATRIG
<input type="checkbox"/> Check All Rods In		OD7
<input type="checkbox"/> Verify Isolations, Initiations, and D/G Starts		CONTISO
<input type="checkbox"/> SDV Vents and Drains		TRBB
<input type="checkbox"/> Main Turbine Speed decreasing		PRIMARY
<input type="checkbox"/> Check Rx Vessel Level		PRIMARY, RPRESS
<input type="checkbox"/> Check Rx Vessel Pressure		SRV, CONTN
<input type="checkbox"/> SRV Lifts		CONTN
<input type="checkbox"/> Check Containment Parameters		RADEFF
<input type="checkbox"/> Check Rad levels		E_RADMON
<input type="checkbox"/> Verify MSL Rads trended down with Power		
<input type="checkbox"/> Verify E-Plan Entries (15 Min)		
<input type="checkbox"/> Evaluate the need for a PAR. A PAR must be made for General Emergency.		
<input type="checkbox"/> Verify ENS Notification (1 hour)		
Reactivity Control		
<input type="checkbox"/> Rx Power >102% (Unit 1 3807 MWth, Unit 2 3807 MWth - NBA01)	Initiate SBLC / Inhibit ADS: >5% Initial Power – Immediately, <5% Initial Power - Before SP Temp =150°F	NBA01, NBA08 OD7 PRIMARY, CORESTAT PRIMARY, ECCSFL STA
<input type="checkbox"/> More than 1 Control Rod > 00 Initial Reactor Power _____% <input type="checkbox"/> Rx Power > 5% <input type="checkbox"/> Recirc Pumps Tripped <input type="checkbox"/> Init SBLC/Inhibit ADS <input type="checkbox"/> Power Decreased w/ lowering level <input type="checkbox"/> Pressure maintained >800# <input type="checkbox"/> ADS & LP ECCS Inhibited <input type="checkbox"/> RPS De-energized? <input type="checkbox"/> Hydraulic Lock? <input type="checkbox"/> CRD Available?, Cross-tie? <input type="checkbox"/> All Insertion methods in Progress?		
Rx Vessel Level Control		
Level Set points reached? <input type="checkbox"/> Level 8, +54" <input type="checkbox"/> Level 3, +13", Auto Act. Complete <input type="checkbox"/> Level 2, -38", Auto Act. Complete <input type="checkbox"/> Level 1, -129", Auto Act. Complete <input type="checkbox"/> WR -145", Transition to Fuel Zone <input type="checkbox"/> Below TAF, -161" Loss – Coolant System Boundary Potential Loss – Fuel Clad Boundary <input type="checkbox"/> Below TAF, - 205", Loss Fuel Clad Boundary Airborne Release <input type="checkbox"/> Fuel Zone < - 290" – Level Indeterminate	Auto Actuation's + 54 Main Turbine Trip RRP's Trip + 13 RX SCRAM, RRP (30%) - 30 RCIC - 38 ARI, HPCI, SBGTS, CREOASS, ISO RWCU, RRP Trip (10s TD) - 129 CS, RHR, D/G, ESW, ADS Timers, MSIV closure	RWTLVL, ECCSFL, STA  FUELZONE EOF, STA  ECCSFL, STA
<input type="checkbox"/> Adequate Core Cooling? <input type="checkbox"/> Submergence, > -161" <input type="checkbox"/> Steam Cooling, > -205" (Non-ATWS)	System Design Flow Cond/FW 28,800 gpm HPCI 5000 gpm RCIC 600 gpm RHR Loop 21,300 gpm CS Loop 6,350 gpm SBLC 40 gpm CRD 63 gpm	
<input type="checkbox"/> Systems Injecting <input type="checkbox"/> Cond / Feedwater <input type="checkbox"/> HPCI <input type="checkbox"/> RCIC <input type="checkbox"/> RHR Loop 'A' <input type="checkbox"/> RHR Loop 'B' <input type="checkbox"/> Core Spray Loop 'A' <input type="checkbox"/> Core Spray Loop 'B' <input type="checkbox"/> SBLC <input type="checkbox"/> CRD		

