PPL SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Compute the Average Drywell Air Temperature IAW SO-100-007**

S/RO	**00.SO.2103.101**	**4**	**08/07/2014**	**Simulator**
Applicability	JPM Number	Revision	Date	Setting

223001	**2.2.12**	**3.0 / 3.4**	**N**	**N**
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

Author _____ **12/04/2014** Date

Validated

Instructor _____ **12/13/2014** Date

Review

Operations Management _____ 12/18/14 Date

Approval

Nuclear Training Supervisor _____ **12/13/2014** Date

10
Validation Time (min)

Examinee Name: _____ _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ _____
Name Signature

Comments

JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM
1	Changed 100% power to rated. Added specific temperatures. Updated to new forms.
2	Edit to match steps in current rev of procedure and specify acceptance criteria.
3	Minor editorial changes, changed number from 00.SO.003.151.
4	Reformatted to the "TQ" procedure format
5	Updated Reference revision to revision 70 from 68. No changes following validation.

REQUIRED TASK INFORMATION

1. SAFETY CONSIDERATIONS

A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.

B. All applicable safety precautions shall be taken in accordance with established PPL safety policies and the Safety Rule Book, for example:

1. Whenever any electrical panel is opened for inspection during JPM performance.

2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.

C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.

D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

2. REFERENCES

A. SO-100-007, Daily Surveillance Operating Log (Rev 70)

3. TASK CONDITIONS

Unit 1 is in Mode 1 at rated power.

The Process Computer is unavailable

4. INITIATING CUE

Determine the average Drywell air temperature in accordance with SO-100-007

5. TASK STANDARD

Calculates the correct average Drywell air temperature using readings obtained from recorders and substituting values for two inoperable instruments

SIMULATOR SETUP INSTRUCTIONS

1. **Reset** the simulator to any full-power IC, or an exam–specific IC if prepared (IC-101).
2. **Fail** TE-15798A and TE-15799B downscale from sim PID PC14.

Examinee _____

Step	Action	Standard	Eval	Comments
EVALUATOR INSTRUCTIONS • Marking a step as UNSAT requires written comments on respective step. • Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *. • The time clock starts when the candidate acknowledges the Initiating Cue. • This JPM must be performed in the simulator. Reset to exam-specific IC-___, or configure the simulator per the Simulator Setup Instructions. • Mark-up a copy of SO-100-007, Attachment A, item 10 and Attachment G.				
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.				
1	**Verifies** SO-100-007 is governing procedure and obtains controlled copy.	Controlled copy of SO-100-007 obtained, selects Attachment A, Item 10.b.		
2	**Determines** if process computer available	Observe from Task Conditions process computer is not available, select Attachment G to complete		

Examinee _____

Step	Action	Standard	Eval	Comments

*3	**Records** Drywell temperatures.	Record the following temperatures from the Drywell Atmosphere Temperature Recorders on Panel 1C693 on SO-100-007 Attachment G, Item 1.a-h
		• Top Area
		  o TE-15791A (124)
		  o TE-15791B (124)
		• Middle Area
		  o TE-15790A (139)
		  o TE-15790B (140)
		• Bottom Area
		  o TE-15798A (50.7)
		  o TE-15798B (139)
		• Pedestal Area
		  o TE-15799A (118)
		  o TE-15799B (50.7)		

*4	**Substitutes** value indicated for INOP indications (150 °F for Top, Middle or Bottom; 130 °F for Pedestal).	Substitute the following values • 150 °F for TE-15798A (Item 1.e) • 130 °F for TE-15799B (Item 1.h)		
EVALUATOR NOTE Verify value calculated by operator if simulator as–found conditions vary due to other activities in–progress during the evaluation. Example: (124+124+139+140+150+139+118+130) / 8 = 1064 / 8 = 133.0 °F				
*5	**Calculates** the average Drywell temperature	Perform the following: • Sum eight temperatures (with two substitutions) • Divide the sum by 8		
*6	**Records** the average Drywell temperature	Record the calculated Drywell average temperature on Attachment G, Item 2.0.		
7	**Determines** if the calculated value meets the Technical Specification requirement	Observe that the calculated temperature is ≤ 135 °F		

Examinee _____

Step	Action	Standard	Eval	Comments
EVALUATOR CUE Record JPM stop time: _____				
EVALUATOR CUE That completes the JPM.				
EVALUATOR: Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

EXAMINEE

TASK CONDITIONS

Unit 1 is in Mode 1 at rated power.

The Process Computer is unavailable

INITIATING CUE

Determine the average Drywell air temperature in accordance with SO-100-007

PPL SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Determine Estimated Time to 200 °F and Required T.S. Actions**

SRO	**49.ON.1869.103**	**5**	**10/23/2014**	**Classroom**
Applicability	JPM Number	Revision	Date	Setting

2.1.25	**N/A**	**4.2**	**N**	**N**
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

Author _____ Date **12/04/2014**

Validated

Instructor _____ Date **12/13/2014**

Review

Operations Management _____ Date 12/18/14

Approval

Nuclear Training Supervisor _____ Date **12/13/2014**

20
Validation Time (min)

Examinee Name: _____ _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ _____
Name Signature

Comments

JPM REVISION SUMMARY

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

REQUIRED TASK INFORMATION

1. SAFETY CONSIDERATIONS

A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.

B. All applicable safety precautions shall be taken in accordance with established PPL safety policies and the Safety Rule Book, for example:

1. Whenever any electrical panel is opened for inspection during JPM performance.

2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.

C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.

D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

2. REFERENCES

A. TS 3.4.9

B. ON-149-001, Loss of Shutdown Cooling Mode (Revision 34)

3. TASK CONDITIONS

Unit 1 is in Mode 4. The reactor has been shutdown for 12.5 days. Reactor coolant temperature is 170 °F and stable.

Recirc MG sets A and B are out of service for maintenance.

RPV level is being maintained at 90 inches by the CRD and RWCU systems.

RHR B LPCI injection valve HV–151–F015B breaker is tripped, all other RHR B components are available and operable.

RHR Pump A is operating, RHR Pump C is in standby.

HV–151–F009, RHR SHUTDOWN CLG SUCT IB ISO, closes due to a spurious PCIS isolation signal and cannot be reopened. RHR Pump A is tripped.

All other low pressure ECCS systems are operable.

4. INITIATING CUE

Determine the estimated time for coolant temperature to reach 200 °F, identify the Technical Specification Required Action(s) for this event, if any, and identify the methods to comply with any applicable Required Action(s).

5. TASK STANDARD

Determines estimated time for reactor coolant temperature to reach 200 °F is 1 hour (+/- 5 minutes). Determines TS 3.4.9 Required Actions A.1, B.1 and B.2 are applicable; identifies 2 alternate methods of decay heat removal, recognizes reactor coolant circulation by natural circulation, and directs reactor coolant temperature monitoring commences.

Examinee _____

Step	Action	Standard	Eval	Comments
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 may be performed in the simulator or the classroom.				
EVALUATOR CUE Record JPM start time: _____				
1	**Identifies** governing procedure and obtain controlled copy.	Obtains controlled copy of ON–149–001 obtained, selects Section 3.3.		
2*	**Complies** with TS 3.4.9.	Identifies entry into TS 3.4.9 Conditions A and B is required.		
EVALUATOR NOTE Other combinations of low–pressure ECCS may be identified that satisfy the TS 3.4.9 Required Action A.1.				
3*	**Identifies** applicable Required Actions and associated Completion Times for entry into TS 3.4.9 Condition A and method to satisfy TS requirements.	Performs the following: • Identifies Required Action A.1, "Verify an alternate method of decay heat removal is available for each inoperable RHR shutdown cooling subsystem", must be performed within 1 hour, and once per 24 hours thereafter. • Identifies at least 2 alternate method of decay heat removal are available 1. CS A(B) and 2 SRVs open, RHR B aligned for Suppression Pool cooling 2. RHR A aligned for LPCI injection from Suppression Pool with 2 SRVs open.		
EVALUATOR CUE Another operator will make the required log entries.				

Examinee _____

Step	Action	Standard	Eval	Comments
4*	**Identifies** applicable Required Actions and associated Completion Times for entry into TS 3.4.9 Condition B and method to satisfy TS requirements.	Performs the following: • Identifies Required Action B.1, "Verify reactor coolant circulating by an alternate method", must be performed within 1 hour, and once per 12 hours thereafter. • Identifies Required Action B.1 is satisfied by natural circulation, as RPV level of 90" as specified in Task Conditions is > 45" required for natural circulation. • Identifies Required Action B.2, "Monitor reactor coolant temperature", must be performed once per hour. • Directs performance of SO-100-011, Reactor Vessel Temperature and Pressure Recording to determine heatup rate.		
EVALUATOR CUE Another operator will perform SO–100–011.				
5*	**Determines** estimated time for reactor coolant to reach 200 °F.	Plots on ON–149–001 Attachment G days after shutdown as 12.5, and from line for initial reactor coolant temperature (Ti) of 170 °F (+ symbol) reads Time to 200 F as 1 hour (±5 minutes).		
EVALUATOR CUE Record JPM stop time: _____				
EVALUATOR CUE That completes the JPM.				
EVALUATOR: Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

EXAMINEE

TASK CONDITIONS

Unit 1 is in Mode 4. The reactor has been shut down for 12.5 days. Reactor coolant temperature is 170 °F and stable.

Recirc MG sets A and B are out of service for maintenance.

RPV level is being maintained at 90 inches by the CRD and RWCU systems.

RHR B LPCI injection valve HV–151–F015B breaker is tripped, all other RHR B components are available and operable.

RHR Pump A is operating, RHR Pump C is in standby.

HV–151–F009, RHR SHUTDOWN CLG SUCT IB ISO, closes due to a spurious PCIS isolation signal and cannot be reopened. RHR Pump A is tripped.

All other low pressure ECCS systems are operable.

INITIATING CUE

Determine the estimated time for coolant temperature to reach 200 °F, identify the Technical Specification Required Action(s) for this event, if any, and identify the methods to comply with any applicable Required Action(s).

PPL SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

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

SRO	**00.AD.1021.101**	**3**	**12/04/2014**	**Classroom**
Applicability	JPM Number	Revision	Date	Setting

215002	**2.1.37**	**4.6**	**N**	**N**
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

Author _____ **12/04/2014** Date

Validated

Instructor _____ **12/13/2014** Date

Review

Operations Management _____ 12/18/14 Date

Approval

Nuclear Training Supervisor _____ **12/13/2014** Date

20
Validation Time (min)

Examinee Name: _____ _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ _____
Name Signature

Comments

JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM
3	Added validator recommendation to add notch position 04 to the task conditions

REQUIRED TASK INFORMATION

1. SAFETY CONSIDERATIONS

A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.

B. All applicable safety precautions shall be taken in accordance with established PPL safety policies and the Safety Rule Book, for example:

1. Whenever any electrical panel is opened for inspection during JPM performance.

2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.

C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.

D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

2. REFERENCES

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

3. TASK CONDITIONS

A plant startup is in progress on Unit 1. Reactor Power is 30%.

Control Rod 10–43 was shown not in its intended position on PPC OD7.

When PCOM selected Rod 10-43, the RBM UPSCALE OR INOP ROD BLOCK, AR-103-001 (C04), annunciator alarmed.

It has been determined that Rod Block Monitor A has a Critical Self Test Fault.

All external inputs to the Rod Block Monitor A have been determined to be valid.

The Reactor Engineer suggests bypassing the Rod Block Monitor A and returning Control Rod 10–43 to notch 04 per AR-103-001 (C04).

4. INITIATING CUE

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

5. TASK STANDARD

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

Examinee _____

Step	Action	Standard	Eval	Comments
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. • Ensure the following material is available to support performance of this JPM: o NDAP-QA-0338 o NDAP-QA-0338, Attachment A o Unit 1 TS 3.3.2.1 o Unit 1 TRM (COLR) o AR-103-001 (C04), RBM UPSCALE OR INOP ROD BLOCK				
EVALUATOR CUE Record JPM start time: _____				
1	**Verifies** NDAP–QA–0338 is governing procedure and obtains controlled copy.	Controlled copy of NDAP–QA–0338 obtained.		
2	**Completes** NDAP-QA-0338, Attachment A.	Reviews NDAP-QA-0338, Section 6.4.1.f and Attachment A.		
3	**Enters** initiating condition data.	Enters the following data for Initiating Condition: • Rod ID 10-43 • Notch 04 • Unit 1 • Circle RBM Channel A • Power Level 30 percent • Date/Time		
4	**Determines** if reactor power is <28%.	Places checkmark in "NO" Box, from Task Conditions Reactor Power is 30%.		

Examinee _____

Step	Action	Standard	Eval	Comments
5*	**Determines** if Rod Block Monitor A is providing a valid rod block per TRM 3.2 Table 7.2-1.	Performs the following: • Refers to Table 7.2-1 and cue sheet • Determines Rod Block is being generated due to the Critical Self Test Fault, not as a result of exceeding a Table 7.2-1 setpoint • Places a checkmark in the "NO" Box		
6*	**Determines** if inputs to the Rod Block Monitor A are valid.	Refer to provided task conditions, and place a checkmark in the "NO" Box.		
7	**Contacts** I&C to repair the Rod Block Monitor A	Contacts I&C to investigate and repair the Rod Block Monitor A failure.		
EVALUATOR CUE I&C has been contacted.				
8*	**Determines** if RBM is required to be OPERABLE	Performs the following: • Refers to TS LCO 3.3.2.1, Table 3.3.2.1-1 for Functions 1.a. – 1.d., and associated footnotes • Refers to TRM 3.2 COLR, Table 7.2.–2 • Determines that MCPR is below the value specified in the COLR and that 2 channels of RBM are required		
9*	**Determines** Technical Specification impact of bypassing RBM.	Determines that LCO 3.3.2.1 Condition A, Required Action A.1 requires RBM A channel to be restored to operable within 24 hours.		

Examinee _____

Step	Action	Standard	Eval	Comments
10*	**Authorizes** bypassing Rod Block Monitor A.	Performs the following: • Determines that Rod Block Monitor A can be bypassed. • Signs, dates, and enters time on Attachment A in the "Shift Supervision Authorization To bypass the RBM channel" block on the lower right-hand side of the page, and enters current time/date.		
EVALUATOR CUE Record JPM stop time: _____				
EVALUATOR CUE That completes the JPM.				
EVALUATOR NOTE That completes the JPM.				
EVALUATOR: Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

EXAMINEE

TASK CONDITIONS

A plant startup is in progress on Unit 1. Reactor Power is 30%.

Control Rod 10–43 was shown not in its intended position on PPC OD7.

When PCOM selected Rod 10-43, the RBM UPSCALE OR INOP ROD BLOCK, AR-103-001 (C04), annunciator alarmed.

It has been determined that Rod Block Monitor A has a Critical Self Test Fault.

All external inputs to the Rod Block Monitor A have been determined to be valid.

The Reactor Engineer suggests bypassing the Rod Block Monitor A and returning Control Rod 10–43 to notch 04 per AR-103-001 (C04).

INITIATING CUE

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

PPL SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Review and Approve Radioactive Liquid Release Permit**

SRO	**00.AD.2175.001**	**1**	**12/04/2014**	**Classroom**
Applicability	JPM Number	Revision	Date	Setting

Generic	**2.3.6**	**3.7**	**N**	**N**
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

Author _____ **12/04/2014** Date

Validated

Instructor _____ **12/13/2014** Date

Review

Operations Management _____ 12/18/14 Date

Approval

Nuclear Training Supervisor _____ **12/13/2014** Date

25
Validation Time (min)

Examinee Name: _____ _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ _____
Name Signature

Comments

JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM
1	Revise for incorporate validator comments to the faulted marked-up procedure handout (OP-069-050). Updated Reference revisions

REQUIRED TASK INFORMATION

1. SAFETY CONSIDERATIONS

A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.

B. All applicable safety precautions shall be taken in accordance with established PPL safety policies and the Safety Rule Book, for example:

1. Whenever any electrical panel is opened for inspection during JPM performance.

2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.

C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.

D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

2. REFERENCES

A. OP-069-050, Release of Liquid Radioactive Rad Waste (Revision 56)

3. TASK CONDITIONS

Preparations are in progress to release LRW Sample Tanks OT303C&D.

OP-069-050, Release of Liquid Radioactive Waste Attachments D, F and H have been prepared.

