

PPL SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: Implement On-Site Class 1E Operability Test for Inoperable Diesel Generator

JPM#: 24.SO.1475.002 Revision: 2 Date: 07/17/2017

Applicability: ☒ RO ☒ SRO

Setting: Simulator

NUREG-1123 E/APE / Sys G K/A Number 2.2.40 K/A Importance 3.4 / 4.7

Alternate Path: ☐ YES ☒ NO Time Critical ☐ YES ☒ NO Validation Time (min): 25

Testing Method: ☐ Simulate ☒ Perform

Author: Michael Wilcox Date: 07/17/17

Operations Review:  Date: 12/4/17

Validated: Michael Wilcox Date: 11/27/17

Approval:  Date: 12/12/17
Nuclear Training Supervisor

Examinee Name: _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min): _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator: _____
Name Signature

Comments:

JPM REVISION SUMMARY
24.SO.1475.002

Revision	Description/Purpose of Revision
0	New JPM
1	Revised for current revision of procedure. Revalidation not required, no changes to critical steps/sequence and no change of procedure direction/intent.
2	Revise for TQ procedures, minor editorial corrections. Renumbered from 24.AD.1475.001.

REQUIRED TASK INFORMATION

24.SO.1475.002

1. SAFETY CONSIDERATIONS

- A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.
- B. All applicable safety precautions shall be taken in accordance with established PPL safety policies and the Safety Rule Book, for example:
 - 1. Whenever any electrical panel is opened for inspection during JPM performance.
 - 2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.
- C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.
- D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

2. REFERENCES

- A. SO-024-013, Offsite Power Source And Onsite Class 1E Operability Test
- B. TS 3.8.1, AC SOURCES - OPERATING
- C. TS 3.1.7, STANDBY LIQUID CONTROL SYSTEM

3. TASK CONDITIONS

Units 1 and 2 are operating at rated power in the normal electrical lineup.

All equipment is operable except as noted:

- Unit 2 SLC Pump 2A is inoperable. It failed to develop the required discharge pressure during performance of SO-253-003. Unit 2 has entered TS 3.1.7 Condition B for the inoperable SLC pump.
- Diesel Generator E is unavailable due to a scheduled overhaul in progress.

Diesel Generator A has just experienced a malfunction. A fitting on the fuel oil system failed, resulting in a fuel oil leak. The leak has been isolated. Diesel Generator A is being maintained in LOCAL until the fuel oil leak can be cleaned up.

4. INITIATING CUE

RO Examinee

Perform SO-024-013, Offsite Power Source And Onsite Class 1E Operability Test, for an inoperable Diesel Generator A.

SRO Examinee

Perform Supervision Review of SO-024-013, Offsite Power Source And Onsite Class 1E Operability Test.

Identify all applicable Technical Specification Required Actions and Completion Times.

5. TASK STANDARD

Performs SO-024-013 and determines that Unit 2 must enter TS 3.1.7 Condition C after 4 hours for 2 SLC subsystems inoperable. Determines that within 24 hours either a common cause failure determination is required to be complete, or Diesel Generators B, C, and D must be tested in accordance with SO-024-001.

Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR INSTRUCTIONS</u> <ul style="list-style-type: none"> Marking a step as UNSAT requires written comments on respective step. Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *. The time clock starts when the candidate acknowledges the Initiating Cue. Ensure Unit 1 and 2 Technical Specifications are available. Ensure a copy of SO-024-013 is available to provide to the examinee when requested. 				
<u>EVALUATOR CUE</u> Record JPM start time: _____				
1	Identifies governing procedure and obtain controlled copy.	Obtains controlled copy of SO-024-013.	S / U	
2	Verifies prerequisites are satisfied.	Performs the following from review of the Task Conditions: <ul style="list-style-type: none"> Observes Units 1 and 2 in Mode 1 Observes no maintenance or testing is in progress that would conflict with performance of SO-024-013 Observes only 1 DG is inoperable, no reportability is required 	S / U	
3	Records operational conditions of both units.	On Attachment A, PROCEDURE DATA RECORD, item 5.1, records Mode 1 as AS-FOUND Unit 1 and Unit 2 Operational Condition and initials.	S / U	
4	Records Plant Condition(s) which requires performance of this surveillance.	On Attachment A, PROCEDURE DATA RECORD, item 5.2, performs the following and initials each: <ul style="list-style-type: none"> Records YES for 5.2.a Loss of D/G A Records NO for all others 	S / U	
5	Records operable Diesel Generators aligned for standby automatic operation.	On Step 5.3.1 of SO-024-013, circles Diesel Generators B, C and D.	S / U	

Step	Action	Standard	Eval	Comments
6	Confirms breaker alignment for inoperable Diesel Generator.	<p>Observes the following breakers are CLOSED at 0C653; and initials, signs and records date and time on Checksheet #2 of Attachment C:</p> <ul style="list-style-type: none"> • SU XFMR 10 TO BUS 10 BKR 0A10301 • SU XFMR 20 TO BUS 20 BKR 0A10401 • SU BUS 10 TO XFMR 101 BKR 0A10306 • SU BUS 10 TO XFMR 111 BKR 0A10312 • SU BUS 20 TO XFMR 201 BKR 0A10406 • SU BUS 20 TO XFMR 211 BKR 0A10412 • XFMR 101 TO BUS 1A BKR 1A20101 • XFMR 111 TO BUS 1C BKR 1A20301 • XFMR 211 TO BUS 1B BKR 1A20209 • XFMR 201 TO BUS 1D BKR 1A20409 • XFMR 101 TO BUS 2A BKR 2A20101 • XFMR 111 TO BUS 2C BKR 2A20301 • XFMR 211 TO BUS 2B BKR 2A20209 • XFMR 201 TO BUS 2D BKR 2A20408 	S / U	
7	Verifies all ESS buses are energized.	Determines power is available for all Unit 1 and Unit 2 ESS Buses.	S / U	
*8	Confirms systems and equipment redundant to systems and equipment supported by Diesel Generator A are operable.	<p>Performs the following on Attachment D of SO-024-013:</p> <ul style="list-style-type: none"> • Records NO for Unit 2 SLC Pump 2A OPERABLE • Records YES for all other systems and equipment OPERABLE for Units 1 and 2 	S / U	
9	Evaluates common cause failure.	Informs Unit Supervisor to determine how to comply with Step 5.3.2.b.2 (common-mode failure determination).	S / U	
EVALUATOR CUE (For the RO examinee) The SRO will determine how to perform Step 5.3.2.b.2. Continue with the SO. The SRO will record whether Acceptance Criteria 2 of Attachment A is met.			S / U	

Examinee _____

Step	Action	Standard	Eval	Comments
10	Notifies Unit Supervisor to review requirements of LCO 3.8.1.b.2	Notifies Unit Supervisor of the following: <ul style="list-style-type: none"> Equipment on Attachment D of SO-024-013 should not be impaired without meeting the requirements of TS 3.8.1 Required Action B.2 	S / U	
*11	Records on-site Class 1E distribution system breaker alignment and power availability is acceptable.	On Attachment A of SO-024-013, records YES for Acceptance Criteria 1 and initials.	S / U	
*12	Records systems/equipment are not operable as required for Diesel Generator A inoperable.	On Attachment A of SO-024-013, records NO for Acceptance Criteria 3 and initials.	S / U	
13	Notifies Shift Supervision of Acceptance Criteria not met.	Notifies Unit Supervisor that SO-024-013 Acceptance Criteria is not met.	S / U	
<u>EVALUATOR CUE</u> (For the RO examinee) That completes the JPM.				
*14	Evaluates common cause failure.	Determines that within 24 hours EITHER of the following actions must be performed: <ul style="list-style-type: none"> Determine cause of diesel generator inoperability and ensuring it does not represent a common mode/generic failure mechanism for remaining diesel generators Test Diesel Generators B, C and D in accordance with SO-024-001 (SRO applicants may have noted how this step would be completed on RO portion.)	S / U	
*15	Identifies applicable REQUIRED ACTIONS are in effect	On Attachment A of SO-024-013, REQUIRED ACTIONS, performs the following and initials each: <ul style="list-style-type: none"> Marks YES for both Unit 1 and Unit 2 for U1 LCO 3.8.1 being in effect. Marks YES for both Unit 1 and Unit 2 for U2 LCO 3.8.1 being in effect. 		

Examinee _____

Step	Action	Standard	Eval	Comments
*16 -	Identifies applicable TS Required Actions and Completion Times for inoperable Unit 2 SLC Pump 2A.	Performs the following: <ul style="list-style-type: none"> Identifies Unit 2 SLC Pump 2B must be declared inoperable within 4 hours per TS 3.8.1 Required Action B.2 Determines that within 8 hours of declaring Unit 2 SLC Pump 2B inoperable, either SLC Pump 2A must be restored OPERABLE, or Diesel Generator A must be restored OPERABLE 	S / U	
<u>EVALUATOR CUE</u> Record JPM stop time: _____				
<u>EVALUATOR NOTE</u> That completes the JPM.				
<u>EVALUATOR:</u> Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

RO EXAMINEE

TASK CONDITIONS

Units 1 and 2 are operating at rated power in the normal electrical lineup.

All equipment is operable except as noted:

- Unit 2 SLC Pump 2A is inoperable. It failed to develop the required discharge pressure during performance of SO-253-003. Unit 2 has entered TS 3.1.7 Condition B for the inoperable SLC pump.
- Diesel Generator E is unavailable due to a scheduled overhaul in progress.

Diesel Generator A has just experienced a malfunction. A fitting on the fuel oil system failed, resulting in a fuel oil leak. The leak has been isolated. Diesel Generator A is being maintained in LOCAL until the fuel oil leak can be cleaned up.

INITIATING CUE

Perform SO-024-013, Offsite Power Source And Onsite Class 1E Operability Test, for an inoperable Diesel Generator A.

RO EVALUATOR

TASK CONDITIONS

Units 1 and 2 are operating at rated power in the normal electrical lineup.

All equipment is operable except as noted:

- Unit 2 SLC Pump 2A is inoperable. It failed to develop the required discharge pressure during performance of SO-253-003. Unit 2 has entered TS 3.1.7 Condition B for the inoperable SLC pump.
- Diesel Generator E is unavailable due to a scheduled overhaul in progress.

Diesel Generator A has just experienced a malfunction. A fitting on the fuel oil system failed, resulting in a fuel oil leak. The leak has been isolated. Diesel Generator A is being maintained in LOCAL until the fuel oil leak can be cleaned up.

INITIATING CUE

Perform SO-024-013, Offsite Power Source And Onsite Class 1E Operability Test, for an inoperable Diesel Generator A.

SRO EXAMINEE

TASK CONDITIONS

Units 1 and 2 are operating at rated power in the normal electrical lineup.

All equipment is operable except as noted:

- Unit 2 SLC Pump 2A is inoperable. It failed to develop the required discharge pressure during performance of SO-253-003. Unit 2 has entered TS 3.1.7 Condition B for the inoperable SLC pump.
- Diesel Generator E is unavailable due to a scheduled overhaul in progress.

Diesel Generator A has just experienced a malfunction. A fitting on the fuel oil system failed, resulting in a fuel oil leak. The leak has been isolated. Diesel Generator A is being maintained in LOCAL until the fuel oil leak can be cleaned up.

INITIATING CUE

Perform Supervision Review of SO-024-013, Offsite Power Source And Onsite Class 1E Operability Test.

Identify all applicable Technical Specification Required Actions and Completion Times.

SRO EVALUATOR

TASK CONDITIONS

Units 1 and 2 are operating at rated power in the normal electrical lineup.

All equipment is operable except as noted:

- Unit 2 SLC Pump 2A is inoperable. It failed to develop the required discharge pressure during performance of SO-253-003. Unit 2 has entered TS 3.1.7 Condition B for the inoperable SLC pump.
- Diesel Generator E is unavailable due to a scheduled overhaul in progress.

Diesel Generator A has just experienced a malfunction. A fitting on the fuel oil system failed, resulting in a fuel oil leak. The leak has been isolated. Diesel Generator A is being maintained in LOCAL until the fuel oil leak can be cleaned up.

INITIATING CUE

Perform Supervision Review of SO-024-013, Offsite Power Source And Onsite Class 1E Operability Test.

Identify all applicable Technical Specification Required Actions and Completion Times.

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: Complete Aborted Evolution Log

JPM#: 00.AD.21017.001 Revision: 0 Date: 06/27/2017

Applicability: ☒ RO

Setting: Classroom

NUREG-1123 E/APE / Sys G K/A Number 2.1.20 K/A Importance 4.6

Alternate Path: ☐ YES ☒ NO Time Critical ☐ YES ☒ NO Validation Time (min): 15

Testing Method: ☐ Simulate ☒ Perform

Author: Michael Wilcox Date: 06/27/17

Operations Review:  Date: 12/4/17

Validated: Michael Wilcox Date: 11/27/17

Approval:  Date: 12/12/17
Nuclear Training Supervisor

Examinee Name: _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min): _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator: _____
Name Signature

Comments:

**REQUIRED TASK INFORMATION
JOB PERFORMANCE MEASURE
00.AD.21017.001**

I. SAFETY CONSIDERATIONS

- A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.
- B. All applicable safety precautions shall be taken in accordance with established Talen Energy safety policies and the Safety Rule Book, for example:
 - 1. Whenever any electrical panel is opened for inspection during JPM performance.
 - 2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.
- C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.
- D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

II. REFERENCES

- OP-133-001 Chemical Addition to Turbine Building Chilled Water System marked up to step 2.5.10 (2.5.10 only circled, not slashed)
- OP-AD-002 Standards for Shift Operation

III. TASK CONDITIONS

- Unit 1 is in Mode 1
- All Plant Equipment required for Mode 1 is in operation
- Turbine Building Chilled Water System in Service
- The Turbine building NPO is performing a Chemical Addition to Turbine Building Chilled Water System IAW OP-133-001 Section 2.5.
- During step 2.5.10 TB Chilled Wtr Chem Add Tank In valve 188003 could not be opened. Maintenance will not be available until dayshift tomorrow to support opening the 188003 valve.
- You are the Unit 1 PCOP

IV. INITIATING CUE

Complete the necessary administrative tasks to turn this information over to the on-coming shift. Document actions taken on OP-AD-002, Attachment B, per section 5.7

V. TASK STANDARD

Aborted Evolution Control Log identifies TB Chilled Wtr Chem Add Tank Out In valve 188003 could not be opened. Unit 1 turbine bldg. NPO, and Control Room Supervisor notified to make turnover sheet entries referencing the Aborted evolution. Plant operator turnover sheet entry referencing the Aborted evolution is made.

INFORMATION FOR EVALUATOR

- Marking a step as UNSAT requires written comments on respective step.
- Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *.
- The time clock starts when the candidate acknowledges the Initiating Cue.
- This JPM can be performed in the simulator, classroom or other similar environment.
- Mark-up a copy of OP-133-001 filled out up to step 2.5.10 (2.5.10 only circled, not slashed).
- Replacement pages for JPM: Section 5.7 of OP-AD-002 and blank Aborted Evolution Control Log (AECL) OP-AD-002-3 Attachment B

EVALUATOR CUE

Record JPM start time: _____

Step	Action	Standard	Eval	Comments
1	Identifies governing procedure and obtain controlled copy.	Obtains controlled copy of OP-AD-002, Standards for shift operations.	S/U	
2	Selects the correct procedure section to perform. OP-AD-002 Section 5.7	Performs OP-AD-002 section 5.7, Aborted Evolution Control Log (AECL)	S/U	
*3	Completes OP-AD-002 Attachment B	Completes Attachment B as follows: <ul style="list-style-type: none"> • Line 1; Date, Time, and name. • Line 2; System number 133 and system name Turbine Building Chilled Water System • *Line 3; Procedure number OP-133-001, Revision 37, step 2.5.10 • *Line 4; TB Chilled Wtr Chem Add Tank In valve 188003 could not be opened 	S/U	

EVALUATOR NOTE

Due to the nature of this JPM, the information provided by the candidate in the next 2 steps may vary from the information scripted in the STANDARD column. Evaluator judgment may need to be applied to information provided by the candidate.

4	Completes OP-AD-002 Att B cont'd	<ul style="list-style-type: none"> • Line 5, Ensure FME controls are in place • Line 6, notes to resume procedure OP-133-001 beginning at step 2.5.10 • Line7, Left Blank 	S/U	
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*6	Documents AECL data	<ul style="list-style-type: none"> Each AECL activity shall be referenced on the Turnover Sheet of the Operator performing the evolution and be reviewed as part of the Turnover process until such time as the AECL is no longer required, or in control <ul style="list-style-type: none"> Referenced on the US turnover sheet Referenced on the TB NPO Turnover sheet 	S/U	
7	Notifies Unit Supervisor	<p>Informs Unit Supervisor and TB NPO to:</p> <ul style="list-style-type: none"> Reference the aborted evolution IAW the AECL form Review the AECL as part of the turnover to the oncoming shift 	S/U	
<u>EVALUATOR CUE</u> Role-play as US and/or Turbine building NPO to acknowledge the report				
<u>EVALUATOR CUE</u> Record JPM stop time: _____				
<u>EVALUATOR CUE</u> That completes the JPM.				
<u>EVALUATOR NOTE</u> Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 10-13 below.

Instructor: _____ Date: _____

REVISION SUMMARY

JOB PERFORMANCE MEASURE
00.AD.21017.001

Revision	Description/Purpose of Revision
0	New JPM, Replaced 00.AD.038.001

EVALUATOR COPY:

TASK CONDITIONS

- Unit 1 is in Mode 1
- All Plant Equipment required for Mode 1 is in operation
- Turbine Building Chilled Water System in Service
- The Turbine building NPO is performing a Chemical Addition to Turbine Building Chilled Water System IAW OP-133-001 Section 2.5.
- During step 2.5.10 TB Chilled Wtr Chem Add Tank In valve 188003 could not be opened. Maintenance will not be available until dayshift tomorrow to support opening the 188003 valve.
- You are the Unit 1 PCOP

INITIATING CUE

Complete the necessary administrative tasks to turn this information over to the on-coming shift.
Document actions taken on OP-AD-002, Attachment B, per section 5.7

EXAMINEE COPY:

TASK CONDITIONS

- Unit 1 is in Mode 1
- All Plant Equipment required for Mode 1 is in operation
- Turbine Building Chilled Water System in Service
- The Turbine building NPO is performing a Chemical Addition to Turbine Building Chilled Water System IAW OP-133-001 Section 2.5.
- During step 2.5.10 TB Chilled Wtr Chem Add Tank In valve 188003 could not be opened. Maintenance will not be available until dayshift tomorrow to support opening the 188003 valve.
- You are the Unit 1 PCOP

INITIATING CUE

Complete the necessary administrative tasks to turn this information over to the on-coming shift. Document actions taken on OP-AD-002, Attachment B, per section 5.7.

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: Authorize Bypassing the Rod Block Monitor In Accordance With NDAP-QA-0338

JPM#: 00.AD.1021.101 Revision: 0 Date: 07/17/2017

Applicability: ☒ SRO

Setting: Classroom

NUREG-1123 E/APE / Sys G K/A Number 2.1.37 K/A Importance 4.6

Alternate Path: ☐ YES ☒ NO Time Critical ☐ YES ☒ NO Validation Time (min): 20

Testing Method: ☐ Simulate ☒ Perform

Author: Michael Wilcox Date: 07/17/17

Operations Review: *Collin Bestine* Date: 12/4/17

Validated: Michael Wilcox Date: 11/27/17

Approval: *[Signature]* Date: 12/12/17
Nuclear Training Supervisor

Examinee Name: _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min): _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator: _____
Name Signature

Comments:

REQUIRED TASK INFORMATION
JOB PERFORMANCE MEASURE
00.AD.1021.101

I. SAFETY CONSIDERATIONS

- A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.
- B. All applicable safety precautions shall be taken in accordance with established Talen Energy safety policies and the Safety Rule Book, for example:
 - 1. Whenever any electrical panel is opened for inspection during JPM performance.
 - 2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.
- C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.
- D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

II. REFERENCES

- A. NDAP-QA-0338, Reactivity Management and Controls Program
- B. AR-103-001 (C04), RBM UPSCALE OR INOP ROD BLOCK
- C. TS 3.3.2.1, Control Rod Block Instrumentation
- D. TRM 3.2.1, Core Operating Limits Report

III. TASK CONDITIONS

- A plant startup is in progress on Unit 1. Reactor Power is 30%.
- Control Rod withdrawals are in progress.
- When PCOM selected Rod 10-43, the RBM UPSCALE OR INOP ROD BLOCK, AR-103-001 (C04), annunciator alarmed.
- Rod 10-43 is at position 04.
- It has been determined that Rod Block Monitor A has a Critical Self Test Fault.
- All external inputs to the Rod Block Monitor A have been determined to be valid.
- Reactor Engineer reports that MCPR is 1.7.
- Reactor Engineer suggests bypassing the Rod Block Monitor A and continuing with the Start-up.

IV. INITIATING CUE

Determine if Rod Block Monitor A can be bypassed and identify any applicable Technical Specification LCO Required Actions and Completion Times.

V. TASK STANDARD

Complete the Reactivity Control System Bypass Authorization Form, determine that bypassing the Rod Block Monitor is allowed, Tech Spec action 3.3.2.1 action A.1 is required.

INFORMATION FOR EVALUATOR

- Marking a step as UNSAT requires written comments on respective step.
- Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *.
- The time clock starts when the candidate acknowledges the Initiating Cue.
- Ensure the following material is available to support performance of this JPM:
 NDAP-QA-0338
 NDAP-QA-0338, Attachment A
 Unit 1 TS 3.3.2.1
 Unit 1 TRM (COLR)
 AR-103-001 (C04), RBM UPSCALE OR INOP ROD BLOCK

EVALUATOR CUE

Record JPM start time: _____

Step	Action	Standard	Eval	Comments
1	Verifies NDAP-QA-0338 is governing procedure and obtains controlled copy.	Controlled copy of NDAP-QA-0338 obtained.	S/U	
2	Completes NDAP-QA-0338, Attachment A.	Reviews NDAP-QA-0338, Section 6.4.1.f and Attachment A.	S/U	
3	Enters initiating condition data.	Enters the following data for Initiating Condition: <ul style="list-style-type: none"> • Rod ID 10-43 • Notch 04 • Unit 1 • Circle RBM Channel A • Power Level 30 percent • Date/Time 	S/U	
4	Determines if reactor power is <28%.	Places checkmark in "NO" Box, from Task Conditions Reactor Power is 30%.	S/U	

*2	Determines if Rod Block Monitor A is providing a valid rod block per TRM 3.2 Table 7.2-1.	<p>Performs the following:</p> <ul style="list-style-type: none"> Refers to Table 7.2-1 and cue sheet Determines Rod Block is being generated due to the Critical Self Test Fault, not as a result of exceeding a Table 7.2-1 setpoint Places a checkmark in the "NO" Box 	S/U	
*3	Determines if inputs to the Rod Block Monitor A are valid.	Refer to provided task conditions, and place a checkmark in the "NO" Box.	S/U	
4	Contacts I&C to repair the Rod Block Monitor A	Contacts I&C to investigate and repair the Rod Block Monitor A failure.	S/U	
<u>EVALUATOR CUE</u> I&C has been contacted.				
*5 -	Determines if RBM is required to be OPERABLE	<p>Performs the following:</p> <ul style="list-style-type: none"> Refers to TS LCO 3.3.2.1, Table 3.3.2.1-1 for Functions 1.a. – 1.d., and associated footnotes Refers to TRM 3.2 COLR, Table 7.2.-2 Determines that MCPR is below the value specified in the COLR and that 2 channels of RBM are required 	S/U	
*6	Determines Technical Specification impact of bypassing RBM.	Determines that LCO 3.3.2.1 Condition A, Required Action A.1 requires RBM A channel to be restored to operable within 24 hours.	S/U	

*7	Authorizes bypassing Rod Block Monitor A.	Performs the following: <ul style="list-style-type: none"> • Determines that Rod Block Monitor A can be bypassed. • Signs, dates, and enters time on Attachment A in the "Shift Supervision Authorization To bypass the RBM channel" block on the lower right-hand side of the page, and enters current time/date. 	S/U	
<u>EVALUATOR CUE</u> Record JPM stop time: _____				
<u>EVALUATOR CUE</u> That completes the JPM.				
<u>EVALUATOR NOTE</u> Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

VALIDATION CHECKLIST
JOB PERFORMANCE MEASURE
00.AD.1021.101

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 10-13 below.

Instructor
Initials

- | | |
|------------|---|
| <u>Mpw</u> | 1. Task description and number, JPM description and number are identified. |
| <u>Mpw</u> | 2. Knowledge and Abilities (K/A) references are included. |
| <u>Mpw</u> | 3. Performance location specified. (in-plant, control room, or simulator) |
| <u>Mpw</u> | 4. Initial setup conditions are identified. |
| <u>Mpw</u> | 5. Initiating and terminating cues are properly identified. |
| <u>Mpw</u> | 6. Task standards identified and verified by SME review. |
| <u>Mpw</u> | 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*). |
| <u>Mpw</u> | 8. Verify cues both verbal and visual are free of conflict. |
| <u>Mpw</u> | 9. Ensure performance time is accurate. |

Mpw

10. Verify the JPM reflects the most current revision of the procedure.

Procedure	<u>NDAP-QA-0338</u>	Rev	<u>26</u>
Procedure	<u>AR-103-001</u>	Rev	<u>55</u>
Procedure	<u>TS 3.3.2.1</u>	Rev	<u>3</u>
Procedure	<u>TRM 3.2.1</u>	Rev	<u>17</u>

Mpw

11. Pilot the JPM.

For Sim JPMs, ensure simulator response is unchanged. Run concurrent JPMs simultaneously to ensure proper simulator response and there is no interaction between JPMs.

For plant JPMs, ensure the JPM is consistent with conditions in the plant (labeling, radiological, etc.).

N/A

12. If the JPM cannot be performed as written, then revise as necessary and revalidate.
13. When JPM is validated, sign and date JPM cover page. When JPM is Re-validated sign below:

Instructor: _____ Date: _____

Instructor: _____ Date: _____

REVISION SUMMARY

JOB PERFORMANCE MEASURE
00.AD.1021.101

Revision	Description/Purpose of Revision
0	New JPM, Replaced 00.AD.038.001
2	Revise for latest JPM procedure revision, eliminate MCPR LCO requirement
3	Ensures failed control rod is at notch position 04

EVALUATOR COPY:

TASK CONDITIONS

- A plant startup is in progress on Unit 1. Reactor Power is 30%.
- Control Rod withdrawals are in progress.
- When PCOM selected Rod 10-43, the RBM UPSCALE OR INOP ROD BLOCK, AR-103-001 (C04), annunciator alarmed.
- Rod 10-43 is at position 04.
- It has been determined that Rod Block Monitor A has a Critical Self Test Fault.
- All external inputs to the Rod Block Monitor A have been determined to be valid.
- Reactor Engineer reports that MCPR is 1.7.
- Reactor Engineer suggests bypassing the Rod Block Monitor A and continuing with the Start-up.

INITIATING CUE

Determine if Rod Block Monitor A can be bypassed and identify any applicable Technical Specification LCO Required Actions and Completion Times.

EXAMINEE COPY:

TASK CONDITIONS

- A plant startup is in progress on Unit 1. Reactor Power is 30%.
- Control Rod withdrawals are in progress.
- When PCOM selected Rod 10-43, the RBM UPSCALE OR INOP ROD BLOCK, AR-103-001 (C04), annunciator alarmed.
- Rod 10-43 is at position 04.
- It has been determined that Rod Block Monitor A has a Critical Self Test Fault.
- All external inputs to the Rod Block Monitor A have been determined to be valid.
- Reactor Engineer reports that MCPR is 1.7.
- Reactor Engineer suggests bypassing the Rod Block Monitor A and continuing with the Start-up.

INITIATING CUE

Determine if Rod Block Monitor A can be bypassed and identify any applicable Technical Specification LCO Required Actions and Completion Times.

PPL SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: Describe RPS Response to APRM Upscale Votes Using Prints

JPM#: 78.AD.3675.101 Revision: 1 Date: 07/17/2017

Applicability: ☒ RO ☒ SRO

Setting: Classroom

NUREG-1123 E/APE / Sys G K/A Number 2.2.41 K/A Importance 3.5 / 3.9

Alternate Path: ☐ YES ☒ NO Time Critical ☐ YES ☒ NO Validation Time (min): 25

Testing Method: ☐ Simulate ☒ Perform

Author: Michael Wilcox Date: 07/17/17

Operations Review:  Date: 12/4/17

Validated: Michael Wilcox Date: 11/27/17

Approval:  Date: 12/12/17
Nuclear Training Supervisor

Examinee Name: _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min): _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator: _____
Name Signature

Comments:

JPM REVISION SUMMARY
78.AD.3675.101

Revision	Description/Purpose of Revision
0	New JPM
1	Added additional SRO cue sheet, changed to all APRM Voters

REQUIRED TASK INFORMATION

78.AD.3675.101

1. SAFETY CONSIDERATIONS

- A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.
- B. All applicable safety precautions shall be taken in accordance with established PPL safety policies and the Safety Rule Book, for example:
 - 1. Whenever any electrical panel is opened for inspection during JPM performance.
 - 2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.
- C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.
- D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

2. REFERENCES

- A. M1-C72-22, Elementary Diagram – Reactor Protection System, Sheets 6, 11, and 12
- B. TS 3.3.1.1, Reactor Protection System (RPS) Instrumentation

3. TASK CONDITIONS

Units 1 and 2 are operating at rated power.

4. INITIATING CUE

A condition has occurred on Unit 1 resulting in all APRM Voters providing an upscale trip signal. You may mark the provided prints and/or write the explanation on this sheet. Using the provided prints, identify the electrical components that contribute to de-energizing Division 1 RPS scram solenoids and how they change state.

5. TASK STANDARD

Identifies electrical components that actuate from APRM Voter upscale votes to cause RPS scram. The SRO also determines the technical specification impact of a Voter failing to trip RPS.

Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR INSTRUCTIONS</u> <ul style="list-style-type: none"> Marking a step as UNSAT requires written comments on respective step. Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *. The time clock starts when the candidate acknowledges the Initiating Cue. This JPM may be performed in a classroom. Ensure Unit 1 and 2 Technical Specifications are available. Ensure sufficient copies of RPS elementary diagrams are available to provide to the examinee. This must include M1-C72-22 sheets 6, 11, and 12 as a minimum. 				
<u>EVALUATOR CUE</u> Record JPM start time: _____				
1	Identifies governing reference and obtain controlled copy.	Obtains controlled copy of RPS elementary diagrams from the evaluator.	S / U	
<u>EVALUATOR NOTE</u> The following components in JPM steps 2-8, may be identified by either marking on the electrical print or writing the electrical print number and location on the response sheet.				
*2	Identifies APRM Voter #1 contacts K1X and K1Y on elementary diagram M1-C72-22 sheet 6.	Identifies APRM Voter #1 contacts K1X and K1Y on elementary diagram M1-C72-22 sheet 6 (near locations J-3 and J-5, respectively).	S / U	
*3	Identifies relays K12A and K12E on elementary diagram M1-C72-22 sheet 6.	Identifies relays K12A and K12E on elementary diagram M1-C72-22 sheet 6 (near locations L-3 and L-5, respectively).	S / U	
*4	Identifies contacts K12A and K12E on elementary diagram M1-C72-22 sheet 11.	Identifies contacts K12A and K12E on elementary diagram M1-C72-22 sheet 11 (near locations H-2 and J-2, respectively).	S / U	
*5	Identifies relays K14A and K14E on elementary diagram M1-C72-22 sheet 11.	Identifies relays K14A and K14E on elementary diagram M1-C72-22 sheet 11 (near location K-2).	S / U	

Examinee _____

Step	Action	Standard	Eval	Comments
*6	Identifies contacts K14A and K14E on elementary diagram M1-C72-22 sheet 12.	Identifies contacts K14A and K14E on elementary diagram M1-C72-22 sheet 12 (near locations, A-9, B-13, A-10, and B-12, respectively).	S / U	
<u>EVALUATOR NOTE</u> In the following step, the examinee does not have to identify all pilot solenoids/relays on this sheet, as long as a representative sample is identified and some indication is given that there are multiple solenoids/relays.				
*7	Identifies pilot solenoids for trip system A scram valves on elementary diagram M1-C72-22 sheet 12.	Identifies pilot solenoids/relays for trip system A scram valves on elementary diagram M1-C72-22 sheet 12 (near locations C-9, C-10, C-12, and C-13).	S / U	
* *8	Describes how APRM Voter #1 upscale vote results in de-energized pilot scram solenoid valves.	Describes the following: <ul style="list-style-type: none"> • Upscale vote causes contacts K1X and K1Y to open. • This causes relays K12A and K12E to de-energize. • This causes contacts K12A and K12E to open. • This causes relays K14A and K14E to de-energize. • This causes contacts K14A and K14E to open. • This causes one pilot solenoid/relay to de-energize at each HCU. 	S / U	
<u>EVALUATOR CUE</u> (For the RO examinee) This completes the JPM. (For the SRO examinee) Provide the SRO examinee with the additional SRO Only cue sheet.			S / U	
*9	Determines applicable Technical Specification	Determines Tech Spec 3.3.1.1 applies	S / U	

Examinee _____

Step	Action	Standard	Eval	Comments
*10	Determines Technical Specification required actions.	<p>Determines that the applicable RPS channel or trip system must be placed in a trip condition within 12 hours.</p> <p>Note: Table 3.3.1.1-1 function 2e requires that 2 Voters be operable for each RPS channel. With APRM Voter #1 inoperable, condition A applies, requiring the associated RPS channel be placed in a trip condition within 12 hours.</p>	S / U	
<u>EVALUATOR CUE</u> Record JPM stop time: _____				
<u>EVALUATOR NOTE</u> That completes the JPM.				
<u>EVALUATOR:</u> Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

EVALUATOR COPY:

TASK CONDITIONS

Units 1 and 2 are operating at rated power.

INITIATING CUE

A condition has occurred on Unit 1 resulting in all APRM Voters providing an upscale trip signal. Using the provided prints, identify the electrical components that contribute to de-energizing Division 1 RPS scram solenoids.

EXAMINEE COPY:

TASK CONDITIONS

Units 1 and 2 are operating at rated power.

INITIATING CUE

A condition has occurred on Unit 1 resulting in all APRM Voters providing an upscale trip signal. Using the provided prints, identify the electrical components that contribute to de-energizing Division 1 RPS scram solenoids.

SRO ONLY - EVALUATOR COPY

TASK CONDITIONS

Unit 2 is at rated power.

Maintenance has determined APRM Voter #1 has failed and will not produce a vote to trip RPS.

INITIATING CUE

Determine the technical specification impact on this failure and identify the required actions and completion times, if any.

SRO ONLY - EXAMINEE COPY

TASK CONDITIONS

Unit 2 is at rated power.

Maintenance has determined APRM Voter #1 has failed and will not produce a vote to trip RPS.

INITIATING CUE

Determine the technical specification impact on this failure and identify the required actions and completion times, if any.

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: Radiological Requirements for Operator Work in High Radiation Areas

JPM#: LOC 29 RC JPM

Revision: 0

Date: 06/29/2017

Applicability: ☒ RO ☒ SRO

Setting: Classroom

NUREG-1123 E/APE / Sys Generic

K/A Number 2.3.7

K/A Importance 3.5/3.6

Alternate Path: ☒ YES ☐ NO

Time Critical ☐ YES ☒ NO

Validation Time (min): 15

Testing Method: ☐ Simulate ☒ Perform

Author: Michael Wilcox

Date: 06/29/2017

Operations Review: Collin Breitman

Date: 12/4/17

Validated: Michael Wilcox

Date: 11/27/17

Approval: 

Date: 12/12/17

Nuclear Training Supervisor

Examinee Name: _____

Last, First MI

Employee Number

Exam Date: _____

Exam Duration (Min): _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator: _____

Name

Signature

Comments:

**REQUIRED TASK INFORMATION
JOB PERFORMANCE MEASURE**

I. SAFETY CONSIDERATIONS

- A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.
- B. All applicable safety precautions shall be taken in accordance with established Talen Energy safety policies and the Safety Rule Book, for example:
 - 1. Whenever any electrical panel is opened for inspection during JPM performance.
 - 2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.
- C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.
- D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

II. REFERENCES

- A. NDAP-QA-0625, Personnel Exposure Monitoring
- B. NDAP-QA-0626, RCAs & RWP's
- C. NDAP-QA-0627, Contamination Control

III. TASK CONDITIONS

Unit 1 is operating at 100% power

A small steam leak has developed in the RCIC Room. Entry into the room is still permissible.

Neither RCIC room cooler is functioning

Stay times have been evaluated to be in excess of 1 hour.

Entry into the room is required to assist Maintenance with repairing a RCIC Room Cooler.

An updated survey map is provided by RP.

Your current year-to-date exposure is 1800 mRem TEDE.

You have not received any dose extension this year.

You will be performing Moderate Work for a total of 45 minutes at the lower RCIC Room Cooler (near x on the provided survey map).

IV. INITIATING CUE

Address the radiological aspects of performing this work, and record your findings on the provided scorecard per NDAP-QA-0625, NDAP-QA-0626, and NDAP-QA-0627.

V. TASK STANDARD

Radiological Requirements have been determined.

INFORMATION FOR EVALUATOR

- Marking a step as UNSAT requires written comments on respective step.
- Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *.
- The time clock starts when the candidate acknowledges the Initiating Cue.
- Ensure that a copy of NDAP-QA-0625, 0626, and 0627 are available.

EVALUATOR CUE

Record JPM start time: _____

Step	Action	Standard	Eval	Comments
1	Obtain copy of reference procedure.	Obtain copies of procedures from examiner.	S/U	
2*	Addresses radiological stress aspects of working in RCIC Room:	Determines radiological classification of area: HIGH RADIATION AREA	S/U	
3*	Answers question 2 on score card	Determines highest dose rate in the room and location: 600 mRem/hr in northern part of room (<i>right side of survey map near RCIC turbine</i>)	S/U	
4*	Answers question 3 on score card	Determines dose rate at the work location: 500 mRem/hr	S/U	
5*	Answers question 4 on score card	Determines highest contamination level in the room and location: 8,000 dpm/100cm² at circle 5	S/U	
6*	Answers question 5 on score card	Determines contamination level the work location: 5,000 dpm/100cm²	S/U	
7*	Answers question 6 on score card	Determines expected dose for job: 500mrem/hr(45min)(1hr/60min) 375 mRem	S/U	

EVALUATOR CUE

Provide candidate with SRO only cue sheet.

8*	SRO Only – Determines dose extension required	Determines annual exposure will exceed 2000 mRem local dose limit(1800 mRem + 375 mRem = 2175 mRem > 2000 mRem)	S/U	
9*	SRO Only – Locates NDAP-QA-0625 attachment A	References NDAP-QA-0625 and determines attachment A (NDAP-QA-0625-1) is the required form for the dose extension (Candidate may also select Attachment B, ALARA Review)	S/U	
10*	SRO Only – Determines required approvals for dose extension	Identifies required approvals as individual's Functional Unit Manager/Supervisor, Radiation Protection Manager. Note: There are two options for dose extensions. If the SRO determines to use the extension up to 3000 mrem TEDE, approvals will be as keyed. If the SRO determines to use the "other" extension, and specifies a value less than 3000 mrem TEDE, the ALARA supervisor approval will also be required. The Plant Manager approval is NOT required in either case.	S/U	

EVALUATOR CUE

Record JPM stop time: _____

EVALUATOR CUE

That completes the JPM.

EVALUATOR NOTE

Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?

VALIDATION CHECKLIST
JOB PERFORMANCE MEASURE
00.EP.1132.180

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 10-13 below.

Instructor
Initials

- | | |
|------------|---|
| <u>Mpw</u> | 1. Task description and number, JPM description and number are identified. |
| <u>Mpw</u> | 2. Knowledge and Abilities (K/A) references are included. |
| <u>Mpw</u> | 3. Performance location specified. (in-plant, control room, or simulator) |
| <u>Mpw</u> | 4. Initial setup conditions are identified. |
| <u>Mpw</u> | 5. Initiating and terminating cues are properly identified. |
| <u>Mpw</u> | 6. Task standards identified and verified by SME review. |
| <u>Mpw</u> | 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*). |
| <u>Mpw</u> | 8. Verify cues both verbal and visual are free of conflict. |
| <u>Mpw</u> | 9. Ensure performance time is accurate. |

Mpw

10. Verify the JPM reflects the most current revision of the procedure.

Procedure	<u>NDAP-QA-0625</u>	Rev	<u>18</u>
Procedure	<u>NDAP-QA-0626</u>	Rev	<u>47</u>
Procedure	<u>NDAP-QA-0627</u>	Rev	<u>47</u>

Mpw

11. Pilot the JPM.

For Sim JPMs, ensure simulator response is unchanged. Run concurrent JPMs simultaneously to ensure proper simulator response and there is no interaction between JPMs.

For plant JPMs, ensure the JPM is consistent with conditions in the plant (labeling, radiological, etc.).