**STA ASSESSMENT GUIDE**  
**STA ASSESSMENT GUIDE SHEET 2**

<b>Rx Pressure Control</b>		
<input type="checkbox"/> MSIV's Open <input type="checkbox"/> Bypass Valves & Condenser Available <input type="checkbox"/> MSIV's Closed <input type="checkbox"/> SRV's Cycling <input type="checkbox"/> RHR in SPC Pressure Setpoints reached? <input type="checkbox"/> 1087# <input type="checkbox"/> 861#, MS in Run <input type="checkbox"/> 700# <input type="checkbox"/> Condensate Available <input type="checkbox"/> 420# <input type="checkbox"/> ECCS Overridden if not Req.	ARI - 1135# EOC-RPT - SV Closure (5.5%) CV Fast Closure (500# ETS) SRV Safety Setpoints Condenser Vacuum Trips Main Turb. - 7.5" HgA Nominal (21.7 HgV) RFPT       11.8" HgA (17.4" HgV) MSL         19.0" HgA (10.2" HgV) BPV's       22.2" HgA (7.0" HgV)	CONTN, SRV  PRIMARY, RPRESS CONTN  USOPSTS
<b>Containment Integrity</b>		
<input type="checkbox"/> Containment Isolations Complete? <input type="checkbox"/> Primary Containment Challenged? <input type="checkbox"/> Supp Pool Temps°F (>90°F) <input type="checkbox"/> 90°F, RHR in SPC <input type="checkbox"/> 140°F, Bypass HPCI Swap <input type="checkbox"/> 150°F Monitor HCTL <input type="checkbox"/> 230°F, use RHR for SP Temps <input type="checkbox"/> Supp Pool Level - (<22', >24') <input type="checkbox"/> 38', RD <input type="checkbox"/> 26', Initiate HPCI/RCIC <input type="checkbox"/> 22', ECCS Rooms Flooded <input type="checkbox"/> <21', Monitor Vortex Limits <input type="checkbox"/> <20.5' SPOTMOS lower sensors <input type="checkbox"/> 17', Isolate HPCI (Before 17') <input type="checkbox"/> 12', RD (Before 12' Non ATWS) <input type="checkbox"/> DW Press (>1.72#) <input type="checkbox"/> Auto Act. Complete <input type="checkbox"/> Initiate SC Sprays <input type="checkbox"/> Supp Chamber Press (>1.72#) <input type="checkbox"/> >13#, DW Sprays Initiated <input type="checkbox"/> H2O2 Levels (>4%) <input type="checkbox"/> DW Temp (>150°F) <input type="checkbox"/> >212°F, monitor SAT curve <input type="checkbox"/> 340°F (Before), Spray DW <input type="checkbox"/> > 340°F, RD <input type="checkbox"/> Secondary Containment challenged? <input type="checkbox"/> ARM Alarms <input type="checkbox"/> Room Temps <input type="checkbox"/> Fire Detection <input type="checkbox"/> 749' 4&5 racks- WR -125" to +60"	Curves PSL - PRESSUPP HCTL - HEATCAP SAT - RPVSAT  Vortex Limits RHR - 18' CS - 15.5' to 21'  1.72 Auto Actuation's - Aux LS, if Gen LO not reset - HPCI, D/G, ESW Init. - RHR, CS Init. if <420# - RHR, SPC/SPS/DWS Isol - HPCI PCM Swap to Inj DW Sprays >13# Supp Chamber Before DW Temp = 340°F  749' Fire Zones, 4 & 5 racks U1 - X218_Z7 U2 - X232_Z5	CONTISO CONTN EOF, STA, STEMP  HEATCAP  PRESSUPP   STEMP   PRESSUPP   RPVSAT  EO104, RADRX RDPAM
<b>Radioactive Release</b>		
<input type="checkbox"/> Radiation Release in progress <input type="checkbox"/> Monitored, (SPINGS Available)? <input type="checkbox"/> Unmonitored, Dose Calc's performed? <input type="checkbox"/> Fuel Damage Indicated <input type="checkbox"/> Containment Rads increasing? <input type="checkbox"/> MSIV Rads increasing? <input type="checkbox"/> MSIV Isolation <input type="checkbox"/> ARM Alarms <input type="checkbox"/> Blowout Panels Checked, Security	Unusual Event (60 min) Noble Gas       2.0E+6 µCi/min Iodine/Part     3000 mRem/Yr Alert, EO105 (15 min) Noble Gas       2.0E+8 µCi/min Iodine/Part     3.0E+5 mRem/Yr Site Noble Gas       6.2E+8 µCi/min General Noble Gas       6.2E+9 µCi/min	RADEFF METVENT1 (15 min ave)  CONTN E_RADMON PROCMON EO104, RADRX, RADTB, CSRWE, RDPAM, RADMS