4. INITIATING CUE

Shift Manager directs you to review and approve OP-069-050 Attachments D, F and H

5. TASK STANDARD

Identify less than required LRW sample tank recirculation time, incorrect settings for Actual High Rad setpoint and Actual Alert Rad setpoint, and determine that U1 & U2 Cooling Tower Blowdown Flow instrumentation is inoperable, requiring blowdown flow instruments to be bypassed

Examinee _____

Step	Action	Standard	Eval	Comments
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. • Mark-up a copy of OP-069-050, Attachments D,F and H, filled in with data from the answer key.				
EVALUATOR CUE Record JPM start time: _____				
1	**Identifies** governing procedure and obtain controlled copy.	Obtains controlled copy of OP-069-050.		
EVALUATOR CUE If at any point during the review of the permit the examinee indicates that the release is not allowed at this time due to problems with the permit, direct the examinee to finish review of the entire permit.				
2*	**Verifies** calculation of required recirculation time.	Performs the following: • Calculates required recirc time. • Compares this number with 1 hour 20 minutes • Determines that calculated required recirculation time is incorrect, the earliest possible sample time would be 10:09 (not 10:03).		
3*	**Verifies** High Rad setpoint.	Performs the following: • Calculates 1.64E4 + 1.89E3 = 1.829E4 and compares this to the number in block 2.3.6.n (4.02E4). • Identifies that high rad countrate was calculated incorrectly as 3.53E4 • Determines that correct rad setpoint value should be 1.829E4.		

Examinee _____

Step	Action	Standard	Eval	Comments
4*	**Compares** calculated required High Rad setpoint with required setpoint and actual setpoint in step 2.3.7.	Determines that the actual setpoint of the LRW rad monitor High Rad setpoint in the field is incorrectly set and requires correction before release can begin.		
5*	**Determines** that Unit 2 Cooling Tower Flowrate Instrument is INOPERABLE, and requires permission from shift supervisor to bypass cooling tower low flow interlock.	• Reviews Attachment F, to determine the satisfactory test results of blowdown flow instrumentation for Unit 1 and Unit 2. • Determines that for Unit 1 based on actual Cooling Tower Basin Blowdown valve position indication (45%) and blowdown flow rate (5000gpm) Unit 1 blowdown flow instrumentation falls within the Acceptable Region of the Graph on Page 160 of Attachment F. • Determines that for Unit 2 based on actual Cooling Tower Basin Blowdown valve position indication (45%) and blowdown flow rate (3500gpm) Unit 2 blowdown flow instrumentation falls within the Unacceptable Region of the Graph on Page 164 of Attachment F. • Determines that based on the Graph results, Unit 2 Blowdown flow instrumentation should be declared INOPERABLE and require to be bypassed.		

EVALUATOR NOTE
Once the examinee indicates that the release permit will not be authorized due to not enough recirculation time prior to sample, incorrect RAD setpoint, AND flowrate instrument is INOPERABLE, then proceed with the JPM.

Examinee _____

Step	Action	Standard	Eval	Comments
EVALUATOR CUE The following actions have been taken • Recirculation time has been satisfactory been met per the corrected calculation • High Rad setpoint is properly set in accordance with the corrected calculation • U2 flowrate instrument is INOPERABLE Complete review and approval of OP-069-050 attachment D, F and H and determine whether a discharge can continue and if it can under what conditions.				
6*	**Determines** that HS-01503 is required to be in UNIT 2 BYPASS when U-2 Cooling tower blowdown instrument is INOPERABLE.	Marks up Attachment H to proper Switch Alignment of HS-01503, indicating the HS-01503, COOLING TOWER BLOWDOWN should be placed in the U2 BYPASS position.		
EVALUATOR CUE Record JPM stop time: _____				
EVALUATOR CUE That completes the JPM.				
EVALUATOR NOTE That completes the JPM.				
EVALUATOR: Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

EXAMINEE

TASK CONDITIONS

Preparations are in progress to release LRW Sample Tanks OT303C&D.

OP-069-050, Release of Liquid Radioactive Waste Attachments D, F and H have been prepared.

INITIATING CUE

Shift Manager directs you to review and approve OP-069-050 Attachments D, F and H

EVALUATOR

TASK CONDITIONS

Preparations are in progress to release LRW Sample Tanks OT303C&D.

OP-069-050, Release of Liquid Radioactive Waste Attachments D, F and H have been prepared.

INITIATING CUE

Shift Manager directs you to review and approve OP-069-050 Attachments D, F and H

VALIDATION CHECKLIST

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

Instructor Initials

_____ 1. Task description and number, JPM description and number are identified.

_____ 2. Knowledge and Abilities (K/A) references are included.

_____ 3. Performance location specified. (in-plant, control room, or simulator)

_____ 4. Initial setup conditions are identified.

_____ 5. Initiating and terminating cues are properly identified.

_____ 6. Task standards identified and verified by SME review.

_____ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

_____ 8. Verify cues both verbal and visual are free of conflict.

_____ 9. Ensure performance time is accurate.

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

Procedure OP-069-050 Rev 56

Procedure _____ Rev _____

Procedure _____ Rev _____

G.v. 11. Pilot the JPM.

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

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

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

G.v. 13. When JPM is validated, sign and date JPM cover page.

Revise for incorporate validator comments to the faulted marked-up procedure handout (OP-069-050).

Updated Reference revisions

JPM ASSEMBLY INSTRUCTIONS

Seq	Item	Copier Program	Binding
1.	Examinee cue sheet	cue	loose
2.	OP-069-050 Attachment D and F (marked-up)	exam	staple
3.	Evaluator cue sheet	cue	loose
4.	JPM	jpm	loose

EXAMINEE

TASK CONDITIONS

Preparations are in progress to release LRW Sample Tanks OT303C&D.

OP-069-050, Release of Liquid Radioactive Waste Attachments D, F and H have been prepared.

INITIATING CUE

Shift Manager directs you to review and approve OP-069-050 Attachments D, F and H

PPL SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

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

SRO	**00.EP.1132.180**	**1**	**12/04/2014**	**Classroom**
Applicability	JPM Number	Revision	Date	Setting

Generic	**2.4.41**	**4.6**	**N**	**Y**
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

Author _____ **12/04/2014** Date

Validated

Instructor _____ **12/13/2014** Date

Review

Operations Management _____ 12/18/14 Date

Approval

Nuclear Training Supervisor _____ **12/13/2014** Date

15
Validation Time (min)

Examinee Name: _____ _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ _____
Name Signature

Comments

JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM

REQUIRED TASK INFORMATION

1. SAFETY CONSIDERATIONS

A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.

B. All applicable safety precautions shall be taken in accordance with established PPL safety policies and the Safety Rule Book, for example:

1. Whenever any electrical panel is opened for inspection during JPM performance.

2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.

C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.

D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

2. REFERENCES

A. EP-PS-100, Emergency Director, Control Room

B. EP-RM-004, EAL CLASSIFICATION BASES (Revision 2)

C. EP-PS-001, EMERGENCY PLANNING FORMS AND SUPPLEMENTARY INSTRUCTIONS (Revision 2)

3. 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.

4. 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.

5. TASK STANDARD

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

Examinee _____

Step	Action	Standard	Eval	Comments
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. • 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: _____				
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.		
2	Refers to classification matrix.	Selects the correct Table.		
*3	Chooses appropriate emergency action level.	Declares the correct event level per the JPM key for the scenario within 15 minutes of start time.		
4	Determines appropriate procedure section.	Identifies the appropriate procedure attachment for the event classification of EP-PS-100.		
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		
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.		

Examinee _____

Step	Action	Standard	Eval	Comments
7	If not performed earlier, appoints an NRC communicator.	Appoints an NRC Communicator and instructs communicator to perform EP-PS-135, NRC Communicator.		
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		
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		
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		

Examinee _____

Step	Action	Standard	Eval	Comments
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		
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		
*13	Approves the ENR.	Signs the ENR and records the current date and time.		
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		
EVALUATOR CUE That completes the JPM.				
EVALUATOR: Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

PPL SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Respond To Multiple Rod Notching IAW ON-155-001**

S/RO	55.ON.2003.151	3	08/08/2014	Simulator
Applicability	JPM Number	Revision	Date	Setting

201002	A1.02	3.4/3.3	Y	N
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

Author — **12/04/2014** Date

Validated

Instructor — **12/13/2014** Date

Review

Operations Management — 12/18/14 Date

Approval

Nuclear Training Supervisor — **12/13/2014** Date

20
Validation Time (min)

Examinee Name: _____ _____
Last, First MI — Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ _____
Name — Signature

Comments

JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM
1	Revise for TQ procedures, minor editorial corrections Reformatted to the "TQ" procedure format
2	Incorporated validator comments; Add "or stuck rods" to task conditions Provide mark-up of SO-156-010 Att A Provide copy of ON-155-001 Att A Add evaluator cue for US to direct returning rod 02-27 to position 48 Change "and" to "and/or" for rod position indication

REQUIRED TASK INFORMATION

1. SAFETY CONSIDERATIONS

A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.

B. All applicable safety precautions shall be taken in accordance with established PPL safety policies and the Safety Rule Book, for example:

1. Whenever any electrical panel is opened for inspection during JPM performance.

2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.

C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.

D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

2. REFERENCES

A. SO-156-010 Monthly Control Rod Exercising (Rev 6)

B. OP-156-001 Reactor Manual Control System (RMCS) (Rev 20)

C. ON-155-001 Control Rod Problems (Rev 38)

D. AR-104-001 (H05) (Rev 37)

3. TASK CONDITIONS

SO-156-010 is in progress. SO-156-010 is complete up to step 5.2.

There are no control rods currently documented as multiple notch rods or stuck rods

4. INITIATING CUE

Continue performing SO-156-010, step 5.2

5. TASK STANDARD

Control rod 02-27 is returned to its intended position of 46 IAW ON-155-001

SIMULATOR SETUP INSTRUCTIONS

- Reset the simulator to IC–20, or an exam–specific IC if prepared.
- To double notch rod 02-27 from 48 to 44, activate the following Event Trigger.
  ET55.ON.2003.151
  ```
  lssblpos(71) < 47
  IOR doC12110DS5IB f:OFF
  IOR doC12110DS2S f:ON
  IOR doC12110DS1 f:OFF
  IOR doHSC121S10 f:OFF
  IOR diHSC121S10 f:INSERT
  ```
- To delete double notch malfunction at position 44 for rod 02-27, activate the following Event Trigger.
  ET55.ON.2003.151 Delete
  ```
  lssblpos(71) < 44
  DOR diHSC121S10
  +1 DOR doC12110DS5IB
  DOR doC12110DS1
  DOR doHSC121S10
   +3 DOR doC12110DS2S
  ```

Examinee _____

Step	Action	Standard	Eval	Comments
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-20, or configure the simulator per the Simulator Setup Instructions. • Markup a copy of SO-156-010 complete up to step 5.2				
EVALUATOR NOTE The FAULTED step in this 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.				
1	**Identifies** governing procedure and obtain controlled copy.	Obtains controlled copy of SO-156-010.		
*2	**Selects** control rod 02–19.	Performs the following: • *Depresses the 02 and 19 CONTROL ROD SELECTION PBs • Observes 02 and 19 CONTROL ROD SELECTION PBs backlit WHITE • Observes FULL CORE DISPLAY for control rod 02–19 illuminated GREEN • Observes 02–19 indicates selected on RWM and/or OD7 displays • Observes RTIME and/or SIP 1C652 FOUR ROD DISPLAY indicate control rod 02-19 position 48		

Step	Action	Standard	Eval	Comments
*3	**Inserts** control rod 02–19 to position 46.	Performs the following: • *Momentarily depresses INSERT ROD PB • Observes ROD INSERT and ROD SETLG lights lit in series • Observes RTIME and/or SIP 1C652 FOUR ROD DISPLAY indicate control rod 02-19 position 46		
*4	**Withdraws** control rod 02–19 to position 48.	Performs the following: • *Momentarily depresses W/DRAW ROD PB until the ROD INSERT light illuminates • Observes ROD INSERT, ROD W/DRAWG and ROD SETLG lights lit in series • Observes RTIME and/or SIP 1C652 FOUR ROD DISPLAY indicate control rod 02-19 position 48		

Step	Action	Standard	Eval	Comments
*5	**Obtains** control rod 02–19 withdraw stall flow and verifies control rod coupled.	Performs the following: • *Depresses and hold the W/DRAW ROD and CONT W/DRAW ROD PBs • Observes ROD INSERT light lit then extinguished, ROD W/DRAWG remains lit • Observes RTIME and SIP 1C652 FOUR ROD DISPLAY indicate control rod 02-19 position 48 • Notes CRD drive water flow • Observes absence of ROD OVERTRAVEL alarm • *Releases W/DRAW ROD and CONT W/DRAW ROD PBs • Observes ROD SETLG light lit, then extinguished • Records withdraw stall flow for control rod 02–19 on Attachment A • *Circles Rod Coupling Check SAT for control rod 02–19 on Attachment A		
6	**Verifies** control rod 02–19 at position 48.	Performs the following: • Depresses DISPLAY RODS FULL–IN FULL–OUT PB • Observes FULL CORE DISPLAY for control rod 02–19 illuminated RED • Releases DISPLAY RODS FULL–IN FULL–OUT PB • Observes RTIME and SIP 1C652 FOUR ROD DISPLAY indicate control rod 02-19 position 48		

Step	Action	Standard	Eval	Comments
7	**Documents** completion of test for control rod 02-19.	Performs the following: • Circles Operability Check SAT for control rod 02–19 on Attachment A • Initials Confirm for control rod 02–19 on Attachment A		
EVALUATOR CUE Initial Verify for control rod 02-19 on Attachment A.				
*8	**Selects** control rod 02–23.	Performs the following: • *Depresses the 02 and 23 CONTROL ROD SELECTION PBs • Observes 02 and 23 CONTROL ROD SELECTION PBs backlit WHITE • Observes FULL CORE DISPLAY for control rod 02–23 illuminated GREEN • Observes 02–23 indicates selected on RTIME RWM and/or OD7 displays • Observes RTIME and SIP 1C652 FOUR ROD DISPLAY indicate control rod 02-23 position 48		
*9	**Inserts** control rod 02–23 to position 46.	Performs the following: • *Momentarily depresses INSERT ROD PB • Observes ROD INSERT and ROD SETLG lights lit in series • Observes RTIME and SIP 1C652 FOUR ROD DISPLAY indicate control rod 02-23 position 46		

Step	Action	Standard	Eval	Comments
*10	**Withdraws** control rod 02–23 to position 48.	Performs the following: • *Momentarily depresses W/DRAW ROD PB until the ROD INSERT light illuminates • Observes ROD INSERT, ROD W/DRAWG and ROD SETLG lights lit in series • Observes RTIME and SIP 1C652 FOUR ROD DISPLAY indicate control rod 02-23 position 48		
*11	**Obtains** control rod 02–23 withdraw stall flow and verifies control rod coupled.	Performs the following: • *Depresses and hold the W/DRAW ROD and CONT W/DRAW ROD PBs • Observes ROD INSERT light lit then extinguished, ROD W/DRAWG remains lit • Observes RTIME and SIP 1C652 FOUR ROD DISPLAY indicate control rod 02-23 position 48 • Notes CRD drive water flow • Observes absence of ROD OVERTRAVEL alarm • *Releases W/DRAW ROD and CONT W/DRAW ROD PBs • Observes ROD SETLG light lit, then extinguished • Records withdraw stall flow for control rod 02–23 on Attachment A • *Circles Rod Coupling Check for control rod 02–23 SAT on Attachment A		

Step	Action	Standard	Eval	Comments
12	**Verifies** control rod 02–23 at position 48.	Performs the following: • Depresses DISPLAY RODS FULL–IN FULL–OUT PB • Observes FULL CORE DISPLAY for control rod 02–23 illuminated RED • Releases DISPLAY RODS FULL–IN FULL–OUT PB • Observes RTIME and SIP 1C652 FOUR ROD DISPLAY indicate control rod 02-23 position 48		
13	**Documents** completion of test for control rod 02-23.	Performs the following: • Circles Operability Check SAT for control rod 02–23 on Attachment A • Initials Confirm for control rod 02–23 on Attachment A		
EVALUATOR CUE Initial Verify for control rod 02-23 on Attachment A.				
*14	**Selects** control rod 02–27.	Performs the following: • *Depresses the 02 and 27 CONTROL ROD SELECTION PBs • Observes 02 and 27 CONTROL ROD SELECTION PBs backlit WHITE • Observes FULL CORE DISPLAY for control rod 02–27 illuminated GREEN • Observes 02–27 indicates selected on RTIME RWM and/or OD7 displays • Observes RTIME and SIP 1C652 FOUR ROD DISPLAY indicate control rod 02-27 position 48		
FAULT STATEMENT **CONTROL ROD 02-27 WILL DOUBLE NOTCH TO POSITION 44.**				

Examinee _____

Step	Action	Standard	Eval	Comments
15	**Observe** control rod 02-27 position indicator responds correctly.	Observe at FOUR ROD DISPLAY control rod inserts and double notches from 48 position to 44 position AND position indicated is an even number. Informs US that control rod 02-27 double notched to position 44 and entry into ON-155-001 is required.		
16	**Identifies** ON-155-001, Control Rod Problems, step 4.7 for multiple rod notching as the governing procedure and obtain a controlled copy.	Controlled copy of ON-155-001 obtained, selects section 4.7.		
17	**Documents** multiple notch rod on Attachment A of ON-155-01	Documents 02-27 at a multiple notch rod on Attachment A of ON-155-001		
EVALUATOR CUE As US, direct examinee to return rod 02-27 to position 48				
EVALUATOR NOTE Provide examinee with copy of ON-155-001 Att A				
18*	**Move** the rod to intended location per procedure governing original control rod motion	Ensure control rod 02-27 selected or Select control rod 02-27 to be withdrawn one notch by Depressing corresponding CONTROL ROD SELECTION pushbuttons • Depress W/DRAW ROD pushbutton		
19*	**Observe** control rod 02-27 has return to its intended position	Observe at FOUR ROD DISPLAY control rod withdraws from position 44 to position 46 AND position indicated is an even number.		
20	If multiple notch rod is not currently listed in CRC book, **initiate** a CR	Indicated that a CR is required.		
EVALUATOR CUE Record JPM stop time: _____				

Examinee _____

Step	Action	Standard	Eval	Comments
EVALUATOR CUE That completes the JPM.				
EVALUATOR: Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

EXAMINEE

TASK CONDITIONS

SO-156-010 is in progress. SO-156-010 is complete up to step 5.2.

