SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: **Complete Aborted Evolution Log**

JPM#: **00.AD.21017.001** Revision: **0** Date: **09/23/2016**

Applicability: ☒ RO ☒ SRO

Setting: **Classroom**

NUREG–1123 E/APE / Sys **Generic** K/A Number **2.1.20** K/A Importance **2.1.20**

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

Testing Method: ☐ Simulate ☒ Perform

Author:: _____ Date: 9/25/16

Operations Review: _____ Date: 9/26/16

Validated: _____ Date: 9/25/16

Approval: _____ Date: 9.27.16
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 (Rev. 37) marked up to step 2.5.10 (2.5.10 only circled, not slashed)

OP-AD-002 Standards for Shift Operation (Rev. 63)

Blank Aborted Evolution Control Log (AECL) OP-AD-002-3 Attachment B

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 PCOM

IV. INITIATING CUE

Your Supervisor directs you complete the necessary administrative documentation to turn this information over to the on-coming shift.

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 OP-AD-002 Attachment B when : • An evolution is aborted prior to completion and will not be resumed prior to shift turnover. • Equipment is left in an abnormal lineup and additional information is essential to the oncoming shift.	S/U	
*4	**Completes** OP-AD-002 Attachment B	Completes Attachment B as follows: • 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.				
5	**Completes** OP-AD-002 Att B cont'd	• Line 5, NONE • Line 6, notes to resume procedure OP-133-001 beginning at step 2.5.10 • Line7, Left Blank	S/U	
*6	**Documents** and **communicates** AECL data	• 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 • *Informs Turbine building NPO of Administrative requirements for the aborted evolution. o Reference the aborted evolution IAW the AECL form And o Review the AECL as part of the turnover to the oncoming shift	S/U	
EVALUATOR CUE Role-play as Turbine building NPO acknowledge the report				
*7	**Notifies** Unit Supervisor	Informs Unit Supervisor to: • Reference the aborted evolution IAW the AECL form AND • Review the AECL as part of the turnover to the oncoming shift	S/U	
EVALUATOR CUE Role-play as Turbine building NPO acknowledge the report				

8	**Identifies** requirement to log the equipment failure in the shift log and initiate a Condition Report.	Informs Unit 1 Control room Supervisor to: • a Narrative Log entry must be made a Condition Report must be initiated	S/U	
EVALUATOR NOTE / CUE Role-play as Unit Supervisor acknowledge the report				
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?				

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 PCOM

INITIATING CUE

Your Supervisor directs you complete the necessary administrative documentation to turn this information over to the on-coming shift.

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 PCOM

INITIATING CUE

Your Supervisor directs you complete the necessary administrative documentation to turn this information over to the on-coming shift.

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: **Perform Validation of Heat Balance at 90% Power**

JPM#: **00.AD.20927.101** Revision: **0** Date: **9/25/2016**

Applicability: ☒ SRO

Setting: **Classroom**

NUREG–1123 E/APE / Sys **G** K/A Number **2.1.7** K/A Importance **4.7**

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

Testing Method: ☐ Simulate ☒ Perform

Author:: _____ Date: 9/25/16

Operations Review: _____ Date: 9/26/16

Validated: _____ Date: 9/25/16

Approval: _____ Date: 9.27.16
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.20927.101

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. RE-1TP-026, VALIDATION OF CORE THERMAL POWER HEAT BALANCE (REV 12)

III. TASK CONDITIONS

1. A plant startup is in progress on Unit 1.
2. APRMs indicate as follows: #1 - 89.9%, #2 - 90.1%, #3 - 92.2%, and #4 - 90.3%.
3. % Core Thermal Power (OD-3) is 90%.
4. LPRM arithmetic average from PI is 46.5.
5. All LPRMs used in the arithmetic average are valid.
6. HPTE pressure at entrance of the A Moisture Seperator (TEP02) is 187 psig.
7. HPTE pressure at entrance of the B Moisture Seperator (TEP03) is 188 psig.
8. Computer Point NBA14 is 93.026 %PWR.
9. Computer Point NBA15 is 93.329 %PWR.
10. Computer Point NBA16 is 94.7 %PWR.
11. Computer Point NBA17 is 93.16.
12. Computer Point NFA50 is 15.5011 MLBS/H.

IV. INITIATING CUE

Perform RE-1TP-026, Validation of Heat Balance. Determine what action, if any, is required. Document conclusions, as necessary, on this cue sheet.

V. TASK STANDARD

Completes RE-1TP-026, determines the Heat Balance cannot be validated, and contacts STA and Reactor Engineering to perform RE-1TP-026 Attachment C.

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 this JPM; RE-1TP-026 and a calculator.

EVALUATOR CUE

Record JPM start time: _____

Step	Action	Standard	Eval	Comments
1	Obtain a controlled copy of RE-1TP-026	Controlled copy obtained from evaluator	S / U	
2	Selects correct procedure section(s).	Determines section 4.2 and Attachment B applies	S / U	
3*	Record the % CTP as determined by Heat Balance (i.e., OD-3) on Attachment B.	Records the % CTP on Attachment B step 4.2.1 as **90**	S / U	
4	Validate % CTP based on HPTE pressure to the A Moisture Separator. Record the HPTE pressure at entrance of the A moisture separator (Computer Point TEP02) on Attachment B.	Records the HPTE pressure at entrance of the A moisture separator (Computer Point TEP02) on Attachment B step 4.2.2.a as **187**	S / U	
5	Plot Computer Point TEP02 and % CTP (Step 4.2.1) on Attachment G "High Pressure Turbine Exhaust vs. Heat Balance % Power."	Plots Computer Point TEP02 and % CTP (Step 4.2.1) on Attachment G "High Pressure Turbine Exhaust vs. Heat Balance % Power."	S / U	
6	Record Computer Point NBA14 (Alternate % CTP) on Attachment B.	Records Computer Point NBA14 (Alternate % CTP) on Attachment B step 4.2.2.c as **93.026.**	S / U	

7*	Confirm that the plotted point is within the valid region OR % CTP is within ± 2% of the Computer Point NBA14 Attachment B.	Determines that the plotted point for HPTE pressure to the A Moisture Separator is NOT within valid region. Determines that % CTP is NOT within ± 2% of Computer Point NBA14.	S / U	
8	Validate % CTP based on HPTE pressure to the B Moisture Separator. Record the HPTE pressure at entrance of the B moisture separator (Computer Point TEP03) on Attachment B.	Records the HPTE pressure at entrance of the B moisture separator (Computer Point TEP03) on Attachment B step 4.2.3.a as **188.**	S / U	
9	Plot Computer Point TEP03 and % CTP (Step 4.2.1) on Attachment G "High Pressure Turbine Exhaust vs. Heat Balance % Power.	Plots Computer Point TEP03 and % CTP (Step 4.2.1) on Attachment G "High Pressure Turbine Exhaust vs. Heat Balance % Power.	S / U	
10	Record Computer Point NBA15 (Alternate % CTP) on Attachment B.	Records Computer Point NBA15 (Alternate % CTP) on Attachment B step 4.2.3.c as **93.329.**	S / U	
11*	Confirm that the plotted point is within the valid region OR % CTP is within ± 2% of the Computer Point NBA15. Record on Attachment B.	Determines that the plotted point for HPTE pressure to the B Moisture Separator is NOT within valid region. Determines that % CTP is NOT within ± 2% of Computer Point NBA15.	S / U	

12	Validate % CTP based on LPRM average. Obtain a printout of the current LPRM readings (OD-8). Identify non-valid LPRMs.	Indicates need to obtain LPRM current readings, identify non-valid LPRMs, and calculate arithmetic average of the valid LPRMs	S / U	
EVALUATOR NOTE If the candidate indicates the need to obtain printout of LPRM readings and calculate the arithmetic average of the valid LPRMs, tell her / him to use the value obtained from the PI program.				
13	Record arithmetic average of the valid LPRM values (PI program may be used to obtain the LPRM average) on Attachment B.	Records arithmetic average of the valid LPRM values (PI program is not available) on Attachment B step 4.2.4.c as **46.5.**	S / U	
14	Plot the LPRM arithmetic average and % CTP (Step 4.2.1) on Attachment F "LPRM Average vs. % Power (Heat Balance)."	Plots the LPRM arithmetic average and % CTP (Step 4.2.1) on Attachment F "LPRM Average vs. % Power (Heat Balance)."	S / U	
15	Record Computer Point NBA17 (Alternate % CTP) on Attachment B.	Records Computer Point NBA17 (Alternate % CTP) on Attachment B step 4.2.4.e as **93.16.**	S / U	
16*	Confirm that the plotted point is within the valid region OR % CTP is within ± 2% of the Computer Point NBA17. Record on Attachment B	Determines that the plotted point for LPRM arithmetic average is NOT within valid region. Determines that % CTP is NOT within ± 2% of Computer Point NBA17.	S / U	
17	Attach copy of LPRM readings to Attachment B	Indicates need to attach copy of LPRM readings to Attachment B	S / U	
EVALUATOR NOTE If the candidate indicates the need to obtain printout of LPRM readings and attach to Attachment B, tell her / him that another operator will attach the LPRM readings once the Attachment B is complete.				

18	Validate % CTP based on Feedwater Flows. Record Feedwater Flow (Computer Point NFA50) on Attachment B.	Records Feedwater Flow (Computer Point NFA50) on Attachment B step 4.2.5.a as **15.5011.**	S / U	
19	Plot Computer Point NFA50 and % CTP (Step 4.2.1) on Attachment H "Feedwater Flow vs. % Power (Heat Balance)."	Plots Computer Point NFA50 and % CTP (Step 4.2.1) on Attachment H "Feedwater Flow vs. % Power (Heat Balance)."	S / U	
20	Record Computer Point NBA16 (Alternate % CTP) on Attachment B.	Records Computer Point NBA16 (Alternate % CTP) on Attachment B step 4.2.5.c as **94.7.**	S / U	
21*	Confirm that the plotted point is within the valid region OR % CTP is within ± 2% of the Computer Point NBA16. Record on Attachment B.	Determines that the plotted point for FW Flow is NOT within valid region. Determines that % CTP is NOT within ± 2% of Computer Point NBA16.	S / U	
22*	Confirm that the Heat Balance is within the valid regions of any one of the previous four methods (± 2% CTP from OD-3). Record on Attachment B.	Determines that the Heat Balance is NOT valid for any of the four methods.	S / U	
23*	IF the Heat Balance cannot be validated, Contact Reactor Engineering and the STA to perform Attachment C.	Indicates need to contact Reactor Engineering and/or STA to perform Attachment C.	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?				

REVISION SUMMARY

JOB PERFORMANCE MEASURE
00.AD.20927.101

Revision	Description/Purpose of Revision
0	New JPM, from 00.AD.3658.101

EVALUATOR COPY:

TASK CONDITIONS

1. A plant startup is in progress on Unit 1.
2. APRMs indicate as follows: #1 - 89.9%, #2 - 90.1%, #3 - 92.2%, and #4 - 90.3%.
3. % Core Thermal Power (OD-3) is 90%.
4. LPRM arithmetic average from PI is 46.5.
5. All LPRMs used in the arithmetic average are valid.
6. HPTE pressure at entrance of the A Moisture Seperator (TEP02) is 187 psig.
7. HPTE pressure at entrance of the B Moisture Seperator (TEP03) is 188 psig.
8. Computer Point NBA14 is 93.026 %PWR.
9. Computer Point NBA15 is 93.329 %PWR.
10. Computer Point NBA16 is 94.7 %PWR.
11. Computer Point NBA17 is 93.16.
12. Computer Point NFA50 is 15.5011 MLBS/H.

INITIATING CUE

Perform RE-1TP-026, Validation of Heat Balance. Determine what action, if any, is required. Document conclusions, as necessary, on this cue sheet.

EXAMINEE COPY:

TASK CONDITIONS

1. A plant startup is in progress on Unit 1.
2. APRMs indicate as follows: #1 - 89.9%, #2 - 90.1%, #3 - 92.2%, and #4 - 90.3%.
3. % Core Thermal Power (OD-3) is 90%.
4. LPRM arithmetic average from PI is 46.5.
5. All LPRMs used in the arithmetic average are valid.
6. HPTE pressure at entrance of the A Moisture Seperator (TEP02) is 187 psig.
7. HPTE pressure at entrance of the B Moisture Seperator (TEP03) is 188 psig.
8. Computer Point NBA14 is 93.026 %PWR.
9. Computer Point NBA15 is 93.329 %PWR.
10. Computer Point NBA16 is 94.7 %PWR.
11. Computer Point NBA17 is 93.16.
12. Computer Point NFA50 is 15.5011 MLBS/H.

INITIATING CUE

Perform RE-1TP-026, Validation of Heat Balance. Determine what action, if any, is required. Document conclusions, as necessary, on this cue sheet.

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: **Perform LPRM Upscale Alarm Operability Tracking & Determine Required Actions**

JPM#: **00.AD.20958.101** Revision: **0** Date: **09/26/2016**

Applicability: ☒ RO ☒ SRO

Setting: **Classroom**

NUREG–1123 E/APE / Sys **Generic** K/A Number **2.2.14** K/A Importance **3.9/4.3**

Alternate Path: ☐ YES ☒ NO Time Critical ☐ YES ☒ NO Validation Time (min): **45**

Testing Method: ☐ Simulate ☒ Perform

Author:: _____ Date: 9/26/16

Operations Review: _____ Date: 9/29/16

Validated: _____ Date: 9/26/16

Approval: _____ Date: 9.29.16
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.20958.101

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. OI-078-001, LPRM Status Control Rev. 18
B. SO-100-008, Weekly Surveillance Operating Log Rev. 33
C. Technical Specification 3.3.1.1 Rev. 3

III. TASK CONDITIONS

Unit 1 is in MODE 1 at 80 percent power.

APRM 2 is INOP and bypassed.

APRM Gain Calibration was last performed 5 days ago.

LPRM detector 40-57A caused a downscale alarm

I&C determined the detector failed. Reactor Engineering requested bypassing the detector.

The PCOP has just bypassed LPRM detector 40-57A in the Lower Relay Room.

IV. INITIATING CUE

Perform LPRM Upscale Alarm operability tracking for LPRM detector 40-57A in accordance with OI-078-001.

SRO Only

Determine the required action(s) based on your findings

V. TASK STANDARD

For RO and SRO: Zone 8 is identified as having LESS THAN 50% upscale alarms operable. APRM Channel 1 determined to be INOPERABLE based on < 3 operable LPRM inputs to the "A" Level.

For SROs only: Determine that LCO 3.3.3.1 IS NOT MET for APRM required channels, and TS action A.1 is required; place channel in trip within 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 can be performed in the classroom.
- Provide a clean copy of OI-078-001. Additionally, markup copies of Attachments A, B and C with LPRM status. Have a clean copy and SO-100-008.

EVALUATOR CUE

Record JPM start time: _____

Step	Action	Standard	Eval	Comments
1	**Identifies** governing procedure and obtain controlled copy.	Obtains controlled copy of OI-078-001, Section 4.	S / U	
2	**Determine** current LPRM status	Refers to the previously completed copy of Attachments A and B	S / U	
3	**Complete** new Attachment A	Performs the following • Enters 1 for Unit • Transfers the previous LPRM data to the new Attachment A	S / U	
*4	**Enter** a check (√) in column (2) for LPRM alarms determined inoperable or bypassed for all other reasons.	Places a checkmark in column 2 adjacent to LPRM detector 40-57A in Zone 8	S / U	

EVALUATOR NOTE

All LPRM Upscale Alarms with a check in column (1) or (2) of Attachment A are inoperable.

*5	**Determine** if ≥50% of LPRM Upscale alarms in each zone are operable and circle YES or NO as applicable	Performs the following • Circles YES for zone 1, 2, 3, 4, 5, 6, 7, and 9 • Determines that there are LESS THAN 50% operable LPRMs in zone 8, AND circles NO for zone 8.	S / U	
6	**Notify** Reactor Engineering of all LPRM upscale alarms determined inoperable	Identifies Reactor Engineering previously informed of LPRM 40-57A status as stated in JPM task conditions.	S / U	
7	**Evaluate** the need to place placard to 1C651 indicating < required # of LPRM Upscale Alarms. (requires completion of Attachments C & D, which appears in Step 11, below.)	Determines that placard is required.	S / U	
*8	**Complete** an LPRM vs. APRM Status Control Log (Attachment B) each time LPRM operability status is changed.	Performs the following • Transfer the previous LPRM data to the new Attachment B • Circle LPRM detector 40-57A for APRM 1, under the column 'A' Level, and enter today's date	S / U	

*9	**Refer** to weekly surveillance SO-100-008 to confirm APRM operability requirements maintained	Compare the following criteria to current APRM/LPRM operability status: • < 20 total operable LPRMs per APRM channel • <3 LPRM inputs per level (A, B, C, or D) • ≤ 9 LPRMs inop since last APRM gain calibration (after date provided in task conditions) • *Determine that APRM channel 1 does NOT meet operability requirements due to LESS THAN 3 operable level "A" LPRMs. (The only operable Level A LPRMs in APRM 1 are 40-17A and 08-49A)	S / U	
*10	**Track** operability of OPRM cells.	Performs the following • Transfers the previous LPRM data to the new Attachment C and circles "A LEVEL" for LPRM 40-57. • Determines it inputs to APRM1 Cell 03. • Transfers the previous LPRM data to the new Attachment D and circles LPRM 40-57A in the Cell 03 row, in the LPRM#2 column. • Determines OPRM cell is INOPERABLE due fewer than two operable LPRMs. • Determines OPRM is OPERABLE due to having 22 or more OPERABLE cells	S / U	

EVALUATOR CUE For RO examinees, this completes the JPM				
EVALUATOR CUE For SRO examinee, provide the SRO examinee sheet that addresses determining required actions				
*11	Identifies Tech Spec 3.3.1.1 for RPS Instrumentation and TR 3.1.3 for Control Rod Block Instrumentation is not met.	Performs the following: • *Refer to Tech Spec 3.3.1.1 and determine that a minimum of 3 operable APRM channels are required in MODE 1 per table 3.3.1.1-1, therefore action A.1 is required; place channel in trip within 12 hours. • *Refer to TRM 3.1.3 and determine that a minimum of 3 operable APRM channels are required in MODE 1 per table 3.1.3-1, therefore action B.2 is required; place 1 channel in tripped condition within 7 days. • Refer to TRM 3.3.9 and determine that a placard will have to be posted at 1C651 indicating less than required number of LPRM upscale alarms, if OPRMs are subsequently declared INOPERABLE	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?				

REVISION SUMMARY

JOB PERFORMANCE MEASURE
00.AD.20958.101

Revision	Description/Purpose of Revision
0	New JPM, Revised from Loc 26
1	

EVALUATOR COPY:

TASK CONDITIONS

Unit 1 is in MODE 1 at 80 percent power.

APRM 2 is INOP and bypassed.

APRM Gain Calibration was last performed 5 days ago.

LPRM detector 40-57A caused a downscale alarm

I&C determined the detector failed. Reactor Engineering requested bypassing the detector.

The PCOP has just bypassed LPRM detector 40-57A in the Lower Relay Room.

INITIATING CUE

Perform LPRM Upscale Alarm operability tracking for LPRM detector 40-57A in accordance with OI-078-001

EXAMINEE COPY:

TASK CONDITIONS

Unit 1 is in MODE 1 at 80 percent power.

APRM 2 is INOP and bypassed.

APRM Gain Calibration was last performed 5 days ago.

LPRM detector 40-57A caused a downscale alarm

I&C determined the detector failed. Reactor Engineering requested bypassing the detector.

The PCOP has just bypassed LPRM detector 40-57A in the Lower Relay Room.

INITIATING CUE

Perform LPRM Upscale Alarm operability tracking for LPRM detector 40-57A in accordance with OI-078-001

SRO EVALUATOR COPY:

INITIATING CUE

Determine the required action(s) based on your findings

SRO EXAMINEE COPY:

INITIATING CUE

Determine the required action(s) based on your findings

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: **Perform Jet Pump Operability Check**

JPM#: 00.**SO.20992.101** Revision:**0** Date:**08/08/2016**

Applicability: ☒ RO ☒ SRO

Setting: **Classroom**

NUREG–1123 E/APE / Sys **Generic** K/A Number **2.2.12** K/A Importance **3.7/4.1**

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

Testing Method: ☐ Simulate ☒ Perform

Author: **Greg van den Berg** Date: **08/08/2016**

Operations Review: _____ Date: 9/29/16

Validated: _____ Date: 9/26/16

Approval: _____ Date: 9.29.16
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.SO.20992.101

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-100-007, DAILY SURVEILLANCE LOG, REV 75

III. TASK CONDITIONS

A. Unit 1 is operating at 100% power.

B. Both Reactor Recirc pumps and loops are in operation.

C. The necessary data to perform the daily surveillance for Recirc pump and jet pump operability has been taken and recorded on Attachment C, PERFORMANCE DATA SHEET RECIRCULATION SYSTEM DUAL LOOP, of SO-100-007, DAILY SURVEILLANCE OPERATING LOG.

D. No Tech Spec LCO action statements are in effect.

IV. INITIATING CUE

Using the data provided on Attachment C, Performance Data Sheet Recirculation System Dual Loop, of SO-100-007, DAILY SURVEILLANCE OPERATING LOG:

- Complete the remaining items in Attachment C.

V. TASK STANDARD

Recirculation pumps declared OPERABLE; Jet pumps declared OPERABLE

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 should be performed in the classroom.
- Provide a partially completed SO-100-007 attachment C (Page 1, a-i)
- "Candidate's Data Sheet #2" (1 page) is not given to the candidate until they identify the need to evaluate jet pump delta Ps.

EVALUATOR CUE

Record JPM start time: _____

Step	Action	Standard	Eval	Comments
1	Obtain a controlled copy of SO-100-007.	Controlled copy obtained from evaluator.	S / U	
2	Selects correct procedure section.	Selects Item 1.	S / U	
3	To determine Recirc Pumps/Jet Pumps and Flow Biased Simulated Thermal Power Upscale (RPS) OPERABLE, Complete APPLICABLE Attachments: IF in Dual Loop Operation, Complete Attachment C. For Recirc Pumps and Jet Pumps	Selects Attachment C	S / U	

4*	Recirc pumps operable if loop jet pump flow mismatch maintained within a or b: Enter N/A for item that does not apply. a. 5 Mlbm/hr with core flow ≥ 75 Mlbm/hr b. 10 Mlbm/hr with core flow < 75 Mlbm/hr	On Attachment C PERFORMANCE DATA SHEET RECIRCULATION SYSTEM DUAL LOOP: Compares line g to h. Determines that the mismatch between Loop A and Loop B is 2 Mlbm/hr. Records: 2 Mlbm/hr on SR 3.4.1.1 line a. Records: N/A on SR 3.4.1.1 line b. Determines Recirc Pumps are operable. Circles YES and places his/her initials under Confirm column on SR 3.4.1.1 line . Records: SAT on Recirc Pumps line of item 1 of SO-100-007 Daily Surveillance Log Attachment A	S / U	

5*	When recirc pumps operating with flow within limits of a or b above, jet pumps operable if no two (2) following conditions exist simultaneously: Recirculation loop drive flow versus recirculation generator speed differs > 10% from established patterns. (Plot applicable performance data on figures 1 and 2 of this attachment)	On Figure 1 RECIRC PUMP A FLOW VS. SPEED TWO LOOP OPERATION of ATTACHMENT C: Plots a point corresponding to: RECIRC GENERATOR A SPEED (SI 14032A) of 87% AND RECIRC PUMP A FLOW (KGPM) of 38 KGPM On Figure 2 RECIRC PUMP B FLOW VS. SPEED TWO LOOP OPERATION of ATTACHMENT C: Plots a point corresponding to: RECIRC GENERATOR B SPEED (SI 14032B) of 88% AND RECIRC PUMP B FLOW (KGPM) of 33 KGPM Circles YES and places his/her initials under Confirm column SR 3.4.2.1 line a.	S / U	

6*	Recirculation loop drive flow versus total core flow differs > 10% from established patterns. (Plot applicable performance data on Figures 3 and 4 of this attachment)	On Figure 3 TOTAL CORE FLOW VS. RECIRC PUMP A FLOW TWO LOOP OPERATION of ATTACHMENT C: Plots a point corresponding to: RECIRC PUMP A FLOW (KGPM) (FR-B31-1R614) of 38 KGPM AND TOTAL CORE FLOW MLB/HR of 92 MLB/HR On Figure 4 TOTAL CORE FLOW VS. RECIRC PUMP B FLOW TWO LOOP OPERATION of ATTACHMENT C Plots a point corresponding to: RECIRC PUMP A FLOW (KGPM) (FR-B31-1R614) of 33 KGPM AND TOTAL CORE FLOW MLB/HR of 92 MLB/HR Circles NO and places his/her initials under Confirm column SR 3.4.2.1 line b.	S / U	

7	Notifies Reactor Engineering directly that surveillance parameters differ from established values by more than 5% or notifies SRO to contact Reactor Engineering.	Contacts Reactor Engineering directly and notifies that surveillance parameters differ from established values by more than 5%. OR Notifies SRO to contact Reactor Engineering. OR Contacts Operator to get additional Jet Pump data.	S / U	
EVALUATOR CUE Role-play Reactor Engineering, SRO, or Operator and acknowledge the report.				
EVALUATOR CUE Provide the candidate with the Candidate Data Sheet #2 (1 page) (Jet pump delta Ps).				

8	Calculates LOOP A JET PUMP ΔP PERCENT DEVIATION FROM THE AVERAGE to be used in Plotting applicable performance data on figure 1 of attachment I.	Records the following data on Attachment C LOOP A JET PUMP ΔP PERCENT DEVIATION FROM THE AVERAGE: 1. JP11_**34**_[(JP11 - A) ÷ A] X 100 =_**-.87**_ 2. JP12_**35**_[(JP12 - A) ÷ A] X 100=_**2.04**_ 3. JP13_**34**_[(JP13 - A) ÷ A] X 100=_**-.87**_ 4. JP14_**35**_[(JP14 - A) ÷ A] X 100 =_**2.04**_ 5. JP15_**35**_[(JP15 - A) ÷ A] X 100 =_**2.04**_ 6. JP16_**35**_[(JP16 - A) ÷ A] X 100 =_**2.04**_ 7. JP17_**34**_[(JP17 - A) ÷ A] X 100 =_**-.87**_ 8. JP18_**34**_[(JP18 - A) ÷ A] X 100 =_**-.87**_ 9. JP19_**35**_[(JP19 - A) ÷ A] X 100 =_**2.04**_ 10. JP20_**32**_[(JP20 - A) ÷ A] X 100 =_**-6.71**_ A =_**343** X 0.1 = _**34.3**_ (Sum of ΔP%) JP11 thru 20	S / U	
EVALUATOR NOTE The candidate may round these numbers to the nearest tenth.				

9	Calculates LOOP B JET PUMP ΔP PERCENT DEVIATION FROM THE AVERAGE to be used in Plotting applicable performance data on figure 2 of attachment I.	Records the following data on Attachment C LOOP B JET PUMP ΔP PERCENT DEVIATION FROM THE AVERAGE: 1. JP1_**39**_[(JP1 - A) ÷ A] X 100 =_**3.17**_ 2. JP2_**39**_[(JP2 - A) ÷ A] X 100 =_**3.17**_ 3. JP3_**37**_[(JP3 - A) ÷ A] X 100 =_**-2.12**_ 4. JP4_**39**_[(JP4 - A) ÷ A] X 100 =_**3.17**_ 5. JP5_**39**_[(JP5 - A) ÷ A] X 100 =_**3.17**_ 6. JP6_**39**_[(JP6 - A) ÷ A] X 100 =_**3.17**_ 7. JP7_**30**_[(JP7 - A) ÷ A] X 100 =_**-20.63**_ 8. JP8_**39**_[(JP8 - A) ÷ A] X 100 =_**3.17**_ 9. JP9_**39**_[(JP9 - A) ÷ A] X 100 =_**3.17**_ 10. JP10_**38**_[(JP10 - A) ÷ A] X 100 =_**.53**_ A =_**378** X 0.1 = _**37.8**_ (Sum of ΔP%) JP1 thru 10	S / U	
EVALUATOR NOTE The candidate may round these numbers to the nearest tenth.				

10*	Each jet pump to lower plenum differential pressure differs by > 20% from the established patterns, (Plot applicable performance data on figures 1 and 2 of attachment I.	On Figure 1 TWO LOOP JET PUMP DISTRIBUTION LOOP A of ATT I Plots the following points: **JP11** and **-.87** % DEVIATION FROM THE MEAN DELTA P VALUE **JP12** and **2.04** % DEVIATION FROM THE MEAN DELTA P VALUE **JP13** and **-.87** % DEVIATION FROM THE MEAN DELTA P VALUE **JP14** and **2.04** % DEVIATION FROM THE MEAN DELTA P VALUE **JP15** and **2.04** % DEVIATION FROM THE MEAN DELTA P VALUE **JP16** and **2.04** % DEVIATION FROM THE MEAN DELTA P VALUE **JP17** and **-.87** % DEVIATION FROM THE MEAN DELTA P VALUE **JP18** and **-.87** % DEVIATION FROM THE MEAN DELTA P VALUE **JP19** and **2.04** % DEVIATION FROM THE MEAN DELTA P VALUE **JP20** and **–6.71** % DEVIATION FROM THE MEAN DELTA P VALUE Determines that all points are within ±20% from the established patterns. ✷	S / U	
EVALUATOR NOTE Plotting of points is not critical in this step.				

10* (con)	Each jet pump to lower plenum differential pressure differs by > 20% from the established patterns, (Plot applicable performance data on figures 1 and 2 of attachment I.	On Figure 2 TWO LOOP JET PUMP DISTRIBUTION LOOP B of ATT I Plots the following points: **JP1** and **3.17** % DEVIATION FROM THE MEAN DELTA P VALUE **JP2** and **3.17** % DEVIATION FROM THE MEAN DELTA P VALUE **JP3** and **–2.12** % DEVIATION FROM THE MEAN DELTA P VALUE **JP4** and **3.17** % DEVIATION FROM THE MEAN DELTA P VALUE **JP5** and **3.17** % DEVIATION FROM THE MEAN DELTA P VALUE **JP6** and **3.17** % DEVIATION FROM THE MEAN DELTA P VALUE **JP7** and **–20.63** % DEVIATION FROM THE MEAN DELTA P VALUE **JP8** and **3.17** % DEVIATION FROM THE MEAN DELTA P VALUE **JP9** and **3.17** % DEVIATION FROM THE MEAN DELTA P VALUE **JP10** and **.53** % DEVIATION FROM THE MEAN DELTA P VALUE Circles NO and places his/her initials under Confirm column SR 3.4.2.1 line c. ✳		
EVALUATOR NOTE Plotting of points is not critical in this step.				

11*	When recirc pumps operating with flow within limits of a or b above, jet pumps operable if no two (2) following conditions exist simultaneously:	Determines Jet pumps are operable based on two (2) of the conditions under SR 3.4.2.1 being met simultaneously. Circles YES and places his/her initials under Confirm column SR 3.4.2.1. Records: SAT on Jet Pumps line of item 1 of SO-100-007 Daily Surveillance Log Attachment A.	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?				

REVISION SUMMARY
JOB PERFORMANCE MEASURE
00.SO.20992.101

Revision	Description/Purpose of Revision
0	New JPM, From 00.SO.003.051

EVALUATOR COPY:

TASK CONDITIONS

A. Unit 1 is operating at 100% power.

B. Both Reactor Recirc pumps and loops are in operation.

C. The necessary data to perform the daily surveillance for Recirc pump and jet pump operability has been taken and recorded on Attachment C, PERFORMANCE DATA SHEET RECIRCULATION SYSTEM DUAL LOOP, of SO-100-007, DAILY SURVEILLANCE OPERATING LOG.

D. No Tech Spec LCO action statements are in effect.

INITIATING CUE

Using the data provided on Attachment C, Performance Data Sheet Recirculation System Dual Loop, of SO-100-007, DAILY SURVEILLANCE OPERATING LOG:

- Complete the remaining items in Attachment C.

EXAMINEE COPY:

TASK CONDITIONS

A. Unit 1 is operating at 100% power.

B. Both Reactor Recirc pumps and loops are in operation.

C. The necessary data to perform the daily surveillance for Recirc pump and jet pump operability has been taken and recorded on Attachment C, PERFORMANCE DATA SHEET RECIRCULATION SYSTEM DUAL LOOP, of SO-100-007, DAILY SURVEILLANCE OPERATING LOG.

D. No Tech Spec LCO action statements are in effect.

INITIATING CUE

Using the data provided on Attachment C, Performance Data Sheet Recirculation System Dual Loop, of SO-100-007, DAILY SURVEILLANCE OPERATING LOG:

- Complete the remaining items in Attachment C.

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: **Determine Operability of MSIV Isolation Actuation**

JPM#: **00.AD.20933.101** Revision: **2** Date: **09/23/2016**

Applicability: ☒ RO ☒ SRO

Setting: **Classroom**

NUREG–1123 E/APE / Sys **Generic** K/A Number **2.2.22** K/A Importance **4.7**

Alternate Path: ☐ YES ☒ NO Time Critical ☐ YES ☒ NO Validation Time (min): **45**

Testing Method: ☐ Simulate ☒ Perform

Author:: _____ Date: 9/26/16

Operations Review: _____ Date: 9/26/16

Validated: _____ Date: 9/26/16

Approval: _____ Date: 9.27.16
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.20933.101

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. SI-183-312, Quarterly Calibration of Main Steam Line Pressure Channels PSL-B21-1N015A, B, C, D Rev 18
B. NDAP-QA-0312, Control of LCOs, TROs and Safety Function Determination Program Rev 20
C. NDAP-QA-0722, Surveillance Test Program Rev 26
D. Technical Specification 3.3.6.1

III. TASK CONDITIONS

Unit 1 is operating at 80 percent power.

I&C is performing SI-183-312, Quarterly Calibration of Main Steam Line Pressure Channels PSL-B21-1N015A, B, C, D.

I&C notifies you that Pressure Switch PSL-B21-1N015C tripped at 838 psig. They were unable to adjust the setting, and it has failed their surveillance.

IV. INITIATING CUE

Determine system operability and take appropriate actions.

V. TASK STANDARD

Examinee determines that LCO 3.3.6.1 is NOT met for MSIV Isolation Actuation Surveillance.

Declares channel INOPERABLE, makes notifications and documents LCO entry per NDAP-QA-0312. Performs LOSF, determines no loss of safety function exists.

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 classroom setting.
- Mark-up a copy of SI-183-312.