## STA ROUTINE

### DAY SHIFT

- Station Status Report Updates (markups)
- Clear SPDS Isolations
- Review Unit Logs
- Review STA Log
- Review LCO/TRO Logs
- Update Turnover Sheet
- Review the STA's Plant Parameter PI Process Data Book
- Review thermal limits
- Check Backup RDAS availability
- Check transient monitoring status
- Review CR's for Operability/Reportability
- Review AR's in 'Supervisory Review' status (Weekends and Holidays when the Screening Team does not meet)
- Perform duties of USW/STA, when assigned

### NIGHT SHIFT

- Station Status Report Updates for Work Management (issue reports on weekends and holidays when Work Management is not available)
- Clear SPDS Isolations
- Review Unit Logs
- Review STA Log
- Review the STA's Plant Parameter PI Process Data Book
- Review thermal limits
- Check Backup RDAS availability
- Check transient monitoring status
- Review LCO/TRO Logs
- Update Turnover Sheet
- Review CR's for Operability/Reportability
- Review AR's in 'Supervisory Review' status (Weekends and Holidays when the Screening Team does not meet)
- Monitor Unit 1 and Unit 2 Steam Dryer Structural Integrity
- Perform duties of USW/STA, when assigned

PICSY DISPLAY TURN-ON CODES

FEEDWATER HEATERS		CONDENSATE & OFFGAS		FEEDWATER	
Feedwater Heaters (In/Out Temps)	FWHT	Condenser perf/Circ wtr	CNDPF	Feedwater System	FWSYS
FW htr str A (Temp-Actual vs. Design)	FWSTA	Condensate Sys	CNDSY	RFPT Steam	RFPT
B	FWSTB	Cond pump motors	CNDPP	RFPT Bearing Temps	RFPTB
C	FWSTC	Cond Air Removal	ARMSY	RFPT & RFPT Lube Oil	RFPLO
FW htr Performance A (Press/Temps)	FWAPR			RFPT & RFP A	RFPA
B	FWBPR			B	RFPB
C	FWCP			C	RNPC
	R				
Heater Drain Valves	HTRDV			Vessel level/feeds	FWJ
Extraction steam valving	EXSTV				
FW Heater Levels (DCS COND/F)	CDF				

MAIN TURBINE FORMATS		MAIN GENERATOR		ELECTRICAL DIST	
Stop/Control Valves	TBVLV	Main Generator	MNGEN	13.8 kv System	13KV
HP Turbine	HPTB	Gen/Alternator cng	GENCL	Aux buses	AXB12
HP Turb Performance	HPPR	<b>DIESELS</b>		Startup bus 10	SU10
Moisture Separators	WTRSP	D/G A	DG-A	Startup bus 20	SU20
LP Turbine A	LPTBA	D/G B	DG-B	4160V System	4KV
B	LPTBB	D/G C	DG-C	Critical motors	CRTMO
C	LPTBC	D/G D	DG-D	Other unit's mtr	UNIT 1
Lube Oil/Brng temps	TBLO				
Lube Oil/EHC	LOEHC				
Vib/Brng metal temp	TBVIB				
Sealing Steam	TBSST				

CONTAINMENT		REACTOR		RAD MONITORING	
Containment Status	CONTN	Rx Cooldown A	RCDA	Rx Bldg	RADRX
Containment Isolations	CONTISO	B	RCDB	Tb Bldg	RADTB
PSL Curve	PRESSUPP	Rx Heatup A	RHUA	CS, RW & Admin	RADMS
HCTL Curve	HEATCAP	B	RHUB	CS & RW	CSRWE
SAT Curve	RPVSAT	Shutdown params	SHDWN	Misc	GD E_CSRAD
Cont temps/press,SP level	CTATM	LPRM's	LPRM	Hi range ARM's	RDPAM
SP Water temp/map,SRV status	SRVTEMP	SRM/IRM Overlap	NMSAE	Process Rad	GD E_RADMON
SP water temp/SPOTMOS	STEMP	IRM/APRM Overlap	NMSC	EO-104 Table #9	EO104
SW/RB/TB sumps	LRW	Reactor Parameters	EOF	Spings	RADEFF
DW fans/coolers/RB chillers	RBWT	Reactor Water Lvl	RWTLVL	Spings (15 Min Avg)	METVENT1
		Reactor Core Status	CORESTAT		