There are no control rods currently documented as multiple notch rods

INITIATING CUE

Continue performing SO-156-010, step 5.2

PPL SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **HPCI Full–Flow Test Quarterly Surveillance, Test Return Valve Fails to Open**

S/RO	**52.SO.1964.151**	**2**	**10/23/2014**	**Simulator**
Applicability	JPM Number	Revision	Date	Setting

206000	**A2.06**	**3.3/3.5**	**Y**	**N**
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

	12/04/2014
Author	Date

Validated

	12/13/2014
Instructor	Date

Review

	12/18/14
Operations Management	Date

Approval

	12/13/2014
Nuclear Training Supervisor	Date

15
Validation Time (min)

Examinee Name: _____ _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ _____
Name Signature

Comments

JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM
1	Revise for TQ procedures, minor editorial corrections
2	Incorporated recommended changes from validating operators. Added verbiage to the evaluator cue prior to action 15 regarding Electrical Maintenance input. Added an evaluator note to direct the examinee to continue if they stop to wait for 5000gpm. Updated the surveillance authorization sheet to denote Post Maintenance Test.

REQUIRED TASK INFORMATION

1. SAFETY CONSIDERATIONS

A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.

B. All applicable safety precautions shall be taken in accordance with established PPL safety policies and the Safety Rule Book, for example:

1. Whenever any electrical panel is opened for inspection during JPM performance.

2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.

C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.

D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

2. REFERENCES

A. SO–152–002, Quarterly HPCI Flow Verification (Revision 62)

3. TASK CONDITIONS

Unit 1 is operating at 90% power.

HPCI is inoperable following a system outage window.

A full–flow test is required to return HPCI to an OPERABLE status. This full–flow test will NOT be used to satisfy Tech Spec quarterly surveillance requirements. IST data collection is not required.

NPOs, Maintenance and HP personnel are standing by to support HPCI operations.

A manual start of HPCI was performed 8 hours ago. HPCI has been returned to standby per OP–152–001.

SO–152–002 has been completed through Step 5.1.3.c(2)

Other operators will perform all timing operations during HPCI startup.

4. INITIATING CUE

Perform a full–flow test of HPCI by completing SO–152–002

5. TASK STANDARD

Aligns HPCI for full–flow test back to the CST at a flow rate of at least 5000 gpm at a discharge pressure of at least 1140 psig

SIMULATOR SETUP INSTRUCTIONS

Reset the simulator to IC–18, or an exam–specific IC 385

Place the following systems in service per the respective OP

RHR B in Suppression Pool Cooling, OP–149–005

Run

EVAL52SO1964151

Insert the following Event Triggers

ET52SO1964151
```
hpvsphv155f008 > 0.3
IMF cmfMV07_HV155F008 f:38
```

ET52SO1964151A
```
hpvsphv155f011 > 0.35
IRF rfDC188110 f:OPEN
```

Perform the following expert commands to align HPCI floor drain and start SGTS and ESW

```
IRF rfLD120003 f:OPEN
IOR diHS07555B c:1 f:OPEN
IOR diHS07551B f:STR
IOR diHS01102A c:1 f:RUN
IOR diHS01102B c:1 f:RUN
```

Perform the following expert commands to assign keys to manually trigger the required simulator events.

```
{Key[21]} IRF rfDC188118 f:OPEN
{Key[22]} IMF cmfMV06_HV155F011
{Key[23]} IRF rfDC188135 f:OPEN
{Key[24]} IMF cmfMV07_HV155F011 c:2 f:AsIs
{Key[24]} IRF rfDC188110 f:CLOSE
{Key[25]} IRF rfDC188135 f:CLOSE
{Key[25]} DMF cmfMV07_HV155F008
```

Flag annunciators as necessary IAW with the procedure
Open breaker for F006

Insert
CMF MV06-HV155F011 to disable F011 auto closure

Examinee _____

Step	Action	Standard	Eval	Comments
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-18, or configure the simulator per the Simulator Setup Instructions.				
EVALUATOR NOTE The FAULTED step in this 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.				
1	**Identifies** governing procedure and obtain controlled copy.	Obtains controlled copy of SO–152–002 obtained.		
2	**Verifies** all prerequisites are satisfied and HPCI support systems are aligned.	Observes prerequisites are met and HPCI support systems are aligned as specified by Task Conditions.		
BOOTH OPERATOR CUE Monitor value of sim parameter hpvsphv155f008 to determine position of HV–155–F008.				
3*	**Opens** HV–155–F008, HPCI Test Line To CST Iso, to 32 percent.	Places HV–155–F008, HPCI TEST LINE TO CST ISO, to OPEN and CLOSE as necessary to obtain valve position of 32 percent.		
BOOTH OPERATOR CUE Ensure Event Trigger ET52SO1964151 fires when F008 is greater than 30 percent open to position the valve as desired.				
EVALUATOR CUE (As NPO) Report valve position as 32 percent when the event trigger fires.				

Examinee _____

Step	Action	Standard	Eval	Comments
4	**Opens** breaker 1D274–081, HPCI Test Line To CST Iso Vlv HV–155–F008.	Directs NPO to open 1D274–081, HPCI TEST LINE TO CST ISO VLV HV–155–F008 BKR.		
BOOTH OPERATOR CUE Depress KEY 23 to open breaker 1D274–081 and report breaker open.				
EVALUATOR CUE Initial as verifier in step 5.3.5 of SO–152–002.				
5	**Evacuates** HPCI room and **ensures** watertight doors are closed.	Directs NPO to clear HPCI room of all personnel and close HPCI room watertight doors.		
EVALUATOR CUE (As NPO) HPCI room evacuated, watertight doors closed.				
6*	**Arms** HPCI manual initiation PB.	Performs the following: • Rotates HS–E41–1S33, HPCI MAN INIT, collar to ARMED position • Observes AR–114–A05 in alarm		
7	**Starts** TRA.	Notifies STA to start TRA.		
EVALUATOR CUE (As STA) TRA initiated.				
EVALUATOR CUE Other operators will start and record F001 stroke time and time to reach 5000 gpm HPCI flow.				
8*	**Initiates** HPCI.	Depresses and holds HS–E41–1S33 HPCI MAN INIT, PB until HV–155–F001, TURBINE STEAM SUPPLY starts to open.		

Step	Action	Standard	Eval	Comments
9	**Confirms** HPCI response.	Observes the following: • HPCI INIT SIG RESET HS–E41–1S17 indicating light illuminates • HPCI BARO CDSR VACUUM PP 1P216 starts • HPCI L–O CLG WTR HV–156–F059 opens • HPCI TURBINE STEAM SUPPLY HV 155–F001 opens • HPCI STM LINE DRN TO CDSR IB ISO HV–155–F028 closes • HPCI STM LINE DRN TO CDSR OB ISO HV–155–F029 closes • HPCI BARO CDSR COND PP DSCH DRN HV–156–F026 closes • HPCI BARO CDSR COND PP DSCH DRN HV–156–F025 closes if open • HPCI Rm Unit Clr 1V209A(B) starts at 1C681		
EVALUATOR NOTE If candidate stops to wait for 5000gpm, as US, direct to continue with the procedure.				
FAULT STATEMENT **HV–155–F011 BREAKER TRIPS WHEN VALVE STROKED OPEN**				
10*	**Opens** HV–155–F011, HPCI Test Line To CST Iso, when HPCI pump discharge pressure reaches 100 psig.	Performs the following: • Observes PI–E41–1R601, HPCI PP DSCH PRESS, greater than 100 psig and then places HV–155–F011, HPCI TEST LINE TO CST ISO, to OPEN • Observes HV–155–F011 indicates dual • Observes loss of indication for HV–155–F011		

Step	Action	Standard	Eval	Comments
EVALUATOR CUE (As PCO) The HPCI response time was NOT acceptable. **IF ASKED**:F001 stroke time was 16.7 seconds and 26.1 seconds to 5000 gpm.				
11	**Notifies** System Engineering to evaluate effect on system components.	Informs Unit Supervisor to notify System Engineering to evaluate effect on system components if loud banging noise heard during system initiation.		
EVALUATOR CUE (As NPO) No banging was heard in the HPCI room during the start.				
12*	**Reduces** HPCI pump speed to approximately 2200 rpm.	Places FC–E41–1R600, HPCI TURBINE FLOW CONTROL, in MANUAL and depresses LOWER PB to obtain HPCI pump speed less than 2500 rpm, as indicated on SI–E41–1R604, HPCI TURB SPEED.		
13*	**Resets** HPCI initiation.	Performs the following: • Rotates HS–E41–1S33, HPCI MAN INIT, collar to DISARMED position • Observes AR–114–A05 clear • Depresses HS–E41–1S17, HPCI INIT SIG RESET, PB • Observes HS–E41–1S17 initiating light extinguished		
14	**Ensures** HV–155–F011, HPCI Test Line To CST Iso, closed.	Directs NPO to manually close HV–155–F011, HPCI TEST LINE TO CST ISO.		
BOOTH OPERATOR CUE **Depress KEY 24** to delete the F011 malfunction and reclose 1D624–01.				
EVALUATOR CUE (As Unit Supervisor) I have been contacted by Electrical Maintenance, they have recommended 1D624–01 be reset and reclosed. Continue with the procedure to establish conditions for re-performing the test.				

Examinee _____

Step	Action	Standard	Eval	Comments
15*	**Closes** HV–155–F011, HPCI Test Line To CST Iso.	Places HV–155–F011, HPCI TEST LINE TO CST ISO, to close and observes valve indicates full closed.		
16	**Trips** HPCI.	Depresses and holds HS–E41–1S19, HPCI TURBINE TRIP, PB.		
17*	**Closes** HV–155–F001, HPCI Turbine Steam Supply.	Places HV–155–F001, HPCI TURBINE STEAM SUPPLY, to close.		
18	**Releases** HPCI trip PB.	Releases HS–E41–1S19, HPCI TURBINE TRIP, PB.		
19	**Confirms** HV–156–F059, HPCI L–O Clg Wtr, closed.	Observes HV–156–F059, HPCI L–O CLG WTR, indicates full closed.		
EVALUATOR NOTE Proceed when the HPCI stop valve indicates full open.				
EVALUATOR CUE Five minutes have elapsed.				
20	**Stops** HPCI auxiliary oil pump.	Places 1P213, HPCI AUXILIARY OIL PP, to STOP.		
EVALUATOR CUE Fifteen minutes have elapsed.				
EVALUATOR NOTE Pump may not be running.				
21	**Stops** HPCI barometric condenser vacuum pump.	Places 1P216, HPCI BARO CDSR VACUUM PP, to STOP.		
22*	**Resets** HPCI turbine flow controller.	Places FC–E41–1R600, HPCI TURBINE FLOW CONTROL, in AUTO with a setpoint of 5100 gpm.		
EVALUATOR CUE Record JPM stop time: _____				

Examinee _____

Step	Action	Standard	Eval	Comments
EVALUATOR CUE That completes the JPM.				
EVALUATOR: Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

EXAMINEE

TASK CONDITIONS

Unit 1 is operating at 90% power.

HPCI is inoperable following a system outage window.

A full–flow test is required to return HPCI to an OPERABLE status. This full–flow test will NOT be used to satisfy Tech Spec quarterly surveillance requirements. IST data collection is not required.

NPOs, Maintenance and HP personnel are standing by to support HPCI operations.

A manual start of HPCI was performed 8 hours ago. HPCI has been returned to standby per OP–152–001.

SO–152–002 has been completed through Step 5.1.3.c(2).

Other operators will perform all timing operations during HPCI startup.

INITIATING CUE

Perform a full–flow test of HPCI by completing SO–152–002

PPL SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Main Steam Line Isolation and Quick Recovery in accordance with ON-184-001**

S/RO	84.ON.2392.101	6	12/04/2014	Simulator
Applicability	JPM Number	Revision	Date	Setting

123456	X1.23	1.1 / 1.1	Y	N
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

	12/04/2014
Author	Date

Validated

	12/13/2014
Instructor	Date

Review

	12/18/14
Operations Management	Date

Approval

	12/13/2014
Nuclear Training Supervisor	Date

20
Validation Time (min)

Examinee Name: _____ _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ _____
Name Signature

Comments

JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
5	Revised from 84.ON.003.101 Rev 4; removed separate RO/SRO cues. Re-validation not required.
6	Revised Action 24 to place switches to NORM not TEST. Identified during validation.

REQUIRED TASK INFORMATION

1. SAFETY CONSIDERATIONS

A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.

B. All applicable safety precautions shall be taken in accordance with established PPL safety policies and the Safety Rule Book, for example:

1. Whenever any electrical panel is opened for inspection during JPM performance.

2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.

C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.

D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

2. REFERENCES

A. ON-184-001, Main Steam Line Isolation And Quick Recovery (Revision 17)

3. TASK CONDITIONS

An MSIV isolation and reactor scram occurred from rated power.

The cause of the MSIV isolation was a faulty isolation logic surveillance test procedure.

RCIC injection is controlling reactor level.

Reactor pressure is controlled by manual SRV actuation.

Restoration of normal steam loads and Main Turbine bypass valves is required for a reactor cooldown.

4. INITIATING CUE

Perform a quick recovery from a Main Steam Line Isolation and reopen the MSIVs per ON-184-001.

5. TASK STANDARD

Pressure equalized around MSIVs and MSIVs re-opened

SIMULATOR SETUP INSTRUCTIONS

- From a power operating IC, insert the following to cause a spurious MSIV isolation on high steam line flow:

  `IMF cmfRL01_B211K3A`

  `IMF cmfRL01_B211K3D`

- Insert the following malfunctions as need to assist in stabilizing Reactor pressure:

  `cmfRV04_PSV141F13A(B)(C)(D) f:8`

- Place the Mode Switch in SHUTDOWN.
- Place the simulator in RUN.
- Reduce reactor pressure to approximately 500 psig using SRVs.
- Take action to stabilize reactor level and pressure. Establish level control with RCIC and pressure control with SRVs.
- Allow plant conditions to stabilize.
- Delete the malfunctions listed above to allow re-opening MSIVs.
- Place the simulator in Freeze.

Examinee _____

Step	Action	Standard	Eval	Comments
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-386, 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.				
1	**Verifies** ON–184–001 is governing procedure and obtains controlled copy.	Controlled copy of ON-184-001 obtained.		
2*	**Places** MSIV handswitches to CLOSE.	Place control switches for following to CLOSE: • Mn Stm Line A IB Iso HV-141-F022A • Mn Stm Line B IB Iso HV-141-F022B • Mn Stm Line C IB Iso HV-141-F022C • Mn Stm Line D IB Iso HV-141-F022D • Mn Stm Line A OB Iso HV-141-F028A • Mn Stm Line B OB Iso HV-141-F028B • Mn Stm Line C OB Iso HV-141-F028C • Mn Stm Line D OB Iso HV-141-F028D		
3	**Ensures** Mn Stm Line IB Drain HV-141-F016 CLOSED.	Observe Mn Stm Line IB Drain HV-141-F016 indicates FULL CLOSED.		
4	**Ensures** Mn Stm Line OB Drain HV-141-F019 CLOSED.	Observe Mn Stm Line OB Drain HV-141-F019 indicates FULL CLOSED.		
5	**Ensures** Mn Stm Line Drain to Cdsr HV-141-F021 CLOSED.	Observe Mn Stm Line Drain to Cdsr HV-141-F021 indicates FULL CLOSED.		