N/A

12. If the JPM cannot be performed as written, then revise as necessary and revalidate.

13. When JPM is validated, sign and date JPM cover page. When JPM is Re-validated sign below:

Instructor: _____ Date: _____

Instructor: _____ Date: _____

REVISION SUMMARY

JOB PERFORMANCE MEASURE

Revision	Description/Purpose of Revision
0	New JPM

EVALUATOR

TASK CONDITIONS

- Unit 1 is operating at 100% power
- A small steam leak has developed in the RCIC Room. Entry into the room is still permissible.
- Neither RCIC room cooler is functioning
- Stay times have been evaluated to be in excess of 1 hour.
- Entry into the room is required to assist Maintenance with repairing a RCIC Room Cooler.
- An updated survey map is provided by RP.
- Your current year-to-date exposure is 1800 mRem TEDE.
- You have not received any dose extension this year.
- You will be performing Moderate Work for a total of 45 minutes at the lower RCIC Room Cooler (near x on the provided survey map).

INITIATING CUE

Address the radiological aspects of performing this work, and record your findings on the provided scorecard per NDAP-QA-0625, NDAP-QA-0626, and NDAP-QA-0627.

EXAMINEE

TASK CONDITIONS

- Unit 1 is operating at 100% power
- A small steam leak has developed in the RCIC Room. Entry into the room is still permissible.
- Neither RCIC room cooler is functioning
- Stay times have been evaluated to be in excess of 1 hour.
- Entry into the room is required to assist Maintenance with repairing a RCIC Room Cooler.
- An updated survey map is provided by RP.
- Your current year-to-date exposure is 1800 mRem TEDE.
- You have not received any dose extension this year.
- You will be performing Moderate Work for a total of 45 minutes at the lower RCIC Room Cooler (near x on the provided survey map).

INITIATING CUE

Address the radiological aspects of performing this work, and record your findings on the provided scorecard per NDAP-QA-0625, NDAP-QA-0626, and NDAP-QA-0627.

Scorecard

<i>Answer the following when performing this task:</i>	
1.	
Classify the room based on radiation level (check one):	<input type="checkbox"/> Radiation Area <input type="checkbox"/> High Radiation Area <input type="checkbox"/> Locked High Radiation Area <input type="checkbox"/> Very High Radiation Area
2.	
What is the highest dose rate in the RCIC room and the location?	
3.	
What is the dose rate at the work location?	
4.	
What is the highest contamination level in the RCIC room and the location?	
5.	
What is the contamination level at the work location?	
6.	
What is the expected dose for the duration of the job?	

NOTE: THIS IS THE EXAMINER SCORECARD.

DO NOT PROVIDE TO THE CANDIDATE.

1.	
Classify the room based on radiation level (check one):	<input type="checkbox"/> Radiation Area <input checked="" type="checkbox"/> High Radiation Area <input type="checkbox"/> Locked High Radiation Area <input type="checkbox"/> Very High Radiation Area
2.	
What is the highest dose rate in the RCIC room and the location?	
600 mRem/hr in northern part of room (right side of survey map)	
3.	
What is the dose rate at the work location?	
500 mRem/hr	
4.	
What is the highest contamination level in the RCIC room and the location?	
8,000 dpm/100cm² at circle 5	
5.	
What is the contamination level at the work location?	
5,000 dpm/100cm²	
6.	
What is the expected dose for the duration of the job?	
375 mRem	

SRO Only Handout

Cue:

“(Operator’s name), determine if a dose extension is required to perform this work. If no extension is required, identify the expected margin to the dose limit upon completion of the task. If an extension is required, identify the form required to be completed for the dose extension and the levels of approval needed for the dose extension. Record your findings on the scorecard below.”

SRO Only Scorecard

<i>Answer the following when performing this task:</i>	
1.	Is a dose extension required?
	<input type="checkbox"/> No (answer question 2 below only) <input type="checkbox"/> Yes (answer questions 3 and 4 below only)
2.	Designate expected margin to dose limit upon completion of the job.
3.	Identify the <u>form</u> and the <u>procedure section</u> required to be completed for the dose extension.
4.	Check all appropriate boxes below for the approvals required for this dose extension. <div style="text-align: right; margin-top: 20px;"> <input type="checkbox"/> Functional Unit Manager/Supervisor <input type="checkbox"/> Radiation Protection Manager <input type="checkbox"/> ALARA Supervisor <input type="checkbox"/> Plant Manager </div>

NOTE: THIS IS THE EXAMINER SCORECARD.

DO NOT PROVIDE TO THE CANDIDATE.

1.
Is a dose extension required? <input type="checkbox"/> No (answer question 2 below only) <input checked="" type="checkbox"/> Yes (answer questions 3 and 4 below only)
2.
Designate expected margin to dose limit upon completion of the job. N/A
3.
Identify the <u>form</u> and the <u>procedure section</u> required to be completed for the dose extension. NDAP-QA-0625 Attachment A also known as NDAP-QA-0625-1 Procedure section 5.5
4.
Check all appropriate boxes below for the approvals required for this dose extension. <input checked="" type="checkbox"/> Functional Unit Manager/Supervisor <input checked="" type="checkbox"/> Radiation Protection Manager <input type="checkbox"/> ALARA Supervisor <input type="checkbox"/> Plant Manager

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: Post-Scenario Emergency Event Classification and Emergency Notification Report

JPM#: LOC 29 SRO EP JPM

Revision: 0

Date: 07/17/2017

Applicability: ☒ SRO

Setting: Simulator

NUREG-1123 E/APE / Sys Generic

K/A Number 2.4.41

K/A Importance 4.6

Alternate Path: ☐ YES ☒ NO

Time Critical ☒ YES ☐ NO

Validation Time (min): 15

Testing Method: ☐ Simulate ☒ Perform

Author: Michael Wilcox

Date: 07/17/2017

Operations Review: 

Date: 12/4/17

Validated: Michael Wilcox

Date: 11/10/17

Approval: 

Date: 12/12/17

Nuclear Training Supervisor

Examinee Name: _____

Last, First MI

Employee Number

Exam Date: _____

Exam Duration (Min): _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator: _____

Name

Signature

Comments:

REQUIRED TASK INFORMATION JOB PERFORMANCE MEASURE

I. SAFETY CONSIDERATIONS

- A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.
- B. All applicable safety precautions shall be taken in accordance with established Talen Energy safety policies and the Safety Rule Book, for example:
 - 1. Whenever any electrical panel is opened for inspection during JPM performance.
 - 2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.
- C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.
- D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

II. REFERENCES

- A. EP-PS-100, CR Emergency Director (revision 35)
- B. EP-RM-004, EAL CLASSIFICATION BASES (Revision 12)
- C. EP-PS-001, EMERGENCY PLANNING FORMS AND SUPPLEMENTARY INSTRUCTIONS (Revision 14)

III. TASK CONDITIONS

Each examinee evaluated in the SRO position for a scenario will be required to classify the event once the scenario concludes. Task Conditions for each scenario are based on the scenario itself.

IV. INITIATING CUE

Based on the events that have just occurred, determine if the conditions warranted emergency classification. If so, determine the appropriate emergency classification and as Emergency Director, complete any associated notification form(s) in accordance with the applicable procedures for activation of the Emergency Plan. This is a time critical task. Your time starts now.

V. TASK STANDARD

Classify the event at the appropriate level on the correct EAL and complete the Emergency Notification Report.

INFORMATION FOR EVALUATOR

- Marking a step as UNSAT requires written comments on respective step.
- Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *.
- The time clock starts when the candidate acknowledges the Initiating Cue.
- Ensure that a copy of EP-RM-004, EP-PS-100 and blank ENR and PAR forms are available.

EVALUATOR NOTE

This is a TIME CRITICAL JPM.

EVALUATOR CUE

Record JPM start time: _____

Step	Action	Standard	Eval	Comments
1	Obtains copy of EP-PS-100, Emergency Director, Control Room and EP-RM-004, EAL Classification Bases.	Obtains copy of EP-PS-100, Emergency Director, Control Room and EP-RM-004, EAL Classification Bases.	S/U	
2	Refers to classification matrix.	Selects the correct Table.	S/U	
*3	Chooses appropriate emergency action level.	Declares the correct event level per the JPM key for the scenario within 15 minutes of start time.	S/U	
4	Determines appropriate procedure section.	Identifies the appropriate procedure attachment for the event classification of EP-PS-100.	S/U	
*5	Documents and communicates the Emergency Classification.	Announces the following: <ul style="list-style-type: none"> • I am assuming duties of the Emergency Director • [Event] declared based on [EAL summary] • Time and Date of Classification 	S/U	
6	If not performed earlier appoints an Emergency Plan Communicator.	Appoints an Emergency Plan Communicator and instructs communicator to immediately perform EP-PS-126, E-Plan Communicator.	S/U	

7	If not performed earlier, appoints an NRC communicator.	Appoints an NRC Communicator and instructs communicator to perform EP-PS-135, NRC Communicator.	S/U	
*8	Initiates an ENR form.	Performs the following: <ul style="list-style-type: none"> Refers to ENR Form under Att I and IF necessary EP-PS-001-4 for instructions on filling out the form Line 1, places checkmark in THIS IS A DRILL box 	S/U	

EVALUATOR NOTE

The time recorded on Line 3 of the ENR form is compared to the start time recorded at the beginning of the JPM to determine if the examinee is successful in meeting the 15 minute event declaration requirement of the JPM.

*9	Completes Line 3 of the ENR	Performs the following: <ul style="list-style-type: none"> Places checkmark in the correct event box 	S/U	
10	Completes Line 4 of the ENR	Performs the following: <ul style="list-style-type: none"> Records declaration time and date 	S/U	
*11	Completes Line 5 of the ENR	Performs the following: <ul style="list-style-type: none"> Records EAL in Classification Description 	S/U	
*12	Completes Line 6 of the ENR	Performs the following: <ul style="list-style-type: none"> Refers to EP-PS-001-48 Att. NN for guidance in determining if there is a radiological release in progress due to the event Places checkmark in release box as appropriate 	S/U	
13	Completes Line 7 of the ENR	Performs the following: <ul style="list-style-type: none"> Records wind direction, wind speed. 	S/U	
14	Determines no PARs	Selects box for No Protective Action Recommendations at this time.	S/U	

15	Approves the ENR.	Signs the ENR and records the current date and time.	S/U	
16	Provides the ENR to the Emergency Plan Communicator.	Performs the following: <ul style="list-style-type: none"> • Provides the approved ENR to the Emergency Plan Communicator. • Reviews the ENR with the Communicator • Directs the Communicator to complete the notification within 15 minutes of the event declaration time 	S/U	

EVALUATOR CUE

Record JPM stop time: _____

EVALUATOR CUE

That completes the JPM.

EVALUATOR NOTE

Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?

VALIDATION CHECKLIST JOB PERFORMANCE MEASURE

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 10-13 below.

Instructor
Initials

- | | |
|-----|---|
| Mpw | 1. Task description and number, JPM description and number are identified. |
| Mpw | 2. Knowledge and Abilities (K/A) references are included. |
| Mpw | 3. Performance location specified. (in-plant, control room, or simulator) |
| Mpw | 4. Initial setup conditions are identified. |
| Mpw | 5. Initiating and terminating cues are properly identified. |
| Mpw | 6. Task standards identified and verified by SME review. |
| Mpw | 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*). |
| Mpw | 8. Verify cues both verbal and visual are free of conflict. |
| Mpw | 9. Ensure performance time is accurate. |

Mpw

10. Verify the JPM reflects the most current revision of the procedure.

Procedure	EP-RM-004	Rev	13
Procedure	EP-PS-100	Rev	35
Procedure	EP-PS-001	Rev	14

Mpw

11. Pilot the JPM.

For Sim JPMs, ensure simulator response is unchanged. Run concurrent JPMs simultaneously to ensure proper simulator response and there is no interaction between JPMs.

For plant JPMs, ensure the JPM is consistent with conditions in the plant (labeling, radiological, etc.).

N/A

12. If the JPM cannot be performed as written, then revise as necessary and revalidate.

13. When JPM is validated, sign and date JPM cover page. When JPM is Re-validated sign below:

Instructor: _____ Date: _____

Instructor: _____ Date: _____

REVISION SUMMARY

JOB PERFORMANCE MEASURE

Revision	Description/Purpose of Revision
0	Modified from 00.EP.1132.180 to support being used with different scenarios.

EVALUATOR

INITIATING CUE

Based on the events that have just occurred, determine if the conditions warranted emergency classification. If so, determine the appropriate emergency classification and as Emergency Director, complete any associated notification form(s) in accordance with the applicable procedures for activation of the Emergency Plan. This is a time critical task. Your time starts now.

EXAMINEE

INITIATING CUE

Based on the events that have just occurred, determine if the conditions warranted emergency classification. If so, determine the appropriate emergency classification and as Emergency Director, complete any associated notification form(s) in accordance with the applicable procedures for activation of the Emergency Plan. This is a time critical task. Your time starts now.

******* JPM KEY Do not provide to applicant*******

Scenario	Classification	EAL	Release
1	Site Area Emergency	FS1.1	Yes
2	Site Area Emergency	RS1.1, RS1.2, or RG1.2	Yes
3	Alert	SA6.1	No
4	Alert	FA1.1	No
5	Site Area Emergency	FS1.1	Yes

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: Drain MSIV Leakage to Main Condenser Post-LOCA

JPM#: 84.OP.24668.152

Revision: 0

Date: 06/13/2017

Applicability: ☒ RO ☒ SRO

Setting: Simulator

NUREG-1123 E/APE / Sys 239001

K/A Number A4.02

K/A Importance 3.2/3.2

Alternate Path: ☐ YES ☒ NO

Time Critical ☐ YES ☒ NO

Validation Time (min): 10

Testing Method: ☐ Simulate ☒ Perform

Author: Michael Wilcox

Date: 06/13/2017

Operations Review: *Colleen Boehm*

Date: 12/4/17

Validated: Michael Wilcox

Date: 11/21/17

Approval: *[Signature]*
Nuclear Training Supervisor

Date: 12/2/17

Examinee Name: _____

Last, First MI

Employee Number

Exam Date: _____

Exam Duration (Min): _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator: _____

Name

Signature

Comments:

REQUIRED TASK INFORMATION
JOB PERFORMANCE MEASURE
84.OP.24668.152

I. SAFETY CONSIDERATIONS

- A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.
- B. All applicable safety precautions shall be taken in accordance with established Talen Energy safety policies and the Safety Rule Book, for example:
 - 1. Whenever any electrical panel is opened for inspection during JPM performance.
 - 2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.
- C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.
- D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

II. REFERENCES

- A. OP-184-001, MAIN STEAM SYSTEM

III. TASK CONDITIONS

- A loss of coolant accident has occurred.
- A LOCA signal was first received 25 minutes ago.
- The MSIVs are closed

IV. INITIATING CUE

Drain MSIV leakage to the Main Condenser IAW OP-184-001, section 2.4

V. TASK STANDARD

Drain MSIV leakage to the Main Condenser

SIMULATOR SETUP INSTRUCTIONS
JOB PERFORMANCE MEASURE
84.OP.24668.152

NOTE: It is permissible to use a similar IC to the IC listed below, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently.

Setup the simulator with the following conditions:

- Reactor scrammed.
- Drywell pressure >1.00 psig.
- MSIVs closed.

INFORMATION FOR EVALUATOR

- Marking a step as UNSAT requires written comments on respective step.
- Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *.
- The time clock starts when the candidate acknowledges the initiating cue.
- This JPM must be performed in the simulator. Reset to exam-specific IC-____, or configure the simulator per the Simulator Setup Instructions.
- Have a copy of OP-184-001 Section 2.4.

BOOTH OPERATOR CUE

When student is ready to begin the JPM and the evaluator indicates, place the simulator in RUN.

EVALUATOR CUE

Record JPM start time: _____

Step	Action	Standard	Eval	Comments
1	Identifies governing procedure and obtain controlled copy.	Obtains a controlled copy of OP-184-001 from evaluator. Selects Section 2.4. Reviews procedure as necessary	S / U	
2	Lineup Primary Flowpath as follows: Open or Confirm OPEN Mn Steam Line Warmup HV-141F020 (1C601).	Observes HV-141F020 red light on, amber light off	S / U	
3*	Open Mn Stm Line Drain To Cdsr HV-141F021 (1C601).	Opens HV-141F021 by depressing OPEN pushbutton.	S / U	
4*	Close Mn Stm SJAE Iso HV-10107 (1C668).	Closes HV-10107 by depressing CLOSE pushbutton.	S / U	
5*	Close SSE Mn Stm Sup HV-10109 (1C668).	Closes HV-10109 by depressing CLOSE pushbutton.	S / U	
6*	Close RFPT Mn Stm Sup Iso HV-10111 (1C668).	Closes HV-10111 by depressing CLOSE pushbutton.	S / U	

EVALUATOR NOTE / CUE

That completes the JPM.

EVALUATOR CUE

Record JPM stop time: _____

EVALUATOR NOTE

Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?

VALIDATION CHECKLIST
JOB PERFORMANCE MEASURE
84.OP.24668.152

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 10-13 below.

Instructor
Initials

- | | |
|-----|---|
| Mpw | 1. Task description and number, JPM description and number are identified. |
| Mpw | 2. Knowledge and Abilities (K/A) references are included. |
| Mpw | 3. Performance location specified. (in-plant, control room, or simulator) |
| Mpw | 4. Initial setup conditions are identified. |
| Mpw | 5. Initiating and terminating cues are properly identified. |
| Mpw | 6. Task standards identified and verified by SME review. |
| Mpw | 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*). |
| Mpw | 8. Verify cues both verbal and visual are free of conflict. |
| Mpw | 9. Ensure performance time is accurate. |

Mpw

10. Verify the JPM reflects the most current revision of the procedure.

Procedure	OP-184-001	Rev	38
Procedure		Rev	
Procedure		Rev	

Mpw

11. Pilot the JPM.

For Sim JPMs, ensure simulator response is unchanged. Run concurrent JPMs simultaneously to ensure proper simulator response and there is no interaction between JPMs.

For plant JPMs, ensure the JPM is consistent with conditions in the plant (labeling, radiological, etc.).

N/A

12. If the JPM cannot be performed as written, then revise as necessary and revalidate.

13. When JPM is validated, sign and date JPM cover page. When JPM is Re-validated sign below:

Instructor: _____ Date: _____

Instructor: _____ Date: _____

REVISION SUMMARY

JOB PERFORMANCE MEASURE
84.OP.24668.152

Revision	Description/Purpose of Revision
0	Created from JPM 84.OP.001.152 R1. Reformatted to the Vision template.

EVALUATOR COPY:

TASK CONDITIONS

- A loss of coolant accident has occurred.
- A LOCA signal was first received 25 minutes ago.
- The MSIVs are closed

INITIATING CUE

Drain MSIV leakage to the Main Condenser IAW OP-184-001, section 2.4

EXAMINEE COPY:

TASK CONDITIONS

- A loss of coolant accident has occurred.
- A LOCA signal was first received 25 minutes ago.
- The MSIVs are closed

INITIATING CUE

Drain MSIV leakage to the Main Condenser IAW OP-184-001, section 2.4

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: Swap Feedwater Level Control

JPM#: 45.OP.23984.101

Revision: 0

Date: 06/15/2017

Applicability: ☒ RO

Setting: Simulator

NUREG-1123 E/APE / Sys 259002

K/A Number A4.01

K/A Importance 3.8/3.6

Alternate Path: ☐ YES ☒ NO Time Critical ☐ YES ☒ NO Validation Time (min): 20

Testing Method: ☐ Simulate ☒ Perform

Author: Michael Wilcox


Date: 06/15/2017

Operations Review: 

Date: 12/4/17

Validated: Michael Wilcox

Date: 11/21/17

Approval: 

Date: 12/7/17

Nuclear Training Supervisor

Examinee Name: _____

Last, First MI

Employee Number

Exam Date: _____

Exam Duration (Min): _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator: _____

Name

Signature

Comments:

REQUIRED TASK INFORMATION
JOB PERFORMANCE MEASURE
45.OP.23984.101

I. SAFETY CONSIDERATIONS

- A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.
- B. All applicable safety precautions shall be taken in accordance with established Talen Energy safety policies and the Safety Rule Book, for example:
 - 1. Whenever any electrical panel is opened for inspection during JPM performance.
 - 2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.
- C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.
- D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

II. REFERENCES

- A. OP-145-001, RFP and RFP Lube Oil System

III. TASK CONDITIONS

- Feedwater level control is in automatic.
- Feedwater level control is selected to Narrow Range level A to support I&C work.
- I&C has requested Feedwater level control be swapped to NRLB BIASED to support continued work.
- All prerequisites have been met

IV. INITIATING CUE

Swap Feedwater level control from Narrow Range level A to NRLB BIASED IAW OP-145-001 section 2.21.

V. TASK STANDARD

Feedwater level control swapped from Narrow Range level A to NRLB BIASED per OP-145-001.

SIMULATOR SETUP INSTRUCTIONS
JOB PERFORMANCE MEASURE
45.OP.23984.101

NOTE: It is permissible to use a similar IC to the IC listed below, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently.

1. **Reset** the simulator to IC- 20.

2. **Other** actions

Setup the simulator with the following conditions:

- Reactor operating at 95%.
- Feedwater level control in automatic, 3-element control with level manually selected to Narrow Range level A.
- Narrow Range level A overridden to indicate >1" higher than Narrow Range level B and C using the following malfunction:

IMF cmfTD04_PDTC321N004A f:2

INFORMATION FOR EVALUATOR

- Marking a step as UNSAT requires written comments on respective step.
- Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *.
- The time clock starts when the candidate acknowledges the initiating cue.
- This JPM must be performed in the simulator. Reset to exam-specific IC-____, or configure the simulator per the Simulator Setup Instructions.
- Have a copy of OP-145-001 section 2.21

BOOTH OPERATOR CUE

When student is ready to begin the JPM and the evaluator indicates, place the simulator in RUN.

EVALUATOR CUE

Record JPM start time: _____

Step	Action	Standard	Eval	Comments
1	Identifies governing procedure and obtain controlled copy.	Obtains a controlled copy of OP-145-001 from evaluator. Selects Section 2.21. Reviews procedure as necessary.	S / U	
2	Perform either of following Steps as required: <ul style="list-style-type: none"> • Step 2.21.4 - IF restoring FWLC System to AUTO SELECT • Step 2.21.5 - IF Manually selecting a FWLC Level input. 	Proceeds to step 2.21.5.	S / U	
3	IF desired to Manually select a FWLC Level input: Ensure Shift Supervision has authorized Manual Level Input Selection.	Determines Shift Supervision has authorized operation based on initial conditions / initiating cue.	S / U	
4*	Touch FWLC SELECT button, to open FWLC Selection overlay.	Depresses FWLC SELECT button or FWLC select area of HMI screen to bring up HS-C32-1S01 MANUAL LEVEL INPUT SELECTION overlay.	S / U	

EVALUATOR NOTE

The same HMI overlay screen can be brought up by touching the FWLC select area. This action would also satisfy this critical step. This action may be repeated later as the candidate switches between HMI screens/overlays.

5	<p>Perform either of following Steps as applicable:</p> <ul style="list-style-type: none"> Step 2.21.5.d - IF Level Channel to be selected is reading within +/- 1" of the Selected Level on FW Master Controller LIC-C32-1R600. Step 2.21.5.e - IF Level Channel to be selected is not reading within +/- 1" of the Selected Level on FW Master Controller LIC-C32-1R600. 	<p>Observes indicated level for Narrow Range A and B.</p> <p>Determines difference between Narrow Range A and NRLB BIASED level is >1".</p> <p>Proceeds to step 2.21.5.e.</p>	S / U	
6*	<p>IF desired to Manually select a FWLC Level input and Channel to be selected is not reading within +/- 1" of Selected Level on FW Master Controller LIC-C32-1R600, Perform following (normal steady state operations):</p> <p>Place the FW LEVEL CTL/DEMAND SIGNAL LIC-C32-1R600 Controller in MANUAL.</p>	<p>Places LIC-C32-1R600 in MANUAL by performing the following:</p> <ul style="list-style-type: none"> Touches RX MASTER LVL CONTROL area or 1R600 MASTER CTLR button. Touches MAN button. Adjusts INC/DEC buttons to maintain Reactor water level if required. 	S / U	

EVALUATOR NOTE

The same HMI overlay screen can be brought up by touching the FWLC select area. This action would also satisfy this critical step. This action may be repeated later as the candidate switches between HMI screens/overlays.

EVALUATOR NOTE

Candidate may switch between HMI screens/overlays as necessary to accomplish operations and monitor parameters.

7*	<p>Touch applicable button for desired Level input which will be used:</p> <p>NRLB BIASED</p>	<p>Depresses NRLB BIASED button on HS-C32-1S01 MANUAL LEVEL INPUT SELECTION overlay.</p>	S / U	
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8	Touch INC/DEC LVL SETPT buttons on LIC-C32-1R600 controller in order to null Actual Level and Level Setpoint indications on LIC-C32-1R600 controller are within 0.5" of each other.	Depresses INC/DEC LVL SETPT buttons as necessary to null Actual Level and Level Setpoint indications on LIC-C32-1R600 overlay.	S / U	
9*	Touch AUTO button on FW LEVEL CTL/DEMAND SIGNAL LIC-C32-1R600 controller.	Depresses AUTO button on FW LEVEL CTL/DEMAND SIGNAL LIC-C32-1R600 controller	S / U	
10	Ensure MANUAL FWLC SELECT is indicated on the FW OVERVIEW HMI screen.	Observes MANUAL FWLC SELECT is indicated on FW OVERVIEW HMI screen.	S / U	
11	Touch INC/DEC LVL SETPT buttons as necessary in 0.5" increments in order to slowly restore Level Setpoint to 35".	Depresses INC/DEC LVL SETPT buttons on LIC-C32-1R600 overlay as necessary to restore level setpoint to 35".	S / U	

EVALUATOR CUE

If asked what the desired level setpoint it, direct a level setpoint of 35".

12	Observe stable RPV Water Level.	Observes Reactor water level is stable.	S / U	
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EVALUATOR CUE

Record JPM stop time: _____

EVALUATOR NOTE

Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?

VALIDATION CHECKLIST
JOB PERFORMANCE MEASURE
45.OP.23984.101

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 10-13 below.

Instructor
Initials

- | | |
|-----|---|
| Mpw | 1. Task description and number, JPM description and number are identified. |
| Mpw | 2. Knowledge and Abilities (K/A) references are included. |
| Mpw | 3. Performance location specified. (in-plant, control room, or simulator) |
| Mpw | 4. Initial setup conditions are identified. |
| Mpw | 5. Initiating and terminating cues are properly identified. |
| Mpw | 6. Task standards identified and verified by SME review. |
| Mpw | 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*). |
| Mpw | 8. Verify cues both verbal and visual are free of conflict. |
| Mpw | 9. Ensure performance time is accurate. |

Mpw

10. Verify the JPM reflects the most current revision of the procedure.

Procedure	OP-145-001	Rev	86
Procedure		Rev	
Procedure		Rev	

Mpw

11. Pilot the JPM.

For Sim JPMs, ensure simulator response is unchanged. Run concurrent JPMs simultaneously to ensure proper simulator response and there is no interaction between JPMs.

For plant JPMs, ensure the JPM is consistent with conditions in the plant (labeling, radiological, etc.).

N/A

12. If the JPM cannot be performed as written, then revise as necessary and revalidate.

13. When JPM is validated, sign and date JPM cover page. When JPM is Re-validated sign below:

Instructor: _____

Date: _____

Instructor: _____

Date: _____

REVISION SUMMARY

JOB PERFORMANCE MEASURE
45.OP.23984.101

Revision	Description/Purpose of Revision
0	Created from JPM 45.OP.013.151 R7. Reformatted to the Vision template.

EVALUATOR COPY:

TASK CONDITIONS

- Feedwater level control is in automatic.
- Feedwater level control is selected to Narrow Range level A to support I&C work.
- I&C has requested Feedwater level control be swapped to NRLB BIASED to support continued work.
- All prerequisites have been met

INITIATING CUE

Swap Feedwater level control from Narrow Range level A to NRLB BIASED IAW OP-145-001 section 2.21.

EXAMINEE COPY:

TASK CONDITIONS

- Feedwater level control is in automatic.
- Feedwater level control is selected to Narrow Range level A to support I&C work.
- I&C has requested Feedwater level control be swapped to NRLB BIASED to support continued work.
- All prerequisites have been met

INITIATING CUE

Swap Feedwater level control from Narrow Range level A to NRLB BIASED IAW OP-145-001 section 2.21.

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: Quarterly Turbine Valve Cycling

JPM#: 93.SO.2467.101

Revision: 0

Date: 11/7/2017

Applicability: ☒ RO ☒ SRO

Setting: Simulator

NUREG-1123 E/APE / Sys 241000

K/A Number A4.08

K/A Importance 3.5/3.4

Alternate Path: ☐ YES ☒ NO Time Critical ☐ YES ☒ NO Validation Time (min): 20

Testing Method: ☐ Simulate ☒ Perform

Author: Michael Wilcox

Date: 06/15/2017

Operations Review: *Allen Batina*

Date: 12/4/17

Validated: Michael Wilcox

Date: 11/21/17

Approval: *[Signature]*
Nuclear Training Supervisor

Date: 12/17/17

Examinee Name: _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min): _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator: _____
Name Signature

Comments:

REQUIRED TASK INFORMATION
JOB PERFORMANCE MEASURE
45.OP.23984.101

I. SAFETY CONSIDERATIONS

- A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.
- B. All applicable safety precautions shall be taken in accordance with established Talen Energy safety policies and the Safety Rule Book, for example:
 - 1. Whenever any electrical panel is opened for inspection during JPM performance.
 - 2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.
- C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.
- D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

II. REFERENCES

- A. SO-193-001, Quarterly Turbine Valve Cycling
- B. AR-105-001 (F05)
- C. AR-104-001 (E01)

TASK CONDITIONS

- Quarterly turbine testing is in progress per SO-193-001. The test is complete through Step 5.3.
- Reactor Engineering has evaluated the current power level; ops will not violate any core thermal limits while performing this test.

III. INITIATING CUE

Continue with quarterly turbine valve cycling per SO-193-001, continuing at Step 5.4.

V. TASK STANDARD

Turbine Valve Cycling is completed.

SIMULATOR SETUP INSTRUCTIONS
JOB PERFORMANCE MEASURE
45.OP.23984.101

NOTE: It is permissible to use a similar IC to the IC listed below, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently.

1. Reset the Simulator to an IC at > 85% power with the turbine on line.
 - A. **Insert** the following expert commands:
 {Key[2]} IRF rFTU193004 f:BYPASS
 IRF rRP158039 f:BYPASS
 IRF rRP158040 f:BYPASS
 IRF rRP158041 f:BYPASS
 IRF rRP158042 f:BYPASS
2. Ensure MAXIMUM COMBINED FLOW LIMIT vernier set at 12.5 turns (125%)
3. Ensure LOAD LIMIT SET vernier set at 8.9 turns.
4. Setup RTIME screens for Turbine Testing.
5. Provide marked up copy of SO-193-00 completed **through** step 5.3

SIMULATOR SETUP INSTRUCTIONS FOR LOC 29 NRC EXAM

1. **Reset** the simulator to IC ____.
2. **Verify** ETs and Commands per the above

Consider setting up PPC displays as part of the snapped IC.

INFORMATION FOR EVALUATOR

- Marking a step as UNSAT requires written comments on respective step.
- Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *.
- The time clock starts when the candidate acknowledges the Initiating Cue.
- This JPM must be performed in the simulator. Reset to exam-specific IC-____, or configure the simulator per the Simulator Setup Instructions.
- Mark-up a copy of SO-193-001 complete **through** Step 5.3.

BOOTH OPERATOR CUE

When student is ready to begin the JPM and the evaluator indicates, place the simulator in RUN.

EVALUATOR CUE

Record JPM start time: _____

Step	Action	Standard	Eval	Comments
1	Identifies governing procedure and obtain controlled copy.	Obtains controlled copy of SO-193-001, and starts at section 5.4.	S / U	
2	Ensure Reactor power established for surveillance.	References Core Reactivity Control Book and determine reactor power is within the allowed window for performing the surveillance.	S / U	
3	Record reactor power level	Records reactor power level	S / U	
4	Ensure MAXIMUM COMBINED FLOW LIMIT vernier set at 12.5 turns (125%)	Perform the following: <ul style="list-style-type: none"> • Ensure MAXIMUM COMBINED FLOW LIMIT vernier set at 12.5 turns (125%) • Record value of LOAD SET • Record value of LOAD LIMIT SET vernier 	S / U	

EVALUATOR NOTE

LOAD LIMIT SET should be verified to 8.9 turns, as this was already performed earlier in the procedure, but will adjust LOAD SET to maximum value as specified in the standard, which meets the intent of the critical step.

EVALUATOR NOTE

The following step is not critical if the test is performed at power levels <85%.

*5	Raise LOAD SET to maximum value (1400 MW)	Perform the following: <ul style="list-style-type: none"> Verifies LOAD LIMIT SET vernier to 8.9 TURNS * Raise LOAD SET to maximum value (1400 MW) to allow Control Valves to cycle open and limit BYPASS VALVE opening 	S / U	
6	Bypass Main Turbine vibration trips	Perform the following: <ul style="list-style-type: none"> Dispatches NPO to Panel 1C6100A, Place HS-11982 to BYPASS Confirm Annunciator AR105, F05 MAIN TURB VIB OR RFPT VIB/THRUST TRIP BYPASS ALARMS 	S / U	

BOOTH OPERATOR CUE

When requested, bypass turbine vibration trips by **depressing Key 2**.
{Key[2]} IRF rFTU193004 f:BYPASS

EVALUATOR CUE

Turbine vibration trips are bypassed.

EVALUATOR NOTE

IF any bearing on the Main Turbine exceeds 10 mils, the Test Pushbutton should be released immediately. Candidate may request Attachments B and/or D while performing this portion of the surveillance.

7	Observe PPC points during valve testing	N/A; to be performed by another operator	S / U	
8	IF the "1XAMPL" value for Bearing 1X, 1Y, 2X or 2Y exceed 6.0 mils during the CV testing portion of the surveillance, THEN contact System Engineering	N/A; to be performed by another operator	S / U	
*9	Direct I&C to install RPS Test Box at 1C611 Relay C72A-K8D IAW att. D part 2 and perform Att B Step1	<ul style="list-style-type: none"> RPS Test Box installed and continuity checked. 	S / U	
<u>EVALUATOR CUE</u> I&C reports test box installed and continuity reading indicates CVTS is OPEN				
<u>EVALUATOR NOTE</u> If asked, an NPO is stationed to monitor EHC pump amps.				
10	Determines/Records CV-4 pretest position.	Records current CV-4 position	S / U	
*11	Test Control Valve 4 by depressing and holding the CV-4 TEST pushbutton.	Observe the following: <ul style="list-style-type: none"> Confirm CV-4 slow closes then fast closes for the final 10% of travel Observes annunciator AR104 E01 TURB CV FAST CLOSURE TRIP Alarms 	S / U	

*12	Release CV-4 TEST pushbutton	<p>Observe the following:</p> <ul style="list-style-type: none"> • Confirms CV-4 returns to pretest position as indicated at CONTROL VLV-4 POSITION indicator • <u>IF</u> half scram condition occurred, Reset half scram condition by placing HS-C72A-1S05 to GRP 1/4, then GRP 2/3; else NA • Confirm annunciator AR104, E01 TURB CV FAST CLOSURE TRIP CLEARS • At 1C601, Confirm four (4) MSIV STATUS LOGIC A through D lights ILLUMINATED 	S / U	
13	Direct I&C to remove RPS Test Box at 1C611 Relay C72A-K8D IAW att. D part 2.	<ul style="list-style-type: none"> • RPS Test Box removed 	S / U	
<u>EVALUATOR CUE</u> Record JPM stop time: _____				
<u>EVALUATOR NOTE</u> Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

VALIDATION CHECKLIST
JOB PERFORMANCE MEASURE
45.OP.23984.101

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 10-13 below.

Instructor

Initials

- | | |
|-----|---|
| Mpw | 1. Task description and number, JPM description and number are identified. |
| Mpw | 2. Knowledge and Abilities (K/A) references are included. |
| Mpw | 3. Performance location specified. (in-plant, control room, or simulator) |
| Mpw | 4. Initial setup conditions are identified. |
| Mpw | 5. Initiating and terminating cues are properly identified. |
| Mpw | 6. Task standards identified and verified by SME review. |
| Mpw | 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*). |
| Mpw | 8. Verify cues both verbal and visual are free of conflict. |
| Mpw | 9. Ensure performance time is accurate. |

Mpw

10. Verify the JPM reflects the most current revision of the procedure.

Procedure	SO-193-001	Rev	45
Procedure	AR-105-001	Rev	61
Procedure	AR-104-001	Rev	39

Mpw

11. Pilot the JPM.

For Sim JPMs, ensure simulator response is unchanged. Run concurrent JPMs simultaneously to ensure proper simulator response and there is no interaction between JPMs.

For plant JPMs, ensure the JPM is consistent with conditions in the plant (labeling, radiological, etc.).

N/A

12. If the JPM cannot be performed as written, then revise as necessary and revalidate.

13. When JPM is validated, sign and date JPM cover page. When JPM is Re-validated sign below:

Instructor: _____

Date: _____

Instructor: _____

Date: _____

REVISION SUMMARY

JOB PERFORMANCE MEASURE

45.OP.23984.101

Revision	Description/Purpose of Revision
0	Created from JPM 45.OP.013.151 R7. Reformatted to the Vision template.

EVALUATOR COPY:

TASK CONDITIONS

- Quarterly turbine testing is in progress per SO-193-001. The test is complete through Step 5.3.
- Reactor Engineering has evaluated the current power level; ops will not violate any core thermal limits while performing this test.
- Another operator is standing by to bypass Turbine Vibration Trips.

INITIATING CUE

Continue with quarterly turbine valve cycling per SO-193-001, continuing at Step 5.4.

EXAMINEE COPY:

TASK CONDITIONS

- Quarterly turbine testing is in progress per SO-193-001. The test is complete through Step 5.3.
- Reactor Engineering has evaluated the current power level; ops will not violate any core thermal limits while performing this test.
- Another operator is standing by to bypass Turbine Vibration Trips.

INITIATING CUE

Continue with quarterly turbine valve cycling per SO-193-001, continuing at Step 5.4.

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: Start RCIC for Injection, Component by Component

JPM#: 50.OP.010.103

Revision: 0

Date: 06/01/2017

Applicability: ☒ RO ☒ SRO

Setting: Simulator

NUREG-1123 E/APE / Sys 217000 K/A Number A4.04 K/A Importance 3.6/3.6

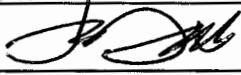
Alternate Path: ☒ YES ☐ NO Time Critical ☐ YES ☒ NO Validation Time (min): 15

Testing Method: ☐ Simulate ☒ Perform

Author: Michael Wilcox Date: 06/01/2017

Operations Review:  Date: 12/14/17

Validated: Michael Wilcox Date: 10/21/17

Approval:  Date: 12/2/17
Nuclear Training Supervisor

Examinee Name: _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min): _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator: _____
Name Signature

Comments:

REQUIRED TASK INFORMATION
JOB PERFORMANCE MEASURE
50.OP.010.103

I. SAFETY CONSIDERATIONS

- A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.
- B. All applicable safety precautions shall be taken in accordance with established Talen Energy safety policies and the Safety Rule Book, for example:
 - 1. Whenever any electrical panel is opened for inspection during JPM performance.
 - 2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.
- C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.
- D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

II. REFERENCES

- A. OP-150-001 Reactor Core Isolation Cooling (RCIC) System
- B. AR-108-001 Reactor Core Isolation Cooling (RCIC) System 1C601

III. TASK CONDITIONS

- A Reactor scram condition exists and RCIC injection is required for inventory control.
- HPCI is OOS, all RFPs have tripped, and all Condensate pumps are unavailable.
- ESW System is in operation.
- RCIC pump discharge piping has been maintained filled and pressurized.
- MOV Overload Bypass switches will not be required to be positioned to the "TEST" position.
- Manual initiation pushbutton has failed to initiate the RCIC System.
- RCIC is aligned in its normal STANDBY condition for automatic response.

IV. INITIATING CUE

Manually start up RCIC component by component IAW OP-150-001 Attachment B (HC), and establish injection to the vessel at a rate of approximately 600 gpm.

V. TASK STANDARD

Manually start up RCIC component by component IAW OP-150-001, and establish injection to the vessel. Manually secure RCIC when an automatic isolation signal fails to trip RCIC.

SIMULATOR SETUP INSTRUCTIONS
JOB PERFORMANCE MEASURE
50.OP.010.103

NOTE: It is permissible to use a similar IC to the IC listed below, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently.

- Reset the simulator to an exam-specific IC _____.
- Configure an exam-specific IC as follows:
 - Reset to normal full power IC
 - Place ESW in service
 - Override HPCI
 - Insert malfunction: **IMF mfRC150001**
 - Insert Overrides:
 - **diHS15012CA** **NORM**
 - **diHS15012CB** **ARM**
 - Insert annunciator on **Key[1]: mfAN_AR108B01**, RCIC TURB EXH HI PRESS to automatically **ALARM_on** when RCIC flow >550 gpm.
 - Scram the reactor and trip RFPs and COND PPs and let water level drop to -40", snap to IC for use.

INFORMATION FOR EVALUATOR

- Marking a step as UNSAT requires written comments on respective step.
- Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *.
- The time clock starts when the candidate acknowledges the initiating cue.
- This JPM must be performed in the simulator.
- Configure the Simulator per the Simulator Setup Instructions.