WATER SYSTEMS		MISC		ICS/HMI/SCREENS	
Service water	SPWTR	Unit Performance	UPERF	A RRP - Runback Reset/ Limiter Enable/Disable	RRP_A
Circ water	CIRWT	Chemistry	CYCHM	B RRP - Runback Reset/ Limiter Enable/Disable	RRP_B
Circ wtr pp mtr	CWPMT	CDI/FW cond trend	CFW	A & B RRP Mode Screens	RRP DUAL SCRNI
RBCCW	RBCCW	RWCU/Recirc cond trend	RXWC	Combination Feedwater Screens	FW OVERVIEW; FW COMBINED; FW SU_SD
TBCCW	TBCCW	Environmental Cond	ENVIR		
ESW	EWSTR	Emergency Format	EOF		
RHRSW	RHR	HWC-H2 Flow	HYDROGEN	A Rx Feed Pump	RFP_A
GRRCCW	GRCCW	HWC-O2 Flow	OXYGEN	B Rx Feed Pump	RFP_B
RBCW	RBWT	CFS	CFS	C Rx Feed Pump	RFP_C
CS, TB HVAC	CSTB	STA Overview	STA	CPU Monitor	CP WD MONITOR
RWMU	MUPWT			Transmitter Status	INSTR BYP/RESET
Cond xfr, Refuel	CDRF				

## STA ACTION GUIDELINES

### TYPICAL ACTIONS (OVERVIEW)

- Check for immediate operator actions
- Scan for EO entries
- Assess feed and pressure control systems
- Establish trends
- Inform crew of major setpoint approaches (1.72#, -129"...)
- Confirm parameter values
- Backup PCO reading Corrected Fuel Zone level
- Backup Emergency Plan calls
- Reportability determinations
- Independent plots of Power/Flow

### TOOLS/TRICKS

- Plot and trend curves on spare EO-103 boards (or use curves on PICSY)
- Keep time line
- Keep "long-term" punchlist (cleanup items; e.g., restore SLC & CRD, restore from ES's, max SPC....)
- Trend containment parameters by recording parameters periodically
- Watch Supp Chamber pressure, inform US when 13# to continue down SP-P leg of EO-103
- Ensure PCO's read Fuel Zone until it "pegs out" when restoring level
- Give containment parameters in order of EO-103 (SP-T, SP-L, PC-P, SC-P, PC-H, DW-T & Rads)
- Watch Shutdown Range when violating RPV Saturation curve for confirmation
- Do not shout out EO-103 entries during ATWS, inform US/SS you have entries when he is ready.
- Remember SPOTMOS is no good after <20.5 feet, use STEMP Screen & lower RTD's.
- PSL probably will not be violated if DW pressure is leading SC pressure; however, SC leads DW, PSL probably will be violated.