Step	Action	Standard	Eval	Comments
6	**Ensures** following steam turbines TRIPPED: • Main Turbine • Reactor Feed Pump Turbine A • Reactor Feed Pump Turbine B • Reactor Feed Pump Turbine C	Observe the following: • MSV 1(2)(3)(4) POSITION ZI-10141A(B)(C)(D) indicate 0 percent OR Annunciator MAIN TURB MASTER TRIP (AR-105-A01) in alarm • On ICS HMI FW_OVERVIEW RFPT A(B)(C) icon GREY and indicate TRIPPED OR Annunciators RFPT A(B)(C) TRIP (AR-101-A10(A12)(A14)) in alarm		
7	**Determines** if MSIVs closed due to Main Turbine EHC malfunction.	Observe from Task Conditions MSIVs closed due to surveillance test.		
8	**Closes** drip leg drain valves.	Perform the following: • Depress Drip Leg Drn HS-10112 AUTO PB • Observe the following indicate FULL CLOSED o Drip Leg Drn HV-10112A1 o Drip Leg Drn HV-10112B1 o Drip Leg Drn HV-10112C1 o Drip Leg Drn HV-10112D1		
9	**Closes** bypass valve header drip leg drain valves.	Perform the following: • Depress BPV Hdr Drip Leg Drn Byps HS-10109A AUTO PB • Observe BPV Hdr Drip Leg Drn Byps HV-10108A indicates FULL CLOSED		

Examinee _____

Step	Action	Standard	Eval	Comments
EVALUATOR NOTE The examinee may elect to depress the CLOSE PB for the following two valves even though the valves are already closed.				
10	**Closes** Main Turbine stop valve below seat drain valves.	Observe MSV Bst Drn HV-10101A(B)(C)(D) indicate FULL CLOSED.		
11	**Closes** Seal Steam Evaporator main steam supply control valve.	Observe SSE Mn Stm Sup CV HV-10703 indicates FULL CLOSED.		
12	**Ensures** Seal Steam Evaporator main steam supply line drain valves are closed.	Observe the following indicate FULL CLOSED • SSE Mn Stm Sup Ln Drn HV-10767 • SSE Mn Stm Sup Ln Drn HV-10768		
13*	**Closes** Seal Steam pressure control valve isolation valve.	Depress SSE Press Ctlr Iso HV-10704 CLOSE PB.		
EVALUATOR NOTE Pressure will not rise in this step because the Main Steam Line is depressurized. If the examinee anticipates this response, they may N/A this step.				
14	**Throttles** Seal Steam Evaporator pressure control bypass valve to establish seal steam header pressure of 0.25 to 0.50 psig.	Perform the following: • Depress and hold SSE Press Ctlr Byps HV-10705 OPEN PB until valve indicates DUAL • Observe no change in seal steam header pressure as indicated on SSE Pressure PI-10723 • Proceeds with procedure to re-open MSIVs		
EVALUATOR CUE If asked how to proceed based on pressure not rising, direct examinee to respond in accordance with the procedure.				
15	**Closes** Seal Steam Evaporator pressure control bypass valve.	Depress SSE Press Ctlr Byps HV-10705 CLOSE PB.		

Step	Action	Standard	Eval	Comments
16	**Closes** SJAE main steam supply isolation valve.	Depress Mn Stm SJAE Iso HV-10107 CLOSE PB.		
EVALUATOR CUE If asked in the next step, direct examinee to continue with procedure.				
17*	**Resets** NSSSS logic.	Depress and release the following PBs: • Mn Stm Line Div 1 Iso Reset HS-B21-1S32 Reset • Mn Stm Line Div 2 Iso Reset HS-B21-1S33 Reset		
18*	**Opens** inboard MSIVs.	Place the following HS to OPEN and observe valve indicates FULL OPEN: • Mn Stm Line A IB Iso HV-141-F022A • Mn Stm Line B IB Iso HV-141-F022B • Mn Stm Line C IB Iso HV-141-F022C • Mn Stm Line D IB Iso HV-141-F022D		
19	**Places** MSIV drain valve thermal overloads in service.	Perform the following: • Notify US to enter TRO 3.8.2.1 • Place AC MOV OL Byps HS-B21-1S37A to TEST • Place DC MOV OL Byps HS-B21-1S37B to TEST		
EVALUATOR CUE As US acknowledge TRO 3.8.2.1 entry.				
20*	**Opens** Mn Stm Line IB Drain HV-141-F016.	Place Mn Stm Line IB Drain HV-141-F016 HS to OPEN and observe valve indicates FULL OPEN.		
21*	**Opens** Mn Stm Line OB Drain HV-141-F019.	Place Mn Stm Line OB Drain HV-141-F019 HS to OPEN and observe valve indicates FULL OPEN.		

Step	Action	Standard	Eval	Comments
22	**Ensures** Mn Steam Line Warm Up HV-141-F020 OPEN.	Observe Mn Steam Line Warm Up HV-141-F020 indicates FULL OPEN.		
23	**Observes** main steam line pressure RISING.	Observe main steam line pressure RISING as indicated on Main Turbine Generator Recorder XR-19201.		
EVALUATOR CUE Two minutes have passed.				
24	**Bypasses** MSIV drain valve thermal overloads after two minutes.	Perform the following: • Place AC MOV OL Byps HS-B21-1S37A to NORM • Place DC MOV OL Byps HS-B21-1S37B to NORM • Notify US to exit TRO 3.8.2.1		
EVALUATOR CUE As US acknowledge TRO 3.8.2.1 exit.				

Examinee _____

Step	Action	Standard	Eval	Comments
EVALUATOR NOTE MSIVs may be re-opened when ΔP across the outboard MSIVs is less than 400 psid without inducing a severe reactor level transient or an MSIV re-isolation on high flow.				
EVALUATOR CUE Once examinee displays ability to determine differential pressure across MSIVs and D/P is less than 400 psig, inform the candidate that the ΔP requirements have been met and the MSIVs may be opened.				
25	**Opens** outboard MSIVs.	Place the following HS to OPEN and observe the associated valve indicates FULL OPEN • Mn Stm Line A OB Iso HV-141-F028A • Mn Stm Line B OB Iso HV-141-F028B • Mn Stm Line C OB Iso HV-141-F028C • Mn Stm Line D OB Iso HV-141-F028D		
EVALUATOR CUE Record JPM stop time: _____				
EVALUATOR CUE That completes the JPM.				
EVALUATOR NOTE That completes the JPM.				
EVALUATOR: Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

EXAMINEE

TASK CONDITIONS

An MSIV isolation and reactor scram occurred from rated power.

The cause of the MSIV isolation was a faulty isolation logic surveillance test procedure.

RCIC injection is controlling reactor level.

Reactor pressure is controlled by manual SRV actuation.

Restoration of normal steam loads and Main Turbine bypass valves is required for a reactor cooldown.

INITIATING CUE

Perform a quick recovery from a Main Steam Line Isolation and reopen the MSIVs per ON-184-001.

PPL SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Perform Manual Component by Component S/U of Core Spray System IAW OP-151-001**

S/RO	51.OP.1934.101	0	12/04/2014	Simulator
Applicability	JPM Number	Revision	Date	Setting

209001	A2.06	3.2/3.2	N	N
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

Greg van den Berg 12/04/2014
Author Date

Validated

Greg van den Berg 12/13/2014
Instructor Date

Review

12/18/14
Operations Management Date

Approval

12/13/2014
Nuclear Training Supervisor Date

10
Validation Time (min)

Examinee Name: _____ _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ _____
Name Signature

Comments

TEAM SUSQUEHANNA Generation Excellence

JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM

REQUIRED TASK INFORMATION

1. SAFETY CONSIDERATIONS

A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.

B. All applicable safety precautions shall be taken in accordance with established PPL safety policies and the Safety Rule Book, for example:

1. Whenever any electrical panel is opened for inspection during JPM performance.

2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.

C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.

D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

2. REFERENCES

A. OP-151-001, Core Spray System (Revision 36)

3. TASK CONDITIONS

A loss of coolant accident occurred 30 minutes ago.

EO-000-112, Rapid Depressurization, has been performed.

Both Core Spray subsystems failed to initiate automatically and manually using the Manual Initiation pushbuttons

Core Spray Loop A was started manually component by component

Reactor water level was being controlled +13" to +54" using Core Spray loop A

Core Spray pump C has tripped

4. INITIATING CUE

Manually start Core Spray Loop B, component by component IAW OP-151-001 to establish injection to the vessel to restore and maintain reactor water level +13" to +54".

5. TASK STANDARD

Manually start Core Spray Loop B component by component per OP-151-001 and establish injection to restore and maintain reactor water level +14" to +54".

SIMULATOR SETUP INSTRUCTIONS

- Reset simulator to IC 20
- Run scenario EVAL51OP1934101

  EVAL51OP1934101 inserts the following malfunctions to initiate a LOCA and fail all high-capacity injection sources other than Core Spray:

  IMF mfRR164011A f:10
  IMF mfRH149007A
  IMF mfRH149007C
  IMF mfRH149007B
  IMF mfRH149007D
  IMF mfRC150007
  IMF mfHP152011
  IMF mfFW144003D
  IMF mfFW144003C
  IMF mfFW144003B
  IMF mfFW144003A

- Place the Mode Switch in SHUTDOWN.
- Place all ADS valve control switches to OPEN.
- Place the simulator in RUN.
- Close MSIV's and Drains
- Insert NI's
- Secure Core Spray loop B per OP-151-001 section 2.7.3.b (shutdown both pumps).
- Throttle Core Spray loop A inboard injection valve as necessary to maintain Reactor water level +13" to +54".
- Allow plant conditions to stabilize.
- Place the simulator in Freeze.
- Consider snapping an IC for multiple performances of this JPM.
- When student is ready to begin **JPM**, place the simulator in **RUN**.

Examinee _____

Step	Action	Standard	Eval	Comments
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-387, or configure the simulator per the Simulator Setup Instructions. • Mark-up a copy of OP-151-001 complete through Step 2.3.3				
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.				
1	**Identifies** governing procedure and obtain controlled copy.	Obtains controlled copy of OP-151-001, Core Spray System.		
2	**Determines** section 2.3 is the correct section of the procedure.	Performs Section 2.3.4		
3*	**Starts** Core Spray pumps 1P206B and/or 1P206D	Starts Core Spray Pump 1P206B by rotating control switch clockwise to START. and/or Starts Core Spray Pump 1P206D by rotating control switch clockwise to START.		
EVALUATOR NOTE Operator may ask if pumps will be on Minimum Flow for continuous operation for more than 3 hours.				
EVALUATOR CUE If asked, Core Spray system operation at minimum flow will be less than 3 hours.				
4	**Verifies** Core Spray loop injection valve is Open.	Open OR Check Open CORE SPRAY LOOP B OB INJ SHUTOFF HV-152F004B		

Examinee _____

Step	Action	Standard	Eval	Comments
5	**Bypasses** Lo Reactor Pressure Permissive	WHEN Reactor pressure < 420 psig, Place LO RX PRESS PERM switch HS-15249B to BYPASS		
6*	**Throttle Open** CORE SPRAY LOOP B IB INJ SHUTOFF HV-152F005B to establish loop flow as follows: • ≤ 90 amps and ≤ 7900 gpm for two pump operation (emergency operation) • ≤ 90 amps and ≤ 3950 gpm for one pump operations (emergency operation)	Throttles open HV-152-F005B by rotating control switch clockwise to OPEN		
7	WHEN flow to reactor vessel ≥ 635 gpm, **Ensure** CORE SPRAY LOOP B MIN FLOW HV-152F031B CLOSES	WHEN Core Spray loop flow rises to 635 gpm, observes HV-152F031B amber light on, red light off		
8	**Check** Core Spray Room Unit Coolers 1V211B and/or D AUTO STARTS indicated on Heating and Ventilation Panel 1C681	Observes 1V211B and/or D red light on, amber light off		

EVALUATOR CUE
Record JPM stop time: _____

EVALUATOR CUE
That completes the JPM.

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

EXAMINEE

TASK CONDITIONS

A loss of coolant accident occurred 30 minutes ago.

EO-000-112, Rapid Depressurization, has been performed.

Both Core Spray subsystems failed to initiate automatically and manually using the Manual Initiation pushbuttons

Core Spray Loop A was started manually component by component

Reactor water level was being controlled +13" to +54" using Core Spray loop A

Core Spray pump C has tripped

INITIATING CUE

Manually start Core Spray Loop B, component by component IAW OP-151-00 section 2.3.4 to establish injection to the vessel to restore and maintain reactor water level +13" to +54".

PPL SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Placing RHRSW In–Service for Suppression Pool Cooling with Piping Rupture**

S/RO	16.OP.1354.151	3	08/08/2014	Simulator
Applicability	JPM Number	Revision	Date	Setting
219000	**A4.05**	**3.4/3.4**	**Y**	**N**
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

Author _____ Date **12/04/2014**

Validated

Instructor _____ Date **12/13/2014**

Review

Operations Management _____ Date 12/18/14

Approval

Nuclear Training Supervisor _____ Date **12/13/2014**

20
Validation Time (min)

Examinee Name: _____ _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ _____
Name Signature

Comments

JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM
1	Revise for TQ procedures, minor editorial corrections
2	Reformatted to the "TQ" procedure format
3	Validation comment to remove bullet in action 18 referencing FI-E11-1R602A pegging high

REQUIRED TASK INFORMATION

1. SAFETY CONSIDERATIONS

A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.

B. All applicable safety precautions shall be taken in accordance with established PPL safety policies and the Safety Rule Book, for example:

1. Whenever any electrical panel is opened for inspection during JPM performance.

2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.

C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.

D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

2. REFERENCES

A. OP–149–005, RHR Suppression Pool Cooling (Rev 28)

B. OP–054–001, ESW System (Rev 38)

C. OP–116–001, RHR Service Water (Rev 46)

D. AR–109–H04, RHRSW PUMP A DISCHARGE LO PRESS (Rev. 33)

E. AR–109–H08, RHR LOOP A PUMP ROOM FLOODED (Rev. 33)

3. TASK CONDITIONS

Unit 1 is operating in Mode 1.

A quarterly RCIC surveillance test has been scheduled. Suppression Pool cooling is required.

Radwaste is unable to accept Suppression Pool water for processing.

All systems are aligned for normal standby operation in accordance with their respective OP.

4. INITIATING CUE

Place RHR A in service in Suppression Pool cooling

5. TASK STANDARD

Starts ESW; trips RHRSW Pump A on evidence of RHRSW leakage into RHR A room

SIMULATOR SETUP INSTRUCTIONS

- Reset the simulator to IC–18, or an exam–specific IC if prepared (IC 388).
- Insert the following Event Triggers
  ET16OP1354151
  diHS11202A2.CurrValue = #OR.diHS11202A2.START
  IMF mfEW116001 d:5 r:15 f:100
  IMF cmfTR02_PT11203A d:5 r:15 f:10
  IMF annAR109H04 d:15 f:ALARM_ON

Examinee _____

Step	Action	Standard	Eval	Comments
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-388, or configure the simulator per the Simulator Setup Instructions.				
EVALUATOR NOTE The FAULTED step in this 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.				
1	**Verifies** OP–149–005 Section 2.1 is governing procedure and obtains controlled copy.	Controlled copy of OP–149–005 obtained, select Section 2.1.		
2	**Verifies** prerequisites are satisfied.	Observe RHR, RHRSW and ESW are in normal standby alignment is specified in Task Conditions.		
EVALUATOR CUE Suppression Chamber access is closed.				
EVALUATOR CUE Suppression Pool cleanup is not required.				
3	**Verifies** OP–054–001 Section 2.2 is governing procedure for placing ESW in service and obtains controlled copy.	Controlled copy of OP–054–001 obtained, select Section 2.2.		
4*	**Starts** ESW pump in A loop.	Depress ESW Pump 0P504A(C) RUN pushbutton		
EVALUATOR CUE Another operator will update the Spray Pond Operations Log.				

Examinee _____

Step	Action	Standard	Eval	Comments
5	**Ensures** flow path to Spray Pond.	Observe one of the following: • HV–01222A ESW POND SPR BPV A, indicates full open. • HV–01224A1, ESW POND SPR IN A1, indicates full open. • HV–01224A2, ESW POND SPR IN A2, indicates full open.		
6	**Ensures** ESW pumphouse ventilation fan starts and damper aligned.	Perform the following: • At OC681, observe 0V521A(C) ESW PP SUPPLY FAN running • Direct NPO to verify ESW pumphouse ventilation aligned per OP–128–001		
EVALUATOR CUE ESW pumphouse ventilation is aligned per procedure.				
7	**Starts** ESW pump in other loop.	Depress ESW Pump 0P504B(D) RUN pushbutton		
8	**Ensures** flow path to Spray Pond.	Observe one of the following: • HV–01222B ESW POND SPR BPV B, indicates full open • HV–01224B1, ESW POND SPR IN B1, indicates full open • HV–01224B2, ESW POND SPR IN B2, indicates full open		
9	**Ensures** ESW pumphouse ventilation fan starts and damper aligned.	Perform the following: • At OC681, observe 0V521B(D) ESW PP SUPPLY FAN running • Direct NPO to verify ESW pumphouse ventilation aligned per OP–128–001		
EVALUATOR CUE ESW pumphouse ventilation is aligned per procedure.				