BOOTH OPERATOR CUE

When student is ready to begin the JPM and the evaluator indicates, place the simulator in RUN.

EVALUATOR CUE

Record JPM start time: _____

Step	Action	Standard	Eval	Comments
1	Obtains the controlling document.	Controlled copy of OP-150-001 obtained.	S / U	
2*	(HC.1) Place RCIC turbine flow control FC-E51-1R600 in Manual and set for minimum speed.	Positions the manual/automatic selector switch on the RCIC Turbine Flow Control FC-E51-1R600 to the "M" (Manual) position. Depresses the CLOSE pushbutton until the controller output meter indicates zero.	S / U	
3*	(HC.2) Start the RCIC Barometric Condenser Vacuum Pump.	Momentarily positions the RCIC Baro Cdsr Vacuum PP 1P219 Switch to the START position.	S / U	
4*	(HC.3) Open RCIC Lube Oil Cooling Water Valve.	Momentarily positions the RCIC L-O Cooler Wtr HV-150-F046 Switch to OPEN.	S / U	
5*	(HC.4) Open STEAM TO RCIC TURBINE HV-150-F045.	Momentarily positions the Steam to RCIC Turbine HV-150-F045 Switch to the OPEN position.	S / U	

EVALUATOR NOTE

When the RCIC Steam Admission Valve is opened:

- Turbine speed will increase to approximately 1,000 rpm.
- RCIC Pump Discharge Lo Flow (AR-108-E02) will alarm when flow <75 gpm and discharge pressure is >190 psig.
- RCIC Low Flow Annunciator (AR-108-E02) will clear when flow >150 gpm.
- Steam Line Drains F025 and F026 will CLOSE.
- RCIC Barometric Condenser Pump Discharge Valve F005 closes.
- RCIC Pump discharge pressure will increase to approximately 110 psig.

6	(HC.5) Observe RCIC turbine accelerates.	Observes RCIC turbine accelerates.	S / U	
7	(HC.6) When RCIC Pump discharge pressure > 190 psig with flow < 75 gpm, Observe RCIC Minimum Flow to Suppression Pool Valve FV-149-F019 OPENS.	Observes Min Flow to Supp Pool FV-149-F019 OPENS.	S / U	

EVALUATOR NOTE

The min flow valve will open when pump discharge pressure is >190 psig and flow <75 gpm.

8	(HC.7) Using RCIC TURBINE FLOW CONTROL FC-E51-1R600, RAISE RCIC Pump discharge pressure within 50 psig of Reactor pressure.	Depresses OPEN pushbutton on RCIC Turbine Flow Control FC-E51-1R600 and increases pump discharge pressure until within 50 psig of reactor pressure.	S / U	
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EVALUATOR NOTE

As the open pushbutton is depressed, the following will occur:

- Turbine speed will increase.
- Pump discharge pressure will increase.
- Minimum Flow Valve FV-149-F019 will open at >190 psig and flow <75 gpm.

9*	(HC) Open RCIC Injection Valve.	Ensures RCIC Injection Valve HV-149-F013 is in the OPEN position.	S / U	
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Alternate Path

The alternate path will be initiated during the following step. As the operator is raising RCIC flowrate, a RCIC Turbine Exhaust High Pressure annunciator will alarm. The operator will need to recognize the alarming condition should have caused an automatic RCIC turbine trip and RCIC failed to trip on the isolation signal. The operator will be required to take appropriate action.

SIMULATOR OPERATOR NOTE

Monitor triggers function to cause fault. If fault not triggered, manually initiate fault by depressing **Key[1]**.

10*	(HC.9) Using RCIC TURBINE FLOW CONTROL, Establish the desired flowrate (≈ 600 gpm).	Depresses OPEN or CLOSE pushbutton on RCIC Turbine Flow Control FC-E51-1R600 to raise RCIC flow in an effort to achieve 600 gpm. Note: 600 gpm may not be achieved due to the alternate path. Successful completion of this step requires raising flow toward 600 gpm.	S / U	
11	(HC.10) Ensure that the RCIC minimum flow to Suppression Pool Valve closes.	Observes RCIC Min Flow to Supp Pool FV-149-F019 CLOSES.	S / U / NA	
12	Recognize alarm and refer to alarm response procedures AR-108-B01	Refer to alarm response procedures.	S / U	
13*	(ARP 2.1) Ensure RCIC Turbine Trips	Recognize an automatic RCIC Turbine Trip should have occurred but did not. Manually trips RCIC by depressing RCIC TURB TRIP pushbutton HS-E51-1S17. Note: The operator may opt to utilize OP-150-001 to Shutdown RCIC. In this case, the operator would place overload bypass switched to test and manually reduce RCIC Pump flow speed prior to tripping the turbine.	S / U	

<u>EVALUATOR NOTE / CUE</u>	
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That completes the JPM.	
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<u>EVALUATOR CUE</u>

Record JPM stop time: _____

<u>EVALUATOR NOTE</u>

Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?

VALIDATION CHECKLIST JOB PERFORMANCE MEASURE

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 10-13 below.

Instructor
Initials

- | | |
|------------|---|
| <u>Mpw</u> | 1. Task description and number, JPM description and number are identified. |
| <u>Mpw</u> | 2. Knowledge and Abilities (K/A) references are included. |
| <u>Mpw</u> | 3. Performance location specified. (in-plant, control room, or simulator) |
| <u>Mpw</u> | 4. Initial setup conditions are identified. |
| <u>Mpw</u> | 5. Initiating and terminating cues are properly identified. |
| <u>Mpw</u> | 6. Task standards identified and verified by SME review. |
| <u>Mpw</u> | 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*). |
| <u>Mpw</u> | 8. Verify cues both verbal and visual are free of conflict. |
| <u>Mpw</u> | 9. Ensure performance time is accurate. |

Mpw

10. Verify the JPM reflects the most current revision of the procedure.

Procedure	<u>OP-150-001</u>	Rev	<u>47</u>
Procedure	<u>AR-108-001</u>	Rev	<u>28</u>
Procedure	<u></u>	Rev	<u></u>

Mpw

11. Pilot the JPM.

For Sim JPMs, ensure simulator response is unchanged. Run concurrent JPMs simultaneously to ensure proper simulator response and there is no interaction between JPMs.

For plant JPMs, ensure the JPM is consistent with conditions in the plant (labeling, radiological, etc.).

N/A

12. If the JPM cannot be performed as written, then revise as necessary and revalidate.

13. When JPM is validated, sign and date JPM cover page. When JPM is Re-validated sign below:

Instructor: _____ Date: _____

Instructor: _____ Date: _____

REVISION SUMMARY

JOB PERFORMANCE MEASURE

Revision	Description/Purpose of Revision
0	This JPM was created by modifying 50.OP.010.101.

EVALUATOR COPY:

TASK CONDITIONS

- A Reactor scram condition exists and RCIC injection is required for inventory control.
- HPCI is OOS, all RFPs have tripped, and all Condensate pumps are unavailable.
- ESW System is in operation.
- RCIC pump discharge piping has been maintained filled and pressurized.
- MOV Overload Bypass switches will not be required to be positioned to "TEST"
- Manual initiation pushbutton has failed to initiate the RCIC System.
- RCIC is aligned in its normal STANDBY condition for automatic response.

INITIATING CUE

Manually start up RCIC component by component IAW OP-150-001 Attachment B (HC), and establish injection to the vessel at a rate of approximately 600 gpm.

EXAMINEE COPY:

TASK CONDITIONS

- A Reactor scram condition exists and RCIC injection is required for inventory control.
- HPCI is OOS, all RFPs have tripped, and all Condensate pumps are unavailable.
- ESW System is in operation.
- RCIC pump discharge piping has been maintained filled and pressurized.
- MOV Overload Bypass switches will not be required to be positioned to "TEST"
- Manual initiation pushbutton has failed to initiate the RCIC System.
- RCIC is aligned in its normal STANDBY condition for automatic response.

INITIATING CUE

Manually start up RCIC component by component IAW OP-150-001 Attachment B (HC), and establish injection to the vessel at a rate of approximately 600 gpm.

RB HVSUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: Re-establish RB HVAC IAW ES-134-003

JPM#: 34.EO.20802.151

Revision: 7 Date: 06/12/2017

Applicability: ☒ RO ☒ SRO

Setting: Simulator

NUREG-1123 E/APE / Sys 295032 K/A Number EA1.03 K/A Importance 3.7/3.7

Alternate Path: ☒ YES ☐ NO Time Critical ☐ YES ☒ NO Validation Time (min): 15

Testing Method: ☐ Simulate ☒ Perform

Author: Michael Wilcox Date: 9/25/17

Operations Review: Jay Barnes Date: 11/3/17

Validated: Michael Wilcox Date: 10/13/17

Approval: Jeffrey Dills Date: 11/3/17
Nuclear Training Supervisor

Examinee Name: _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min): _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator: _____
Name Signature

Comments:

REQUIRED TASK INFORMATION
JOB PERFORMANCE MEASURE
34.EO.20802.151

I. SAFETY CONSIDERATIONS

- A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.
- B. All applicable safety precautions shall be taken in accordance with established Talen Energy safety policies and the Safety Rule Book, for example:
 - 1. Whenever any electrical panel is opened for inspection during JPM performance.
 - 2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.
- C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.
- D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

II. REFERENCES

- A. ES-134-003, Re-Establishing Reactor Building HVAC

III. TASK CONDITIONS

- The Plant has experienced a loss of normal feed and makeup. The Reactor is shut down, with water level at -65", pressure is 900 psig.
- A primary and secondary containment isolation has occurred due to level being < -38". The isolations are verified to be completed IAW ON-CONTISOL-101.
- RPV control is IAW EO-100-102. Primary containment parameters are all normal (i.e., pressure, temperature and suppression pool level).
- EO-100-104, Secondary Containment Control, has been entered due to Zone I HVAC not being in service for four hours.
- HPCI is unavailable, RCIC is being restored and expected to be lined up feeding the vessel in approximately 30 minutes. RCIC had been down for repairs, which are now complete.
- Both loops of ESW are in service.
- 'A' Control Structure Chiller is in service.
- All Individual room cooler fans are running.
- Service water is available
- ES-134-003, Attachment A is complete.

IV. INITIATING CUE

Re-establish Reactor Building HVAC in accordance with ES-134-003, step 5.1.3.b

V. TASK STANDARD

Zone 1 ISO SIGNALS LOCKOUT RELAYS re-tripped

SIMULATOR SETUP INSTRUCTIONS
JOB PERFORMANCE MEASURE
34.EO.20802.151

NOTE: It is permissible to use a similar IC to the IC listed below, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently.

1. **Reset** the simulator to any rated-power IC.
2. **Setup** the simulator as follows:
 - a. Both loops of ESW in service with at least one pump running in both loops
 - b. Take the Mode Switch to SHUTDOWN
 - c. Ensure RB HVAC isolation trip on low level and maintain reactor water level <-50" (Trip feed, condensate, HPCI, and maintain with RCIC)
 - d. Start all room coolers with a cooling source
3. **Insert** the following malfunctions
 - a. **IMF cmfPM01_1V202A** Zone 1 fans do not start
 - b. **IMF cmfPM01_1V202B** Zone 1 fans do not start
4. **Other**

INFORMATION FOR EVALUATOR

- Marking a step as UNSAT requires written comments on respective step.
- Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *.
- The time clock starts when the candidate acknowledges the initiating cue.
- This JPM must be performed in simulator.
- Configure the Simulator per the Simulator Setup Instructions.

BOOTH OPERATOR CUE

When student is ready to begin the JPM and the evaluator indicates, place the simulator in RUN.

EVALUATOR CUE

Record JPM start time: _____

Step	Action	Standard	Eval	Comments
1	Identifies governing procedure and obtain controlled copy.	Obtains controlled copy of ES-134-003.	S / U	

EVALUATOR NOTE

It will not be necessary to obtain any of the required equipment in the next step. This JPM deals with the control room actions ONLY.

2	Reviews , required equipment, precautions and limitations	Identifies Shift manager's office as the location for obtaining the special equipment.	S / U	
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EVALUATOR CUE

Inform the student that any required equipment will be SIMULATED.

3	Ensure Service Water is available for restoration of Reactor Building chillers prior to bypassing isolations	Determines from task conditions that service water is available	S / U	
---	---	--	-------	--

4	<p>Ensure following conditions exist:</p> <ul style="list-style-type: none"> Both loops of ESW in operation in accordance with OP-054-001. Control Structure Chiller in operation in accordance with OP-030-001. All individual room cooler fans that have cooling source in operation in accordance with OP-134-002. 	<p>Determines from task conditions:</p> <ul style="list-style-type: none"> Both loops of ESW are in operation Control structure chiller is in service All individual room coolers are running 	S / U	
<p><u>EVALUATOR NOTE</u> With Reactor Building HVAC isolation signal present, the following will be performed to bypass High Drywell Pressure/Low RPV Water Level HVAC Interlocks.</p>				
5	<p>Confirm automatic actuations per Attachment A</p>	<p>Determines from task conditions: Attachment A is being performed by another operator.</p>	S / U	
*6	<p>On 1C681 Heat & Ventilation Control Panel, Place ZONE 1 HVAC LOCA ISO BYPASS HS 17551A keylock switch to BYPASS</p>	<p>Inserts key and Places ZONE 1 HVAC LOCA ISO BYPASS HS 17551A keylock switch to BYPASS</p>	S / U	
7	<p>Observe Zone 1 HVAC LOCA ISO BYPASSED annunciator AR-127 D09 alarms</p>	<p>Verifies Zone 1 HVAC LOCA ISO BYPASSED annunciator AR-127 D09 alarms</p>	S / U	
*8	<p>On 1C681 Heat & Ventilation Control Panel, Place Zone 1 HVAC LOCA ISO BYPASS HS-17551B keylock switch to BYPASS</p>	<p>Inserts key and Places ZONE 1 HVAC LOCA ISO BYPASS HS 17551B keylock switch to BYPASS</p>	S / U	
9	<p>Observe Zone 1 HVAC LOCA ISO BYPASSED annunciator AR-128 D09 alarms</p>	<p>Verifies Zone 1 HVAC LOCA ISO BYPASSED annunciator AR-128 D09 alarms.</p>	S / U	
*10	<p>Reset Zone 1 ISO SIGNALS LOCKOUT RELAY XY07551A</p>	<p>Turns the lockout relay clockwise UNTIL it remains in the vertical position</p>	S / U	

*11	Reset Zone 1 ISO SIGNALS LOCKOUT RELAY XY07551B	Turns the lockout relay clockwise UNTIL it remains in the vertical position	S / U	
<u>Alternate Path</u> The zone I fans do not automatically return to normal operation when the lockout relay is reset. The operator will need to manually restore the system.				
12	Ensure Reactor Building Ventilation System Division I and Division II fans for Zone 1 return to normal operation in accordance with OP-134-002	Verifies RB Zone 1 NO Vent AR-127-C09 is STILL LIT Contacts the RB NPO to determine the status of the RB Ventilation system	S / U	
<u>EVALUATOR CUE</u> Acknowledge request and report, "Both Div 1 and Div 2 RB Zone 1 fans are tripped and neither can be restarted."				
<u>EVALUATOR NOTE</u> The operator should continue to step 5.1.3.b.7 to restore the line-up.				
*13	On 1C681 Heat & Ventilation Control Panel, Place ZONE 1 HVAC LOCA ISO BYPASS HS-17551A keylock switch to NORMAL	Places ZONE 1 HVAC LOCA ISO BYPASS HS-17551A keylock switch to NORMAL	S / U	
14	Observe Zone 1 ISO SIGNALS LOCKOUT RELAY XY07551A trips	Verifies Zone 1 ISO SIGNALS LOCKOUT RELAY XY07551A - pointing to ~ 10 o'clock position with the RED semaphore visible	S / U	
15	Observe Zone 1 HVAC LOCA ISO BYPASSED alarm AR-127 D09 clears	Verifies Zone 1 HVAC LOCA ISO BYPASSED alarm AR-127 D09 - SLOW FLASHING	S / U	
*16	On 1C681 Heat & Ventilation Control Panel, Place Zone 1 HVAC LOCA ISO BYPASS HS-17551B keylock switch to NORMAL	Places ZONE 1 HVAC LOCA ISO BYPASS HS-17551B keylock switch to NORMAL	S / U	

17	Observe Zone 1 ISO SIGNALS LOCKOUT RELAY XY07551B trips	Verifies Zone 1 ISO SIGNALS LOCKOUT RELAY XY07551B - pointing to ~ 10 o'clock position with the RED semaphore visible	S / U	
18	Observe Zone 1 HVAC LOCA ISO BYPASSED alarm AR 128 D09 clears	Verifies Zone 1 HVAC LOCA ISO BYPASSED alarm AR-128 D09 - SLOW FLASHING	S / U	
*19	Notify Technical Support Coordinator attempts to restart RB HVAC have failed and to determine additional actions required to restart HVAC or shed electrical loads to reduce heat load	Contacts TSC	S / U	
<u>EVALUATOR CUE</u> Role-play the TSC coordinator, and acknowledge the request.				
20	Exit this procedure	Exits the procedure	S / U	
<u>EVALUATOR NOTE / CUE</u> That completes the JPM.				
<u>EVALUATOR CUE</u> Record JPM stop time: _____				
<u>EVALUATOR NOTE</u> Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

VALIDATION CHECKLIST
JOB PERFORMANCE MEASURE
34.EO.20802.151

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 10-13 below.

Instructor
Initials

- | | |
|------------|---|
| <u>Mpw</u> | 1. Task description and number, JPM description and number are identified. |
| <u>Mpw</u> | 2. Knowledge and Abilities (K/A) references are included. |
| <u>Mpw</u> | 3. Performance location specified. (in-plant, control room, or simulator) |
| <u>Mpw</u> | 4. Initial setup conditions are identified. |
| <u>Mpw</u> | 5. Initiating and terminating cues are properly identified. |
| <u>Mpw</u> | 6. Task standards identified and verified by SME review. |
| <u>Mpw</u> | 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*). |
| <u>Mpw</u> | 8. Verify cues both verbal and visual are free of conflict. |
| <u>Mpw</u> | 9. Ensure performance time is accurate. |

- Mpw 10. Verify the JPM reflects the most current revision of the procedure.

Procedure	<u>ES-134-003</u>	Rev	<u>24</u>
Procedure	<u>N/A</u>	Rev	<u>N/A</u>
Procedure	<u>N/A</u>	Rev	<u>N/A</u>

- Mpw 11. Pilot the JPM.

For Sim JPMs, ensure simulator response is unchanged. Run concurrent JPMs simultaneously to ensure proper simulator response and there is no interaction between JPMs.

For plant JPMs, ensure the JPM is consistent with conditions in the plant (labeling, radiological, etc.).

- N/A 12. If the JPM cannot be performed as written, then revise as necessary and revalidate.

13. When JPM is validated, sign and date JPM cover page. When JPM is Re-validated sign below:

Instructor: _____

Date: _____

Instructor: _____

Date: _____

REVISION SUMMARY

JOB PERFORMANCE MEASURE
34.EO.20802.151

Revision	Description/Purpose of Revision
0	New JPM
5	Revised to new JPM format.
6	Incorporated NRC comments from LOC 28 Prep Week.
7	Updated to reflect Vision task number

EVALUATOR COPY:

TASK CONDITIONS

- The Plant has experienced a loss of normal feed and makeup. The Reactor is shut down, with water level at -65", pressure is 900 psig.
- A primary and secondary containment isolation has occurred due to level being < -38". The isolations are verified to be completed IAW ON-CONTISOL-101.
- RPV control is IAW EO-100-102. Primary containment parameters are all normal (i.e., pressure; temperature and suppression pool level).
- EO-100-104, Secondary Containment Control, has been entered due to Zone I HVAC not being in service for four hours.
- HPCI is unavailable, RCIC is being restored and expected to be lined up feeding the vessel in approximately 30 minutes. RCIC had been down for repairs, which are now complete.
- Both loops of ESW are in service.
- 'A' Control Structure Chiller is in service.
- All Individual room cooler fans are running.
- Service water is available
- ES-134-003, Attachment A is complete

INITIATING CUE

Re-establish Reactor Building HVAC in accordance with ES-134-003, step 5.1.3.b

EXAMINEE COPY:

TASK CONDITIONS

- The Plant has experienced a loss of normal feed and makeup. The Reactor is shut down, with water level at -65", pressure is 900 psig.
- A primary and secondary containment isolation has occurred due to level being < -38". The isolations are verified to be completed IAW ON-CONTISOL-101.
- RPV control is IAW EO-100-102. Primary containment parameters are all normal (i.e., pressure, temperature and suppression pool level).
- EO-100-104, Secondary Containment Control, has been entered due to Zone I HVAC not being in service for four hours.
- HPCI is unavailable, RCIC is being restored and expected to be lined up feeding the vessel in approximately 30 minutes. RCIC had been down for repairs, which are now complete.
- Both loops of ESW are in service.
- 'A' Control Structure Chiller is in service.
- All Individual room cooler fans are running.
- Service water is available
- ES-134-003, Attachment A is complete

INITIATING CUE

Re-establish Reactor Building HVAC in accordance with ES-134-003, step 5.1.3.b

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: Synchronize the Main Generator

JPM#: 98.GO.20544.151

Revision: 0

Date: 06/13/2017

Applicability: ☒ RO ☒ SRO

Setting: Simulator

NUREG-1123 E/APE / Sys 262001

K/A Number A4.04

K/A Importance 3.6/3.7

Alternate Path: ☒ YES ☐ NO

Time Critical ☐ YES ☒ NO

Validation Time (min): 20

Testing Method: ☐ Simulate ☒ Perform

Author: Michael Wilcox

Date: 06/13/2017

Operations Review: Colin Brennan

Date: 12/4/17

Validated: Michael Wilcox

Date: 10/21/17

Approval: [Signature]

Date: 12/12/17

Nuclear Training Supervisor

Examinee Name: _____

Last, First MI

Employee Number

Exam Date: _____

Exam Duration (Min): _____

Evaluation Result: ☐ Satisfactory

☐ Unsatisfactory

Evaluator: _____

Name

Signature

Comments:

REQUIRED TASK INFORMATION
JOB PERFORMANCE MEASURE
98.GO.20544.151

I. SAFETY CONSIDERATIONS

- A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.
- B. All applicable safety precautions shall be taken in accordance with established Talen Energy safety policies and the Safety Rule Book, for example:
 - 1. Whenever any electrical panel is opened for inspection during JPM performance.
 - 2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.
- C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.
- D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

II. REFERENCES

- A. OP-198-001, Main Generator System
- B. GO-100-002, Plant Startup, Heatup And Power Operation

III. TASK CONDITIONS

- A plant startup is in progress.
- Reactor power is ~ 15%.
- Main Turbine startup is complete.
- Main Generator prestart lineup is complete.
- Service Water is aligned to H2 coolers and the Core Monitor is in service.
- GO-100-002, Plant Startup, Heatup And Power Operation, has been completed up to step 5.75.
- ON-GENGRID-101, Main Generator or Grid Disturbance, has been reviewed as part of the pre-job brief and another PCO is responsible for implementing this ON, should the need arise.
- GCC has given approval to synchronize with the Voltage Regulator in Auto.
- OP-198-001, Main Generator System, has been completed up to step 2.3.

IV. INITIATING CUE

Synchronize the Main Generator to the grid using auto-synchronization IAW OP-198-001, Main Generator System, in accordance with section 2.3.

V. TASK STANDARD

Main generator synchronized to grid

SIMULATOR SETUP INSTRUCTIONS
JOB PERFORMANCE MEASURE
98.GO.20544.151

NOTE: It is permissible to use a similar IC to the IC listed below, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently.

1. **Reset** the simulator to IC-14 (or equivalent IC prepared for exam – IC-___ for 2018 NRC Exam)
Reactor Power 15-16%, approximately 3 Turbine Bypass Valves full open, Turbine @ 1800 RPM
ready for Generator synchronization.
2. **Other actions**
 - a. Set RTIME screen to ON230KV
 - b. Place Simulator in RUN
 - c. Ensure a stopwatch is available
 - d. **Insert IMF cmfBR04_1R101** to keep GEN SYNC BKR 1T from AUTO closing BUT allows MANUAL closing
 - e. Insert **MRF EC197002 F:IN_SVC** to place Generator Core Monitor and H₂ Gas Analyzer in service.

INFORMATION FOR EVALUATOR

- Marking a step as UNSAT requires written comments on respective step.
- Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *.
- The time clock starts when the candidate acknowledges the initiating cue.
- This JPM must be performed in the simulator. Reset to exam-specific IC-____, or configure the simulator per the Simulator Setup Instructions.
- Mark-up a copy of GO-100-002 complete through Step 5.74
- Mark-up a copy of OP-198-001 complete to step 2.3.

EVALUATOR NOTE: For Faulted JPMs

The FAULTED step in the JPM is preceded by a fault statement in **BOLD TYPE WITH ALL CAPITAL LETTERS**.

BOOTH OPERATOR CUE

When student is ready to begin the JPM and the evaluator indicates, place the simulator in RUN.

EVALUATOR CUE

Record JPM start time: _____

Step	Action	Standard	Eval	Comments
1	Identifies governing procedure and obtain controlled copy.	Obtains controlled copy of OP-198-001, Main Generator System	S / U	
2	Reviews prerequisites and precautions	Determines from initial conditions: <ul style="list-style-type: none"> • Main Turbine S/U complete. • Generator Prestart Lineup complete. • Service Water is aligned to H2 coolers. 	S / U	

EVALUATOR NOTE

Allowing Main Turbine To Remain Unloaded At Rated Speed Causes Overheating Of Exhaust Hoods.

EVALUATOR CUE

Several alarms for feedwater heater levels and Exhaust hood sprays/temp will be received throughout this JPM. Inform the candidate that another PCO will attend to these alarms.

EVALUATOR NOTE

RPV Water Level May Lower As A Result Of Condenser Parameter Changes During Generator Synchronization.

Moisture Separator Drain Tank Levels Will Increase For A Short Duration As A Result Of Steam Flow Changes In The Moisture Separators During Generator Synchronization.

EVALUATOR CUE

Role-play the Unit Supervisor and inform the candidate that Automatic SYNCHRONIZATION will be performed for this startup.

3	Locates appropriate section of procedure for Automatic SYNCHRONIZATION	Refers to section 2.3 of procedure	S / U	
4	Reviews prerequisites and precautions	Determines: Main Generator S/U complete.	S / U	
5	Place GEN SYNC SEL 1T HS-10002 switch to MAN	Places: GEN SYNC SEL 1T HS-10002 keylock switch to MAN Verifies: SYNCHROSCOPE meter is rotating and the lights are ON when the meter is NOT at 12 O'clock position	S / U	
6	If in auto voltage control, Ensure SYNCHRONIZING DIFF VOLTS, XI-10007, is slightly to the RIGHT of ZERO by Adjusting generator output voltage using AUTO VOLT REG ADJUST HC-10001 potentiometer	Turns AUTO VOLT REG ADJUST HC-10001 potentiometer, in direction necessary, to ensure XI-10007, is slightly to the RIGHT of ZERO Verifies: SYNCHRONIZING DIFF VOLTS, XI-10007, is slightly to the RIGHT of ZERO	S / U	

EVALUATOR NOTE

If asked, state that the Auto Voltage Regulator will be used.
Candidate may wish to use a stopwatch in performing the next step.

7*	Adjust generator frequency using LOAD SELECTOR INCREASE/DECREASE push buttons until SYNCHROSCOPE is rotating in the CLOCKWISE (FAST) direction at approximately 1 revolution per 30 seconds.	Depresses: LOAD SELECTOR INCREASE/DECREASE pushbutton until the SYNCHROSCOPE is rotating in the CLOCKWISE (FAST) direction at approximately 1 revolution per 30 seconds.	S / U	
8*	Perform next three steps Expeditiously to reduce possibility of a reverse power trip. To Synchronize Main Generator with the grid, Place GEN SYNC SEL 1T HS-10002 switch to AUTO.	Places: GEN SYNC SEL 1T HS-10002 keylock switch to AUTO	S / U	
<u>Alternate Path</u> IMF cmfBR04_1R101; GEN SYNC BKR 1T will not automatically close when gen sync sel 1t hs-10002 is placed in auto. The operator will be required to complete the task manually.				
9	Ensure GEN SYNC BKR 1T Closes by Observing: <ul style="list-style-type: none"> Red indicating light at GEN SYNC BKR 1T HS-10001 ILLUMINATES. Megawatts Rise	Verifies GEN SYNC BKR 1T HS-10001: <ul style="list-style-type: none"> Red light – OFF Amber light – ON Megawatts NOT rising 	S / U	
10	Notifies Unit Supervisor that GEN SYNC BKR 1T did not automatically CLOSE	Notifies Unit Supervisor that GEN SYNC BKR 1T did not automatically CLOSE	S / U	
<u>EVALUATOR CUE</u> Role-play Unit Supervisor and inform candidate that electrical maintenance has investigated the problem with the synchronizing circuit, and determined that AUTO SYNCHRONIZE circuit has a bad circuit card, but MANUAL SYNCHRONIZE is functional. Instruct candidate to MANUALLY SYNCHRONIZE the Main Generator				
11	Locates appropriate section of procedure for Manual SYNCHRONIZATION	Refers to section 2.4 of procedure	S / U	

12	Reviews prerequisites and precautions	Determines: Main Generator S/U complete.	S / U	
13	Obtain Shift Supervision approval to Manually Synchronize main generator.	Determines: Shift Supervision approval to Manually Synchronize main generator has been received	S / U	
14*	Place GEN SYNC SEL 1T HS-10002 switch to MAN.	Places: GEN SYNC SEL 1T HS-10002 keylock switch to MAN Verifies: SYNCHROSCOPE meter is rotating and the lights are ON when the meter is NOT at 12 O'clock position	S / U	

EVALUATOR NOTE

It may not be necessary to adjust voltage in the next step. This was previously performed back in step 19 of the JPM prior to the Fault. If the candidate determines that no adjustment is necessary at this point, then step 19 becomes the critical step.

15	If in auto voltage control, Ensure SYNCHRONIZING DIFF VOLTS, XI-10007, is slightly to the RIGHT of ZERO by Adjusting generator output voltage using AUTO VOLT REG ADJUST HC-10001 potentiometer	Verifies: SYNCHRONIZING DIFF VOLTS, XI 10007, is slightly to the RIGHT of ZERO	S / U	
----	---	--	-------	--

EVALUATOR NOTE

Candidate may wish to use a stopwatch in performing the next step.

16*	Adjust generator frequency using LOAD SELECTOR INCREASE/DECREASE push buttons until SYNCHROSCOPE is rotating in the CLOCKWISE (FAST) direction at approximately 1 revolution per 60 seconds.	Depresses: LOAD SELECTOR INCREASE/DECREASE pushbutton until the SYNCHROSCOPE is rotating in the CLOCKWISE (FAST) direction at approximately 1 revolution per 60 seconds.	S / U	
-----	---	--	-------	--

17*	<p>Perform next three steps Expeditiously to reduce possibility of a reverse power trip.</p> <ul style="list-style-type: none"> To Synchronize Main Generator with the grid, when synchroscope is at or slightly before "12 O'clock" position <p>Close GEN SYNC BKR 1T HS-10001.</p>	<p>When synchroscope is at or slightly before "12 O'clock" position, Places: GEN SYNC BKR 1T HS-10001 control switch to CLOSE</p>	S / U	
18	<p>Ensure GEN SYNC BKR 1T Closes by Observing:</p> <ul style="list-style-type: none"> Red indicating light GEN SYNC BKR 1T HS-10001 is ILLUMINATED. <p>Megawatts Increase.</p>	<p>Verifies GEN SYNC BKR 1T HS-10001:</p> <ul style="list-style-type: none"> Red light – ON Amber light – OFF Megawatts Increase 	S / U	
19*	<p>Depress Increase push button on LOAD SELECTOR until all BYPASS VALVES are CLOSED.</p>	<p>Depresses: LOAD SELECTOR INCREASE pushbutton until: BPVs will close beginning with higher number , and then finally BPV1 POSITION indicates ZERO</p>	S / U	
20	<p>Place GEN SYNC SEL 1T HS-10002 Switch to OFF.</p>	<p>Places: GEN SYNC SEL 1T HS-10002 keylock switch to OFF Verifies: SYNCHROSCOPE meter is NOT rotating and the lights are OFF.</p>	S / U	
21	<p>Maintain LOAD SET at < 100 MWe ABOVE actual load</p>	<p>Depresses: LOAD SET INCREASE pushbutton until: 100 MWe ABOVE actual load</p>	S / U	
<p><u>EVALUATOR NOTE / CUE</u> That completes the JPM.</p>				
<p><u>EVALUATOR CUE</u> Record JPM stop time: _____</p>				
<p><u>EVALUATOR NOTE</u> Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?</p>				

VALIDATION CHECKLIST
JOB PERFORMANCE MEASURE
98.GO.20544.151

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 10-13 below.

Instructor
Initials

- | | |
|-----|---|
| Mpw | 1. Task description and number, JPM description and number are identified. |
| Mpw | 2. Knowledge and Abilities (K/A) references are included. |
| Mpw | 3. Performance location specified. (in-plant, control room, or simulator) |
| Mpw | 4. Initial setup conditions are identified. |
| Mpw | 5. Initiating and terminating cues are properly identified. |
| Mpw | 6. Task standards identified and verified by SME review. |
| Mpw | 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*). |
| Mpw | 8. Verify cues both verbal and visual are free of conflict. |
| Mpw | 9. Ensure performance time is accurate. |

- | | |
|-----|---|
| Mpw | 10. Verify the JPM reflects the most current revision of the procedure. |
|-----|---|

Procedure	OP-198-001	Rev	30
Procedure	GO-100-002	Rev	109
Procedure		Rev	

- | | |
|-----|--------------------|
| Mpw | 11. Pilot the JPM. |
|-----|--------------------|

For Sim JPMs, ensure simulator response is unchanged. Run concurrent JPMs simultaneously to ensure proper simulator response and there is no interaction between JPMs.

For plant JPMs, ensure the JPM is consistent with conditions in the plant (labeling, radiological, etc.).

- | | |
|-----|---|
| N/A | 12. If the JPM cannot be performed as written, then revise as necessary and revalidate. |
|-----|---|

13. When JPM is validated, sign and date JPM cover page. When JPM is Re-validated sign below:

Instructor: _____ Date: _____

Instructor: _____ Date: _____

REVISION SUMMARY

JOB PERFORMANCE MEASURE
98.GO.20544.151

Revision	Description/Purpose of Revision
0	Created from JPM 98.GO.2493.151 R3

EVALUATOR COPY:

TASK CONDITIONS

- A plant startup is in progress.
- Reactor power is ~ 15%.
- Main Turbine startup is complete.
- Main Generator prestart lineup is complete.
- Service Water is aligned to H2 coolers and the Core Monitor is in service.
- GO-100-002, Plant Startup, Heatup And Power Operation, has been completed up to step 5.75.
- ON-GENGRID-101, Main Generator or Grid Disturbance, has been reviewed as part of the pre-job brief and another PCO is responsible for implementing this ON, should the need arise.
- PJM has given approval to synchronize with the Voltage Regulator in Auto.
- OP-198-001, Main Generator System, has been completed up to step 2.3.

INITIATING CUE

Synchronize the Main Generator to the grid using auto-synchronization IAW OP-198-001, Main Generator System, in accordance with section 2.3.

EXAMINEE COPY:

TASK CONDITIONS

- A plant startup is in progress.
- Reactor power is ~ 15%.
- Main Turbine startup is complete.
- Main Generator prestart lineup is complete.
- Service Water is aligned to H2 coolers and the Core Monitor is in service.
- GO-100-002, Plant Startup, Heatup And Power Operation, has been completed up to step 5.75.
- ON-GENGRID-101, Main Generator or Grid Disturbance, has been reviewed as part of the pre-job brief and another PCO is responsible for implementing this ON, should the need arise.
- PJM has given approval to synchronize with the Voltage Regulator in Auto.
- OP-198-001, Main Generator System, has been completed up to step 2.3.

INITIATING CUE

Synchronize the Main Generator to the grid using auto-synchronization IAW OP-198-001, Main Generator System, in accordance with section 2.3.

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: Perform Weekly RPS Surveillance

JPM#: 50.SO.

Revision: 0

Date: 06/14/2017

Applicability: ☒ RO ☒ SRO

Setting: Simulator

NUREG-1123 E/APE / Sys 212000

K/A Number A4.02

K/A Importance 3.6/3.7

Alternate Path: ☒ YES ☐ NO Time Critical ☐ YES ☒ NO Validation Time (min): 20

Testing Method: ☐ Simulate ☒ Perform

Author: Michael Wilcox

Date: 06/14/2017

Operations Review: 

Date: 12/4/17

Validated: Michael Wilcox

Date: 10/21/17

Approval: 

Date: 12/12/17

Nuclear Training Supervisor

Examinee Name: _____

Last, First MI

Employee Number

Exam Date: _____

Exam Duration (Min): _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator: _____

Name

Signature

Comments:

REQUIRED TASK INFORMATION
JOB PERFORMANCE MEASURE
50.SO.

I. SAFETY CONSIDERATIONS

- A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.
- B. All applicable safety precautions shall be taken in accordance with established Talen Energy safety policies and the Safety Rule Book, for example:
 - 1. Whenever any electrical panel is opened for inspection during JPM performance.
 - 2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.
- C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.
- D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

II. REFERENCES

- A. SO-158-001, Weekly Manual Scram Control Switch Functional Check

III. TASK CONDITIONS

- Unit 1 is operating at rated conditions
- Maintenance has just been completed on RPS logic channels.
- Post Maintenance testing is required for RPS channels A and B
- SO-158-001, Weekly Manual Scram Control Switch Functional Check, is being performed for post-maintenance testing and has been completed up to step 5.1

IV. INITIATING CUE

Perform the Weekly Manual Scram Control Switch Functional Check in accordance with SO-158-001, sections 5.1 and 5.3, only.

V. TASK STANDARD

Performs the functional check of RPS channel A1 satisfactorily. Scrams the reactor after three control rods insert while testing RPS channel B1, as directed by ON-CRD-101, Control Rod Malfunction.

SIMULATOR SETUP INSTRUCTIONS
JOB PERFORMANCE MEASURE
50.SO.

NOTE: It is permissible to use a similar IC to the IC listed below, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently.

1. **Reset** the simulator to IC-_____.

2. **Other** actions

Setup the simulator with the following conditions:

- Start in a power operating IC.
- Insert the following Event Triggers:

ET58SO

```
diHSC72A1S03BB.CurrValue = #0R.diHSC72A1S03BB.ARM & diHSC72A1S03BA.CurrValue =  
#0R.diHSC72A1S03BA.INIT  
IMF mFRD1550083039  
IMF mFRD1550081843  
IMF mFRD1550084631  
IRF rFRP158039 d:3 f:BYPASS  
IRF rFRP158040 d:3 f:BYPASS  
IOR diHSC72A1S03AA f:NORM  
IOR diHSC72A1S03CA f:NORM
```

- Perform the following expert commands

```
IOR diHSC72A1S01 f:RUN
```

- Perform the following expert commands to assign keys to manually trigger the appropriate malfunctions if the event triggers do not fire

```
{Key[1]} IMF mFRP158002  
{Key[1]} IMF mFRD1550083039  
{Key[1]} IMF mFRD1550081843  
{Key[1]} IMF mFRD1550084631  
{Key[1]} IRF rFRP158039 d:3 f:BYPASS  
{Key[1]} IRF rFRP158040 d:3 f:BYPASS  
{Key[1]} IOR diHSC72A1S03AA f:NORM  
{Key[1]} IOR diHSC72A1S03CA f:NORM
```


INFORMATION FOR EVALUATOR

- Marking a step as UNSAT requires written comments on respective step.
- Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *.
- The time clock starts when the candidate acknowledges the initiating cue.
- This JPM must be performed in the simulator. Reset to exam-specific IC-____, or configure the simulator per the Simulator Setup Instructions.
- Mark-up a copy of SO-158-001 complete to Step 5.1.

BOOTH OPERATOR CUE

When student is ready to begin the JPM and the evaluator indicates, place the simulator in RUN.

EVALUATOR CUE

Record JPM start time: _____

Step	Action	Standard	Eval	Comments
1	Identifies governing procedure and obtain controlled copy.	Obtains a controlled copy of SO-158-001 from evaluator. Selects step 5.1. Reviews procedure as necessary.	S / U	
2	Verifies SO-158-001 prerequisites are satisfied.	Determines prerequisites met based on initial conditions.	S / U	

EVALUATOR NOTE

JPM steps 3 – 9 test the reactor scram instrument channel A1.