EVENT INITIAL EVALUATIONS

Ensure TRA tripped

Power	<ul style="list-style-type: none"> <li>- All rods in?</li> <li>- SDV Vent &amp; Drain Valves closed?</li> <li>- Turbine tripped, speed decreasing, Generator trip?</li> <li>- ATWS (electrical or hydraulic), RPS Man init, ARI, SLC, Turbine on line, MSIV's open?</li> </ul>
SBLC Injection	<ul style="list-style-type: none"> <li>- RWCU isolated?</li> <li>- Pumps running; injecting and flow?</li> </ul>
Pressure	Bypass Valves operating, SRV lifts, scrams, EO entry, condenser available?
Level	ECCS initiations or anticipated, EO entry?
Containment	DW-P/T, SP-T/L, H2 concentrations, EO entries?
Rad Releases	Offgas, Refuel Floor, RB, row-of-five, EO entries? MSIVs need to be closed (PICSY E-PLAN MENU formats).
DG starts	Voltage, frequency, output breaker/bus voltages?
ESW starts	<ul style="list-style-type: none"> <li>- Ensure DG and ECCS room cooling</li> <li>- Ensure started manually if HPCI/RCIC auto-start on level</li> </ul>
ESS power	Busses 1A thru 1D and 2A thru 2D available?
Offsite power	Start Up Bus 10 and 20 powered?
Emergency Plan	15 minutes to classify and call, Protective Action Recommendation (PAR) evaluation required. PAR must be made for General Emergency.
Reportability	1, 4, 8 or 24 hour?
Makeup sources	MSIV's, RFP's, Condensate, RCIC, HPCI, CRD, SLC, RHR, Core Spray, Condensate Transfer, RHRSW....?
Heat Sinks	MSIV's Condenser, Circ Water, Bypass Valves, Supp Pool temp
BOP	Condenser, Circ Water, Service Water, Instrument Air, rad levels, HVAC configuration
Isolations	SPDS and ON-159-002 or ON-259-002

**UNIT 1 AND COMMON  
OFF NORMAL PROCEDURES**

Attachment E  
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**SCRAM/TRIP:**

- ON-100-101 SCRAM, SCRAM Imminent
- ON-158-001 Loss of RPS
- ON-193-002 Main Turb Trip
- ON-183-001 Stuck Open SRV
- ON-184-001 MS Line Isol & Quick Recovery

**REACTIVITY:**

- ON-100-004 Rx Power > Authorized Limit
- ON-100-006 Loss of Reactor Heat Balance Calculation
- ON-131-002 PMS System Malfunction (SPD OP-131-002)
- ON-147-001 Loss of FW Htg Extr Strm
- ON-147-002 Loss of FW Htg String
- ON-155-001 Control Rod Problems
- ON-155-004 RPIS Failure
- ON-155-007 Loss of CRD System Flow
- ON-156-001 Unexplained Reactivity Chg
- ON-164-002 Loss of Recirc Flow
- ON-164-003 Recirc Pp Dual Seal Failure
- ON-178-002 Core Flux Oscillations
- ON-193-001 Turb EHC Malfunction

**ELECTRICAL:**

- ON-003-001 Loss of SUB 10
- ON-003-002 Loss of SUB 20
- ON-004-002 Energizing Dead 4KV Bus
- ON-024-001 D/G Trip
- ON-102-610 Loss of 125 VDC Bus 1D610
- ON-102-620 Loss of 125 VDC Bus 1D620
- ON-102-630 Loss of 125 VDC Bus 1D630
- ON-102-640 Loss of 125 VDC Bus 1D640
- ON-103-001 Grid Instabilities
- ON-103-003 Aux Buses 11A/B Loss/UV Shed
- ON-104-001 LOOP - U1 Response
- ON-104-201 Loss of 4KV Bus 1A (1A201)
- ON-104-202 Loss of 4KV Bus 1B (1A202)
- ON-104-203 Loss of 4KV Bus 1C (1A203)
- ON-104-204 Loss of 4KV Bus 1D (1A204)
- ON-117-001 Loss of Instrument Bus
- ON-175-001 Loss of 24 VDC Bus
- ON-188-001 Loss of 250 VDC Bus

**COOLING:**

- ON-009-001 Loss of RWMU
- ON-030-001 Loss of CS Chilled Water
- ON-054-001 Loss of ESW
- ON-111-001 Loss of Service Water
- ON-114-001 Loss of RBCCW
- ON-115-001 Loss of TBCCW
- ON-133-001 Loss of TBCW
- ON-134-001 Loss of RBCW
- ON-135-001 Loss of FPC/Coolant Inventory
- ON-142-003 Cooling Tower Screen Plugging
- ON-149-001 Loss of SDC
- ON-197-001 Loss of Stator Cooling

**CONDENSER/VACUUM:**

- ON-070-002 Hi Hi H2 Concentration in Common Offgas RCB Discharge
- ON-142-001 Circ Water System Leak
- ON-143-001 Main Condenser Vacuum & Offgas Sys Off Normal Operation
- ON-172-002 Hi Hi H2 Concentration in Unit 1 Offgas RCB Discharge