Examinee _____

Step	Action	Standard	Eval	Comments
10	**Verifies** ESW flows within applicable limits.	Observe A/C DSCH HDR LOOP A FLOW FI–01109A and B/D DSCH HDR LOOP B FLOW FI-01109B indicate approximately 4200–4800 gpm.		
EVALUATOR CUE Another operator will place Spray Pond spray networks in service.				
11	**Verifies** OP–116–001 Section 2.2 is governing procedure for placing RHRSW in service and obtains controlled copy.	Controlled copy of OP–116–001 obtained, select Section 2.2.		
12	**Complies** with TRO 3.8.2.1.	Inform Unit Supervisor to comply with TRO 3.8.2.1.		
EVALUATOR CUE As Unit Supervisor, acknowledge TRO entry.				
13	**Places** RHRSW Division 1 MOV overloads in service.	At 0C697 Motor Overload Bypass Control Panel, Place HS-11210A1 RHRSW Sys Unit 1 Div 1 to TEST		
14	**Ensures** HV–21210A, RHRSW HX A Inlet, closed.	Contact Unit 2 PCO and request HV–21210A UNIT 2 RHRSW HX A INLET CLOSED if not already full closed.		
EVALUATOR CUE HV–21210A is closed.				
15*	**Opens** HV–11210A, RHRSW Hx A Inlet, 10 percent open.	Place HV–11210A, UNIT 1 RHRSW HX A(B) INLET, to OPEN until 10 percent indicated on ZI–11210A, RHRSW HX A INLET VLV POSN.		
16*	**Opens** HV–11215A, RHRSW Hx A Outlet.	Place HV–11215A, RHRSW HX A OUTLET, to OPEN.		

Examinee _____

Step	Action	Standard	Eval	Comments
17	**Ensures** flow path to Spray Pond.	Observe one of the following: • HV–01222A(B) ESW POND SPR BPV A(B), indicate full open • HV–01224A1(B1), ESW POND SPR IN A1(B1), indicate full open • HV–01224A2(B2), ESW POND SPR IN A2(B2), indicate full open		
EVALUATOR CUE If questioned, as Unit Supervisor respond that the system was NOT drained for maintenance.				
FAULT STATEMENT **A MAJOR LEAK DEVELOPS FROM RHRSW A INTO THE RHR A ROOM WHEN THE PUMP IS STARTED.**				
18*	**Starts** RHRSW Pump A.	Perform the following: • *Place 1P506A, RHRSW PUMP A, to START • Observe AR–109–H04 in alarm • Observes AR–109–H08 in alarm • Informs Unit Supervisor of suspected RHRSW leak into RHR A room, EO–100–104 entry		
EVALUATOR CUE Respond to RHRSW and RHR room flooded alarms. I will enter EO–100–104 and have another operator perform actions in that procedure.				
EVALUATOR NOTE Actions to close RHRSW A inlet/outlet valves permissible, but not required for successful completion of task.				
*19	**Trips** RHRSW Pump A.	Place 1P506A, RHRSW PUMP A, to STOP.		
EVALUATOR CUE Record JPM stop time: _____				
EVALUATOR CUE That completes the JPM.				

Examinee _____

Step	Action	Standard	Eval	Comments
EVALUATOR: Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

EXAMINEE

TASK CONDITIONS

Unit 1 is operating in Mode 1.

A quarterly RCIC surveillance test has been scheduled. Suppression Pool cooling is required.

Radwaste is unable to accept Suppression Pool water for processing.

All systems are aligned for normal standby operation in accordance with their respective OP.

INITIATING CUE

Place RHR A in service in Suppression Pool cooling

PPL SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

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

S/RO	15.OP.1347.151	1	10/23/2014	Simulator
Applicability	JPM Number	Revision	Date	Setting

400000	A2.01	3.3/3.4	Y	N
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

	11/26/2014
Author	Date

Validated

	12/13/2014
Instructor	Date

Review

	12/18/14
Operations Management	Date

Approval

	12/13/2014
Nuclear Training Supervisor	Date

10
Validation Time (min)

Examinee Name: _____ _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ _____
Name Signature

Comments

JPM REVISION SUMMARY

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

REQUIRED TASK INFORMATION

1. SAFETY CONSIDERATIONS

A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.

B. All applicable safety precautions shall be taken in accordance with established PPL safety policies and the Safety Rule Book, for example:

1. Whenever any electrical panel is opened for inspection during JPM performance.

2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.

C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.

D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

2. REFERENCES

A. OP–115–001, Turbine Building Closed Cooling Water System (Revision 24)

B. ON–115–001, Loss of Turbine Building Closed Cooling Water (Revision 22)

C. AR–123–G02, TBCCW PUMP B MOTOR TRIP (Revision 25)

D. AR–123–G04, TBCCW HEAT EXCHANGER HEADER LO PRESS (Revision 25)

3. 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.

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

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

4. INITIATING CUE

Place TBCCW Pump 1B in service and shutdown TBCCW Pump 1A.

5. TASK STANDARD

TBCCW Pump 1A restarted and supplying cooling to TBCCW loads

SIMULATOR SETUP INSTRUCTIONS

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

  ET15OP1347151

  ```
  tw_1p103a(1) = 0 & twvp114011 > 0.9
  IMF cmfPM02_1P103B
  ```

  ET15OP1347151A

  ```
  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
  i/a xtie to U2
  ```