EVALUATOR CUE

Record JPM start time: _____

Step	Action	Standard	Eval	Comments
1	**Identifies** governing procedure and obtain controlled copy.	Obtains controlled copy of TS 3.3.6.1-1.	S/U	
*2	**Evaluate** the condition and identify appropriate LCO	Using Tech Specs, compare test results with allowable value in Table 3.3.6.1-1	S/U	
*3	**Determine** the actions required to be taken	Performs the following: • Declare the channel INOPERABLE in accordance with TS 3.3.6.1 Condition A Recognize that the TRIP SYSTEM must be placed in the TRIP condition within 24 hours in accordance with TS 3.3.6.1 Required Action A.1	S/U	
4	**Identifies** need to initiate a Condition Report to document the condition	Directs I&C to generate a Condition Report.	S/U	
EVALUATOR CUE Acknowledge direction to initiate a CR				
5	**Notifies** Management and support personnel	In accordance with OP-AD-002 performs the following: • Notify Duty Manager Notify appropriate support personnel	S/U	

EVALUATOR CUE Acknowledge communications.				
6	**Determines** that LCO/TRO Log entry is required	States requirement to make an entry into SOMs LCO module.	S/U	
EVALUATOR CUE SOMs LCO module is unavailable. Per NDAP-QA-0312 document the information required to complete a LCOTR when SOMs is restored on the Answer Sheet. Answer any questions about what information is expected on each line of the Answer Sheet.				
EVALUATOR NOTE Date/time of entry is not critical. Required action date/time is critical based on date/time of entry recorded by examinee.				
*7	**Records** applicable TS/TRM, Condition, and Required Action and required action time	Performs the following: Completes Answer Sheet with information listed on Answer Key at a minimum	S/U	
*8	**Determines** no loss of safety function exists	Performs the following: • Determines TS 3.6.1.3 MSIV and MSL drain NSSS isolation is the supported system • Determines that all MSIVs and MSL drains are operable in both inboard and outboard NSSSS Determines no loss of safety function exists in TS 3.6.1.3	S/U	
EVALUATOR CUE If the examinee does not proceed to document the safety function determination on Attachment E, but did mark Y for application of TS 3.0.6 on the Answer Sheet, ask the examinee what the result of applying LOSF.				

9	**Documents** a Loss of Safety Function Determination per NDAP-QA-0312	Completes Attachment E of NDAP-QA-0312 as follows: • Records TS 3.6.1.3 MSIVs and MSL drains (or similar) as Supported Component or System • Records status of supported system as OPERABLE • Records status of opposite division of the supported system as OPERABLE (Optional) Records TS 3.6.1.3 as the LCO where a loss of safety function was evaluated	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?

REVISION SUMMARY

JOB PERFORMANCE MEASURE
00.AD.20933.101

Revision	Description/Purpose of Revision
0	New JPM
1	Revise for TQ procedures, minor editorial corrections

EVALUATOR COPY:

TASK CONDITIONS

Unit 1 is operating at 80 percent power

I&C is performing SI-183-312, Quarterly Calibration of Main Steam Line Pressure Channels PSL-B21-1N015A, B, C, D.

I&C notifies you that Pressure Switch PSL-B21-1N015C tripped at 838 psig. They were unable to adjust the setting, and it has failed their surveillance

INITIATING CUE

Determine system operability and take appropriate actions, including completing the required documentation

EXAMINEE COPY:

TASK CONDITIONS

Unit 1 is operating at 80 percent power

I&C is performing SI-183-312, Quarterly Calibration of Main Steam Line Pressure Channels PSL-B21-1N015A, B, C, D.

I&C notifies you that Pressure Switch PSL-B21-1N015C tripped at 838 psig. They were unable to adjust the setting, and it has failed their surveillance

INITIATING CUE

Determine system operability and take appropriate actions, including completing the required documentation

ANSWER KEY

Initiating Condition:	**PSL-B21-1N015C Inoperable**
Unit	**1**
TS/TR Number(s)	**TS 3.3.6.1**
Condition(s)	**A**
Condition Description(s)	**One or more required channels inoperable**
Entry Date/Time	**Today / now**
Action Statement Number(s)	**A.1**
Required Action(s)	**Place channel in trip**
TS/TR Completion Time	**24 hours**
Entry Date/Time	**Today / now**
Action Date/Time	**Tomorrow / now**
Chem/HP Sample Log Required	Y / **N**
Support System Invoking TS 3.0.6 LOSF Determination?	**Y** / N

ANSWER SHEET

Initiating Condition:	
Unit	
TS/TR Number(s)	
Condition(s)	
Condition Description(s)	
Entry Date/Time	
Action Statement Number(s)	
Required Action(s)	
TS/TR Completion Time	
Entry Date/Time	
Action Date/Time	
Chem/HP Sample Log Required	Y / N
Support System Invoking TS 3.0.6 LOSF Determination?	Y / N

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: **Activate the Fire Brigade**

JPM#: **00.AD.21022.101** Revision: **0** Date: **09/23/2016**

Applicability: ☒ RO ☒ SRO

Setting: **Simulator**

NUREG–1123 E/APE / Sys **Generic** K/A Number **2.4.27** K/A Importance **3.4/4.9**

Alternate Path: ☐ YES ☒ NO Time Critical ☐ YES ☒ NO Validation Time (min): **10**

Testing Method: ☐ Simulate ☒ Perform

Author:: _____ Date: 9/25/16

Operations Review: _____ Date: 9/26/16

Validated: _____ Date: 9/25/16

Approval: _____ Date: 9-27-16
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.21022.101

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. ON-013-001 Response To Fire, (rev. 45)

B. FP-013-132 Common Refueling Floor, (rev. 4)

C. AR-SP-002 pages 57, 70, (rev. 33)

D. OP-099-004, Station Alarm System (rev. 7)

III. TASK CONDITIONS

Unit 1 is in MODE 1 at 80% Power.
SIMPLEX fire alarms have been acknowledged in accordance with OP-013-002.
The following VALID SIMPLEX data print out is available:

FIRE DET X112_Z5 ALM
12:14 MON 06-DEC-10
818 U1 REFUEL FLOOR

FIRE DET X114_Z2 ALM
12:16 MON 06-DEC-10
818 U1 REFUEL FLOOR

An NPO confirms that a fire exists on Unit 1 Reactor Building 818'.

IV. INITIATING CUE

Activate the Fire Brigade and select the appropriate Pre-Fire Plan.

V. TASK STANDARD

Fire brigade activated in accordance with ON-013-001, "Response to Fire", and Pre-Fire Plan FP-013-132 selected.

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. Any IC can be used for simulator setup.

BOOTH OPERATOR CUE

When the evaluator indicates the examinee is ready to begin the JPM, 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 AR-SP-002.	S/U	
EVALUATOR NOTE: **The alarm response procedure identifies the Pre-Fire Plan FP-013-132**				
2	**Identifies** appropriate alarm response	Selects AR-SP-002, Fire Det X112_Z5 ALM,818 U1 Refuel Floor and Fire Det X114_Z2 ALM 818 U1 Refuel Floor	S/U	
3	**Enters** Off Normal Procedure	Obtains a copy of ON-013-001, Response to Fire and performs Attachment L, Fire Brigade Normal Response	S/U	
*4	**Dispatch** Fire Brigade Leader	Contact the Field Unit Supervisor as Fire Brigade Leader using the plant page or radio. AND Inform the Fire Brigade Leader a fire is confirmed in Unit 1 Reactor Building 818'	S/U	

*5	**Activate** Fire Brigade Pagers	Activate the Fire Brigade pagers using the central desk phone set by pressing blue button and lifting the handset for at least 45 seconds.	S/U	
*6	**Sound** Fire Alarm for ~10 seconds.	• Pull Out the Pistol Grip EVACUATION ALARM switch • Turn the Pistol Grip EVACUATION ALARM switch to PLANT ALARM • Place the SIREN TONE GENERATOR switch to FIRE (SIREN) • Push In the Pistol Grip EVACUATION ALARM switch to initiate the alarm • Pull Out the Pistol Grip EVACUATION ALARM switch to stop the alarm • **Turn** the Pistol Grip EVACUATION ALARM switch to the **OFF** position • Push In the Pistol Grip EVACUATION ALARM switch	S/U	
*7	**Make** plant page announcement	Key the plant page and announce: "ATTENTION ALL PERSONNEL: THERE IS A FIRE ON THE REFUEL FLOOR, REACTOR BUILDING ELEVATION 818'. STATION FIRE BRIGADE HAS BEEN ACTIVATED; STAY CLEAR OF AFFECTED AREAS."	S/U	Announcement should be repeated.

EVALUATOR CUE
Role-play as fire brigade leader. Inform the candidate you will be setting up the command post at Fire Brigade Shed #2 – Unit 2 Tool Room 676', and radio OPS Channel 1 will be used.

*8	**Directs** a Fire Brigade Member to take Pre-Fire plan for the applicable building to the Command Post	Designate one fire brigade member to take RB Pre-Fire Plan (FP-013-132) to the command post at Fire Brigade Shed #2 – Unit 2 Tool Room 676"	S/U	
9	**Inform** Security of fire and OPS radio channel being used	Contacts Security at extension 3114 or 3115 and inform them of the fire and the radio channel being used.	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?				

REVISION SUMMARY

JOB PERFORMANCE MEASURE
00.AD.21022.101

Revision	Description/Purpose of Revision
0	New JPM From LOC 26 JPM EPP-RO

EVALUATOR COPY:

TASK CONDITIONS

Unit 1 is in MODE 1
SIMPLEX fire alarms have been acknowledged in accordance with OP-013-002.
The following VALID SIMPLEX data print out is available:

FIRE DET X112_Z5 ALM
12:14 MON 06-DEC-10
818 U1 REFUEL FLOOR

FIRE DET X114_Z2 ALM
12:16 MON 06-DEC-10
818 U1 REFUEL FLOOR

An NPO confirms that a fire exists on Unit 1 Reactor Building 818'.

INITIATING CUE

Activate the Fire Brigade and select the appropriate Pre-Fire Plan.

EXAMINEE COPY:

TASK CONDITIONS

Unit 1 is in MODE 1
SIMPLEX fire alarms have been acknowledged in accordance with OP-013-002.
The following VALID SIMPLEX data print out is available:

FIRE DET X112_Z5 ALM
12:14 MON 06-DEC-10
818 U1 REFUEL FLOOR

FIRE DET X114_Z2 ALM
12:16 MON 06-DEC-10
818 U1 REFUEL FLOOR

An NPO confirms that a fire exists on Unit 1 Reactor Building 818'.

INITIATING CUE

Activate the Fire Brigade and select the appropriate Pre-Fire Plan.

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: **Classify an Emergency Condition and Complete Emergency Notification Report**

JPM#: **00.EP.1132.180** Revision: **2** Date: **09/23/2016**

Applicability: ☒ RO ☒ SRO

Setting: **Classroom**

NUREG–1123 E/APE / Sys **Generic** K/A Number **2.4.41** K/A Importance **2.4.41**

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

Testing Method: ☐ Simulate ☒ Perform

Author:: _____ Date: 9/26/16

Operations Review: _____ Date: 9/26/16

Validated: _____ Date: 9/26/16

Approval: _____ Date: 9-27-16
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.EP.1132.180

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 34)

B. EP-RM-004, EAL CLASSIFICATION BASES (Revision 9)

C. EP-PS-001, EMERGENCY PLANNING FORMS AND SUPPLEMENTARY INSTRUCTIONS (Revision 11)

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 provided on the cue sheet.

IV. INITIATING CUE

Make the initial emergency classification and as Emergency Director complete any associated notification form(s) in accordance with the applicable procedures for activation of the Emergency Plan.

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: • 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: • Refers to ENR Form under Att J and IF necessary EP–PS-001-4 for instructions on filling out the form • Records CR-1 as the control # • 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: • Places checkmark in the correct event box • Places checkmark in the correct unit box • Records declaration time and date • Places checkmark in INITIAL DECLARATION box	S/U	
10	Completes Line 4 of the ENR	Performs the following: • Records EAL in Classification Description • Records a brief non–technical description of EAL or applies appropriate sticker marked-up to reflect actual event	S/U	

*11	Completes Line 5 of the ENR	Performs the following: • Refers to EP-PS-001-48 Att. QQ 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	
*12	Completes Lines 6 and 7 of the ENR	Performs the following: • Records wind direction, wind speed. • Places checkmark in THIS IS A DRILL box	S/U	
*13	Approves the ENR.	Signs the ENR and records the current date and time.	S/U	
14	Provides the ENR to the Emergency Plan Communicator.	Performs the following: • 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?				

REVISION SUMMARY

JOB PERFORMANCE MEASURE
00.EP.1132.180

Revision	Description/Purpose of Revision
0	New JPM
1	Minor editorial changes
2	Updated references and individual scenario task conditions to accommodate the LOC 28 NRC exam.

EVALUATOR – SCENARIO 1

TASK CONDITIONS

Unit 1 was at 95% power

Unit 1 was manually scrammed resulting in an ATWS.

Unit 1 experienced the following conditions:

- EO-000-113 actions are being performed
- Standby Liquid Control is injecting
- ES-158-002 has been dispatched, rods are being inserted manually

INITIATING CUE

Make the initial emergency classification and as Emergency Director complete any associated notification form(s) in accordance with the applicable procedures for activation of the Emergency Plan.

EXAMINEE – SCENARIO 1

TASK CONDITIONS

Unit 1 was at 95% power

Unit 1 was manually scrammed resulting in an ATWS.

Unit 1 experienced the following conditions:

- EO-000-113 actions are being performed
- Standby Liquid Control is injecting
- ES-158-002 has been dispatched, rods are being inserted manually

INITIATING CUE

Make the initial emergency classification and as Emergency Director complete any associated notification form(s) in accordance with the applicable procedures for activation of the Emergency Plan.

EVALUATOR – SCENARIO 2

TASK CONDITIONS

Unit 1 Reactor Power was approximately 80% during a startup

A manual scram is inserted due to a low level condition

Unit 1 experienced the following conditions:

- Loss of Offsite Power
- RPV pressure and level are being maintained by SRVs and RCIC.
- A small RCS leak develops in the drywell
- RPV level goes below TAF
- ADS fails to initiate
- Emergency Depressurization is performed
- Manual initiation of ECCS systems required due to a failure to auto initiate

INITIATING CUE

Make the initial emergency classification and as Emergency Director complete any associated notification form(s) in accordance with the applicable procedures for activation of the Emergency Plan.

EXAMINEE – SCENARIO 2

TASK CONDITIONS

Unit 1 Reactor Power was approximately 80% during a startup

A manual scram is inserted due to a low level condition

Unit 1 experienced the following conditions:

- Loss of Offsite Power
- RPV pressure and level are being maintained by SRVs and RCIC.
- A small RCS leak develops in the drywell
- RPV level goes below TAF
- ADS fails to initiate
- Emergency Depressurization is performed
- Manual initiation of ECCS systems required due to a failure to auto initiate

INITIATING CUE

Make the initial emergency classification and as Emergency Director complete any associated notification form(s) in accordance with the applicable procedures for activation of the Emergency Plan.

EVALUATOR – SCENARIO 3

TASK CONDITIONS

Unit 1 Reactor Power was approximately 33%.

A shutdown was in progress for an unplanned maintenance outage

Unit 1 experienced the following conditions:

- A loss of ESS Bus 1C occurred
- A manual scram is inserted due to a leak in the drywell resulting in an ATWS
- ARI is initiated, drifting rods in.
- SDV drains fail to close.
- Rad levels in the CRD HCU area and RCIC room rad levels exceed Max Safe levels
- Emergency depressurization is conducted

INITIATING CUE

Make the initial emergency classification and as Emergency Director complete any associated notification form(s) in accordance with the applicable procedures for activation of the Emergency Plan.

EXAMINEE – SCENARIO 3

TASK CONDITIONS

Unit 1 Reactor Power was approximately 33%.

A shutdown was in progress for an unplanned maintenance outage

Unit 1 experienced the following conditions:

- A loss of ESS Bus 1C occurred
- A manual scram is inserted due to a leak in the drywell resulting in an ATWS
- ARI is initiated, drifting rods in.
- SDV drains fail to close.
- Rad levels in the CRD HCU area and RCIC room rad levels exceed Max Safe levels
- Emergency depressurization is conducted

INITIATING CUE

Make the initial emergency classification and as Emergency Director complete any associated notification form(s) in accordance with the applicable procedures for activation of the Emergency Plan.

EVALUATOR – SCENARIO 4

TASK CONDITIONS

Unit 1 Reactor Power was approximately 90%

A small steam leak developed in the drywell

Unit 1 experienced the following conditions:

- A manual scram is inserted
- Plant Aux load shed occurs
- RPV level is maintained using HPCI
- Suppression chamber and Drywell sprays are in service
- RPV flooding is required due to erratic pressure instruments
- Level is steady at +30" prior to the loss of level indication

INITIATING CUE

Make the initial emergency classification and as Emergency Director complete any associated notification form(s) in accordance with the applicable procedures for activation of the Emergency Plan.

EXAMINEE – SCENARIO 4

TASK CONDITIONS

Unit 1 Reactor Power was approximately 90%

A small steam leak developed in the drywell

Unit 1 experienced the following conditions:

- A manual scram is inserted
- Plant Aux load shed occurs
- RPV level is maintained using HPCI
- Suppression chamber and Drywell sprays are in service
- RPV flooding is required due to erratic pressure instruments
- Level is steady at +30" prior to the loss of level indication

INITIATING CUE

Make the initial emergency classification and as Emergency Director complete any associated notification form(s) in accordance with the applicable procedures for activation of the Emergency Plan.

JPM KEY

Scenario	Classification	EAL	Release
1	SAE	MS3	No
2	SAE	FS1	No
3	SAE	FS1	Yes
4	Alert	FA1	No

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: **Determine LCO Applicability to Bypass Secondary Containment Zone 2 Isolation**

JPM#: **34.OP.21505.201** Revision: **0** Date: **09/26/2016**

Applicability: ☒ SRO

Setting: **Classroom**

NUREG–1123 E/APE / Sys **Generic** K/A Number **2.3.13** K/A Importance **3.8**

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

Testing Method: ☐ Simulate ☒ Perform

Author:: _____ Date: 9/26/16

Operations Review: _____ Date: 9/29/16

Validated: _____ Date: 9/26/16

Approval: _____ Date: 9.29.16
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.OP.21505.201

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 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-234-002, Reactor Building HVAC Zones 2 and 3 (Rev. 15)
B. NDAP-QA-0321, Secondary Containment Integrity Control (Rev. 13)

III. TASK CONDITIONS

A. Unit 2 is shutdown.

B. All rods were inserted 4 hours ago.

C. Plant cool down and equipment shutdown are in progress in preparation for start of a refueling outage.

D. C RHR Pump is in service in Shutdown Cooling.

E. A and B ESW pumps and 2A RHRSW Pump is in service providing cooling to the RHR system.

R. Reactor coolant temperature is 194°F and lowering.

G. Cask Storage Gates are removed.

H. All other equipment is operable.

I. I & C has requested the Secondary Containment Zone 2 Isolation bypassed to support work.

IV. INITIATING CUE

Determine the ability to bypass the Secondary Containment Zone 2 Isolation. Record your findings, including any applicable references. Document your approval / disapproval of the request. Specify actions required for bypass.

V. TASK STANDARD

Candidate determines Unit 2 Tech Spec 3.6.4.1 is Not Applicable to Mode 4, and may continue with Bypass of Secondary Containment Isolation signal for Zone 2. Candidate authorizes bypassing the Zone 2 Isolation IAW OP-234-002 and NDAP-QA-0321.

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 may be performed in the classroom.
- Ensure the following material is available; OP-234-002, NDAP-QA-0321, and Tech Specs

EVALUATOR CUE

Record JPM start time: _____

Step	Action	Standard	Eval	Comments
1	**Obtain** a controlled copy of the procedure	Obtains a controlled copy of the applicable procedure(s).	S / U	
2	**Selects** the correct section to perform	Selects: • OP-234-002 section 2.12 and/or • NDAP-QA-0321 section 6.4 and/or • Technical Specification 3.6.4.1/3.6.4.2.	S / U	
3	**Review** NDAP-QA-0321 section 6.4	Determines nothing in NDAP-QA-0321 prohibits bypassing the Secondary Containment Zone 2 Isolation. Determines OP-234-002 and Technical Specifications should be referenced.	S / U	
4	**Review** OP-234-002 section 2.12	Determines must evaluate Technical Specifications 3.6.4.1 and 3.6.4.2.	S / U	

EVALUATOR NOTE

Candidate may refer to TRO 3.7.10 which addresses cross-tying the Fuel Pools.
Candidate may also initially refer to GO-200-006 regarding the precautions for SC Integrity.

*5	**Evaluate** Unit 2 Tech Spec 3.6.4.1.	Determines plant is currently in Mode 4. Review Technical Specification 3.6.4.1 and determines operability of Secondary Containment is NOT required in Mode 4. Determines irradiated fuel movement and OPDRVs are not in progress based on initial conditions. Determines Technical Specification 3.6.4.1 allows bypassing of Secondary Containment Zone 2 Isolation in present plant conditions.	S / U	
EVALUATOR NOTE / CUE If asked about irradiated fuel movement, inform candidate that no irradiated fuel movement is in progress.				
EVALUATOR NOTE / CUE If asked about OPDRVs, inform candidate that no OPDRVs are in progress.				
*6	**Evaluate** Unit 2 Tech Spec 3.6.4.2.	Determines plant is in currently in Mode 4. Determines Secondary Containment Isolation Valve operability is NOT required in Mode 4. Determines irradiated fuel movement and OPDRVs are not in progress based on initial conditions. Determines Technical Specification 3.6.4.2 allows bypassing of Secondary Containment Zone 2 Isolation in present plant conditions	S / U	
EVALUATOR CUE If asked about irradiated fuel movement, inform candidate that no irradiated fuel movement is in progress.				

EVALUATOR CUE If asked about OPDRVs, inform candidate that no OPDRVs are in progress.				
EVALUATOR CUE If asked about release paperwork (OP-234-002 Att J), inform candidate that OP-234-002 Attachment J has been completed and is being maintained by the Operations Outage Manager (OOM).				
*7	**Complete** OP-234-002 Attachment F	Indicates need to fill out OP-234-002 Attachment F and indicates they would direct an operator to complete it. Indicates that after this form is completed, they would authorize isolation bypass.	S / U	
EVALUATOR NOTE Provide a blank copy of OP-234-002 Attachment F upon request.				
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
34.OP.21505.201

Revision	Description/Purpose of Revision
0	New JPM, Revised from 34.OP.2683.201
1	

EVALUATOR COPY:

TASK CONDITIONS

A. Unit 2 is shutdown.

B. All rods were inserted 4 hours ago.

C. Plant cool down and equipment shutdown are in progress in preparation for start of a refueling outage.

D. C RHR Pump is in service in Shutdown Cooling.

E. A and B ESW pumps and 2A RHRSW Pump is in service providing cooling to the RHR system.

R. Reactor coolant temperature is 194°F and lowering.

G. Cask Storage Gates are removed.

H. All other equipment is operable.

I. I & C has requested the Secondary Containment Zone 2 Isolation bypassed to support work.

INITIATING CUE

Determine the ability to bypass the Secondary Containment Zone 2 Isolation. Record your findings, including any applicable references. Document your approval / disapproval of the request. Specify actions required for bypass.

EXAMINEE COPY:

TASK CONDITIONS

A. Unit 2 is shutdown.

B. All rods were inserted 4 hours ago.

C. Plant cool down and equipment shutdown are in progress in preparation for start of a refueling outage.

D. C RHR Pump is in service in Shutdown Cooling.

E. A and B ESW pumps and 2A RHRSW Pump is in service providing cooling to the RHR system.

R. Reactor coolant temperature is 194°F and lowering.

G. Cask Storage Gates are removed.

H. All other equipment is operable.

I. I & C has requested the Secondary Containment Zone 2 Isolation bypassed to support work.

INITIATING CUE

Determine the ability to bypass the Secondary Containment Zone 2 Isolation. Record your findings, including any applicable references. Document your approval / disapproval of the request. Specify actions required for bypass.

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: **Reset Recirculation Pump Limiter #2 Runback, RRP B Runout**

JPM#: **64.ON.67049.101** Revision:**0** Date:**07/07/2016**

Applicability: ☒ RO ☒ SRO

Setting: **Simulator**

NUREG–1123 E/APE / Sys **202002** K/A Number **A2.05** K/A Importance **3.8/4.0**

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

Testing Method: ☐ Simulate ☒ Perform

Author::**Greg van den Berg** Date: **07/07/2016**

Operations Review: _____ Date: 9/29/16

Validated: _____ Date: 9/26/16

Approval: _____ Date: 9.29.16
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
64.ON.67049.101

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. ON-RECIRC-101, Reactor Recirculation Malfunction (Rev. 1)
B. AOP-164-001, Reactor Recirculation Abnormal Operating Procedure (Rev. 0)

III. TASK CONDITIONS

Unit 1 is in Mode 1.

A trip of Condensate Pump 1D has caused a Reactor Recirculation runback to occur.

ON-RECIRC-101, Reactor Recirculation Malfunction, has been completed up to step C.18.d.

A Critical Brief has been performed

1D Condensate Pump has been restored.

IV. INITIATING CUE

Reset the Recirculation Pump limiter #2 runback for both Recirculation Pumps in accordance with AOP-164-001, Attachment B.

V. TASK STANDARD

Recirc LIM2 runback is reset for Reactor Recirc Pump 1A and 1B.

SIMULATOR SETUP INSTRUCTIONS
JOB PERFORMANCE MEASURE
64.ON.67049.101

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.

- Reset the simulator to an exam-specific IC if prepared.
- Configure an exam-specific IC as follows:
  - Reset to IC-18
  - Perform the following expert command to trip Condensate Pump D:
    IOR diHS10510D f:STOP
- Place the simulator in RUN.
- Allow plant conditions to stabilize.
- Perform actions of ON-RECIRC-101 through step C.14
- Perform the following expert command to delete the Condensate Pump D trip malfunction: DOR diHS10510D f:START
- Restart Condensate Pump 1D
- Perform the following expert command to load RRP A(B) speed as a Monitored Parameter
  insmp rrn1p401a
  insmp rrn1p401b

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	**Verifies** AOP-164-001 Att. B is the controlling document.	Controlled copy of AOP-164-001 obtained, select Att. B.	S / U	
2	**Verifies** Condenser Pressure is <5.5" HgA.	Verifies Condenser Pressure is <5.5" HgA at panel 1C668B	S / U	
3	**Determines** RFP(s) indicated flow.	• Observe Feedwater flow on the Feedwater Flow Overview. • Determines that RFP discharge flows are all <0.9Mlbm/hr (>16.4%).	S / U	
4	**Ensures** associated IND RFP FLOW < 16.4% Limiter # 2 Input(s) to Rx Recirc Runback Circuit is ENABLED.	• On the RRP A HMI screen, determines IND FLOW <16.4% is ENABLED. • On the RRP B HMI screen, determines IND FLOW <16.4% is ENABLED.	S / U	

EVALUATOR NOTE

The Limiter #2 RESET buttons will not become active until Controller Output indication is ≤ 27.10% and initiating condition has cleared (with the exception of CWP Trip/High Condenser Pressure and/or Condensate Pump trips).

5	**Ensure** a Critical Brief has been conducted	Verifies initial conditions state that the Critical Brief has been conducted.	S / U	

6*	**RESET** Limiter #2 Runback on 'A' Reactor Recirculation Pump	Performs the following:
		• **VERIFY** SY-B31-1R621A % Controller Output Signal is approximately 27.10%.
		• ***TOUCH** DEC button RECIRC PUMP 1A SPEED SY-B31-1R621A Controller
		• **Observes** a change in the following:
		  ○ Lowering of Gen 1A Speed or on SI 14032A (TRA036)
		  ○ Lowering of Gen 1A Demand, on XI 14032A (TRA040)
		  ○ Lowering of Scoop Tube 1A Position (TRA044)
		  ○ Lowering of Loop 1A Drive Flow (APMF01)
		• **OBSERVE** HS-B31-1S12A RX RECIRC LIMITER #2 (48%) RUNBACK RESET button is ACTIVE
			S / U	

EVALUATOR NOTE One minute time delay allows for Scoop Tube Positioner to make the final (0.111%) position adjustment				
7*	**Depress** the RX RECIRC LIMITER #2 (48%) RUNBACK RESET button.	***TOUCH** HS-B31-1S12A RX RECIRC LIMITER #2 (48%) RUNBACK RESET button AND ***TOUCH** RESET LIMITER #2 button	S / U	
8	**Monitor** Recirc Pump A speed.	Observe GEN 1A SPEED SI-14032A remains steady.		

9	**Observes** Recirc Pump A LIM2 runback resets.	Observe the following: • # 2 LIMITER INITIATED status block background changes from RED to GRAY • AR-102-C01 annunciator clears	S / U	

10*	**RESET** Limiter #2 Runback on 'B' Reactor Recirculation Pump	Performs the following:
		• **VERIFY** SY-B31-1R621B % Controller Output Signal is approximately 26.90%.
		• ***TOUCH** DEC button RECIRC PUMP 1A SPEED SY-B31-1R621B Controller
		• **Observes** a change in the following:
		  ○ Lowering of Gen 1A Speed or on SI 14032A (TRA037)
		  ○ Lowering of Gen 1A Demand, on XI 14032A (TRA041)
		  ○ Lowering of Scoop Tube 1A Position (TRA045)
		  ○ Lowering of Loop 1A Drive Flow (APMF02)
		OBSERVE HS-B31-1S12B RX RECIRC LIMITER #2 (48%) RUNBACK RESET button is ACTIVE
			S / U	

EVALUATOR NOTE One minute time delay allows for Scoop Tube Positioner to make the final (0.111%) position adjustment				

11*	**Depress** the RX RECIRC LIMITER #2 (48%) RUNBACK RESET button.	***TOUCH** HS-B31-1S12B RX RECIRC LIMITER #2 (48%) RUNBACK RESET button AND ***TOUCH** RESET LIMITER #2 button	S / U	
12	**Monitor** Recirc Pump B speed.	Observe GEN 1B SPEED SI-14032B is raising.	S / U	
13	**Observes** Recirc Pump B LIM2 runback resets.	Observe the following: • # 2 LIMITER INITIATED status block background changes from RED to GRAY • AR-102-C04 annunciator clears		

14*	**RESET** Limiter #2 Runback on 'B' Reactor Recirculation Pump	Performs the following:
		• **VERIFY** SY-B31-1R621B % Controller Output Signal is approximately 26.90%.
		• ***TOUCH** DEC button RECIRC PUMP 1A SPEED SY-B31-1R621B Controller
		• **Observes** a change in the following:
		  ○ Lowering of Gen 1A Speed or on SI 14032A (TRA037)
		  ○ Lowering of Gen 1A Demand, on XI 14032A (TRA041)
		  ○ Lowering of Scoop Tube 1A Position (TRA045)
		  ○ Lowering of Loop 1A Drive Flow (APMF02)
		• **OBSERVE** HS-B31-1S12B RX RECIRC LIMITER #2 (48%) RUNBACK RESET button is ACTIVE		

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
64.ON.67049.101

Revision	Description/Purpose of Revision
0	New JPM
1	This JPM was created by modifying 64.ON.2131.151.

EVALUATOR COPY:

TASK CONDITIONS

Unit 1 is in Mode 1.

A trip of Condensate Pump 1D has caused a Reactor Recirculation runback to occur.

ON-RECIRC-101, Reactor Recirculation Malfunction, has been completed up to step C.18.d.

A Critical Brief has been performed

1D Condensate Pump has been restored

INITIATING CUE

Reset the Recirculation Pump limiter #2 runback for both Recirculation Pumps in accordance with AOP-164-001, Attachment B.

EXAMINEE COPY:

TASK CONDITIONS

Unit 1 is in Mode 1.

A trip of Condensate Pump 1D has caused a Reactor Recirculation runback to occur.

ON-RECIRC-101, Reactor Recirculation Malfunction, has been completed up to step C.18.d.

A Critical Brief has been performed

1D Condensate Pump has been restored

INITIATING CUE

Reset the Recirculation Pump limiter #2 runback for both Recirculation Pumps in accordance with AOP-164-001, Attachment B.

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: **Implement RFP Post Scram Recovery**

JPM#: **45.OP.21388.102** Revision: **1** Date: **7/27/2016**

Applicability: ☒ RO ☒ SRO

Setting: **Simulator**

NUREG–1123 E/APE / Sys **259001** K/A Number **A3.07** K/A Importance **3.2 / 3.2**

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

Testing Method: ☐ Simulate ☒ Perform

Author:: _____ Date: 9/25/16

Operations Review: _____ Date: 9/26/16

Validated: _____ Date: 9/25/16

Approval: _____ Date: 9.29.16
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.21388.102

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 (Rev. 84)

III. TASK CONDITIONS

Unit 1 scrammed from approximately 70 percent power.

All 3 RFPs tripped on a spurious high RPV level signal following the scram.

RPV level is being maintained at approximately -5" using RCIC and CRD

IV. INITIATING CUE

Restart a RFP and maintain RPV level -40" to -50".

V. TASK STANDARD

Places a RFP in–service in Discharge Pressure Mode and establishes a rising RPV level trend by injection through the HV-10641

SIMULATOR SETUP INSTRUCTIONS
JOB PERFORMANCE MEASURE
45.OP.21388.102

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. Configure an exam–specific IC as follows

   - Reset to IC-20
   - Insert a recirc LIM2 runback, allow to stabilize
   - Place mode switch to Shutdown
   - Trip all 3 Feed Pumps
   - Insert NI's
   - Verify RCIC initiates (or initiate and return collar to not armed)
   - Stabilizes RPV level at approximately -45"
   - Trip 2 Condensate Pumps (to prevent condensate pump damage)
   - Reset Generator Lockouts
   - Override AR-108-E02

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.

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.

BOOTH OPERATOR CUE

Adjust the RCIC flow controller setpoint to maintain RPV water level -60" to -50" during performance of the JPM.