**CIG/INSTRUMENT AIR:**

- ON-118-001 Loss of Instrument Air
- ON-125-001 Loss of CIG

**PRIMARY CONTAINMENT:**

- ON-100-005 Excess DW Leakage
- ON-159-002 Containment Isolation
- ON-159-003 PC Water Level Anomaly

**MAIN GENERATOR:**

- ON-198-001 MVAR Cntl, Auto Volt Reg. Sync'd to Grid
- ON-198-002 MVAR Cntl, Manual Volt Reg. Sync'd to Grid
- ON-198-003 Mn Gen Connected Single Phase to Grid @ S/U
- ON-198-004 Mn Gen Unable to Disco. from Grid After a TT

**RPV LEVEL:**

- ON-145-001 RPV Lvl Cntrl Malfunction
- ON-145-004 RPV Water Level Anomaly
- ON-144-001 Emergency Operation of Condensate System

**HVAC:**

- ON-030-002 Loss of CS HVAC
- ON-134-002 High/Low RX Bldg DP

**RADIATION:**

- ON-069-001 Abnormal Rad Rel - Liquid
- ON-070-001 Abnormal Gas Rad Rel/CAM Alarms
- ON-179-001 Increasing Offgas MSL Rad Levels

**FUEL:**

- ON-081-001 Fuel Handling Accident
- ON-081-002 Refueling Platform Operation Anomaly

**FIRE/FLOOD:**

- ON-013-001 Fire
- ON-169-001 TB Flooding
- ON-169-002 RB Flooding

**WEATHER:**

- ON-000-002 Natural Phenomena
- GO-100-014 Unit 1 Hot Weather

**MISCELLANEOUS:**

- ON-000-010 Security Event
- ON-037-001 Loss of Condensate Transfer
- ON-089-001 Dry Fuel Storage Temp Anomaly
- ON-100-003 Chemistry Anomaly
- ON-100-009 Control Rm Evacuation
- ON-144-002 Condensate Filtr Anomaly

## UNIT 2 OFF NORMAL PROCEDURES

Attachment F  
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**SCRAM/TRIP:**

- ON-200-101 SCRAM, SCRAM Imminent
- ON-258-001 Loss of RPS
- ON-293-002 Main Turb Trip
- ON-283-001 Stuck Open SRV
- ON-284-001 MS Line Isol & Quick Recovery

**REACTIVITY:**

- ON-200-004 Rx Power > Authorized Limit
- ON-200-006 Loss of Reactor Heat Balance Calculation
- ON-231-002 PMS System Malfunction (SPM OP-231-002)
- ON-247-001 Loss of FW Htg Extr Strm
- ON-247-002 Loss of FW Htg String
- ON-255-001 Control Rod Problems
- ON-255-004 RPIS Failure
- ON-255-007 Loss of CRD System Flow
- ON-256-001 Unexplained Reactivity Chg
- ON-264-002 Loss of Recirc Flow
- ON-264-003 Recirc Pp Dual Seal Failure
- ON-278-002 Core Flux Oscillations
- ON-293-001 Turb EHC Malfunction

**ELECTRICAL:**

- ON-202-610 Loss of 125 VDC Bus 2D610
- ON-202-620 Loss of 125 VDC Bus 2D620
- ON-202-630 Loss of 125 VDC Bus 2D630
- ON-202-640 Loss of 125 VDC Bus 2D640
- ON-203-001 Grid Instabilities
- ON-203-003 Aux Buses 11A/B Loss/UV Shed
- ON-204-001 LOOP – U2 Response
- ON-204-201 Loss of 4KV Bus 1A (2A201)
- ON-204-202 Loss of 4KV Bus 1B (2A202)
- ON-204-203 Loss of 4KV Bus 1C (2A203)
- ON-204-204 Loss of 4KV Bus 1D (2A204)
- ON-217-001 Loss of Instrument Bus
- ON-275-001 Loss of 24 VDC Bus
- ON-288-001 Loss of 250 VDC Bus