- 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
  ```

Examinee _____

Step	Action	Standard	Eval	Comments
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-18, or configure the simulator per the Simulator Setup Instructions.				
EVALUATOR NOTE The FAULTED step in this 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.				
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..		
2*	**Starts** TBCCW Pump 1B	Depresses TBCCW PP 1P103B RUN PB		
3	**Closes** TBCCW Pump 1A discharge valve	Directs NPO to slowly close 114011, TBCCW PUMP A DSCH		
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.		
EVALUATOR CUE PI–11405B indicates 98 psig.				

Examinee _____

Step	Action	Standard	Eval	Comments
5*	**Stops** TBCCW Pump 1A.	Depresses TBCCW PP 1P103A STOP PB.		
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.		
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.		
EVALUATOR NOTE The following step is a critical step only if the TBCCW Pump 1A discharge valve was closed in the preceeding 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.		
BOOTH OPERATOR CUE • **Depress KEY 27** to open 114011. • **Ensure** Event Trigger ET15OP1347151 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.				

Examinee _____

Step	Action	Standard	Eval	Comments
EVALUATOR NOTE Direction to start TBCCW Pump 1A is provided in AR–123–G02, AR–123–G04, or ON–115–001.				
9*	**Starts** TBCCW Pump 1A.	Depresses TBCCW PP 1P103A RUN PB.		
BOOTH OPERATOR CUE **Ensure** Event Trigger ET15OP1347151A fires when TBCCW Pump 1A is re–started to reset I/A and S/A compressors.				
EVALUATOR CUE Record JPM stop time: _____				
EVALUATOR CUE That completes the JPM.				
EVALUATOR: Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

EXAMINEE

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.

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

PPL SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Restore Offgas System IAW ON-143-011**

S/RO	**72.ON.1786.101**	**0**	**12/05/2014**	**Simulator**
Applicability	JPM Number	Revision	Date	Setting

271000	**A2.11**	**2.8/2.9**	**N**	**N**
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

Author _____ **11/26/2014** Date

Validated

Instructor _____ **12/15/2014** Date

Review

Operations Management _____ 12/18/14 Date

Approval

Nuclear Training Supervisor _____ **12/15/2014** Date

15
Validation Time (min)

Examinee Name: _____ _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ _____
Name Signature

Comments

JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM

REQUIRED TASK INFORMATION

1. SAFETY CONSIDERATIONS

A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.

B. All applicable safety precautions shall be taken in accordance with established PPL safety policies and the Safety Rule Book, for example:

1. Whenever any electrical panel is opened for inspection during JPM performance.

2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.

C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.

D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

2. REFERENCES

A. ON-143-001, Main Condenser Vacuum and Offgas System (Revision 38)

3. TASK CONDITIONS

Unit 1 is operating in Mode 1.

A spurious closure of HV-10721 occurred, causing an ARESD

ON-143-001 has been entered

4. INITIATING CUE

Restore the Offgas System IAW ON-143-001, step 3.6.7

5. TASK STANDARD

Restores the Offgas System IAW ON-143-001, Step 3.6.7

SIMULATOR SETUP INSTRUCTIONS

1. **Reset** the simulator to IC 390.

PERFORMANCE CHECKLIST

Examinee _____

Step	Action	Standard	Eval	Comments
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-390, or configure the simulator per the Simulator Setup Instructions. • Mark-up a copy of ON-143-001 complete through Step 3.6.6.				
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.				
1	**Identifies** ON-143-001 is the governing procedure and obtains controlled copy.	Obtains controlled copy of ON-143-001, selects step 3.6.7.		

Step	Action	Standard	Eval	Comments
2*	**IF** Offgas System Automatic Isolation **OR** an ARESD Signal occurred, **THEN Performs** following:	• Ensure Isolation occurred by checking SJAE Suct Iso Vlvs HV-10716, HV-10717, HV-10718 and HV-10719 CLOSED, as indicated by Amber light ILLUMINATED at HS-10716 SJAE Suct Iso • * IF isolation originated from Low Dilution Steam Flow, OR an ARESD Signal THEN Perform following: o *IF on Main Steam, THEN Ensure following valves are OPEN: o *HV 10721 SJAE Dsch Iso. o *HV 10702 SJAE Sec. Eject Iso. o *HV 10701A SJAE Mn Stm Sup Iso. o *HV 10701B SJAE Mn Stm Sup Iso. o *HV 10107 Mn Stm SJAE Iso. o *HV 10722 SJAE Sup. Pri. Eject Iso.		
3	**Check** steam pressure ≥110 psig on PI-10701 SJAE Stm Sup Press	Check Steam Supply Pressure is >110 psig on PI 10701		
4	**IF** steam pressure on PI-10701 <110 psig, **THEN Evaluate** transferring steam supply to the alternate source in accordance with OP-172-001.	Evaluates the need to transfer to an alternate steam supply		
EVALUATOR NOTE Alternate steam supply will not be necessary				

Step	Action	Standard	Eval	Comments
5	**IF** Dilution Steam Flow is <10,700 lb/hr, **THEN** at 0C145, **Perform** following:	• Check FIC 10702A(B) Dilution Stm Flow Vlv A(B) Controller in AUTO, with setpoint at 10,800 lb/hr. • IF necessary, THEN Place FIC 10702A(B) Dilution Stm Flow Vlv A(B) Controller in MANUAL. • Adjust FIC 10702A(B) Dilution Stm Flow Vlv A(B) Controller to establish 10,800 lb/hr flow. • WHEN automatic controls functional, THEN Place FIC 10702A(B) Dilution Stm Flow Vlv A(B) Controller in AUTO, with setpoint at 10,800 lb/hr. • Place FIC 10702B(A) Dilution Steam Flow Vlv B(A) Controller in AUTO as backup, with a setpoint at 10,700 lb/hr.		
BOOTH OPERATOR CUE **Insert Key 1** when requested to perform field actions at 0C145.				
6	**Return** Unit 1 (Common) Recombiner to service by:	• Notify HP that Ops will be returning Unit 1 (Common) Recombiner to service. • At 0C673 Offgas Recombiner Panel, Ensure Dilution Steam flow ≥ 10,700 lb/hr on FI 10702, Dilution Steam Flow. • Momentarily Depress HS 10716 (1C668) Open pushbutton to open SJAE Suct Iso Vlvs HV 10716, HV 10717, HV 10718 and HV 10719.		
EVALUATOR CUE Record JPM stop time: _____				

Examinee _____

Step	Action	Standard	Eval	Comments
EVALUATOR CUE That completes the JPM.				
EVALUATOR NOTE That completes the JPM.				
EVALUATOR: Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

EXAMINEE

TASK CONDITIONS

Unit 1 is operating in Mode 1.

A spurious closure of HV-10721 occurred, causing an ARESD

ON-143-001 has been entered

INITIATING CUE

Restore the Offgas System IAW ON-143-001, step 3.6.7

PPL SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Shifting CRD Drive Water Filters**

S/RO	55.OP.2016.001	4	08/08/2014	Plant
Applicability	JPM Number	Revision	Date	Setting
201001	**K1.02**	**3.0/3.0**	**N**	**N**
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

Author _____ **12/04/2014** Date

Validated

Instructor _____ **12/13/2014** Date

Review

Operations Management _____ 12/18/14 Date

Approval

Nuclear Training Supervisor _____ **12/13/2014** Date

20
Validation Time (min)

Examinee Name: _____ _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ _____
Name Signature

Comments

JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM
1	Revise for TQ procedures, minor editorial corrections
2	Revised due to reference revision
3	Reformatted to the "TQ" procedure format
4	Updated reference revision, removed Unit 2 references

REQUIRED TASK INFORMATION

1. SAFETY CONSIDERATIONS

A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.

B. All applicable safety precautions shall be taken in accordance with established PPL safety policies and the Safety Rule Book, for example:

1. Whenever any electrical panel is opened for inspection during JPM performance.

2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.

C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.

D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

2. REFERENCES

A. OP–155–001, CRDH SYSTEM (Revision 61)

3. TASK CONDITIONS

Unit 1 is operating at 100% power.

Foreign material has entered the Unit 1 CST.

The CRD pump suction filter has been bypassed to keep a CRD pump in–service.

CRD Drive Water Filter A differential pressure is rising

4. INITIATING CUE

Shift CRD Drive Water Filters, placing B in service and removing A from service, per OP-155-001 Section 2.12

5. TASK STANDARD

Shift CRD drive water filters, with B in service and A removed from service and isolated

Examinee _____

Step	Action	Standard	Eval	Comments
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 plant. Obtain Shift Manager authorization to proceed. This JPM requires access to Unit 1(2) CRD drive water filter area. • Unit 2 equipment designations are in parentheses () after Unit 1.				
EVALUATOR CUE Record JPM start time: _____				
1	**Verifies** OP–155–001 Section 2.12 is governing procedure and obtains controlled copy.	Controlled copy of OP–155–001 obtained, selects Section 2.12.		
2*	**Aligns** 1F204B, Drive Water Filter B vent path	Performs the following: • Opens 146004, DRIVE WTR FILTER B VENT, by rotating the valve handwheel in the counter–clockwise direction until resistance is felt • Opens 146F022B, DRIVE WTR FILTER B VENT, by rotating the valve handwheel in the counter–clockwise direction until resistance is felt		
EVALUATOR CUE You feel resistance in the counter–clockwise direction.				
3*	**Vents** 1F204B, Drive Water Filter B	Performs the following • Slowly throttles open 146F021B, CRD DRIVE WTR FILTER B OUTLET ISO VLV, by rotating the valve handwheel in the counter–clockwise direction • Observes steady stream of water from vent line		

Examinee _____

Step	Action	Standard	Eval	Comments
EVALUATOR CUE You observe a steady stream of water from the B filter vent.				
4*	**Isolates** 1F204B, Drive Water Filter B vent path.	Performs the following: • Slowly closes 146F022B, DRIVE WTR FILTER B VENT, by rotating the valve handwheel in the clockwise direction until resistance is felt • Closes 146004 (146006), DRIVE WTR FILTER B VENT, by rotating the valve handwheel in the clockwise direction until resistance is felt		
EVALUATOR CUE You feel resistance in the clockwise direction.				
5*	**Opens** 146F021B, CRD Drive Wtr Filter B Outlet Iso Vlv fully.	Slowly throttles open 146F021B, CRD DRIVE WTR FILTER B OUTLET ISO VLV, by rotating the valve handwheel in the counter–clockwise direction until resistance is felt.		
EVALUATOR CUE You feel resistance in the counter–clockwise direction.				
6*	**Opens** 146F020B, CRD Drive Wtr Filter B Inlet Iso Vlv.	Slowly throttles open 146F020B, CRD DRIVE WTR FILTER B INLET ISO VLV, by rotating the valve handwheel in the counter–clockwise direction until resistance is felt.		
EVALUATOR CUE You feel resistance in the counter–clockwise direction.				
7*	**Closes** 146F020A, CRD Drive Wtr Filter A Inlet Iso Vlv.	Closes 146F020A, CRD DRIVE WTR FILTER A INLET ISO VLV, by rotating the valve handwheel in the clockwise direction until resistance is felt.		

Examinee _____

Step	Action	Standard	Eval	Comments
EVALUATOR CUE You feel resistance in the clockwise direction				
8*	**Closes** 146F021A, CRD Drive Wtr Filter A Outlet Iso Vlv.	Closes 146F021A, CRD DRIVE WTR FILTER A INLET ISO VLV, by rotating the valve handwheel in the clockwise direction until resistance is felt.		
EVALUATOR CUE You feel resistance in the clockwise direction				
EVALUATOR CUE Record JPM stop time: _____				
EVALUATOR CUE That completes the JPM.				
EVALUATOR: Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

EXAMINEE

TASK CONDITIONS

Unit 1 is operating at 100% power.

Foreign material has entered the Unit 1 CST.

The CRD pump suction filter has been bypassed to keep a CRD pump in–service.

CRD Drive Water Filter A differential pressure is rising

INITIATING CUE

Shift CRD Drive Water Filters, placing B in service and removing A from service, per OP-155-001 Section 2.12

PPL SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Establish and Maintain Reactor Vessel Level (RCIC Not Injecting) from the U2 RSDP**

S/RO	**50.OP.1916.201**	**4**	**08/08/2014**	**Plant**
Applicability	JPM Number	Revision	Date	Setting

295016	**AA1.06**	**4.0 / 4.1**	**N**	**N**
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

Author _____ **12/04/2014** Date

Validated

Instructor _____ **12/13/2014** Date

Review

Operations Management _____ 12/18/14 Date

Approval

Nuclear Training Supervisor _____ **12/13/2014** Date

15
Validation Time (min)

Examinee Name: _____ _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ _____
Name Signature

Comments

JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM
1	Revise for TQ procedures, minor editorial corrections
2	Updated to reflect procedure revision of OP-250-001 Rev 40
3	Reformatted to the "TQ" procedure format
4	Updated reference revision Minor typo corrections and editorial changes No other changes identified during validation

REQUIRED TASK INFORMATION

1. SAFETY CONSIDERATIONS

A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.

B. All applicable safety precautions shall be taken in accordance with established PPL safety policies and the Safety Rule Book, for example:

1. Whenever any electrical panel is opened for inspection during JPM performance.

2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.

C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.

D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

2. REFERENCES

A. ON-200-009 Rev 31, Control Room Evacuation

B. OP-250-001 Rev 43, Reactor Core Isolation Cooling (RCIC) System

3. TASK CONDITIONS

A condition has occurred requiring abandonment of the Control Room.

All required immediate operator actions of ON-200-009 have been completed prior to abandoning the Control Room.

Control has been transferred to the Remote Shutdown Panel per ON-200-009 Section 4.3.

Reactor vessel water level is decreasing.

Reactor pressure is being maintained by SRVs cycling.

RCIC is not running. There has been no initiation signal.

An NPO is stationed outside the Unit 2 RCIC room.

4. INITIATING CUE

Manually initiate RCIC and establish 625 gpm flow to the reactor

5. TASK STANDARD

RCIC started and feeding the reactor vessel at 625 gpm

Examinee _____

Step	Action	Standard	Eval	Comments
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 plant. Obtain Shift Manager authorization to proceed. This JPM requires access to the Unit 2 Remote Shutdown Panel.				
EVALUATOR CUE Record JPM start time: _____				
1	**Verifies** OP–250–001 Section 2.15 is governing procedure and obtains controlled copy.	Controlled copy of OP-250-001 obtained, selects Section 2.15.		
EVALUATOR NOTE Student may review previous sections of ON-200-009.				
2	**Verifies** prerequisites satisfied.	Observe from Task Conditions prerequisites for RCIC operation from RSDP are met per Task Conditions.		
EVALUATOR NOTE Per OP-250-001, if at any time RCIC flow becomes unstable, the examinee may elect to place RCIC Flow Controller in MANUAL. For this JPM leaving the RCIC Flow Controller in MANUAL at the end of the task represents unacceptable performance.				
3	**Observes** ES-24901 RCIC STATIC INVERTER light ILLUMINATED.	On panel ES-24901, RCIC STATIC INVERTER, observe status light illuminated GREEN.		
EVALUATOR CUE Status light is illuminated.				
4	**Ensures** RCIC TURBINE FLOW CONTROLLER FIC-24903 in AUTO set at 625 gpm.	Observe RCIC TURBINE FLOW CONTROLLER FIC-24903 in AUTO with setpoint set to approximately 625 gpm.		
EVALUATOR CUE Controller is selected to AUTO with setpoint at 625 gpm.				

Examinee _____

Step	Action	Standard	Eval	Comments
5	**Notify** HP of intent to start RCIC and **Evacuate** personnel from RCIC and HPCI pump rooms and 670' RCIC/HPCI pipe tunnel.	Dispatches NPO to check RCIC and HPCI pump rooms, 670' RCIC/HPCI pipe tunnel clear of personnel.		
EVALUATOR CUE Requested areas are clear of personnel.				
*6	**Place** RCIC TURBINE FLOW CONTROLLER FIC-24903 in MANUAL and set for MINIMUM SPEED.	Perform the following on FIC-24903, RCIC TURBINE FLOW CONTROLLER: • Place the A/M toggle to M • Depress the CLOSE PB until 0 percent controller output indicated		
EVALUATOR CUE Controller is selected to MANUAL and minimum speed.				
7	**Start** RCIC BARO CDSR VACUUM PP 2P219.	Place 2P219 RCIC BARO CDSR VACUUM PP HS to START.		
EVALUATOR CUE HS is in START. AMBER light EXTINGUISHED, RED light LIT.				
*8	**Open** STEAM TO RCIC TURBINE HV-250-F045.	Place STEAM TO RCIC TURBINE HV-250-F045 HS to OPEN and release.		
EVALUATOR CUE HS to OPEN. RED light LIT. After a brief time delay: AMBER light EXTINGUISHED.				
9	**Observe** RCIC Turbine ACCELERATES.	Observe RCIC turbine speed rising on RCIC TURBINE SPEED SI-25001B.		
EVALUATOR CUE RCIC turbine speed is approximately 1000 rpm, steady.				
*10	**Open** MIN FLOW TO SUPP POOL FV-249-F019.	Place MIN FLOW TO SUPP POOL FV-249-F019 HS to OPEN and release (Springs back to normal		

Examinee _____

Step	Action	Standard	Eval	Comments
EVALUATOR CUE HS to OPEN. RED light LIT. After a brief time delay: AMBER light EXTINGUISHED.				
*11	**Open** RCIC INJECTION HV-249-F013.	Place RCIC INJECTION HV-249-F013 HS to OPEN and release		
EVALUATOR CUE HS to OPEN. RED light LIT. After a brief time delay: AMBER light EXTINGUISHED.				
*12	**Establish** desired flow using RCIC TURBINE FLOW CONTROLLER FIC-24903.	On RCIC TURBINE FLOW CONTROLLER FIC-24903 depress OPEN and CLOSE PB as necessary to raise controller output and RCIC turbine speed to inject to reactor at approximately 625 gpm as indicated on RCIC PUMP INJECTION FLOW FI-14903.		
EVALUATOR CUE Controller output rising. RCIC indicates as expected.				
13	**Close** MIN FLOW TO SUPP POOL FV-249-F019 when RCIC flowrate above 250 gpm.	Place MIN FLOW TO SUPP POOL FV-249-F019 HS to CLOSE and release.		
EVALUATOR CUE HS to CLOSE. AMBER light LIT. After a brief time delay: RED light EXTINGUISHED.				
14	**Null** RCIC TURBINE FLOW CONTROLLER FIC-24903.	On RCIC TURBINE FLOW CONTROLLER FIC-24903 adjust setpoint up and down as necessary until red flow indication within the GREEN band.		
15	**Place** RCIC TURBINE FLOW CONTROLLER FIC-24903 in AUTO.	On FIC-24903, RCIC TURBINE FLOW CONTROLLER place the A/M toggle to A.		

Examinee _____

Step	Action	Standard	Eval	Comments
EVALUATOR CUE Controller is in AUTO.				
16	**Place** ESW System in operation in accordance with OP-054-001 to supply RCIC Pump Room Unit Cooler.	**EVALUATOR CUE** Another operator will perform that task.		
17	**Place** Suppression Pool cooling in operation in accordance with OP-249-005.	**EVALUATOR CUE** Another operator will perform that task.		
EVALUATOR CUE Record JPM stop time: _____				
EVALUATOR CUE That completes the JPM.				
EVALUATOR: Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

EXAMINEE

TASK CONDITIONS

A condition has occurred requiring abandonment of the Control Room.

All required immediate operator actions of ON-200-009 have been completed prior to abandoning the Control Room.

Control has been transferred to the Remote Shutdown Panel per ON-200-009 Section 4.3.

Reactor vessel water level is lowering.

Reactor pressure is being maintained by SRVs cycling.

RCIC is not running. There has been no initiation signal.

An NPO is stationed outside the Unit 2 RCIC room.

INITIATING CUE

Manually initiate RCIC and establish 625 gpm flow to the reactor

PPL SUSQUEHANNA, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Start Containment Hydrogen Recombiner**

S/RO	73.OP.011.202	8	12/04/2014	Plant
Applicability	JPM Number	Revision	Date	Setting

223001	A2.01	4.3/4.4	N	N
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

Author _____ 12/04/2014 Date

Validated

Instructor _____ 12/13/2014 Date

Review

Operations Management _____ 12/18/14 Date

Approval

Nuclear Training Supervisor _____ 12/13/2014 Date

20
Validation Time (min)

Examinee Name: _____ _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ _____
Name Signature

Comments

JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM
6	Revise for TQ procedures, minor editorial corrections, updated reference revisions.
7	Format change
8	Revision to incorporate updated reference revision

REQUIRED TASK INFORMATION

1. SAFETY CONSIDERATIONS

A. All Operations personnel are responsible for maintaining their radiation exposure As Low As Reasonably Achievable in accordance with OP-AD-002, Standards for Shift Operations.

B. All applicable safety precautions shall be taken in accordance with established PPL safety policies and the Safety Rule Book, for example:

1. Whenever any electrical panel is opened for inspection during JPM performance.

2. Whenever entering any plant area where specific safety equipment such as hearing or eye protection, safety shoes, hardhats, etc., is required and/or posted as being necessary.

C. If, in the judgment of the Evaluator any safety issue occurs during the performance of a JPM, the JPM will be terminated until the issue is resolved.

D. Peer checking is the expectation for all evolutions; however, since a JPM is an individual effort, no peer check will be provided and Self Checking is required.

2. REFERENCES

A. OP-273-001 Rev 47, CONTAINMENT ATMOSPHERE CONTROL SYSTEM

3. TASK CONDITIONS

A. Unit 2 is in a post-LOCA condition approximately 24 hours after the event.

B. Containment H_2 and O_2 concentrations are below combustible limits.

C. Pre-LOCA containment temperature was 135°F.

D. Post-LOCA containment pressure is 6 psig.

4. INITIATING CUE

Start Containment Hydrogen Recombiner 2E440A(B)(C)(D) in Manual per OP-273-001 Section 2.9.

5. TASK STANDARD

Selected Recombiner operating in Manual IAW OP-273-001.

Examinee _____

Step	Action	Standard	Eval	Comments
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 plant. Obtain Shift Manager authorization to proceed. This JPM requires access to Upper or Lower Relay rooms.				
EVALUATOR CUE Record JPM start time: _____				
1	**Identifies** controlled copy of OP-273-001, select correct section, and review procedure.	Obtains a controlled copy of OP-273-001 from evaluator. Selects Section 2.9. Reviews prerequisites and precautions.		
EVALUATOR NOTE If asked, inform the candidate that all prerequisites have been met				
2	(Step 2.9.3) Ensure H_2 Recombiner aligned as follows prior to startup: (Step 2.9.3.a) Turn H_2 Rcb A(B)(C)(D) Heater Power Adj Control HC-25796A(B)(C)(D) in counter clockwise direction until potentiometer STOPS	Simulates rotating H_2 Rcb A(B)(C)(D) Heater Power Adj Control HC-25796A(B)(C)(D) counterclockwise until potentiometer STOPS		
EVALUATOR CUE Indicate H_2 Rcb A(B)(C)(D) Heater Power Adj Control HC-25796A(B)(C)(D) is rotated fully counterclockwise				
3	(Step 2.9.3.b) Set H_2 Rcb A(B)(C)(D) Heater Power Adj Control HC-25796A(B)(C)(D) to ZERO (000)	Simulates rotating H_2 Rcb A(B)(C)(D) Heater Power Adj Control HC-25796A(B)(C)(D) potentiometer to ZERO (000).		
EVALUATOR CUE Indicate H_2 Rcb A(B)(C)(D) Heater Power Adj Control HC-25796A(B)(C)(D) is at ZERO (000).				
4	(Step 2.9.3.c) Observe H_2 RCB A(B)(C)(D) Power In Available White light ILLUMINATED indicating MCC feeder closed.	Observes H_2 RCB A(B)(C)(D) Power In Available White light.		

Step	Action	Standard	Eval	Comments
EVALUATOR CUE Indicate H_2 RCB A(B)(C)(D) Power In Available White light is ILLUMINATED.				
5*	(Step 2.9.5) To start H_2 Recombiner in Manual: (Step 2.9.5.a) Place H_2 Rcb A(B)(C)(D) Temp Ctl Select HSS-25796A(B)(C)(D) to MAN.	Simulates placing H_2 Rcb A(B)(C)(D) Temp Ctl Select HSS-25796A(B)(C)(D) to MAN		
EVALUATOR CUE Indicate H_2 Rcb A(B)(C)(D) Temp Ctl Select HSS-25796A(B)(C)(D) is in MAN				
6*	(Step 2.9.5.b) Place H_2 Rcb A(B)(C)(D) Power Out Switch HS-25796A(B)(C)(D) to ON	Simulates placing H_2 Rcb A(B)(C)(D) Power Out Switch HS-25796A(B)(C)(D) to ON.		
EVALUATOR CUE Indicate H_2 Rcb A(B)(C)(D) Power Out Switch HS-25796A(B)(C)(D) is in ON				
7	(Step 2.9.5.c) Verify Red light above HS-25796A(B)(C)(D) ILLUMINATES	Observes Red light above HS-25796A(B)(C)(D).		
EVALUATOR CUE Indicate Red light above HS-25796A(B)(C)(D) is ILLUMINATED.				
8	(Step 2.9.5.d) Determine required power setting from Attachment A	Determines required power setting from Attachment A is approximately 54 KW		
9*	(Step 2.9.5.e) Raise power out to heater as follows: (Step 2.9.5.e(1)) Adjust H_2 Rcb A(B)(C)(D) Heater Power Adj Control HC-25796A(B)(C)(D) until H_2 Rcb A(B)(C)(D) Power Out to Heater XI-25796A(B)(C)(D) indicates 5 KW.	Simulates adjusting H_2 Rcb A(B)(C)(D) Heater Power Adj Control HC-25796A(B)(C)(D) until H_2 Rcb A(B)(C)(D) Power Out to Heater XI-25796A(B)(C)(D) indicates 5 KW.		

Step	Action	Standard	Eval	Comments
EVALUATOR CUE H_2 Rcb A(B)(C)(D) Power Out to Heater XI-25796A(B)(C)(D) indicates 5 KW				
EVALUATOR CUE 10 minutes have elapsed				
10*	(Step 2.9.5.e(2)) After 10 minutes, Adjust HC-25796A(B)(C)(D) until XI-25796A(B)(C)(D) indicates 10 KW	Simulates adjusting H_2 Rcb A(B)(C)(D) Heater Power Adj Control HC-25796A(B)(C)(D) until H_2 Rcb A(B)(C)(D) Power Out to Heater XI-25796A(B)(C)(D) indicates 10 KW		
EVALUATOR CUE H_2 Rcb A(B)(C)(D) Power Out to Heater XI-25796A(B)(C)(D) indicates 10 KW				
EVALUATOR CUE 10 minutes have elapsed				
11*	(Step 2.9.5.e(3)) After 10 minutes, Adjust HC-25796A(B)(C)(D) until X2-15796A(B)(C)(D) indicates 20 KW	Simulates adjusting H_2 Rcb A(B)(C)(D) Heater Power Adj Control HC-25796A(B)(C)(D) until H_2 Rcb A(B)(C)(D) Power Out to Heater XI-25796A(B)(C)(D) indicates 20 KW		
EVALUATOR CUE H_2 Rcb A(B)(C)(D) Power Out to Heater XI-25796A(B)(C)(D) indicates 20 KW				
EVALUATOR CUE 5 minutes have elapsed				
12*	(Step 2.9.5.e(4)) After 5 minutes, Adjust HC-25796A(B)(C)(D) until required power setting determined in 2.10.5.c of this procedure observed on XI-25796A(B)(C)(D)	Simulates adjusting H_2 Rcb A(B)(C)(D) Heater Power Adj Control HC-25796A(B)(C)(D) until H_2 Rcb A(B)(C)(D) Power Out to Heater XI-25796A(B)(C)(D) indicates approximately 54 KW		

Examinee _____

Step	Action	Standard	Eval	Comments
13	(Step 2.9.5.f) Monitor temperature periodically placing H_2 Rcb A(B)(C)(D) Temp Chan Select TSS-25796A(B) (C)(D) in following while observing temperature: • Position #1 • Position #2 • Position #3	Simulates rotating H_2 Rcb A(B)(C)(D) Temp Chan Select TSS-25796A(B)(C)(D) and monitoring temperature		
EVALUATOR CUE Temperature indicates 1250°F and stable				
14	(Step 2.9.5.g) Adjust HC-25796A(B)(C)(D) between 0 KW and calculated required power setting to maintain following: • H2 Recombiner temperature ~ 1250°F not to exceed 1400°F. • Required power setting on H2 Rcb A(B)(C)(D) Power Out to Heater XI-25796A(B)(C)(D) not to exceed 75 KW	Determines temperature is approximately 1250°F and further adjustment is not required		
EVALUATOR CUE Record JPM stop time: _____				
EVALUATOR CUE That completes the JPM.				
EVALUATOR NOTE That completes the JPM.				
EVALUATOR: Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

EXAMINEE

TASK CONDITIONS

A. Unit 2 is in a post-LOCA condition approximately 24 hours after the event.

B. Containment H_2 and O_2 concentrations are below combustible limits.

C. Pre-LOCA containment temperature was 135°F.

D. Post-LOCA containment pressure is 6 psig

INITIATING CUE

Start Containment Hydrogen Recombiner 2E440A(B)(C)(D) in Manual per OP-273-001 Section 2.9.

TEAM SUSQUEHANNA Generating Excellence	**PPL–SUSQUEHANNA, LLC LEARNING CENTER**
	SIMULATOR SCENARIO
Scenario Title:	**SLC Squib Failure / RHR Pump Start and Leak / Main Generator Voltage Regulator Failure / HPCI Steam Leak / Rapid Depressurization**
Scenario Duration:	**75 minutes**
Scenario Number:	**LOC26R-N-01**
Revision / Date:	**0 / December 16, 2014**
Course:	**PC017 SRO License** **PC018 RO License**

Prepared By:	Tom Hooper	12/16/2014
	Instructor	Date
Reviewed By:	Bob Spadoni	12/16/2014
	Operations Training Management	Date
Approved By:	Mike Jacopetti	12/16/2014
	Operations Line Management	Date

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SCENARIO SUMMARY

The scenario begins with Unit 1 at 87% power following a control rod pattern adjustment, near the end of the operating cycle. EHC pump 1B is out of service for maintenance.

The crew will begin by raising power to 95% in accordance with a RMR from Reactor Engineering.

SLC squib valve 1B will lose continuity in the firing circuit. The crew will diagnose the failure. The SRO will declare the valve inoperable and determine the Technical Specification impact.

RHR pump 1B will spuriously start. Shortly after start, a leak will develop on the suction flange of the pump. RHR pump room water level will rise and Suppression Pool level will lower. The crew will secure the pump and isolate the leak by closing the suction valve. The crew will enter ON-169-002 due to flooding in the Reactor Building, EO-100-104 due to high Reactor Building area water level, and possibly EO-100-103 due to low Suppression Pool level. The SRO will review Technical Specifications and determine the impact.

The Main Generator voltage regulator will fail to maximum demand while in automatic. The crew will respond per ON-198-001. The crew may attempt to fix the automatic voltage regulator demand signal, but will eventually place the manual voltage regulator in service and lower reactive load.

A steam leak will develop in the HPCI equipment room. HPCI will fail to automatically isolate. When the crew attempts to manually isolate the leak, both HPCI steam isolation valves will fail mid-position due to power loss during valve stroke. The crew will re-enter EO-100-104, Secondary Containment Control. With an un-isolable primary system discharging into the Reactor Building and one area temperature approaching or exceeding the maximum safe value, the crew will insert a manual Reactor scram. The crew will enter EO-100-102, RPV Control, and take actions for the scram. HPCI room coolers will fail to start, requiring the crew to attempt manual start the coolers per EO-100-104. Four of the five Turbine Bypass Valves will fail closed, limiting the crew's ability to depressurize the Reactor prior to Rapid Depressurization. A second steam leak will develop from the HPCI steam isolation valves in the HPCI pipe routing area. This will lead to a second area temperature exceeding the maximum safe value. The crew will perform a Rapid Depressurization of the Reactor per EO-100-112.

The scenario may be terminated when Rapid Depressurization is complete or in progress and Reactor level is controlled above -161".

The highest expected EAL classification at scenario termination is expected to be Site Area Emergency FS1, based on un-isolable primary system (HPCI) discharging outside primary containment reaching maximum safe temperatures.

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SCENARIO REFERENCES

1.	OP-AD-001	Operations Standards For System And Equipment Operation
2.	OP-AD-002	Standards For Shift Operations
3.	OP-AD-004	Operations Standards For Error And Event Prevention
4.	OP-AD-055	Operations Procedure Program
5.	OP-AD-338	Reactivity Manipulations Standards and Communication Requirements
6.	OP-164-001	Reactor Recirculation System
7.	AR-107-A03	SBLC Squib Vlvs Loss of Ckt Continuity
8.	ON-169-002	Flooding in Reactor Building
9.	ON-198-001	Unit 1 Main Generator MVAR Control for Auto Voltage Regulator Operation When Synched to Grid
10.	ON-100-101	Scram, Scram Imminent
11.	EO–100–102	RPV Control
12.	EO–100–103	Primary Containment Control
13.	EO–100–104	Secondary Containment Control
14.	EO–100–112	Rapid Depressurization
15.	EP–RM–004	EAL Classification Levels
16.	TS 3.1.7	Standby Liquid Control System
17.	TS 3.5.1	ECCS – Operating

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SCENARIO TASKS

Crew Position	Task	Description
PCO	2780	Implement Standards for Shift Operations
	4764	Implement Reactor Power Maneuvering Envelope for Normal Daily Power Operations (ICS)
	4721	Implement Actions to Reduce Reactor Core Flow for Scram Imminent (ICS)
	2383	Implement Manual Operation of Automatic Depressurization System (Adherence Level: STEP-BYSTEP)
	4842	Implement RFP Operating Mode Changes During Transient Conditions
US	1183	Ensure Plant Operates In Accordance With The Operating License, Technical Specifications (TS), and Technical Requirements Manual (TRM)
	1185	Apply Technical Specification (TS) And Technical Requirements Manual (TRM) Requirements
	1125	Implement RPV Control
	1127	Implement Secondary Containment Control
	1129	Implement Rapid Depressurization
ALL	1081	Implement Appropriate Portions Of Operations Standards For System and Equipment Operation
	1091	Implement Operations Standards For Error And Event Prevention
	2784	Implement Reactivity Manipulations Standards and Communication Requirements
	1786	Implement Main Condenser Vacuum and Offgas System Off-Normal Operation

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CRITICAL TASKS

Manually scram the reactor when any Secondary Containment Area temperature / radiation approaches or exceeds Max Safe Temperature.	
Safety Significance	High-energy leakage into the Secondary Containment Area impacts the integrity of Secondary Containment. Failure of the Secondary Containment directly relates to the 10CFR100 design criteria of dose to the General Public.
Consequences for Failure To Perform 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	Simplex Fire Detection alarms indicating High temperatures in RB Areas Increasing area radiation and alarms for RB Areas Increasing Steam Leak Detection System temperatures and alarms
Performance Criteria	Manually Scram the Reactor when approaching or exceeding any Max Safe Temperature/Radiation as indicated by associated control room alarms and PICSY radiation indications.
Performance Feedback	Initiating a reactor scram reduces the heat load that will be absorbed and released by the Secondary Containment as well as the radioactive source term. Rods inserted and power lowering.
Rapidly depressurize the reactor when two Secondary Containment Areas exceed Max Safe Rad / Temperature / Water levels.	
Safety Significance	A high-energy leak in the Secondary Containment area impacts the integrity of Secondary Containment. Failure of the Secondary Containment directly relates to the 10CFR100 design criteria of dose to the General Public.
Consequences for Failure To Perform 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 Steam Leak Detection System temperatures and alarms indicating levels at Max Safe values.
Performance Criteria	Perform a Rapid Depressurization per EO-100-112 when two or more RB areas exceed max safe temperatures per EO-100-104 Table 8. Initiate ADS / Manually Open all 6 ADS valves
Performance Feedback	Initiating a rapid depressurization causes Reactor pressure to lower which lowers the driving force of any primary system breach. Verify ADS valves are open using red light indication, acoustic monitoring, lowering Reactor pressure and rising Reactor water level.

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SCENARIO MALFUNCTIONS

Event	Description	Crew Response
2	SLC Squib Valve Continuity Loss	Diagnose failure; determine Technical Specification impact
3	RHR Pump 1B Spurious Start and Suction Flange Leak	Secure and isolate pump; determine Technical Specification impact
4	Main Generator Auto Voltage Regulator Failure	Take manual control of Main Generator voltage regulator; restore MVARs
5	HPCI Steam Leak into Reactor Building, HPCI Fails to Automatically Isolate	Attempt to isolate leak; scram the Reactor
6	HPCI Isolation Valve Power Loss When Manual Closure Attempted	Attempt to isolate leak with other valve; initiate Reactor cool down; eventual Rapid Depressurization
7	HPCI Room Coolers Fail to Automatically Start	Manually start HPCI room coolers
8	Four Turbine Bypass Valves Fail Closed	Attempt other methods to open Turbine Bypass Valves; limits Reactor cool down; eventual Rapid Depressurization
9	HPCI Steam Leak in Second Area of Reactor Building	Rapid Depressurization when max safe temperature exceeded in 2 areas

ABNORMAL EVENTS / MAJOR TRANSIENTS / TECH SPEC

Malfunction	Description
R	Raise Power with Recirc Flow per RMR
AE1	RHR Pump 1B Spurious Start and Suction Flange Leak
AE2	Main Generator Auto Voltage Regulator Failure
MT1	HPCI Steam Leak into Reactor Building, HPCI Fails to Automatically Isolate
MT2	HPCI Steam Leak in Second Area of Reactor Building
TS1	SLC Squib Valve Continuity Loss
TS2	RHR Pump 1B Spurious Start and Suction Flange Leak

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SCENARIO SPECIAL INSTRUCTIONS

1. Simulator setup
   a. **Initialize** to an exam-specific IC (IC–398). If an exam-specific IC is not available, then setup the simulator as follows:
      i) **Initialize** to IC-20.
      ii) **Place** the simulator in RUN.
      iii) **Lower** Reactor power to approximately 87% using Recirculation flow.
      iv) **Place** appropriate tags for EHC pump 1B OOS.
   b. **Run** SCN file **exam\LOC26R-N01.scn**
   c. **Open** trend files **rat.tnd.**
2. **Verify** the following malfunctions/overrides, event triggers and key assignments:

MF	RF	OR	SCN	ET	COND
8:8	1:1	2:2	0:0	2:0	7

3. **Prepare** the simulator for evaluation
   a. **Complete** a simulator exam checklist, TQ-106-0315
   b. **Reset** ODAs and all Overhead, PICSY, HMI and RWM alarms
   c. **Ensure** EOL CRC book is staged and marked-up for current plant conditions
   d. **Ensure** GO-100-012 is marked up to appropriate step (5.4.20)
4. **Prepare** a Turnover Sheet including the following:
   a. Unit 1
      i) Power ascension in progress. Reactor power 87 percent.
      ii) EHC pump 1B out of service for maintenance.
      iii) Continue power ascension using Recirculation flow per RMR.
   b. Common
      i) Unit 2 is at rated power
5. **Document** training participation and feedback
   a. **Ensure** all present have signed Security Agreements per NUREG-1021 and TQ-104-0306
   b. **Show** the crew that the Evaluators and Booth Operators are qualified
   c. **Complete** an Operator Fundamental Score Card

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SCENARIO FILES

LOC26R-N01.scn