Step	Action	Standard	Eval	Comments
1	**Verifies** OP–145–001 Attachment B is governing procedure and obtains controlled copy.	Controlled copy of OP–145–001 obtained, select Attachment B.	S / U	
EVALUATOR NOTE The following step is critical only if more than two Condensate Pumps are running. This step is not required to be performed for successful completion of the JPM if only two Condensate Pumps are running in the simulator IC.				
2*	**Stops** 2 Condensate Pumps.	Depress 1P102A(B)(C)(D), CONDENSATE PUMP, STOP PB as necessary to leave 2 Condensate Pumps running.	S / U	
2	**Ensures** all HV–10603A(B)(C) RFP A(B)(C) Discharge Iso Vlv closed.	Observe HV–10603A(B)(C) RFP A(B)(C) DISCHARGE ISO VLV indicate full closed.	S / U	
3	**Ensures** all HV–10651A(B)(C) RFP A(B)(C) Startup Iso Vlv closed.	Observe HV–10651A(B)(C) RFP A(B)(C) STARTUP ISO VLV indicate full closed.	S / U	

4	**Ensures** controller LIC–C32–1R602, FW Lo Load Demand Signal to LV–10641, in MANUAL and 0 percent output.	On controller LIC–C32–1R602, FW LO LOAD DEMAND SIGNAL TO LV–10641, perform the following: • Depress MAN PB • Depress single- or double-DEC PB until % CONTROLLER OUTPUT indicates 0 percent	S / U	
5	**Ensures** 2 NR RPV level instruments indicate <54" on FW HMI.	Observe any 2 of NAR RNG A(B)(C) indicate less <54".	S / U	
6*	**Open** RFPT A(B)(C) steam supply isolation valves.	At 1C668, depress RFPT A(B)(C) LP ISO HV–12709A(B)(C) OPEN PB.	S / U	
EVALUATOR NOTE The RESET A(B)(C) RFPT TRIP PB must be depressed for approximately 5 seconds to reset the RFPT.				
7*	**Reset** RFPT A(B)(C) trip.	Perform the following: • Select RFP_A(B)(C) screen • Depress A(B)(C) RFPT TRIPPED PB • On overlay HS-12745A2(B2)(C2), RFPT A(B)(C) TRIP RESET SWITCH, depress RESET PB • Depress ENABLE RESET PB • Depress and hold RESET A(B)(C) RFPT TRIP PB until RFP A(B)(C) icon indicates Reset	S / U	
8*	**Places** RFPT A(B)(C) valve control in AUTO	Depress the A(B)(C) RFPT AUTO VLV CTL PB and observes it backlit YELLOW.	S / U	

*9	**Places** RFPT A(B)(C) in Idle mode.	Perform the following: • Observe controller FIC–10604A(B)(C) RX FEED PUMP A(B)(C) RECIRC FLOW in AUTO • *Depress A(B)(C) IDLE MODE PB and then depress IDLE MODE PB • On controller FIC-10604A(B)(C), RX FEED PUMP A RECIRC FLOW, depress the MAN PB and then the single- and double-chevron INC PB as necessary to raise RFP flow as indicated on FI-10604A, RFP FLOW, > 600 gpm • *When RFP A(B)(C) recirc flow indicates > 600 gpm, depress 1,000 RPMS PB • On controller FIC-10604A(B)(C), RX FEED PUMP A RECIRC FLOW, depress the AUTO PB	S / U	
10*	**Stops** RFP A turning gear when RFPT A speed is > 100 rpm and then returns to AUTO.	Observe RFPT A turning gear is OFF and in AUTO.	S / U	
11*	**Places** RFPT A(B)(C) in Discharge Pressure Mode.	Perform the following: • Selects RFP_A(B)(C) screen • *Depress the A(B)(C) RFPT DSCH PRESS MODE PB AND then depresses the INITIATE DSH PRSS MODE PB • After 30 seconds, observe A(B)(C) RFPT DSCH PRESS MODE PB YELLOW • Observe HV–10651A(B)(C) stroke FULL OPEN • Observe RFP A(B)(C) pressure rise approximately 120 psig above reactor pressure.	S / U	

EVALUATOR CUE It is required to raise RFP A discharge pressure for DPM per Step 17 of the hard card. (Only needed for time compression, if cue not given skip step 13)				
12*	**Establishes** RFPT A(B)(C) discharge pressure for DPM.	On controller SIC-C32-1R601A(B)(C) RFP A(B)(C) SPD CTL/DEMAND SIGNAL perform the following: • Depress MAN PB • Depress single- and/or double-chevron INC and DEC PB as necessary to obtain approximately 55% on SPD DMD (STPT) • Depress AUTO PB	S / U	
13*	**Adjusts** LV-10641 FW LO LOAD VALVE LIC-C32-1R602 controller to slowly raise reactor water level.	Perform the following on controller LIC-C32-1R602 FW LO LOAD VALVE • Depress single- and double-chevron INC PB as necessary to raise controller output to desired level	S / U	
EVALUATOR CUE When flow is indicated from RFP A, inform the examinee RCIC has been secured and that the examinee has control of RPV level.			S / U	
BOOTH OPERATOR CUE When flow is indicated from RFP A, place the RCIC flow controller to manual at 0 percent output.			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?				

REVISION SUMMARY

JOB PERFORMANCE MEASURE
45.OP.21388.102

Revision	Description/Purpose of Revision
0	New JPM
1	Revised to modify faulted JPM 45.OP.4677.152. This revision eliminates the faulted aspect of the JPM. A JPM without a fault could not be found for this task, therefore this is a modified JPM.

EVALUATOR COPY:

TASK CONDITIONS

Unit 1 scrammed from approximately 70 percent power.

All 3 RFPs tripped on a spurious high RPV level signal following the scram.

RPV level is being maintained at approximately -50" using RCIC and CRD

INITIATING CUE

Restart a RFP and restore RPV level -40" to -50".

EXAMINEE COPY:

TASK CONDITIONS

Unit 1 scrammed from approximately 70 percent power.

All 3 RFPs tripped on a spurious high RPV level signal following the scram.

RPV level is being maintained at approximately -50" using RCIC and CRD

INITIATING CUE

Restart a RFP and restore RPV level -40" to -50".

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: **Open MSIVs During Reactor Startup (All Rods In)**

JPM#: **84.OP.24667.151** Revision:**1** Date:**07/07/2016**

Applicability: ☒ RO ☒ SRO

Setting: **Simulator**

NUREG–1123 E/APE / Sys**239001** K/A Number **A4.01** K/A Importance **4.2**

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

Testing Method: ☐ Simulate ☒ Perform

Author::**Greg van den Berg** Date: **07/07/2016**

Operations Review: _____ Date: 9/26/16

Validated: _____ Date: 9/25/16

Approval: _____ Date: 9.29.16
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
84.OP.24667.151

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-100-002, Plant Startup, Heatup and Power Operations (Rev 105)

B. OP-184-001, Main Steam System (Rev 37)

C. ON-193-001, Turbine EHC System Malfunction (Rev 24)

III. TASK CONDITIONS

Unit 1 startup is in progress in accordance with GO-100-002.

The reactor is at the POAH.

Reactor startup will continue after the MSIVs are open.

Reactor pressure is 10 psig and reactor coolant temperature is 240 °F.

The operator will perform all control room actions.

IV. INITIATING CUE

Open the MSIVs per OP-184-001 Section 2.3.

V. TASK STANDARD

Open MSIVs for reactor startup. Close the MSIV's when the turbine bypass valves fail open.

SIMULATOR SETUP INSTRUCTIONS
JOB PERFORMANCE MEASURE
84.OP.24667.151

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 a hot startup IC at POAH. Scram the reactor and then reset the scram. Establish reactor pressure and stabilize no higher than 10 psig.

2. **Run** scenario file EVAL84OP24667151.scn

```
;Overides alarm horns on oc653 and 1c668
IOR do0C653HRN1 f:OFF
IOR do0C653HRN2 f:OFF
IOR do1C668HRN f:OFF

;Fails A EHC PT to 1000 psig
;Cause all the BPVs to open
{Key[1]} IMF mfTC193002A f:1000
```

3. **Other** Adjust RWCU blowdown flow if necessary to stabilize reactor level at approximately 35" and place the RWCU blowdown flow controller back to AUTO.

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.

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.	Refers to OP-184-001 Section 2.3. Obtains controlled copy of OP-184-001 and selects section 2.3.	S / U	
*2	**Reset** Main Steam Line Isolation logic	Performs the following • **Ensure** All MSIV control switches in CLOSE position • **Reset** Main Steam Line Isolation by Depressing Mn Stm Line Div 1 Iso Reset HS B21 1S32 push button. • **Reset** Main Steam Line Isolation by Depressing Mn Stm Line Div 2 Iso Reset HS B21 1S33 push button.	S / U	
3	**Enters** TRO 3.8.2.1	Informs Unit Supervisor to take TRO 3.8.2.1.	S / U	
EVALUATOR CUE TRO 3.8.2.1 taken.				

4	**Place** MOV overloads in service.	Performs the following: • Place AC MOV OL BYPS HS-B21-1S37A Keyswitch to TEST Position. • Place DC MOV OL BYPS HS-B21-1S37B Keyswitch to TEST Position.	S / U	

*5	**Open** outboard MSIVs	Performs the following:
		• Place Mn Stm Line A OB Iso HV-141-F028A control switch to AUTO.
		• Place Mn Stm Line B, OB Iso HV-141-F028B, control switch to AUTO.
		• Place Mn Stm Line C, OB Iso HV-141-F028C, control switch to AUTO.
		• Place Mn Stm Line D, OB Iso HV-141-F028D, control switch to AUTO.
		• Check Outboard MSIV OPENS by observing Red indicating light ILLUMINATED.
		  ○ HV-141-F028A OPEN
		  ○ HV-141-F028B OPEN
		  ○ HV-141-F028C OPEN
		  ○ HV-141-F028D OPEN
			S / U	

6	**Open** Main Steam Line Drains	Open following Main Steam Line Drain Valves: • Mn Stm Line IB Drain HV-141-F016 • Main Stm Line OB Drain HV-141-F019	S / U	

7	**Bypass** MOV overloads	WAIT 2 minutes, THEN: • Place AC MOV OL BYPS HS-B21-1S37A Keyswitch to NORM position • Place DC MOV OL BYPS HS-B21-1S37B Keyswitch to NORM position	S / U	
8	**Drain** Main Steam lines	Performs the following: • Jog Open Mn Stm Line Drain To Cdsr HV-141-F021. • AFTER 1 minute, Close Mn Stm Line Drain To Cdsr HV-141-F021. • Open Mn Steam Line Warmup HV-141F020.	S / U	
*9	**Open** Inboard MSIVs	Performs the following • Place in MANUAL LV-10641 FW STARTUP CONTROL VLV. • *Open Inboard MSIV by Placing Mn Stm Line A IB Iso HV-141-F022A control switch to AUTO. • WHEN power, pressure, level stabilizes THEN Open Inboard MSIV's as follows: o *Place Mn Stm Line B, IB Iso HV-141-F022B, control switch to AUTO. o *Place Mn Stm Line C, IB Iso HV-141-F022C, control switch to AUTO. o *Place Mn Stm Line D, IB Iso HV-141-F022D, control switch to AUTO. Check each Inboard MSIV OPENS by observing Red indicating light ILLUMINATED.	S / U	

FAULT STATEMENT **AFTER THE LAST INBOARD MSIV HAS BEEN OPENED, THE "A" EHC PRESSURE TRANSMITTER OUTPUT WILL FAIL TO 1000 PSIG WHICH WILL CAUSE ALL THE TURBINE BYPASS VALVES TO OPEN AND DEPRESSURIZE THE REACTOR.**				
BOOTH OPERATOR CUE **After** the last inboard MSIV has been opened, **depress Key 1** to initiate bypass valves opening due to failure of the 'A' EHC pressure transmitter.				
10	**Recognize** EHC malfunction	Observes the following: • Alarm - MAIN TURBINE BYPASS VALVES OPEN (AR 105 I06) • All turbine bypass valves open • Reactor pressure lowering	S / U	
EVALUATOR NOTE Due to the failure of the EHC system to automatically control reactor pressure, the operators are authorized to close MSIVs without a procedure reference in order to mitigate the effects of the failure. ON-193-001step 3.7 provides procedural direction to close MSIVs and scram the reactor if the reactor is startup and <861 psig.				
11	**Scram** the Reactor	Places the Mode Switch to Shutdown	S / U	

*12	**Close** MSIV's.	Prior to reactor pressure going below 0 psig, close MSIV's and drains by performing the following: • Place MN STM Line A, OB ISO HV 141 F028A, Control Switch to CLOSE. • Place MN STM Line B OB ISO HV 141 F028B Control Switch to CLOSE. • Place MN STM Line C, OB ISO HV 141 F028C, Control Switch to CLOSE. • Place MN STM Line D OB ISO HV 141 F028D, Control Switch to CLOSE. • Place MN STM Line A IB ISO HV 141 F022A Control Switch to CLOSE. • Place MN STM Line B IB ISO HV 141 F022B Control Switch to CLOSE. • Place MN STM Line C IB ISO HV 141 F022C Control Switch to CLOSE. • Place MN STM Line D IB ISO HV 141 F022D Control Switch to CLOSE. • Check Inboard MSIV Opens by Observing Red Indicating Light ILLUMINATED.	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?				

REVISION SUMMARY

JOB PERFORMANCE MEASURE
84.OP.24667.151

Revision	Description/Purpose of Revision
0	New JPM
1	JPM revised to incorporated referenced document revisions. Also, revised to put JPM in the new format.

EVALUATOR COPY:

TASK CONDITIONS

Unit 1 startup is in progress in accordance with GO-100-002.

The reactor is at the POAH.

Reactor startup will continue after the MSIVs are open.

Reactor pressure is 10 psig and reactor coolant temperature is 240 °F.

The operator will perform all control room actions.

INITIATING CUE

Open the MSIVs per OP-184-001 Section 2.3.

EXAMINEE COPY:

TASK CONDITIONS

Unit 1 startup is in progress in accordance with GO-100-002.

The reactor is at the POAH.

Reactor startup will continue after the MSIVs are open.

Reactor pressure is 10 psig and reactor coolant temperature is 240 °F.

The operator will perform all control room actions.

INITIATING CUE

Open the MSIVs per OP-184-001 Section 2.3.

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: **Shutdown Cooling Temperature Control**

JPM#: **49.ON.20294.151** Revision:**3** Date:**07/07/2016**

Applicability: ☒ RO ☒ SRO

Setting: **Simulator**

NUREG–1123 E/APE / Sys**223002** K/A Number **K1.08** K/A Importance **3.4/3.5**

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

Testing Method: ☐ Simulate ☒ Perform

Author::**Greg van den Berg** Date: **07/07/2016**

Operations Review: _____ Date: 9/26/16

Validated: _____ Date: 9/29/16

Approval: _____ Date: 9.29.16
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.ON.20294.151

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. ON-SDC-101, Loss of Shutdown Cooling (Rev. 1)
B. OP-149-002, RHR Shutdown Cooling (Rev. 72)
C. AOP-149-001, RHR Abnormal Operating Procedure (Rev 0)

III. TASK CONDITIONS

Unit 1 is in MODE 4, 2 days into an outage.

Reactor coolant temperature is 170 °F.

Time to 200 °F is approximately 45 minutes.

Section 2.22 (Operation of SDC in Mode 4 or 5) of OP-149-002 has NOT been performed.

TRO 3.8.2.1 has been entered for SDC temperature control.

An operator has been assigned to perform a SO-100-011 during the cooldown.

IV. INITIATING CUE

Lower reactor coolant temperature to 140°F in accordance with OP-149-002, Attachment E, step 6.

V. TASK STANDARD

Manipulate RHR to lower reactor coolant temperature. Restore SDC following SDC isolation.

SIMULATOR SETUP INSTRUCTIONS
JOB PERFORMANCE MEASURE
49.ON.20294.151

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 272 'B' Loop of RHR in Shutdown Cooling
   - **Place** the simulator in RUN.
   - **Open** RHR F048B
   - **Adjust** RHR flow to 10,000 gpm and RHRSW flow to 9000 gpm.

2. **Run** scenario file **EVAL49ON20294151 IC SETUP.SCN** to lower ESW temperature. The scenario will take 5 min to complete.

```
00:00:00 IRF rfEN009002 f:45
00:00:01 IRF rfEN100005 f:45
00:00:02 set ypxfstctwbasin=100
00:00:03 set ypxfsttsprpond=100
00:05:02 set ypxfstctwbasin=1
00:05:03 set ypxfsttsprpond=1
```

3. **Run** scenario file **EVAL49ON20294151.SCN**

```
IMF cmfMV01_HV151F007A
{Key[1]} IMF cmfMV05_HV151F009 c:20
```

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.

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-149-002 Att. E, SDC Temperature Control.	S / U	
2	**Ensure** TRO 3.8.2.1 is entered.	Confirms TRO 3.8.2.1 is entered per initial conditions	S / U	
3	**Places** HS-E11-1S62B RHR LOOP B MOV OL BYPS keyswitch to TEST	Place keyswitch to TEST	S / U	
EVALUATOR NOTE Due to RHR conditions (F003B and F047B open and RHRSW and RHR at maximum flow), the only option for lowering temperature is to throttle closed F048B)				
*4	**Operates** RHR B to lower reactor coolant temperature	Throttle Closed on HV-151-F048B RHR HX B SHELL SIDE BYPS	S / U	
5	AFTER 2 minutes, **Place** HS-E11-1S62B RHR LOOP A MOV OL BYPS keyswitch to OPERATE	AFTER 2 minutes, place keyswitch to NORM	S / U	

FAULT STATEMENT **HV-151-F009, SDC SUCTION OB ISOLATION VALVE SPURIOUS CLOSURE OCCURS WHILE LOWERING REACTOR COOLANT TEMPERATURE**				
BOOTH OPERATOR CUE After reactor coolant temperature begins to lower (indicated by RHR HX Inlet temperature) or when directed by the evaluator, **depress Key 1** to initiate spurious isolation of F009 and cause a loss of SDC.				
EVALUATOR NOTE Examinee will investigate isolation of HV-151-F009				
6	Enters and obtains a copy of ON-SDC-101 for Loss of Shutdown Cooling for automatic isolation of HV-151-F009.	Enters ON-SDC-101 based on isolation of HV-151-F009 and loss of SDC flow.	S / U	
EVALUATOR CUE If the applicant does not recognize to enter ON-SDC-101, ask, "What procedure will the SRO direct you to enter in this condition?" Then direct Entry for ON-SDC-101.				
EVALUATOR CUE Once the examinee has determined that HV-151-F009 is closed, provide report as the US that "Electrical maintenance has determined that F009 experienced a spurious closure. The cause of the spurious closure has been found and corrected." If the examinee does not recognize that a quick recovery can be performed due to the F009 being closed, as the US direct the examinee to "Restore shutdown cooling in accordance with ON-SDC-101."				
7	**Determines** cause for the loss of RHR was due to spurious isolation of HV-151-F009.	Performs the following • Recognizes that Condition B of ON-SDC-101 is applicable to restore RHR Loop B to shutdown cooling.	S / U	
EVALUATOR CUE If candidate begins to perform the surveillance, SO-100-011 in the next step, provide a cue that another operator will perform the surveillance.				

8	**Perform** SO-100-011	Determines another operator is performing SO-100-011.		
9	**Comply** with Tech Specs	Notifies US to comply with Mode 4 LCO 3.4.9		
EVALUATOR CUE If candidate begins to perform Attachment B in the next step, provide a cue that another operator will perform the attachment to determine time to 200°F.				
10	**Determines** time to 200°F	Determines another operator will perform attachment B.		
EVALUATOR CUE If candidate begins to determine if reactor coolant circulation is established in the next step, provide a cue that another operator will maintain reactor coolant circulation.				
11	**Establish** reactor coolant circulation	Determines another operator will maintain reactor coolant circulation		
EVALUATOR CUE Once the examinee has determined that a quick recovery can be performed due to the F009 being closed, as the US direct the examinee to "Restore shutdown cooling in accordance with AOP-149-001, Att A."				
12	**Restore** previously in-service loop of RHR to SDC	Determines AOP-149-001, Att A will govern a quick recovery of the previously in-service SDC loop		

13	**Verify** valve alignment prepared for SDC restoration.	• Ensure HV-151-F015B CLOSED. • Ensure HV-151-F049 Radwaste OB Isolation CLOSED. • Ensure HV-151-F040 Radwaste IB Isolation CLOSED. • Ensure HV-151-F007B RHR PUMPS B&D DISCHARGE MIN FLOW VLV TO SUPP POOL is CLOSED and DEACTIVATED.	S / U	
14	**Determines** that loop voiding is not suspected	Marks step 7 as N/A	S / U	
*15	**Opens** shutdown cooling suction isolation valve F009.	• Ensure Open HV-151-F008 OPEN SHUTDOWN CLG SUCT OB ISO. • Ensure Open HV-151-F009 SHUTDOWN CLG SUCT IB ISO.	S / U	
*16	**Lines up** RHR injection valves for pump start.	• Close HV-151-F017B RHR INJ FLOW CTL. • Open HV-151-F015B RHR INJ OB ISO.	S / U	
*17	**Starts** an RHR pump	Starts RHR PUMP 1P202B or D.	S / U	
*18	**Establishes** approximately 5000 GPM of RHR flow.	Throttle OPEN HV-151-F017B RHR INJ FLOW CTL to promptly establish flow approximately 5,000 gpm.	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?				

REVISION SUMMARY

JOB PERFORMANCE MEASURE
49.ON.20294.151

Revision	Description/Purpose of Revision
0	New JPM
3	Updated to match new format of ON-SDC-101 and AOP-149-001.

EVALUATOR COPY:

TASK CONDITIONS

Unit 1 is in MODE 4, 2 days into an outage.

Reactor coolant temperature is 170 °F.

Time to 200 °F is approximately 45 minutes.

Section 2.22 (Operation of SDC in Mode 4 or 5) of OP-149-002 has NOT been performed.

TRO 3.8.2.1 has been entered for SDC temperature control.

An operator has been assigned to perform a SO-100-011 during the cooldown.

INITIATING CUE

Lower reactor coolant temperature to 140°F in accordance with OP-149-002, Attachment E, step 6.

EXAMINEE COPY:

TASK CONDITIONS

Unit 1 is in MODE 4, 2 days into an outage.

Reactor coolant temperature is 170 °F.

Time to 200 °F is approximately 45 minutes.

Section 2.22 (Operation of SDC in Mode 4 or 5) of OP-149-002 has NOT been performed.

TRO 3.8.2.1 has been entered for SDC temperature control.

An operator has been assigned to perform a SO-100-011 during the cooldown.

INITIATING CUE

Lower reactor coolant temperature to 140°F in accordance with OP-149-002, Attachment E, step 6.

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:**5** Date:**07/06/2016**

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):**20**

Testing Method: ☐ Simulate ☒ Perform

Author::**Greg van den Berg** Date: **07/06/2016**

Operations Review: _____ Date: 9/26/16

Validated: _____ Date: 9/29/16

Approval: _____ Date: 9-29-16
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 (Revision 24)

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-159-002.
- 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

IV. INITIATING CUE

Re-establish Reactor Building HVAC in accordance with ES-134-003, Re-establishing Reactor Building HVAC

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"
   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.

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 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 managers office as the location for obtaining the special equipment.	S / U	
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	Ensure following conditions exist: • 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.	**Determines** from task conditions: • Both loops of ESW are in operation • Control structure chiller is in service • All individual room coolers are running	S / U	
EVALUATOR NOTE With Reactor Building HVAC isolation signal present, the following will be performed to bypass High Drywell Pressure/Low RPV Water Level HVAC Interlocks.				

5	**Confirm** automatic actuations per Attachment A	**Completes** Attachment A: • RECIRC SYS TO ZONE I SUP SYS DMP HD-17657A – **OPEN** • ZONE I EXH SYS TO RECIRC SYS DMP HD-17602A – **OPEN** • ZONE I FILT EXH TO RECIRC SYS DMP HD-17601A – **OPEN** • ZONE I EXH SYS ISOLATION DMP HD-17576A – **CLOSED** • ZONE I EQUIP COMPT EXH SYS DMP HD-17524A – **CLOSED** • ZONE I SUPP SYS ISOLATION DMP HD-17586A – **CLOSED** • RECIRC SYS TO ZONE I SUP SYS DMP HD-17657B – **OPEN** • ZONE I EXH SYS TO RECIRC SYS DMP HD-17602B – **OPEN** • ZONE I FILT EXH TO RECIRC SYS DMP HD-17601B – **OPEN** • ZONE I EXH SYS ISOLATION DMP HD-17576B – **CLOSED** • ZONE I EQUIP COMPT EXH SYS DMP HD-17524B – **CLOSED** • ZONE I SUPP SYS ISOLATION DMP HD-17586B - **CLOSED**	S / U	
6*	On 1C681 Heat & Ventilation Control Panel, **Place** ZONE 1 HVAC LOCA ISO BYPASS HS 17551A keylock switch to BYPASS	**Inserts** key and Places ZONE 1 HVAC LOCA ISO BYPASS HS 17551A keylock switch to BYPASS	S / U	
7	**Observe** Zone 1 HVAC LOCA ISO BYPASSED annunciator AR-127 D09 alarms	Verifies Zone 1 HVAC LOCA ISO BYPASSED annunciator AR-127 D09 alarms	S / U	
8*	On 1C681 Heat & Ventilation Control Panel, **Place** Zone 1 HVAC LOCA ISO BYPASS HS-17551B keylock switch to BYPASS	**Inserts** key and Places ZONE 1 HVAC LOCA ISO BYPASS HS 17551B keylock switch to BYPASS	S / U	

9	**Observe** Zone 1 HVAC LOCA ISO BYPASSED annunciator AR-128 D09 alarms	Verifies Zone 1 HVAC LOCA ISO BYPASSED annunciator AR-128 D09 alarms.	S / U	
10*	**Reset** Zone 1 ISO SIGNALS LOCKOUT RELAY XY07551A	**Turns** the lockout relay clockwise UNTIL it remains in the vertical position	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	
FAULT STATEMENT **THE ZONE I FANS DO NOT RETURN TO NORMAL OPERATION.**				
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	
EVALUATOR CUE Acknowledge request and report, "Both RB ventilation fans are tripped and neither can be restarted."				
EVALUATOR NOTE 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	
EVALUATOR CUE Role-play the TSC coordinator, and acknowledge the request.				
20	**Exit** this procedure	**Exits** the procedure	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?				

REVISION SUMMARY

JOB PERFORMANCE MEASURE
34.EO.20802.151

Revision	Description/Purpose of Revision
0	New JPM
5	Revised to new JPM format.

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-159-002.
- 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

INITIATING CUE

Re-establish Reactor Building HVAC in accordance with ES-134-003, Re-establishing Reactor Building HVAC

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-159-002.
- 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

INITIATING CUE

Re-establish Reactor Building HVAC in accordance with ES-134-003, Re-establishing Reactor Building HVAC

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: **Energize "Dead" 4KV ESS Bus '2D'**

JPM#: **04.ON.20641.251** Revision:**2** Date:**07/06/2016**

Applicability: ☒ RO ☒ SRO

Setting: **Simulator**

NUREG–1123 E/APE / Sys**262001** K/A Number **A2.07**K/A Importance **3.0/3.2**

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

Testing Method: ☐ Simulate ☒ Perform

Author::**Greg van den Berg** Date: **07/06/2016**

Operations Review: _____ Date: 9/26/16

Validated: _____ Date: 9/29/16

Approval: _____ Date: 9.29.16
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
04.ON.20641.251

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. AOP-004-001, Energizing Dead 4KV ESS Bus (Rev. 1)

B. AOP-024-001, Diesel Generator AOP (Rev. 0)

C. AR-016-001, D/G D, ESW, RWMU, and Misc Load Center (Rev 61)

III. TASK CONDITIONS

A. Unit 2 is at rated power.

B. An Electrical transient has occurred on the 2D ESS bus.

C. DG D failed to auto start. It is now in LOCAL, repaired, and available to be started and loaded.

D. No electrical Bus fault is present.

E. You are the On-Shift U2 PCOP

F. Both loops of ESW are operational

IV. INITIATING CUE

Implement AOP-004-001 Attachment A to re-energize the 2D ESS bus from the 'D' EDG

V. TASK STANDARD

ESS Bus 2D is re-energized from DG 'D' IAW AOP-004-001 (Energizing Dead 4KV ESS Bus) recognizing that the DG trips and must be shutdown.

SIMULATOR SETUP INSTRUCTIONS
JOB PERFORMANCE MEASURE
04.ON.20641.251

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-18 or an IC with Unit 2 S/D.
2. **Insert** the following malfunctions
   a. `IMF cmfBR05_2A20401` `Bkr 01 Fails AsIs`
   b. `IMF cmfBR03_2A20408` `Bkr 08 Overcurrent Trip`
   c. `IOR di43CMD_Q f:LOCAL` `'D' EDG 43CM to LOCAL`
3. **Have** the following keys assigned
   a. **{Key[31]} IOR di5ESD_Q f:STOP** Depress 5ES Pushbutton
   b. **{Key[32]} DOR di5ESD_Q f:STOP** Depress 5ES reset P/B
   c. **{Key[32]} IOR di5ESRD_Q f:RESET** Depress 5ES reset P/B
   d. **{Key[33]} IOR di0C521DRST_Q f:RESET c:5** Annunciator reset
   e. **{Key[34]} IOR di43GMD_Q f:ISO** Switch to iso on EDG
   f. **{Key[35]} IOR di1LD_Q f:START** Starts the 'D' EDG
4. **Activate** the following ET to trip the'D' EDG on overspeed after it starts
   a. **ET-04ON1203251**
   b. **di1LD_Q.CurrValue=#OR.di1LD_Q.START**
   c. **IMF mfDG024008D d:10**
5. **Other**

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.
- Have a copy of AOP-004-001.

EVALUATOR NOTE: For Faulted JPMs

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

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 AOP-004-001.	S / U	
2	**Review** sections 1-5	**Determines** that step 5.1 starts with attachment A	S / U	
EVALUATOR NOTE The following steps prevent inadvertent auto breaker closure by mismatching semaphores. This is performed on the de-energized 4KV ESS bus only.				
3*	**Place** XFMR 101 TO BUS 2D BKR 2A20401 switch to CLOSE	**Places** 2A20401 switch to CLOSE. Verifies Red light OFF, Amber light LIT, Green light LIT.	S / U	
4*	**Place** XFMR 201 TO BUS 2D BKR 2A20408 switch to CLOSE	**Places** 2A20408 switch to CLOSE. Verifies Red light OFF, Amber light LIT, Green light LIT.	S / U	

5	**Check** the status of lockout relays on Bus 2D (86A-204, 86A1-204, and 86A2-204)	**Directs** an NPO to check the status of Bus 2D lockout relays	S / U	
EVALUATOR CUE Acknowledge request and report NO lockout relays are tripped on the 2D ESS Bus.				
EVALUATOR NOTE Steps 3, 4, and 5 of Attachment A determine which Attachment of the procedure is required to energize the bus. Step 3 and 5 are not applicable due to no Bus lockouts and the availability of the 'D' EDG. The given sections of the procedure have the applicable Attachments for all three steps so not to cue the operator.				
6	**Determines** step 4 is applicable	**Proceeds** to attachment M	S / U	
7	**Determines** step 1 is not applicable	**N/As** step 1	S / U	
8	**Verify** XFMR 101 TO BUS 2D BKR 2A20401, XFMR 201 TO BUS 2D BKR 2A20408, and Diesel Generator B(E) Output Breaker 2A20404 are OPEN	**Verifies** breakers 2A20401, 2A20408, and 2A20404 are open by Green flags	S / U	
EVALUATOR NOTE The following step can be verified using R*Time screen or sending an NPO to verify				
9	**Ensure** the following breakers are OPEN: • 2A20402, RHR Pump 2P202D • 2A20403, CRD Wtr Pump 2P132B • 2A20405, CS Pump 2P206D 2A20409, Turbine Bldg Chiller 2K102B	**Dispatches** an NPO to verify breaker positions	S / U	
EVALUATOR CUE Acknowledge request and report, "At 2A204, breakers 2, 3, 5, and 9 are open."				
10	**Determines** step 3 is not applicable	**N/As** step 3	S / U	
11*	At 0C521D, **Place** DG D Control Mode Select Switch to LOCAL	**Determines** this step has been completed	S / U	

12*	At 0C521D, **Depress** 5ES Emergency Stop Pushbutton	**Directs** NPO to depress 5ES Pushbutton on 'D' EDG	S / U	
BOOTH OPERATOR CUE When directed by the floor, insert **Key 31**				
EVALUATOR CUE Acknowledge request, Direct booth to insert Key 31, and report 5ES pushbutton has been depressed				
13	At 0C521D, **Verify** the following: • Remote light NOT illuminated • Local light illuminated DG D Available for emergency light not illuminated	**Directs** NPO to report status of the indicating lights	S / U	
EVALUATOR CUE Acknowledge request and report, "The Remote light is NOT illuminated, Local light is illuminated, and DG D Available for emergency light is not illuminated."				
14	**Determines** step 4.b and c are not applicable	**N/As** step 4.b and c	S / U	
15	**Verifies** ESW is available	**Determines** ESW pumps are running	S / U	
16*	At 0C521D, **Depress** 5ES Emergency Stop Reset pushbutton	**Directs** NPO to depress 5ES Reset Pushbutton on 'D' EDG	S / U	
EVALUATOR CUE Acknowledge request, Direct booth to insert Key 32, and report 5ES reset pushbutton has been depressed				
BOOTH OPERATOR CUE When directed by the floor, insert **Key 32**				
17*	At 0C521D, **Depress** Annunciator and System Reset pushbutton	**Directs** NPO to depress Annunciator and System Reset Pushbutton on 'D' EDG	S / U	
EVALUATOR CUE Acknowledge request, Direct booth to insert Key 33, and report Annunciator and System reset pushbutton has been depressed				

BOOTH OPERATOR CUE When directed by the floor, insert **Key 33**				
18*	At 0C521D, **Place** Governor mode select switch to ISOCHRONOUS	**Directs** NPO to Place 'D' EDG Governor mode select switch to ISOCHRONOUS	S / U	
EVALUATOR CUE Acknowledge request, Direct booth to insert Key 34, and report Governor mode select switch is in ISOCHRONOUS				
BOOTH OPERATOR CUE When directed by the floor, insert **Key 34**				
FAULT STATEMENT **10 SECONDS AFTER THE DG IS STARTED, THE ENGINE WILL OVERSPEED AND TRIP THE EDG.**				
19*	At 0C521D, **Depress** DG D Engine Control START P/B	**Directs** NPO to Start the 'D' EDG	S / U	
EVALUATOR CUE Acknowledge request, Direct booth to insert Key 35, and report The 'D' diesel has started				
BOOTH OPERATOR CUE When directed by the floor, insert **Key 35**				
20	**Verify** 2A20404 DG D(E) TO BUS 2D automatically closes.	**Verifies** that 2A20404 closes and the ESS Bus available light is Illuminated.	S / U	
EVALUATOR NOTE When the EDG trips the operator may perform actions per AR-016-001 or per AOP-004-001 att M step D.5. The below sequence is from the AR. **Continue at step 24 if AOP-004-001 is followed.**				
21	**Ensure** automatic actions	**Verifies** 2A20404 DG D(E) TO BUS 2D opens and the EDG stops	S / U	
EVALUATOR CUE Inform the student that another operator will finish the AR and they are to continue with AOP-004-001				

22	**Enter** AOP-024-001	**Obtains** AOP-024-001	S / U	
23	**Determine** attachment D is applicable	**Reads** the procedure to see Attachment D is for the 'D' EDG.	S / U	
24	**Verify** 43CM DG D Control mode switch is in LOCAL	**Contacts** NPO to verify position of 43CM.	S / U	
EVALUATOR CUE Acknowledge request and report, "The 'D' DG mode switch is in LOCAL."				
EVALUATOR NOTE The operator may or may not depress the 5ES Stop Pushbutton depending on which procedure they use. Since the 1D ESS bus has power, it is not essential that the 5ES Stop P/B is depressed.				
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
04.ON.20641.251

Revision	Description/Purpose of Revision
0	New JPM
2	Updated to new JPM format, revised task number and updated referenced procedures.