**COOLING:**

- ON-211-001 Loss of Service Water
- ON-214-001 Loss of RBCCW
- ON-215-001 Loss of TBCCW
- ON-233-001 Loss of TBCW
- ON-234-001 Loss of RBCW
- ON-235-001 Loss of FPC/Coolant Inventory
- ON-242-003 Cooling Tower Screen Plugging
- ON-249-001 Loss of SDC
- ON-297-001 Loss of Stator Cooling

**CONDENSER/VACUUM:**

- ON-242-001 Circ Water System Leak
- ON-243-001 Main Condenser Vacuum & Offgas Sys Off Normal Operation
- ON-272-002 Hi Hi H2 Concentration in Unit 2 Offgas RCB Discharge

**CIG/INSTRUMENT AIR:**

- ON-218-001 Loss of Instrument Air
- ON-225-001 Loss of CIG

**PRIMARY CONTAINMENT:**

- ON-200-005 Excess DW Leakage
- ON-259-002 Containment Isolation
- ON-259-003 PC Water Level Anomaly

**MAIN GENERATOR:**

- ON-298-001 MVAR Cntl, Auto Volt Reg. Sync'd to Grid
- ON-298-002 MVAR Cntl, Manual Volt Reg. Sync'd to Grid
- ON-298-003 Mn Gen Connected Single Phase to Grid @ S/U
- ON-298-004 Mn Gen Unable to Disco. from Grid After a TT

**RPV LEVEL:**

- ON-245-001 RPV Lvl Cntrl Malfunction
- ON-245-004 RPV Water Level Anomaly
- ON-244-001 Emergency Operation of Condensate System

**HVAC:**

- ON-234-002 High/Low RX Bldg DP

**RADIATION:**

- ON-279-001 Increasing Offgas MSL Rad Levels

**FIRE/FLOOD:**

- ON-269-001 TB Flooding
- ON-269-002 RB Flooding

**WEATHER:**

- GO-200-014 Unit 2 Hot Weather

**MISCELLANEOUS:**

- ON-200-003 Chemistry Anomaly
- ON-200-009 Control Rm Evacuation
- ON-244-002 Condensate Filtr Anomaly

**UNIT 1 RPV STEAM DRYER  
 STRUCTURAL INTEGRITY MONITORING**

**NOTE:** The requirements of this instruction are applicable for MODE 1 only, and may be terminated when in MODES 2,3,4,5,\* or DEFUELED.

Moisture Carryover Monitoring

CH-SY-026, Moisture Carry Over Fraction (performed by Chemistry weekly) (To be performed daily following a transient event that could affect the dryer)

Parameters To Be Monitored For Steam Dryer Structural Integrity At Least Daily At Rated Conditions

1. NBA01 Core Thermal Power
2. Condensing Chamber XY-B21-1D002
  - a. NFP03 RPV Wide Range Press
  - b. NFL04 Rx Upset Range Lvl 517" variable tap
  - c. NFL05 RPV Extended Range Lvl 366" variable tap
3. Condensing Chamber XY-B21-1D004A
  - a. NFP05 RPV Wide Range Press
  - b. NFL02 Rx Narrow Range Lvl B 517" variable tap
  - c. NBL05 RPV Wide Range Lvl 366" variable tap
4. Condensing Chamber XY-B21-1D004B
  - a. NFP51 Reactor Pressure SRU 4
  - b. NFL03 Rx Narrow Range Lvl C 517" variable tap
  - c. NBL06 RPV Wide Range Lvl 366" variable tap
5. Condensing Chamber XY-14202
  - a. NFL07 RPV Extended Range Lvl 366" variable tap
6. FPA02 NSSS Total Feedwater Flow
7. NFF01 Rx Stm Flow A
8. NFF02 Rx Stm Flow B
9. NFF03 Rx Stm Flow C
10. NFF04 Rx Stm Flow D

**UNIT 2 RPV STEAM DRYER  
STRUCTURAL INTEGRITY MONITORING**

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**NOTE:** The requirements of this instruction are applicable for MODE 1 only, and may be terminated when in MODES 2,3,4,5,\* or DEFUELED.