```
SCN rat_mp
SCN exam\LOC26R-N01-MP

; EHC pump B breaker racked out
IRF crfPM10_1P113B f:OUT

; SLC B squib loss of continuity
{Key[1]} IMF cmfRL01_XYC411M600B

; RHR pump B spuriously starts; leak on
suction line
{Key[2]} IMF cmfRL02_E111K11A
{Key[2]} IMF mfRH149004B d:30 r:2:00 f:40

; NPO may open room drain valve
{Key[12]} IRF rfLD120005 f:OPEN

; NPO may open RHR pump B knife switch
{Key[22]} IRF cmfPM01_1P202B

; Main Generator voltage regulator failure
{Key[3]} IOR aiHS10001 r:8:00 f:1

; HPCI leak into RB (equipment room)
{Key[4]} IMF mfHP152009 f:0.5

; HPCI equipment room coolers fails to
auto-start
IMF cmfPM04_1V209B
IMF cmfPM04_1V209A

; HPCI equipment room coolers fail to
manually start
IOR diHS17663B f:AUTO
IOR diHS17663A f:AUTO

; HPCI fails to automatically isolate
IMF cmfMV06_HV155F002
IMF cmfMV06_HV155F003

; HPCI fails to fully isolate manually
; 2nd HPCI leak into RB (pipe tunnel)
aet LOC26R-N01-1
aet LOC26R-N01-2

; Four Turbine Bypass Valves failed closed
IMF mfTC193023B f:AsIs
IMF mfTC193023C f:AsIs
IMF mfTC193023D f:AsIs
IMF mfTC193023E f:AsIs
```

LOC26R-N01-MP.scn

```
insmp ldtee41n24b
changemp ldtee41n24b ,,,HPCI equipment room
temperature
```

LOC26R-N01-1.et/scn