3*	5.1.1 - PLACE RPS MAN SCRAM CHAN A1 HS-C72A-1S03A control switch to ARMED.	Rotates HS-C72A-1S03A, RPS MAN SCRAM CHAN A1, locking collar to the ARMED position. • Observes AR103 A03 in alarm	S / U	
4*	5.1.3 - DEPRESS RPS MAN SCRAM CHAN A1 HS-C72A-1S03A control switch.	Trips RPS Channel A1 by depressing HS-C72A-1S03A, RPS MAN SCRAM CHAN A1 pushbutton.	S / U	

5	<p>5.1.4 - VERIFY the following annunciator alarms ILLUMINATED:</p> <ul style="list-style-type: none"> • AR103 A01, RPS CHANNEL A1/A2 AUTO SCRAM • AR103 F01, RPS CHANNEL A1/A2 MAN SCRAM 	<p>Observes AR103 A01, AR103 F01 in alarm, confirming RPS channel A is tripped.</p>	S / U	
6	<p>5.1.5 - PLACE RPS MAN SCRAM CHAN A1 HS-C72A-1S03A switch to DISARMED.</p>	<p>Performs the following to disarm RPS channel A1 manual scram pushbutton:</p> <ul style="list-style-type: none"> • Rotates HS-C72A-1S03A, RPS MAN SCRAM CHAN A1, locking collar to the DISARMED position. • Observes AR103 A03 clear 	S / U	
7*	<p>5.1.6 - RESET RPS A half scram as follows:</p> <ul style="list-style-type: none"> • Momentarily PLACE REACTOR SCRAM RESET HS C72A 1S05 switch to GROUP 1/4 position. • Momentarily PLACE REACTOR SCRAM RESET HS C72A 1S05 switch to GROUP 2/3 position. 	<p>Performs the following to reset RPS A:</p> <ul style="list-style-type: none"> • Momentarily places HS-C72A-1S05, RPS SCRAM RESET, to the GRP 1/4 position. • Momentarily places HS-C72A-1S05, RPS SCRAM RESET, to the GRP 2/3 position. 	S / U	
8*	<p>5.1.7 - VERIFY the following annunciators <u>NOT</u> ILLUMINATED:</p> <ul style="list-style-type: none"> • AR103 A01, RPS CHANNEL A1/A2 AUTO SCRAM • AR103 A03, RPS MAN SCRAM CHANNEL A1/A2 SWITCH ARMED • AR103 F01, RPS CHANNEL A1/A2 MAN SCRAM 	<p>Observes AR103 A01, AR103 F01, and AR103 A03 clear.</p>	S / U	

9	5.1.8 - COMPLETE Acceptance Criteria Item 1 of Attachment A, Data Form.	<p>Performs the following:</p> <ul style="list-style-type: none"> • Circles Acceptable YES for RPS channel A1 on Attachment A • Initials Confirm for RPS channel A1 on Attachment A 	S / U	
<p><u>ALTERNATE PATH</u></p> <p>JPM steps 10 – 11 test the reactor scram instrument channel B1. The alternate path becomes apparent when the manual scram pushbutton is depressed for RPS channel B1. Three control rods will scram, prompting the operator to take the required actions from ON-CRD-101 to place the mode switch in SHUTDOWN if three or more rods have drifted or scrambled from their target positions. Inserting a manual scram for 3 or more control rods scrambled is also an Immediate Operator Action per OP-AD-055 Attachment B. Either procedure is acceptable. Since it is an immediate operator action, the applicant may not reference a procedure prior to taking the required actions.</p>				
<p><u>BOOTH OPERATOR CUE</u></p> <p>Ensure Event Trigger ET58SO fires when RPS B1 PB is armed and depressed, to drift the control rods in. If the ET does not fire depress KEY 1 to insert a RPS B half-scram and control rod drift.</p>				
10*	5.3.1 - PLACE RPS MAN SCRAM CHAN B1 HS-C72A-1S03B control switch to ARMED.	<p>Rotates HS-C72A-1S03B, RPS MAN SCRAM CHAN B1, locking collar to the ARMED position.</p> <ul style="list-style-type: none"> • Observes AR104 A03 in alarm 	S / U	
11*	5.3.3 - DEPRESS RPS MAN SCRAM CHAN B1 HS-C72A-1S03B control switch.	Trips RPS Channel B1 by depressing HS-C72A-1S03B, RPS MAN SCRAM CHAN B1 pushbutton.	S / U	
12	IDENTIFIES the insertion of three control rods.	<ul style="list-style-type: none"> • Observes AR104 A01, AR104 F01 in alarm • Observes AR104 H05 in alarm • Depresses the DISPLAY RODS DFTING PB • Observes FULL CORE DISPLAY for control rods 30-39, 18-43, AND 46-31 illuminated RED • Notifies Unit Supervisor of 3 control rod insertions 	S / U	

13*	INSERTS a manual reactor SCRAM	Places the MODE SWITCH in SHUTDOWN.	S / U	
<u>EVALUATOR NOTE / CUE</u> That completes the JPM.				
<u>EVALUATOR CUE</u> Record JPM stop time: _____				
<u>EVALUATOR NOTE</u> Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

VALIDATION CHECKLIST JOB PERFORMANCE MEASURE

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 10-13 below.

Instructor
Initials

- | | |
|------------|---|
| <u>Mpw</u> | 1. Task description and number, JPM description and number are identified. |
| <u>Mpw</u> | 2. Knowledge and Abilities (K/A) references are included. |
| <u>Mpw</u> | 3. Performance location specified. (in-plant, control room, or simulator) |
| <u>Mpw</u> | 4. Initial setup conditions are identified. |
| <u>Mpw</u> | 5. Initiating and terminating cues are properly identified. |
| <u>Mpw</u> | 6. Task standards identified and verified by SME review. |
| <u>Mpw</u> | 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*). |
| <u>Mpw</u> | 8. Verify cues both verbal and visual are free of conflict. |
| <u>Mpw</u> | 9. Ensure performance time is accurate. |

Mpw

10. Verify the JPM reflects the most current revision of the procedure.

Procedure	<u>SO-158-001</u>	Rev	<u>16</u>
Procedure	<u>ON-CRD-101</u>	Rev	<u>3</u>
Procedure	<u></u>	Rev	<u></u>

Mpw

11. Pilot the JPM.

For Sim JPMs, ensure simulator response is unchanged. Run concurrent JPMs simultaneously to ensure proper simulator response and there is no interaction between JPMs.

For plant JPMs, ensure the JPM is consistent with conditions in the plant (labeling, radiological, etc.).

N/A

12. If the JPM cannot be performed as written, then revise as necessary and revalidate.

13. When JPM is validated, sign and date JPM cover page. When JPM is Re-validated sign below:

Instructor: _____	Date: _____
Instructor: _____	Date: _____

REVISION SUMMARY

JOB PERFORMANCE MEASURE

Revision	Description/Purpose of Revision
0	New JPM

EVALUATOR COPY:

TASK CONDITIONS

- Unit 1 is operating at rated conditions
- Maintenance has just been completed on RPS logic channels.
- Post Maintenance testing is required for RPS channels A and B
- SO-158-101, Weekly Manual Scram Control Switch Functional Check, is being performed for post-maintenance testing and has been completed up to step 5.1

INITIATING CUE

Perform the Weekly Manual Scram Control Switch Functional Check in accordance with SO-158-001, sections 5.1 and 5.3, only.

EXAMINEE COPY:

TASK CONDITIONS

- Unit 1 is operating at rated conditions
- Maintenance has just been completed on RPS logic channels.
- Post Maintenance testing is required for RPS channels A and B
- SO-158-001, Weekly Manual Scram Control Switch Functional Check, is being performed for post-maintenance testing and has been completed up to step 5.1

INITIATING CUE

Perform the Weekly Manual Scram Control Switch Functional Check in accordance with SO-158-001, sections 5.1 and 5.3, only.

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: Perform RBCCW System Flush

JPM#: 14.ON.20370.151

Revision: 0

Date: 06/13/2017

Applicability: ☒ RO ☒ SRO

Setting: Simulator

NUREG-1123 E/APE / Sys 400000

K/A Number A2.01

K/A Importance 3.3/3.4

Alternate Path: ☒ YES ☐ NO Time Critical ☐ YES ☒ NO Validation Time (min): 11

Testing Method: ☐ Simulate ☒ Perform

Author: Michael Wilcox Date: 10/3/17

Operations Review: Jay Barnes Date: 11/7/17

Validated: Michael Wilcox Date: 10/6/17

Approval: Jeffrey Dills Date: 11/7/17
Nuclear Training Supervisor

Examinee Name: _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min): _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator: _____
Name Signature

Comments:

REQUIRED TASK INFORMATION
JOB PERFORMANCE MEASURE
14.ON.20370.151

I. SAFETY CONSIDERATIONS

- A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.
- B. All applicable safety precautions shall be taken in accordance with established Talen Energy safety policies and the Safety Rule Book, for example:
 - 1. Whenever any electrical panel is opened for inspection during JPM performance.
 - 2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.
- C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.
- D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

II. REFERENCES

- A. GO-100-014, Unit 1 Hot Weather Operation (Rev 13)
- B. ON-RBCCW-101, Loss of RBCCW (Rev 1)
- C. OP-114-001, Reactor Building Closed Cooling Water System (Rev 25)
- D. OP-AD-001, Ops Standards for System and Equipment Operation (Rev 59)

III. TASK CONDITIONS

- Systems cooled by Unit 1 RBCCW are experiencing degraded performance due to hot weather operation.
- Engineering has recommended a flush of the in-service RBCCW Heat Exchanger A to see if performance improves.
- The RBCCW TCV bypass valve is unavailable to be operated.
- No throttled isolation valves are to be operated during the flush.

IV. INITIATING CUE

Perform a flush of RBCCW HX A per GO-100-014 Section 5.3.2.

V. TASK STANDARD

The operator will recognize the loss of the 'A' RBCCW pump. 'B' RBCCW pump will be running and vented in accordance with ON-RBCCW-101.

SIMULATOR SETUP INSTRUCTIONS
JOB PERFORMANCE MEASURE
14.ON.20370.151

NOTE: It is permissible to use a similar IC to the IC listed below, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently.

1. **Reset** the simulator to any IC with RBCCW in operation.
2. **Run** scenario file JPM14ON20370151.SCN
aet ETJPM14ON20370151
IMF cmfPM04_1P210B
IRF rfRW114002 f:20
{Key[1]} IRF rfRW114002 f:100 r:10
ETJPM14ON20370151.ET/SCN
;METER:RBCCW HX TEMP CONTROL (HORZ METER)
aoTIC11028B.CurrValue > 90
IMF cmfPM03_1P210A d:30

EVALUATOR INSTRUCTIONS

- Marking a step as UNSAT requires written comments on respective step.
- Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *.
- The time clock starts when the candidate acknowledges the Initiating Cue.
- This JPM must be performed in the simulator. Reset to exam-specific IC, or configure the simulator per the Simulator Setup Instructions.
- Mark-up a copy of GO-100-014 complete up to initiating flush of RBCCW with TCV. N/A steps associated with the TCV bypass and throttled isolation valves.

EVALUATOR CUE

Record JPM start time: _____

BOOTH OPERATOR CUE

When the evaluator indicates the examinee is ready to begin the JPM, **place** the simulator in RUN.

Step	Action	Standard	Eval	Comments
1	Identifies governing procedure and obtain controlled copy.	Obtains controlled copy of GO-100-014. Determines Att. E is the correct section.	S / U	
<u>Alternate Path</u> RBCCW PUMP 1A trips 30 seconds after controller output exceeds 90 percent. The operator will need to restore RBCCW flow with Pump B.				
*2	Initiates flush of system heat exchangers cooled by RBCCW.	Performs the following on controller TIC-11028, RBCCW COOLER TEMP: <ul style="list-style-type: none"> • Places M/A toggle switch to M • Depresses OPEN PB until controller output indicates 100 percent 	S / U	
3	Observes RBCCW Pump 1A tripped.	Observes the following: <ul style="list-style-type: none"> • RBCCW Pump 1A indication lost • RBCCW system pressure low on PI-11308, RBCCW HX DSCH PRESS • AR-123-E03, RBCCW PUMPS DISCHARGE HEADER LO PRESS, and AR-123-E04, RBCCW HEAT EXCHANGER HEADER LO PRESS, in alarm • RBCCW Pump 1B fails to automatically start • Informs Unit Supervisor 	S / U	

EVALUATOR CUE (As Unit Supervisor) Respond in accordance with plant procedures.				
*4	Starts RBCCW Pump 1B.	Depresses RBCCW PUMP 1P210B START PB.	S / U	
EVALUATOR NOTE Normal RBCCW system pressure on PI-11308 is approximately 75 psig.				
5	Observes RBCCW Pump 1B fails to develop flow.	<p>Observes the following:</p> <ul style="list-style-type: none"> • RBCCW Pump 1B indicates running • RBCCW system pressure low on PI-11308, RBCCW HX DSCH PRESS • AR-123-E03, RBCCW PUMPS DISCHARGE HEADER LO PRESS, and AR-123-E04, RBCCW HEAT EXCHANGER HEADER LO PRESS, in alarm <p>Informs Unit Supervisor</p>	S / U	
EVALUATOR CUE (As Unit Supervisor) Perform ON-RBCCW-101.				
6	Records Recirc Pump bearing and seal cavity temperatures.	Recirc Pumps A&B Motor Temperature TRSH B31 1R601 Panel 1C614, records Reactor Recirc Pump A(B) Motor Bearing and Seal Cavity temperatures.	S / U	
EVALUATOR CUE (When first set of data collected) Another operator will monitor Recirc Pump temperatures. I will determine when action is required before the temperature limits. Continue in ON-RBCCW-101.				
7	Determines loss of flow has occurred.	Selects Condition A to perform.	S / U	
8	Ensures RBCCW Pump 1B running.	Observes RBCCW Pump 1B indicates running, but pump discharge header pressure low annunciator remains in alarm.	S / U	

9	Checks RBCCW Pump breakers.	Directs NPO to check the following breakers: • RBCCW Pump 1A: 1B216-103 • RBCCW Pump 1B: 1B237-093	S / U	
<u>EVALUATOR CUE</u> 1B216-103 is tripped. 1B237-093 is closed.				
10	Identifies performance of ON-CIG-101 for loss of CIG compressors is required.	Informs Unit Supervisor to enter ON-CIG-101.	S / U	
<u>EVALUATOR CUE</u> Another operator will perform ON-CIG-101.				
11	Determines if RBCCW Pump 1B is developing flow.	Directs the NPO to report the status of RBCCW Pump 1B.	S / U	
<u>EVALUATOR CUE</u> (As NPO) RBCCW Pump 1B is running, but sounds air-bound.				
*12	Vents RBCCW Pump 1B.	Directs NPO to vent RBCCW Pump 1B.	S / U	
<u>BOOTH OPERATOR CUE</u> When directed to vent RBCCW Pump 1B, depress KEY 1 to simulate venting the pump.				
<u>EVALUATOR CUE</u> I got a lot of air when I initially opened the pump casing vents, then a solid stream of water. RBCCW Pump 1B sounds to be running normally now.				
13	Verifies RBCCW flow is restored.	Observes the following: • Observes RBCCW system pressure approximately 75 psig on PI-11308, RBCCW HX DSCH PRESS • Observes AR-123-E03, RBCCW PUMPS DISCHARGE HEADER LO PRESS, and AR-123-E04, RBCCW HEAT EXCHANGER HEADER LO PRESS, clear	S / U	

14	Ensures RBCCW Head Tank in normal band.	Observes annunciator AR-132-E06, RBCCW HEAD TANK HI LO LEVEL, is clear.	S / U	
<u>EVALUATOR NOTE / CUE</u> That completes the JPM.				
<u>EVALUATOR CUE</u> Record JPM stop time: _____				
<u>EVALUATOR NOTE</u> Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

VALIDATION CHECKLIST
JOB PERFORMANCE MEASURE
14.ON.20370.151

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 10-13 below.

Instructor
Initials

- | | |
|-----|---|
| Mpw | 1. Task description and number, JPM description and number are identified. |
| Mpw | 2. Knowledge and Abilities (K/A) references are included. |
| Mpw | 3. Performance location specified. (in-plant, control room, or simulator) |
| Mpw | 4. Initial setup conditions are identified. |
| Mpw | 5. Initiating and terminating cues are properly identified. |
| Mpw | 6. Task standards identified and verified by SME review. |
| Mpw | 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*). |
| Mpw | 8. Verify cues both verbal and visual are free of conflict. |
| Mpw | 9. Ensure performance time is accurate. |

Mpw

10. Verify the JPM reflects the most current revision of the procedure.

Procedure	OP-114-001	Rev	25
Procedure	ON-RBCCW-101	Rev	2
Procedure	GO-100-014	Rev	14

- Mpw
11. Pilot the JPM.

For Sim JPMs, ensure simulator response is unchanged. Run concurrent JPMs simultaneously to ensure proper simulator response and there is no interaction between JPMs.

For plant JPMs, ensure the JPM is consistent with conditions in the plant (labeling, radiological, etc.).

- N/A
12. If the JPM cannot be performed as written, then revise as necessary and revalidate.

13. When JPM is validated, sign and date JPM cover page. When JPM is Re-validated sign below:

Instructor: _____ Date: _____

Instructor: _____ Date: _____

REVISION SUMMARY

JOB PERFORMANCE MEASURE
14.ON.20370.151

Revision	Description/Purpose of Revision
0	Crated from JPM 14.ON.1335.151. Reformatted to the Vision template.

EVALUATOR COPY:

TASK CONDITIONS

- Systems cooled by Unit 1 RBCCW are experiencing degraded performance due to hot weather operation.
- Engineering has recommended a flush of the in-service RBCCW Heat Exchanger A to see if performance improves.
- The RBCCW TCV bypass valve is unavailable to be operated.
- No throttled isolation valves are to be operated during the flush.

INITIATING CUE

Perform a flush of RBCCW HX A per GO-100-014 Section 5.3.2.

EXAMINEE COPY:

TASK CONDITIONS

- Systems cooled by Unit 1 RBCCW are experiencing degraded performance due to hot weather operation.
- Engineering has recommended a flush of the in-service RBCCW Heat Exchanger A to see if performance improves.
- The RBCCW TCV bypass valve is unavailable to be operated.
- No throttled isolation valves are to be operated during the flush.

INITIATING CUE

Perform a flush of RBCCW HX A per GO-100-014 Section 5.3.2.

SUSQUEHANNA NUCLEAR, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: Place RHR In Suppression Pool Cooling At Remote Shutdown Panel

JPM#: 49.OP.20301.101 Revision: 3 Date: 7/25/17

Applicability: ☒ RO ☒ SRO

Setting: Plant

NUREG-1123 E/APE / Sys 219000 K/A Number A2.13 K/A Importance 3.5/3.7


Faulted: ☐ YES ☒ NO Time Critical ☐ YES ☒ NO Validation Time (min): 20

Testing Method: ☒ Simulate ☐ Perform

Author: Michael Wilcox Date: 7/25/17

Operations Review:  Date: 12/14/17

Validated: Michael Wilcox Date: 10/22/17

Approval:  Date: 12/12/17
Nuclear Training Supervisor

Examinee Name: _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min): _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator: _____
Name Signature

Comments:

REQUIRED TASK INFORMATION
JOB PERFORMANCE MEASURE
49.OP.20301.201

I. SAFETY CONSIDERATIONS

- A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.
- B. All applicable safety precautions shall be taken in accordance with established Susquehanna Nuclear, LLC safety policies and the Safety Rule Book, for example:
 - 1. Whenever any electrical panel is opened for inspection during JPM performance.
 - 2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.
- C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.
- D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

II. REFERENCES

- A. OP-249-005, RHR Suppression Pool Cooling

III. TASK CONDITIONS

- Unit 2 was operating at rated power when the Control Room was evacuated due to a hazardous atmosphere.
- Operators completed all actions in ON-CREVAC-201, Control Room Evacuation, before evacuating the Control Room.
- Unit 2 RSDP transfer switches have been aligned per ON-CREVAC-201.
- RPV level control is with RCIC, stable at -40". RPV pressure is being maintained with SRVs 800-1050 psig.
- RHR was in the normal standby alignment when the Control Room was evacuated.
- ESW is in operation.
- RHRSW is in operation, supplying the 2A RHR heat exchanger.
- Condensate Transfer is in operation.

IV. INITIATING CUE

Place RHR A in Suppression Pool cooling from the Unit 2 RSDP IAW OP-249-005 section 2.4.

V. TASK STANDARD

RHR A operating in Suppression Pool Cooling per OP-249-005 at $\leq 10,000$ gpm flow, with all flow through the RHR heat exchanger.

INFORMATION FOR EVALUATOR

- Marking a step as UNSAT requires written comments on respective step.
- Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *.
- The time clock starts when the candidate acknowledges the initiating cue.
- This JPM must be performed in the plant. If in the plant, obtain permission from Shift Manager to perform this JPM. This JPM requires access to Unit 2 RSDP.
- Have a copy of OP-249-005 section 2.4 and ON-CREVAC-201.

EVALUATOR CUE

Record JPM start time: _____

Step	Action	Standard	Eval	Comments
1	Identifies governing procedure and obtain controlled copy.	Obtains controlled copy of OP-249-005 section 2.4.	S / U	
- 2	Reviews note.	Reviews note.	S / U	
3	Reviews prerequisites.	Reviews prerequisites.	S / U	
4	Reviews precautions.	Reviews precautions.	S / U	
5	Reviews note.	Reviews note.	S / U	
6 (step 2.4.3)	Ensure ESW in operation IAW OP-054-001, Emergency Service Water System.	Observes ESW in operation is specified in Task Conditions.	S / U	
7 (step 2.4.4)	Place RHRSW in operation IAW OP-216-001, RHR Service Water System.	Observes RHRSW in operation is specified in Task Conditions.	S / U	

EVALUATOR NOTE/CUE: The following step may be completed a variety of ways. If the trainee attempts to Start the 2A RHR Pump, ensure this attempt is **Simulated**. Cue will be "Indications are as seen". If the trainee attempts to determine RHR Pump 1A via communications with other operators, Role Play as necessary to provide the information that the 1A RHR Pump is not running.

8 (step 2.4.5)	If RHR Pump 1A is running, as determined locally or RHR Pump 2A will not start, Stop RHR Pump 1A locally at RHR Pump 1P202A breaker 1A20102.	Determines step is Not Applicable.	S / U	
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9 (step 2.4.6)	Ensure HV-251-F048 HX A SHELL SIDE BYPS OPEN.	Observes HV-251-F048 is open.	S / U	
*10 (step 2.4.7)	Open HV-251-F028A SUPP CHMBR SPRY TEST SHUTOFF.	Simulates placing HV-251-F028A to OPEN.	S / U	
EVALUATOR CUE: HV-251-F028A Red light illuminated, amber light off.				
11 (step 2.4.8)	Ensure HV-251-F007A RHR PP A/C MIN FLOW OPEN.	Observes HV-251-F007A is open.	S / U	
12 (step 2.4.9)	If RHR discharge loop is potentially voided in accordance with ON-037-001, Fill and Pressurize RHR Loop A as follows:	Determines RHR discharge loop is not voided and step is Not Applicable. Condensate Transfer is in operation as specified in the Task Conditions.	S / U	
13 (step 2.4.10)	Ensure RHR System filled and vented.	Notifies NPO to perform step 2.4.10 of OP- 249-005.	S / U	
EVALUATOR CUE: Step 2.4.10 of OP-249-005 is complete.				
*14 (step 2.4.11)	Start 2P202A RHR PP.	Simulates placing RHR PP 2A control switch to START.	S / U	
EVALUATOR CUE: RHR Pump 2A Red Light Illuminated, Amber Light Off.				
15	If RHR Pump A 2P202A is not available, substeps A and B are to be performed.	Determines this step is Not Applicable.	S / U	
*16 (step 2.4.13)	Throttle Open HV-251-F024A TEST LINE CTL	Simulates placing HV-251-F024A to OPEN	S / U	
EVALUATOR CUE: As HV-251-F024A is simulated in the OPEN position, indicate that the associated Red Light is Illuminated, Amber Light is Illuminated, and RHR System flow on FI-25105 is rising. The examinee should release HV-251-F024A when RHR Flow is > 3,000 gpm. This will stop the rise in RHR Flow.				
17 (step 2.4.14)	After 3,000 gpm flow reached, Close HV-251- F007A RHR PUMP A/C MIN FLOW.	Simulates placing HV-251-F007 in CLOSE.	S / U	

EVALUATOR CUE: HV-251-F007 Red Light is Off, Amber Light is Illuminated.			
*18 (step 2.4.15)	Adjust flow to $\leq 10,000$ gpm using HV-251-F024A TEST LINE CTL.	Simulates placing HV-251-F024 to OPEN to establish $\leq 10,000$ gpm RHR Flow on FI-25105.	S / U
EVALUATOR CUE: Manipulate RHR Flow Indication, FI-25105, to respond to examinee manipulations. Closing HV-251-F024 will lower RHR Flow; Opening HV-251-F024 will raise RHR Flow.			
19 (step 2.4.16)	Close HV-251-F048A HX B SHELL SIDE BYPS.	Simulates placing HV-251-F048A to close.	S / U
EVALUATOR CUE: HV-251-F048A Red Light is Off, Amber Light is Illuminated.			
EVALUATOR NOTE / CUE That completes the JPM.			
EVALUATOR CUE Record JPM stop time: _____			
EVALUATOR NOTE Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?			

REVISION SUMMARY

JOB PERFORMANCE MEASURE
49.OP.20301.201

Revision	Description/Purpose of Revision
0	New JPM
1	Changed to new TQ format. Updated to latest procedure revisions
2	Updated to latest procedure revisions.
3	Updated to latest TQ revisions.

EVALUATOR COPY:

TASK CONDITIONS

- Unit 2 was operating at rated power when the Control Room was evacuated due to a hazardous atmosphere.
- Operators completed all actions in ON-CREVAC-201; Control Room Evacuation, before evacuating the Control Room.
- Unit 2 RSDP transfer switches have been aligned per ON-CREVAC-201.
- RPV level control is with RCIC, stable at -40". RPV pressure is being maintained with SRVs 800-1050 psig.
- RHR was in the normal standby alignment when the Control Room was evacuated.
- ESW is in operation.
- RHRSW is in operation, supplying the 2A RHR heat exchanger.
- Condensate Transfer is in operation.

INITIATING CUE

Place RHR A in Suppression Pool cooling from the Unit 2 RSDP IAW OP-249-005 section 2.4.

EXAMINEE COPY:

TASK CONDITIONS

- Unit 2 was operating at rated power when the Control Room was evacuated due to a hazardous atmosphere.
- Operators completed all actions in ON-CREVAC-201, Control Room Evacuation, before evacuating the Control Room.
- Unit 2 RSDP transfer switches have been aligned per ON-CREVAC-201.
- RPV level control is with RCIC, stable at -40". RPV pressure is being maintained with SRVs 800–1050 psig.
- RHR was in the normal standby alignment when the Control Room was evacuated.
- ESW is in operation.
- RHRSW is in operation, supplying the 2A RHR heat exchanger.
- Condensate Transfer is in operation.

INITIATING CUE

Place RHR A in Suppression Pool cooling from the Unit 2 RSDP IAW OP-249-005 section 2.4.

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: Shift the CRD Flow Control Stations from A to B per OP-155-001

JPM#: 55.OP.20251.101

Revision: 0

Date: 06/15/2017

Applicability: ☒ RO ☒ SRO

Setting: Plant

NUREG-1123 E/APE / Sys 201001 K/A Number A2.07 K/A Importance 3.2/3.1


Alternate Path: ☐ YES ☒ NO Time Critical ☐ YES ☒ NO Validation Time (min): 20

Testing Method: ☒ Simulate ☐ Perform

Author: Michael Wilcox Date: 06/15/2017

Operations Review:  Date: 12/4/17

Validated: Bruce Althouse Date: 11/16/17

Approval:  Date: 12/12/17
Nuclear Training Supervisor

Examinee Name: _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min): _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator: _____
Name Signature

Comments:

REQUIRED TASK INFORMATION
JOB PERFORMANCE MEASURE
55.OP.20251.101

I. SAFETY CONSIDERATIONS

- A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.
- B. All applicable safety precautions shall be taken in accordance with established Talen Energy safety policies and the Safety Rule Book, for example:
 - 1. Whenever any electrical panel is opened for inspection during JPM performance.
 - 2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.
- C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.
- D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

II. REFERENCES

- A. OP-155-001, Control Rod Drive Hydraulics System

III. TASK CONDITIONS

Unit 1 is at 80 percent reactor power.

CRD System is aligned for normal operation per OP-155-001

IV. INITIATING CUE

Change CRD flow control stations from FV-1F002A to FV-1F002B per OP-155-001 Section 2.4

V. TASK STANDARD

Formerly out of service FCV in service and former in-service out of service. CRD System operating normally

INFORMATION FOR EVALUATOR

- Marking a step as UNSAT requires written comments on respective step.
- Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *.
- The time clock starts when the candidate acknowledges the initiating cue.
- This JPM must be performed in the plant. Obtain Shift Manager authorization to proceed. This JPM requires access to Unit 1 CRD FCV in the Reactor Building.

EVALUATOR CUE

Record JPM start time: _____

Step	Action	Standard	Eval	Comments
1	Verifies OP-155-001 Section 2.4 is governing procedure and obtains controlled copy.	Controlled copy of OP-155-001 obtained, selects Section 2.4.	S / U	

EVALUATOR NOTE

With the A flow control station in service the following conditions exist:

- M/A-1D009A is in AUTO
- CLOSED and OPEN position indicator lights for FCV A are illuminated
- M/A-1D009B is in MAN
- FCV B CLOSED light is ILLUMINATED and the OPEN light is EXTINGUISHED

EVALUATOR NOTE

M/A-1D009A(B) RED pen is controller output, BLACK pen is Control Room controller demand

2	Verifies CRD in operation per OP-155-001.	Observe from Task Conditions CRD aligned for normal operation per procedure.	S / U	
3	Ensures FC-C12-1R600, CRD Flow Controller, in AUTO.	Notifies Control Room to ensure FC-C12-1R600, CRD Flow Controller, in AUTO.	S / U	

EVALUATOR CUE

The CRD flow controller is in AUTO.

4	Ensures M/A-1D009B, Man/Auto Station Flow Control Valve B, in MAN at minimum output.	Observe the following on controller M/A-1D009B, MAN/AUTO STATION FLOW CONTROL VALVE B: <ul style="list-style-type: none"> Man/Auto control switch in the MAN position Red pen indicates 0 	S / U	
<u>EVALUATOR CUE</u> M/A-1D009B is in manual with red pen indicating 0.				
5	Ensures FV146F002B, CRD Flow Control Vlv B, CLOSED by position indication.	Observe amber light ILLUMINATED, red light EXTINGUISHED	S / U	
<u>EVALUATOR CUE</u> Amber light ILLUMINATED, red light EXTINGUISHED				
6	Ensures 146F046B, CRD Flow Control Valve B Inlet Iso Vlv, OPEN.	Perform the following: <ul style="list-style-type: none"> Rotate handwheel for 146F046B, CRD FLOW CONTROL VALVE B INLET ISO VLV, in the clockwise direction Rotate handwheel for 146F046B, CRD FLOW CONTROL VALVE B INLET ISO VLV, in the counter-clockwise direction until resistance felt 	S / U	
<u>EVALUATOR CUE</u> You feel no resistance in the clockwise direction You feel resistance in the counter-clockwise direction				
<u>EVALUATOR NOTE</u> The F047B must be opened very slowly or large (20 to 25 gpm) CRD system flow changes may result.				
7	Slowly cracks open 146F047B, CRD Flow Control Valve B Outlet Iso Vlv, slowly, to a partially OPEN position.	Rotate handwheel for 146F047B, CRD FLOW CONTROL VALVE B OUTLET ISO VLV in the counter-clockwise direction a few turns.	S / U	

<u>EVALUATOR CUE</u> You feel no resistance in the counter-clockwise direction. There was an audible flow noise, which has subsided				
8	Verifies CRD system flow stabilizes.	Observe the following: <ul style="list-style-type: none"> M/A-1D009A, MAN/AUTO STATION FLOW CONTROL VALVE A, black pen (Control Room demand) STABLE FI-1R019, FLOW CONTROL STATION TOTAL WATER FLOW, indicates approximately 63 gpm 	S / U	
<u>EVALUATOR CUE</u> M/A-1D009A black pen is STABLE. FI-1R019 indicates approximately 63 gpm				
9*	Opens 146F047B, CRD Flow Control Valve B Outlet Iso Vlv full OPEN.	Rotate handwheel for 146F047B, CRD FLOW CONTROL VALVE B OUTLET ISO VLV in the counter-clockwise direction until resistance felt.	S / U	
<u>EVALUATOR CUE</u> You feel resistance in the counter-clockwise direction.				
10	Raises output of M/A-1D009B, Man/Auto Station Flow Control Valve B, to match Control Room controller demand.	On controller M/A-1D009B, MAN/AUTO STATION FLOW CONTROL VALVE B, adjust manual adjust knob as necessary until BLACK and RED pens are closely matched.	S / U	
<u>EVALUATOR CUE</u> Black and red pens are matched				

11	Verifies CRD system flow stabilizes.	Observe the following: <ul style="list-style-type: none"> Audible flow noise stops M/A-1D009A, MAN/AUTO STATION FLOW CONTROL VALVE A, black pen lowers and stabilizes FI-1R019, FLOW CONTROL STATION TOTAL WATER FLOW, indicates approximately 63 gpm 	S / U	
<u>EVALUATOR CUE</u> There was an audible flow noise, which has subsided. M/A-1D009A black pen is STABLE at a lower value. FI-1R019 indicates approximately 63 gpm.				
12	Nulls M/A-1D009A, Man/Auto Station Flow Control Valve A.	On controller M/A-1D009B, MAN/AUTO STATION FLOW CONTROL VALVE B, adjust manual adjust knob as necessary until BLACK and RED pens are closely matched.	S / U	
<u>EVALUATOR CUE</u> Black and red pens are matched				
13	Ensures CRD system flow stable.	Observe FI-1R019, FLOW CONTROL STATION TOTAL WATER FLOW, indicates approximately 63 gpm, steady	S / U	
<u>EVALUATOR CUE</u> FI-1R019 indicates approximately 63 gpm				
14	Places M/A-1D009A, Man/Auto Station Flow Control Valve A, in MANUAL	On controller M/A-1D009A, MAN/AUTO STATION FLOW CONTROL VALVE A, place the Man/Auto control switch in the MAN position	S / U	
<u>EVALUATOR CUE</u> The controller is in manual				

15*	Places M/A-1D009B, Man/Auto Station Flow Control Valve B, in AUTO	On controller M/A-1D009B, MAN/AUTO STATION FLOW CONTROL VALVE B, place the Man/Auto control switch in the AUTO position	S / U	
<u>EVALUATOR CUE</u> The controller is in AUTO				
16	Reduces output of M/A-1D009A, Man/Auto Station Flow Control Valve A, to minimum.	Perform the following: <ul style="list-style-type: none"> On controller M/A-1D009A, MAN/AUTO STATION FLOW CONTROL VALVE A, adjust manual adjust knob until RED pen indicates 0 Observe Position Indicator Flow Control Valve A amber light ILLUMINATED and red light EXTINGUISHED 	S / U	
<u>EVALUATOR CUE</u> The red pen is at 0. (If requested) Amber light ILLUMINATED and red light EXTINGUISHED				
17	Ensures CRD system flow stable.	Observe FI-1R019, FLOW CONTROL STATION TOTAL WATER FLOW, indicates approximately 63 gpm, steady	S / U	
<u>EVALUATOR CUE</u> FI-1R019 indicates approximately 63 gpm				
18*	Closes 146F047A, CRD Flow Control Valve A Outlet Iso Vlv, slowly	Rotate handwheel for 146F047A, CRD FLOW CONTROL VALVE A OUTLET ISO VLV, in the clockwise direction until resistance felt.	S / U	
<u>EVALUATOR CUE</u> You feel resistance in the clockwise direction				

19	Verifies indication for CRD Flow Control Valve, FV146F002B.	Perform the following: <ul style="list-style-type: none"> Observe Position Indicator Flow Control Valve B amber light ILLUMINATED and red light ILLUMINATED Mark Step 2.4.19a-d as N/A 	S / U	
<u>EVALUATOR CUE</u> FV146F002B indicates dual				
20	Verifies CRD system parameters normal.	Observe the following: <ul style="list-style-type: none"> FI-1R019, FLOW CONTROL STATION TOTAL WATER FLOW, indicates approximately 63 gpm PDI-1R005, DOWNSTREAM P-C/REA DIFFERENTIAL PRESSURE, indicates < 50 psid. PDI-1R009, UPSTREAM P-C/REA DIFFERENTIAL PRESSURE, indicates approximately 250 psid. 	S / U	
<u>EVALUATOR CUE</u> FI-1R019 indicates 63 gpm PDI-1R005 indicates 13 psid PDI-1R009 indicates 247 psid				
<u>EVALUATOR NOTE / CUE</u> That completes the JPM.				
<u>EVALUATOR CUE</u> Record JPM stop time: _____				
<u>EVALUATOR NOTE</u> Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

-19	Verifies indication for CRD Flow Control Valve, FV146F002B. <i>How is this critical? NO ACTION is TAKEN..</i>	Perform the following: • Observe Position Indicator Flow Control Valve B amber light ILLUMINATED and red light ILLUMINATED • Mark Step 2.4.19a-d as N/A	S / U	
EVALUATOR FV146F002B ii				
20	Verifies normal.	Observe the following: • FI-1R019, FLOW CONTROL STATION TOTAL WATER FLOW, indicates approximately 63 gpm • PDI-1R005, DOWNSTREAM P-C/REA DIFFERENTIAL PRESSURE, indicates < 50 psid. • PDI-1R009, UPSTREAM P-C/REA DIFFERENTIAL PRESSURE, indicates approximately 250 psid.	S / U	
EVALUATOR CUE. FI-1R019 indicates 63 gpm PDI-1R005 indicates 13 psid PDI-1R009 indicates 247 psid				
EVALUATOR NOTE / CUE That completes the JPM.				
EVALUATOR CUE Record JPM stop time: _____				
EVALUATOR NOTE Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

VALIDATION CHECKLIST
JOB PERFORMANCE MEASURE
55.OP.20251.101

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 10-13 below.

Instructor

Initials

- | | |
|----|---|
| BA | 1. Task description and number, JPM description and number are identified. |
| BA | 2. Knowledge and Abilities (K/A) references are included. |
| BA | 3. Performance location specified. (in-plant, control room, or simulator) |
| BA | 4. Initial setup conditions are identified. |
| BA | 5. Initiating and terminating cues are properly identified. |
| BA | 6. Task standards identified and verified by SME review. |
| BA | 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*). |
| BA | 8. Verify cues both verbal and visual are free of conflict. |
| BA | 9. Ensure performance time is accurate. |

BA

10. Verify the JPM reflects the most current revision of the procedure.

Procedure	OP-155-001	Rev	73
Procedure		Rev	
Procedure		Rev	

- BA
11. Pilot the JPM.

For Sim JPMs, ensure simulator response is unchanged. Run concurrent JPMs simultaneously to ensure proper simulator response and there is no interaction between JPMs.

For plant JPMs, ensure the JPM is consistent with conditions in the plant (labeling, radiological, etc.).

- N/A
12. If the JPM cannot be performed as written, then revise as necessary and revalidate.

13. When JPM is validated, sign and date JPM cover page. When JPM is Re-validated sign below:

Instructor: <u>N/A</u>	Date: <u>N/A</u>
Instructor: <u>N/A</u>	Date: <u>N/A</u>

REVISION SUMMARY

JOB PERFORMANCE MEASURE
55.OP.20251.101

Revision	Description/Purpose of Revision
0	Created from JPM 55.OP.2011.101 R5. Reformatted to Vision template.

EVALUATOR COPY:

TASK CONDITIONS

- Unit 1 is at 80 percent reactor power.
- CRD System is aligned for normal operation per OP-155-001

INITIATING CUE

Change CRD flow control stations from FV-1F002A to FV-1F002B per OP-155-001 Section 2.4

EXAMINEE COPY:

TASK CONDITIONS

- Unit 1 is at 80 percent reactor power.
- CRD System is aligned for normal operation per OP-155-001

INITIATING CUE

Change CRD flow control stations from FV-1F002A to FV-1F002B per OP-155-001 Section 2.4

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: Transfer of DG 'E' for DG 'C'

JPM#: 24.OP.20661.001

Revision: 0

Date: 06/15/2017

Applicability: ☒ RO ☒ SRO

Setting: Plant

NUREG-1123 E/APE / Sys 264000 K/A Number A2.09 K/A Importance 3.7/4.1

Alternate Path: ☐ YES ☒ NO Time Critical ☐ YES ☒ NO Validation Time (min): 20

Testing Method: ☒ Simulate ☐ Perform

Author: Michael Wilcox Date: 06/15/2017

Operations Review: Collin Breitman Date: 12/4/17

Validated: Bruce Althouse Date: 11/16/17

Approval:  Date: 12/12/17
Nuclear Training Supervisor

Examinee Name: _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min): _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator: _____
Name Signature

Comments:

REQUIRED TASK INFORMATION
JOB PERFORMANCE MEASURE
24.OP.20661.001

I. SAFETY CONSIDERATIONS

- A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.
- B. All applicable safety precautions shall be taken in accordance with established Talen Energy safety policies and the Safety Rule Book, for example:
 - 1. Whenever any electrical panel is opened for inspection during JPM performance.
 - 2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.
- C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.
- D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

II. REFERENCES

- A. OP-024-004, TRANSFER AND TEST MODE OPERATIONS OF DIESEL GENERATOR E

III. TASK CONDITIONS

- A Station Blackout occurred due to a loss of offsite power. The control room crew is performing Unit 1(2) Response to Station Blackout, EO-100(200)-030.
- Diesel Generators A and B were started LOCALLY.
- The Control Room is preparing to energize ESS Buses 1C and 2C using Diesel Generator E.
- Another operator is at DG E and has already performed steps 1-3 of OP-024-004, Attachment C.
- The C Diesel Bldg Basement has been evaluated and conditions are adequate for habitability, another operator is on station to support.