Moisture Carryover Monitoring

CH-SY-026, Moisture Carry Over Fraction (performed by Chemistry weekly) (To be performed daily following a transient event that could affect the dryer)

Parameters To Be Monitored For Steam Dryer Structural Integrity At Least Daily At Rated Conditions

1. NBA01 Core Thermal Power
2. Condensing Chamber XY-B21-2D002
  - a. NFP03 RPV Wide Range Press
  - b. NFL04 Rx Upset Range Lvl 517" variable tap
  - c. NFL05 RPV Extended Range Lvl 366" variable tap
3. Condensing Chamber XY-B21-2D004A
  - a. NFP05 RPV Wide Range Press
  - b. NFL02 Rx Narrow Range Lvl B 517" variable tap
  - c. NBL05 RPV Wide Range Lvl 366" variable tap
4. Condensing Chamber XY-B21-2D004B
  - a. NFP51 Reactor Pressure SRU 4
  - b. NFL03 Rx Narrow Range Lvl C 517" variable tap
  - c. NBL06 RPV Wide Range Lvl 366" variable tap
5. Condensing Chamber XY-24202
  - a. NFL07 RPV Extended Range Lvl 366" variable tap
6. FPA02 NSSS Total Feedwater Flow
7. NFF01 Rx Stm Flow A
8. NFF02 Rx Stm Flow B
9. NFF03 Rx Stm Flow C
10. NFF04 Rx Stm Flow D

**UNIT 1 AND UNIT 2 RPV STEAM DRYER  
STRUCTURAL INTEGRITY MONITORING**Attachment I  
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Page 24 of 25Background

GE SIL No 644 Rev 2 recommends monitoring on a daily basis for significant anomalies (such as step changes in indicated values) that may indicate a steam dryer failure. The following observations can indicate a problem with the steam dryer:

- Step change in reactor pressure (usually small ~2 to 3 psi)
- Step change in reactor level (~2 inches)
- Step change in steamline flow (~5%)

Therefore, trend plots of RPV parameter data will be useful for performing the monitoring.

Significant steam dryer damage could be detected by a change in steam line flow distribution.

Damage to the dryer skirt or hood in the region of the reference leg vessel tap could permit flow through the annular area around the skirt. In the presence of the vessel level reference level instrumentation this flow has the potential to induce a Bernoulli effect indication error that may affect both the water level and reactor pressure indications.

GE SIL No 644 Rev 2 recommends monitoring moisture content in the steam leaving the reactor weekly. The Chemistry department normally performs CH-SY-026, Moisture Carry Over Fraction on a monthly basis. During the first cycle of operation with a new dryer, the Chemistry department is planning to perform the analysis weekly for at least the first year if not the whole cycle.

Following a transient event that may result in pressure loading of the steam dryer (relief valve opening, turbine stop valve closure, etc), monitor moisture content daily until the structural integrity of the dryer is confirmed. Once it has been established that the dryer sustained no damage, routine monitoring may be resumed. The Chemistry department will have to be notified to perform daily moisture content sampling following a transient that has caused pressure loading of the dryer. OP-AD-327, Post Reactor Transient / Scram / Shutdown Evaluation will ensure CH-SY-026 is performed daily until parameters confirm that there is no compromise to the steam dryer structural integrity.

Moisture content can change during the operating cycle due to changes in core power, core flow, or core radial peaking. An observed moisture carryover of 0.2% would be a significant change for an efficient dryer with a normal carryover of about 0.05%. A high core radial peaking factor has the capability to overload a local section of the steam separator which would overload a local section of the steam dryer. A structural failure would allow wet steam to bypass the dryer vane banks. An increase in feed-to-steam flow mismatch may validate an increase in moisture carryover. Moisture carryover can affect turbine efficiency and increase balance of plant radiation levels.

**UNIT 1 AND UNIT 2 RPV STEAM DRYER  
STRUCTURAL INTEGRITY MONITORING**

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References

1. GE SIL No. 644 Rev 2 BWR Steam Dryer Integrity
2. GE SIL No. 644 Supplement 1 BWR Steam Dryer Integrity
3. EC 674923 – EPU - Steam Dryer Upgrade – Unit 1
4. ON-145-004, RPV Water Level Anomaly
5. TRM 2.2, Instrument Trip Setpoint Table
6. TM-OP-062-ST, Reactor Vessel and Internals
7. TM-OP-080-ST, Reactor Vessel Instrumentation
8. P&ID M-142 sheet 1