EVALUATOR COPY:

TASK CONDITIONS

- Unit 2 is at rated power.
- An Electrical transient has occurred on the 2D ESS bus.
- DG D failed to auto start. It is now in LOCAL, repaired, and available to be started and loaded.
- No electrical Bus fault is present.
- You are the On-Shift U2 PCOP
- Both loops of ESW are operational

INITIATING CUE

Implement AOP-004-001 Attachment A to re-energize the 2D ESS bus from the 'D' EDG

EXAMINEE COPY:

TASK CONDITIONS

- Unit 2 is at rated power.
- An Electrical transient has occurred on the 2D ESS bus.
- DG D failed to auto start. It is now in LOCAL, repaired, and available to be started and loaded.
- No electrical Bus fault is present.
- You are the On-Shift U2 PCOP
- Both loops of ESW are operational

INITIATING CUE

Implement AOP-004-001 Attachment A to re-energize the 2D ESS bus from the 'D' EDG

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: **APRM Gain Adjustment**

JPM#: **78.OP.27731.101** Revision: **5** Date: **09/23/2016**

Applicability: ☒ RO ☒ SRO

Setting: **Simulator**

NUREG–1123 E/APE / Sys **215005** K/A Number **A1.07** K/A Importance **3.0/3.4**

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

Testing Method: ☐ Simulate ☒ Perform

Author:: _____ Date: 9/25/16

Operations Review: _____ Date: 9/26/16

Validated: _____ Date: 9/25/16

Approval: _____ Date: 9·29·16
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
78.OP.27731.101

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-178-002, PRNMS (Revision 9)

III. TASK CONDITIONS

APRM Channel 3 is reading approximately 70%.

Core thermal power from the OD-3 heat balance has been verified to be 73%

APRM Channel 3 has already been bypassed by the PCO.

IV. INITIATING CUE

Perform a manual APRM GAF adjustment of APRM 3 IAW OP-178-002 Section 2.2.5.

V. TASK STANDARD

Successfully perform manual APRM GAF adjustments for APRM 3.

SIMULATOR SETUP INSTRUCTIONS

1. **Reset** Simulator to any power IC and adjust reactor power to 73%.
   - **Adjust** APRM 3 GAF to indicate ≈70%
   - **Bypass** APRM 3.

SIMULATOR SETUP INSTRUCTIONS FOR LOC 28 NRC EXAM

1. **Reset** the simulator to IC 390.
2. **Verify** conditions above.

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.
- A replacement copy of OP-178-002 section 2.2.

BOOTH OPERATOR CUE

When the evaluator indicates the examinee is ready to begin the JPM, **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-178-002, determines section 2.2.5 applies. Verifies prerequisites and precautions are met.	S/U	
EVALUATOR NOTE Role-play as PCO or SRO to avoid using plant page system during the JPM				
2	Establish communications with PCO	Establishes communications using plant page.	S/U	
EVALUATOR CUE State that all communications will be with examiner role playing as PCO or SRO to avoid using plant page system during the JPM				
EVALUATOR CUE When operator is confirming BYPASS LED status state, "Channel 13 BYPASSED LEDs for APRM 11, 12, and 14 are lit."				
3	**Verifies** APRM 3 bypassed	Confirms all four 2/4 voters, BYPASSED LEDs for bypassed APRM are illuminated	S/U	
*4	**Adjust** the display to the proper screen	Press ETC button to display ENTER SET MODE	S/U	
*5	**Accept** the proper display screen	Press ENTER SET MODE key	S/U	
*6	**Enter** the password	Enter password "1234" and press ENT	S/U	

7	**Confirm** mode	Confirm OPER SET mode indicated on APRM or ODA	S/U	
*8	**Setup** display for gain adjustment	• Using the cursor keys, highlight the APRM GAIN • Press SET PARAMETERS key Verify APRM indicates SET PARAMETERS: APRM GAIN	S/U	
*9	**Adjust** APRM 3 GAF to the target gain	Performs the following IAW section 2.2.5: • Adjust the APRM GAIN DESIRED UNTIL PROJECTED FLUX (%) is ± 2% of calculated CTP using using (↓↑) CURSOR keys to scroll • Press the ACCEPT key	S/U	
10	**Confirm** APRM 3 target gain is selected	• Confirm the APRM GAIN PRESENT changes to equal the APRM GAIN DESIRED Confirm ACTUAL FLUX (%) is ± 2% of calculated CTP	S/U	
11	**Exit** the setup displays	• Press EXIT key • Press EXIT SET MODE key Press YES key	S/U	
12	**Confirms** APRM 3 display indicates OPERATE	Confirms APRM upper display section indicates OPERATE on top right corner of display	S/U	
13	**Ensures** indications are within 2% of APRM reading	Ensure reading on NMSB display and APRM ODA reading within 2% of desired APRM reading	S/U	

EVALUATOR NOTE
When Applicant either calls the control room or is returning to the control room to verify indications, end the JPM.

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?

REVISION SUMMARY

JOB PERFORMANCE MEASURE
78.OP.27731.101

Revision	Description/Purpose of Revision
0	New JPM
1	Revise for TQ procedures, minor editorial corrections
2	NRC revised based on facility comments
3	Revised for format change from NRC format to SSES format
4	Minor editorial changes. Revised power level to accommodate JPM pairing.
5	Updated to new format and updated referenced procedure revisionss

EVALUATOR – SCENARIO 1

TASK CONDITIONS

APRM Channel 3 is reading approximately 70%.

Core thermal power from the OD-3 heat balance has been verified to to be 73%

APRM Channel 3 has already been bypassed by the PCO.

INITIATING CUE

Perform a manual APRM GAF adjustment of APRM 3 IAW OP-178-002 Section 2.2.5.

EXAMINEE – SCENARIO 1

TASK CONDITIONS

APRM Channel 3 is reading approximately 70%.

Core thermal power from the OD-3 heat balance has been verified to to be 73%

APRM Channel 3 has already been bypassed by the PCO.

INITIATING CUE

Perform a manual APRM GAF adjustment of APRM 3 IAW OP-178-002 Section 2.2.5.

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: **Implement Placing Alternate TBCCW Pump In Service**

JPM#: **15.OP.20688.151** Revision:**2** Date:**07/07/2016**

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):**10**

Testing Method: ☐ Simulate ☒ Perform

Author::**Greg van den Berg** Date: **07/07/2016**

Operations Review: _____ Date: 9/24/16

Validated: _____ Date: 9/25/16

Approval: _____ Date: 9.29.16
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
15.OP.20688.151

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–115–001, Turbine Building Closed Cooling Water System (Revision 26)

B. ON–TBCCW-101, Loss of Turbine Building Closed Cooling Water (Revision 1)

C. AR–123–G02, TBCCW PUMP B MOTOR TRIP (Revision 27)

D. AR–123–G04, TBCCW HEAT EXCHANGER HEADER LO PRESS (Revision 27)

III. TASK CONDITIONS

TBCCW Pump 1A is in service, TBCCW Pump 1B is in standby.

TBCCW Pump 1A is to be removed from service for planned maintenance.

1A TBCCW HTX is in-service.

Pre–start checks for TBCCW Pump 1B are sat.

An NPO is stationed in the Unit 1 TBCCW pump area.

IV. INITIATING CUE

Place TBCCW Pump 1B in service and shutdown TBCCW Pump 1A, IAW OP-115-001 section 2.2.

V. TASK STANDARD

TBCCW Pump 1A restarted and supplying cooling to TBCCW loads

SIMULATOR SETUP INSTRUCTIONS
JOB PERFORMANCE MEASURE
15.OP.20688.151

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.

- Reset the simulator to IC–18, or an exam–specific IC 389.
- Insert the following Event Triggers

  ETEVAL15OP20688151

```
tw_1p103a(1) = 0 & twvp114011 > 0.9
aet ETEVAL15OP20688151A
```

  ETEVAL15OP20688151A

```
diHS11405A.CurrValue = #OR.diHS11405A.RUN
+30 IOR di1C140ACK_Q f:ACK
+2 MOR di1C140ACK_Q f:NORMAL
+2 DOR di1C140ACK_Q
+2 IOR di1C140RST_Q f:RESET
+2 MOR di1C140RST_Q f:NORMAL
+2 DOR di1C140RST_Q
IRF rfIA119003 f:RESET
```

- Perform the following expert commands

```
IMF cmfPM04_1P103A
```

- Perform the following expert commands to assign keys to perform the required operator actions for the JPM.

```
{Key[26]} IRF rfTW115001 f:0
 {Key[27]} IRF rfTW115001 f:100
```

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-389, or configure the simulator per the Simulator Setup Instructions.

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** OP–115–001 Section 2.2 is governing procedure and obtains controlled copy.	Obtains controlled copy of OP–115–001 obtained, selects Section 2.2.	S / U	
2*	**Starts** TBCCW Pump 1B	Depresses TBCCW PP 1P103B RUN PB	S / U	
3	**Closes** TBCCW Pump 1A discharge valve	Directs NPO to slowly close 114011, TBCCW PUMP A DSCH	S / U	
BOOTH OPERATOR CUE **Depress KEY 26** to close 114011.				
EVALUATOR CUE 114011 is closed.				
4	**Checks** TBCCW Pump 1B discharge pressure 86–100 psig.	Performs the following: • Requests from NPO current indication on PI–11405B, TBCCW PUMP B DSCH PRESS. • Confirms value is within 86–100 psig band.	S / U	

EVALUATOR CUE PI–11405B indicates 98 psig.				
5*	**Stops** TBCCW Pump 1A.	Depresses TBCCW PP 1P103A STOP PB.	S / U	
6	**Checks** TBCCW HX 1A outlet temperature 92–98 °F.	Performs the following: • Requests from NPO current indication on TI–11407A, TBCCW HX A OUTLET TEMP. • Confirms value is within 92–98 °F band.	S / U	
EVALUATOR CUE TI–11407A indicates 95 °F.				
7	**Checks** TBCCW system pressure stabilizes at approximately 64–66 psig.	Observes PI–11409, TB CCW HX OUTLET HEADER, indicates approximately 64–66 psig.	S / U	
EVALUATOR NOTE The following step is a critical step only if the TBCCW Pump 1A discharge valve was closed in the preceding steps.				
FAULT STATEMENT **TBCCW PUMP 1B TRIPS WHEN TBCCW PUMP 1A DISCHARGE VALVE IS STROKING OPEN.**				
8*	**Opens** TBCCW Pump 1A discharge valve.	Performs the following: • Directs NPO to open 114011, TBCCW PUMP A DSCH • Observes AR–123–G02, TBCCW PUMP B MOTOR TRIP, in alarm. • Informs Unit Supervisor of TBCCW Pump 1B trip.	S / U	
BOOTH OPERATOR CUE • **Depress KEY 27** to open 114011. • **Ensure** Event Trigger ETEVAL15OP20688151 fires as 114011 strokes open to trip TBCCW Pump 1B.				

EVALUATOR CUE As NPO: 114011 is open. As Unit Supervisor: Respond per procedure. As NPO if contacted about TBCCW Pump 1B status: TBCCW Pump 1B tripped. I don't know why.				
EVALUATOR NOTE Direction to start TBCCW Pump 1A is provided in AR–123–G02, AR–123–G04, or ON–TBCCW-101.				
9*	**Starts** TBCCW Pump 1A.	Depresses TBCCW PP 1P103A RUN PB.	S / U	
BOOTH OPERATOR CUE **Ensure** Event Trigger ETEVAL15OP20668151A fires when TBCCW Pump 1A is re–started to reset I/A and S/A compressors.				
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
15.OP.20688.151

Revision	Description/Purpose of Revision
0	New JPM
2	Revised for the new template and to update referenced procedures. ON-115-001 is now ON-TBCCW-101, Loss of Turbine Building Closed Cooling Water

EVALUATOR COPY:

TASK CONDITIONS

TBCCW Pump 1A is in service, TBCCW Pump 1B is in standby.

TBCCW Pump 1A is to be removed from service for planned maintenance.

1A TBCCW HTX is in-service.

Pre–start checks for TBCCW Pump 1B are sat.

An NPO is stationed in the Unit 1 TBCCW pump area.

INITIATING CUE

Place TBCCW Pump 1B in service and shutdown TBCCW Pump 1A, IAW OP-115-001 section 2.2.

EXAMINEE COPY:

TASK CONDITIONS

TBCCW Pump 1A is in service, TBCCW Pump 1B is in standby.

TBCCW Pump 1A is to be removed from service for planned maintenance.

1A TBCCW HTX is in-service.

Pre–start checks for TBCCW Pump 1B are sat.

An NPO is stationed in the Unit 1 TBCCW pump area.

INITIATING CUE

Place TBCCW Pump 1B in service and shutdown TBCCW Pump 1A, IAW OP-115-001 section 2.2.

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: **Hydraulically Remove a HCU from Service in Accordance With OP-155-001**

JPM#: **55.OP.20241.102** Revision: **0** Date: **09/23/2016**

Applicability: ☒ RO ☒ SRO

Setting: **Plant**

NUREG–1123 E/APE / Sys **201001** K/A Number **A1.06** K/A Importance **3.4/3.4**

Alternate Path: ☐ YES ☒ NO Time Critical ☐ YES ☒ NO Validation Time (min): **10**

Testing Method: ☒ Simulate ☐ Perform

Author:: _____ Date: 9/25/16

Operations Review: _____ Date: 9/26/16

Validated: _____ Date: 9/25/16

Approval: _____ Date: 9.27.16
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.20241.102

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 Hydraulic System (Revision 69)

III. TASK CONDITIONS

A. Unit 1 is in Mode 4; all rods in.
B. CRD System is aligned for normal operation.
C. Tech Specs 3.1.3, 3.1.4, and 3.1.5 have been referenced and all appropriate actions are being followed.

IV. INITIATING CUE

Isolate HCU 30-47 IAW OP-155-001 section 2.17. DO NOT drain OR depressurize the HCU.

V. TASK STANDARD

HCU 30-47 is Hydraulically isolated.

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 the RB.
- Have a copy of OP-155-001 section 2.17.
- A different HCU may be selected for the JPM prior to the start if in-plant situations require changing it. (High rad, protected area, etc) Prior approval of the supervisor is required and the JPM may be pen and inked to identify the change.

EVALUATOR CUE
Record JPM start time: _____

Step	Action	Standard	Eval	Comments
1	**Identifies** governing procedure and obtain controlled copy.	**Obtains** controlled copy of OP-155-001 section 2.17.	S / U	
2	**Review** the prerequisites and precautions	**Reviews** prerequisites and precautions.	S / U	
EVALUATOR CUE All prerequisites have been met.			S / U	
3	**Comply** with following: TS 3.1.3, TS 3.1.4, TS 3.1.5.	**Determines** all appropriate actions are being followed from the initial conditions.	S / U	
EVALUATOR NOTE Following is applicable to all Hydraulic Control Units 1S239. Three (3) digit standard HCU valve numbers are used.(i.e. instead of 147101-3047 it will say 101)				
*4	**Close** 101, CRD Insert Iso.	**Closes** 101, CRD Insert Iso by turning the handwheel clockwise.	S / U	
EVALUATOR CUE If turned clockwise, the valve moved and is now closed. If turned counter-clockwise, the valve did not move.			S / U	
*5	**Close** 102, CRD Withdrawal Iso.	**Closes** 102, CRD Withdrawal Iso by turning the handwheel clockwise.	S / U	

EVALUATOR CUE If turned clockwise, the valve moved and is now closed. If turned counter-clockwise, the valve did not move.			S / U	
*6	**Close** 113, Charging Water Iso	**Closes** 113, Charging Water Iso by turning the handwheel clockwise.	S / U	
EVALUATOR CUE If turned clockwise, the valve moved and is now closed. If turned counter-clockwise, the valve did not move.			S / U	
*7	**Close** 104, Cooling Water Iso.	**Closes** 104, Cooling Water Iso by turning the handwheel clockwise.	S / U	
EVALUATOR CUE If turned clockwise, the valve moved and is now closed. If turned counter-clockwise, the valve did not move.			S / U	
*8	**Close** 103, Drive Header Iso.	**Closes** 103, Drive Header Iso by turning the handwheel clockwise.	S / U	
EVALUATOR CUE If turned clockwise, the valve moved and is now closed. If turned counter-clockwise, the valve did not move.			S / U	
*9	**Close** 105, Exhaust Header Iso.	**Closes** 105, Exhaust Header Iso by turning the handwheel clockwise.	S / U	
EVALUATOR CUE If turned clockwise, the valve moved and is now closed. If turned counter-clockwise, the valve did not move.			S / U	
*10	**Close** 112, Scram Discharge Header Iso.	**Closes** 112, Scram Discharge Header Iso by turning the handwheel clockwise.	S / U	

EVALUATOR CUE If turned clockwise, the valve moved and is now closed. If turned counter-clockwise, the valve did not move.	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?		

REVISION SUMMARY

JOB PERFORMANCE MEASURE
55.OP.20241.102

Revision	Description/Purpose of Revision
0	New JPM, Revised from 55.OP.003.102

EVALUATOR COPY:

TASK CONDITIONS

A. Unit 1 is in Mode 4; all rods in.
B. CRD System is aligned for normal operation.
C. Tech Specs 3.1.3, 3.1.4, and 3.1.5 have been referenced and all appropriate actions are being followed.

INITIATING CUE

Isolate HCU 30-47 IAW OP-155-001 section 2.17. DO NOT drain OR depressurize the HCU.

EXAMINEE COPY:

TASK CONDITIONS

A. Unit 1 is in Mode 4; all rods in.
B. CRD System is aligned for normal operation.
C. Tech Specs 3.1.3, 3.1.4, and 3.1.5 have been referenced and all appropriate actions are being followed.

INITIATING CUE

Isolate HCU 30-47 IAW OP-155-001 section 2.17. DO NOT drain OR depressurize the HCU.

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: **Start RPS MG Set 2S237A(B) from Local Control Panel 2G201A(B) IAW OP–258–001**

JPM#: **58.OP.26824.201** Revision: **3** Date: **09/23/2016**

Applicability: ☒ RO ☒ SRO

Setting: **Plant**

NUREG–1123 E/APE / Sys **212000** K/A Number **A2.02** K/A Importance **3.7/3.9**

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

Testing Method: ☐ Simulate ☒ Perform

Author:: _____ Date: 9/25/16

Operations Review: _____ Date: 9/26/16

Validated: _____ Date: 9/25/16

Approval: _____ Date: 9.27.16
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
58.OP.26824.201

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 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–258–001, RPS SYSTEM (Rev. 62)

III. TASK CONDITIONS

RPS MG Set 2S237A(B) has been de–energized for emergent maintenance on the normal supply EPA breakers.

The 120V RPS Power Distribution Panel 2Y201A(B) is on Alternate Power.

Maintenance has been completed on the RPS A(B) MG Set, and all clearance orders have been removed.

All 480V AC and 125V DC power systems are in operation.

CL–258–0011 is complete.

Electrical Maintenance is available to support this evolution.

Initial conditions at the RPS MG set are

- Motor On light (red) is EXTINGUISHED
- Motor Off light (green) is ILLUMINATED
- Generator Output breaker (on the MG Set) is open
- The MG voltmeter and ammeter indicate 0
- Both EPA breakers (2CBS003A–A and 2CBS003A–C) are open
- All four red indicating lights on the EPA breakers are extinguished

IV. INITIATING CUE

Start Unit 2 RPS MG Set A(B) and close the associated EPA breakers IAW OP-258-001 Sections 2.1 and 2.2.

V. TASK STANDARD

Unit 2 RPS MG Set A(B) started per OP–258–001 Section 2.1 and normal supply EPA breakers closed per OP–258–001 Section 2.2.

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 plant. Obtain Shift Manager authorization to proceed. This JPM requires access to Unit 2 RB RPS MG set
- This JPM can be performed on either Unit 2 RPS MG set
- Have a copy of OP-258-001 Section 2.1 and 2.2.

EVALUATOR CUE

Record JPM start time: _____

Step	Action	Standard	Eval	Comments
1	**Identifies** governing procedure and obtain controlled copy.	**Obtains** controlled copy of OP-258-001 sections 2.1 and 2.2.	S/U	

EVALUATOR NOTE

The Operator will require a key for the EPA breakers later. They may choose to obtain a 235, 1235, or 2235 key from Control Room or the FUS. If they ask now, they now have a 2235 key.

2	**Unlock** AND **rotate** Voltage Adjust potentiometer to full counter–clockwise position.	At 2G201A(B), REACTOR PROT SYS M–G SET A(B) GENERATOR, local control panel performs the following • **Loosens** locking device set screw. **Rotates** the potentiometer to the full counter–clockwise position	S/U	

EVALUATOR CUE

Voltage adjust potentiometer unlocked
Voltage adjust potentiometer is in the full counter–clockwise position

EVALUATOR NOTE

Motor has automatic reset of thermal overloads. If examinee releases PB before MOTOR ON PB cued as ON, such that motor would fail to come up to speed, thermal overloads should be allowed time to reset prior to initiating another start sequence.

*3	**Depress** AND hold MOTOR ON pushbutton	**Depresses** the MOTOR ON PB and maintains it depressed	S/U	

EVALUATOR CUE Motor On PB is depressed				
*4	**Release** Motor On PB when Motor On red indicating light Illuminates.	**Observes** the MOTOR ON red light is illuminated and **releases** the MOTOR ON PB	S/U	
EVALUATOR CUE Motor On red light is lit and when released, the Motor On PB releases				
5	**Observes** MG Set comes up to speed	**Observes** MG Set comes up to speed	S/U	
EVALUATOR CUE MG set running at speed				
EVALUATOR NOTE The Motor On pushbutton must be depressed again in order to reset the overvoltage trip. There is no visible indication that it has reset.				
*6	**Resets** OV relay	**Depresses** MOTOR ON PB	S/U	
EVALUATOR CUE Motor On PB depressed and released				
7	**Verifies** RPS MG set voltage at 120V AC	**Observes** RPS MG Set A(B) voltmeter.	S/U	
EVALUATOR CUE RPS MG set voltmeter indicates 110V AC				
*8	**Adjusts** voltage output to 120V AC.	**Turns** the VOLTAGE ADJUST potentiometer clockwise until 120V AC	S/U	
EVALUATOR CUE RPS MG set voltmeter indicates 120V AC				
9	**Locks** Voltage Adjust potentiometer.	• **Tightens** the locking set screw on the VOLTAGE ADJUST potentiometer.	S/U	
*10	**Closes** MG set generator output breaker	**Lifts** the GENERATOR OUTPUT breaker operating paddle to the full up position.	S/U	

EVALUATOR CUE Generator Output breaker is closed.				
11	**Observes** EPA breaker 2CBS003A–A(B–B).Input Power Available red light ILLUMINATES	At 1CBS003A–A (B–B), RPS MG SET A(B) EPA BREAKER, **observes** POWER IN MOTOR GEN red light illuminated.	S/U	
EVALUATOR CUE Power In Motor Gen red light is lit.				
EVALUATOR NOTE Section 2.1 is complete. Remaining steps are in Section 2.2.				
*12	**Obtains** 235, 1235, or 2235 key from Control Room.	**Indicates** keys available from Control Room, FUS office.	S/U	
EVALUATOR CUE You have a 2235 key.				
*13	**Inserts** key in 2CBS003A–A(B–B), RPS MG Set A(B) EPA Breaker, Oper/Reset switch.	At 2CBS003A–A (B–B), RPS MG SET A(B) EPA BREAKER, **inserts** key in OPER/RESET switch	S/U	
EVALUATOR CUE Key inserted.				
*14	**Resets** 2CBS003A–A(B–B), RPS MG Set A(B) EPA Breaker.	Momentarily **places** OPER/RESET Switch to RESET.	S/U	
EVALUATOR CUE EPA breaker reset.				
*15	**Place** 2CBS003A–A(B–B), RPS MG Set A(B) EPA Breaker, in Operate	**Places** OPER/RESET switch to OPER	S/U	
EVALUATOR CUE Oper/Reset switch is in OPER				

*16	**Confirm** overvoltage, undervoltage, and underfrequency lights are not illuminated	**Observes** OVERVOLTAGE, UNDERVOLTAGE and UNDERFREQUENCY lights are extinguished.	S/U	
EVALUATOR CUE Overvoltage, Undervoltage And Underfrequency lights are out.				
17	**Removes** key from 2CBS003A–A(B–B), RPS MG Set A(B) EPA Breaker, Oper/Reset switch.	**Removes** key from OPER/RESET switch	S/U	
EVALUATOR CUE Key removed.				
*18	**Close** 2CBS003A–A(B–B), RPS MG Set A(B) EPA Breaker	**Lifts** the 2CBS003A–A(B–B), RPS MG SET A(B) EPA BKR, operating paddle to the full up position	S/U	
EVALUATOR CUE EPA breaker is closed.				
19	**Observe** EPA breaker 2CBS003A–C(B–D).Input Power Available red light ILLUMINATES	**Observes** 2CBS003A–C(B–D), RPS MG SET A(B) EPA BKR, POWER IN MOTOR GEN red light illuminated	S/U	
EVALUATOR CUE Power In Motor Gen red light is lit.				
*20	**Inserts** key in 2CBS003A–C(B–D), RPS MG Set A(B) EPA Breaker, Oper/Reset switch.	At 2CBS003A–C(B–D), RPS MG SET A(B) EPA BREAKER, **inserts** key in OPER/RESET switch	S/U	
EVALUATOR CUE Key inserted.				
*21	**Resets** 2CBS003A–C(B–D), RPS MG Set A(B) EPA Breaker.	Momentarily **places** OPER/RESET Switch to RESET.	S/U	
EVALUATOR CUE EPA breaker reset.				

*22	**Place** 2CBS003A–C(B–D), RPS MG Set A(B) EPA Breaker, in Operate	**Places** OPER/RESET switch to OPER Observes OVERVOLTAGE, UNDERVOLTAGE and UNDERFREQUENCY lights are extinguished.	S/U	
EVALUATOR CUE Oper/Reset switch is in OPER				
*23	**Confirm** overvoltage, undervoltage, and underfrequency lights are not illuminated	**Observes** OVERVOLTAGE, UNDERVOLTAGE and UNDERFREQUENCY lights are extinguished.	S/U	
EVALUATOR CUE Overvoltage, Undervoltage And Underfrequency lights are out.				
*24	**Remove** key from 2CBS003A–C(B–D), RPS MG Set A(B) EPA Breaker, Oper/Reset switch.	**Removes** key from OPER/RESET switch	S/U	
EVALUATOR CUE Key removed.				
*25	**Closes** 2CBS003A–C(B–D), RPS MG Set A(B) EPA Breaker	**Lifts** the 2CBS003A–C(B–D), RPS MG SET A(B) EPA BKR, operating paddle to the full up position	S/U	
EVALUATOR CUE EPA breaker is closed.				
26	**Verifies** Generator A(B) Feed to RPS Bus A(B) white indicating light illuminated at 2C610.	**Contacts** Control Room to observe at 2C610 GENERATOR A (B) FEED TO RPS BUS A(B) white indicating light illuminated.	S/U	
EVALUATOR CUE Generator A(B) feed to RPS Bus A(B) white light is lit at 2C610.				
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?

REVISION SUMMARY

JOB PERFORMANCE MEASURE
58.OP.26824.201

Revision	Description/Purpose of Revision
0	New JPM
1	Revision history unknown
2	Changed to new TQ format Updated procedures to latest revision

EVALUATOR – SCENARIO 1

TASK CONDITIONS

RPS MG Set 2S237A(B) has been de–energized for emergent maintenance on the normal supply EPA breakers.

The 120V RPS Power Distribution Panel 2Y201A(B) is on Alternate Power.

Maintenance has been completed on the RPS A(B) MG Set, and all clearance orders have been removed.

All 480V AC and 125V DC power systems are in operation.

CL–258–0011 is complete.

Electrical Maintenance is available to support this evolution

Initial conditions at the RPS MG set are

- Motor On light (red) is EXTINGUISHED
- Motor Off light (green) is ILLUMINATED
- Generator Output breaker (on the MG Set) is open
- The MG voltmeter and ammeter indicate 0
- Both EPA breakers (2CBS003A–A and 2CBS003A–C) are open
- All four red indicating lights on the EPA breakers are extinguished

INITIATING CUE

Start Unit 2 RPS MG Set A(B) and close the associated EPA breakers IAW OP-258-001 Sections 2.1 and 2.2.

EXAMINEE – SCENARIO 1

TASK CONDITIONS

RPS MG Set 2S237A(B) has been de–energized for emergent maintenance on the normal supply EPA breakers.

The 120V RPS Power Distribution Panel 2Y201A(B) is on Alternate Power.

Maintenance has been completed on the RPS A(B) MG Set, and all clearance orders have been removed.

All 480V AC and 125V DC power systems are in operation.

CL–258–0011 is complete.

Electrical Maintenance is available to support this evolution

Initial conditions at the RPS MG set are

- Motor On light (red) is EXTINGUISHED
- Motor Off light (green) is ILLUMINATED
- Generator Output breaker (on the MG Set) is open
- The MG voltmeter and ammeter indicate 0
- Both EPA breakers (2CBS003A–A and 2CBS003A–C) are open
- All four red indicating lights on the EPA breakers are extinguished

INITIATING CUE

Start Unit 2 RPS MG Set A(B) and close the associated EPA breakers IAW OP-258-001 Sections 2.1 and 2.2.

SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title: **Place RHR In Suppression Pool Colling at Remote Shutdown Panel**

JPM#: **49.OP.20301.201** Revision: **2** Date: **09/23/2016**

Applicability: ☒ RO ☒ SRO

Setting: **Plant**

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

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

Testing Method: ☐ Simulate ☐ Perform

Author:: _____ Date: 9/25/16

Operations Review: _____ Date: 9/26/16

Validated: _____ Date: 9/25/16

Approval: _____ Date: 9-27-16
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 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. ON–200–009, Control Room Evacuation (Rev 37)

B. OP–249–005, RHR Operation in Suppression Pol Cooling Mode (Rev 32)

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–200–009, Control Room Evacuation, before evacuating the Control Room.

Unit 2 RSDP transfer switches have been aligned per ON–200–009.

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 ≤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. Obtain Shift Manager authorization to proceed. This JPM requires access to Unit 2 RB RSDP.
- Have a copy of OP-249-005 section 2.4 and ON-200-009.

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	**Review** prerequisites and precautions.	**Reviews** prerequisites and precautions.	S / U	
3	**Ensure** ESW in operation.	**Observes** ESW in operation is specified in Task Conditions.	S / U	
4	**Place** RHRSW in operation.	**Observes** RHRSW in operation to the 2A RHR HX is specified in Task Conditions.	S / U	
*5	**Verifies** that RHR Pump 1A not running.	**Contacts** Unit 1 RSDP to determine RHR Pump 1A status.	S / U	
EVALUATOR CUE RHR Pump 1A is in standby.			S / U	
*6	**Ensure** HV–251–F048A, Hx A Shell Side Byps, is open.	**Observes** HV–251–F048A, HX A SHELL SIDE BYPS, indicates full open.	S / U	
EVALUATOR CUE HV–251–F048A indicates red light **ON**, amber light **OFF**.			S / U	
*7	**Open** HV–251–F028A, Supp Chmbr Spry Test Shutoff.	**Places** HS HV–251–F028A, SUPP CHMBR SPRY TEST SHUTOFF, to the OPEN position	S / U	

EVALUATOR CUE HV–251–F028A indicates red light **ON**, amber light **OFF**.			S / U	
*8	**Ensure** HV–251–F007A, RHR PP A/C Min Flow, is open.	**Observes** HV–251–F007A, RHR PP A/C MIN FLOW, indicates full open.	S / U	
EVALUATOR CUE HV–251–F007A indicates red light **ON**, amber light **OFF**.			S / U	
9	**Determines** no potential for RHR discharge loop voiding.	**Observes** Condensate Transfer in operation is specified in Task Conditions.	S / U	
EVALUATOR CUE RHR A was in the normal standby lineup when the Control Room was evacuated.			S / U	
*10	**Ensure** RHR A filled and vented.	**Directs** NPO to vent RHR A using 251821, RHR DIV 1 DRYWELL SPRAY VENT VALVE, per OP–249–001 Step 2.4.10.	S / U	
EVALUATOR CUE RHR A fill and vent complete.			S / U	
*11	**Start** RHR Pump A, 2P202A	**Places** HS RHR PUMP A 2P202A to the START position and observes breaker closed.	S / U	
EVALUATOR CUE RHR Pump A indicates red light **ON**, amber light **OFF**.			S / U	
*12	**Throttle Open** HV–251– F048A HX A SHELL SIDE BYPS to establish a system flow between 3,000 gpm and 3,500 gpm as indicated on RHR SYSTEM FLOW INDICATOR FI-25105	**Performs** the following: • **Places** HS HV–251– F048A HX A SHELL SIDE BYPS, to the OPEN position in 500 gpm increments followed by a 20 second pause. • **Observes** FI–25105, RHR SYSTEM FLOW, indicates 6000 gpm • **Releases** HS HV–251–F024A, TEST LINE CTL	S / U	

EVALUATOR CUE HV–251–F048A indicates red light **ON**, amber light **ON**. FI–25105 indicates 3500 gpm.			S / U	
*13	**Throttle Open** HV–251– F048A HX A SHELL SIDE BYPS to establish RHR loop flow between 11,000 gpm and 12,000 gpm as indicated on RHR SYSTEM FLOW INDICATOR FI-25105	**Performs** the following: • **Places** HS HV–251– F048A HX A SHELL SIDE BYPS, to the OPEN position and establishes 11,000 to 12,000 gpm as indicated on RHR SYSTEM FLOW INDICATOR FI-25105 • **Observes** FI–25105, RHR SYSTEM FLOW, indicates 11,000 gpm • **Releases** HS HV–251–F024A, TEST LINE CTL	S / U	
*14	**Throttle Closed** HV-251-F024A TEST LINE CTL to maintain ≤ 10,000 gpm as indicated on RHR SYSTEM FLOW INDICATOR FI-25105	• **Places** HS HV–251–F024A TEST LINE CTL, to the CLOSED position • **Maintains** ≤ 10,000 gpm as indicated on RHR SYSTEM FLOW INDICATOR FI-25105	S / U	
EVALUATOR CUE HV–251–F024A indicates red light **OFF**, amber light **ON**.			S / U	
*15	**Fully Open** HV-251-F048A HX A SHELL SIDE BYPS	**Performs** the following: • **Places** HS HV–251– F048A HX A SHELL SIDE BYPS, to the OPEN position	S / U	
EVALUATOR CUE HV–251–F048A indicates red light **ON**, amber light **OFF**. FI–25105 indicates 9700 gpm.			S / U	
*16	**Open** HV-251-F047A RHR HX A SHELL SIDE INLET	**Performs** the following: • **Places** HS HV–251– F047A RHR HX A SHELL SIDE INLET, to the OPEN position	S / U	

EVALUATOR CUE HV–251–F047A indicates red light **ON**, amber light **OFF**.	
EVALUATOR 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

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–200–009, CONTROL ROOM EVACUATION, before evacuating the Control Room.