IV. INITIATING CUE

Swap E EDG for C EDG using OP-024-004, Attachment C starting at step 4.

V. TASK STANDARD

DG C removed from service, and DG E ready to supply power to ESS Buses 1C and 2C in accordance with OP-024-004 Attachment C steps 4-12.

INFORMATION FOR EVALUATOR

- Marking a step as UNSAT requires written comments on respective step.
- Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *.
- The time clock starts when the candidate acknowledges the initiating cue.
- This JPM must be performed in the plant. Obtain Shift Manager Authorization to proceed. This JPM requires access to DG C.
- Have a copy of OP-024-004 att. C

EVALUATOR CUE

Record JPM start time: _____

Step	Action	Standard	Eval	Comments
1	Verifies OP-024-004 Attachment C is governing procedure and obtains controlled copy.	Controlled copy of OP-024-004 obtained, selects Attachment C.	S / U	
2	At 0C521C Diesel Generator C Engine Control Panel, place DG C Control Mode Select Switch 43CM to LOCAL.	Rotates 43CM DG C CONTROL MODE SELECT SWITCH to LOCAL	S / U	

EVALUATOR CUE

43CM control mode select switch is in LOCAL

3	Observe the following: <ul style="list-style-type: none"> • Control switches not proper for Remote Auto Oper. ALARM • Remote white light Extinguishes • Local white light Illuminates DG C available for Emergency white light Extinguishes	Observes the following: <ul style="list-style-type: none"> • Alarm E-08, CONTROL SWITCHES NOT PROPER FOR REMOTE AUTO OPER, in alarm • REMOTE white light EXTINGUISHED • LOCAL white light ILLUMINATED • DG C AVAILABLE FOR EMERGENCY white light EXTINGUISHED 	S / U	
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EVALUATOR CUE

Alarm E-08, CONTROL SWITCHES NOT PROPER FOR REMOTE AUTO OPER, is in alarm
REMOTE White light is out
LOCAL white light is lit
DG C AVAILABLE FOR EMERGENCY white light is out

4	Verifies Control Room alarm	Contacts Control Room PCO and requests status of DG panel alarm	S / U	
---	------------------------------------	--	-------	--

<u>EVALUATOR CUE</u> DG panel alarm was received.				
<u>EVALUATOR NOTE</u> The candidate may attempt to enter the basement area to perform the next two steps. It is desired to minimize industrial safety risk and utilize the additional operator on station to perform the next two steps. Do not allow the candidate to enter the basement area.				
5*	Manually Closes HV-01112C/ HV-0112C, DG C ESW A supply/return isolation valve	<ul style="list-style-type: none"> Directs field operator in basement to perform step 7 of Attachment C, OP-024-004. 	S / U	
<u>EVALUATOR CUE</u> Step 7 of OP-024-004 Attachment C is complete.				
6*	Manually Closes HV-01110C/ HV-0110C, DG C ESW B supply/return isolation valve	<ul style="list-style-type: none"> Directs field operator in basement to perform step 8 of Attachment C, OP-024-004. 	S / U	
<u>EVALUATOR CUE</u> Step 8 of OP-024-004 Attachment C is complete.				
7	At 0C512C, Place DG C building ventilation supply fan 0V512C to Stop.	At 0C512C, DG E FOR DG C TRANSFER PANEL, places HS DG C BLDG VENTIL SUPPLY FAN 0V512C to STOP	S / U	
<u>EVALUATOR CUE</u> DG C BLDG VENTIL SUPPLY FAN 0V512C is in STOP				
8*	At 0C512C: <ul style="list-style-type: none"> Place HS-00057C, DG C Auto Start Control to Disable. Observe DG C Aligned white light Extinguished 	Performs the following: <ul style="list-style-type: none"> Places HS-00057C, DG C AUTO START CONTROL, to DISABLE Observes DG C ALIGNED white light EXTINGUISHED 	S / U	
<u>EVALUATOR CUE</u> HS-00057C is in DISABLE DG C ALIGNED white light is out				
<u>EVALUATOR CUE</u> As each of the following steps (11-19) are performed, cue the examinee that the identified switch is in the desired position.				

9*	Place HS-00058C, GENERATOR METERING & COMPUTER MONITORING, to the DG E position	Places HS-00058C, GENERATOR METERING & COMPUTER MONITORING, to the DG E position	S / U	
10*	Place HS-00059C, GENERATOR FIELD CURRENT COMPUTER MONITORING, to the DG E position	Places HS-00059C, GENERATOR FIELD CURRENT COMPUTER MONITORING, to the DG E position	S / U	
11*	Place HS-00060C, DIESEL ALARMS TO CONTROL ROOM ANNUNCIATOR, to the DG E position	Places HS-00060C, DIESEL ALARMS TO CONTROL ROOM ANNUNCIATOR, to the DG E position	S / U	
12*	Place HS-00061C, ESW TEMP MONITORING & HVAC ALARMS, to the DG E position	Cycles and Places HS-00061C, ESW TEMP MONITORING & HVAC ALARMS, to the DG E position	S / U	
13*	Place HS-00062C, ESW LOOP A SUPPLY VALVE CONTROL & INDICATION, to the DG E position	Places HS-00062C, ESW LOOP A SUPPLY VALVE CONTROL & INDICATION, to the DG E position	S / U	
14*	Place HS-00063C, ESW LOOP A RETURN VALVE CONTROL & INDICATION, to the DG E position	Places HS-00063C, ESW LOOP A RETURN VALVE CONTROL & INDICATION, to the DG E position	S / U	
15*	Place HS-00064C, ESW LOOP B SUPPLY VALVE CONTROL & INDICATION, to the DG E position	Places HS-00064C, ESW LOOP B SUPPLY VALVE CONTROL & INDICATION, to the DG E position	S / U	
16*	Place HS-00065C, DG BYPASS INDICATION UNIT 1, to the DG E position	Places HS-00065C, DG BYPASS INDICATION UNIT 1, to the DG E position	S / U	
17*	Place HS-00066C, DG BYPASS INDICATION UNIT 2, to the DG E position	Places HS-00066C, DG BYPASS INDICATION UNIT 2, to the DG E position	S / U	
18*	Place HS-00067C, ALIGNMENT ALARM & INDICATION ONLY, to the DG E position	Places HS-00067C, ALIGNMENT ALARM & INDICATION ONLY, to the DG E position	S / U	
19*	Place HS-00068C, ESW LOOP B RETURN VALVE CONTROL & INDICATION, to the DG E position	Places HS-00068C, ESW LOOP B RETURN VALVE CONTROL & INDICATION, to the DG E position	S / U	

20*	Place HS-00069C, ESW BYPASS INDICATION AND AUTO LOOP TRANSFER, to the DG E position	Places HS-00069C, ESW BYPASS INDICATION AND AUTO LOOP TRANSFER, to the DG E position	S / U	
21*	Place HS-00070C, VENTILATION SUPPLY FANS CONTROL, to the DG E position	Places HS-00070C, VENTILATION SUPPLY FANS CONTROL, to the DG E position	S / U	
22*	Place HS-00071C, DG CTL, INDICATION, METERING & BREAKER TRIP INTERLOCK, to the DG E position	Places HS-00071C, DG CTL, INDICATION, METERING & BREAKER TRIP INTERLOCK, to the DG E position	S / U	
23*	Place HS-00072C, GENERATOR RELAYING & BREAKER TRIP INTERLOCK, to the DG E position	Places HS-00072C, GENERATOR RELAYING & BREAKER TRIP INTERLOCK, to the DG E position	S / U	
24*	Place HS-00073C, GENERATOR METERING & BREAKER TRIP INTERLOCK, to the DG E position	Places HS-00073C, GENERATOR METERING & BREAKER TRIP INTERLOCK, to the DG E position	S / U	
25*	Place HS-00074C, ENGINE CONTROL & INDICATION, to the DG E position	Places HS-00074C, ENGINE CONTROL & INDICATION, to the DG E position	S / U	
26*	Place HS-00075C, ENGINE, GENERATOR & ESW PUMP CONTROL, to the DG E position	Places HS-00075C, ENGINE, GENERATOR & ESW PUMP CONTROL, to the DG E position	S / U	
27*	Place HS-00076C, Generator Breaker Control, to the DG E position	Places HS-00076C, Generator Breaker Control, to the DG E position	S / U	
<u>EVALUATOR NOTE / CUE</u> That completes the JPM.				
<u>EVALUATOR CUE</u> Record JPM stop time: _____				
<u>EVALUATOR NOTE</u> Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

VALIDATION CHECKLIST
JOB PERFORMANCE MEASURE
24.OP.20661.001

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 10-13 below.

Instructor
Initials

- | | |
|----|---|
| BA | 1. Task description and number, JPM description and number are identified. |
| BA | 2. Knowledge and Abilities (K/A) references are included. |
| BA | 3. Performance location specified. (in-plant, control room, or simulator) |
| BA | 4. Initial setup conditions are identified. |
| BA | 5. Initiating and terminating cues are properly identified. |
| BA | 6. Task standards identified and verified by SME review. |
| BA | 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*). |
| BA | 8. Verify cues both verbal and visual are free of conflict. |
| BA | 9. Ensure performance time is accurate. |

BA

10. Verify the JPM reflects the most current revision of the procedure.

Procedure	OP-024-004	Rev	36
Procedure		Rev	
Procedure		Rev	

BA

11. Pilot the JPM.

For Sim JPMs, ensure simulator response is unchanged. Run concurrent JPMs simultaneously to ensure proper simulator response and there is no interaction between JPMs.

For plant JPMs, ensure the JPM is consistent with conditions in the plant (labeling, radiological, etc.).

N/A

12. If the JPM cannot be performed as written, then revise as necessary and revalidate.

13. When JPM is validated, sign and date JPM cover page. When JPM is Re-validated sign below:

Instructor: _____

Date: _____

Instructor: _____

Date: _____

REVISION SUMMARY

JOB PERFORMANCE MEASURE
24.OP.20661.001

Revision	Description/Purpose of Revision
0	Created from JPM 24.OP.1464.001 R4. Reformatted to the Vision template.

EVALUATOR COPY:

TASK CONDITIONS

- A Station Blackout occurred due to a loss of offsite power. The control room crew is performing Unit 1(2) Response to Station Blackout, EO-100(200)-030.
- Diesel Generators A and B were started LOCALLY.
- The Control Room is preparing to energize ESS Buses 1C and 2C using Diesel Generator E.
- Another operator is at DG E and has already performed steps 1-3 of OP-024-004, Attachment C.
- The C Diesel Bldg Basement has been evaluated and conditions are adequate for habitability, another operator is on station to support.

INITIATING CUE

Swap E EDG for C EDG using OP-024-004, Attachment C starting at step 4.

EXAMINEE COPY:

TASK CONDITIONS

- A Station Blackout occurred due to a loss of offsite power. The control room crew is performing Unit 1(2) Response to Station Blackout, EO-100(200)-030.
- Diesel Generators A and B were started LOCALLY.
- The Control Room is preparing to energize ESS Buses 1C and 2C using Diesel Generator E.
- Another operator is at DG E and has already performed steps 1-3 of OP-024-004, Attachment C.
- The C Diesel Bldg Basement has been evaluated and conditions are adequate for habitability, another operator is on station to support.

INITIATING CUE

Swap E EDG for C EDG using OP-024-004, Attachment C starting at step 4.

**SUSQUEHANNA NUCLEAR, LLC
OPERATIONS TRAINING PROGRAM**

SCENARIO EXAMINATION GUIDE

2018

LOC 29 NRC SCENARIO 2

**SCN# LOC29-NRC-02
Revision 0**

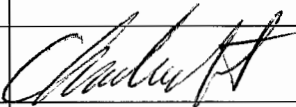
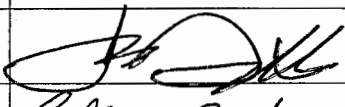
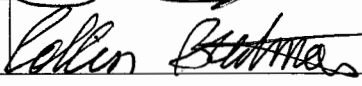
06/22/2017



Lesson Information

Title	Swap TBCCW / Fuel Failure / Steam Leak into TB				
Vision ID		Accredited		■ YES □ NO	
Training ID	LOC29-NRC-02	Revision	0	Date	06/22/17
Prerequisites					
Teaching Time	65 Minutes				

Approval

CBT Approval ¹	N/A	Date	N/A
Preparer	Michael Wilcox	Date	06/22/17
Review (Instructor/SME)		Date	12/5/17
Nuclear Engineering ¹	N/A	Date	N/A
Training Supervision		Date	12/12/17
Line Management		Date	12/6/17

¹If required, otherwise N/A

This simulator scenario has been reviewed and satisfies management expectations for inclusion of OE, Department Fundamentals and HuP, error-reduction techniques and safety standards. Specific applications and/or opportunities for reinforcement of management expectations are noted in the scenario guide or Attachment(s) where applicable.

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Revision History

Revision	Date	Comments
0	06/22/2017	New exam

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Scenario Overview

The crew assumes the shift with the plant operating at approximately 100% power. IAC B and SLC pump B are out of service for maintenance.

The crew will begin by starting TBCCW pump B and securing TBCCW pump A per OP-115-001. During this evolution, an APRM fails upscale and causes a control rod block. The crew will bypass the APRM to clear the rod block. The SRO will review the Technical Specification impact of the failed APRM.

Next, a failure of the Turbine First Stage Pressure instrumentation will occur. The SRO will determine the Technical Specification impact.

Next, extraction steam to Feedwater Heater 5A will isolate. The loss of Feedwater heating will cause Reactor power to rise. The crew will respond per ON-FWHTG-101, Feedwater Heating Off Normal Operation, and multiple other off-normal procedures. The crew will be required to reduce Reactor power to $\leq 71\%$. They will initiate a Recirculation runback to limiter #2. The crew will then isolate Feedwater Heater string A. The SRO will determine the Technical Specification impact.

The reactivity excursion will cause fuel damage. Off-gas and Main Steam Line radiation levels will rise. The crew will execute ON-MSLRAD-101, Rising Offgas MSL Rad Levels. The crew will lower Reactor power in an attempt to reduce radiation levels. The crew will eventually scram the Reactor and attempt to isolate the MSIVs. The MSIVs will stick in mid-position.

After the scram, a Main Steam Line break will develop in the Turbine Building. With the MSIVs stuck mid-position, this is an un-isolable primary system discharging outside of the primary containment. Turbine Building exhaust fan A will trip. Turbine Building exhaust fan B will trip approximately 1 minute after being started. The loss of Turbine Building HVAC will lead to an un-monitored release from the Turbine Building. The crew will execute EO-000-105, Radioactivity Release Control. When dose rates approach the General Emergency level, the crew will execute EO-000-112, Emergency Depressurization, and open all ADS valves. The crew will control Reactor injection to restore / maintain Reactor water level during and after the emergency depressurization.

The scenario will be terminated when 6 SRVs are open and Reactor water level is being restored to or controlled in the assigned band above -161".

The expected E Plan classification is a Site Area Emergency, RS1.1, based on a loss of two barriers or RS1.2, based on offsite radiation levels. Depending on when the scenario is terminated, RG1.2, General Emergency criteria may be met.

Objectives

Mastery of the training content shall be demonstrated by individual and/or crew performance evaluation as specified in this training material and the applicable training program description, in accordance with training procedures.

A. Terminal Objective

Perform all system operations required to maintain the plant operating safely, or place the plant in a safe condition if a plant shutdown is required

During the specified mode of plant / system operation

Without error and in accordance with site procedures and management expectations

B. Generic Performance Objectives

1. For all activities, exhibit use of the Human Performance Tools, demonstrating the ability to:
 - Use HU tools to effectively control the plant during normal, abnormal, and emergency conditions
 - Use of HU tools will be observable per the standards in HU-AD-003
 - (SRO) Take every opportunity to coach the team when HU standards are not being met and provide feedback to the team when the HU standards are being met
2. For all activities, exhibit proper use of procedures by:
 - Applying the correct procedure to operate equipment and respond to abnormalities
 - Ensuring procedures are detailed enough to allow precise control of plant evolutions.
 - Demonstrating the ability to:
 - Apply the correct procedure to the situation
 - Use place keeping for accurate implementation
 - Identify any and all areas for procedure improvement
 - Take ownership of and complete the improvement, whenever an area for procedure improvement is identified
3. Base actions and decisions with a bias toward conservative, safe operation of the plant, demonstrating the ability to:
 - Assure all plant evolutions and work are assessed for Radiological Safety, Industrial Safety, Nuclear Safety, Environmental Safety, or Corporate Safety
 - Once a risk is determined, take appropriate actions to mitigate or minimize risk
 - Request assistance for any activity which requires additional planning, special precautions, and management oversight to adequately manage the risks
 - (SRO) Champion activities that are biased conservatively

4. Demonstrate complete understanding of plant design and system interrelationships, demonstrating the ability to:

Work effectively as a team to interpret plant indications and determine an effective response

Understand the bases for, and the plant response to, actions being taken

5. Maintain continuous awareness of critical parameters, demonstrating the ability to:

Validate parameters by observing multiple independent indications

Relay parameter values with value, units, and trend; and include action being taken for an abnormal value or trend

Notify supervision of any change to critical parameters

(SRO) Assure critical parameters for operational conditions are understood by the team

6. Operate plant systems and equipment within design and operational limits, maintaining relevant parameters within assigned operating bands, demonstrating the ability to:

Anticipate the impact of component operation prior to its operation, and then verify that the expected effects occur during and following the operation

Take manual actions (in accordance with procedure direction) when automatic actions do not occur

Take prompt action to adjust system operating controls before assigned operating bands are exceeded

Make reactivity and mode changes as directed by detailed operating procedures and approved reactivity plans

C. Simulator Performance Objectives

1. Operational Actions and Annunciator Response

Correctly identify plant annunciators and indications and perform appropriate remedial actions

2. System Operation, Controls and Instrumentation

Accurately identify plant instrumentation and correctly interpret instrument readings to respond to normal, abnormal, and emergency conditions

3. Facility Design and Operating Characteristics

Demonstrate the following:

- An understanding of facility operating characteristics
- The ability to safely control the operating characteristics of the facility within prescribed operating boundaries

4. System Loss and Component Level Malfunctions

Perform system control manipulations to obtain desired operating results and demonstrate the ability to correctly respond to malfunction/loss of components and the impact of the malfunction/loss on interfacing plant systems

5. Heat Removal Component Operation

Safely operate the plant's heat removal components and demonstrate knowledge of the relationship between the heat removal systems and the operation of facility to prevent exceeding System, Structure, or Component (SSC) design limits which include:

- Primary coolant systems
- Emergency coolant systems
- Decay heat removal systems

6. Auxiliary and Emergency Component Operations

Safely operate the plant's auxiliary and emergency components / systems to include the controls associated with plant equipment that could affect reactivity or the release of radioactive materials to the environment to control release of radioactivity within regulatory limits

7. Reactivity Management

Demonstrate knowledge of how reactivity is affected by plant operation and ability to respond to the change in reactivity to protect the safety and integrity of the reactor core

8. Technical Specifications

During plant operation with the plant or system in a condition requiring Technical Specification action

Identify the deviation and any required actions / notifications

9. Emergency Plan (if required)

During plant operation in an emergency condition

Recognize conditions covered by the Emergency Plan

(SRO) Demonstrate the ability to:

- Identify and Implement the appropriate Emergency Action Level
- Use the applicable bases to support an Event Classification on the specified Emergency Action Level

10. Control Room Duties

Demonstrate the knowledge and ability to assume the appropriate responsibilities (for the assigned position) associated with the safe operation of the facility

11. Control Room Team Work

Demonstrate the ability to function within the Control Room team to comply with station procedures and limits of facility license and respond to plant events using appropriate human performance tools to support safe operation of the facility

D. Task List

Task Title	ID
Licensed Operator	
Apply Technical Specification (TS) And Technical Requirements Manual (TRM) Requirements	S-COO-00-1185
Implement Reactivity Manipulations Standards and Communication Requirements	S-COO-00-2784
Implement Appropriate Portions Of Operations Standards For System and Equipment Operation	S-COO-00-1081
Implement Operations Standards For Error And Event Prevention	S-ADM-00-1091
Implement Standards for Shift Operations	S-COO-00-2780
Implement Appropriate Portions of Conduct of Operations	S-COO-00-1015
Implement Appropriate Portions of Secondary Containment Integrity Control	S-COO-00-1020
Implement EOP Cautions	S-COO-00-2566
Implement Operations Directives	S-COO-00-3130
Ensure Plant Operates IAW the Operating License, Technical Specifications (TS), and Technical Requirements Manual (TRM)	S-COO-00-1183
Implement HUMAN PERFORMANCE (HuP) – Standards for Error and Event Prevention	S-EPP-00-3068

Scenario Attributes

A. Critical Tasks

1. Given a fuel failure causing Main Steam Line radiation levels to rise, manually scram the Reactor when Main Steam Line Hi Hi Rad setpoint is approached or exceeded.	
Safety Significance	Manually scrambling the Reactor when Main Steam Line radiation levels approach or exceed predetermined values is important to limit the production and release of fission products outside of the Reactor coolant system and Primary Containment.
Consequences for Failure to Perform Task	Continued Reactor operation with fuel damage causing high Main Steam Line radiation levels will result in increased production and release of fission products. Plant release rates will rise, resulting in an elevated dose to the public.
Indications/Cues for Event Requiring Critical Task	Offgas and Main Steam Line high radiation indicators and annunciators.
Performance Criteria	Manually scram the Reactor when Main Steam Line Hi Hi Rad setpoint is approached or exceeded.
Performance Feedback	Control rods inserted and Reactor power lowering.
2. Given a radiological release where dose rates cannot be maintained below GE Declaration Levels, perform a Emergency Depressurization.	
Safety Significance	In order to minimize radiation exposure to the public, Emergency Depressurization of RPV is required if a primary system is discharging and the radioactivity release rate cannot be controlled below release rate that requires a General Emergency.
Consequences for Failure to Perform Task	Failure to take the EOP actions will result in increased dose and/or dose rates at the EPB. An offsite radioactivity release rate above the General Emergency action level represents a substantial increase in the severity of the offsite radioactivity release, relative to the entry condition, and accordingly presents a more immediate threat to the continued health and safety of the public. Emergency depressurization is directed before the release rate reaches the General Emergency level to reduce the radioactivity release rate.
Indications/Cues for Event Requiring Critical Task	The results of Offsite radiation exposures and radiation release rate projections are transmitted to the Control Room Crew after obtained. The Crew must determine that the calculated results exceed the limits for General Emergency level releases (1R or 1R/hour TEDE or 5R or 5R/hour Thyroid CDE at the EPB) as noted on EO-000-105 Table 13.
Performance Criteria	Perform an Emergency Depressurization per EO-000-112 when EPB dose or dose rates are projected to exceed EO-000-105 Table 13 values. Initiate ADS / Manually open all 6 ADS valves
Performance Feedback	Initiating an emergency depressurization causes Reactor pressure to lower which lowers the driving force of any primary system breach. Verify ADS valves are open using red light indication, acoustic monitoring and lowering Reactor pressure and rising reactor water level.

B. Scenario Malfunctions

Event	Malfunction	Operator Action in Response
1	N/A	Swap TBCCW Pumps
2	APRM Fails Upscale	Bypass APRM, Reset half scram
3	Turbine First Stage Pressure Instrument Failure	SRO determines Technical Specification impact
4	Loss of Extraction Steam to Feedwater Heating	Lower Reactor power, isolate Feedwater Heater string
5	Fuel Failure – MSIVs fail to isolate	Lower Reactor power, scram the Reactor, attempt MSIV closure
6	Main Steam Leak into Turbine Building	Attempt MSIV closure, perform Emergency Reactor Depressurization
7	Turbine Building HVAC Trips	Re-start Turbine Building HVAC, perform Emergency Reactor Depressurization

C. Abnormal Events and Major Transients

Malfunction	Description
AE1, TS	APRM Fails Upscale AR-103-A06(B06), Technical Specifications
TS	Turbine First Stage Pressure Instrument Failure AR- Technical Specifications
TS	Turbine First Stage Pressure Instrument Failure AR- Technical Specifications
AE2, R, TS	Loss of Extraction Steam to Feedwater Heating ON-FWHTG-101, Technical Specifications
AE3	Fuel Failure – MSIVs fail open ON-MSLRAD-101, ON-SCRAM-101, EO-000-102
MT1	Main Steam Leak into Turbine Building EO-000-102, EO-000-105
MAE1	Turbine Building HVAC Trips EO-000-105, EO-000-112

D. EOP and EOP Contingencies Used

EOPs	EOP Contingencies
<input checked="" type="checkbox"/> EO-000-102, RPV Control	<input type="checkbox"/> EO-000-102, Alternate Level Control
<input type="checkbox"/> EO-000-103, Primary Containment Control	<input type="checkbox"/> EO-000-102, Steam Cooling
<input checked="" type="checkbox"/> EO-000-104, Secondary Containment Control	<input checked="" type="checkbox"/> EO-000-112, Emergency Depressurization
<input checked="" type="checkbox"/> EO-000-105, Radioactivity Release Control	<input type="checkbox"/> EO-000-113, Power/Level Control
	<input type="checkbox"/> EO-000-114, RPV Flooding

E. Technical Specifications

1. TS 3.2.2, Minimum Critical Power Ratio (MCPR)
2. TS 3.3.1.1, Reactor Protection System (RPS) Instrumentation

References

1. OP-115-001 TURBINE BUILDING CLOSED COOLING WATER SYSTEM
2. ON-FWHTG-101 FEEDWATER HEATING OFF NORMAL OPERATION
3. ON-RBCCW-101 LOSS OF RBCCW
4. OP-164-001 REACTOR RECIRCULATION SYSTEM
5. ON-MSLRAD-101 RISING OFFGAS/MSL RAD LEVELS
6. ON-SCRAM-101 REACTOR SCRAM
7. EO-000-102 RPV CONTROL
8. ON-TURBINE-101 MAIN TURBINE OFF NORMAL
9. OP-145-001 RFP AND RFP LUBE OIL SYSTEM
10. ON-CONTISOL-101 CONTAINMENT ISOLATION
11. EO-000-104 SECONDARY CONTAINMENT CONTROL
12. EO-000-105 RADIOACTIVITY RELEASE
13. EP-RM-004 EAL Classification Bases
14. EO-000-112 EMERGENCY DEPRESSURIZATION

Setup Instructions

A. Required Materials

1. US Turnover Sheet
 - a. Unit 1
 - 1) 100% power
 - 2) SLC Pump B is out of service for maintenance.
 - 3) Instrument Air Compressor B is out of service for maintenance.
 - 4) Shift activity is to start TBCCW pump B and secure TBCCW pump A per OP-115-001 section 2.2.
 - b. Common and Unit 2
 - 1) Unit 2 at rated power.
2. Supporting Documents
 - a. OP-115-001 (for the Normal Event)

B. Simulator Initialization

1. **Reset** to exam specific IC-382. If not available, setup IAW the following instructions.
2. **Run** SCN file **exam\18scn2.scn**
3. **Place** the simulator in RUN prior to operators entering simulator.
4. **Perform** simulator activities
 - a. **Place** a tag on the Instrument Air Compressor B control switch and the SLC pump keylock switch.
 - b. **Markup** OP-115-001, as appropriate to start at step 2.2
5. **Reset** ODAs and all Overhead, PPC, HMI and RWM alarms
6. **Ensure** horns and annunciators are on
7. **Ensure** Overhead Lights Override is off

C. Simulator Preparation

1. **Ensure** the EOL CRC Book is at the PCO Console

D. Document Training and Performance Feedback

1. **Record** crew position assignments per TQ-104 (ILO)
2. **Complete** simulator exam checklist

E. Scenario Execution

1. **Provide** turnover to the crew using the US Turnover sheet

2. **Direct** the crew to walk down the Control Room panels
3. **Inform** the Shift Manager that the crew has the shift

F. Simulator Files

N18scn2.scn

```
; Scenario File
; Monitored parameters
SCN rat_mp
SCN Exam\N18scn2mp
; IAC B 00S
IRF crfPM09_1K107B f:OUT

; SLC pump B 00S
IRF rfDB106723 f:OPEN
IMF cmfPM01_1P208B

; Crew starts TBCCW pump B and secures TBCCW pump A

; NPO closes TBCCW pump A discharge valve
{Key[10]} IRF rftW115001 r:30 f:0

; APRM 1 Fails Upscale
{Key[1]} IMF mfNM178007A f:125

; Turbine first stage bowl pressure instrument failure
{Key[2]} IMF cmfRL02_C721K9A

; Loss of extraction steam to Feedwater heater 5A and the start of the fuel failure
{Key[3]} IMF cmfMV05_HV10242A
{Key[3]} IMF mfRR179003 f:1
{Key[3]} IMF mFRM179004A d:2:30 r:5:00 f:7000
{Key[3]} IMF mFRM179004B d:2:30 r:5:00 f:5800
{Key[3]} IMF mFRM179004C d:2:30 r:5:00 f:3900
{Key[3]} IMF mFRM179004D d:2:30 r:5:00 f:5000

; NPO closes RFP seal water bleed off to FWH 5A
{Key[31]} IMF cmfAV02_HV10244A

; Fuel failure
; Inserted as part of event 4

; Fuel failure gets worse

{Key[23]} MMF mfRR179003 f:50
{Key[23]} MMF mFRM179004A r:3:00 f:20000
{Key[23]} MMF mFRM179004B r:3:00 f:20000
{Key[23]} MMF mFRM179004C r:3:00 f:20000
{Key[23]} MMF mFRM179004D r:3:00 f:20000
{Key[23]} MMF mFRM179002A r:30:00 f:40
{Key[23]} MMF mFRM179002B r:30:00 f:40

; Local Evac Alarm
{Key[24]} SCN exam\LOCAL_EVAC_ALARM

; Main steam leak into Turbine Building. Noble Gas approaches alert level.
aet Exam_ET\N18scn2et5

; D line MSIVs fail mid-position
IMF cmfAV06_HV141F022D f:90
IMF cmfAV06_HV141F028D f:90

; Turbine building exhaust fan A trips and B fails to auto-start
```

{Key[4]} IMF cmfPM03_1V104A
IMF cmfPM04_1V104B

; NPO starts Turbine building exhaust fan B and fan
; trips after one minute
{Key[5]} IRF crfPM09_1V104B f:CLS
{Key[5]} IMF cmfPM03_1V104B d:60

; Open ADS valves from relay room
{Key[6]} scn n18scn2_3

n18scn2_3.scn
; Opens ADS valves from relay room

IOR diHS14113G2 f:OPEN
IOR diHS14113J2 d:6 f:OPEN
IOR diHS14113K2 d:12 f:OPEN
IOR diHS14113L2 d:18 f:OPEN
IOR diHS14113M2 d:24 f:OPEN
IOR diHS14113N2 d:30 f:OPEN

n18scn2et5.et
;SWITCH:MODE SWITCH
diHSC72A1S01.CurrValue = #OR.diHSC72A1S01.SHUTDN

n18scn2et5.scn
IMF mfMS183008 f:1 d:3:00 r:6:00
IMF mfrm179005D r: 20:00 f: 115000
DMF mfrm179004A
DMF mfrm179004B
DMF mfrm179004C
DMF mfrm179004D

n18scn2mp.scn
insmp aoURSG331N604P.CurrValue
changemp aoURSG331N604P.CurrValue 0,350,norm,Steam Tunnel Temperature

Sound Local Evac Alarm
;
+1 IOR di20A02A02S001B f:OUT
+1 IOR di20A02A02S002 f:WARBLE
;
+1 IOR di20A02A02S001A f:6
+1 IOR di20A02A02S001B f:IN
+5 IOR di20A02A02S001B f:OUT
+1 IOR di20A02A02S001A f:4
+1 IOR di20A02A02S002 f:SIREN
+1 IOR di20A02A02S001B f:IN
;
DOR di20A02A02S001A
DOR di20A02A02S001B
DOR di20A02A02S002

Event 1 – Swap TBCCW Pumps

Instructor Activities	Operator Activities	Notes
Booth Operator Role play any other directed actions as required		
Role Play When dispatched as NPO to close TBCCW pump A discharge valve, immediately depress KEY 10 , wait 30 seconds, then report: "TBCCW pump A discharge valve is closed." {Key[10]} IRF rTW115001 r:30 f:0	US <input type="checkbox"/> Directs BOP to start TBCCW pump B and secure TBCCW pump A per OP-115-001 section 2.2. PCOM <input type="checkbox"/> Monitors plant parameters US Starts TBCCW pump B and secures TBCCW pump A per OP-115-001 section 2.2: <input type="checkbox"/> On Panel 1C668, Start TBCCW PP 1P103B by Depressing RUN pushbutton. <input type="checkbox"/> Dispatch NPO to slowly Close TBCCW Pump A Dsch 114011. <input type="checkbox"/> Direct NPO to observe TBCCW Pump 1P103B discharge pressure 86-100 psig as indicated on PI-11405B. <input type="checkbox"/> Stop TBCCW PP 1P103A by Depressing STOP pushbutton. <input type="checkbox"/> Check TBCCW Heat Exchanger A outlet temperature 92-98°F on TI-11407A. <input type="checkbox"/> Check TBCCW System pressure stabilizes at ~ 64-66 psig with 'A' Hx I/S, 70-74 psig for 'B' Hx I/S as indicated on PI-11409 or Computer Pt. ATP01 (values expected for normal operating conditions). <input type="checkbox"/> Direct NPO to open TBCCW Pump A Dsch 114011. <input type="checkbox"/> Reference Attachment A as necessary to verify proper flowrates / temperatures.	
Role Play If dispatched as NPO to check on start of TBCCW pump B, immediately report, "We have a good start on TBCCW pump B."		
Role Play When dispatched as NPO to open TBCCW pump A discharge valve, immediately modify the remote inserted on KEY 10 to 100% over 30 seconds, wait 30 seconds, then report: "TBCCW pump A discharge valve is open."		


Instructor Note

If the student asks, all prerequisites are completed so that the evolution may proceed. The crew may decide to also swap heat exchangers. If the crew makes this decision, move on to the next event.

Event 2 – APRM Fails Upscale

Instructor Activities	Operator Activities	Notes
Booth Operator When directed by Lead Examiner, depress KEY 1 to initiate event. {Key[1]} IMF mfNM178007A f:125 Role Play: As WWM (or equivalent) contacted for assistance, acknowledge request.		
	CREW Recognize / report: <ul style="list-style-type: none"> <input type="checkbox"/> Annunciator AR-103-A06, APRM UPSCALE OR INOP TRIP <input type="checkbox"/> Annunciator AR-103-B06, APRM UPSCALE <input type="checkbox"/> Annunciator AR-104-H03, ROD OUT BLOCK <input type="checkbox"/> APRM 1 indicates upscale. <input type="checkbox"/> Other Reactor power indications indicate normal values. PCOM <ul style="list-style-type: none"> <input type="checkbox"/> Execute ARs. <input type="checkbox"/> Determine APRM 1 has failed upscale. <input type="checkbox"/> Bypass APRM 1 by moving APRM BYPASS joystick up to CH 1 position. PCOP <ul style="list-style-type: none"> <input type="checkbox"/> Monitor Plant Parameters US <ul style="list-style-type: none"> <input type="checkbox"/> Ensure execution of ARs. <input type="checkbox"/> Determine Technical Specification 3.3.1.1 only requires 3 APRMs, which allows bypassing of APRM 1. <input type="checkbox"/> Direct bypass of APRM 1. 	