Unit 2 RSDP transfer switches have been aligned per ON–200–009.

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–200–009, CONTROL ROOM EVACUATION, before evacuating the Control Room.

Unit 2 RSDP transfer switches have been aligned per ON–200–009.

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 NUCLEAR, LLC
OPERATIONS TRAINING PROGRAM

SCENARIO EXAMINATION GUIDE

CONTROL ROD PATTERN ADJUSTMENT/ RFP LUBE OIL PUMP SWAP/ RFP VIBRATION/ LOSS OF RBCCW/ HYDRAULIC-BLOCK ATWS

SCN# LOC28-NRC-01
Revision 1

04/14/2016

Examination Material

TEAM SUSQUEHANNA
Generating Excellence

Lesson Information

Title	Control Rod Pattern Adjustment/ RFP lube oil pump swap/ RFP Vibration/ Loss of RBCCW/ Hydraulic-Block ATWS				
Vision ID		Accredited		■YES	□ NO
Training ID	LOC28-NRC-01	Revision	1	Date	04/14/2016
Prerequisites					
Teaching Time	65 Minutes				

Approval

CBT Approval[1]	N/A	Date	N/A
Preparer		Date	
Review (Instructor/SME)		Date	
Nuclear Engineering[1]	N/A	Date	N/A
Training Supervision		Date	
Line Management		Date	

[1]If 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.

Revision History

Revision	Date	Comments
0	03/17/2014	New exam
1	04/14/2016	Revised to new template format. Changed event number 1 to the lube oil pump transfer. Removed some RWCU malfunctions. Clarified the event going into the scram. Changed the reports to match procedures and actual guidance. Changed the scram from high RRP temperature to a RBCCW rupture. Event 3 is just a setup for Event 4 and actions are removed due to the fast nature of the RFP trip.

Table of Contents

Scenario Overview

The scenario begins with Unit 1 at 95 percent power, 500 days into the operating cycle. Preparations are set for performing a control rod pattern adjustment. HPCI is in day 2 of a planned 4-day system outage window. Diesel Generator E is substituted for DG A for a system outage window. The RFP lube oil conditioner was swapped from the RFP A reservoir to the B reservoir last shift. A severe thunderstorm watch is in effect for Luzerne County for the next 12 hours.

The first task for the crew is to test the RFP A main lube oil pumps, and perform a pump swap in the process, per OP-145-003. NPOs will report the RFP lube oil conditioner is in-service on the RFP B reservoir once the lube oil pump swap is complete.

When the RFP main lube oil Pump swap is complete the crew will withdraw control rods in accordance with the Reactivity Maneuver Request provided by Reactor Engineering, then proceed to raise power with recirc flow. The pattern adjustment will raise reactor power approximately 3 percent.

When the reactivity maneuver has been completed, 'B' RFP will experience a rising vibration trend. Vibration will quickly rise to the alarm setpoint and then to the RFP trip setpoint. The crew is not expected to be able to respond to vibration trip. The crew will respond per off-normal procedures to the RFP trip and recirc LIM2 runback. Control rod insertion may be performed due to margin to the MELLA rod-line. The Recirc loop 'A' drive flow inputs to APRM flow channels 'C' and 'D' (APRMs 2 and 3) will drift high during the runback, resulting in a RBM flow compare control rod withdrawal block. The inoperable flow-biased scram and rod-block functions of the two APRMs will require entry into TS 3.3.1.1 and TRO 3.1.3.

When the crew has lowered power below the MELLA rod-line, the RBCCW TCV will malfunction resulting in a loss of cooling to RBCCW. RBCCW temperature will quickly rise. The RBCCW TCV bypass valve will be stuck closed. The crew will be required to place RBCCW on ESW which bypasses the RBCCW TCVs and will restore cooling to RBCCW loads. Entry into TS 3.7.2 will be required for the loop of ESW made inoperable when aligned to the RBCCW HX.

Once the crew has placed ESW in-service to RBCCW the return valve HV11024A2 will fail closed after approximately 5 minutes, due to its solenoid failing, resulting in a total loss of RBCCW cooling. Recirc Pump A lower motor bearing temperature will rise rapidly on the second loss of cooling, requiring a reactor scram and tripping of the Recirc Pump. If the reactor is not scrammed before the recirc pump is tripped, Region 1 of the power-flow map will be entered and the reactor will automatically scram on OPRMs.

The reactor scram will result in a hydraulic-block ATWS. The crew will trip both Recirc Pumps and reduce level to the ATWS band to lower power. The crew will perform the ES to bypass RPS trips, allowing the scram to be reset to drain the SDV and scram again. The crew will be able to insert control rods using RMCS. The first SLC pump started will trip shortly after starting, requiring the second pump to be started. As reactor level is lowered one channel of Wide Range reactor level will fail, requiring the crew to diagnose the failure and raise FW flow to maintain reactor level within the ATWS band.

The in-service RFP will trip after the scram is reset. RCIC can be used to maintain reactor level as the standby RFP is placed in service.
The first attempt at draining the SDV and re-inserting a scram will result in limited control rod motion. The crew should reset the scram and allow the SDV to drain again while continuing control rod insertion.

The scenario may be terminated when RPV water level is stable in the ATWS band, the 'A' RFP has tripped, and the Scram has been reset twice **OR** at the lead evaluator's discretion.

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
Reactor Operator	
Implement Withdraw Control Rod One Notch	S-201002-01-005
Implement Test of Standby Main and Emergency Oil Pumps	S-259001-01-100
Operate a Single Reactor Feed Pump in Manual	S-259001-01-037
Perform Speed Adjustment of Reactor Recirc Pump During Normal Operation	S-202001-01-008
Direct RBCCW Heat Exchanger Manual Transfer Of Service Water And Emergency Service Water	S-276000-01-003
Inhibit ADS from actuating	S-218000-01-006
Bypass the MSIV and CIG Interlocks	S-239001-01-025
Inject Liquid Poison Using Pump 1P208A(B)/2P208A(B)	S-211000-01-006
Perform the Required Actions to Maximize CRD Flow	S-201001-01-044
Start an Individual Reactor Feed Pump Turbine following a Trip	S-259001-01-045
Perform a Manual Startup of RCIC Using Turbine Trip and Throttling Valve	S-217000-01-035
Perform Actions Required to Override RCIC Injection	S-217000-01-060
Perform HPCI System Override Injection	S-206000-01-062
Direct the Actions for Unanticipated Reactivity Change	S-201002-01-009
Direct Actions for Core Flux Oscillations	S-215005-01-017

Task Title	ID
Direct Actions for Loss of RBCCW Flow	S-208000-01-007
Direct the Actions for RPS and ARI Trip Bypass	S-212000-01-038
Perform Required Actions for a Reactor Recirculation Pump Runback	S-202002-01-022
Enter EOP RPV Control	S-EOPRR-01-006
Enter Level/Power Control EO Procedure	S-EOPRPV-01-004
Confirm Reactor Scram	S-EOPRPV-01-002
Confirm Reactor Shutdown	S-EOPRPV-01-003
Ensure All Isolations and Actuations Occur	S-EOPRPV-01-005
Enter Primary Containment Control	S-EOPPCC-01-002
Scram the Reactor	S-EOPRR-01-005

Senior Reactor Operator	
Direct Entry into Loss of Reactor Recirculation Flow	S-202001-02-004
Direct Required Actions for a Trip of Both Reactor Recirculation Pumps	S-202001-02-009
Direct Entry into Unanticipated Reactivity Change	S-201002-02-001
Direct Entry into Loss of Reactor Building Closed Cooling Water (RBCCW)	S-208000-02-001
Direct and Coordinate Implementation of Level Power Control (ATWS)	000000-02-1154
Direct Performance of RPS and ARI Trip Bypass	S-212000-02-002
Direct the Operation of a Single Reactor Feed Pump in Manual (ICS)	S-259001-02-024
Direct a Reactor Feed Pump Turbine A(B)(C) Trip	S-259001-02-035
Direct Speed Adjustment of Reactor Recirc Pump During Normal Operation	S-202001-02-002
Direct Inhibiting the Automatic Depressurization System from Actuating	S-218000-02-001
Direct Performance of the Required Actions to Maximize CRD Flow	S-201001-02-007
Direct Start of an Individual Reactor Feed Pump Turbine Following a Trip	S-259001-02-030
Direct Performance of Overriding RCIC Injection	S-217000-02-010

Scenario Attributes

A. Critical Tasks

1. Inject SLC	
Safety Significance	Early boron injection has the following benefits: • Stop or prevent large magnitude Limit Cycle Oscillations which can lead to core damage. • Limit fuel damage from uneven flux patterns that could result from partial rod inserts.
Consequences for Failure to Perform Task	Failure to inject Boron can result in • Cycle Oscillations which can lead to core damage. • Fuel damage from uneven flux patterns that could result from partial rod inserts.
Indications/Cues for Event Requiring Critical Task	ATWS with initial reactor power level greater than 5% APRM power.
Performance Criteria	Inject SLC by inserting key into keylock switch and turning to start selected SLC pump, fire the Squib valves and close the Reactor Water Cleanup isolation valve.
Performance Feedback	Successful SLC injection would be indicated by a lowering SLC tank level and a corresponding power level decrease.
2. Lowers RPV level to <-60" and maintains until EO-000-113 directs otherwise	
Safety Significance	Core damage due to unstable operation can be prevented or at least mitigated by promptly reducing Feedwater flow so that level is lowered below the Feedwater spargers.
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.
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	Reducing vessel injection will result in Wide Range level indications lowering to –60 to –110 inches and will result in power level lowering as indicated on the Average Power Range Monitors.

3. Insert Control Rods IAW EO-000-113	
Safety Significance	Control rod insertion initiates power reduction immediately.
Consequences for Failure to Perform Task	Failure to insert control rods 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	Insert Control Rods by one or more of the following methods: • Drive control rods after bypassing RWM • Reset and Scram again by performing ES-158-002 Bypass RPS logic trips
Performance Feedback	Successful insertion of control rods will be indicated by: • Rod position full in indication for manual insertion of control rods • Rod position showing control rod insertion after resetting scram, draining scram discharge volume and re-scram • Power level lowering as indicated on the Average Power Range Monitors

B. Scenario Malfunctions

Event	Malfunction	Operator Action in Response
1	N/A	Swap 'A' RFP main lube oil pumps (OP-145-003)
2	N/A	Withdraw control rods to raise reactor power 3 percent. (OP-AD-338, GO-100-012)
3	mfFW145 007B	'B' RFPT vibration rises and 'B' RFPT trips on high vibration, Recirc LIM2 runback (ON-164-002)
4	cmfTR03_FTB31 1N014C	APRM 2 and 3 'A' Recirc Loop drive flow fails high during LIM2 runback (TS 3.3.1.1)
5	cmfAV04_TV11028	RBCCW TCV fails, ESW placed in-service to restore RBCCW cooling (ON-114-001), ESW loop declared inoperable when aligned to RBCCW (TS 3.7.2)
6	cmfAV01_HV11024A2	Complete loss of RBCCW, High RRP temperatures, Manual Scram
7	mfRD155 017	Hydraulic-block ATWS (EO-100-113, OP-145-005, ES-158-002)

8	cmfPM03_ 1P208A cmfPM03_ 1P208B	SLC pump trips after start, standby SLC pump successfully injects boron (OP-153-001)
9	cmfTR01_LT14201A	Wide Range level instrument fails, RFP flow must be raised to maintain reactor level in ATWS band
10	mfFW148002	In-service RFPT trips after first scram, RCIC restored to maintain RPV level while standby RFPT placed in-service

C. Abnormal Events and Major Transients

Malfunction	Description
R	Withdraw control rods to raise reactor power 3 percent. (OP-AD-338, GO-100-012)
N	Swap 'A' RFP main lube oil pumps (OP-145-003)
AE1	RBCCW TCV fails, ESW placed in-service to restore RBCCW cooling (ON-114-001)
AE2	RBCCW ruputure (ON-114-001)
MT1	Hydraulic-block ATWS
TS1	APRM 2 and 3 'A' Recirc Loop drive flow fails high during LIM2 runback (TS 3.3.1.1)
TS2	ESW loop declared inoperable when aligned to RBCCW (TS 3.7.2)
MAE1	SLC pump trips after start, standby SLC pump successfully injects boron (OP-153-001)
MAE2	Wide Range level instrument fails, RFP flow must be raised to maintain reactor level in ATWS band
MAE3	In-service RFPT trips after first scram, RCIC restored to maintain RPV level while standby RFPT placed in-service

D. EOP and EOP Contingencies Used

EOPs	EOP Contingencies
☒ EO-000-102, RPV Control	☐ EO-000-102, Alternate Level Control
☒ EO-000-103, Primary Containment Control	☐ EO-000-102, Steam Cooling
☐ EO-000-104, Secondary Containment Control	☐ EO-000-112, Emergency Depressurization
☐ EO-000-105, Radioactivity Release Control	☒ EO-000-113, Power/Level Control
	☐ EO-000-114, RPV Flooding

E. Technical Specifications

1. TS 3.3.1.1, Instrumentation Reactor Protection System (RPS)
2. TS 3.7.2, Plant Systems Emergency Service Water System
3. TRM 3.1.3, Reactivity Control Systems Control Rod Block Instrumentation

References

1.	OP-AD-001	Operations Standards for System and Equipment Operation
2.	OP-AD-004	Operations Standards for Error and Event Prevention
3.	OP-AD-300	Administration of Operations
4.	OP-AD-338	Reactivity Manipulations Standards and Communication Requirements
5.	OP-111-001	Service Water System
6.	OP-145-001	RFP and RFP Lube Oil System
7.	OP-145-005	Infrequent Manual RFP System Operations
8.	OP-145-006	Feedwater HMI Operations
9.	OP-153-001	Standby Liquid Control System
10.	OP-156-001	Reactor Manual Control System RMCS
11.	OP-183-001	Automatic Depressurization System and Safety Relief Valves
12.	OP-184-001	Main Steam System
13.	GO-100-012	Power Maneuvers
14.	ON-SCRAM-101	Reactor Scram
15.	ON-RBCCW-101	Loss of RBCCW
16.	ON-PWR-101	Reactor Power
17.	ON-RECIRC-101	Reactor Recirculation Malfunction
18.	EO-000-102	RPV Control
19.	EO-000-103	Primary Containment Control
20.	EO-000-104	Secondary Containment Control
21.	EO-000-112	Emergency Rapid Depressurization
22.	EO-000-113	Power/Level Control
23.	AR-101-A01	RWCU Filter Inlet Hi Temp Iso
24.	AR-101-A10	RFPT A Trip
25.	AR-101-A16	RFPT B Trip
26.	AR-102-F03	Recirc Pump A Seal Clg Water Lo Flow
27.	AR-103-E06	APRM Flow Reference Off Normal
28.	AR-104-H03	Rod Out Block
29.	AR-106-C09	Gen Volt Reg Auto To Man Set Point Unbalanced
30.	AR-110-A01	ADS Logic A Timer Initiated
31.	AR-110-A02	ADS Logic B Timer Initiated

32.	AR-100-A03	ADS Logic C Timer Initiated
33.	AR-100-A04	ADS Logic D Timer Initiated
34.	AR-123-E05	RBCCW Header Hi Temp
35.	LA-1295-001	RWCU System Panel 1C295
36.	EP-PS-100	Emergency Director Control Room Emergency Plan Position Specific Instruction
37.	EP-RM-004	EAL Classification Bases
38.	ES-158-002	RPS and ARI Trip Bypass
39.		

Setup Instructions

A. Required Materials

1. US Turnover Sheet
   a. Unit 1
      1) ~95% power for control rod pattern adjustment, 500 days on-line
      2) HPCI in day 2 of 4-day system outage window for steam side maintenance. LCO 3.5.1 condition D has been entered for the outage.
      3) 'E' EDG substituted for 'A' EDG for 'A' system outage window
      4) RFP lube oil conditioner was swapped from RFP 'A' reservoir to 'B' reservoir last shift
      5) Perform control rod pattern adjustment per RMR
      6) Test 'A' RFP main lube oil pump 'B' and swap to main lube oil pump 'B'
   b. Common and Unit 2
      1) Unit 2 at rated power.
      2) Severe thunderstorm watch is in effect for Luzerne County for the next 12 hours
2. Supporting Documents
   a. RMR (2 copies)
   b. OP-145-003 (for the Normal Event)

B. Simulator Initialization

1. **Reset** to exam specific IC. If not available, setup IAW the following instructions
   a. **Reset** to IC-20
   b. **Place** the simulator in RUN
   c. **Reduce** core power to 95% using RRPs. Match loop flows.
   d. **Isolate** the HPCI steam supply by closing the F002 and F003 isolation valves.
   e. **Depressurize** the HPCI steam supply line after F002 and F003 are closed by opening F054 valve. Close the F054 valve once the steam line is depressurized.
   f. **Run** SCN file **HPB_HPCIOOS.scn** to tagout HPCI steam-side
   g. **Place** the simulator in FREEZE
2. **Run** SCN file **exam\LOC28-NRC-01.scn**
3. **Place** the simulator in RUN

4. **Perform** simulator activities
   a. **Place** a status control tag on the HPCI Steam Supply Valves
   b. **Place** protected equipment magnets around RCIC
   c. **Place** the 'E' for 'A' EDG signs up
   d. **Ensure** proper CRMs are inservice
   e. **Post** the blue reactivity signs
5. **Verify** the simulator matches the following
   a. 3 RFs and 1MF is in the list due to performing the HPCI setup

MF	RF	OR	ET	CONDITIONS
7:7	4:4	0:0	8	15

6. **Ensure** FW Control is selected to LEFM
7. **Reset** ODAs and all Overhead, PICSY, HMI and RWM alarms
8. **Ensure** horns and annunciators are on
9. **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 in G:\NTGOPS\LOR\REQUAL\Info Tracking\ (LOR)
2. **Record** crew position assignments per TQ-104 (ILO)
3. **Complete** simulator exam checklist

E. Scenario Execution

1. **Identify** performance improvement actions that may be addressed during the scenario
2. **Provide** turnover to the crew using the US Turnover sheet
3. **Direct** the crew to walk down the Control Room panels
4. **Inform** the Shift Manager that the crew has the shift

F. Simulator Files

LOC28-NRC-01

delmp
SCN rat_mp

insmp ycpxftv03
changemp ycpxftv03 0,10,mils,RFP B VIBR

insmp fx10FWCTRL_B21.OUT
changemp fx10FWCTRL_B21.OUT ,,%,FW MASTER LVL CTRL OUTPUT

insmp fx1BRFP_B115.OUT
changemp fx1BRFP_B115.OUT ,,%,RFP B DEMAND

insmp fx1BB_SM_B1.OUT
changemp fx1BB_SM_B1.OUT ,,RPM,RFPT B SPEED

insmp fx1BRFP_B115.MA

changemp fx1BRFP_B115.MA ,,bool,RFPT B AUTO/MAN

insmp rwtt11305
changemp rwtt11305 ,,,RBCCW HX OUTLET TEMP

insmp swvsptv11028
changemp swvsptv11028 ,,,RBCCW HX TCV POS

insmp aoTRSHB311R601D.CurrValue
changemp aoTRSHB311R601D.CurrValue 0,300,DEG F,RRP A LO GUIDE BRG TEMP(PT4)

insmp aoTRSHB311R601I.CurrValue
changemp aoTRSHB311R601I.CurrValue 0,300,DEG F,RRPA #1 SEAL CAV TEMP

insmp cuteg331n019
changemp cuteg331n019 ,,DEG F,RWCU NRHX INLET

;O-G alarms suppressed SDR
IMF annAR106F15 f:ALARM_OFF
IMF annAR131A04 f:ALARM_OFF

;E DG subst for A
IRF rfDG024001 f:A

;Recirc loop A xmitter offset initialization
IMF cmfTR03_FTB311N014C f:0
IMF cmfTR03_FTB311N014D f:0

;Hyd-block ATWS
IMF mfRD155017

;CRD PCV binding
IMF cmfMV07_PV146F003 f:AsIs

;Recirc loop A channel D flow xmitter malfunctions
aet ETLOC28-NRC01-B

;activate NRHX iso alarm on high temp
aet ETLOC28-NRC01-C

;align ESW to RBCCW HX
aet ETLOC28-NRC01-D

;Activates ETLOC28-NRC01-J
aet ETLOC28-NRC01-E

;1st SLC pump trips
aet ETLOC28-NRC01-F
aet ETLOC28-NRC01-G

;Trips breaker for PV-146-F003 when operated
aet ETLOC28-NRC01-H

;WR level A fails as-is
aet ETLOC28-NRC01-I

; RFP B vibration
{Key[1]} IMF mfFW145007B r:180 f:10

; RBCCW HX TCV fails
{Key[3]} IMF cmfAV04_TV11028 r:10 f:0

; Adjust RBCCW cooling
{Key[4]} IMF cmfAV04_TV11028 d:15 r:30 f:5

; RBCCW discharge header rupture
{Key[5]} IMF mfRW114001 f:20

; Byp CRD pump suct filter
{Key[6]} IRF rfRD155028 d:120 f:100

; Close CRD chrg wtr isol F034
{Key[7]} IRF rfRD155017 d:120 f:0

; ES-158-002 - ARI
{Key[8]} IRF rfDC102129 f:OPEN d:120
{Key[8]} IRF rfDC102103 f:OPEN d:120

; ES-158-002 - Div 1 RPS
{Key[9]} IRF rfRP158039 f:BYPASS d:120
{Key[9]} IRF rfRP158040 f:BYPASS d:120

; ES-158-002 - Div 2 RPS
{Key[10]} IRF rfRP158041 f:BYPASS d:120
{Key[10]} IRF rfRP158042 f:BYPASS d:120

; Re-open CRD chrg wtr isol F034
{Key[11]} IRF rfRD155017 d:120 f:100

; X-Tie CIG and I/A
{Key[12]} IRF rfPC125001 f:OPEN

; HPCI OOSVC - isolate and depress steam-side first
{Key[40]} SCN exam\HPB_HPCIOOS

HPB.HPCIOOS
;# HV-F002 BRKR OPEN (IB)
IRF rfDB106236 f:OPEN
;# HV-F003 BRKR OPEN (OB)
IRF rfDC188113 f:OPEN
;# HPCI AOP BRK OPEN
IRF rfDC188128 f:OPEN
;# LOSS OF PWR TO HV-F100 SOLENOID
IMF cmfAV01_HV155F100

ETLOC28-NRC01-B
fx1B_LIMITERS_B432.BO01 = 1
MMF cmfTR03_FTB311N014C r:30 i:0 f:21789
MMF cmfTR03_FTB311N014D r:30 i:0 f:19876

ETLOC28-NRC01-C
cuteg331n019 > 145
IMF annAR101A01 f:ALARM_ON

ETLOC28-NRC01-D
;SWITCH:RBCCW HX A SW-ESW CHANGEOVER
diHS11024A.CurrValue = #OR.diHS11024A.EMERG
IMF cmfAV04_HV11024A1 f:0
IMF cmfAV04_HV11024A2 f:0
IRF rfSW111032 f:0
IMF cmfCV02_110050
+5 DMF cmfAV04_HV11024A1
DMF cmfAV04_HV11024A2

ETLOC28-NRC01-E
;SWITCH:MODE SWITCH
diHSC72A1S01.CurrValue != #OR.diHSC72A1S01.RUN
aet ETLOC28-NRC01-J

ETLOC28-NRC01-F
;SWITCH:SBLC MANUAL INITIATION
diHSS14804.CurrValue = #OR.diHSS14804.START_A
IMF cmfPM03_1P208A d:45
cet ETLOC28-NRC01-G

ETLOC28-NRC01-G
;SWITCH:SBLC MANUAL INITIATION
diHSS14804.CurrValue = #OR.diHSS14804.START_B
IMF cmfPM03_1P208B d:45
cet ETLOC28-NRC01-F

ETLOC28-NRC01-H
;SWITCH:DRIVE WTR PRESS THTLG
diHS14603.CurrValue = #OR.diHS14603.OPEN
IMF cmfMV01_PV146F003

ETLOC28-NRC01-I
rrlwr < -50
IMF cmfTR01_LT14201A

ETLOC28-NRC01-J
;SWITCH:MODE SWITCH
diHSC72A1S01.CurrValue != #OR.diHSC72A1S01.RUN & (
rp_c721k14a = 1 | rp_c721k14b = 1) & rp_c721k1a = 0
IMF mfFW148002 d:120

Event 1 – RFP 'A' Main Lube Oil Pump Swap

Instructor Activities	Operator Activities	Notes
Booth Operator No additional actions required		
Role Play As **NPO** dispatched to 'A' RFP main lube oil pumps for pre-start checks, report ***Standing by for test and swap of 'A' RFP main lube oil pumps.***	**PCO** ☐ Identifies the following alarm windows: AR-120-B03 and AR-101-H10 ☐ Dispatch NPO to perform pre-start checks of RFPT 'A' main lube oil pump ☐ Depress and hold TEST pushbutton for RFPT A ALT MN L-O PPS HS-11912A ☐ Observes standby lube oil pump starts by appropriate Red light ILLUMINATED ☐ Release TEST pushbutton HS-11912A ☐ Depress RUN pushbutton for RFPT A MN L-O PP 1P124B ☐ Places 1P124A in Standby ☐ Performs above steps again to test the auto start function of the 'A' lube oil pump **US** ☐ Directs PCO to test the 'A' RFP main lube oil pumps and perform a pump swap IAW OP-145-003	

Instructor Note
If the student asks, all prerequistes are completed so that the evolution may proceed.

Event 2 – Control Rod Pattern Adjustment

Instructor Activities	Operator Activities	Notes
Booth Operator When control rod withdrawal is complete, **Enter** the Control Room as Reactor Engineering and update the CRC book with the updated shutdown sequence sheets and current control rod pattern. When the CRC book has been updated, **Perform** the third role play as the booth or on the floor Initiate Event 3 as soon as the reactivity maneuver is completed.		
Role Play As **RE** contacted for assistance, reply ***Core Thermal limits are within our predictions. You may proceed with the pattern adjustment.*** **Role Play** As **SM** contacted for approval to commence the reactivity manipulation, reply ***The Reactivity manipulation may proceed IAW the RMR*** **Role Play** As **RE** contact the Control Room as stated in the booth operator section ***Thermal Limits are sat per step #4 of the RMR. We will bring the RMR for returning to rated power with Recirc flow momentarily. The updated CRC pages have been replaced. The maneuvering envelope is still 90% to 100% power.*** **Role Play** As **GCC**, acknowledge all power change updates	**PCOM** ☐ Withdraws Control Rods 22-23, 38-39, 38-23, and 22-39 from position 00 to position 04 IAW OP-156-001 and OP-AD-338 ☐ Uses two finger operation to select the proper Control Rod by depressing the Control Rod Selection pushbuttons ☐ Verifies the correct Control Rod is selected and in the proper position ☐ Withdraws Control rods by depressing the "W/Draw Rod" pushbutton ☐ When all 4 rods have been moved, verifies that the rods are in the proper position ☐ Depress 'Rod Selct Clear' pushbutton ☐ Plots the power change on the Power/Flow map ☐ Monitors diverse indications of reactor power IAW OP-AD-001 Att G **PCOP** ☐ Verifies control rods to be withdrawn as directed by RMR IAW OP-AD-338 ☐ IAW OP-AD-300, nulls Manual and Automatic regulars using Man Volt Reg Adjust HC-10002 potentiometer, as required ☐ Maintains Load Set ~100 MWe above actual generator loads IAW GO-100-012 by depressing Load Selector 'Decrease' and 'Increase' pushbuttons, as required	

Event 2 – Control Rod Pattern Adjustment

Instructor Activities	Operator Activities	Notes
	US ☐ Obtains permission from the Shift Manager prior to commencing reactivity manipulations ☐ May, inform GCC of load change on Unit 1 ☐ Conducts a Crew Update prior to commencing rod withdrawal ☐ Directs Control Rod Withdrawal IAW OP-156-001, RMR, and GO-100-012 ☐ Monitors control rod movement with independent copy of RMR	

Instructor Note
The rod pattern adjustment should be completed before moving to Event 3. This will ensure that the rod-line is raised high enough to challenge the MELLA boundary during the runback for the RFP Trip.

Instructor Cue
Initiate Event 3 as soon as power has been raised 5% or on the Lead Examiner's direction. If the next event is started before the RE explaination for the maneuvering envelope, the crew may decide to only use RRPs.

Event 3 & 4 – 'B' RFP vibration/ 'B' RFP trip

Instructor Activities	Operator Activities	Notes

Booth Operator

When power has been raised 5% or at the Lead Examiner's direction, **Insert Key 1** to initiate high vibrations on 'B' RFP.

{Key[1]} IMF mfFW145007B r:180 f:10 'B' RFP vibration

Monitor 'B' RFP vibration in Monitored Parameters.

Ensure Event Trigger **ETLOC28-NRC01-B** fires when a Recirc LIM2 is actuated by the 'B' RFP trip, to fail the APRM 2 drive flow input from Recirc Loop 'A'.

Role Play

As **FUS/NPO** dispatched to 'B' RFP, wait 2 minutes and report

The 'B' RFP sounds out-of-balance and it feels like there are higher vibrations around the pump.

Role Play

As **FUS/NPO** contacted for 'B' RFP status post-trip, report

'B' RFP is coasting down on the turning gear. I don't see anything abnormal.

Role Play

As **NPO** dispatched to the Lower Relay Room to report the status of APRMS, wait 2 minutes and report

No APRMs indicate any alarms.

PCOM

- ☐ Performs AR-101-A16 for 'B' RFP vibs
- ☐ Reports Reactor Power, pressure, and water level
- ☐ If directed, lowers 'B' RFP speed IAW OP-145-006 by taking manual control and lowering speed
- ☐ If directed, lowers Core power IAW OP-164-002 by manually lowering RRPs speed
- ☐ Observes AR-101-A12 and reports 'B' RFP Tripped
- ☐ Plots position on Power/Flow map
- ☐ Performs ON-PWR-101 to monitor OPRMs for instabilities
- ☐ If directed, inserts control rods IAW OP-156-001 and OP-AD-338
- ☐ Performs AR-104-H03 and AR-103-E06 for 'A' & 'B' RBM and APRM 2
- ☐ Directs NPO to investigate APRMs

Event 3 & 4 – 'B' RFP vibration/ 'B' RFP trip

Instructor Activities	Operator Activities	Notes
Role Play As **WWM** contacted for assistance with 'B' RFP vibrations, wait 5 minutes and report ***Engineering is looking at the vibration data but doesn't have a specific recommendation at this time.*** **Role Play** As **WWM** contacted for assistance with APRM flow reference abnormal alarm, wait 5 minutes and report ***I&C reports that Recirc Loop 'A' recirc flow transmitters B31-1N014C and 1N014D are indicating ~20,000 gpm higher than the other two 'A' Recirc Loop drive flow transmitters.***	**PCOP** ☐ IAW AR-101-A16, Checks alarm condition and trend on RFPT Vibration XRSH-12728 and observes rise in 'B' RFP vibration ☐ May direct NPO to report conditions at the 'B' RFP ☐ Performs ON-RECIRC-101 and verifies a LIM2 runback occurred ☐ Monitors Main Steam Line Radiation Monitor, RR-D12-1R603, and Offgas Pretreatment Log Radiation Monitor, RR-D12-1R601 **US** ☐ If time allows, directs lowering 'B' RFP speed IAW AR-101-A16 by either manual control of the 'B' RFP or manual control of the RRPs ☐ Contacts WWM for assistance with the 'B' RFP ☐ Directs Transient Actions IAW OP-AD-300 when 'B' RFP trips ☐ Directs entry into ON-RECIRC-101 and ON-LVL-101 ☐ May direct control rod insertion to gain margin to MELLA rod-line IAW the Shutdown Control Rod Sequence package and ON-PWR-101 ☐ Notifies Chemistry, RP, and RE of >15% power change in 1 hour IAW GO-100-012 ☐ Contacts WWM for assistance with the APRM flow compare alarm	

Event 3 & 4 – 'B' RFP vibration/ 'B' RFP trip

Instructor Activities	Operator Activities	Notes
	US ☐ Enters Tech Specs 3.3.1.1 Condition 'A' for B31N014C and B31N014D Recirc Flow Transmitter inoperable in functions 2.b and 2.f **AND** TRM 3.1.3 Conditions 'A' and 'B' for Function 1.b	

Instructor Note
The scenario may proceed to Event 5 after 10 minutes have elapsed **or** once the crew has evaluated the power/flow map and made a determination as to whether control rod insertion is required.

Event 5 – RBCCW TCV failure

Instructor Activities	Operator Activities	Notes

Booth Operator

IAW Event 3 note, **Insert KEY 3** to initiate a failure of the RBCCW HX TCV

{Key[3]} IMF cmfAV04_TV11028 r:10 f:0 RBCCW HX TCV fails

Ensure Event Trigger **ETLOC28-NRC01-C** fires when RWCU NRHX inlet temperature reaches 145F to activate RWCU F/D inlet high temperature isolation alarm.

Monitor RRP bearing temperature on Monitored Parameters. After RWCU isolates, if required to prevent RRP bearing temperatures exceeding 195F, **Insert KEY 4**. **Adjust** the severity of malfunction **cmfAV04_TV11028** in 1% increments as necessary to slowly raise bearing temperatures toward the 195F limit without going over.

{Key[4]} IMF cmfAV04_TV11028 d:15 r:30 f:5

Ensure Event Trigger **ETLOC28-NRC01-D** fires when ESW is aligned to the RBCCW HX to complete the in-field valve alignments.