Event 3 – Turbine First Stage Pressure Instrument Failure

Instructor Activities	Operator Activities	Notes
<p>Booth Operator When directed by lead examiner, depress KEY 2 to initiate event.</p> <p>{Key[2]} IMF cmfRL02_C721K9A</p> <p>Role Play: As WWM (or equivalent) contacted for assistance, acknowledge request.</p>		
<p>Role Play As NPO dispatched to investigate in relay room, wait 2 minutes, then report, “K9A is energized. K9B, K9C, and K9D are de-energized.”</p>	<p>Crew <input type="checkbox"/> Recognizes / reports AR-103-001 (E03), TURB CV FAST CLS & STOP VLV TRIP BYPASS</p> <p>US <input type="checkbox"/> Determines Turbine trip scrams are inoperable. <input type="checkbox"/> Determines Technical Specification Table 3.3.1.1 Functions 8 and 9 are not met. <input type="checkbox"/> Determines Technical Specification 3.3.1.1 Condition A must be entered and requires the affected channel be placed in trip within 12 hours. (May determine condition C until NPO role play is made)</p> <p>PCOM <input type="checkbox"/> Executes AR-103-001 (E03).</p> <p>PCOP <input type="checkbox"/> Monitors plant parameters.</p>	<p>Due to the complexity of the logic involved, the SRO may need to review RPS prints (N1-C72-22 Sheets 6, 7, 8, 9) prior to making the Technical Specification determination. This may be conducted as a scenario follow-up question if desired to move on in the scenario earlier.</p>

Event 4 – Loss of Extraction Steam to Feedwater Heating

Instructor Activities	Operator Activities	Notes
<p>Booth Operator</p> <p>When directed by lead examiner, depress KEY 3 to initiate event.</p> <p>{Key[3]} IMF cmfMV05_HV10241A</p> <p>A smaller fuel failure is initiated on a delay with the loss of FW heating. The fuel failure worsens when directed by the lead examiner for event 5.</p> <p>{Key[3]} IMF mfRR179003 f:1 {Key[3]} IMF mfRM179004A d:2:30 r:5:00 f:7000 {Key[3]} IMF mfRM179004B d:2:30 r:5:00 f:5800 {Key[3]} IMF mfRM179004C d:2:30 r:5:00 f:3900 {Key[3]} IMF mfRM179004D d:2:30 r:5:00 f:5000</p> <p>Role Play: As WWM (or equivalent) contacted for assistance, acknowledge request.</p>		
	<p>Crew</p> <p>Recognizes / reports:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Annunciator AR-120-001 (H04), FW LOOP A PANEL 1C101 TROUBLE <input type="checkbox"/> HTR 5A HP EXTR ISO HV-10242A indicates closed. <input type="checkbox"/> Reactor power rises above 100%. <p>US</p> <ul style="list-style-type: none"> <input type="checkbox"/> Enters ON-FWHTG-101, Feedwater Heating Off Normal Operation. <input type="checkbox"/> Enters ON-PWR-101, Reactor Power. <input type="checkbox"/> Directs power reduction to $\leq 71\%$ RTP. <input type="checkbox"/> Provides oversight for reactivity manipulation. <input type="checkbox"/> Enters ON-RECIRC-101, Reactor Recirculation Malfunction. <input type="checkbox"/> Directs isolation of Feedwater Heater string A. <input type="checkbox"/> Prior to isolation of Feedwater Heater string A, determines MCPR must be declared not within limits and Technical Specification 3.2.2 requires MCPR to be restored to within limits within 2 hours. <p>Once Feedwater Heater string A is isolated, determines MCPR is back within limits and Technical Specification 3.2.2 is satisfied.</p>	

Event 4 – Loss of Extraction Steam to Feedwater Heating

Instructor Activities	Operator Activities	Notes
	<p>PCOM</p> <ul style="list-style-type: none"> □ Coordinates with BOP to immediately Reduce Reactor Power IAW RE Instructions in CRC Book to $\leq 71\%$ RTP by Performing the following: <ul style="list-style-type: none"> • IF required, Insert Control Rods as necessary to obtain a Rod Line which is less than the value stated in the CRC Book. • Initiate the required flow/power reduction by performing either of the following: <ul style="list-style-type: none"> ○ Initiate a Manual Rx Recirc Limiter #2 Runback in accordance with OP-164-001. <li style="text-align: center;">OR ○ Adjust the double chevron DEC buttons on the REACTOR RECIRC PUMP A(B) SPEED controllers SY-B31-1R621A & B as required to establish the final Core Flow value stated in the CRC Book. ○ Inserts control rods, if necessary 	

Event 4 – Loss of Extraction Steam to Feedwater Heating

Instructor Activities	Operator Activities	Notes
	<p>PCOM Executes ON-RECIRC-101, Reactor Recirculation Malfunction:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Performs section D, Dual Reactor Recirculation Pump Runback. <input type="checkbox"/> Plot position on Power/Flow Map. <input type="checkbox"/> Ensure a Non Peripheral Control Rod selected. <p style="text-align: center;">AND</p> <ul style="list-style-type: none"> <input type="checkbox"/> Monitor LPRM's for Limit Cycle Oscillations. <input type="checkbox"/> Perform appropriate actions specified in ON-PWR-101, Reactor Power. <input type="checkbox"/> Ensure the applicable Rx Recirc Pump(s) runs back to value associated with controlling limiter. <input type="checkbox"/> Ensure the associated SY-B31-1R621A(B) controller(s) have transferred to Manual as appropriate. <input type="checkbox"/> Continue Monitoring position on Power/Flow map. <input type="checkbox"/> On 1C600, Monitor the following: <ul style="list-style-type: none"> • Main Steam Line Radiation Monitor, RR-D12-1R603. • Offgas Pretreatment Log Radiation Monitor, RR-D12-1R601. <input type="checkbox"/> Observe following plant parameters WITHIN LIMITS corresponding to new power level: <ul style="list-style-type: none"> • Power to flow limits • Condenser vacuum • Feedwater flow/steam flow • RPV water level <p>Perform the applicable sections of GO-100-012, Power Maneuvers.</p>	


Event 4 – Loss of Extraction Steam to Feedwater Heating

Instructor Activities	Operator Activities	Notes
	<p>PCOP</p> <p>Executes ON-FWHTG-101, Feedwater Heating Off Normal Operation, Condition B:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Coordinates with PCOM to immediately Reduce Reactor Power IAW ON-RPR-101 to $\leq 71\%$ RTP. <input type="checkbox"/> Concurrently perform ON-RECIRC-101. <input type="checkbox"/> Monitor for core instabilities. <input type="checkbox"/> WHEN power reduction complete: <ul style="list-style-type: none"> • Monitor position and Comply with Stability Region Requirements on Power/Flow map. • On 1C600, Monitor the following: <ul style="list-style-type: none"> ○ Main Steam Line Radiation Monitor RR-D12-1R603. ○ Offgas Pretreatment Log Radiation Monitor RR-D12-1R601. • (B.1.) IF operating with 3 feedwater heater strings in service at greater than 23% power, all extraction steam to those heaters must be inservice or MCPR LCO 3.2.2 Action Statement is applicable. • (B.2.) IF operating with only 2 feedwater heater strings in service at greater than 23% power, all extraction steam to those heaters must be in service or MCPR LCO 3.2.2 Action Statement is applicable and power must be reduced to $< 23\%$. <input type="checkbox"/> Contact Reactor Engineering. <input type="checkbox"/> (Step B.11) IF extraction steam lost to Feedwater Heater 4A: <ul style="list-style-type: none"> • Ensure HTR 4A HP EXTR ISO HV-10242A CLOSED. • Close HTR 5A(B)(C) HP EXTR ISO HV-10242A. • Close MSEP A DRN TO HTR 4A HV-10213A. • Close MSEP B DRN TO HTR 4A HV-10216A. <p>(B.3.) IF any feedwater heating lost and cannot be restored within 2 hours, Isolate affected feedwater string in accordance with OP-144-001 Condensate and Feedwater System. Maximum power level with 2 feedwater strings is 71%.</p>	

Event 4 – Loss of Extraction Steam to Feedwater Heating

Instructor Activities	Operator Activities	Notes
	<p>PCOP May isolate Feedwater Heater string A per OP-144-001, Condensate and Feedwater System:</p> <ul style="list-style-type: none"> <input type="checkbox"/> IF extraction steam is isolated to any feedwater heater with Reactor Power \geq 23% RTP AND the associated feedwater string is not isolated, Enter T.S. 3.2.2 for MCPR limit. <input type="checkbox"/> Open Feedwater HTR STRING A INLET BYPS HV-10659A by depressing OPEN pushbutton. <input type="checkbox"/> Close Feedwater HTR STRING A INLET HV-10639A by depressing CLOSE pushbutton. <input type="checkbox"/> IF possible, Maintain this heater string cooldown flow path until shell pressure in heater is approximately atmospheric pressure. <input type="checkbox"/> Close Feedwater HTR STRING A DSCH ISO HV-10620A by depressing CLOSE pushbutton. <input type="checkbox"/> IF no feedwater heater tube leak indicated and it is desired to maintain feedwater heater string pressurized, Maintain Feedwater HTR STRING A INLET BYPS HV-10659A OPEN. <input type="checkbox"/> To isolate feedwater heater string, Close Feedwater HTR STRING A INLET BYPS HV-10659A by depressing CLOSE push button. <p>IF level of Feedwater Heater String A continues to increase, Close FW Heater Train A(B)(C) Inlet Iso 106245A.</p>	
<p>Evaluator Note: Depending on how and when the operators evaluate MSL rad levels rising, the crew may opt to scram the reactor prior to event 5. This satisfies the critical task to scram the reactor on MLS radiation. If the crew scrams the reactor prior to event 5, initiate event 5.</p>		

Event 5 – Fuel Failure with MSIVs Failing Open

Instructor Activities	Operator Activities	Notes
<p>Booth Operator</p> <p>When directed by lead examiner, depress Key 23 to make the fuel failure worse and drive the crew to scram:</p> <p>{Key[23]} MMF mfRR179003 f:50 (Fuel Failure) {Key[23]} MMF mfRM179004A r:6:00 f:20000 (MSL Rad Monitors) {Key[23]} MMF mfRM179004B r:6:00 f:20000 {Key[23]} MMF mfRM179004C r:6:00 f:20000 {Key[23]} MMF mfRM179004D r:6:00 f:20000 {Key[23]} MMF mfRM179002A r:30:00 f:40 (Containment Rad Monitors) {Key[23]} MMF mfRM179002B r:30:00 f:40</p> <p>When the mode switch is taken out of run, verify automatic event trigger n18scn2et5 inserts the following to allow MSL rad levels to lower:</p> <p>DMF mfRM179004A DMF mfRM179004B DMF mfRM179004C DMF mfRM179004D</p> <p>If directed to evacuate any portion of the power block, use KEY 24 to sound the local evacuation alarm. Perform OP-009-004 attachment A for the announcement and order for the alarm.</p> <p>{Key[24]} SCN exam\LOCAL_EVAC_ALARM</p> <p><u>Role Plays:</u> As Reactor Engineering, acknowledge any reports / requests. As WWM (or equivalent) contacted for assistance, acknowledge request.</p>		
<div>  <div> <p>Critical Task</p> <p>Given a fuel failure causing Main Steam Line radiation levels to rise, manually scram the Reactor when Main Steam Line Hi Hi Rad setpoint is approached or exceeded.</p> </div> </div>		

	<p>Crew</p> <p>Recognizes / reports:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Annunciator AR-101-001 (C05), TURB BLDG AREA PANEL 1C605 HI RADIATION <input type="checkbox"/> Off-gas radiation levels rising. <input type="checkbox"/> Main Steam Line radiation levels rising. <input type="checkbox"/> Annunciator AR-106-001 (G03), OFF GAS HI RADIATION <input type="checkbox"/> Annunciator AR-106-001 (F03), OFF GAS HI-HI RADIATION Annunciator AR-111-001 (C03), MN STM LINE RAD MONITOR HI RADIATION 	
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Event 5 – Fuel Failure with MSIVs Failing Open

Instructor Activities	Operator Activities	Notes
	<p>US</p> <ul style="list-style-type: none"> <input type="checkbox"/> Enters ON-MSLRAD-101, Rising Offgas MSL Rad Levels. <input type="checkbox"/> Enters ON-SCRAM-101, Reactor Scram. <input type="checkbox"/> Directs Reactor power reduction. <input type="checkbox"/> Provides oversight for reactivity manipulation. <input type="checkbox"/> Directs manual Reactor scram. <input type="checkbox"/> Enters EO-000-102, RPV Control, on low Reactor water level. <input type="checkbox"/> Directs closure of MSIVs and MSL drains. <input type="checkbox"/> Acknowledges failure of D line MSIVs to close. <input type="checkbox"/> Directs Reactor water level controlled +13" to +54" using Condensate / Feedwater, HPCI, RCIC, and/or CRD. <input type="checkbox"/> Directs Reactor pressure controlled 800-1050 psig using Turbine Bypass Valves, SRVs, HPCI, and/or RCIC. <input type="checkbox"/> May direct cooldown <100°F/hr. <input type="checkbox"/> May enter EO-000-104, Secondary Containment Control, on high Reactor Building radiation levels. 	<p>The initial Reactor water level control band is likely to be +20 to +45".</p>

Event 5 – Fuel Failure with MSIVs Failing Open

Instructor Activities	Operator Activities	Notes
	<p>PCOM</p> <ul style="list-style-type: none"> <input type="checkbox"/> Coordinates with BOP to reduce Reactor power in accordance with CRC Book to stabilize rad increase below setpoint by performing the following: <ul style="list-style-type: none"> • IF required, Insert Control Rods, as necessary, to obtain a Rod Line which is less than the value stated in the CRC Book. • Initiate the required flow/power reduction by performing either of the following: <ul style="list-style-type: none"> ○ Initiate a Manual Rx Recirc Limiter #2 Runback in accordance with OP-164-001. OR ○ Adjust the double chevron DEC buttons on the REACTOR RECIRC PUMP A(B) SPEED controllers SY-B31-1R621A & B, as required, to establish the final Core Flow value stated in the CRC Book. <input type="checkbox"/> May dispatch operator to lower RRP A speed manually. <input type="checkbox"/> May trip RRP A due to inability to runback. <input type="checkbox"/> Executes ON-SCRAM-101, Reactor Scram. <input type="checkbox"/> Places the Mode Switch in SHUTDOWN. <input type="checkbox"/> Recognizes/reports all control rods inserted. <input type="checkbox"/> Inserts SRMs/IRMs. <input type="checkbox"/> Stops Condensate Pumps 1P102A(B)(C)(D) as necessary to leave 2 pumps in operation. <input type="checkbox"/> Observes Scram Discharge Volume Vent and Drain valves CLOSED. <input type="checkbox"/> WHEN main generator load < 150 MWe, at 1C651, Depresses Trip Pushbutton for Main Turbine. 	<p>If the crew is aggressive with the Reactor power reduction, it is possible that Main Steam Line radiation monitors will not approach levels requiring a Reactor scram. If this occurs, initiate the next event (Main Steam Line break) to proceed with the scenario. In this case, Critical Task #1 will be N/A. The new Critical Task #1 will be, "Manually scram the Reactor when an un-isolable primary system is discharging and causing off-site rad release rate above the Alert level."</p>

Event 5 – Fuel Failure with MSIVs Failing Open

Instructor Activities	Operator Activities	Notes
	<p>PCOM cont...</p> <p><u>Performs ON-TURBINE-101, Main Turbine Off Normal, to ensure main turbine trip and main generator lockout.</u> Ensures:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Main Generator Output Breaker TRIPS. <input type="checkbox"/> IF Main Generator is unable to disconnect from grid after a turbine trip, Perform ON-GENGRID-101. <input type="checkbox"/> Main Generator Exciter Field Breaker TRIPS. <input type="checkbox"/> Auxiliary Bus "11A" 1A101 TRANSFERS to Startup Bus 0A103. <input type="checkbox"/> Auxiliary Bus "11B" 1A102 TRANSFERS to Startup Bus 0A103. <input type="checkbox"/> Motor Suction Pump 1P108 STARTS. <input type="checkbox"/> Turning Gear Oil Pump 1P111 STARTS. <input type="checkbox"/> Turbine Lift Pumps 1P109A,B,C,D,E,F,G, H & J START. <input type="checkbox"/> Reactor Recirc Pumps 1P401A and B TRIP caused by EOC RPT if thermal power > 26%. <p><u>Ensures Feedwater is aligned for Start Up Level Control per OP-145-001:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> IF Setpoint Setdown Signal AND lead SULC RFP is in AUTO Valve Control is present, Ensure following: <ul style="list-style-type: none"> • One RFP automatically transfers to DISCHARGE PRESSURE MODE. • Remaining in service RFP(s) automatically transfer to IDLE MODE. <input type="checkbox"/> Ensure Condensate System Flow > 2,200 gpm per in service pump using CONDENSATE RECIRC FLOW FIC-10508 controller AND/OR RX FEED PUMP A(B)(C) RECIRC FLOW FIC-10604A(B)(C). <input type="checkbox"/> Trip a RFP 1P101A(B)(C) as necessary to leave one RFP feeding and one RFP in Idle Mode. <input type="checkbox"/> Ensure Open Startup ISO VLV HV-10651A(B)(C) for feeding RFP 1P101A(B)(C). <input type="checkbox"/> Ensure Closed RFP STARTUP ISO VLV HV-10651A(B)(C) for any non feeding RFP. <input type="checkbox"/> Ensure Closed all RFP DSCH ISO VLV HV-10603A(B)(C). <input type="checkbox"/> IF applicable, AFTER feeding RFP has completed the transfer to DPM AND RPV level is $\geq 15"$ and stable, Touch HS-C32-1S08 RESET SETPT SETDOWN button on FW_OVERVIEW HMI screen. <input type="checkbox"/> Ensure FW LO LOAD DEMAND SIGNAL TO LV-10641 LIC-C32-1R602 is in AUTO AND Slowly Raise Level Setpoint to 35". 	

Event 5 – Fuel Failure with MSIVs Failing Open

Instructor Activities	Operator Activities	Notes
	<p>PCOM</p> <p><u>Resets Main Generator Lockouts in accordance with ON-TURBINE-101:</u></p> <p><input type="checkbox"/> At Generator and Transformers Protection Relays Vertical Board 1C654, Circle as found position AND Reset the following Primary and Backup Lockout Relays if tripped:</p> <ul style="list-style-type: none"> • 86GA TRIPPED/RESET • 86GCTRIPPED/RESET • 86GE TRIPPED/RESET • Reset/Ensure Reset Breaker Failure Lockout Relay 86BF–190B1 at Panel 0C190B. • 86GB TRIPPED/RESET • 86GDTRIPPED/RESET <p><input type="checkbox"/> May control Reactor water level +13" to +54" using Condensate/Feedwater.</p> <p><input type="checkbox"/> May control Reactor pressure 800-1000 psig using Turbine Bypass Valves</p>	

Event 5 – Fuel Failure with MSIVs Failing Open

Instructor Activities	Operator Activities	Notes
<p>Role Play</p> <p>If directed as NPO to check HWC, wait 2 minutes, then report, “Everything is normal at the HWC control panel.”</p>	<p>PCOP</p> <p>Executes ON-MSLRAD-101, Rising Offgas MSL Rad Levels:</p> <ul style="list-style-type: none"> <input type="checkbox"/> IF MSIV Hi Hi Rad setpoint is exceeded, Perform the following: <ul style="list-style-type: none"> • Coordinates with PCOM to immediately SCRAM Reactor IAW ON-SCRAM-101 REACTOR SCRAM • Close MSIVs and MSL drains, if open. • Recognizes / reports failure of D line MSIVs to close. <input type="checkbox"/> At any time during performance of this Off Normal, IF Main Steam Line Rad levels approach the MSIV Hi Hi Rad Alarm setpoint (10,000 or approx. 1E4), Perform the following: <ul style="list-style-type: none"> • Coordinates with PCOM to reduce Reactor power. • IF Power decrease did NOT stop Rad increase OR MSIV Hi Hi Rad setpoint is exceeded: <ul style="list-style-type: none"> ○ SCRAM reactor IAW ON-SCRAM-101 ○ Close MSIVs and MSL drains: • Remove SJAE from service IAW OP-172-001 (SJAE AND OFFGAS SYSTEM) <input type="checkbox"/> IF MSIV Hi Hi Rad Alarms are received, Confirm automatic action in accordance with ON-CONTISOL-101, Containment Isolation. <input type="checkbox"/> Ensure Hydrogen Water Chemistry not the cause as follows: <ul style="list-style-type: none"> • Confirm Hydrogen Water Chemistry hydrogen and oxygen flows set IAW OP-145-002 and Chemistry Report. PPC screens are “hydrogen” and “oxygen”. • IF required, Dispatch operator to HWC panel 1C198. <input type="checkbox"/> Evaluate changes in offgas flow. <input type="checkbox"/> IF >Lim1, <ul style="list-style-type: none"> • Contact Chemistry to obtain offgas pretreatment sample. <p>Evaluate required actions of TS 3.7.5.</p>	<p>The following are normal and alarm values for Off-gas and Main Steam Line radiation monitors:</p> <ul style="list-style-type: none"> • Normal Off-gas – ~42 mr/hr • Off-gas hi alarm – ~9,500 mr/hr • Off-gas hi-hi alarm - ~21,000 mr/hr • Normal Main Steam Line - ~6,475 mr/hr • Main Steam Line hi alarm - ~7,800 mr/hr <p>Main Steam Line hi-hi alarm - ~10,000 mr/hr</p>

Event 5 – Fuel Failure with MSIVs Failing Open

Instructor Activities	Operator Activities	Notes
	<p>PCOP cont...</p> <ul style="list-style-type: none"> <input type="checkbox"/> (Step B.5) If increase of radioactive material released from fuel confirmed, Perform the following steps concurrently: <ul style="list-style-type: none"> • Monitor Offgas/Main Steam Line Radiation levels for an increasing trend using PPC display PROCMON. • Monitor area radiation levels using PPC (RADRX, RADTB, EO104). • As required, Evacuate locally impacted areas of the plant IAW OP-099-004. • Informs SRO to evaluate entry in EO-100-104, SC Control. • Informs SRO to evaluate entry into the E plan (MU 7 and Fuel Clad Degradation). • Notify Health Physics of condition. <input type="checkbox"/> Executes ON-SCRAM-101, Reactor Scram. <input type="checkbox"/> May control Reactor pressure 800-1050 psig using Turbine Bypass Valves, SRVs, HPCI, and/or RCIC. <input type="checkbox"/> May control Reactor water level +13" to +54" using Condensate, Feedwater, RCIC, HPCI, and/or CRD. <input type="checkbox"/> May perform a Reactor cooldown <100°F/hr using Turbine Bypass Valves, HPCI, RCIC, and/or SRVs. 	




Evaluator Note

The steam line break will automatically insert when the mode switch is taken to shutdown.

Event 6, 7 – Main Steam Line Break in TB, TB HVAC Trips

Instructor Activities	Operator Activities	Notes
<p>Booth Operator</p> <p>If directed by lead examiner, initiate the Main Steam Line break by forcing event trigger n18scen2et5, which causes:</p> <p>IMF mfMS183008 f:1 d:3:00 r:6:00 (if desired, lower the delay time if manually triggered; this will be automatically inserted if the mode switch is taken to shutdown)</p> <p>When directed by lead examiner, depress Key 4 to trip Turbine Building exhaust fan Recommend waiting until the crew enters the Rad Release EOP: {Key[4]} IMF cmfPM03_1V104A</p> <p>If dispatched as NPO/Security to check Turbine Building blowout panels, wait 2 minutes, then report: “Steam is coming out of the side of the Turbine Building from the blowout panels.” If NPO/Security was not dispatched, make the report as Security seven minutes after the steam line break was initiated (10 minutes after Mode Switch to Shutdown).</p> <p>EVALUATOR NOTES</p> <ol style="list-style-type: none"> 1. If the crew scrams on MSL high radiation, the MSL break will occur 3 minutes later. The MSL break should be manually triggered if the crew does not scram on MSL high radiation. 2. The D line MSIVs will close only ~10%. This is enough to give dual indication on the valves, but not enough to cause an RPS scram signal on MSIV position. 3. The Turbine Building exhaust fans are sequentially tripped. This is designed to both exercise EO-000-105 step RR-1 and to provide an unmonitored release from the Turbine Building. 		

	<p>Critical Task</p> <p>Given a radiological release where dose rates cannot be maintained below GE Declaration Levels, perform an Emergency Depressurization.</p>
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Crew	Recognizes / reports:	
<input type="checkbox"/> Annunciators AR-111(112)-001 (B02), STEAM TUNNEL LOGIC A/C(B/D) HI TEMP		
<input type="checkbox"/> Annunciators AR-111(112)-001 (B03), MN STM LINE LEAK DETECTION HI TEMP		
<input type="checkbox"/> Annunciators AR-111-001 (D01(E01)), MSIV LOGIC A/C(B/D) ISO INITIATED		
<input type="checkbox"/> Rising Main Steam Tunnel temperatures.		
<input type="checkbox"/> Rising Turbine Building radiation levels.		
<input type="checkbox"/> MSIVs fail to fully close.		

Event 6, 7 – Main Steam Line Break in TB, TB HVAC Trips

Instructor Activities	Operator Activities	Notes
<p>Role Play</p> <p>If dispatched as HP, Chemistry, or equivalent to assess dose, acknowledge request and use dose assessment role plays below.</p> <p>Five minutes after tripping Turbine Building exhaust fan A, call the control room as RP and deliver MIDAS report indicating, the current off-site dose rate at the EPB is 300 mRem/hr TEDE.</p> <p>Three minutes later, call the control room as RP and deliver MIDAS report indicating, the current off-site dose rate at the EPB is 500 mRem/hr TEDE.</p> <p>Three minutes later, call the control room as RP and deliver MIDAS report indicating, the current off-site dose rate at the EPB is 750 mRem/hr TEDE.</p> <p>Three minutes later, call the control room as RP and deliver MIDAS report indicating, the current off-site dose rate at the EPB is 900 mRem/hr TEDE.</p> <p>Three minutes later, call the control room as RP and deliver MIDAS report indicating, the current off-site dose rate at the EPB is 1150 mRem/hr TEDE.</p>	<p>US</p> <ul style="list-style-type: none"> <input type="checkbox"/> Directs attempt to manually close MSIVs. (if not performed earlier) <input type="checkbox"/> Acknowledges MSIVs cannot be manually closed. <input type="checkbox"/> Determines an un-isolable primary system is discharging into the Turbine Building. <input type="checkbox"/> May direct Reactor cooldown <100°F/hr. <input type="checkbox"/> When Noble Gas exceeds Alert Level, Enters EO-000-105, Radioactivity Release Control, on off-site release rate / unmonitored release from primary system. <input type="checkbox"/> May enter EO-000-104, Secondary Containment Control, due to shine causing high rad levels on HPCI rad monitors. <ul style="list-style-type: none"> • Directs start of ESW and Unit Coolers. <input type="checkbox"/> Contacts HP, Chemistry, or equivalent to ensure off-site dose calculations are performed. <input type="checkbox"/> Re-enters EO-000-102, RPV Control, from EO-000-105. <input type="checkbox"/> Acknowledges Turbine Building exhaust fan A tripped. <input type="checkbox"/> Directs restarting Turbine Building HVAC. <input type="checkbox"/> Acknowledges Turbine Building exhaust fan B tripped. <input type="checkbox"/> Determines off-site release rates are approaching the General Emergency value. <input type="checkbox"/> Enters EO-000-112, Rapid Depressurization: <ul style="list-style-type: none"> • Exits EO-000-102 pressure leg • Directs preventing uncontrolled Condensate injection. • Directs opening all ADS valves. <input type="checkbox"/> Directs Reactor water level controlled +13" to +54" using Condensate/Feedwater, CRD, LPCI, and/or Core Spray. 	

Event 6, 7 – Main Steam Line Break in TB, TB HVAC Trips

Instructor Activities	Operator Activities	Notes
<p>Role Play If dispatched to start Turbine Building exhaust fan B, wait 2 minutes, then depress Key 5:</p> <p>{Key[5]} IRF crfPM09_1V104B f:CLS / {Key[5]} IMF cmfPM03_1V104B d:60</p> <hr/> <p>Role Play If dispatched to open ADS valves from relay room, wait 2 minutes, then depress Key 6:</p> <p>{Key[6]} scn n18scen2_3</p>	<p>PCOM / PCOP</p> <ul style="list-style-type: none"> <input type="checkbox"/> Attempts to close MSIVs. (If not performed earlier) <input type="checkbox"/> Recognizes / reports MSIVs fail to manually close. <input type="checkbox"/> Recognizes / reports Turbine Building exhaust fan trip and/or high Turbine Building pressure. <input type="checkbox"/> Dispatches NPO to re-start Turbine Building HVAC. <input type="checkbox"/> Recognizes / reports Turbine Building exhaust fan trip and/or high Turbine Building pressure. <input type="checkbox"/> May perform Reactor cooldown <100°F/hr. <input type="checkbox"/> Prevents uncontrolled Condensate injection, as necessary. <input type="checkbox"/> Opens all ADS valves (6). <input type="checkbox"/> Restores / maintain Reactor water level +13" to +54" using Condensate/Feedwater, CRD, LPCI, and/or Core Spray. 	

	<p>Instructor Activity - Termination Recommended termination criteria:</p> <ul style="list-style-type: none"> a. 6 SRVs open. b. Reactor water level being restored to or controlled in assigned band above -161".
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**SUSQUEHANNA NUCLEAR, LLC
OPERATIONS TRAINING PROGRAM**

SCENARIO EXAMINATION GUIDE

2018

LOC 29 NRC SCENARIO 3

**SCN# LOC29-NRC-03
Revision 0**

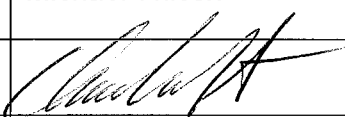
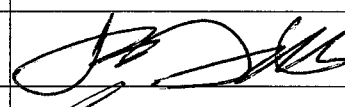

06/22/2017



Lesson Information

Title	CRD Failures / Turbine Vibrations / Hydraulic ATWS			
Vision ID		Accredited		■ YES □ NO
Training ID	LOC29-NRC-03	Revision	0	Date 06/22/17
Prerequisites				
Teaching Time	65 Minutes			

Approval

CBT Approval ¹	N/A	Date	N/A
Preparer	Michael Wilcox	Date	06/22/17
Review (Instructor/SME)		Date	12/5/17
Nuclear Engineering ¹	N/A	Date	N/A
Training Supervision		Date	12/6/17
Line Management		Date	12/6/17

¹If required, otherwise N/A

This simulator scenario has been reviewed and satisfies management expectations for inclusion of OE, Department Fundamentals and HuP, error-reduction techniques and safety standards. Specific applications and/or opportunities for reinforcement of management expectations are noted in the scenario guide or Attachment(s) where applicable.

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Revision History

Revision	Date	Comments
0	06/22/2017	New exam

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Scenario Overview

The crew assumes the shift with the plant operating at approximately 45-46% power. IAC B is out of service for maintenance.

The crew will begin by lowering Reactor power with control rod insertion. The crew will insert control rods to lower rod line below 60% for securing Recirculation pump B. Then, the crew will secure Recirculation pump B per OP-164-001. The crew will establish single loop operation and the SRO will determine the Technical Specification requirements.

Next, CRD pump A will trip. The crew will respond per ON-CRD-101 by placing the CRD flow control valve in manual and fully closing it. Then the crew will start CRD pump B, open the CRD flow control valve, and place the valve back in automatic. One CRD accumulator will alarm with low nitrogen pressure. The low nitrogen pressure condition will continue even after other CRD parameters are restored. The SRO will determine the Technical Specification impact of the inoperable accumulator. The Main Generator voltage regulator will fail to maximum demand while in automatic. The crew will respond per ON-GENGRID-101. The crew may attempt to fix the automatic voltage regulator demand signal, but will eventually place the manual voltage regulator in service and lower reactive load.

The Main Turbine Lube Oil temperature controller will fail to minimum cooling while in automatic. The crew will respond by placing the temperature controller in manual and lowering oil temperature. Main Turbine bearing #4 temperature and vibration will continue to rise even after cooling is restored, indicating bearing damage from the initial temperature transient. Damage to Main Turbine seals will result in rising Main Condenser air in-leakage. Bearing temperature will eventually require the crew to insert a manual Reactor scram.

A hydraulic failure to scram will occur. The crew will execute EO-000-113, Level/Power Control, to control Reactor power, level, and pressure. The crew will attempt to inject SLC, but SLC pump A and SLC pump B will both trip shortly after being started. The crew will lower Reactor water level. The crew will be able to insert control rods using RMCS and by repeated manual scrams. If all control rods are inserted during the scenario, the crew will restore and maintain Reactor water level to the normal level control band.

The scenario will be terminated when control rod insertion is in progress or when all control rods are inserted and Reactor water level is being restored to or controlled in the assigned band above -161".

The expected EAL is an Alert, SA6.1 due to the failure to scram.

Objectives

Mastery of the training content shall be demonstrated by individual and/or crew performance evaluation as specified in this training material and the applicable training program description, in accordance with training procedures.

A. Terminal Objective

Perform all system operations required to maintain the plant operating safely, or place the plant in a safe condition if a plant shutdown is required

During the specified mode of plant / system operation

Without error and in accordance with site procedures and management expectations

B. Generic Performance Objectives

1. For all activities, exhibit use of the Human Performance Tools, demonstrating the ability to:
 - Use HU tools to effectively control the plant during normal, abnormal, and emergency conditions
 - Use of HU tools will be observable per the standards in HU-AD-003
 - (SRO) Take every opportunity to coach the team when HU standards are not being met and provide feedback to the team when the HU standards are being met
2. For all activities, exhibit proper use of procedures by:
 - Applying the correct procedure to operate equipment and respond to abnormalities
 - Ensuring procedures are detailed enough to allow precise control of plant evolutions.
 - Demonstrating the ability to:
 - Apply the correct procedure to the situation
 - Use place keeping for accurate implementation
 - Identify any and all areas for procedure improvement
 - Take ownership of and complete the improvement, whenever an area for procedure improvement is identified
3. Base actions and decisions with a bias toward conservative, safe operation of the plant, demonstrating the ability to:
 - Assure all plant evolutions and work are assessed for Radiological Safety, Industrial Safety, Nuclear Safety, Environmental Safety, or Corporate Safety
 - Once a risk is determined, take appropriate actions to mitigate or minimize risk
 - Request assistance for any activity which requires additional planning, special precautions, and management oversight to adequately manage the risks
 - (SRO) Champion activities that are biased conservatively
4. Demonstrate complete understanding of plant design and system interrelationships, demonstrating the ability to:
 - Work effectively as a team to interpret plant indications and determine an effective response
 - Understand the bases for, and the plant response to, actions being taken

5. Maintain continuous awareness of critical parameters, demonstrating the ability to:
 - Validate parameters by observing multiple independent indications
 - Relay parameter values with value, units, and trend; and include action being taken for an abnormal value or trend
 - Notify supervision of any change to critical parameters
 - (SRO) Assure critical parameters for operational conditions are understood by the team
6. Operate plant systems and equipment within design and operational limits, maintaining relevant parameters within assigned operating bands, demonstrating the ability to:
 - Anticipate the impact of component operation prior to its operation, and then verify that the expected effects occur during and following the operation
 - Take manual actions (in accordance with procedure direction) when automatic actions do not occur
 - Take prompt action to adjust system operating controls before assigned operating bands are exceeded
 - Make reactivity and mode changes as directed by detailed operating procedures and approved reactivity plans

C. Simulator Performance Objectives

1. Operational Actions and Annunciator Response
 - Correctly identify plant annunciators and indications and perform appropriate remedial actions
2. System Operation, Controls and Instrumentation
 - Accurately identify plant instrumentation and correctly interpret instrument readings to respond to normal, abnormal, and emergency conditions
3. Facility Design and Operating Characteristics
 - Demonstrate the following:
 - An understanding of facility operating characteristics
 - The ability to safely control the operating characteristics of the facility within prescribed operating boundaries
4. System Loss and Component Level Malfunctions
 - Perform system control manipulations to obtain desired operating results and demonstrate the ability to correctly respond to malfunction/loss of components and the impact of the malfunction/loss on interfacing plant systems
5. Heat Removal Component Operation
 - Safely operate the plant's heat removal components and demonstrate knowledge of the relationship between the heat removal systems and the operation of facility to prevent exceeding System, Structure, or Component (SSC) design limits which include:
 - Primary coolant systems
 - Emergency coolant systems
 - Decay heat removal systems

6. Auxiliary and Emergency Component Operations

Safely operate the plant's auxiliary and emergency components / systems to include the controls associated with plant equipment that could affect reactivity or the release of radioactive materials to the environment to control release of radioactivity within regulatory limits

7. Reactivity Management

Demonstrate knowledge of how reactivity is affected by plant operation and ability to respond to the change in reactivity to protect the safety and integrity of the reactor core

8. Technical Specifications

During plant operation with the plant or system in a condition requiring Technical Specification action

Identify the deviation and any required actions / notifications

9. Emergency Plan (if required)

During plant operation in an emergency condition

Recognize conditions covered by the Emergency Plan

(SRO) Demonstrate the ability to:

- Identify and Implement the appropriate Emergency Action Level
- Use the applicable bases to support an Event Classification on the specified Emergency Action Level

10. Control Room Duties

Demonstrate the knowledge and ability to assume the appropriate responsibilities (for the assigned position) associated with the safe operation of the facility

11. Control Room Team Work

Demonstrate the ability to function within the Control Room team to comply with station procedures and limits of facility license and respond to plant events using appropriate human performance tools to support safe operation of the facility

D. Task List

Task Title	ID
Licensed Operator	
Apply Technical Specification (TS) And Technical Requirements Manual (TRM) Requirements	S-COO-00-1185
Implement Reactivity Manipulations Standards and Communication Requirements	S-COO-00-2784
Implement Appropriate Portions Of Operations Standards For System and Equipment Operation	S-COO-00-1081
Implement Operations Standards For Error And Event Prevention	S-ADM-00-1091
Implement Standards for Shift Operations	S-COO-00-2780
Implement Appropriate Portions of Conduct of Operations	S-COO-00-1015
Implement Appropriate Portions of Secondary Containment Integrity Control	S-COO-00-1020
Implement EOP Cautions	S-COO-00-2566
Implement Operations Directives	S-COO-00-3130
Ensure Plant Operates IAW the Operating License, Technical Specifications (TS), and Technical Requirements Manual (TRM)	S-COO-00-1183
Implement HUMAN PERFORMANCE (HuP) – Standards for Error and Event Prevention	S-EPP-00-3068

Scenario Attributes

A. Critical Tasks

1. Given a failure of the reactor to scram with power >5%, Stop and Prevent all injection to the RPV except RCIC, CRD, and SBLC to reduce power IAW EO-000-113, Level/Power Control.	
Safety Significance	High Reactor power after a scram is attempted indicates a challenge to nuclear fuel and to plant heat sinks. In the event of a loss of the normal heat sink, this may result in adding heat to the Suppression Pool and challenging the Primary Containment. Lowering Reactor power reduces these challenges.
Consequences for Failure to Perform Task	A General Electric Company study (NEDO-32047) indicates that the major threat to fuel integrity from ATWS is caused by large-amplitude power/flow instabilities. The power oscillations can become large enough to cause melting of fuel in high-power bundles. EOP Basis LQ/L-13 - This step identifies the widest, acceptable water level control band. Although level fluctuations within this band are safe, it is very desirable to maintain level within the more restrictive <u>target</u> area of -110" to -60". The target area and expanded band are shown in Figure 8, Water Level Operation Guidance. The intent of this step is to remain within the target band at all times unless prohibited by system perturbations, and remain within the expanded band at all times.
Indications/Cues for Event Requiring Critical Task	ATWS with initial reactor power level greater than 5% APRM power.
Performance Criteria	Lower reactor water level by manually controlling injection rate from Feedwater, HPCI and/or RCIC.
Performance Feedback	Lowering water level to -60 to -110 inches will result in power level lowering as indicated on the Average Power Range Monitors.
2. Given a failure of the reactor to scram, reduce reactor power by inserting control rods or injecting Boron IAW EO-100-113	
Safety Significance	Inserting control rods lowers Reactor power, which reduces challenges to the plant during a failure to scram. Additionally, inserting control rods ultimately provides a long-term, stable core shutdown. Boron injection will lower power rapidly, however, alone may not provide a stable shutdown condition.
Consequences for Failure to Perform Task	Failure to insert control rods or inject Boron allows power to remain elevated with resultant power oscillations and potential core damage.
Indications/Cues for Event Requiring Critical Task	Exceeding a RPS scram setting with NO reactor scram signal, or RPS/ARI fail to fully insert all control rods.
Performance Criteria	Manipulation of RPS, CRD, liquid poison, and RMCS controls will provide observable actions for the evaluation team.
Performance Feedback	Control rod position and Reactor power will provide performance feedback regarding success of crew actions to insert control rods or inject poison .

B. Scenario Malfunctions

Event	Malfunction	Operator Action in Response
1	N/A	Lower Reactor Power Using Control Rods
2	N/A	Remove Recirculation Pump B From Service
3	CRD Pump A Trip with One Inoperable CRD Accumulator	Take manual control of CRD FCV, start alternate pump, place CRD FCV back in automatic, determine Technical Specification impact
4	Main Generator Auto Voltage Regulator Failure	Swap to manual voltage regulation, lower MVARs
5	Main Turbine Lube Oil Controller Fails to Minimum Cooling in Auto	Take manual control of controller and lower oil temperature
6	Main Turbine Bearing #4 High Temperature and Vibration	Scram the Reactor
7	Hydraulic ATWS	Trip Recirc pump, lower Reactor water level, maximize CRD, attempt to inject SLC, insert control rods
8	SLC Pump Trip	Direct alternate boron injection, utilize other methods to lower Reactor power

C. Abnormal Events and Major Transients

Malfunction	Description
R	Lower Reactor Power Using Control Rods
N TS	Remove Recirculation Pump B from Service OP-164-001, Technical Specifications
AE1 TS	CRD Pump A Trip with One Inoperable CRD Accumulator ON-CRD-101, Technical Specifications
AE2	Main Generator Auto Voltage Regulator Failure ON-GENGRID-101
AE3	Main Turbine Lube Oil Controller Fails to Minimum Cooling in Auto AR-123-H05
AE4	Main Turbine Bearing #4 High Temperature and Vibration AR-105-C05, AR-105-E05, ON-SCRAM-101
MT	Hydraulic ATWS EO-000-102, EO-000-113
MAE1	SLC Pump Trip EO-000-113

D. EOP and EOP Contingencies Used

EOPs	EOP Contingencies
<input checked="" type="checkbox"/> EO-000-102, RPV Control <input type="checkbox"/> EO-000-103, Primary Containment Control <input type="checkbox"/> EO-000-104, Secondary Containment Control <input type="checkbox"/> EO-000-105, Radioactivity Release Control	<input type="checkbox"/> EO-000-102, Alternate Level Control <input type="checkbox"/> EO-000-102, Steam Cooling <input type="checkbox"/> EO-000-112, Emergency Depressurization <input checked="" type="checkbox"/> EO-000-113, Power/Level Control <input type="checkbox"/> EO-000-114, RPV Flooding

E. Technical Specifications

1. TS 3.4.1, Recirculation Loops Operating
2. TS 3.1.5, Control Rod Scram Accumulators

References

1. OP-164-001 REACTOR RECIRCULATION SYSTEM
2. OP-156-001 REACTOR MANUAL CONTROL SYSTEM (RMCS)
3. AR-112-001 (G02) REFUEL FLOOR HI EXH MON DNSCALE
4. ON-CRD-101 Control Rod Malfunction
5. AR-106-001 (C09) GEN VOLT REG AUTO TO MAN SET POINT UNBALANCE
6. OP-198-001 MAIN GENERATOR SYSTEM
7. EO-000-102 RPV CONTROL
8. GO-100-009 SINGLE RECIRCULATION LOOP OPERATION
9. EO-000-113 LEVEL/POWER CONTROL
10. OP-153-001 STANDBY LIQUID CONTROL SYSTEM
11. OP-149-001 RHR SYSTEM
12. OP-116-001 RHR SERVICE WATER
13. GO-100-012 Power Maneuvers
14. ON-SCRAM-101 Reactor Scram
15. OP-155-001 CONTROL ROD DRIVE HYDRAULIC SYSTEM
16. OP-150-001 RCIC SYSTEM
17. EP-RM-004 EAL Classification Bases

Setup Instructions

A. Required Materials

1. US Turnover Sheet
 - a. Unit 1
 - 1) 45-46% power
 - 2) Instrument Air Compressor B is out of service for maintenance.
 - 3) Insert control rods to lower the rod line below 60% per the Reactivity Manipulation Package, OP-156-001, and GO-100-012. Starting at step 168 of A2 Shutdown Sequence.
 - 4) Shift activity is to remove Recirculation pump B from service per OP-164-001 section 2.6.
 - 5) HWC is already shutdown in preparation for lowering power.
 - b. Common and Unit 2
 - 1) Unit 2 at rated power.
2. Supporting Documents
 - a. RMR (2 copies)
 - b. OP-156-001
 - c. GO-100-012
 - d. OP-164-001 (for the Normal Event)
 - e. GO-100-009 marked up through step 5.4

B. Simulator Initialization

1. **Reset** to exam specific IC-383. If not available, setup IAW the following instructions
2. **Run** SCN file **exam\18scn3.scn**
3. **Place** the simulator in RUN prior to operators entering simulator.
4. **Perform** simulator activities
 - a. **Place** a tag on the Instrument Air Compressor B control switch.
 - b. **Markup** OP-164-001 to step 2.6.6.b
 - c. **Markup** the shutdown control sequence to the current place for rod insertions
5. **Reset** ODAs and all Overhead, PPC, HMI and RWM alarms
6. **Ensure** horns and annunciators are on
7. **Ensure** Overhead Lights Override is off

C. Simulator Preparation

1. **Ensure** the EOL CRC Book is at the PCO Console

D. Document Training and Performance Feedback

1. **Record** crew position assignments per TQ-104 (ILO)
2. **Complete** simulator exam checklist

E. Scenario Execution

1. **Provide** turnover to the crew using the US Turnover sheet
2. **Direct** the crew to walk down the Control Room panels
3. **Inform** the Shift Manager that the crew has the shift

F. Simulator Files

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n18scn3.scn
; Scenario File
; Monitored parameters
; Shutdown HWC
; Disable RFP inputs to LIM 2 per step 2.6.6.a
SCN rat_mp

; IAC B 005
IRF crfPM09_1K107B f:OUT

; Crew inserts control rods to lower rod line
; Crew secures RRP B

; Crew performs control rod pattern adjustment

; CRD pump A trips with one accumulator inoperable
{Key[3]} IMF cmfPM03_1P132A
{Key[3]} IMF mfrD1550193431 d:10

; Main Generator auto voltage regulator fails high
{Key[4]} IOR aiHS10001 r:8:00 f:1
{Key[4]} IMF ann106a06 d:4:00 f:alarm-on

; Main turbine lube oil controller fails to min cooling in auto
{Key[5]} IMF cmfCN02_TIC10955 f:0

; Main turbine bearing #4 high temperature and vibration
{Key[5]} IMF mftU193007D d:1:00 r:8:00 f:160
{Key[5]} IMF mftU193008D d:2:00 r:10:00 i:2 f:10

; Loss of main condenser vacuum
{Key[5]} IMF mfMC143001 d:2:00 r:2:00 f:100

; Hydraulic ATWS with some additional stuck rods
IMF mfrD155017
IMF mfrD1550063443 f:40
IMF mfrD1550063839 f:40
IMF mfrD1550063431 f:40
IMF mfrD1550063423 f:40
IMF mfrD1550063419 f:40
IMF mfrD1550063415 f:40
IMF mfrD1550064223 f:40
IMF mfrD1550063831 f:40
IMF mfrD1550063027 f:40
IMF mfrD1550063035 f:40

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IMF mFRD1550064243 f:40
IMF mFRD1550064635 f:40
IMF mFRD1550063851 f:40

; CRD FCV isolation valve throttles flow to prevent
; maximizing CRD from drifting in control rods
aet Exam_ET\n18scn3et2

; Disable ARI per ES-158-002
{Key[10]} IRF rfdc102129 f:OPEN
{Key[10]} IRF rfdc102103 f:OPEN

; Bypass RPS per ES-158-002
{Key[20]} IRF rfrp158039 f:BYPASS
{Key[20]} IRF rfrp158040 f:BYPASS
{Key[20]} IRF rfrp158041 f:BYPASS
{Key[20]} IRF rfrp158042 f:BYPASS

; Close charging water header isolation valve
{Key[30]} IRF rfrd155017 f:0

; SLC pump A trip
aet Exam_ET\n18scn3etA

; SLC pump B trip
aet Exam_ET\n18scn3etB

n18scn3et2.et
;SWITCH:MODE SWITCH
diHSC72A1S01.CurrValue = #OR.diHSC72A1S01.SHUTDN

n18scn3et2.scn
IRF rfrd155020 f:5

n18scn3etA.et
;SWITCH:SBLC MANUAL INITIATION 'A'
diHSS14804.CurrValue = #OR.diHSS14804.START_A

n18scn3etA.scn
IMF cmfPM02_1P208A d:5

n18scn3etB.et
;SWITCH:SBLC MANUAL INITIATION 'B'
diHSS14804.CurrValue = #OR.diHSS14804.START_B

n18scn3etB.scn
IMF cmfPM01_1P208B d:5

n18scn3mp.scn

Event 1 & 2 – Lower Reactor Power with Control Rod Insertion, Remove Recirculation Pump B from Service

Instructor Activities	Operator Activities	Notes
<p>Booth Operator</p> <p>Role play any other directed actions as required</p> <p>No additional actions required</p>		
	<p>US</p> <ul style="list-style-type: none"> <input type="checkbox"/> Directs PCOM to lower Reactor power by inserting control rods per the Reactivity Manipulation Package, OP-156-001, and GO-100-012. <input type="checkbox"/> Directs PCOM to remove Recirculation pump B from service per OP-164-001 section 2.6. <input type="checkbox"/> Provides oversight for reactivity manipulations. <input type="checkbox"/> Determines Technical Specification 3.4.1 requires adjustment to APLHGR, MPCR, LHGR, and APRM Flow Biased scram limits for single-loop operation within 12 hours. <p>PCOP</p> <ul style="list-style-type: none"> <input type="checkbox"/> Monitors plant parameters 	

Event 1 & 2 – Lower Reactor Power with Control Rod Insertion, Remove Recirculation Pump B from Service

Instructor Activities	Operator Activities	Notes
Role Play If LPRM downscale alarms and Reactor Engineering is consulted, report you have looked at LPRMs and they are reading appropriate values for current plant conditions.	<p>PCOM <u>Inserts control rods to achieve < 60% rod line (expect 06-23, 54-23, 54-39, and 06-39 from 48 to 00):</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Select control rod to be inserted continuously by Depressing corresponding CONTROL ROD pushbuttons. <input type="checkbox"/> Observe: <ul style="list-style-type: none"> • CONTROL ROD SELECTION pushbuttons ILLUMINATED. • FULL CORE DISPLAY ILLUMINATED GREEN at selected location. • Present position of selected rod INDICATED on FOUR ROD DISPLAY on CRT and Standby Information Panel 1C652. <input type="checkbox"/> Depress and Hold INSERT ROD pushbutton. <input type="checkbox"/> Observe following: <ul style="list-style-type: none"> • ROD INSERT light ILLUMINATES. • Insert drive flow of approx. 4 gpm during control rod insertion on CRT FOUR ROD DISPLAY. • Changing rod position indicated on FOUR ROD DISPLAY on CRT and Standby Information Panel 1C652 for selected rod. <input type="checkbox"/> Release ROD INSERT pushbutton when control rod has inserted just past desired position. <input type="checkbox"/> Observe: <ul style="list-style-type: none"> • ROD INSERT light EXTINGUISHES. • ROD SETLG light ILLUMINATES THEN EXTINGUISHES at end of insert cycle. <input type="checkbox"/> Observe control rod position on FOUR ROD DISPLAY at desired notch position AND position indicated is an even number. 	<p>Operator may only insert 3 rods to achieve <43% power.</p>

Event 1 & 2 – Lower Reactor Power with Control Rod Insertion, Remove Recirculation Pump B from Service

Instructor Activities	Operator Activities	Notes
<p>Role Play</p> <p>When dispatched as NPO to check RRP B lube oil pressure, immediately report, “I am on-station and ready for swapping RRP B lube oil pumps.”</p> <p>When the running pump is secured, wait a few seconds, then report, “The standby AC Lube Oil Pump started approximately one second after lube oil pressure lowered to 10 psig.”</p>	<p>PCOM cont...</p> <p><u>Removes Recirculation pump B from service per OP-164-001 section 2.6:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Ensure Reactor Power below 60% rod line by following direction provided in Emergency Power Reduction/Shutdown Instructions located in Core Reactivity Control book OR Reactor Engineering direction. <input type="checkbox"/> Refer to Attachment A for Recirc Pump Speeds and Core Flow/Jet Pump Loop Flow Limitations. <input type="checkbox"/> Reduce Rx Recirc Pump B speed to 30% rated speed in Manual Mode in accordance with OP-164-002. <input type="checkbox"/> Swap Recirculation Pump MG Set B Lube Oil Pumps in accordance with this procedure: <ul style="list-style-type: none"> • Dispatch an operator locally to observe lube oil pressure at MG Set Fld Drive Lube Oil In PI-14018B. • Establish constant communication with operator at PI-14018B. (Local operator must promptly notify PCO if standby pump does not auto start approximately one second after lube oil pressure lowers to 10 psig.) • Depress AND Hold AC LUBE OIL PP 1P154A STOP pushbutton. • Observe Standby AC Lube Oil Pump 1P154B auto starts approximately one second after lube oil pressure lowers to 10 psig. <ul style="list-style-type: none"> • Release AC LUBE OIL PP 1P154A STOP pushbutton. <input type="checkbox"/> Depress MG SET B DRV MTR BKR HS-14001B STOP pushbutton. <input type="checkbox"/> Observe the following: <ul style="list-style-type: none"> • Amber stop indication light ILLUMINATES on MG SET B DRIVE MTR BKR HS-140001B. • GEN 1B SPEED indicator on SI-14032B lowers to 0% on the RRP_B or RRP DUAL SCRAN (Manual Mode) HMI screens. • After short time delay, GEN 1B Field Breaker OPENS. • After the Gen 1B Field Breaker opens, the Gen 1B Speed Demand (XI-14032B) and Scoop Tube Position indications ramps to the Startup Limiter values of 37.0% (23.60%). <input type="checkbox"/> WHEN one Recirculation Loop in operation: <ul style="list-style-type: none"> • Comply with TRO 3.4.6. AND • Perform SO-164-004. 	

Event 1 & 2 – Lower Reactor Power with Control Rod Insertion, Remove Recirculation Pump B from Service

Instructor Activities	Operator Activities	Notes
	<p>PCOM cont...</p> <ul style="list-style-type: none"> <input type="checkbox"/> Perform SO-100-007, Daily Surveillance Operating Log, Item #1. <input type="checkbox"/> IF Core Thermal Power \geq 23%, Perform SO-178-002, Verification of APRM Scram and Rod Block Settings. <input type="checkbox"/> Comply with TR 3.8.2.1 Motor Operated Valves (MOV) Thermal Overload Protection – Continuous. <input type="checkbox"/> For the stopped Recirculation Pump, Place RECIRC B MOV OL BYPS HV-143-F031B/F032B switch to TEST position. <input type="checkbox"/> Close RECIRC PUMP B DSCH HV-143-F031B. <input type="checkbox"/> Ensure RECIRC PUMP B DSCH BYPS HV-143-F032B OPEN. <input type="checkbox"/> Within 5 minutes, Re Open RECIRC PUMP B DSCH HV-143- F031B. <input type="checkbox"/> AFTER 2 minutes, Place RECIRC B MOV OL BYPS HV-143-F031B/F032B switch to NORM position. <input type="checkbox"/> IF desired, Clear TR 3.8.2.1.Motor Operated Valves (MOV) Thermal Overload Protection Continuous <input type="checkbox"/> Perform GO-100-009 Single Recirculation Loop Operation. 	



Evaluator Note

The next event may be initiated any time after RRP B is stopped.

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Event 3 – CRD Pump A Trip with One Inoperable CRD Accumulator

Instructor Activities	Operator Activities	Notes
<p>Booth Operator When directed by lead examiner, depress KEY 3 to initiate event.</p> <p>{Key[3]} IMF cmfPM03_1P132A {Key[3]} IMF mfrD1550193431 d:10</p> <p>Role Plays: As Reactor Engineer (or equivalent) contacted for assistance with determining accumulator 34-31 scram time data, acknowledge request (no data will be given during time frame of scenario).</p> <p>As WWM (or equivalent) contacted for assistance with CRD pump A and/or CRD accumulator 34-31, acknowledge request.</p>		
	<p>Crew Recognizes / reports:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Annunciator AR-107-001 (A01), CRD CHARGING WATER LO PRESS <input type="checkbox"/> Annunciator AR-107-001 (D01), CRD PUMP A TRIP <input type="checkbox"/> Annunciator AR-103-001 (H06), CRD ACCUMULATOR TROUBLE <input type="checkbox"/> CRD pump A tripped. <input type="checkbox"/> Annunciator AR-102-001 (G03), RECIRC PUMP MOTOR HI TEMP (due to loss of seal purge) <p>US</p> <ul style="list-style-type: none"> <input type="checkbox"/> Enters ON-CRD-101, Control Rod Malfunction. <input type="checkbox"/> Declares CRD accumulator 34-31 inoperable due to low pressure (≤ 940 psig). <input type="checkbox"/> Determines Technical Specification 3.1.5 Condition A.1 requires declaring control rod "slow" within 8 hours if scram time was within limits during last surveillance. <input type="checkbox"/> Determines Technical Specification 3.1.5 Condition A.2 requires declaring control rod inoperable within 8 hours if scram time was NOT within limits during last surveillance. 	<p>SRO may declare on condition A.1 -OR- condition A.2.</p>

Event 3 – CRD Pump A Trip with One Inoperable CRD Accumulator

Instructor Activities	Operator Activities	Notes
<p>Role Play As NPO dispatched to investigate CRD accumulator 34-31, wait 2 minutes and report, "CRD accumulator 34-31 pressure is 900 psig and stable."</p>	<p>PCOM May respond to AR-102-001 (G03): <input type="checkbox"/> Monitors Recirc pump seal cavity temperatures. <input type="checkbox"/> If seal cavity temperatures approach limits, may lower Recirculation flow.</p>	
<p>Role Play As NPO dispatched to investigate CRD pump A, wait 2 minutes and report, "There are no abnormal indications at CRD pump 1A."</p>	<p>PCOP <u>Executes ON-CRD-101, Control Rod Malfunction, Condition A:</u> <input type="checkbox"/> Determines accumulator trouble alarm has been received for control rod 34-31: <ul style="list-style-type: none"> • Determines control rod 34-31 is withdrawn. • Dispatches NPO to check HCU. • Acknowledges HCU pressure is 900 psig. • Informs SRO to evaluate Technical Specification 3.1.5. • Determines Reactor pressure is > 900 psig and a Reactor scram is NOT required. • Directs NPO to charge accumulator. </p>	
<p>Role Play As NPO dispatched to check the breaker for 1A CRD Pump, wait two minutes and report, "1A201-07 for 1A CRD Pump is tripped and there is an acrid odor in the area."</p>	<p><u>Determines CRD pump A tripped and trip not caused by low suction pressure and performs Condition B.</u> <input type="checkbox"/> (Step B.3.)Close CRD Flow Control Valve FV-146-F002A(B) as follows: <ul style="list-style-type: none"> • Place CRD Flow Controller FC-C12-1R600 in MANUAL. • Set CRD Flow Controller FC-C12-1R600 to 0% DEMAND SIGNAL. • Verify CRD Flow Control Valve FV-146-F002A(B) CLOSED. </p>	<p>Accumulator 34-31 must be declared inoperable per TS 3.1.5</p>
<p>Role Play As NPO dispatched to check CRD pump B start, wait 2 minutes and report, "CRD pump B post-start checks are SAT."</p>	<p><input type="checkbox"/> Start standby CRD Pump 1P132B by placing control switch to RUN position. <input type="checkbox"/> With CRD Pump 1P132B in operation, Establish system flow ~ 63 gpm using CRD Flow Controller FC-C12-1R600. <input type="checkbox"/> Place CRD Flow Controller FC-C12-1R600 in AUTO.</p>	
<p>Role Play If dispatched to reset RWCU Pump Trouble annunciator, acknowledge direction and perform booth operation.</p>		

Event 4 – Main Generator Auto Voltage Regulator Failure

Instructor Activities	Operator Activities	Notes
<p>Booth Operator</p> <p>When directed by lead examiner, depress KEY 4 to initiate event.</p> <p>{Key[4]} IOR aiHS10001 r:8:00 f:1 {Key[4]} IMF ANNAR106A06 d:4:00 f:alarm-on</p> <p>Role Plays: Provide the following role plays either when called or 4 minutes after event initiation (call as TCC): “We have noticed a slight rise in grid voltage, but other than that, the grid appears stable.” “We need SSES Unit 1 to supply approximately 150 MVAR to the grid.”</p> <p>As WWM (or equivalent) contacted for assistance, acknowledge request.</p> <p>Evaluator Note: The procedural path taken in this event may vary depending on how the crew diagnoses failure of the auto voltage regulator. Multiple procedure sections are described, however the crew may not perform all sections.</p>		
	<p>Crew</p> <p>Recognizes / reports:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Annunciator AR-106-001 (C09), GEN VOLT REG AUTO TO MAN SETPOINT UNBALANCED <input type="checkbox"/> Annunciator AR-106-001 (A06), GEN FLD OVERVOLTAGE <input type="checkbox"/> Main Generator reactive load high. <p>US</p> <ul style="list-style-type: none"> <input type="checkbox"/> Ensures execution of AR-106-C09. <input type="checkbox"/> Enters ON-GENGRID-101, Main Generator or Grid Disturbance <input type="checkbox"/> Directs placing Main Generator voltage regulator in MANUAL. <input type="checkbox"/> Directs lowering Main Generator reactive load. <p>PCOP</p> <ul style="list-style-type: none"> <input type="checkbox"/> Monitors plant parameters. <input type="checkbox"/> As time permits, Contact GCC (TENASCA) and TCC and advise MVAR output greater than desired on Generator Capability Curve. 	

Event 4 – Main Generator Auto Voltage Regulator Failure

Instructor Activities	Operator Activities	Notes
<p>Booth Operator: When the crew lowers MVARs with the voltage regulator in Manual, modify the A06 annunciator.</p> <p>ANN106A06 f:cry wolf</p>	<p>PCOM</p> <p><u>Executes AR-106-001 (C09):</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Determines Generator field overvoltage alarm is NOT in. (If it's not yet in) <input type="checkbox"/> Determines grid is stable. <input type="checkbox"/> Ensures AC MVARs, XI-10004, within limits of OP-198-001 Attachment A, Main Generator Reactive Capability curve. <input type="checkbox"/> Determines Main Generator is in Auto Voltage Regulator control. <input type="checkbox"/> Monitors Main Generator parameters (MVars, MWe, Stator Cooling Temps Gen H2 Press. and Temp). <input type="checkbox"/> May attempt to null Manual and Automatic regulators using MAN VOLT REG ADJUST HC-10002 potentiometer. <p><u>Executes AR-106-001 (C09):</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Ensure transfer to manual voltage regulator. <p><u>May execute ON-GENGRID-101, Main Generator or Grid Disturbance:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Bring Up Group Display ON198 or PPC PID menu (GENB) and Record parameters. <input type="checkbox"/> If MVAR is approaching or exceeding Generator Capability Curve OR Generator Field Current exceeding 6000 Amps as viewed on Unit 1 Computer Point GNI01, Perform Section 3.5: <ul style="list-style-type: none"> • May attempt to slowly Lower generator output voltage by using AUTO VOLT REG ADJUST HC-10001 potentiometer in order to control the Generator MVAR output 	

Event 4 – Main Generator Auto Voltage Regulator Failure

Instructor Activities	Operator Activities	Notes
	<p>PCOM cont...</p> <p>If a problem is suspected of the Voltage Regulator, Perform either of the following as required:</p> <p><input type="checkbox"/> To wipe the auto and manual voltage regulator potentiometers, Perform Section 3.9.1:</p> <ul style="list-style-type: none"> • Ensure both Rx Recirc Pump controllers are operating in the Manual Mode in accordance with OP-164-002. • Contact TCC to request permission to wipe the manual and auto voltage regulator potentiometers. • IF generator voltage becomes unstable at any time during or after transfers between regulators, Promptly Transfer to the regulator that provides stable operation. • Ensure HS-10006, VOLT REG XFER SELECT, switch is in the AUTO position. • Rotate Slightly HC-10002, MAN VOLT REG ADJUST, and Ensure Auto Voltage Reg in control. • Rapidly Rotate HC-10002, MAN VOLT REG ADJUST, from end to end a few times to clean its brush surface. • Return HC-10002, MAN VOLT REG ADJUST, to null volts at XI-10012, VR XFER. • Transfer HS-10006, VOLT REG XFER SELECT, switch to MAN position. • Ensure HS-10006, VOLT REG XFER SELECT, switch is in the MAN position. • Rotate Slightly HC-10001, AUTO VOLT REG ADJUST and Ensure Manual Voltage Reg in control. • Rapidly Rotate HC-10001, AUTO VOLT REG ADJUST, from end to end a few times to clean its brush surface. • Return HC-10001, AUTO VOLT REG ADJUST, to null volts at XI-10012, VR XFER. (Will not Null) • Transfer HS-10006, VOLT REG XFER SELECT, switch back to AUTO position. • Ensure HS-10006, VOLT REG XFER SELECT, switch is in the AUTO position. • Observe operation of the auto voltage regulator voltage adjust controls to verify proper operation and response. • Select the desired modes of operation for the Rx Recirc Pump controllers in accordance with OP-164-002. 	

Event 4 – Main Generator Auto Voltage Regulator Failure

Instructor Activities	Operator Activities	Notes
	<p>PCOM cont...</p> <ul style="list-style-type: none"> <input type="checkbox"/> To transfer the voltage regulator from auto to manual and back to auto without performing a wiping action, Perform Section 3.9.2: <ul style="list-style-type: none"> • Contact TCC to request permission to transfer to the manual regulator for a period of time to ride out MVAR oscillations. • Ensure both Rx Recirc Pump controllers are operating in the Manual Mode in accordance with OP-164-002. • IF generator voltage becomes unstable at any time during or after transfers between regulators, Promptly Transfer to the regulator that provides stable operation. • Ensure HS-10006, VOLT REG XFER SELECT, switch is in the AUTO position. • Adjust HC-10002, MAN VOLT REG ADJUST, to null volts at XI-10012, VR XFER if required. • Transfer HS-10006, VOLT REG XFER SELECT, switch to MAN position. • Adjust HC-10001, AUTO VOLT REG ADJUST, to null volts at XI-10012, VR XFER if required. • Transfer HS-10006, VOLT REG XFER SELECT, switch back to AUTO position. • Observe operation of the auto voltage regulator voltage adjust controls to verify proper operation and response. • Select the desired modes of operation for the Rx Recirc Pump controllers in accordance with OP-164-002. 	

Event 4 – Main Generator Auto Voltage Regulator Failure

Instructor Activities	Operator Activities	Notes
	<p>PCOM cont... <u>May use OP-198-001 section 2.7 to transfer to manual voltage regulator:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Obtain Unit Supervisor Permission to Transfer. <input type="checkbox"/> Contact GCC (TENASCA) and TCC to Request permission to transfer to the MANUAL regulator. <input type="checkbox"/> IF generator voltage becomes UNSTABLE at any time during OR after transfers between regulators, Promptly Transfer to the regulator that provides STABLE operation. <input type="checkbox"/> Ensure HS-10006, VOLT REG XFER SELECT, switch is in the AUTO position. <input type="checkbox"/> Adjust HC-10002, MAN VOLT REG ADJUST, to Null volts at XI-10012, VR XFER IF Required. <input type="checkbox"/> Transfer HS-10006, VOLT REG XFER SELECT, switch to MAN position. <input type="checkbox"/> Check operation of the Manual voltage regulator voltage adjust controls AND Observe proper Response. <ul style="list-style-type: none"> <input type="checkbox"/> Adjusts HC-10002, MAN VOLT REG ADJUST, as necessary to obtain desired Main Generator reactive load. 	

Event 5 – Main Turbine Lube Oil Controller Fails to Minimum Cooling in Auto

Instructor Activities	Operator Activities	Notes
Booth Operator When directed by lead examiner, depress KEY 5 to initiate event. {Key[5]} IMF cmfCN02_TIC10955 f:0 {Key[5]} IMF mFTU193007D d:1:00 r:8:00 f:160 {Key[5]} IMF mFTU193008D d:2:00 r:10:00 i:2 f:10 {Key[5]} IMF mfMC143001 d:2:00 r:2:00 f:100 Role Plays: As WWM (or equivalent) contacted for assistance with Main Turbine Lube Oil, acknowledge request. Evaluator Note: The next event (Turbine bearing vibrations, high temperature, and slight condenser vacuum degradation) is inserted along with this event.		
	Crew Recognizes / reports: <input type="checkbox"/> Annunciator AR-123-001 (H05), MAIN TURB L-O COOLER DSCH HI TEMP <input type="checkbox"/> Main Turbine Lube Oil temperature controller in auto with a zero demand signal. US <input type="checkbox"/> Ensures execution of AR-123-001(H05). <input type="checkbox"/> Directs manual control of Main Turbine Lube Oil temperature controller. PCOM <input type="checkbox"/> Monitors plant parameters.	

Event 5 – Main Turbine Lube Oil Controller Fails to Minimum Cooling in Auto

Instructor Activities	Operator Activities	Notes
<p>Role Play As NPO dispatched to investigate Main Turbine Lube Oil cooler / temperature controller, wait 2 minutes, then report, “The Main Turbine Lube Oil TCV appears to be closed (or open, based on actual position).”</p> <hr/> <p>Role Play If asked as NPO for field indication of Main Turbine Lube Oil temperature, wait 1 minute, then report temperature based on simulator value.</p>	<p>PCOP <u>Executes AR-123-001 (H05):</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Check L O CLR TEMPS XR-19201 temperature indication. <input type="checkbox"/> Check TURB L O CLRS TEMP TIC-10955 for proper operation maintaining temperature between 110°F to 120°F. <input type="checkbox"/> Check local TI-11932 indication. <input type="checkbox"/> Check service water available to cooler in accordance with OP-111-001 Service Water System. <ul style="list-style-type: none"> <input type="checkbox"/> Places Main Turbine Lube Oil controller in MAN and depresses OPEN pushbutton as necessary to lower oil temperature. 	

Event 6 – Main Turbine Bearing #4 High Temperature and Vibration

Instructor Activities	Operator Activities	Notes
<p>Booth Operator The malfunctions for this event were inserted on delay times with event 6.</p> <p>Role Plays: As WWM (or equivalent) contacted for assistance, acknowledge request.</p>		
	<p>Crew Recognizes / reports:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Annunciator AR-105-001 (C05), TURB GEN BRG HI TEMP <input type="checkbox"/> Annunciator AR-105-001 (E05), TURB GEN BRD HI VIBRATION <input type="checkbox"/> Rising Main Turbine bearing #4 temperature and vibration. <p>US</p> <ul style="list-style-type: none"> <input type="checkbox"/> Ensures execution of AR-105-001 (C05/E05). <input type="checkbox"/> Determines bearing temperature exceeds 250°F or bearing vibration exceeds scram threshold (6.5 mils), and a scram is required. <input type="checkbox"/> Enters ON-SCRAM-101, Reactor Scram. <input type="checkbox"/> Directs manual Reactor scram. <p>PCOM</p> <ul style="list-style-type: none"> <input type="checkbox"/> Monitors plant parameters. <input type="checkbox"/> Places the Mode Switch in SHUTDOWN. <input type="checkbox"/> Arms and depresses manual scram pushbuttons. 	<p>Bearing temperature will reach a maximum >250°F with no operator action. This will require a plant scram.</p> <p>Bearing vibration will reach a maximum ~10 mils with no operator action.</p>

Event 6 – Main Turbine Bearing #4 High Temperature and Vibration



Instructor Activities	Operator Activities	Notes
<p>Role Play If dispatched as NPO to check local lube oil flow from bearing #4, wait 2 minutes, then report, “Local lube oil flow from bearing #4 is normal.”</p> <hr/> <p>Role Play If dispatched as NPO to investigate Turbine vibration, wait 2 minutes, then report, “There is a noticeable rise in noise and vibration near the Turbine.”</p>	<p>PCOP Executes AR-105-001 (C05):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Check TURB/GEN BRG TEMP TR-11980 to see which bearing(s) is causing the alarm and Compare that reading with computer point. (TBVIB) (The computer uses a separate RTD element for each bearing). <input type="checkbox"/> Check Lube Oil temperature leaving the Main Turbine Lube Oil Cooler between 110 and 120°F. <input type="checkbox"/> Verify locally adequate Lube Oil flow from each of the bearings. <input type="checkbox"/> IF bearing metal temperature exceeds 225°F, Notify Mechanical Maintenance. <input type="checkbox"/> IF bearing metal temperature exceeds 230°F, Commence Plant Shutdown to Minimum Power IAW GO-100-004. <input type="checkbox"/> IF bearing metal temperature reaches 250°F: <ul style="list-style-type: none"> • IF $\geq 26\%$ Power, Manually Scram Reactor IAW ON-SCRAM-101, Reactor Scram. • IF $< 26\%$ Power, Trip Main Turbine AND Perform ON-193-002, Main Turbine Trip. <input type="checkbox"/> Manually initiates ARI by arming and depressing pushbuttons. 	



Instructor Note

The next event is initiated when the mode switch is taken to shutdown.

Event 7 & 8 – Hydraulic ATWS, SLC Pumps Trip

Instructor Activities	Operator Activities	Notes
<p>Booth Operator</p> <p>When the mode switch is taken to shutdown, verify automatic event trigger n18scn3et2 throttles CRD flow to prevent drifting in control rods:</p> <p>IRF rfRD155020 f:5</p> <p>When SLC pump A is started, verify automatic event trigger n18scn3etA trips the pump:</p> <p>IMF cmfPM02_1P208A d:5</p> <p>When SLC pump B is started, verify automatic event trigger n18scn3etB trips the pump:</p> <p>IMF cmfPM01_1P208B d:5</p> <p>When the scram is reset, delete the ATWS malfunction to allow rods to insert if another manual scram is attempted.</p> <p>Role Play: As WWM (or equivalent) contacted for assistance, acknowledge request.</p>		
		
<p>Critical Task Given a failure of the reactor to scram with power >5%, Stop and Prevent all injection to the RPV except RCIC, CRD, and SBLC to reduce power IAW EO-000-113, Level/Power Control.</p>		
		
<p>Critical Task Given a failure of the reactor to scram, reduce reactor power by inserting control rods or injecting Boron IAW EO-100-113</p>		
	<p>Crew <input type="checkbox"/> Recognizes / reports failure to scram.</p>	

Event 7 & 8 – Hydraulic ATWS, SLC Pumps Trip

Instructor Activities	Operator Activities	Notes
	<p>US Enters EO-000-102, RPV Control, on high Reactor power.</p> <p>Exits EO-000-102 and enters EO-000-113, Level/Power Control:</p> <p><input type="checkbox"/> Directs ARI initiated.</p> <p><input type="checkbox"/> Records initial ATWS power level.</p> <p><input type="checkbox"/> Executes Power Leg:</p> <ul style="list-style-type: none"> • Answers, "Is initial ATWS pwr >5% or cannot be determined?" Yes • Directs SLC injection. • Directs ADS inhibited. • When informed of SLC failure, may direct boron injection with RCIC per ES-150-002. • Ensures RWCU isolated. • Ensures SRMs and IRMs inserted. • Ensures Recirc run back to minimum. • Directs Recirc pump tripped. • Direct CRD maximized. • Enters EO-000-113 sheet 2 for control rod insertion: <ul style="list-style-type: none"> ○ Answers, "Is more than 1 control rod >00?" Yes. ○ Directs control rod insertion by repeated manual scrams and/or with RMCS. <p><input type="checkbox"/> Executes Level Leg:</p> <ul style="list-style-type: none"> • Directs verification of isolations and initiations. • Answers, "Is initial ATWS pwr >5% or cannot be determined?" Yes • Directs injection throttled and prevented until level between -60" and -110". • Directs bypassing of MSIV and CIG interlocks. • Directs Reactor water level controlled -60" to -161" using Table 15 systems (SLC, FW, Cond, CRD, HPCI, RCIC). <p><input type="checkbox"/> Executes Pressure Leg:</p> <p><input type="checkbox"/> Directs Reactor pressure controlled 800-1050 psig using Main Turbine, Turbine Bypass Valves, SRVs, RCIC, and/or HPCI.</p>	

Event 7 & 8 – Hydraulic ATWS, SLC Pumps Trip

Instructor Activities	Operator Activities	Notes
	US cont... <ul style="list-style-type: none"><input type="checkbox"/> May direct tripping Main Turbine due to vibrations/temperatures.<input type="checkbox"/> Acknowledges all control rods are inserted.<input type="checkbox"/> Directs stopping boron injection.<input type="checkbox"/> Exits EO-000-113 and enters EO-000-102, RPV Control.<input type="checkbox"/> Directs Reactor water level restored and maintained +13" to +54".<input type="checkbox"/> May direct placing loop of RHR in Suppression Pool Cooling, as time allows<input type="checkbox"/> After being notified of SLC Pump A tripping, may direct Boron injection with RCIC IAW ES-150-002	

Event 7 & 8 – Hydraulic ATWS, SLC Pumps Trip

Instructor Activities	Operator Activities	Notes
	<p>PCOM</p> <ul style="list-style-type: none"> <input type="checkbox"/> Inserts SRMs/IRMs. <input type="checkbox"/> Runs Recirc to minimum From any RRP HMI screen by: <ul style="list-style-type: none"> • Selects MANUAL FLOW REDUCTION INITIATION. • Selects RRP SPEED TO MINIMUM. • Selects INITIATE RRP FLOW REDUCTION. <input type="checkbox"/> Trips Recirculation pump A. <input type="checkbox"/> Throttles and prevents RPV injection from FW and Cond until level is between -60" and -110" per OP-145-001 hard card: <ul style="list-style-type: none"> <input type="checkbox"/> IF RFP A(B)(C) is in DPM, or transfer to DPM is in progress: <ul style="list-style-type: none"> ○ Control level in MANUAL via LV-10641 FW Startup Control Vlv controller LIC-C32-1R602. ○ As required, Adjust INC/DEC button on feeding RFP A(B)(C) SPD CTL/DEMAND SIGNAL controller SIC C32 1R601A(B)(C) in MANUAL to establish and maintain assigned level band. (2.19.9b) <input type="checkbox"/> IF RFP A(B)(C) is operating in FCM: (2.19.10) <ul style="list-style-type: none"> ○ Place FW LO LOAD DEMAND SIGNAL TO LV-10641, controller LIC-C32-1R602 in MANUAL with a controller output of 0%. ○ Place FW LEVEL CTL/DEMAND SIGNAL controller LIC-C32-1R600 in MANUAL. ○ Perform following for RFP A(B)(C) which will continue feeding: <ul style="list-style-type: none"> ▪ Touch A(B)(C) RFPT MAN VLV CTL button. ▪ Place feeding RFP A(B)(C) SPD CTL/DEMAND SIGNAL controller SIC-C32-1R601A(B)(C) in MANUAL. • Lower FW LEVEL CTL/DEMAND SIGNAL controller LIC C32 1R600 output by ~ 20%. 	


Event 7 & 8 – Hydraulic ATWS, SLC Pumps Trip

Instructor Activities	Operator Activities	Notes
<p>Role Play If directed as NPO to disable ARI, wait one minute, depress KEY 10, then report, "ARI is disabled."</p> <p>{Key[10]} IRF rDC102129 f:OPEN / {Key[10]} IRF rDC102103 f:OPEN</p> <p>Role Play If directed as NPO to bypass RPS scram logic, wait one minute, depress KEY 20, then report, "RPS scram logic is bypassed."</p> <p>{Key[20]} IRF rRP158039 f:BYPASS / {Key[20]} IRF rRP158040 f:BYPASS</p> <p>{Key[20]} IRF rRP158041 f:BYPASS / {Key[20]} IRF rRP158042 f:BYPASS</p> <p>Role Play If directed as NPO to close CRD charging water header isolation valve, wait 2 minutes, depress KEY 30 as described above, then report, "The CRD charging water header isolation valve is closed."</p> <p>{Key[30]} IRF rRD155017 f:0</p>	<p>PCOM</p> <ul style="list-style-type: none"> ○ Place remaining in service RFP B(C)(A) in IDLE MODE. (Fast Rate) ○ Adjust INC/DEC buttons on feeding RFP A(B)(C) SPD CTL/DEMAND SIGNAL controller SIC-C32-1R601A(B)(C) in MANUAL to establish and maintain assigned level band (initially all the way to no flow). <p><input type="checkbox"/> Stop Condensate pumps as necessary to leave 2 pumps in operation.</p> <p><input type="checkbox"/> Maintains Reactor water level between -60" and -161" using Table 15 systems (FW, Cond, CRD, RCIC, HPCI, LPCI).</p> <p><input type="checkbox"/> May insert control rods using RMCS per EO-000-113 Sheet 2 hard card:</p> <ul style="list-style-type: none"> • Bypass RWM. • Establish approximately (if obtainable) (closing Charging Water Iso 146F034 as necessary): <ul style="list-style-type: none"> ○ 63 gpm cooling water flow. ○ 350 psid drive water pressure. • Select rod. • Depress continuous insert pushbutton. <p><input type="checkbox"/> May insert control rods by repeated manual scrams:</p> <ul style="list-style-type: none"> • Dispatches NPO to disable ARI and bypass RPS logic trips per ES-158-002. • Resets scram. • Ensures Charging Water Iso 146F034 is open. • When SDV partially drains, inserts manual scram. <p><input type="checkbox"/> Recognizes / reports control rod insertion in progress.</p> <p><input type="checkbox"/> If all control rods are inserted, restores and maintains Reactor water level +13" to +54".</p>	

Event 7 & 8 – Hydraulic ATWS, SLC Pumps Trip

Instructor Activities	Operator Activities	Notes
<p>Role Play</p> <p>If directed as NPO to inject boron with RCIC, acknowledge direction. No booth action will be taken.</p>	<p>PCOP</p> <p><u>Attempts to inject SLC per OP-153-001:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Place HS-14804 SBLC MANUAL INITIATION keylock control switch to A START. <input type="checkbox"/> Observe SBLC PUMPS 1P208A STARTS <input type="checkbox"/> Once initiated, Observe the following: <ul style="list-style-type: none"> • HV-144-F004 RWCU INLET OB ISO CLOSURES. • SBLC SQUIB READY A B white indicating lights EXTINGUISHED. • SBLC SQUIB VALVES LOSS OF CKT CONTINUITY annunciator ALARMS. • Pump 1P208A Red indicating light ILLUMINATED. • SBLC PUMP discharge header pressure > 200 psig greater than reactor pressure. • SBLC FLOW Indicates ~ 40 GPM. • SBLC Storage Tank level decreasing. <input type="checkbox"/> Recognize / report SLC pump A trips after ~5 seconds. <input type="checkbox"/> Initiate SLC using SLC pump B <input type="checkbox"/> Recognize / report SLC pump B trips after ~5 seconds. <input type="checkbox"/> If directed, dispatches NPO to begin lining up for Boron injection with RCIC. <input type="checkbox"/> Bypasses ADS. <p><u>Maximizes CRD per OP-155-001:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Place control switch CRD Pump 1P132B(A) to RUN, to start 1P132B(A), Ctl Rod Drive Water Pump B(A). <input type="checkbox"/> Using FC-C12-1R600, CRD Flow Controller, in MANUAL, Fully Open FV-146-F002A(B), CRD Flo Ctl. <input type="checkbox"/> Fully Open THTLG PV-146-F003, DRIVE WTR PRESS THTLG valve. <p><u>Overrides RCIC per OP-150-001:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> To prevent Auto Injection if RCIC NOT initiated, Close RCIC TURBINE TRIP AND THROTTLING HV-15012. <input type="checkbox"/> To stop injection, Place RCIC pump on minimum flow as follows: <ul style="list-style-type: none"> • Place RCIC TURBINE FLOW CONTROL FC-E51-1R600 in MANUAL. • Adjust RCIC TURBINE FLOW CONTROL FC-E51-1R600 to reduce RCIC discharge pressure less than reactor pressure while maintaining turbine above 2200 RPM. • WHEN RCIC pump discharge pressure > 190 psig with flow < 75 gpm, Ensure RCIC MIN FLOW TO SUPP POOL FV-149-F019 OPENS. • IF above steps do not stop RCIC injection, Close RCIC TURBINE TRIP AND THROTTLING HV-15012. 	

Event 7 & 8 – Hydraulic ATWS, SLC Pumps Trip

Instructor Activities	Operator Activities	Notes
	<p>PCOP</p> <p>Overrides HPCI per OP-152-001:</p> <ul style="list-style-type: none"> <input type="checkbox"/> To prevent auto injection if HPCI not initiated, Place HPCI TURBINE FLOW CONTROL FC-E41-1R600 in MANUAL AND Reduce demand to zero (0). <input type="checkbox"/> To stop injection place HPCI pump on minimum flow as follows: <ul style="list-style-type: none"> • Place or CHECK PLACED HPCI AUXILIARY OIL PUMP 1P213 switch to START. • Place HPCI TURBINE FLOW CONTROL FC E41 1R600 in MANUAL. • Adjust HPCI TURBINE FLOW CONTROL FC E41 1R600 to reduce HPCI discharge pressure less than Reactor pressure. • Ensure HPCI MIN FLOW TO SUPP POOL HV 155 F012 opens when HPCI flow < 500 gpm and discharge pressure > 125 psig. <input type="checkbox"/> Maintain Reactor pressure 800-1050 psig (or similar) using Main Turbine, TBVs, SRVs, HPCI, and/or RCIC. <input type="checkbox"/> May place loop of RHR in Suppression Pool Cooling mode, as time allows. <input type="checkbox"/> If dispatched earlier, informs NPO to stop lining up boron injection with RCIC once all rods are inserted. 	
	<p>Instructor Activity - Termination</p> <p>Recommended termination criteria:</p> <ul style="list-style-type: none"> a. Control rod insertion in progress or all control rods inserted b. Reactor water level being restored to or controlled in assigned band above - 161". 	

**SUSQUEHANNA NUCLEAR, LLC
OPERATIONS TRAINING PROGRAM**

SCENARIO EXAMINATION GUIDE

2018

LOC 29 NRC SCENARIO 4

**SCN# LOC29-NRC-04
Revision 0**

06/12/2017



Lesson Information

Title	RCIC Testing / Electrical Faults / Steam Leak with degraded injection				
Vision ID		Accredited		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
Training ID	LOC29-NRC-04	Revision	0	Date	06/12/17
Prerequisites					
Teaching Time	65 Minutes				

Approval

CBT Approval ¹	N/A	Date	N/A
Preparer	Michael Wilcox	Date	06/12/17
Review (Instructor/SME)	<i>SPence</i>	Date	12/6/17
Nuclear Engineering ¹	N/A	Date	N/A
Training Supervision	<i>[Signature]</i>	Date	12/12/17
Line Management	<i>[Signature]</i>	Date	12/6/17

¹If required, otherwise N/A

This simulator scenario has been reviewed and satisfies management expectations for inclusion of OE, Department Fundamentals and HuP, error-reduction techniques and safety standards. Specific applications and/or opportunities for reinforcement of management expectations are noted in the scenario guide or Attachment(s) where applicable.