Role Play

As **NPO** dispatched to RBCCW, wait 2 minutes
The RBCCW HX TCV is almost full closed.

Role Play

As **NPO** directed to open the RBCCW HX TCV bypass, 110062, wait 1 minutes
The RBCCW bypass valve, 110062, would not move. I do not hear flow noise through the valve.

Role Play

As **NPO** directed to support aligning 'A' ESW to 'A' RBCCW HX, when asked to report local valve position IAW OP-114-001 Step 5.13.9b, report
HV-11024A1 and HV-11024A2 are open, HV-11024A3 is closed.

Role Play

As **NPO** directed to RWCU filters, wait 2 minutes
The RWCU filters are in hold

PCOM

- ☐ Reports Reactor power, pressure, and water level

PCOP

- ☐ Performs AR-123-E05 and checks RBCCW HX DSCH temp and controller
- ☐ Dispatches NPO to RBCCW pump/heat exchanger area
- ☐ Performs ON-RBCCW-101 to verify RRP temperatures, TCV-11028 operability, Bypass Valve 110062 operability, and swap RBCCW HX to ESW supply IAW OP-111-001
- ☐ Aligns ESW to RBCCW HX 'A' IAW OP-111-001 by starting ESW in one loop and depressing the RBCCW HX A SW/ESW SUP HA 11024 pushbutton

Event 5 – RBCCW TCV failure

Instructor Activities	Operator Activities	Notes
Role Play As **NPO** directed to close 11046 IAW step 5.13.9c, wait 1 minute ***110046 is closed*** **Role Play** As **WWM** contacted for assistance with RBCCW HX TCV, wait 5 minutes ***I&C believes the positioner is getting a close signal from the controller. Additional investigation is required.***	**US** ☐ Directs entry into ON-RBCCW-101 ☐ Contacts WWM for assistance with the RBCCW TCV ☐ Directs aligning ESW to the RBCCW HX IAW OP-111-001, Service Water System ☐ Declares ESW loop to be aligned inoperable IAW OP-111-001 and Enters TS 3.7.2 Condition C for 1 ESW subsystem inoperable for reasons other than Condition B	

Instructor Note

- The RBCCW high temperature alarm is received ~3 minutes after the TCV malfunction is inserted.
- A total loss of RBCCW occurs in the next event.
- Once ESW has been aligned to RBCCW HX 'A', proceed to Event 5

Event 6 – Complete loss of RBCCW/ SCRAM

Instructor Activities	Operator Activities	Notes
Booth Operator IAW Event 4 Note, **Depress KEY 5** to insert a 20% rupture on the common discharge header of RBCCW **{Key[5]} IMF mfRW114001 f:20** **RBCCW discharge header rupture** **Perform** first role play after inserting Key 5 **Ensure** Event Trigger **ETLOC28-NRC01-E** fires when the mode switch is placed in SHUTDOWN to activate Event Trigger **ETLOC28-NRC01-J**		
Role Play As **NPO** at RBCCW HX, when Key 5 is inserted, contact the control room ***There is a rupture on the common discharge header of RBCCW. It is too large to quantify.*** **Role Play** As **WWM** contacted for assistance with RBCCW rupture, acknowledge request. **Role Play** As **NPO** requested to isolate the rupture, report ***The rupture cannot be isolated.***	**PCOM** ☐ If directed, trips 'A' RRP by depressing MG SET A DRV MTR BKR HS-14001A STOP PB ☐ Inserts a manual scram by placing the Mode Switch to Shutdown ☐ Identifies more than 1 control rod > position 00 ☐ Reports ATWS ☐ Arms and Depresses the manual Scram Pushbuttons ☐ Performs Scram Report **PCOP** ☐ Performs AR-201-F03 for 'A' RRP by monitoring motor bearing and seal cavity temperatures and trips RRP when seal cavity exceeds 195F ☐ Initiates ARI by arming and depressing ARI pushbuttons and collars during the ATWS **US** ☐ Before RRP 'A' temperatures exceed 195F, either Trips the 'A' RRP and scrams the reactor on OPRMs **or** Manually scrams the reactor and trips the 'A' RRP ☐ IAW ON-RBCCW-101, performs a manual scram of the Unit. ☐ Enters EO-000-102 and transitions to EO-000-113	

Event 6 – Complete loss of RBCCW/ SCRAM

Instructor Activities	Operator Activities	Notes

Instructor Note
If the reactor is not scrammed before the recirc pump is tripped, Region 1 of the power/flow map will be entered and the reactor will automatically scram on OPRMs.

Event 7, 8 & 9 – Hydraulic-block ATWS

Instructor Activities	Operator Activities	Notes

Booth Operator

Ensure Event Trigger **ETLOC28-NRC01-F(G)** fires when the first SLC pump is started, to trip the running pump due to a motor fault after a time delay.

Ensure Event Trigger **ETLOC28-NRC01-H** fires when the CRD PCV, PV-146-F003 is opened to trip the breaker.

When directed, **Insert KEY 6** to bypass CRD pump suction filter. **Monitor** sim RF count and report when complete.

{Key[6]} IRF rfRD155028 d:120 f:100 **Byp CRD pump suct filter**

When directed, **Insert KEY 7** to close CRD charging water isolation valve 146-F034. **Monitor** sim RF count and report when complete

{Key[7]} IRF rfRD 155017 d:120 f:0 **Close CRD chrg wtr isol F034**

Ensure Event Trigger **ETLOC28-NRC01-I** fires when RPV level falls below -50" to fail Wide range level transmitter 14201A

★ **Critical Task**
Inject SLC

★ **Critical Task**
Lowers RPV level to <-60" and maintains until EO-000-113 directs otherwise

Role Play

As **NPO** dispatched to CRD PCV breaker 1B227-024, wait 2 minutes
1B227 breaker 24 is tripped on magnetics

Role Play

If directed to open CRD PCV bypass valve 146-F004, wait 2 minutes
CRD PCV bypass valve 146-F004 is stuck closed

Role Play

As **WWM** contacted for assistance, acknowledge and take no action

PCOM

- ☐ If requested, reports reactor power > 5%
- ☐ Performs actions IAW ON-SCRAM-101, Inserts IRMs and SRMS
- ☐ Trips both RRPs
- ☐ Verifies HPCI is overridden
- ☐ Takes manual control of RFPs and valves, as required, to stop and prevent injection until water level lowers to -60" and then starts injecting to control level in band
- ☐ Ensures only 2 Condensate pumps are running

Event 7, 8 & 9 – Hydraulic-block ATWS

Instructor Activities	Operator Activities	Notes
	PCOM ☐ Injects SBLC IAW OP-153-001 by placing HS-14804 to 'A' or 'B' and then to the other pump when the first fails ☐ Identifies Wide Range Level 'A' instrument channel failure. Maintains with 'B' Level indicator ☐ Uses FW to maintain RPV water level within ATWS level band, initially -60" to -110" **PCOP** ☐ Ensures HV-144-F004 RWCU Inlet OB Iso Closes ☐ Inhibits ADS IAW OP-183-001 ☐ If directed, Overrides RCIC by manually lowering flow until ~2200 RPM ☐ Bypasses MSIV and CIG interlocks IAW OP-184-001 by taking the 5 switches to BYPASS on 1C645 and 1C644 ☐ Maximizes CRD by starting the standby pump, fully open CRD flow controller in MANUAL, fully open Drive water pressure valve **US** ☐ Enters EO-000-113 ☐ Directs PCOP to inhibit ADS ☐ Directs PCOM to perform the ATWS HC ☐ Gives PCOM a RPV water level band of -60" to -110"	

Event 7, 8 & 9 – Hydraulic-block ATWS

Instructor Activities	Operator Activities	Notes
	US ☐ Directs PCOP to bypass MSIV and CIG interlocks ☐ Directs PCOP to maximize CRD to drift control rods ☐ Directs PCOM to maintain reactor pressure 800-1050 psig using the main turbine ☐ Contacts WWM for assistance with SBLC	

Instructor Note
ES-158-002 actions are in Event 7A

Event 7A – Control Rod Insertion

Instructor Activities	Operator Activities	Notes

Booth Operator

When ES-158-002 is requested, **Insert KEY 8. Monitor** sim SCN count and when complete, perform the first role play and Key 9.

{Key[8]} IRF rfDC102129 f:OPEN d:120 — **ES-158-002 ARI with 2 min TD**
{Key[8]} IRF rfDC102103 f:OPEN d:120 — **ES-158-002 ARI with 2 min TD**

When moving on to Div 1 RPS, **Insert KEY 9. Monitor** sim RF count and perform second role play when complete.

{Key[9]} IRF rfRP158039 f:BYPASS d:120 — **ES-158-002 Div 1 RPS**
{Key[9]} IRF rfRP158040 f:BYPASS d:120

If requested to bypass DIV 2 RPS because the scram cannot be reset, **Insert KEY 10. Monitor** sim RF count and when complete perform fourth role-play.

{Key[10]} IRF rfRP158041 f:BYPASS d:120 — **ES-158-002 Div 2 RPS**
{Key[10]} IRF rfRP158042 f:BYPASS d:120

IF requested, **Insert KEY 11** to reopen CRD charging water isolation valve 146-F034. **Monitor** sim RF count and report when complete.

{Key[11]} IRF rfRD155017 d:120 f:100 — **Re-open CRD chrg wtr isol F034**

If directed to X-tie CIG and I/A, **Wait** 2 minutes, **Insert KEY 12** to open 126172 and report when complete

{Key[12]} IRF rfPC125001 f:OPEN — **X-Tie CIG and I/A**

★ **Critical Task**
Insert Control Rods IAW EO-000-113

Role Play

As **FUS** performing ES-158-002 and ARI is bypassed
ARI has been disabled. Proceeding to RPS Div 1.

Role Play

As **FUS** performing ES-158-002 and Div 1 RPS is bypassed
RPS Div 1 has been bypassed, the scram can be reset at this time. Let me know if the scram cannot be reset.

PCOM

- ☐ Performs hard card for driving control rods
- ☐ Dispatch NPO to close charging water isolation valve 146F034 to attempt to restore drive water pressure
- ☐ Opens 146F034 when rods will not insert
- ☐ Resets Scram when directed
- ☐ Resets rod drift alarm by depressing ROD DRIFT RESET pushbutton
- ☐ Reports when SDV hi-hi level alarm AR-103(4)-F02 clears

Event 7A – Control Rod Insertion

Instructor Activities	Operator Activities	Notes
Role Play As **WWM** contacted for assistance, acknowledge request	**PCOM** ☐ When directed, inserts a manual scram ☐ Observes control rod motion by AR-104-H05, OD7, and 4-rod display ☐ Resets the scram when directed a second time **PCOP** ☐ Directs NPO to re-open charging water isolation valve 146F034 when scram is reset **US** ☐ Directs PCO to manually drive control rods ☐ Directs FUS to perform ES-158-002 to defeat ARI and bypass RPS trips ☐ Directs PCO to ensure charging water isolation valve 146F034 is open when the scram is reset ☐ Directs PCOM to insert a manual scram when the SDV is drained ☐ Directs the PCOM to reset the scram after the first attempt fails to fully insert all the control rods	
Role Play As **FUS** performing ES-158-002 and Div 2 RPS is bypassed ***RPS Div 2 has been bypassed, the scram may be reset at this time, ES-158-002 section 5.3 is complete***		

Critical Parameter
The US should give a Critical Parameter to the PCOM to monitor SDV hi-hi level alarm AR-103(4)-F02 and inform the US when the alarm clears.

Instructor Note
- This scenario will terminate prior to all the control rods being inserted. The scenario should not be terminated until the scram has been reset twice.
- The charging water isolation valve 146F034 must be open to be able to have an effective scram. If the student has closed it and does not reopen the valve, they may not be able to clear the alarms.

Event 10 – RFP Trip

Instructor Activities	Operator Activities	Notes
Booth Operator **Ensure** Event Trigger **ETLOC28-NRC01-J** fires when the scram is reset. Trips the 'A' RFP after a time delay.		
Role Play As **NPO** dispatched to 'A' RFP, wait 2 minutes ***'A' RFP is coasting down. I don't see any indication of why it tripped.***	**PCOM** ☐ Observes and reports AR-101-A10 for 'A' RFP trip ☐ Places the standby RFP in service by opening the HV-10603C valve, Manually raising speed on the 'C' RFP until level is steady, and placing 'C' RFP and valves in automatic **PCOP** ☐ If directed, uses RCIC to restore level until a RFP is restored by raising speed on the speed controller until the desired injection rate is established **US** ☐ Directs PCO to place standby RFP in-service IAW OP-145-005 ☐ Directs PCO to maintain RPV water level -60" to -110" using RCIC until Feedwater is restored ☐ May direct using RCIC as the sole injection source if the plant can support ☐ May direct RHR placed in Suppression Pool Cooling	
Role Play As **WWM** contacted for assistance, acknowledge request		

Instructor Activity - Termination
The scenario may be terminated when RPV water level is stable in the ATWS band, the 'A' RFP has tripped, and the Scram has been reset twice **OR** at the lead evaluator's discretion.

UNIT SUPERVISOR TURNOVER SHEET

UNIT 1 *to/dd/yy*
Date

SHIFT 1900 (Start) to 0700 (End)

MODE 1
POWER LEVEL 95 %
GENERATOR OUTPUT 1270 MWe
CASK STORAGE GATE INSTALLED: YES/NO

SHIFT 0700 (Start) to 1900 (End)

MODE
POWER LEVEL %
GENERATOR OUTPUT MWe
CASK STORAGE GATE INSTALLED: YES/NO

REMARKS:

1) ~95% power for control rod pattern adjustment, 500 days on-line
2) HPCI in day 2 of 4-day system outage window for steam-side maintenance
3) LCO 3.5.1 entered for HPCI outage
4) Diesel Generator E substituted for Diesel Generator A for a SOW
5) RFP lube oil conditioner was swapped from RFP A reservoir to B reservoir last shift
6) Test 'A' RFP main lube oil pump 'B' and swap to main lube oil pump 'B' for PMT. Emergency pump is not required to be tested.
7) Perform control rod pattern adjustment per Reactivity Manipulation Package. Contact RxEng when complete for evaluation.
8)
9)
10)
11)
12)
13)
14)
15)

COMMON:

1) Unit 2 at rated power
2) Severe thunderstorm watch is in effect for Luzerne County for the next 12 hours
3)
4)
5)
6)
7)
8)
9)

OFFGOING UNIT SUPERVISOR CHECKLIST:

NRC CODE PRIOR TO 0800	FOXTROT	DELTA	BRAVO	OSCAR
NRC CODE AFTER 0800	FOXTROT	UNIFORM	HOTEL	ROMEO

1900-0700	0700-1900

1. Evolutions in progress and items to be completed during next shift, as noted in remarks, have been discussed with oncoming Unit Supervisor (including special evolutions, i.e. SICT/E, OPDRVs, etc.).
2. Problems encountered during past shift and abnormal plant conditions, as noted in remarks, have been discussed with oncoming Unit Supervisor.
3. Information in SOMS Log is complete and discussed with oncoming Unit Supervisor.
4. As applicable, turnover plastic Security Badge cover and CRS Monitor function to oncoming Unit Supervisor.

1900 - 0700 _____

0700 - 1900 _____
Offgoing Unit Supervisor

ONCOMING UNIT SUPERVISOR CHECKLIST:

0700 -	1900 -

(14)

1. LCO/TRO Log reviewed.
2. SOMS Log reviewed for entries made in past 24 hours.
3. Report any changes to license or medical status PER NDAP-QA-0723.

0700 - 1900 _____

1900 - 0700 _____
Oncoming Qualified
Unit Supervisor

POST RELIEF

0700 -	1900 -

1. Walk down Control Room panels with Unit Responsible PCO.
2. CRC Book reviewed and Reactivity Brief performed with PCO.
3. Completed System Status Operable audit for open PMT this shift.
4. From the OPS Web page, Review OPS Aggregate Index for Challenges, Work Arounds, and Deficiencies Reports for impact on scheduled work activities and compensatory actions. (20)

0700 - 1900 _____

1900 - 0700 _____
Oncoming Unit Supervisor

SUSQUEHANNA NUCLEAR, LLC
OPERATIONS TRAINING PROGRAM

SCENARIO EXAMINATION GUIDE

REACTOR SHUTDOWN/ FW HEATER TUBE LEAK/ ESS BUS LOCKOUT/ ATWS/ FUEL FAILURE/ RCIC STEAM LEAK/ EMERGENCY DEPRESSURIZATION

SCN# LOC28-NRC03
Revision 1

4/21/2016

Examination Material

TEAM SUSQUEHANNA
Generating Excellence

Lesson Information

Title	Reactor Shutdown/ FW Heater Tube Leak/ ESS Bus Lockout/ ATWS/ Fuel Failure/ RCIC Steam Leak/ Emergency Depressurization				
Vision ID		Accredited		■YES	□ NO
Training ID		Revision	1	Date	4/21/2016
Prerequisites					
Teaching Time	75 minutes				

Approval

CBT Approval[1]	N/A	Date	N/A
Preparer		Date	
Review (Instructor/SME)		Date	
Nuclear Engineering[1]	N/A	Date	N/A
Training Supervision		Date	
Line Management		Date	

[1]If 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.

Revision History

Revision	Date	Comments
0	06/23/2014	New Scenario
1	04/21/2016	Placed in new template. Changed the setup conditions. Changed Event 8 to be a HPCI issue. Changed Event 9 to be triggered off of max safe Temperature. Removed an unanticipated start of an EDG. Changed the leak sizes to allow for operator actions. Adjusted the sim files to remove the CRD rad release. Swapped event 1 and 2.

Table of Contents

Scenario Overview

The scenario begins with Unit 1 shutting down for an unplanned maintenance outage to identify and repair a small RCS leak in the Drywell, 300 days into the operating cycle. Unidentified DW leakage is steady at approximately 0.5 gpm. Reactor power is 33 percent with RFP A in-service in Flow Control Mode. HPCI is in day 2 of a 4-day unplanned maintenance window. The RFP lube oil conditioner is being placed on the RFP B reservoir after being removed from the RFP A reservoir last shift in preparation for a RFP A main lube oil pump test. Control rods 42-15 and 46-19 were declared slow during the last scram time test.

The first task for the crew is to cycle Main Turbine Bypass valve #3 per SO-182-001 to demonstrate functionality of the valve prior to scram. The crew will then insert control rods to lower power to approximately 30 percent.

When the reactivity maneuver has been completed, a tube leak will develop on the 2C Feedwater heater. The leak will initially be within the capability of the dump valve, but will continue to degrade until a heater isolation on high-high level occurs. The crew will respond to the isolation by isolating the extraction steam supplies to the 3C, 4C and 5C heaters and other inputs in accordance with off-normal procedures, and verify the high FW heater levels clear within 15 minutes or trip the main turbine.

Once the crew has completed off-normal procedures for the Feedwater heater isolation, Diesel Generator C will spuriously start. ESW Pump C will fail to automatically start and must be manually started to provide cooling to the DG. When the breaker for ESW Pump C closes, a fault in the breaker will result in an ESS Bus 1C lockout. The crew will align Instrument Air to Containment Instrument Gas to maintain AOVs in the Drywell functional. The leak in the Drywell will degrade coincident with the bus lockout, resulting in a more rapid rise in Drywell temperature and pressure. The crew should complete activities associated with the loss of ESS Bus 1C and insert a manual scram before an automatic scram on high Drywell pressure is received.

When the reactor is scrammed RPS will fail to de-energize, resulting in an electrical ATWS. When ARI is initiated, control rods will slowly drift in when ARI is initiated, resulting in significant fuel cladding failure. The Scram Discharge Volume drains will be failed open, allowing the spread of highly radioactive coolant into the CRD HCU area. This will result in radiation levels rapidly exceeding the EO-104 maximum safe values. The magnitude of the fuel failure will also result in MSL high radiation signals that will require the MSIVs to be closed.

RPV level and pressure control will be with RCIC and SRVs. The RCIC injection valve will fail to automatically open and must be manually opened. Reactor pressure may be lowered to 500-600 psig to allow Condensate to be used for reactor level control.

Once RCIC has been initiated and the CRD HCU area radiation levels have exceeded the max safe value a steam leak will develop in the RCIC room. The isolation logic will fail and both isolation valves will fail to close automatically or manually. RCIC room radiation levels will quickly rise to maximum safe levels. With radiation levels in two areas above max safe, and an unisolable primary system leak outside the primary containment, EO-104 requires Emergency Depressurization. As reactor pressure lowers, the RCIC outboard isolation valve will stroke fully closed.

This scenario may be terminated when RPV water level has been stabilized and actions are being taken to place RHR in Suppression Pool cooling **OR** at the direction of the Chief Examiner.

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. Plant Shutdown Activities

   During plant operation in a shutdown condition

   Perform the activities associated with plant pre-start or shutdown procedures to ensure safe operation of station equipment including the operation of the controls associated with plant equipment that could affect reactivity

2. Operational Actions and Annunciator Response

   Correctly identify plant annunciators and indications and perform appropriate remedial actions

3. System Operation, Controls and Instrumentation

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

4. 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

5. 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

6. 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

7. 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

8. Radiation Monitoring Component Operations

   Demonstrate or describe the use and function of the facility's radiation monitoring systems to maintain radiation levels within regulatory limits

9. Radiation Hazards

   Demonstrate knowledge of significant radiation hazards and ability to respond to the hazards to prevent exceeding regulatory limits

10. 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

11. 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

12. 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

13. 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

14. 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
Reactor Operator	
Insert a Control Rod One Notch	S-201002-01-003
Perform the Monthly Turbine Bypass Valve Cycling	S-241001-01-021
Manually Place Feedwater in Startup Level Control Following Reactor Scram	S-259003-01-018
Confirm Automatic Initiation of RCIC	S-217000-01-001
Perform the Actions of Fire Alarm Response	S-286005-01-008

Task Title	ID
Perform a Manual Operation of the Safety/Relief Valves	S-218000-01-003
Initiate Suppression Chamber Sprays	S-203000-01-088
Initiate Drywell Sprays	S-203000-01-089
Operate the RHR System in the Suppression Pool Cooling Mode	S-203000-01-093
Direct the Actions for Loss of Feedwater Heater String	S-260000-01-007
Direct Actions of Loss of Emergency Service Water (ESW)	S-276001-01-012
Direct the actions for a loss of a 4 KV ESS Bus	S-262004-01-007
Direct the Actions for a Sustained Loss of 4KV ESS Bus 1C (2C)	S-262001-01-025
Direct the Actions for a Loss of Containment Instrument Gas	S-223002-01-005
Direct Actions for Excess Drywell Leakage	S-00-005-01-001
Enter EOP RPV Control	S-EOPRR-01-006
Direct the Actions for Increasing Offgas/MSL Rad Levels	S-272000-01-037
Direct Actions for a +13 Inch Containment Isolation Actuation	S-223002-01-006
Scram the Reactor	S-EOPRR-01-005

Senior Reactor Operator	
Implement Appropriate Portions Of Plant Shutdown To Minimum Power	000000-02-1138
Direct Entry into Loss of Feedwater Heater String	S-260000-02-002
Direct Entry into Loss of Emergency Service Water (ESW)	S-276001-02-001
Direct Entry into Loss of 4KV ESS Bus 1(2)A(B)(C)(D)	S-262001-02-010
Direct Entry into Loss of Containment Instrument Gas	S-223002-02-001
Direct or Concur with entry into Excess Drywell Leakage	S-00-005-02-001
Direct entry into ON-SCRAM-101(201) Reactor Scram	000000-02-1147
Direct and Coordinate Implementation of RPV Control	000000-02-1125
Direct Entry into Increasing Offgas/MSL Rad Levels	S-272000-02-006
Direct and Coordinate Implementation of Secondary Containment Control	000000-02-1127
Direct Entry into Containment Isolation	S-223002-02-002
Direct and Coordinate Implementation of Emergency Depressurization	000000-02-1129

Scenario Attributes

A. Critical Tasks

1. **Manually initiate ARI**	
Safety Significance	Control rod insertion initiates power reduction immediately.
Consequences for Failure to Perform the Task	Failure to insert control rods 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	Arm and depress Division 1 and 2 ARI initiation pushbuttons, HS-147103A(B)1.
Performance Feedback	ARI Division 1 and 2 vent valves open, block valves close. Rod position full-in indication when control rod insertion complete.
2. Emergency Depressurize the reactor when two Secondary Containment Areas exceed Max Safe Temperature levels	
Safety Significance	High energy leak in the Secondary Containment Area impacts the integrity of Secondary Containment. Failure of the Secondary Containment directly relates to the 10CFR50.67 design criteria of dose to the General Public.
Consequences for Failure to Perform the Task	Failure to take actions to mitigate the energy released to the secondary containment directly affects the radiation dose to the General Public.
Indications/ Cues for Event Requiring Critical Task	Increasing area temperatures and alarms for RB Areas indicating levels at Max Safe values.
Performance Criteria	Perform an Emergency Depressurization per EO-000-112 when two or more RB areas exceed max safe temperature per EO-000-104. Open 6 ADS SRVs.
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 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	Test Turbine Bypass Valve #3 (SO-182-001)
2	N/A	Insert Control Rods (OP-156-001, OP-AD-338)
3	cmfHX02_1E102C	FW heater 2C tube leak (AR-120-C10, D10), Isolate FW heater extraction steam (ON-147-002), TS MCPR limits not applicable (TS 3.2.2)
4	cmfEB01_1A203 mfRR164010	ESS Bus 1C lockout, Drywell leak severity rises, reactor scram required (ON-104-203, TS 3.8.7)
5	mfRP158003	Electrical ATWS (EO-000-113) ARI inserts control rods
6	cmfMV06_HV149F013	RCIC injection valve fails to open on initiation (OP-150-001)
7	mfRR179003	Fuel failure with high MSL radiation, MSIV isolation required (AR-103-D01, AR-104-D01)
8	cmfMV01_HV155F002 cmfMV07_HV155F003 f:90	HPCI steam isolation valves fail to automatically close (AR-108-F04, F05), manual isolation successful after reactor pressure reduced
9	mfRC150004	Unisolable RCS leak into Secondary Containment, 2 areas above Max Safe Temp (EO-000-104)

C. Abnormal Events and Major Transients

Malfunction	Description
R	Insert Control Rods (OP-156-001, OP-AD-338)
N	Test Turbine Bypass Valve #3 (SO-182-001)
AE1	FW heater 2C tube leak (AR-120-C10, D10),
AE2	ESS Bus 1C lockout
AE3	Electrical ATWS (EO-000-113)
MT1	Unisolable RCS leak into Secondary Containment, 2 areas above Max Safe Rad (EO-000-104)
MAE1	Fuel failure with high MSL radiation, MSIV isolation required

Malfunction	Description
MAE2	RCIC injection valve fails to open on initiation
MAE3	HPCI steam isolation valves fail to automatically close
TS1	TS MCPR limits not applicable (TS 3.2.2)
TS2	ESS Bus 1C lockout (TS 3.8.7)

D. EOP and EOP Contingencies Used

EOPs	EOP Contingencies
☒ EO-000-102, RPV Control	☐ EO-000-102, Alternate Level Control
☐ EO-000-103, Primary Containment Control	☐ EO-000-102, Steam Cooling
☒ EO-000-104, Secondary Containment Control	☒ EO-000-112, Emergency Depressurization
☐ EO-000-105, Radioactivity Release Control	☒ EO-000-113, Power/Level Control
	☐ EO-000-114, RPV Flooding

E. Technical Specifications

1. TS 3.8.1 AC Sources operating
2. TS 3.7.6 Plant Systems Main Turbine Bypass System
3. TS 3.2.2 Minimum Critical Power Ratio
4. TR 3.2.1 Core Operating Limits Report (COLR)

References

1.	OP-AD-300	Administration of Operations
2.	OP-AD-338	Reactivity Manipulation Standards and Communication Requirements
3.	OP-054-001	Emergency Service Water
4.	OP-156-001	Reactor Manual Control System
5.	SO-182-001	Monthly Turbine Bypass Valve Testing
6.	ON-SCRAM-101	Reactor Scram
7.	AOP-104-101	Energizing Dead 4KV ESS Bus
8.	ON-4KV-101	Loss of 4KV bus
9.	ON-125-001	Loss of Containment Instrument Gas
10.	ON-147-002	Anticipated Loss of FW HTR String
11.	ON-179-001	Increasing Offgas MSL Rad Levels
12.	EO-000-102	RPV Control
13.	EO-000-103	Primary Containment Control
14.	EO-000-104	Secondary Containment Control
15.	EO-000-105	Radioactivity Release Control
16.	EO-000-112	Emergency Rapid Depressurization
17.	EO-000-113	Power/ Level Control
18.	ES-158-001	De-energizing Scram Pilot Solenoids
19.	EP-PS-100	Emergency Director Control Room Emergency Plan
20.	EP-RM-004	EAL Classification Bases
21.	AR-106-F03	Offgas Hi Hi Radiation
22.	AR-108-E05	RCIC Leak Detection Hi Temp/ Hi Diff Temp
23.	AR-110-A01	ADS Logic A Timer Initiated
24.	AR-110-A02	ADS Logic C Timer Initiated
25.	AR-110-A03	ADS Logic B Timer Initiated
26.	AR-110-A04	ADS Logic D Timer Initiated
27.	AR-120-D10	FW HTR C Dump Vlv Open
28.	TS 3.8.1	AC Sources operating
29.	TS 3.7.6	Plant Systems Main Turbine Bypass System
30.	TS 3.2.2	Minimum Critical Power Ratio
31.	TR 3.2.1	Core Operating Limits Report (COLR)
32.		

Setup Instructions

A. Required Materials

1. US Turnover Sheet
   a. Unit 1
      1) Reactor Power ~33%
      2) 1 RFP in FCM
      3) Shutdown to identify and repair small RCS leak in Drywell. Unidentified leak is 0.5 gpm for last 36 hours. ON-100-005 actions are complete. 12 hour leakrate calculations are being performed.
      4) Insert Control Rods IAW given RMR
      5) Perform test of Bypass Valve #3 IAW SO-182-001 for valve functional test
   b. Common and Unit 2
      1) Unit 2 at rated power.
2. Supporting Documents
   a. SO-182-001
   b. GO-100-012
   c. RMR (2 copies)

B. Simulator Initialization

1. **Reset** to exam specific IC, otherwise setup as follows
   a. **Reset** to IC-20
   b. **Place** the simulator in RUN
   c. **Insert** a LIM2
   d. **Disable** IND RFP FLOW < 16.4% LIM2 runback IAW OP-164-001
   e. **Select** FWLC to VENTURI
   f. **Insert** rfFW145032 to CLOSE for HWC to 'C' RFP
   g. **Place** 'C' RFP in STANDBY IAW OP-145-001
   h. **Remove** 2 condensate pumps from service (prefer 'C' and 'D') when suction pressure is >600 psig
   i. **Shutdown** HWC IAW OP-145-002
   j. **Ensure** proper number for filter/demins are in-service IAW OP-139-001
   k. **Insert** control rods to <60% rod-line
   l. **Lower** reactor power to 37-38% using recirc

m. **Place** 'B' RFP in STANDBY and **Trip** 'C' RFP

n. **Reduce** RRP speed to <30%

o. **Verify** Load Set is ~100MWe above generator load

p. **Place** the simulator in FREEZE

2. **Run** SCN file **exam\LOC28-NRC-03**
3. **Place** the simulator in RUN
4. **Perform** simulator activities
   a. **Place** the blue reactivity in progress signs up.
5. **Verify** the simulator matches the following

MF	RF	OR	ET	CONDITIONS
16:16	4:4	0:0	8	12

6. **Ensure** FW Control is selected to VENTURI
7. **Reset** ODAs and all Overhead, PICSY, HMI and RWM alarms
8. **Ensure** horns and annunciators are on
9. **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 in G:\NTGOPS\LOR\REQUAL\Info Tracking\ (LOR)
2. **Record** crew position assignments per TQ-104 (ILO)
3. **Complete** an IER 11-3 Operator Fundamentals Simulator Observer Aid
4. **Complete** simulator setup checklists

E. Scenario Execution

1. **Identify** performance improvement actions that may be addressed during the scenario
2. **Provide** turnover to the crew using the US Turnover sheet
3. **Direct** the crew to walk down the Control Room panels
4. **Inform** the Shift Manager that the crew has the shift

F. Simulator Files

LOC28-NRC-03

delmp
SCN rat_mp

insmp tcvpbv3
changemp tcvpbv3 ,,,BYPASS VALVE POSITION 3

insmp fwlt10303c1
changemp fwlt10303c1 ,,,FWH 2C LEVEL

```
insmp ycpxnbt01
changemp ycpxnbt01 ,,DEG F,TFW A

insmp ycpxghf01
changemp ycpxghf01 ,,,GEN H2 SUPPLY FLOW

insmp ycpxghp01
changemp ycpxghp01 ,,,GEN H2 PRESSURE

insmp ecvp033035
changemp ecvp033035 ,,,HYDROGEN EXCESS FLOW A INLET ISO
VLV

insmp rdpic121r013
changemp rdpic121r013 ,,psig,SCRAM AIR HDR PRESS

insmp ycpxpar02
changemp ycpxpar02 ,,MR/HR,RCIC RM ARM LO-RNG

insmp ycpxpar57
changemp ycpxpar57 ,,MR/HR,RCIC RM ARM HI-RNG

insmp ycpxmar01
changemp ycpxmar01 ,,R/HR,CTMT HI-RANGE ARM

insmp aoURSG331N605A.CurrValue
changemp aoURSG331N605A.CurrValue 0,350,DEG F,RCIC
Equip Area Temp

insmp aoURSG331N604D.CurrValue
changemp aoURSG331N604D.CurrValue 0,350,DEG F,HPCI
Equip Area Temp


; O-G alarms suppressed SDR #
IMF annAR106F15 f:ALARM_OFF
IMF annAR131A04 f:ALARM_OFF

; small dw leak
IMF mfRR164010 f:.1
IMF cmfTR01_LT16102A
IMF cmfTR01_LT16102B
IMF annAR107A05 f:ALARM_OFF
IMF annAR107B05 f:ALARM_OFF

; FWH trouble alarms defeated
IMF annAR120H10 f:ALARM_ON
IMF annAR120H07 f:ALARM_ON
IMF annAR120H04 f:ALARM_ON

; HVAC Div 1&2 alarms locked in
IMF annAR106A16 f:ALARM_ON
IMF annAR106B16 f:ALARM_ON

; Electrical ATWS
IMF mfRP158003

; ARI outlets partially blocked
IRF rfRD155030 f:1

; RCIC F013 valve auto-open failure
IMF cmfMV06_HV149F013

; HPCI isol valve auto logic fail
IMF cmfMV06_HV155F002
IMF cmfMV06_HV155F003

aet ETLOC28-NRC03-A        ; terminate LOCA severity on
scram

aet ETLOC28-NRC03-B        ; Fuel failure and spurious RCIC
init on rod drift

aet ETLOC28-NRC03-C        ; Delete MSIV rad malfunction on
MSIV closure

aet ETLOC28-NRC03-D        ; RCIC room steam leak

aet ETLOC28-NRC03-E; HPCI room steam leak

aet ETLOC28-NRC03-F; HPCI F002 valve breaker trips when
stroked

aet ETLOC28-NRC03-G        ; HPCI F003 valve binds when
stroked

aet ETLOC28-NRC03-H        ; HPCI F003 valve closes on
blowdown


; 2C FWH tube leak
{Key[1]} IMF cmfHX02_1E102C r:300 i:5 f:15

; 2C FWH tube leak degrades
{Key[2]} IMF cmfHX02_1E102C r:60 f:20

; 2C FWH dump/drain 3C drain
{Key[3]} SCN exam\LOC28-NRC03-A

; 1C ESS Bus Lockout
{Key[4]} IMF mfDS104001C

; Xtie I/A to CIG
{Key[5]} IRF rfPC125001 f:OPEN

; Local Evac Alarm
{Key[6]} SCN exam\LOCAL_EVAC_ALARM

; ADS Keys
{Key[7]} IOR diHS14113G2 d:60 f:OPEN
{Key[7]} IOR diHS14113J2 d:66 f:OPEN
{Key[7]} IOR diHS14113K2 d:72 f:OPEN
{Key[7]} IOR diHS14113L2 d:78 f:OPEN
{Key[7]} IOR diHS14113M2 d:84 f:OPEN
{Key[7]} IOR diHS14113N2 d:90 f:OPEN
```

LOC28-NRC03-A
IOR diLIC10306CD_Q f:MANUAL
IOR diLIC10306CB_Q f:OPEN
IOR diLIC10302CD_Q f:MANUAL
IOR diLIC10302CA_Q f:OPEN
IOR diLIC10407CD_Q f:MANUAL
IOR diLIC10407CB_Q f:CLOSE

LOC28-NRC03-B
IMF mfRR179003 i:2 f:5 r:600
;IMF cmfTR02_RIT13705 r:68 f:1000
;IMF cmfTR02_RIT13706 r:59 f:1000
;IMF cmfTR02_RIT13750 d:45 r:30:00 f:65
;IMF cmfTR02_RIT13751 d:40 r:30:00 f:66
IMF mfRM179004A r:300 f:50000
IMF mfRM179004B r:300 f:50000
IMF mfRM179004C r:300 f:50000
IMF mfRM179004D r:300 f:50000

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

ETLOC28-NRC03-A
pcpdwg > 1.8 | diHSC72A1S01.CurrValue !=
#OR.diHSC72A1S01.RUN
MMF mfRR164010 f:0.0

ETLOC28-NRC03-B
rdpic121r013 < 42
SCN exam\LOC28-NRC03-B
IMF mfRC150006

ETLOC28-NRC03-C
msvsphv141f022a < .1 & msvsphv141f022b < .1 &
msvsphv141f022c < .1 & msvsphv141f022d < .1
MMF mfRM179004A r:300 f:50 c:300
MMF mfRM179004B r:300 f:50 c:300
MMF mfRM179004C r:300 f:50 c:300
MMF mfRM179004D r:300 f:50 c:300

ETLOC28-NRC03-D
rcvsphv150f045 > 0.1
IMF mfRC150004 r:120 f:20

ETLOC28-NRC03-E
;HPCI steam leak
hpvsphv155f001 > 0.1
IMF mfHP152009 r:120 f:20
IMF mfHP152003 r:360 f:20

ETLOC28-NRC03-F
;HPCI I/B F002 breaker trip
diHS15502.CurrValue = #OR.diHS15502.CLS
IMF cmfMV01_HV155F002

ETLOC28-NRC03-G
;HPCI O/B F003 Binds
diHS15503.CurrValue = #OR.diHS15503.CLS
IMF cmfMV07_HV155F003 f:90

ETLOC28-NRC03-H
rrpdome < 200
MMF cmfMV07_HV155F003 f:0 r:60 c:70

Event 1 – Turbine Bypass Valve #3 Test

Instructor Activities	Operator Activities	Notes
Booth Operator No additional activities required.		
Role Play As **GCC/TCC** informed of turbine bypass test ***Grid conditions are stable thank you for the notification. Inform us when testing is complete.*** **Role Play** If required to prompt the crew to perform the BPV testing, contact the control room as the **Shift Manager** ***Have we started the bypass valve testing?***	**PCOM** ☐ Monitor diverse indications of reactor power IAW OP-AD-001 ☐ As required, performs peer checks **PCOP** ☐ When directed, performs BPV #3 testing ☐ Selects position 3 on the BPV TEST SELECT ☐ Depress AND Hold TEST BYPASS VALVE pushbutton ☐ Observes proper light indications and BPV #3 opens fully ☐ Releases TEST BYPASS VALVE pushbutton ☐ Observes proper light indications and BPV #3 closes **US** ☐ Performs update for performing SO-182-001, Monthly Turbine Bypass Valve Cycling for BPV #3 ☐ Directs PCOP to perform SO-182-001	

Event 2 – Control Rod insertion to lower power

Instructor Activities	Operator Activities	Notes
Booth Operator No additional activities are required.		
Role Play As **RE** contacted for assistance ***Core thermal limits are within our predictions. You may proceed with the power reduction.*** **Role Play** As **Shift Manager** contacted for approval ***The reactivity manipulation may proceed IAW the RMR.***	**PCOM** ☐ Inserts Control Rods IAW OP-156-001, OP-AD-338, and the RMR to lower power to ~30% ☐ Uses two-handed operation to select the correct control rod ☐ Inserts the selected control rod by depressing and holding the Insert pushbutton ☐ Depress the Rod Selct Clear pushbutton when rod movement is complete ☐ Plots power change on Power/ Flow map ☐ Monitors diverse indications of reactor power IAW OP-AD-001 **PCOP** ☐ Peer Checks the reactivity maneuver ☐ IAW OP-AD-300, nulls Manual and Automatic regulators using MAN VOLT REG ADJUST HC-10002 ☐ Maintains Load Set ~100MWe above actual generator load **US** ☐ Obtains permission from the SM prior to commencing reactivity manipulations ☐ Informs TCC/GCC of load changes on Unit 1 ☐ Conducts crew update prior to commencing rod insertion ☐ Directs control rod insertion IAW OP-156-001, RMR, and GO-100-012 ☐ Monitors control rod movement with independent RMR	

Event 2 – Control Rod insertion to lower power

Instructor Activities	Operator Activities	Notes

Event 3 – FW Heater 2C Tube Leak

Instructor Activities	Operator Activities	Notes

Booth Operator

When the bypass valve test circuit has been turned off, **Insert KEY 1** to initiate a tube leak in FW heater 2C. The tube leak will take 2-3 minutes to result in a noticeable rise in FW heater level.

{Key[1]} IMF cmfHX02_1E102C r:300 i:5 f:15 **FWH 2C tube leak**

Once the crew has diagnosed the tube leak and initiated actions to isolate FW heater 2C, if desired, **Insert KEY 2** to raise the severity of the leak

{Key[2]} IMF cmfHX02_1E102C r:60 f:20 **FWH 2C tube leak degrades**

When directed, **Insert KEY 3** to configure FW heater 2C and 3C drains and dumps IAW ON-147-002 Step 3.8

{Key[3]} SCN exam\LOC28-NRC03-A **RFP seal water iso**

Role Play

As **NPO** dispatched to FWH 'C' panel 1C103, wait 2 minutes

The 2C FW heater level control and emergency dump valves are responding. Heater level is continuing to rise.

Role Play

As **WWM** contacted for assistance with FW heater 'C', wait 5 minutes

Engineering recommends removing the 2C FW heater from service and isolating it.

Role Play

As **NPO**to check FWH level after the isolation, wait 1 minute

The 2C FW heater level is slowly lowering

PCOM

- ☐ Monitors neutron instrumentation for indication of core instability

PCOP

- ☐ Performs AR-120-D10, FW HTR String 'C' Dump VLV Full Open
- ☐ Dispatches NPO to 1C103 to ensure FW Heater 3C to 2C Iso VLV is 100% OPEN and if FW level control valve 100% open
- ☐ Performs ON-147-002 to isolate extraction steam supplies to 3C, 4C, and 5C and to isolated FW heater string 'C'
- ☐ Dispatches NPO to perform ON-147-002 step 3.7 to configure FW heater vent and drain valves
- ☐ Dispatches NPO to perform ON-147-002 step 3.8 to close the RFP Seal Water Bleed Off HV-10244C

US

- ☐ Enters ON-147-002 for Anticipated Loss/Loss of Feedwater Heater String
- ☐ Enters TS 3.2.2

Instructor Cue

When the SSE and MSEP drain valves are closed, proceed to Event 4

Event 3 – FW Heater 2C Tube Leak

Instructor Activities	Operator Activities	Notes

Event 4 – ESS Bus 1C lockout/ Reactor Scram

Instructor Activities	Operator Activities	Notes

Booth Operator

When the crew has completed the isolation of 2C FW heater, **Insert KEY 4** to initiate a lockout of 1C ESS Bus

{Key[4]} IMF mfDS104001C **1C ESS Bus Lockout**

When directed, **Wait** 2 minutes, **Insert KEY 5** to cross-tie Instrument Air to CIG and report when complete

{Key[5]} IRF rfPC125001 f:OPEN **X-tie I/A to CIG**

Ensure Event Trigger **ETLOC28-NRC03-A** fires when the mode switch is placed in SHUTDOWN or DW pressure reaches 1.72 psig to terminate the rise in DW leak severity.

Role Play

As **NPO** dispatched to ESS Bus 1C, wait 2 minutes

The '1C' ESS bus has a differential trip lockout.

Role Play

As **NPO** directed to perform post start checks on the 'C' EDG, wait 2 minutes

Post Start checks on the 'C' diesel are SAT.

PCOM

- ☐ When directed, inserts a manual scram by placing the Mode Switch to SHUTDOWN
- ☐ Identifies more than 1 control rod > position 00
- ☐ Performs Scram report

PCOP

- ☐ IAW ON-104-203, directs NPO to crosstie I/A to CIG
- ☐ Performs ON-4KV-101
- ☐ Informs US of rising DW pressure
- ☐ Ensures cooling to the 'C' EDG

US

- ☐ Enters ON-4KV-101
- ☐ Enters ON-125-001
- ☐ Enters TS 3.8.7.A for a required AC distribution system inoperable
- ☐ Contacts WWM for assistance with the 1C ESS Bus
- ☐ Prior to 1.72# in the DW, directs a manual SCRAM

Critical Parameter

The US should direct updates of Drywell Pressure and an action to scram the Unit prior to 1.72#. Preffered update is every 0.2 psig and preffered scram is at 1.2 psig.

Event 5, 6 – Electrical ATWS

Instructor Activities	Operator Activities	Notes

Booth Operator

Ensure Event Trigger **ETLOC28-NRC03-B** fires when scram air header pressure falls below 42 psig to initiate a spurious RCIC initiation and fuel failure.

★ **Critical Task**
Manually initiate ARI

Role Play

As **NPO** dispatched to vent the scram air header, wait 3 minutes

I am having issues with the scram air header cap. I am going to get a pipe wrench.

Role Play

As **NPO** sent to scram air header, 2 minutes after the above report

I still can't get the cap off. I am going to get maintenance support.

Role Play

As **FUS** contacted to implement ES-158-001, acknowledge the request

PCOM

- ☐ Arm and Depress Manual Scram Pushbuttons on 1C651
- ☐ Inserts IRMs and SRMs
- ☐ If directed, Lowers RRP speed to Minimum
- ☐ If directed, trips RRPs one at a time
- ☐ If directed, Injects SBLC with HS-14804
- ☐ Maintains RPV water level within the ATWS band
- ☐ Reports Control Rods drifting and "All Rods in" when ARI completes

PCOP

- ☐ Initiates ARI by Arming and Depressing HS-147103A1 & B1
- ☐ If directed, inhibits ADS
- ☐ If directed, maximizes CRD
- ☐ If directed, Bypasses MSIV and CIG interlocks

US

- ☐ Enters EO-000-102, RPV control
- ☐ Transitions to EO-000-113, Level/ Power Control
- ☐ Transitions back to EO-000-102 when all rods are inserted
- ☐ May direct PCOP to Inhibit ADS
- ☐ May direct PCOM to perform the ATWS HC

Event 5, 6 – Electrical ATWS

Instructor Activities	Operator Activities	Notes
	US ☐ Directs PCOP to override HPCI ☐ May Direct PCOM to stop and prevent injection with Feedwater and maintain Water level -60" to -110" ☐ Directs PCOM to maintain RPV pressure 800 to 1050 psig with Bypass Valves ☐ May direct PCOP to bypass MSIV and CIG interlocks ☐ May direct PCOP to maximize CRD	

Instructor Note
Actions for the fuel failure and high MSL radiation levels are in the next event.

Actions for the ATWS in EO-000-113 are dependent upon when all the control rods are inserted with ARI. All of these steps start with 'If directed" or "May direct."

Event 7 – Fuel Failure/ MSIV closure

Instructor Activities	Operator Activities	Notes
Booth Operator **Ensure** Event Trigger **ETLOC28-NRC03-C** fires when all inboard MSIVs are closed to terminate the elevated radiation readings If directed to evacuate any portion of the power block, use **KEY 6** to sound the local evacuation alarm. **Perform** OP-009-004 attachment A for the announcement and order for the alarm. **{Key[6]} SCN exam\LOCAL_EVAC_ALARM**		
Role Play As **WWM** contacted for assistance with the fuel failure, wait 5 minutes ***The scram air header vented very slowly. The vent ports are somehow restricted. The slow control rod drifting caused a number of fuel rods to fail.*** **Role Play** As **NPO** dispatched to investigate a fire alarm in the Reactor Building sump room area, wait 2 minutes ***Steam was coming from the Reactor Building sumps. I had to leave the room due to dose rates in the area.*** **Role Play** As **Chemistry** contacted for sampling due to the fuel failure, wait 5 minutes ***Dose rates by the sample stations are preventing us from collecting samples. We are working with RP to gain access.***	**PCOM** ☐ Performs AR-106-F03, Offgas Hi Hi Radiation Alarm ☐ Performs AR-103(104)-D01, Main Steam Line Hi Hi Radiation **PCOP** ☐ Performs ON-179-001, Increasing Offgas/ MSL Rad Levels ☐ Performs AR-SP-002 for X108_Z1 alarm, observes Fire Pumps Start ☐ Dispatches NPO to investigate RB sump area ☐ When directed, closes all MSIVs and MSL drains **US** ☐ Enters ON-179-001 for MSL/ Offgas Hi Rad conditions ☐ Directs Unit 2 to perform evacuations of Unit 1 and Unit 2 Turbine Building ☐ Contacts WWM to assist with elevated dose rates ☐ Contacts Chemistry to collect samples due to the fuel failure ☐ Contacts RP to support Chemistry with the samples ☐ Directs closure of MSIVs and MSL drains when MSL Hi Hi Rad Alarm is received	

Event 8 – Steam Leaks

Instructor Activities	Operator Activities	Notes
Booth Operator **Ensure** Event Trigger **ETLOC28-NRC03-D** fires when the RCIC steam supply valve HV-150-F045 opens to cause a steam leak in the RCIC room. **Ensure** Event Trigger **ETLOC28-NRC03-E** fires when the HPCI steam supply valve HV-155-F001 opens to cause an unisolable steam leak in the HPCI room. This trigger may be forced if HPCI is not initiated for water level control. **Ensure** Event Trigger **ETLOC28-NRC03-F** fires when HPCI inboard isolation valve HV-155-F002 is stroked to trip its breaker 1B237-082. **Ensure** Event Trigger **ETLOC28-NRC03-G** fires when HPCI outboard isolation valve HV-155-F003 is stroked to bind the valve in place.		
Role Play As **NPO** dispatched to the RCIC room, wait 2 minutes ***I can hear a steam leak in the RCIC room*** **Role Play** As **NPO** dispatched to the RCIC room after RCIC has been isolated, wait 2 minutes unless already there then report ***I do not hear steam in the RCIC room*** **Role Play** As **NPO** dispatched to the HPCI room, wait 2 minutes ***I can hear steam in the HPCI room*** **Role Play** As **NPO** dispatched to 1B237-082, HPCI IB Iso valve breaker, wait 2 minutes ***1B237 breaker 82 is tripped on magnetics*** **Role Play** As **NPO** dispatched to HPCI OB isolation valve F003, wait 2 minutes ***HV-155-F003 HPCI OB valve is about 50% closed***	**PCO** ☐ Performs AR-108-E05, RCIC Leak Detection Hi Temp/Hi Diff Temp ☐ Performs AR-114-E05, HPCI Leak Detection Hi Temp/Hi Diff Temp ☐ Performs AR-SP-002 for X108_Z3 alarm ☐ Dispatches NPO to RCIC room to investigate leak ☐ Dispatches NPO to HPCI room to investigate leak ☐ Isolates RCIC by closing the steam valves ☐ Attempts to isolate HPIC by closing the steam isolation valves ☐ Dispatches NPO to HPCI IB valve breaker 1B237-082 ☐ Dispatches NPO to HPCI OB valve to manually close HV-155-F003 ☐ Starts an ESW pump in each loop	

Event 8 – Steam Leaks

Instructor Activities	Operator Activities	Notes
Role Play As **NPO** dispatched to manually close HPCI OB valve HV-155-F003, wait 2 minutes ***The HPCI OB valve F003 will not move manually.***	**US** ☐ Enters EO-000-104, Secondary Containment Control ☐ Directs starting ESW ☐ Directs PCO to isolate RCIC ☐ Directs PCO to isolate HPCI ☐ Contacts WWM for assistance with isolating HPCI ☐ Contacts WWM for assistance with RCIC leak	
Role Play As **WWM** contacted for assistance with the HPCI IB valve F002, wait 5 minutes ***Maintenance believes there is a fault on the HPCI IB valve F002 actuator motor. A Drywell entry will be required to troubleshoot.***		
Role Play As **WWM** contacted for assistance with the HPCI IB valve F003, acknowledge request. If contacted later, report ***Engineering and Maintenance are still discussing the issue.***		

Critical Parameter
The US should direct a PCO to monitor RCIC and HPCI room temperatures and Radiation levels. These are key to determining if an Emergency Depressurization is required.

Instructor Note
Event Trigger **ETLOC28-NRC03-E** will have to be forced if HPCI was not initiated for level control. This will be at the direction of the Chief Evaluator.

Event 9 – Emergency Depressurization

Instructor Activities	Operator Activities	Notes

Booth Operator

Ensure Event Trigger **ETLOC28-NRC03-H** fires when reactor pressure falls below 200 psig to allow the HPCI OB isolation valve F003 to close

When directed, **Insert KEY 7** to open ADS SRVs from the Upper Relay Room. Monitor 1C601 ADS SRV solenoid status and report when complete.

{Key[7]} IOR diHS14113G2 d:60 f:OPEN
{Key[7]} IOR diHS14113J2 d:66 f:OPEN
{Key[7]} IOR diHS14113K2 d:72 f:OPEN
{Key[7]} IOR diHS14113L2 d:78 f:OPEN
{Key[7]} IOR diHS14113M2 d:84 f:OPEN
{Key[7]} IOR diHS14113N2 d:90 f:OPEN

★ **Critical Task**
Emergency Depressurize the reactor when two Secondary Containment Areas exceed Max Safe Temperature levels

	PCO ☐ Prevents injection from RHR pumps not required for adequate core cooling ☐ Prevents injection of Core Spray pumps not required for adequate core cooling ☐ Opens all ADS valves by placing hand switches for the ADS SRVs to open ☐ Restores and maintains RPV level using condensate as reactor pressure lowers ☐ Places RHR is Suppression Pool Cooling IAW OP-149-004 ☐ Places RHRSW in service IAW OP-149-004	

Event 9 – Emergency Depressurization

Instructor Activities	Operator Activities	Notes
	US ☐ Enters EO-000-112, Emergency Depressurization ☐ Enters EO-000-105 for an unisolated primary leak into secondary containment and SGTS not running ☐ Directs PCO to prevent injection from LPCI and Core Spray pumps not required for adequate core cooling ☐ Directs PCO to open all ADS valves ☐ Directs PCO to restore and maintain RPV level using Condensate ☐ Directs PCO to place Suppression Pool Cooling in service	

Instructor Note
EO-000-105 should be entered when the HPCI leak occurs and after the scram. Ventilation has been secured due to the power failure, SGTS is not running, and a primary leak is occuring. This is an unmonitored release. If the crew starts SBGT before the leak, then it will not need to be entered. After the ED, HPCI will isolate and terminate the requirement for entering EO-000-105.

Instructor Activity - Termination
This scenario may be terminated when RPV water level has been stabilized and actions are being taken to place RHR in Suppression Pool cooling **OR** at the direction of the Chief Examiner.

UNIT SUPERVISOR TURNOVER SHEET

UNIT 1 *to/dd/yy*
Date

SHIFT 1900 (Start) to 0700 (End)

MODE 1
POWER LEVEL 33 %
GENERATOR OUTPUT 351 MWe
CASK STORAGE GATE INSTALLED: YES/NO

SHIFT 0700 (Start) to 1900 (End)

MODE
POWER LEVEL %
GENERATOR OUTPUT MWe
CASK STORAGE GATE INSTALLED: YES/NO

REMARKS:

1) Reactor power approximately 33 percent, 1 RFP in FCM
2) Shutdown in progress to identify and repair small RCS leak in Drywell. Unidentified leak rate 0.5 gpm. ON-100-005 actions are complete. Leak rate is stable and 12-hour calculations are being performed. AR-106-A16 & B16 are locked in for this condition.
3) Perform test of Bypass Valve #3 per SO-182-001 for troubleshooting
4) Insert Control Rod IAW the RMR to 30% APRM power
5)
6)
7)
8)
9)
10)
11)
12)
13)
14)
15)

COMMON:

1) Unit 2 at rated power
2)
3)
4)
5)
6)
7)
8)
9)

OFFGOING UNIT SUPERVISOR CHECKLIST:

NRC CODE PRIOR TO 0800	FOXTROT	DELTA	BRAVO	OSCAR
NRC CODE AFTER 0800	FOXTROT	UNIFORM	HOTEL	ROMEO

1900-0700	0700-1900

1. Evolutions in progress and items to be completed during next shift, as noted in remarks, have been discussed with oncoming Unit Supervisor (including special evolutions, i.e. SICT/E, OPDRVs, etc.).
2. Problems encountered during past shift and abnormal plant conditions, as noted in remarks, have been discussed with oncoming Unit Supervisor.
3. Information in SOMS Log is complete and discussed with oncoming Unit Supervisor.
4. As applicable, turnover plastic Security Badge cover and CRS Monitor function to oncoming Unit Supervisor.

1900 - 0700 _____

0700 - 1900 _____
Offgoing Unit Supervisor

ONCOMING UNIT SUPERVISOR CHECKLIST:

0700 -	1900 -

(14)

1. LCO/TRO Log reviewed.
2. SOMS Log reviewed for entries made in past 24 hours.
3. Report any changes to license or medical status PER NDAP-QA-0723.

0700 - 1900 _____

1900 - 0700 _____
Oncoming Qualified
Unit Supervisor

POST RELIEF

0700 -	1900 -

1. Walk down Control Room panels with Unit Responsible PCO.
2. CRC Book reviewed and Reactivity Brief performed with PCO.
3. Completed System Status Operable audit for open PMT this shift.
4. From the OPS Web page, Review OPS Aggregate Index for Challenges, Work Arounds, and Deficiencies Reports for impact on scheduled work activities and compensatory actions. (20)

0700 - 1900 _____

1900 - 0700 _____
Oncoming Unit Supervisor

SUSQUEHANNA NUCLEAR, LLC
OPERATIONS TRAINING PROGRAM

SCENARIO EXAMINATION GUIDE

EDG SHUTDOWN/ CONTROL ROD DRIFT/ T-20 LOCKOUT/ DRYWELL STEAM LEAK/ RPV FLOODING

SCN# LOC28-NRC-04
Revision 1

4/26/2016

Examination Material

TEAM SUSQUEHANNA
Generating Excellence

Lesson Information

Title	EDG Shutdown/ Failed RPS Reactor Pressure Channel/ Control Rod Drift/ T-20 Lockout/ Drywell Steam Leak/ RPV Flooding				
Vision ID		Accredited		■YES	□ NO
Training ID		Revision	1	Date	4/26/2016
Prerequisites					
Teaching Time	75 minutes				

Approval

CBT Approval[1]	N/A	Date	N/A
Preparer		Date	
Review (Instructor/SME)		Date	
Nuclear Engineering[1]	N/A	Date	N/A
Training Supervision		Date	
Line Management		Date	

[1]If 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.

Revision History

Revision	Date	Comments
0	6/10/2014	New Scenario
1	4/26/2016	Updated to new format. Removed the Pressure transmitter failure Event. Changed the drifting control rod events from drifting in then out to only drifting in. Removed Event to fail an injection valve for a loop of RHR. Added runaway RRP with Event 2.

Table of Contents

Scenario Overview

The scenario begins with Unit 1 at 90 percent power in a power ascension following a control rod pattern adjustment. Unit 2 is at rated power. RCIC is out of service due to oil system contamination. The station experienced a less-than-OBE seismic event 6 hours ago due to a magnitude 5.6 earthquake in the Lehigh Valley. The actions of ON-NATPHENOM-001 for the seismic event have been completed. Unit 2 is at rated power.

Diesel Generator B is running and synchronized to ESS Bus 1B in accordance with SO-024-001B, with the 15-minute run at 1000 KW complete. The first action of the crew is to shutdown DG B in accordance with SO-024-001B. Then, the crew will raise reactor power by 5 percent per GO-100-012 and Reactor Engineering Reactivity Maneuver Request. During the flow change, the 'A' RRP will runaway. The crew will have to lock the scoop tube to stop the flow change. TS 3.4.1 will have to be reviewed for loop mismatch.

Once the DG is shutdown and the power ascension is complete, reactor pressure switch PS-B21-1N023C will spike and then fail downscale. The spike high will result in a reactor half-scram, which must be reset. The pressure switch will be inoperable per TS 3.3.1.1. When the half-scram occurs control rod 50-23 will scram in due to a blown fuse to its B RPS solenoid. When the half-scram is reset, control rod 50-23 will begin drifting out of the core due to stuck collet fingers. The crew will respond per ON-CRD-101 and fully insert the control rod. Action will be required to maintain the control rod fully inserted until the CRD can be hydraulically disarmed per the ON and OP-155-001.

When the control rod has been hydraulically disarmed, Startup Transformer 20 will experience a lockout. The crew will respond per ON-SUB-001 to restore Recirc Pump cooling and verify ESS Buses transferred to the alternate source. The crew will enter TS 3.8.1 for one offsite AC source inoperable.

Once activities associated with the loss of T-20 are complete, a small steam leak will develop in the Drywell. The crew will perform ON-RPR-101 actions and will scram the reactor. The leak will degrade after the scram, resulting in a Plant Aux Load Shed and loss of the Feedwater and the normal heat sink. Condensate Pump discharge valves fail open preventing recovery of Condensate. HPCI will fail to auto-start, requiring the crew to perform a component by component start of the system for injection. The leak size will allow the crew to maintain reactor level during the transient with HPCI.

The crew will initiate Suppression Chamber sprays. Once Suppression Chamber pressure exceeds 13 psig, Drywell sprays are required. When Drywell spray is attempted, the first Drywell spray valve opened will experience stem-to-disk separation. The other division of RHR will be placed in Drywell spray.

Once Drywell sprays are established, high drywell temperature combined with reduced reactor pressure will result in all reactor level instrumentation becoming erratic and unusable. EO-100-114, RPV Flooding, will be used to depressurize the reactor and flood the RPV to the Main Steam Lines. Neither division of RHR will automatically align in the LPCI mode due to failure of the low reactor pressure permissive logic, but both can be manually aligned.

The scenario may be terminated when the crew acknowledges indications of being flooded to the main steam lines **OR** at the direction of the Chief Examiner.

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. Plant Startup/Heatup/Power Maneuvers

   With the plant operating at off-rated conditions

   Demonstrate the ability to manipulate console controls to safely operate the facility between shutdown and the designated power level

2. Operational Actions and Annunciator Response

   Correctly identify plant annunciators and indications and perform appropriate remedial actions

3. System Operation, Controls and Instrumentation

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

4. 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

5. 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

6. 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

7. 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

8. 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

9. 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

10. 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

11. 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

12. 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
Reactor Operator	
Perform the Monthly Diesel Generator Operability Test	S-264001-01-013
Implement Reactor Power Maneuvering Envelope for Normal Daily Power Operations (ICS)	S-COO-01-4764
Direct the Actions for Loss of Startup Bus 20	S-262001-01-017
Perform Manual HPCI System Startup to Maintain Reactor Water Level	S-206000-01-005
Perform the Required Actions for a Rod Drift or Rod Scram	S-201001-01-021
Initiate Drywell Sprays	S-203000-01-089
Initiate Suppression Chamber Sprays	S-203000-01-088
Operate the RHR System in the Suppression Pool Cooling Mode	S-203000-01-093
Perform a Manual Initiation of the Automatic Depressurization System	S-218000-01-002
Direct ESW System Manual Startup	S-276001-01-002
Perform a Manual Startup of the RHR System in LPCI Mode with the System Filled	S-203000-01-073

Task Title	ID
Senior Reactor Operator	
Direct and Coordinate Implementation of RPV Control	000000-02-1125
Direct and Coordinate Implementation of Primary Containment Control	000000-02-1126
Direct and Coordinate Implementation of RPV Flooding	000000-02-1131
Implement Reactor Power Maneuvering Envelope for Normal Daily Power Operations (ICS)	000000-02-4764
Direct Entry into Loss of Startup Bus 20	S-262001-02-007
Direct Entry into CONTROL ROD PROBLEMS	S-201001-02-001

Scenario Attributes

A. Critical Tasks

1. Spray the Drywell when Suppression Chamber pressure exceeds 13 psig.	
Safety Significance	Maintenance of primary containment integrity.
Consequences for Failure to Perform Task	Potential failure of primary containment.
Indications/Cues for Event Requiring Critical Task	Multiple control board and control room indications of suppression chamber and drywell pressures.
Performance Criteria	Start an operable RHR loop. Perform a valve alignment to provide a flowpath for spray.
Performance Feedback	RHR pump, valve and system flow indications are available. Multiple indications of Drywell pressure dropping.
2. Performs RPV Flooding when RPV water level becomes indeterminate by establishing RPV Flooded to Steamlines.	
Safety Significance	Adequate core cooling may be challenged if core submergence cannot be verified.
Consequences for Failure to Perform Task	Failure to take the EOP actions may result in uncovering the core and breach of the fuel clad due to overheating.
Indications/Cues for Event Requiring Critical Task	RPV water level indication is believed to be erroneous or unbelievable due to failure of all reactor water level indications upscale with no injection and a reactor coolant leak into the Drywell in progress.
Performance Criteria	Recognize failure of RPV level indication, initiate emergency depressurization by opening ADS Valves, and then increasing RPV injection until RPV flooded to Main Steam Lines as indicated by a combination of conditions as shown in FLOODED TO STEAMLINES TABLE.
Performance Feedback	Initiating an emergency depressurization causes Reactor pressure to lower to the shutoff head of the low pressure injection systems allowing RPV water level to rise to the point that it reaches the main steam lines and returns to the suppression pool via the SRVs. No single indication can be relied upon in all events to determine conclusively that the RPV has been flooded to the main steam lines, therefore, some combination of the following conditions need to be established to ensure water fills the lines: • SRV tail pipe acoustic monitors cycling. • Tail pipe temperatures of open SRVs decrease to subcooled values. • Increasing RPV pressure. • Suppression Pool Water Level not lowering Verify ADS Valves are open using light red light indication, acoustic monitoring and lowering Reactor pressure.