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Revision History

Revision	Date	Comments
0	06/12/2017	New exam

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Scenario Overview

The crew assumes the shift with the plant operating at approximately 100% power. IAC B and SLC pump B are out of service for maintenance.

The crew will begin by lowering reactor power using recirc flow, then performing quarterly RCIC valve exercising per SO-150-004. The second valve to be exercised will be the Turbine Exhaust to Suppression Pool Isolation Valve. This valve will close, but fail to re-open. The surveillance will be placed on hold and the SRO will determine the Technical Specification impact.

Next, power will be lost to Instrument Bus 1Y125. This bus supplies power to multiple Reactor and ECCS indicators. The SRO will determine the Technical Specification impact. The crew will respond per ON-YPNL-101, Loss of Instrument Bus, and restore power to the various instruments from the alternate supply.

Then, an electrical fault will cause ESS Bus 1A to de-energize. This results in the loss of Core Spray pump A, RHR pump A, and RHR loop A Containment Spray ability. The crew will respond per ON-4KV-101, Loss of 4KV Bus, and multiple other off-normal procedures. The crew will cross-tie Instrument Air to Containment Instrument Gas, place RPS Bus A on the alternate supply, reset a half scram and half isolation, and start the 1B CRD pump. The SRO will determine the Technical Specification impact.

A steam leak will develop inside the Primary Containment. The crew will execute ON-SCRAM-101, Reactor Scram, EO-000-102, RPV Control, and EO-000-103, Primary Containment Control. The crew will scram the Reactor, initiate Suppression Chamber spray, and attempt to initiate Drywell spray. HPCI will trip upon start, requiring use of other systems for Reactor water level control.

When Drywell spray is initiated, the first RHR pump started, B or D, will trip. RHR loop A is unavailable for Drywell spray due to earlier electrical losses. The crew will then place Containment Spray in service using the remaining available RHR pump. Spray will be hindered by the spray valve failing to fully open. Partial spray will be achieved and will be sufficient to improve containment parameters temporarily.

After containment spray is in service, a Suppression Chamber to Drywell vacuum breaker will stick open and the steam leak will worsen. Containment pressure will rise and the Pressure Suppression Limit will be violated. The crew will execute EO-000-112, Emergency Depressurization, and open 6 ADS valves.

The scenario will be terminated when 6 SRVs are open, RHRSW is spraying the Drywell, and Reactor water level is being restored to or controlled in the assigned band above -161".

The expected EAL call is an Alert, FA1.1 due to loss of RCS barrier.

Objectives

Mastery of the training content shall be demonstrated by individual and/or crew performance evaluation as specified in this training material and the applicable training program description, in accordance with training procedures.

A. Terminal Objective

Perform all system operations required to maintain the plant operating safely, or place the plant in a safe condition if a plant shutdown is required

During the specified mode of plant / system operation

Without error and in accordance with site procedures and management expectations

B. Generic Performance Objectives

1. For all activities, exhibit use of the Human Performance Tools, demonstrating the ability to:

Use HU tools to effectively control the plant during normal, abnormal, and emergency conditions

Use of HU tools will be observable per the standards in HU-AD-003

(SRO) Take every opportunity to coach the team when HU standards are not being met and provide feedback to the team when the HU standards are being met

2. For all activities, exhibit proper use of procedures by:

Applying the correct procedure to operate equipment and respond to abnormalities

Ensuring procedures are detailed enough to allow precise control of plant evolutions.

Demonstrating the ability to:

Apply the correct procedure to the situation

Use place keeping for accurate implementation

Identify any and all areas for procedure improvement

Take ownership of and complete the improvement, whenever an area for procedure improvement is identified

3. Base actions and decisions with a bias toward conservative, safe operation of the plant, demonstrating the ability to:

Assure all plant evolutions and work are assessed for Radiological Safety, Industrial Safety, Nuclear Safety, Environmental Safety, or Corporate Safety

Once a risk is determined, take appropriate actions to mitigate or minimize risk

Request assistance for any activity which requires additional planning, special precautions, and management oversight to adequately manage the risks

(SRO) Champion activities that are biased conservatively

4. Demonstrate complete understanding of plant design and system interrelationships, demonstrating the ability to:

Work effectively as a team to interpret plant indications and determine an effective response

Understand the bases for, and the plant response to, actions being taken

5. Maintain continuous awareness of critical parameters, demonstrating the ability to:
 - Validate parameters by observing multiple independent indications
 - Relay parameter values with value, units, and trend; and include action being taken for an abnormal value or trend
 - Notify supervision of any change to critical parameters
 - (SRO) Assure critical parameters for operational conditions are understood by the team
6. Operate plant systems and equipment within design and operational limits, maintaining relevant parameters within assigned operating bands, demonstrating the ability to:
 - Anticipate the impact of component operation prior to its operation, and then verify that the expected effects occur during and following the operation
 - Take manual actions (in accordance with procedure direction) when automatic actions do not occur
 - Take prompt action to adjust system operating controls before assigned operating bands are exceeded
 - Make reactivity and mode changes as directed by detailed operating procedures and approved reactivity plans

C. Simulator Performance Objectives

1. Operational Actions and Annunciator Response

Correctly identify plant annunciators and indications and perform appropriate remedial actions

2. System Operation, Controls and Instrumentation

Accurately identify plant instrumentation and correctly interpret instrument readings to respond to normal, abnormal, and emergency conditions

3. Facility Design and Operating Characteristics

Demonstrate the following:

- An understanding of facility operating characteristics
- The ability to safely control the operating characteristics of the facility within prescribed operating boundaries

4. System Loss and Component Level Malfunctions

Perform system control manipulations to obtain desired operating results and demonstrate the ability to correctly respond to malfunction/loss of components and the impact of the malfunction/loss on interfacing plant systems

5. Heat Removal Component Operation

Safely operate the plant's heat removal components and demonstrate knowledge of the relationship between the heat removal systems and the operation of facility to prevent exceeding System, Structure, or Component (SSC) design limits which include:

- Primary coolant systems
- Emergency coolant systems
- Decay heat removal systems

6. Auxiliary and Emergency Component Operations

Safely operate the plant's auxiliary and emergency components / systems to include the controls associated with plant equipment that could affect reactivity or the release of radioactive materials to the environment to control release of radioactivity within regulatory limits

7. Reactivity Management

Demonstrate knowledge of how reactivity is affected by plant operation and ability to respond to the change in reactivity to protect the safety and integrity of the reactor core

8. Technical Specifications

During plant operation with the plant or system in a condition requiring Technical Specification action

Identify the deviation and any required actions / notifications

9. Emergency Plan (if required)

During plant operation in an emergency condition

Recognize conditions covered by the Emergency Plan

(SRO) Demonstrate the ability to:

- Identify and Implement the appropriate Emergency Action Level
- Use the applicable bases to support an Event Classification on the specified Emergency Action Level

10. Control Room Duties

Demonstrate the knowledge and ability to assume the appropriate responsibilities (for the assigned position) associated with the safe operation of the facility

11. Control Room Team Work

Demonstrate the ability to function within the Control Room team to comply with station procedures and limits of facility license and respond to plant events using appropriate human performance tools to support safe operation of the facility

D. Task List

Task Title	ID
Licensed Operator	
Apply Technical Specification (TS) And Technical Requirements Manual (TRM) Requirements	S-COO-00-1185
Implement Reactivity Manipulations Standards and Communication Requirements	S-COO-00-2784
Implement Appropriate Portions Of Operations Standards For System and Equipment Operation	S-COO-00-1081
Implement Operations Standards For Error And Event Prevention	S-ADM-00-1091
Implement Standards for Shift Operations	S-COO-00-2780
Implement Appropriate Portions of Conduct of Operations	S-COO-00-1015
Implement Appropriate Portions of Secondary Containment Integrity Control	S-COO-00-1020
Implement EOP Cautions	S-COO-00-2566
Implement Operations Directives	S-COO-00-3130
Ensure Plant Operates IAW the Operating License, Technical Specifications (TS), and Technical Requirements Manual (TRM)	S-COO-00-1183
Implement HUMAN PERFORMANCE (HuP) – Standards for Error and Event Prevention	S-EPP-00-3068

Scenario Attributes

A. Critical Tasks

1. <u>Given a steam leak into primary containment, spray the Drywell with RHR when Suppression Chamber pressure exceeds 13 psig.</u>	
Safety Significance	Initiating Containment Sprays reduces Primary Containment pressure. This reduces stresses on the Drywell and Torus, assists in avoiding "chugging" that may cause fatigue failure of the LOCA downcomers, and avoids the need for a blowdown. These benefits reduce challenges to the fuel cladding, the RPV, and the Primary Containment.
Consequences for Failure to Perform Task	Potential failure of primary containment. SSES EOP Basis for: PC/P-5 WHEN SUPP CHMBR PRESS > 13 PSIG CONTINUE [Directions to initiate drywell sprays]
Indications/Cues for Event Requiring Critical Task	Multiple control board and control room indications of suppression chamber and drywell pressures. Multiple indications of unavailability of normal Drywell spray from RHR.
Performance Criteria	Start RHR and align it to the Drywell spray flow path.
Performance Feedback	RHR pump, valve and system flow indications are available. Multiple indications of Drywell pressure dropping
2. <u>Perform Emergency Depressurization when Suppression Chamber Pressure cannot be maintained below the Pressure Suppression Limit.</u>	
Safety Significance	Maintenance of primary containment integrity.
Consequences for Failure to Perform Task	Potential subsequent violation of Primary Containment Pressure Limit (PCPL) and damage to primary containment.
Indications/Cues for Event Requiring Critical Task	Containment parameters exceeding the limits of the Pressure Suppression Limit curve.
Performance Criteria	When the determination is made that efforts to maintain Suppression Pool level and Suppression Chamber pressure within the PSL limit are unsuccessful, perform EO-000-112, Emergency Depressurization.
Performance Feedback	Verify ADS valves are open using light red light indication, acoustic monitoring and lowering Reactor pressure and rising reactor water level.

B. Scenario Malfunctions

Event	Malfunction	Operator Action in Response
1	N/A	Lower Reactor Power Using Recirc Flow
2	N/A	Perform Quarterly RCIC Valve Exercising SO-150-004
3	RCIC Turbine Exhaust to Suppression Pool Valve Fails to Re-Open	Stop surveillance test, SRO determines Technical Specification impact
4	Loss of Power to Instrument Bus 1Y125	Align alternate instrument power, determine Technical Specification impact
5	Electrical Fault on ESS Bus 1A (1A201)	Cross-tie 1A to CIG, start CRD pump, re-energize RPS A, reset half scram and isolation, determine Technical Specification impact
6	Steam Leak in Drywell With Failure of HPCI	Scram the Reactor, spray the Containment, Use alternate systems for Reactor water level control
7	RHR Pumps B or D Trip	Align alternate Containment spray
8	Failed Open Suppression Chamber to Drywell Vacuum Breaker	Perform emergency depressurization

C. Abnormal Events and Major Transients

Malfunction	Description
R	Lower Reactor Power Using Recirc Flow
N	Perform Quarterly RCIC Valve Exercising SO-150-004
TS	RCIC Turbine Exhaust to Suppression Pool Valve Fails to Re-Open SO-150-004, Technical Specifications
AE1 TS	Loss of Power to Instrument Bus 1Y125 ON-YPNL-101, Technical Specifications
AE2 TS	Electrical Fault on ESS Bus 1A (1A201) ON-4KV-101, Technical Specifications
MT1	Steam Leak in Drywell With Failure of HPCI ON-DWLEAK-101, ON-SCRAM-101, EO-000-102, EO-000-103
MAE1	RHR Pumps B or D Trip EO-000-103, OP-116-001
MT2	Failed Open Suppression Chamber to Drywell Vacuum Breaker EO-000-103, EO-000-112

D. EOP and EOP Contingencies Used

EOPs	EOP Contingencies
<input checked="" type="checkbox"/> EO-000-102, RPV Control	<input type="checkbox"/> EO-000-102, Alternate Level Control
<input checked="" type="checkbox"/> EO-000-103, Primary Containment Control	<input type="checkbox"/> EO-000-102, Steam Cooling
<input type="checkbox"/> EO-000-104, Secondary Containment Control	<input checked="" type="checkbox"/> EO-000-112, Emergency Depressurization
<input type="checkbox"/> EO-000-105, Radioactivity Release Control	<input type="checkbox"/> EO-000-113, Power/Level Control
	<input type="checkbox"/> EO-000-114, RPV Flooding

E. Technical Specifications

1. TS 3.5.3, RCIC System
2. TS 3.3.3.1, Post Accident Monitoring (PAM) Instrumentation
3. TS 3.8.7, Distribution Systems – Operating

References

1. SO-150-004 QUARTERLY RCIC VALVE EXERCISING
2. OP-164-001 REACTOR RECIRCULATION SYSTEM
3. OP-144-001 CONDENSATE AND FEEDWATER SYSTEM
4. ON-YPNL-101 LOSS OF INSTRUMENT BUS
5. ON-4KV-101 LOSS OF 4KV ESS BUS 1A (1A201)
6. ON-SCRAM-101 REACTOR SCRAM
7. EO-000-102 RPV CONTROL
8. EO-000-103 PRIMARY CONTAINMENT CONTROL
9. OP-149-004 RHR CONTAINMENT COOLING
10. OP-160-001 DRYWELL VENTILATION SYSTEM
11. OP-149-001 RHR SYSTEM
12. OP-151-001 CORE SPRAY SYSTEM
13. GO-100-012 Power Maneuvers
14. EO-000-112 EMERGENCY DEPRESSURIZATION
15. EP-PS-100 Emergency Director Control Room Emergency Plan Position Specific Instruction
16. EP-RM-004 EAL Classification Bases

Setup Instructions

A. Required Materials

1. US Turnover Sheet
 - a. Unit 1
 - 1) 100% power
 - 2) SLC Pump B is out of service for maintenance.
 - 3) Instrument Air Compressor B is out of service for maintenance.
 - 4) Lower reactor power to 95% with Recirculation Flow
 - 5) Shift activity is to perform quarterly RCIC valve exercising per SO-150-004. The procedure is in progress up to step 5.1.8. The applicable Technical Specifications have been entered.
 - b. Common and Unit 2
 - 1) Unit 2 at rated power.
2. Supporting Documents
 - a. RMR (2 copies)
 - b. SO-150-004 (for the Normal Event)

B. Simulator Initialization

1. **Reset** to exam specific IC. If not available, setup IAW the following instructions
2. **Run** SCN file **exam\N18scen4.scn**
3. **Place** the simulator in RUN prior to operators entering simulator.
4. **Perform** simulator activities
 - a. **Place** a tag on the Instrument Air Compressor B control switch and the SLC pump keylock switch.
 - b. **Markup** SO-150-004 to step 5.1.8
 - c. **Place** flags on expected annunciators for the RCIC surveillance.
 - 1) AR-108-001 (B04, B05, C01, D01, D05, E02, F01, G01, H01)
 - 2) AR-106-001 (G15)
5. **Reset** ODAs and all Overhead, PPC, HMI and RWM alarms
6. **Ensure** horns and annunciators are on
7. **Ensure** Overhead Lights Override is off

C. Simulator Preparation

1. **Ensure** the EOL CRC Book is at the PCO Console

D. Document Training and Performance Feedback

1. **Record** crew position assignments per TQ-104 (ILO)
2. **Complete** simulator exam checklist

E. Scenario Execution

1. **Provide** turnover to the crew using the US Turnover sheet
2. **Direct** the crew to walk down the Control Room panels
3. **Inform** the Shift Manager that the crew has the shift

F. Simulator Files

```

N18scn4.scn
; Monitored parameters
SCN rat_mp

; IAC B 00S
IRF crfPM09_1K107B f:OUT

; SLC pump B 00S
IRF rfDB106723 f:OPEN
IMF cmfPM01_1P208B

; Crew performs RCIC valve stroke surveillance

; RCIC Turbine Exhaust to Suppression Pool valve fails to re-open
aet Exam_ET\N18scn4et1

; Loss of power to Instrument Bus 1Y125
{Key[2]} IRF rfDC102114 f:OPEN

; NPO swaps instrument power HSE-112505 to alternate
{Key[12]} IRF rfDB157002 f:ALTERNATE

; Electrical fault on ESS Bus 1A (1A201)
{Key[3]} IMF cmfEB01_1A201

; NPO crossties IA to CIG
{Key[13]} IRF rfPC125001 f:OPEN

; Steam leak in Drywell
{Key[4]} IMF mfMS183007 r:2:00 f:0.06

; Steam leak gets worse when mode switch is in shutdown
aet Exam_ET\N18scn4et2

; HPCI trips upon initiation
aet Exam_ET\N18scn4et5

; RHR pump B or D trip shortly after Drywell spray is initiated
aet Exam_ET\N18scn4etB
aet Exam_ET\N18scn4etD

; If crew sprays with RHR SW, manually Key containment degradation
{Key[25]} +30 IMF cmfAV04_PSV15704B2 r:15 f:100
{Key[25]} IMF cmfAV04_PSV15704B1 d:15 r:15 f:100
{Key[25]} +30 MMF mfMS183007 d:15 r:1:30 f:3.5

; Failed open Supp Chamber to Drywell vacuum breaker and
; steam leak worsens shortly after RHR is spraying DW
aet Exam_ET\N18scn4et4

```

N18scn4et1.et

;when 59 valve is closed, will not re-open
rcvshpv149f059 = 0

N18scn4et1.scn

ior dihs14959a f:close

N18scn4et2.et

;SWITCH:MODE SWITCH
diHSC72A1S01.CurrValue = #0R.diHSC72A1S01.SHUTDN

N18scn4et2.scn

MMF mfMS183007 r:2:00 f:1.5

N18scn4et3.et

;METER:CONTAINMENT SPRAY - DIV 2
aoFI15120BA.CurrValue > 2000

N18scn4et4.et

; RHRSW B to RHR crossties open and RHR B DW spray valves open
doHS15121B_2.CurrValue = #0R.doHS15121B_2.ON & doHS15116B_2.CurrValue = #0R.doHS15116B_2.ON &
doHS11275B_2.CurrValue = #0R.doHS11275B_2.ON & doHS11273B_2.CurrValue = #0R.doHS11273B_2.ON

N18scn4et3.scn

imf cmfMV01_HV151F016B
+30 IMF cmfAV04_PSV15704B2 r:15 f:100
IMF cmfAV04_PSV15704B1 d:15 r:15 f:100
+30 MMF mfMS183007 d:15 r:1:30 f:3.5

N18scn4et5.et

;LIGHT:HPCI TURBINE STEAM SUPPLY
doHS15501_2.CurrValue = #0R.doHS15501_2.ON

N18scn4et5.scn

IMF mfHP152015

N18scn4et6.et

;LIGHT:TURBINE EXHAUST TO SUPP POOL (HS-E51A-S21)
doHS14959A_2.CurrValue = #0R.doHS14959A_2.OFF

N18scn4et6.scn

IOR diHS14959A f:CLOSE

N18scn4etB.et

;if B RHR started first
doHS15102B1_3.CurrValue = #0R.doHS15102B1_3.ON

N18scn4etB.scn

+1 imf cmfpm03_1P202B
cet Exam_ET\n18scn4etD

N18scn4etD.et

;if D RHR started first
doHS15102D1_3.CurrValue = #0R.doHS15102D1_3.ON

N18scn4etD.scn

+1 imf cmfpm03_1P202D

cet Exam_ET\n18scn4etB

Event 1 – Lower Reactor Power Using Recirculation Flow

Instructor Activities	Operator Activities	Notes
<p>Booth Operator</p> <p>Role Play: The crew may contact PJM (Tenaska) requesting if the power reduction was sufficient. With lead examiner concurrence, confirm sufficient power reduction.</p> <p>No actions required for this event</p>		
	<p>PCOM</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lowers Reactor Power by depressing either the single or double chevron DEC PB and maintaining loop flows matched <input type="checkbox"/> Monitors indications of reactor power per OP-AD-001 Att G <p>PCOP</p> <ul style="list-style-type: none"> <input type="checkbox"/> Performs peer checks as requested <input type="checkbox"/> IAW AR-106-C09, nulls Manual and Automatic regulators using MAN VOLT REG ADJUST HC-10002 potentiometer <input type="checkbox"/> Maintains Load Set ~100MWe above actual Generator Load IAW GO-100-012 using LOAD SELECTOR DECREASE/INCREASE PBs <p>US</p> <ul style="list-style-type: none"> <input type="checkbox"/> Directs lowering reactor power with recirculation flow 	

Event 2 & 3 – Perform Quarterly RCIC Valve Exercising, RCIC Turbine Exhaust to Suppression Pool Valve Fails to Re-Open

Instructor Activities	Operator Activities	Notes
Booth Operator		
<p>Role Play</p> <p>If dispatched to investigate HV-149-F059 failing to reopen, and/or the associated breaker, acknowledge direction and delay action. The next event will be initiated prior to any investigation actions.</p>	<p>US</p> <ul style="list-style-type: none"> <input type="checkbox"/> Directs PCOP to perform quarterly RCIC valve exercising per SO-150-004, starting at step 5.1.8. <input type="checkbox"/> Acknowledges that HV-149-F059 TURB EXH TO SUPP POOL is closed and will not re-open. <input type="checkbox"/> Places surveillance testing on hold. <input type="checkbox"/> Determines Technical Specification 3.5.3 requires immediately verifying by administrative means that HPCI is operable. <input type="checkbox"/> Determines Technical Specification 3.5.3 requires RCIC to be restored to operable status within 14 days. <p>PCOM</p> <ul style="list-style-type: none"> <input type="checkbox"/> Monitors Plant Parameters 	<p>There are multiple expected annunciators on AR108 for this surveillance. The crew may opt to flag them ahead of time.</p>

Event 2 & 3 – Perform Quarterly RCIC Valve Exercising, RCIC Turbine Exhaust to Suppression Pool Valve Fails to Re-Open

Instructor Activities	Operator Activities	Notes
	<p>PCOP</p> <ul style="list-style-type: none"> <input type="checkbox"/> Performs quarterly RCIC valve exercising per SO-150-004, starting at step 5.1.8: <ul style="list-style-type: none"> • Test HV-149-F060 VAC PP DSCH TO SUPP POOL as follows: <ul style="list-style-type: none"> ○ Confirm HV-149-F060 OPEN. ○ Simultaneously Close HV-149-F060 AND Commence stroke timing. ○ Stop timing HV-149-F060 when FULL CLOSE indication observed. ○ Record HV-149-F060 closure stroke time on Attachment A. ○ Open HV-149-F060. • Test HV-149-F059 TURB EXH TO SUPP POOL as follows: <ul style="list-style-type: none"> ○ Confirm HV-149-F059 OPEN. ○ Simultaneously Close HV-149-F059 AND Commence stroke timing. ○ Stop timing HV-149-F059 when FULL CLOSE indication observed. ○ Record HV-149-F059 closure stroke time on Attachment A. ○ Open HV-149-F059. <input type="checkbox"/> Recognizes / reports HV-149-F059 TURB EXH TO SUPP POOL is closed and will not re-open. 	<p>The crew may desire to replace the indicator bulb. Lead examiner should intervene and inform the crew the bulb is replaced.</p>

Event 4 – Loss of Power to Instrument Bus 1Y125

Instructor Activities	Operator Activities	Notes
Booth Operator At the Lead Examiner's direction, Insert Key 2 to initiate event. {Key[2]} IRF rDC102114 f:OPEN		
	Crew <input type="checkbox"/> Recognizes / reports: <ul style="list-style-type: none"> • Annunciator AR-107-001 (C06), BYPASS INDICATION SYS DIV 2 INOP ECCS/ESF SYS • Annunciator AR-112-001 (F04), SUPP POOL DIV 2 AVERAGE TEMP HI • Multiple control room indicators fail 	
	US <input type="checkbox"/> Enters ON-YPNL-101, Loss of Instrument Bus. <input type="checkbox"/> Determines certain channels of post-accident monitoring instrumentation are inoperable. <input type="checkbox"/> Determines Technical Specification 3.3.3.1 Condition A requires restoring channels to operable status within 30 days. PCOM <input type="checkbox"/> Monitors plant parameters.	Multiple Tech Specs require evaluation IAW)N-YPNL-101. At the lead examiners discretion, this evaluation can be performed as a follow up question post scenario.

Event 4 – Loss of Power to Instrument Bus 1Y125

Instructor Activities	Operator Activities	Notes
<p>Role Play As NPO dispatched to investigate 1D62430, wait 2 minutes, then report, “1D62430 is tripped open.”</p> <p>Role Play As NPO dispatched to investigate 1D125 lights, wait 1 minute, then report, “1D125 Master Unit Indicating Light and 1D125 Slave Unit Indicating Light are extinguished.”</p> <p>Role Play When directed as NPO to place HSE-112505 in ALTERNATE position, wait 2 minutes, then depress KEY 12, then report, “HSE-112505 is in the ALTERNATE position.”</p> <p>{Key[12]} IRF rFDB157002 f:ALTERNATE</p>	<p>PCOP</p> <p><input type="checkbox"/> Executes ON-YPNL-101, Loss of Instrument Bus, Condition H:</p> <ul style="list-style-type: none"> Refer to Attachment Y for functions/instrumentation lost and recommended actions. Dispatch Operator to ensure 1D62430 CLOSED. <ul style="list-style-type: none"> Dispatch Operator to 1D125. <ul style="list-style-type: none"> IF 1D125 Indicating Lights EXTINGUISHED: <ul style="list-style-type: none"> Dispatches operator to PLACE HSE-112505 in ALTERNATE position. At 1C690B, PLACE HSE-112502 in ALTERNATE position. At 1C601-22B, PLACE HSE-112501 in ALTERNATE position. 	


Event 5 – Electrical Fault on ESS Bus 1A (1A201)

Instructor Activities	Operator Activities	Notes
Booth Operator When directed by lead examiner, depress KEY 3 to initiate event. {Key[3]} IMF cmfEB01_1A201		
	Crew <input type="checkbox"/> Recognizes / reports: <ul style="list-style-type: none"> • Annunciator AR-015-001 (A08), 4KV BUS 1A (1A201) LO VOLT/PROT CKT TROUBLE • Annunciator AR-015-001 (D08), 4.8KV BUS 1A BUS LOCKOUT RELAY TRIP • Annunciator AR-015-001 (D10), DB A SUPPLY BKR TO BUS 1A/2A TRIP • Annunciators AR-109-001 (B02(B09)), CORE SPRAY (RHR) LOOP A OUT OF SERVICE • Half scram. • Loss of ESS Bus 1A 	
Role Play As WWM (or equivalent) contacted for assistance with ESS Bus 1A, acknowledge request.	US <input type="checkbox"/> Enters ON-4KV-101, Loss of 4KV Bus. <input type="checkbox"/> Enters ON-CIG-101, Loss of Containment Instrument Gas. <input type="checkbox"/> Enters ON-CRD-101, Control Rod Drive Malfunction. <input type="checkbox"/> Enters ON-RPS-101, Loss of RPS. <input type="checkbox"/> Determines Technical Specification 3.8.7 Condition A Required Action 1 is applicable for loss of ESS Bus 1A. PCOM <input type="checkbox"/> Monitors plant parameters. <input type="checkbox"/> Once RPS A is placed on alternate supply, resets half scram by momentarily positioning REACTOR SCRAM RESET HS-C72A-1S05 to GROUP 1/4 position AND THEN to GROUP 2/3 position.	



Event 5 – Electrical Fault on ESS Bus 1A (1A201)

Instructor Activities	Operator Activities	Notes
<p>Role Play</p> <p>When dispatched as NPO to crosstie Instrument Air to CIG, wait 2 minutes, then depress KEY 13, then report,</p> <p>“Instrument Air has been cross-tied to CIG.”</p> <p>{Key[13]} IRF rPC125001 f:OPEN</p> <hr/> <p>Role Play</p> <p>If dispatched as NPO to investigate ESS Bus 1A, wait 2 minutes, then report,</p> <p>“The normal supply breaker to ESS Bus 1A tripped on overcurrent.”</p>	<p>PCOP</p> <p><input type="checkbox"/> Executes ON-4KV-101, Loss of 4KV Bus, Condition B:</p> <ul style="list-style-type: none"> • Ensure ESW in service to provide cooling to diesel generator in accordance with OP-054-001, ESW System: <ul style="list-style-type: none"> ○ Starts at least one ESW pump. • ENSURE B CRD pump in service <ul style="list-style-type: none"> ○ Close CRD Flow Control Valve FV 146 F002A(B) as follows: ○ Place CRD Flow Controller FC-C12-1R600 in MANUAL. ○ Set CRD Flow Controller FC-C12-1R600 to 0% DEMAND SIGNAL. ○ Verify CRD Flow Control Valve FV-146-F002A(B) CLOSED. ○ Start standby CRD Pump 1P132B by placing control switch to RUN position. ○ With CRD Pump 1P132B in operation, Establish system flow ~ 63 gpm using CRD Flow Controller FC-C12-1R600. ○ Place CRD Flow Controller FC-C12-1R600 in AUTO. • Crosstie Instrument Air to CIG 90# header: <ul style="list-style-type: none"> ○ Dispatches NPO to perform OP-125-001, Containment Instrument Gas System, section 2.8. • ENSURE ESS Transformers 101, 201, 111, and 211 cooling systems in service. (OP-004-001) 	

Event 5 – Electrical Fault on ESS Bus 1A (1A201)

Instructor Activities	Operator Activities	Notes
	<p>PCOP Cont...</p> <p>ENSURE Unit 1 RPS Bus A is ENERGIZED and Containment Isolations RESET</p> <p><input type="checkbox"/> Transfer RPS bus A to alternate supply and Restore containment isolation in accordance with ON-RPS-101, Loss of RPS:</p> <ul style="list-style-type: none"> • Ensure ALTERNATE A FEED White indicating light ILLUMINATED. • Ensure RPS M G SET TRANSFER SWITCH HS-C72B-S1 in NORM position. • Place RPS M G SET TRANSFER SWITCH HS-C72B-S1 in ALT A position. • Reset the Main Steam Line Rad Monitors at Panel 1C606. • Coordinates with PCOM to reset A RPS half scram by momentarily positioning REACTOR SCRAM RESET HS-C72A-1S05 to GROUP 1/4 position AND THEN to GROUP 2/3 position. • Depress MN STM LINE DIV 1 ISO RESET HS-B21-1S32. • Depress MN STM LINE DIV 2 ISO RESET HS-B21-1S33. • Recover from RBCW isolation: <ul style="list-style-type: none"> ○ Ensure RRP A CLG WTR OB ISO VALVES HV-18791A1&A2 CLOSED. ○ Ensure RRP B CLG WTR IB ISO VALVES HV-18792A1&A2 CLOSED. ○ Depress HV-18791A1&A2 ISOLATION RESET. ○ Depress HV-18792A1&A2 ISOLATION RESET. ○ Ensure RRP A CLG WTR OB ISO VALVES HV-18791A1&A2 OPEN. ○ Ensure RRP B CLG WTR IB ISO VALVES HV-18792A1&A2 OPEN. 	
	<p>Evaluator Note</p> <ul style="list-style-type: none"> • Recommend moving to the next event once RPS is on the alternate supply, the half scram is reset, RBCW is restored, CRD is restored, and the Technical Specification call is made. 	

Events 6, 7, & 8 – Steam Leak in Drywell, HPCI Trips, RHR Pumps B and D Trip, Failed Open Suppression Chamber to Drywell Vacuum Breaker

Instructor Activities	Operator Activities	Notes
<p>Booth Operator</p> <p>When directed by lead evaluator, depress KEY 4: {Key[4]} IMF mfMS183007 r:2:00 f:0.06</p> <p>When the mode switch is placed in shutdown, verify automatic event trigger n18scen4et2 modifies the steam leak severity: MMF mfMS183007 r:2:00 f:1.5</p> <p>When HPCI steam supply valve opens, verify automatic event trigger n18scen4et5 trips HPCI: IMF mfHP152015</p> <p>When the crew sprays containment with RHR, verify automatic event trigger n18scen4et4 initiated to cause further containment degradation. If crew sprays with RHRSW, manually Key containment degradation. {Key[25]} +30 IMF cmfAV04_PSV15704B2 r:15 f:100 {Key[25]} IMF cmfAV04_PSV15704B1 d:15 r:15 f:100 {Key[25]} +30 MMF mfMS183007 d:15 r:1:30 f:3.5</p> <p>EVALUATOR NOTES</p> <ol style="list-style-type: none"> 1. The initial Reactor water level control band will likely be +20 to +45". 2. When the Main Generator lockouts trip with Drywell pressure > 1.72 psig, Condensate pumps will lose power due to load shedding. HPCI will trip on start, leaving the crew with RCIC, CRD and SLC for level control. 3. Due to loss of ESS Bus 1A, RHR A will be unavailable for Containment Sprays. 4. Once Drywell spray is placed in service on RHR loop B or D, RHR pump B or D will trip. This will drive the crew to place the other RHR pump in service. 5. After RHR is spraying the Drywell and conditions are improving, a Suppression Chamber to Drywell vacuum breaker will stick open and the steam leak will get worse. This will lead to violation of the Pressure Suppression Limit (~26 psig). 		
	<p>Critical Task Given a steam leak into primary containment, spray the Drywell with RHR when Suppression Chamber pressure exceeds 13 psig.</p>	
	<p>Critical Task Perform Emergency Depressurization when Suppression Chamber Pressure cannot be maintained below the Pressure Suppression Limit.</p>	
	<p>Crew</p> <p><input type="checkbox"/> Recognizes / reports rising:</p> <ul style="list-style-type: none"> • Drywell leakage • Drywell temperature • Drywell pressure 	


Events 6, 7, & 8 – Steam Leak in Drywell, HPCI Trips, RHR Pumps B and D Trip, Failed Open Suppression Chamber to Drywell Vacuum Breaker

Instructor Activities	Operator Activities	Notes
	<p>US</p> <ul style="list-style-type: none"> <input type="checkbox"/> Enters ON-SCRAM-101, Reactor Scram. <input type="checkbox"/> Directs Scram Imminent actions. <input type="checkbox"/> Directs manual Reactor scram. <input type="checkbox"/> Enters EO-100-102, RPV Control, due to low Reactor water level and high Drywell pressure. <input type="checkbox"/> Enters EO-100-103, Primary Containment Control, due to high Drywell temperature and pressure. <input type="checkbox"/> Directs initiation of Suppression Chamber spray. <input type="checkbox"/> Directs Reactor water level controlled between +13" and +54" using Condensate, RCIC, CRD, and/or SLC. <input type="checkbox"/> Directs Reactor pressure controlled 800-1050 psig with Turbine Bypass Valves. <input type="checkbox"/> May direct Reactor cooldown. <p>When Suppression Chamber pressure exceeds 13 psig or Drywell temperature approaches 340°F:</p> <ul style="list-style-type: none"> • Ensures shutdown of Drywell coolers and fans. • Ensures shutdown of Recirculation pumps. 	

<p>Role Play</p> <p>As WWM contacted for assistance, acknowledge and take no action</p>	<p>US Cont...</p> <ul style="list-style-type: none"> <input type="checkbox"/> Acknowledges trip of RHR pumps B (D). <input type="checkbox"/> Directs spraying containment using RHR D(B) or alternate Drywell sprays using RHRSW cross-tied to RHR per OP-116-001. <input type="checkbox"/> Determines Containment parameters are NOT within the Pressure Suppression Limit. <input type="checkbox"/> Enters EO-000-112, Emergency Depressurization. <input type="checkbox"/> Directs preventing uncontrolled Condensate injection <input type="checkbox"/> Directs preventing injection from LPCI and Core Spray pumps. <input type="checkbox"/> Directs opening all ADS valves. 	
<p>Role Play</p> <p>If directed as NPO to investigate HPIC trip, acknowledge direction and delay action.</p>	<p>PCOM</p> <ul style="list-style-type: none"> <input type="checkbox"/> Places the Mode Switch in SHUTDOWN. <input type="checkbox"/> Executes scram actions of ON-SCRAM-101, Reactor Scram: <ul style="list-style-type: none"> • Observe all Control Rods indicate fully inserted (using two indications, OD 7 completed as soon as possible). • Insert IRMs and SRMs. • Observe Scram Discharge Volume Vent and Drain valves CLOSED. • Check Reactor water level between 13" and 54". • Check Reactor pressure <1087 psig. • WHEN main generator load < 150 MWe, at 1C651, Depress Trip Pushbutton for Main Turbine. • Check Turbine speed is lowering. • Check status of MSIVs. 	
	<p>PCOP</p> <ul style="list-style-type: none"> <input type="checkbox"/> Executes ON-SCRAM-101, Reactor Scram: <ul style="list-style-type: none"> • Verifies isolations and initiations: <ul style="list-style-type: none"> ○ 13" Reactor water level isolations ○ 1.72 psig Drywell pressure isolations 	

<p>Booth Operator</p> <p>When Drywell spray is initiated, verify automatic event trigger n18scen4et3 trips RHR pumps B or D, whichever was started. And verify deleted, the malfunction to trip the remaining RHR pump: +3 IMF cmfPM03_1P202B / +6 IMF cmfPM03_1P202D</p> <hr/> <p>Role Play</p> <p>If directed as NPO to check RHR pumps B or D, wait 2 minutes, then report,</p> <p>“RHR pump B(D) breaker tripped on overcurrent.”</p> <hr/> <p>Booth Operator</p> <p>When RHR is spraying the Drywell, verify automatic event trigger n18scen4et4 fails open a SC to Drywell vacuum breaker and modifies the steam leak severity: +30 IMF cmfAV04_PSV15704B2 d:15 r:15 f:100 / IMF cmfAV04_PSV15704B1 d:15 r:15 f:100 +30 MMF mfMS183007 r:1:30 f:3.5</p> <hr/> <p>Role Play</p> <p>If dispatched to manually open RHR Div 1 valves, wait 4 minutes, then report,</p> <p>“The manual handwheel will not operate to open the valve.”</p>	<p>PCOM / PCOP</p> <p><input type="checkbox"/> Initiates Suppression Chamber spray per OP-149-004:</p> <ul style="list-style-type: none"> • IF available, Place Emergency Service Water System in operation supplying RHR Room Cooler and RHR Pump to be placed in service. • IF LOCA signal present, Place HS-E11-1S17B LOCA ISOLATION MANUAL OVERRIDE Switch to OVERRIDE. • Observe White Indicating Light ILLUMINATED above HS-E11-1S17B LOCA ISOLATION MANUAL OVERRIDE. • Observe LOCA ISO SWITCH LOOP B MANUAL OVERRIDE (AR-113-C5) Annunciator alarms. • Open HV-151-F028B SUPP CHMBR SPR TEST SHUTOFF. • Close HV-151-F017B RHR INJ FLOW CTL. • IF a RHR Pump not in service, Start 1P202B(D)RHR PUMP. • Throttle Open HV-151-F027B SUPP POOL SPRAY CTL, as necessary, to maintain ≤ 500 GPM as indicated on FI-15120B CONTN SPRAY DIV 2 AND maintain total loop flowrate $\leq 10,000$ gpm. <p>After RHR pump trips</p> <ul style="list-style-type: none"> • Recognize RHR pump trip • Line up to spray with remaining RHR pump. • Start remaining RHR pump and open spray valve. • Recognize valve only partially opened, but sprays are in service. • Monitor Suppression Chamber pressure. • IF Suppression Chamber pressure drops to 0 psig, THEN Stop Suppression Chamber Sprays 	<p>The crew may need to perform a slow fill prior to initiating spray, if the RHR loop was voided. This takes several minutes.</p>
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	<p>PCOM / PCOP</p> <ul style="list-style-type: none"> <input type="checkbox"/> Recognizes/reports Drywell pressure rising. <input type="checkbox"/> Recognizes/reports Containment parameters exceed Pressure Suppression Limit. <input type="checkbox"/> Prevents LPCI and Core Spray injection. <p><u>Actions to prevent LPCI injection per OP-149-001:</u></p> <ul style="list-style-type: none"> • IF RHR initiated and RPV pressure >420 psig, Prevent injection per following: <ul style="list-style-type: none"> ○ Place pump control switches to STOP and then Release. ○ Observe white pump override lights ILLUMINATED, and NO RHR Pumps running. • IF RHR not initiated, Prevent injection per following: <ul style="list-style-type: none"> ○ Arm AND Depress initiation button HS-E11-1S20A. ○ Place pump control switches to STOP, then Release. ○ Observe white pump override lights ILLUMINATED, and NO RHR Pumps running. <p><u>Actions to prevent Core Spray injection per OP-151-001:</u></p> <ul style="list-style-type: none"> • IF Core Spray NOT initiated, Arm AND Depress initiation button HS-E21-1S16A(B). • Shutdown pumps: <ul style="list-style-type: none"> ○ Place pump control switches to STOP AND Release. ○ Observe white pump override lights ILLUMINATED. <p>Observe no Core Spray pump running.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Opens 6 ADS valves. <input type="checkbox"/> Controls Reactor water level +13" to +54" using CRD, SLC, Core Spray, and/or LPCI. 	<p>The electrical malfunctions earlier will cause only three ADS valve indicating lights. The crew may check tailpipe temperatures to verify 6 ADS valves open.</p>
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	<p>Termination</p> <p>Recommended termination criteria:</p> <ol style="list-style-type: none"> a. 6 SRVs open. b. RHR spraying the Drywell. c. Reactor water level being restored to or controlled in assigned band above -161".
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