B. Scenario Malfunctions

Event	Malfunction	Operator Action in Response
1	N/A	Secure 'B' EDG (SO-024-001B)
2	Various	Raise Reactor Power 5% using Recirc flow, 'A' RRP runs away
3	mfRD15500850230055023	Control rod drift in (TS 3.1.3)
4	mfDS003008	Startup Transformer 20 lockout (TS 3.8.1)
5	mfMS183007	Small RCS steam leak in the Drywell
6	Multiple	HPCI fails to automatically initiate on high Drywell pressure, all other high-pressure injection lost
7	mfRH149011A(B)	Stem-to-disk separation of RHR F016 Drywell Spray valve
8	Multiple	Loss of reactor level indication – RPV Flooding (EO-000-114)

C. Abnormal Events and Major Transients

Malfunction	Description
R	Raise Reactor Power 5% using Recirc flow, 'A' RRP Runaway
N	Secure 'B' EDG (SO-024-001B)
AE1	Control rod drift in/out
AE2	Startup Transformer 20 lockout
MT1	Small RCS steam leak in the Drywell
MT2	Loss of reactor level indication – RPV Flooding (EO-000-114)
MAE1	HPCI fails to automatically initiate on high Drywell pressure, all other high-pressure injection lost
MAE2	Stem-to-disk separation of RHR F016 Drywell Spray valve
TS1	RRP flow mismatch (TS 3.4.1)
TS2	Control rod drift in/out (TS 3.1.3)
TS3	Startup Transformer 20 lockout (TS 3.8.1)

D. EOP and EOP Contingencies Used

EOPs	EOP Contingencies
☒ EO-000-102, RPV Control	☐ EO-000-102, Alternate Level Control
☒ EO-000-103, Primary Containment Control	☐ EO-000-102, Steam Cooling
☐ EO-000-104, Secondary Containment Control	☐ EO-000-112, Emergency Depressurization
☐ EO-000-105, Radioactivity Release Control	☐ EO-000-113, Power/Level Control
	☒ EO-000-114, RPV Flooding

E. Technical Specifications

1. TS 3.1.3 Control Rod Operability
2. TS 3.9.5 Control Rod Operability – Refueling
3. TS 3.8.1 Electrical Power Systems AC Sources Operating
4. TS 3.4.1 Recirc Loop Flow Mismatch

References

1.	OP-AD-055	Operations Procedure Program
2.	OP-AD-300	Administration of Operations
3.	OP-AD-338	Reactivity Manipulations Standards and Communication Requirements
4.	OP-054-001	Emergency Service Water System
5.	OP-155-001	Control Rod Drive Hydraulic System
6.	OP-158-001	RPS System
7.	GO-100-012	Power Maneuvers
8.	SO-024-001B	Monthly Diesel Generator B Operability Test
9.	ON-NATPHENOM-001	Severe Weather Natural Phenomena
10.	ON-SUB-001	Loss of Startup Bus 10 or 20
11.	ON-SCRAM-101	Reactor Scram
12.	ON-CRD-101	Control Rod Malfunctions
13.	ON-4KV-101	Loss of 4KV Bus
14.	ON-RPS-101	Loss of RPS
15.	EO-000-102	RPV Control
16.	EO-000-103	Primary Containment Control
17.	EO-000-104	Secondary Containment Control
18.	EO-000-105	Radioactivity Release Control
19.	EO-000-112	Emergency Rapid Depressurization
20.	EO-000-114	RPV Flooding
21.	EP-RM-004	EAL Classification Bases
22.	EP-PS-100	Emergency Director Control Room
23.	AR-103-A01	RPS Channel A1/A2 Auto Scram
24.	AR-103-B02	RX Vessel Hi Press Trip
25.	AR-104-H05	Rod Drift
26.	AR-109-C05	LOCA ISO Switch LOOP A Manual Override
27.	TS 3.1.3	Control Rod Operability
28.	TS 3.9.5	Control Rod Operability – Refueling
29.	TS 3.8.1	Electrical Power Systems AC Sources Operating
30.	TS 3.4.1	Recirc Loop Flow Mismatch

Setup Instructions

A. Required Materials

1. US Turnover Sheet
   a. Unit 1
      1) Unit 1 is at ~90% power following a rod pattern adjustment
      2) RCIC is OOS due to contamination of the lube oil system. Estimated RTS is 4 days
      3) LCO 3.5.3 entered. Day 2 of the 14 day LCO.
      4) Shutdown 'B' EDG IAW SO-024-001B
      5) Raise Reactor Power 5% IAW RMR
   b. Common and Unit 2
      1) Unit 2 at rated power.
      2) SSES experienced a less-than-OBE seismic event 6 hours ago due to expected blasting activities by neighboring industrial facilities.
      3) Actions IAW ON-NATPHENOM-001 have been completed
2. Supporting Documents
   a. SO-024-001B
   b. RMR (2 copies)

B. Simulator Initialization

1. **Reset** to exam specific IC, Otherwise perform the following
   a. **Reset** to IC-20
   b. **Place** the simulator in RUN
   c. **Lower** power to 90% with flow
   d. **Set** Xe to fast time to burn Xe until power returns to 90% and starts rising
   e. **Set** Xe to normal time
   f. **Start** the 'B' EDG and sync to 1B ESS bus IAW SO-024-001B
   g. **Load** the 'B' EDG to 800KW
   h. **Close** HV-149-F007 & F008 to isolate RCIC
   i. **Depressurize** RCIC using LV-149-F054
   j. **Run** SCN file exam\RCB_RCICOOS
   k. **Place** the simulator in FREEZE

2. **Run** SCN file **exam\LOC28-NRC-04.scn**
3. **Place** the simulator in RUN
4. **Perform** simulator activities
   a. **Place** a status control tags on HV-149-F007, F008 & F088
   b. **Place** the protected equipment magnets on HPCI
   c. **Place** the 'surveillance in progress' sign on 'B' EDG
   d. **Ensure** the 'Diesel B Power & Vars' R*Time screen under 'Trends' is displayed by the EDGs with it ranged properly
   e. **Post** Blue reactivity signs
5. **Verify** the simulator matches the following

MF	RF	OR	ET	CONDITIONS
18:18	2:2	0:0	4	16

6. **Ensure** FW Control is selected to LEFM
7. **Reset** ODAs and all Overhead, R*TIME, HMI and RWM alarms
8. **Ensure** horns and annunciators are on
9. **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 in G:\NTGOPS\LOR\REQUAL\Info Tracking\ (LOR)
2. **Record** crew position assignments per TQ-104 (ILO)
3. **Complete** an IER 11-3 Operator Fundamentals Simulator Observer Aid
4. **Complete** simulator checklists

E. Scenario Execution

1. **Identify** performance improvement actions that may be addressed during the scenario
2. **Provide** turnover to the crew using the US Turnover sheet
3. **Direct** the crew to walk down the Control Room panels
4. **Inform** the Shift Manager that the crew has the shift

F. Simulator Files

LOC28-NRC-04

```
delmp
SCN rat_mp

insmp lssblpos(68)
changemp lssblpos(68) ,,,CONTROL ROD 50-23 POS

insmp aoTRSHB311R601E.CurrValue
changemp aoTRSHB311R601E.CurrValue 0,300,DEG F,RECIRC
PP A MTR WDG TEMP

insmp aoTRSHB311R601Q.CurrValue
changemp aoTRSHB311R601Q.CurrValue 0,300,DEG F,RECIRC
PP B MTR WDG TEMP

insmp aoFI15120AB.CurrValue
changemp aoFI15120AB.CurrValue 0,750,GPM,RHR A SC SPRAY
FL

insmp aoFI15120BB.CurrValue
changemp aoFI15120BB.CurrValue 0,750,GPM,RHR B SC SPRAY
FL

insmp aoFI15120AA.CurrValue
changemp aoFI15120AA.CurrValue 0,12000,GPM,RHR A DW
SPRAY FL

insmp aoFI15120BA.CurrValue
changemp aoFI15120BA.CurrValue 0,12000,GPM,RHR B DW
SPRAY FL

insmp aoTRSB211R614A.CurrValue
changemp aoTRSB211R614A.CurrValue 0,600,DEG F,ADS/SRV G
TAILPIPE TEMP

;B CRM spurious alarm suppressed
IMF annAR112G04 f:ALARM_OFF

; DW spray valves stem-to-disk failure
IMF mfRH149011A f:0.0
IMF mfRH149011B f:0.0

; Condensate pump discharge valves fail
IMF cmfMV09_HV10502A f:100
IMF cmfMV09_HV10502B f:100
IMF cmfMV09_HV10502C f:100
IMF cmfMV09_HV10502D f:100

; HPCI auto-start failure
IMF mfHP152002
IMF cmfMV06_HV155F001
IMF cmfMV06_HV155F006
IMF cmfMV06_HV156F059
IMF cmfPM04_1P213

; LPCI injection valves fail
IMF cmfRL01_E111K66A
IMF cmfRL01_E111K66B
IMF cmfRL01_E111K67A
IMF cmfRL01_E111K67B

aet ETLOC28-NRC04-A     ; Steam leak degrades on scram
aet ETLOC28-NRC04-B     ; Allow other division of DW spray
aet ETLOC28-NRC04-C     ; Allow other division of DW spray
aet ETLOC28-NRC04-E     ; Runaway RRP at 95.5 Mlbm Core
Flow

; Drift Control Rod 50-23 In
{Key[1]} IMF mfRD1550085023

; Hyd disarm HCU 50-23
{Key[2]} IRF rfRD1550075023 d:120 f:DISARM
{Key[2]} DMF mfRD1550085023

; T-20 lockout
{Key[3]} IMF mfDS003008

; Small steam leak in DW
{Key[4]} IMF mfMS183007 r:600 f:0.02

; Raise severity of steam leak
{Key[5]} MMF mfMS183007 r:0 f:0.05

; Failure of rx level instr
{Key[6]} SCN exam\LOC28-NRC04-C

; Backup ADS
{Key[7]} IOR diHS14113G2 d:60 f:OPEN
{Key[7]} IOR diHS14113J2 d:66 f:OPEN
{Key[7]} IOR diHS14113K2 d:72 f:OPEN
{Key[7]} IOR diHS14113L2 d:78 f:OPEN
{Key[7]} IOR diHS14113M2 d:84 f:OPEN
{Key[7]} IOR diHS14113N2 d:90 f:OPEN

; Reset Rad Monitors
{Key[8]} SCN exam\RMA_DIV2RST
```

LOC28-NRC04-A

```
; NR/WR ref leg break
;IMF mfRR180002 f:100
;IMF mfRR180001 f:100

;RCIC/HPCI L8 trip
IMF cmfRL02_E411K11
IMF cmfRL01_E411K4
IMF cmfRL02_E511K58
IMF cmfRL01_E111K79B
IMF cmfRL01_E111K80B
IMF mfRC150001

;ADS L3 confirmatory
IMF cmfRL01_B21C1K12A
IMF cmfRL01_B21C1K12B

;NR N004
;IMF cmfTR02_PDTC321N004A f:60
IMF cmfTD03_PDTC321N004A f:60
IMF mfRR164022A f:61.2
```

;IMF cmfTR02_PDTC321N004B f:60
IMF cmfTD03_PDTC321N004B f:60
IMF mfRR164022B f:61.2
;IMF cmfTR02_PDTC321N004C f:60
IMF cmfTD03_PDTC321N004C f:60
IMF mfRR164022C f:61.2

;NR N042
IMF cmfNB01_LISB211N042A
IOR aoLISB211N042A_Q f:60
IMF cmfNB01_LISB211N042B
IOR aoLISB211N042B_Q f:60

;NR N024
IMF cmfNB01_LISB211N024A1
IOR aoLISB211N024A_Q f:60
IMF cmfNB01_LISB211N024B1
IOR aoLISB211N024B_Q f:60
IMF cmfNB01_LISB211N024C1
IOR aoLISB211N024C_Q f:60
IMF cmfNB01_LISB211N024D1
IOR aoLISB211N024D_Q f:60

;WR N031
IMF cmfNB01_LISB211N031A1
IMF cmfNB01_LISB211N031A2
IOR aoLISB211N031A_Q f:+60
IMF cmfNB01_LISB211N031B1
IMF cmfNB01_LISB211N031B2
IOR aoLISB211N031B_Q f:+60
IMF cmfNB01_LISB211N031C1
IMF cmfNB01_LISB211N031C2
IOR aoLISB211N031C_Q f:+60
IMF cmfNB01_LISB211N031D1
IMF cmfNB01_LISB211N031D2
IOR aoLISB211N031D_Q f:+60

;WR N025
IMF cmfNB01_LISB211N025A
IOR aoLISB211N025A_Q f:+60
IMF cmfNB01_LISB211N025B
IOR aoLISB211N025B_Q f:+60
IMF cmfNB01_LISB211N025C
IOR aoLISB211N025C_Q f:+60
IMF cmfNB01_LISB211N025D
IOR aoLISB211N025D_Q f:+60

;WR n026
IMF cmfNB01_LISB211N026A1
IMF cmfNB01_LISB211N026A2
IMF cmfTR02_LITSB211N026A f:60
IMF cmfNB01_LISB211N026B1
IMF cmfNB01_LISB211N026B2
IMF cmfTR02_LITSB211N026B f:60
IMF cmfNB01_LISB211N026C1
IMF cmfNB01_LISB211N026C2
IMF cmfTR02_LITSB211N026C f:60
IMF cmfNB01_LISB211N026D1
IMF cmfNB01_LISB211N026D2
IMF cmfTR02_LITSB211N026D f:60

;other wr
IMF cmfTR02_LT14201A f:60
IMF cmfTR02_LT14201B f:60

;dw clg
IMF cmfNB01_LIS14221C
IOR aoLIS14221C_Q f:60
IMF cmfNB01_LIS14221D
IOR aoLIS14221D_Q f:60

; ER
IMF cmfTR02_LT14203A f:180
IMF cmfTR02_LT14203B f:180

; UR
;IMF cmfTR02_PDTC321N017 f:180
IMF cmfTD03_PDTC321N017 f:180

; S/D
IMF cmfTR02_LTB211N027 f:500

; fuel zone
IMF cmfTR02_LT14202A f:-110
IMF cmfTR02_LT14202B f:-110

LOC28-NRC04-B
; NR/WR ref leg break
;DMF mfRR180002 f:100
;DMF mfRR180001 f:100

;RCIC/HPCI L8 trip
DMF cmfRL02_E411K11
DMF cmfRL01_E411K4
DMF cmfRL02_E511K58
DMF cmfRL01_E111K79B
DMF cmfRL01_E111K80B
DMF mfRC150001

;ADS L3 confirmatory
DMF cmfRL01_B21C1K12A
DMF cmfRL01_B21C1K12B

;NR N004
;DMF cmfTR02_PDTC321N004A
DMF cmfTD03_PDTC321N004A
DMF mfRR164022A
;DMF cmfTR02_PDTC321N004B
DMF cmfTD03_PDTC321N004B
DMF mfRR164022B
;DMF cmfTR02_PDTC321N004C
DMF cmfTD03_PDTC321N004C
DMF mfRR164022C

;NR N042
DMF cmfNB01_LISB211N042A
DOR aoLISB211N042A_Q
DMF cmfNB01_LISB211N042B
DOR aoLISB211N042B_Q

;NR N024
DMF cmfNB01_LISB211N024A1
DOR aoLISB211N024A_Q

DMF cmfNB01_LISB211N024B1
DOR aoLISB211N024B_Q
DMF cmfNB01_LISB211N024C1
DOR aoLISB211N024C_Q
DMF cmfNB01_LISB211N024D1
DOR aoLISB211N024D_Q

;WR N031
DMF cmfNB01_LISB211N031A1
DMF cmfNB01_LISB211N031A2
DOR aoLISB211N031A_Q
DMF cmfNB01_LISB211N031B1
DMF cmfNB01_LISB211N031B2
DOR aoLISB211N031B_Q
DMF cmfNB01_LISB211N031C1
DMF cmfNB01_LISB211N031C2
DOR aoLISB211N031C_Q
DMF cmfNB01_LISB211N031D1
DMF cmfNB01_LISB211N031D2
DOR aoLISB211N031D_Q

;WR N025
DMF cmfNB01_LISB211N025A
DOR aoLISB211N025A_Q
DMF cmfNB01_LISB211N025B
DOR aoLISB211N025B_Q
DMF cmfNB01_LISB211N025C
DOR aoLISB211N025C_Q
DMF cmfNB01_LISB211N025D
DOR aoLISB211N025D_Q

;WR n026
DMF cmfNB01_LISB211N026A1
DMF cmfNB01_LISB211N026A2
DMF cmfTR02_LITSB211N026A
DMF cmfNB01_LISB211N026B1
DMF cmfNB01_LISB211N026B2
DMF cmfTR02_LITSB211N026B
DMF cmfNB01_LISB211N026C1
DMF cmfNB01_LISB211N026C2
DMF cmfTR02_LITSB211N026C
DMF cmfNB01_LISB211N026D1
DMF cmfNB01_LISB211N026D2
DMF cmfTR02_LITSB211N026D

;other wr
DMF cmfTR02_LT14201A
DMF cmfTR02_LT14201B

;dw clg
DMF cmfNB01_LIS14221C
DOR aoLIS14221C_Q
DMF cmfNB01_LIS14221D
DOR aoLIS14221D_Q

; ER
DMF cmfTR02_LT14203A
DMF cmfTR02_LT14203B

; UR
;DMF cmfTR02_PDTC321N017
DMF cmfTD03_PDTC321N017

; S/D
DMF cmfTR02_LTB211N027

; fuel zone
DMF cmfTR02_LT14202A
DMF cmfTR02_LT14202B

LOC28-NRC04-C
scn exam\LOC28-NRC04-A
+5 scn exam\LOC28-NRC04-B
+30 scn exam\LOC28-NRC04-A
+3 scn exam\LOC28-NRC04-B
+30 scn exam\LOC28-NRC04-A

LOC28-NRC04-D
;Revision/Date: 1/09/18/2016
;Description:Recirc A speed failure High

set fx1A_MAN_MODE_B200D.BI01=1
+1 set fx1A_MAN_MODE_B200D.BI01=1
+1 set fx1A_MAN_MODE_B200D.BI01=1
+1 set fx1A_MAN_MODE_B200D.BI01=1
+1 set fx1A_MAN_MODE_B200D.BI01=1
+1 set fx1A_MAN_MODE_B200D.BI01=1
+1 set fx1A_MAN_MODE_B200D.BI01=1
+1 set fx1A_MAN_MODE_B200D.BI01=1
+1 set fx1A_MAN_MODE_B200D.BI01=1
+1 set fx1A_MAN_MODE_B200D.BI01=1
+1 set fx1A_MAN_MODE_B200D.BI01=1
+1 set fx1A_MAN_MODE_B200D.BI01=1
+1 set fx1A_MAN_MODE_B200D.BI01=1
+1 set fx1A_MAN_MODE_B200D.BI01=1
+1 set fx1A_MAN_MODE_B200D.BI01=1
+1 set fx1A_MAN_MODE_B200D.BI01=1
+1 set fx1A_MAN_MODE_B200D.BI01=1
+1 set fx1A_MAN_MODE_B200D.BI01=1
+1 set fx1A_MAN_MODE_B200D.BI01=1
+1 set fx1A_MAN_MODE_B200D.BI01=1
+1 set fx1A_MAN_MODE_B200D.BI01=1

RCB_RCICOOS
IMF mfRC150011
IRF rfDC188073 f:OPEN
IRF rfDB106383 f:OPEN
IMF cmfA01_HV149F088

ETLOC28-NRC04-A
;SWITCH:MODE SWITCH
diHSC72A1S01.CurrValue != #OR.diHSC72A1S01.RUN
MMF mfMS183007 r:300 i:0.5 f:2
IMF mfDS103010 d:10

ETLOC28-NRC04-B
;SWITCH:DRYWELL SPRAY OB ISO HV-1F016A (E11A-S9A)
diHS15116A.CurrValue != #OR.diHS15116A.CLOSE
DMF mfRH149011B
cet ETLOC28-NRC04-C

ETLOC28-NRC04-C
;SWITCH:DRYWELL SPRAY OB ISO HV-1F016B (E11A-S9B)
diHS15116B.CurrValue != #OR.diHS15116B.CLOSE
DMF mfRH149011A
cet ETLOC28-NRC04-B

ETLOC28-NRC04-D
;A RRP failure stops with scoop tube lock
diHSB311S03A.CurrValue=#OR.diHSB311S03A.TRIP
abort exam\LOC28-NRC04-D
set fx1A_MAN_MODE_B200D.BI01=0

ETLOC28-NRC04-E
;A RRP runaway at 95.5 Mlbm
aoXR14301F.CurrValue>95.5
SCN exam\LOC28-NRC04-D
aet ETLOC28-NRC04-D

Event 1 – Shutdown the 'B' EDG

Instructor Activities	Operator Activities	Notes
Booth Operator No additional activities are required		
Role Play As **NPO** at the 'B' EDG, acknowledge requests and report actions complete when the 'B' EDG is secured (~5 minutes)	**PCOM** ☐ Monitor diverse plant indications **PCOP** ☐ Adjusts EDG KW to the proper setting with HS-00054B, Speed governor ☐ Adjusts EDG Kvars ~ 0 with HS-00053B, Voltage Adjust ☐ Opens 1A20204 to divorce from the EDG ☐ Adjusts voltage to 4250V using HS-00053B for 5 minute unloaded run ☐ Depresses HS-00052B, DG B Stop pushbutton ☐ Directs NPO to perform field actions **US** ☐ Directs PCOP to secure the 'B' EDG IAW SO-024-001B	

Instructor Note
There is a 5 minute unloaded cooldown time in the SO. No actions are taken during that time period. Time compression is allowed for that section of the procedure if authorized by the Chief Examiner.

Event 2 – Raise Reactor Power 5% with RRPs, 'A' RRP Runaway

Instructor Activities	Operator Activities	Notes
Booth Operator After the stop pushbutton has been depressed for the 'B' EDG and the crew is not proceeding to raise power, perform the first role play. **Ensure** Event Trigger **ETLOC28-NRC04-E** fires when Core Flow reaches 95.5 Mlbm. This should occur the third time 'A' RRP flow is adjusted. The Event Trigger will cause the 'A' RRP to run away and activate ETLOC28-NRC04-D. **Ensure** Event Trigger **ETLOC28-NRC04-D** fires when the scoop tube is locked to stop the scenario and the RRP malfunction.		
Role Play As **Shift Manager** contact the control room ***If we have depressed the stop pushbutton for the 'B' Diesel, you have my permission to continue with the 5% power ascension while the stop timers and field actions are proceeding.***	**PCOM** ☐ Raises Reactor Power with RRPs IAW provided RMR and OP-AD-338 ☐ Plots power on the power/flow map prior to the power change and following the power change ☐ Depresses the single or double up chevron to raise reactor power. (A 2% change in speed on both RRPs equates to ~ 1% change in reactor power) ☐ Monitors diverse indications of reactor power ☐ Reports 'A' RRP speed is raising ☐ May attempt to lower flow by depressing the up chevron ☐ Locks 'A' RRP MG Scoop Tube. **PCOP** ☐ Peer checks the PCOM during the power maneuver ☐ As required, adjusts manual voltage to zero manual and auto voltage regulators ☐ Performs ON-RECIRC-101	

Event 2 – Raise Reactor Power 5% with RRPs, 'A' RRP Runaway

Instructor Activities	Operator Activities	Notes
	US ☐ Obtains permission from the SM to perform the reactivity manipulation ☐ Directs PCOM to raise reactor power using RRPs IAW the RMR and OP-AD-338 ☐ Directs PCOP to peer check the PCOM ☐ May conduct update after the reactivity maneuver ☐ Enters ON-RECIRC-101 on runaway RRP ☐ Evaluates entering TS 3.4.1.B for loop flows not matched.	

Instructor Note
When the crew locks the Scoop Tube, speed may continue to raise. This is because the RRP will match speed to the location of the scoop tube. If speed was lower than the position of the scoop tube, it will continue to rise until it reaches that position and then stop moving. The crew may discuss tripping the 'A' RRP if they do not notice that the scoop tube position is not moving.

Event 3 – Control rod scram

Instructor Activities	Operator Activities	Notes

Booth Operator

When the power change has been completed, **Insert KEY 1** to scram control rod 50-23 due to blown fuses.

{Key[1]} IMF mfRD1550085023 — **Drift Control rod 50-23 In**

If directed, **Insert KEY 2** to disarm control rod 50-23. Report when the actions are complete.

{Key[2]} IRF rfRD1550075023 d:120 f:DISARM — **Disarms Control rod 50-23**
{Key[2]} DMF mfRD1550085023 — **Removes the drift in malfunction**

Role Play

As **NPO** dispatched to HCU 50-23, wait 2 minutes
Scram inlet and outlet valves on HCU 50-23 are open.

Role Play

As **WWM** contacted for assistance with control rod 50-23, wait 5 minutes
I&C discovered a blown fuse on the 'B' RPS solenoid for the scram pilot solenoid valve for HCU 50-23. They are still troubleshooting.

Role Play

As **NPO** dispatched to 1C007 for high temperatures, wait 2 minutes
Control rod 50-23 has elevated temperature on 1C007.

PCOM

- ☐ Reports RPV power, pressure, and water level after the plant stabilizes
- ☐ Reports control rod 50-23 is at position 00
- ☐ Plots position on the Power/Flow Map

PCOP

- ☐ Performs ON-CRD-101 condition D
- ☐ Verifies position of control rod 50-23
- ☐ Resets rod drift alarm
- ☐ Informs US to address LCO 3.1.3 and 3.9.5

US

- ☐ Enters ON-CRD-101 condition D
- ☐ Enters ON-PWR-101 for power change
- ☐ Enters TS 3.1.3.C for a control rod inoperable fully inserted

Event 4 – T-20 Lockout

Instructor Activities	Operator Activities	Notes
Booth Operator When the US has reviewed TS for the drifted control rod, **Insert KEY 3** to initiate a lockout of Start Up Transformer 20 (T-20). **{Key[3]} IMF mfDS003008** — **T-20 lockout** If requested to reset Div 2 rad monitors for the loss of RPS, **Wait** 1 minute, **Insert KEY 8** and report when complete **{Key[8]} SCN exam\RMA_DIV2RST** — **Reset Rad monitors**		
Role Play As **NPO** dispatched to T-20, wait 2 minutes ***There is nothing abnormal at the T-20 transformer.*** **Role Play** As **WWM** contacted for assistance with T-20 lockout, wait 5 minutes ***Electrical Maintenance reports the backup transformer lockouts were tripped on T-20. It looks like a bad lockout relay and we are getting a package to replace it.*** **Role Play** As **NPO** dispatched to SUB-20, wait 2 minutes ***The backup lockout relay for T-20 is tripped on Startup Bus 20.*** **Role Play** As **NPO** dispatched to verify the position of the 'E' EDG 0ATS, wait 3 minutes ***The 'E' diesel 0ATS is on SUB-10.***	**PCOM** ☐ Reports RPV Power, Pressure, and Water Level **PCOP** ☐ Reports loss of Startup Bus 20 ☐ Dispatches NPO to Startup Bus 20 ☐ Dispatches NPO to Startup Transformer 20 ☐ Performs ON-SUB-001 ☐ Performs ON-4KV-101 ☐ Performs ON-RPS-101 ☐ Restores cooling to the RRPs **US** ☐ Enters ON-SUB-001, Loss of Startup Bus 10 or 20 ☐ Enters TS 3.8.1.A, Actions A.1 & A.3 ☐ Enters TRO 3.4.1	

Event 5, 6 – Small Steam Leak/ Manual Scram/ HPCI failure

Instructor Activities	Operator Activities	Notes

Booth Operator

When RRP cooling has been restored, **Insert KEY 4** to initiate a small steam leak in the Drywell

{Key[4]} IMF mfMS183007 r:600 f:0.02 **Small steam leak**

When the crew recognized the steam leak, **Insert KEY 5** when desired to raise the severity of the steam leak and proceed to reactor scram.

{Key[5]} MMF mfMS183007 r:0 f:0.05 **Raise severity of the leak**

Ensure Event Trigger **ETLOC28-NRC04-A** fires when the Mode Switch is placed to SHUTDOWN to raise the severity of the steam leak AND cause a Plant Aux Load Shed

Role Play

As **NPO** dispatched to investigate Condensate Pump discharge valves, wait 2 minutes

The Condensate Pump discharge valves all indicate full open. The breakers are closed and reset.

Role Play

As **WWM** contacted for assistance with the Drywell steam leak, wait 5 minutes

I have activated the forced outage response team at the direction of the Duty Manager.

Role Play

As **WWM** contacted for assistance with Condensate Pump discharge valves, acknowledge the request, if asked about status

Engineering and maintenance are still investigating.

PCOM

- ☐ If directed, Inserts a LIM #2 on RRPs
- ☐ When directed, Places Mode Switch in SHUTDOWN to Scram the reactor
- ☐ Performs Scram Report IAW OP-AD-300
- ☐ Inserts IRMS and SRMS
- ☐ Reports trip of all RFPs
- ☐ If observed, Reports failure of condensate discharge valves to close

PCOP

- ☐ Reports rising Drywell Pressure
- ☐ Verifies Isolations, Initiations, and EDG starts
- ☐ Reports an Aux Bus Load Shed happened
- ☐ Reports failure of HPCI to auto start
- ☐ Performs Component by component startup of HPCI IAW OP-152-001

Instructor Note

The initial steam leak is very small in severity and takes ~5 minutes to be readily detected

Event 5, 6 – Small Steam Leak/ Manual Scram/ HPCI failure

Instructor Activities	Operator Activities	Notes
	US ☐ Performs ON-RPR-101 ☐ Directs PCOM to scram the plant ☐ Enters EO-000-102, RPV Control ☐ Enters EO-000-103, PC Control Directs PCOP to maintain RPV water level with HPCI and RCIC	

Critical Parameter
Once Drywell pressure is noticed to be rising, it would be expected that the US gives a Critical Parameter to the PCOP on Drywell pressure and an action to place the Mode Switch to SHUTDOWN when it is reached.

Event 7 – Containment Cooling

Instructor Activities	Operator Activities	Notes

Booth Operator

Ensure Event Trigger **ETLOC28-NRC04-B(C)** fires when the first RHR F016A(B) valve is opened to clear the stem-to-disk malfunction on the other division.

★ **Critical Task**
Spray the Drywell when Suppression Chamber pressure exceeds 13 psig.

Role Play As **NPO** dispatched to RHR F016A(B), wait 2 minutes ***The RHR Drywell spray OB valve HV-151-F016A(B) indicates full open. I do NOT hear any flow.*** **Role Play** As **WWM** contacted for assistance with RHR F016A(B), acknowledge request, if contacted about status ***Engineering and Maintenance are still troubleshooting.***	**PCO** ☐ When directed, initiates suppression chamber sprays IAW OP-149-004 ☐ Aligns RHRSW to the RHR heat exchanger IAW OP-149-004 ☐ When directed, initiates Drywell Sprays IAW OP-149-004 ☐ Requests plant status IAW the DSIL curve before spraying the Drywell ☐ Reports failure to achieve flow through the RHR F016A(B) and moves to the other RHR Loop for Drywell sprays ☐ Dispatches NPO to investigate RHR F016A(B) **US** ☐ Directs PCO to initiate Suppression Chamber Sprays ☐ Directs PCO to line-up for Drywell Sprays ☐ Verifies plant conditions are in the 'Safe to Spray' region of the DISL curve before directing PCO to spray the Drywell	

Event 8 – RPV Flooding

Instructor Activities	Operator Activities	Notes

Booth Operator

When the crew has established Drywell Spray and Drywell pressure is trending down, **Insert KEY 6** to initiate reactor level notching and subsequent failure of all reactor level indications upscale.

{Key[6]} SCN exam/LOC28-NRC04-C

If directed, **Insert KEY 7** to back up ADS with the keylock switches from the relay room. When complete, report to the control room.

{Key[7]} IOR diHS14113G2 d:60 f:OPEN
{Key[7]} IOR diHS14113J2 d:66 f:OPEN
{Key[7]} IOR diHS14113K2 d:72 f:OPEN
{Key[7]} IOR diHS14113L2 d:78 f:OPEN
{Key[7]} IOR diHS14113M2 d:84 f:OPEN
{Key[7]} IOR diHS14113N2 d:90 f:OPEN

Monitor 'EO114' on R*Time and 'Vesvoid' on the Simulator in the booth and inform the Lead Evaluator when the simulator is Flooded to the Main Steam Lines (MSL)

★ **Critical Task**
Performs RPV Flooding when RPV water level becomes indeterminate by establishing RPV Flooded to Steamlines.

Role Play

As **NPO** dispatched to Instrument racks C004/C005, wait 2 minutes
All reactor level indicators at the 4 and 5 racks show full upscale.

Role Play

As **WWM** contacted for assistance with Reactor level indications, acknowledge request and if contacted about status
Engineering and Maintenance are developing a plan to go troubleshoot.

PCO

- ☐ Reports erratic and unusable level instrumentation
- ☐ Verifies ALL level indications are erratic
- ☐ When directed, Opens the 6 ADS SRVs on 1C601
- ☐ May, dispatch NPO to backup ADS with the keylocks in the relay room
- ☐ Verify ADS SRVs are open by temperature recorders, acoustic monitors, and reactor pressure lowering
- ☐ Closes all MSIVs and MSL drains
- ☐ Aligns RHR to LPCI mode IAW OP-149-004

Event 8 – RPV Flooding

Instructor Activities	Operator Activities	Notes
	PCO ☐ Isolates HPCI and RCIC when the supply valves close on low pressure ☐ May bring up on R*Time page EO114 to aid in monitoring for filling to the MSL **US** ☐ Enters EO-000-114, RPV Flooding ☐ Directs opening all ADS SRVs ☐ Directs isolating all MSIVs and MSL drains ☐ Directs aligning RHR for LPCI injection ☐ Directs maximizing RPV injection to flood the RPV to the MSL	

Critical Parameter
When flooding to the MSL, the US may give a critical parameter to inform the US when flooded conditions are met.

Instructor Activity - Termination
The scenario may be terminated when the crew acknowledges indications of being flooded to the main steam lines **OR** at the direction of the Chief Examiner.

UNIT SUPERVISOR TURNOVER SHEET

UNIT 1 *to/dd/yy*
Date

SHIFT 1900 (Start) to 0700 (End)

MODE 1
POWER LEVEL 90 %
GENERATOR OUTPUT 1206 MWe
CASK STORAGE GATE INSTALLED: YES/NO

SHIFT 0700 (Start) to 1900 (End)

MODE
POWER LEVEL %
GENERATOR OUTPUT MWe
CASK STORAGE GATE INSTALLED: YES/NO

REMARKS:

1) Power ascension from control rod pattern adjustment in progress, 90 percent power
2) RCIC is out-of-service due to contamination of lube oil system. Estimated RTS is 4 days
3) LCO 3.5.3 Entered. Day 2 of the 14 day LCO
4) Shutdown Diesel Generator B per SO-024-001B
5) Raise power 5 percent per Reactor Engineering RMR to 94% APRM power
6) Perform all briefings prior to taking the shift
7)
8)
9)
10)
11)
12)
13)
14)
15)

COMMON:

1) Unit 2 is at rated power
2) SSES experienced a less-than-OBE seismic event 6 hours ago due to expected blasting activities by neighboring industrial facilities
3) Actions of ON-000-002 for a seismic event have been completed
4)
5)
6)
7)
8)
9)

OFFGOING UNIT SUPERVISOR CHECKLIST:

NRC CODE PRIOR TO 0800	FOXTROT	DELTA	BRAVO	OSCAR
NRC CODE AFTER 0800	FOXTROT	UNIFORM	HOTEL	ROMEO

1900-0700	0700-1900

1. Evolutions in progress and items to be completed during next shift, as noted in remarks, have been discussed with oncoming Unit Supervisor (including special evolutions, i.e. SICT/E, OPDRVs, etc.).
2. Problems encountered during past shift and abnormal plant conditions, as noted in remarks, have been discussed with oncoming Unit Supervisor.
3. Information in SOMS Log is complete and discussed with oncoming Unit Supervisor.
4. As applicable, turnover plastic Security Badge cover and CRS Monitor function to oncoming Unit Supervisor.

1900 - 0700 _____

0700 - 1900 _____
Offgoing Unit Supervisor

ONCOMING UNIT SUPERVISOR CHECKLIST:

0700 -	1900 -

(14)

1. LCO/TRO Log reviewed.
2. SOMS Log reviewed for entries made in past 24 hours.
3. Report any changes to license or medical status PER NDAP-QA-0723.

0700 - 1900 _____

1900 - 0700 _____
Oncoming Qualified
Unit Supervisor

POST RELIEF

0700 -	1900 -

1. Walk down Control Room panels with Unit Responsible PCO.
2. CRC Book reviewed and Reactivity Brief performed with PCO.
3. Completed System Status Operable audit for open PMT this shift.
4. From the OPS Web page, Review OPS Aggregate Index for Challenges, Work Arounds, and Deficiencies Reports for impact on scheduled work activities and compensatory actions. (20)

0700 - 1900 _____

1900 - 0700 _____
Oncoming Unit Supervisor