```
;LIGHT:HPCI STEAM SUPPLY IB ISO
doHS15502_1.CurrValue = #OR.doHS15502_1.ON

IMF cmfMV01_HV155F002 d:3
```

LOC26R-N01-2.et/scn

```
;LIGHT:HPCI STEAM SUPPLY OB ISO
doHS15503_1.CurrValue = #OR.doHS15503_1.ON

IMF cmfMV01_HV155F003 d:4
IMF mfHP152003 d:5:00 r:2:00 f:1
```

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SCENARIO EVENT DESCRIPTION FORM

Initial Conditions: Ensure shift positions are assigned, have the Crew conduct the turnover and perform a panel walk down before the start of the scenario.

EVENT	TIME	DESCRIPTION
N/A	0	Crew assumes shift
1	10	Raise Power with Recirc Flow per RMR
2	20	SLC Squib Valve Continuity Loss
3	30	RHR Pump 1B Spurious Start and Suction Flange Leak
4	40	Main Generator Auto Voltage Regulator Failure
5-9	55	HPCI Steam Leak into Reactor Building, HPCI Fails to Automatically Isolate, HPCI Isolation Valve Power Loss When Manual Closure Attempted, HPCI Room Coolers Fail to Automatically Start, Four Turbine Bypass Valves Fail Closed, HPCI Steam Leak in Second Area of Reactor Building
N/A	75	Termination

INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENT	1
BRIEF DESCRIPTION	Raise Power with Recirc Flow per RMR

INSTRUCTOR ACTIVITY

1. None

ROLE PLAY

1. As **RxEng** contacted for assistance, **report**

   Core thermal limits are within our predictions. You may proceed with power ascension.

2. As **RxEng** contacted for how fast to raise power, **report**

   The normal 1 percent power per minute rate is appropriate.

3. As **Shift Manager** contacted for approval to commence the reactivity manipulation, **report**

   The reactivity manipulation may proceed per the RMR.

4. If directed by the lead evaluator, **contact** the Control Room as GCC and **report**

   We request you hold power at this level for one hour while we make some adjustments to the voltage schedule because of a trip at Montour.

5. **Role play** any other directed actions as required.

EVALUATOR NOTES

1. The power ascension may be stopped when desired. Perform Role Play 4.

SCENARIO EVENT FORM

EVENT	1
BRIEF DESCRIPTION	Raise Power with Recirc Flow per RMR

POSITION	TIME	STUDENT ACTIVITIES
PCOM		Raise reactor power with recirc flow in accordance with RMR and OP-AD-338 ATT. K. Per GO-100-012, plot power change on power/flow map. Depress the single or double chevron button on selected RRP and observes correct HMI response releasing the double chevron button if used, to achieve target controller output % (typically 2 percent on each pump). Monitor diverse indications of reactor power (APRMs, heat balance, Main Generator output) per OP-AD-001 Attachment G.
PCOP		Confirm the correct RRP, Direction, Intended Manipulation as directed by RMR and OP-AD-338.
US		Direct PCOM to raise reactor power using recirc flow in accordance with RMR from RE and OP-AD-338. Direct PCOP to provide peer check to PCOM during power ascension. Provides oversight for reactivity manipulation.

NOTES	

INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENT	2
BRIEF DESCRIPTION	SLC Squib Valve Continuity Loss

INSTRUCTOR ACTIVITY

1. When directed by Lead Examiner, **depress KEY 1** to initiate event.

   {Key[1]} IMF cmfRL01_XYC411M600B

ROLE PLAY

As **NPO** dispatched to investigate SLC continuity meters, wait 2 minutes and **report**

The continuity meter for SLC squib A indicates 4mA. The continuity meter for SLC squib B indicates 0mA.

As **WWM** contacted for assistance, acknowledge request.

Role play any other directed actions as required.

EVALUATOR NOTES

None

SCENARIO EVENT FORM

EVENT	2
BRIEF DESCRIPTION	SLC Squib Valve Continuity Loss

POSITION	TIME	STUDENT ACTIVITIES
TEAM		Recognize / report: • Annunciator AR-107-A03, SBLC Squib Vlvs Loss of Ckt Continuity • White SBLC Squib Ready B light extinguished
PCOM		Monitor plant parameters.
PCOP		Execute AR-107-A03: • Dispatch NPO to check power monitor meters for squib valves at 1C617 in Upper Relay Room
US		Ensure execution of AR-107-A03. Declare SLC squib valve B inoperable. Determine Technical Specification 3.1.7 Condition B must be entered (restore to operable within 7 days).

NOTES	

INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENT	3
BRIEF DESCRIPTION	RHR Pump 1B Spurious Start and Suction Flange Leak

OPERATOR ACTIVITY

1. When directed by Lead Examiner, **depress KEY 2** to initiate event.

   {Key[2]} IMF cmfRL02_E111K11A
   {Key[2]} IMF mfRH149004B d:30 r:2:00 f:40

2. If directed as NPO to open RHR pump room B drain valve, wait 2 minutes, then **depress KEY 12** and report task completion.

   {Key[12]} IRF rfLD120005 f:OPEN

3. If directed as NPO to open RHR B DC knife switch, wait 2 minutes, then **depress KEY 22** and report task completion.

   {Key[22]} IRF cmfPM01_1P202B

ROLE PLAY

As **NPO** dispatched to RHR pump B, wait 2 minutes and **report** the pump and leak status based on current plant condition. If the leak is still un-isolated, **report** at a minimum,

"There is a leak coming from a flange on RHR pump B. The leak is between the pump and the suction valve."

As **NPO** dispatched to investigate if RHR leak has been isolated, **report** that the leak is slowing.

If dispatched as **NPO** to ensure closed water tight doors, wait 2 minutes and **report** that all water tight doors on elevation 645' are closed.

If asked as **Radwaste** about capacity to take on water, **report** that you have room for water and will align to surge tanks.

If dispatched as **NPO** open RHR pump room B drain valve (161121), wait 2 minutes and **depress KEY 12,** as described above, and **report** the valve is open.

If directed to open RHR B DC knife switch, wait 2 minutes and **depress KEY 22**, as described above, and report completion.

As **WWM** (or equivalent) contacted for assistance with RHR pump B, acknowledge request.

Role play any other directed actions as required.

EVALUATOR NOTES

1. None

SCENARIO EVENT FORM

EVENT	3
BRIEF DESCRIPTION	RHR Pump 1B Spurious Start and Suction Flange Leak

POSITION	TIME	STUDENT ACTIVITIES
TEAM		Recognize / report: • Annunciator AR-110-C03, RHR/CORE SPRAY LOOP B OPERATING ADS PERMISSIVE • RHR pump B is running • Annunciator AR-113-H08, RHR LOOP B PUMP ROOM FLOODED • Suppression Pool level is lowering
PCOM		Monitor plant parameters.
PCOP		Stop RHR pump B by placing 1P202B to STOP. Close RHR pump B suction valve by placing HV-151-F004B to CLOSE.
US		Ensure execution of AR-110-C03 and AR-113-H08. Determine RHR pump B operation is not required. Direct PCOP to stop RHR pump B. Enter EO-100-104, Secondary Containment Control, on high RB area water level. Enter ON-169-002, Flooding in Reactor Building. Direct PCOP to close RHR pump B suction valve. May direct start of ESW and Unit Coolers. If Suppression Pool level lowers to 22', enter EO-100-103, Primary Containment Control. May direct makeup to the Suppression Pool using Suppression Pool Cleanup per OP-159-001 section 2.4.

POSITION	TIME	STUDENT ACTIVITIES
US (cont.)		Declare RHR pump B inoperable. Determine Technical Specification 3.5.1 Condition B applies which requires restoration of RHR pump B within 7 days. If Suppression Pool level lowers below 22 feet, determine Technical Specification 3.6.2.2 Condition A requires restoring level within 2 hours.

NOTES	

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INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENT	4
BRIEF DESCRIPTION	Main Generator Auto Voltage Regulator Failure

OPERATOR ACTIVITY

1. When directed by Lead Examiner, **depress KEY 3** to initiate event.

   {Key[3]} IOR aiHS10001 r:8:00 f:1

ROLE PLAY

Provide the following role plays either when called or 4 minutes after event initiation (call as GCC):

> **"We have noticed SSES Unit 1 MVAR output rising. Other grid conditions are stable. We need SSES Unit 1 to supply approximately 150 MVAR to the grid."**

If asked as **GCC/TCC**, give permission to make any changes to the voltage regulator that SSES requests (Auto to Manual, Manual to Auto, wiping potentiometers).

As **WWM** (or equivalent) contacted for assistance, acknowledge request.

Role play any other directed actions as required.

EVALUATOR NOTES

1. The procedural path taken in this event may vary depending on how the crew diagnoses failure of the auto voltage regulator. Multiple procedure sections are described, however the crew may not perform all sections.

SCENARIO EVENT FORM

EVENT	4
BRIEF DESCRIPTION	Main Generator Auto Voltage Regulator Failure

POSITION	TIME	STUDENT ACTIVITIES
TEAM		Recognize / report: • Annunciator AR-106-C09, GEN VOLT REG AUTO TO MAN SETPOINT UNBALANCED • Main Generator reactive load high
PCOM		Execute AR-106-C09: • Determine Generator field overvoltage alarm is NOT in. • Determine grid is stable. • Ensure AC MVARS, XI-10004, within limits of OP-198-001 Attachment A, Main Generator Reactive Capability curve. • Determine Main Generator is in Auto Voltage Regulator control. • Monitor Main Generator parameters (MVars, MWe, Stator Cooling Temps Gen H2 Press. and Temp). • May attempt to null Manual and Automatic regulators using MAN VOLT REG ADJUST HC-10002 potentiometer. Execute ON-198-001, Unit 1 Main Generator MVAR Control for AUTO Voltage Regulator Operation when Synched to Grid: • Bring Up Group Display ON198 or PICSY PID menu (GENB) and Record parameters. • If MVAR is approaching or exceeding Generator Capability Curve OR Generator Field Current exceeding 6000 Amps as viewed on Unit 1 Computer Point GNI01, Perform Section 3.5: o May attempt to slowly Lower generator output voltage by using AUTO VOLT REG ADJUST HC-10001 potentiometer in order to control the Generator MVAR output

POSITION	TIME	STUDENT ACTIVITIES
PCOM (cont.)		• If a problem is suspected of the Voltage Regulator, Perform either of the following as required: o To wipe the auto and manual voltage regulator potentiometers, Perform Section 3.9.1: ▪ Ensure both Rx Recirc Pump controllers are operating in the Manual Mode in accordance with OP-164-002. ▪ Contact TCC to request permission to wipe the manual and auto voltage regulator potentiometers. ▪ IF generator voltage becomes unstable at any time during or after transfers between regulators, Promptly Transfer to the regulator that provides stable operation. ▪ Ensure HS-10006, VOLT REG XFER SELECT, switch is in the AUTO position. ▪ Rotate Slightly HC-10002, MAN VOLT REG ADJUST, and Ensure Auto Voltage Reg in control. ▪ Rapidly Rotate HC-10002, MAN VOLT REG ADJUST, from end to end a few times to clean its brush surface. ▪ Return HC-10002, MAN VOLT REG ADJUST, to null volts at XI-10012, VR XFER. ▪ Transfer HS-10006, VOLT REG XFER SELECT, switch to MAN position. ▪ Ensure HS-10006, VOLT REG XFER SELECT, switch is in the MAN position. ▪ Rotate Slightly HC-10001, AUTO VOLT REG ADJUST and Ensure Manual Voltage Reg in control. ▪ Rapidly Rotate HC-10001, AUTO VOLT REG ADJUST, from end to end a few times to clean its brush surface **(may not continue in procedure if diagnoses failure here)** ▪ Return HC-10001, AUTO VOLT REG ADJUST, to null volts at XI-10012, VR XFER. ▪ Transfer HS-10006, VOLT REG XFER SELECT, switch back to AUTO position. ▪ Ensure HS-10006, VOLT REG XFER SELECT, switch is in the AUTO position. ▪ Observe operation of the auto voltage regulator voltage adjust controls to verify proper operation and response. ▪ Select the desired modes of operation for the Rx Recirc Pump controllers in accordance with OP-164-002.

POSITION	TIME	STUDENT ACTIVITIES
PCOM (cont.)		○ To transfer the voltage regulator from auto to manual and back to auto without performing a wiping action, Perform Section 3.9.2: ▪ Contact TCC to request permission to transfer to the manual regulator for a period of time to ride out MVAR oscillations. ▪ Ensure both Rx Recirc Pump controllers are operating in the Manual Mode in accordance with OP-164-002. ▪ IF generator voltage becomes unstable at any time during or after transfers between regulators, Promptly Transfer to the regulator that provides stable operation. ▪ Ensure HS-10006, VOLT REG XFER SELECT, switch is in the AUTO position. ▪ Adjust HC-10002, MAN VOLT REG ADJUST, to null volts at XI-10012, VR XFER if required. ▪ Transfer HS-10006, VOLT REG XFER SELECT, switch to MAN position. ▪ Adjust HC-10001, AUTO VOLT REG ADJUST, to null volts at XI-10012, VR XFER if required. ▪ Transfer HS-10006, VOLT REG XFER SELECT, switch back to AUTO position. ▪ Observe operation of the auto voltage regulator voltage adjust controls to verify proper operation and response. ▪ Select the desired modes of operation for the Rx Recirc Pump controllers in accordance with OP-164-002.

POSITION	TIME	STUDENT ACTIVITIES
PCOM (cont.)		May use OP-198-001 section 2.7 to transfer to manual voltage regulator: • Obtain Unit Supervisor Permission to Transfer. • Contact GCC and TCC to Request permission to transfer to the MANUAL regulator. • IF generator voltage becomes UNSTABLE at any time during OR after transfers between regulators, Promptly Transfer to the regulator that provides STABLE operation. • Ensure HS-10006, VOLT REG XFER SELECT, switch is in the AUTO position. • Adjust HC-10002, MAN VOLT REG ADJUST, to Null volts at XI-10012, VR XFER IF Required. • Transfer HS-10006, VOLT REG XFER SELECT, switch to MAN position. • Check operation of the Manual voltage regulator voltage adjust controls AND Observe proper Response. Adjust HC-10002, MAN VOLT REG ADJUST, as necessary to obtain desired Main Generator reactive load.
PCOP		Monitor plant parameters. Assist PCOM as requested.
US		Ensure execution of AR-106-C09. Enter ON-198-001, Unit 1 Main Generator MVAR Control for AUTO Voltage Regulator Operation when Synched to Grid Direct placing Main Generator voltage regulator in MANUAL. Direct lowering Main Generator reactive load.

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INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENTS	5-9
BRIEF DESCRIPTION	HPCI Steam Leaks into Reactor Building, Isolation Failures, Room Coolers Fail to Auto Start, Four TBVs Fail Closed

OPERATOR ACTIVITY

1. When directed by Lead Examiner, **depress KEY 4** to initiate HPCI pump room steam leak.

   {Key[4]} IMF mfHP152009 f:0.5

2. When crew takes action to isolate HPCI, verify the following triggers activate to fail the HPCI inboard and outboard steam isolation valves and initiate the 2nd HPCI steam leak.

   aet LOC26R-N01-1, aet LOC26R-N01-2

ROLE PLAY

1. As **NPO** dispatched to investigate HPCI fire or area temperature alarm **wait** 2 minutes then **report,**

   I can hear a steam leak in the HPCI room.

2. As **NPO** dispatched to F002 breaker 1B237–08 and/or F003 breaker 1D264–08, **wait** 2 minutes and **report,**

   The breaker(s) is(are) tripped open.

3. As **NPO** dispatched to manually close HPCI isolation valve, wait 2 minutes, then report that the valve is stuck and cannot be closed.

4. As **WWM** contacted for assistance with HPCI isolation valves, acknowledge request.

5. As **Security** contacted for status of blowout panels, **report**

   No blowout panels have ruptured at this time.

6. As **HP** contacted for HPCI room survey, wait 10 minutes and report

   Preliminary report is maximum dose rates below 150 mR/hr in the HPCI room. HP techs are continuing the survey.

7. **Role play** any other directed actions as required.

EVALUATOR NOTES

1. Once the crew attempts to manually isolate HPCI, a second steam leak will occur in the HPCI pipe routing area where the isolation valves are located. This will drive a second area temperature to exceed maximum safe and require a rapid depressurization.
2. Due to the quick rise in HPCI equipment room temperature, the crew may not scram the Reactor prior to exceeding the maximum safe temperature of 167°F. In this case, the crew should take prompt action to scram the Reactor once the HPCI equipment room temperature exceeds 167°F.

SCENARIO EVENT FORM

EVENTS	5-9
BRIEF DESCRIPTION	HPCI Steam Leaks into Reactor Building, Isolation Failures, Room Coolers Fail to Auto Start, Four TBVs Fail Closed

POSITION	TIME	STUDENT ACTIVITIES
★TEAM		**Manually scram the reactor when any Secondary Containment Area temperature approaches or exceeds Max Safe temperature.** **Rapidly depressurize the reactor when two Secondary Containment Areas exceed Max Safe Temperature levels.**
TEAM		Recognize / report: • Annunciator AR-114-E05, HPCI LEAK DETECTION HI TEMP/HI DIFF TEMP • Annunciator AR-016-G15, FIRE PROTECTION PANEL 0C650 SYSTEM TROUBLE • Elevated temperatures in the HPCI equipment area on recorder 1R604 and Riley Tempmatic readings at 1C614.
PCOM		As directed / time permits, perform scram imminent actions of ON-100-101, Scram, Scram Imminent: • REDUCE Reactor Power PER RE Instructions in the CRC Book: o INITIATE the required Flow/Power reduction by performing either of the following: ▪ INITIATE a Manual Rx Recirc Limiter #2 Runback using CORE POWER OFF NORMAL POWER REDUCTION HARD CARD (OP-164-001 Attachment E), OR ▪ TOUCH double chevron DEC buttons on REACTOR RECIRC PUMP A(B) SPEED controllers SY-B31-1R621A & B as required to establish the final Core Flow value stated in the CRC Book. o INSERT Control Rods, as necessary, to obtain a Rod Line which is less than the value stated in the CRC Book. • NOTIFY GCC that the Unit is coming Off Line. **Rotate Mode Switch to SHUTDOWN.**

POSITION	TIME	STUDENT ACTIVITIES
PCOM (cont.)		Execute scram actions of ON-100-101, Scram, Scram Imminent: • Observe all Control Rods indicate fully inserted (using two indications, OD 7 completed as soon as possible). • Insert IRMs and SRMs. • Observe Scram Discharge Volume Vent and Drain valves CLOSED. • Check Reactor water level between 13" and 54". • Check Reactor pressure <1087 psig. • WHEN main generator load < 150 MWe, at 1C651, Depress Trip Pushbutton for Main Turbine. • Check Turbine speed is lowering. • Check status of MSIVs. • STOP Condensate Pumps 1P102A(B)(C)(D) as necessary to leave 2 pumps in operation. • ENSURE Feedwater is in a Startup Level Control alignment per OP-145-001. Control Reactor water level between +13" and +54" (+20" to +45" preferred band) using Condensate/Feedwater. May initiate Reactor cooldown. May attempt to open all Turbine Bypass Valves irrespective of cooldown rate. Recognize / report failure of four of the five Turbine Bypass Valves to open. Prevent uncontrolled Condensate injection. Restore / maintain Reactor water level to +13 to +54" (+20" to +45" preferred band) using Condensate / Feedwater.

POSITION	TIME	STUDENT ACTIVITIES
PCOP		Determine HPCI equipment area temperature is elevated and rising. Recognize/report failure of HPCI room coolers to start. Start ESW and attempt to start all individual Room Coolers. Attempt to manually isolate HPCI by closing: • HV-155-F002 • HV-155-F003 Recognize/report HPCI isolation valves failed mid-position and HPCI is NOT isolated. Dispatch NPOs to attempt manual closure and/or breaker reset. Recognize/report high temperature in HPCI pipe routing area (2nd area). May isolate RCIC (HPCI pipe routing area leak causes RCIC steam leak detection annunciator also). Recognize/report two area temperatures above Max Safe. **Open all 6 ADS valves.** If time permits, initiate Suppression Pool cooling.

SCENARIO EVENT FORM

EVENTS	5-9
BRIEF DESCRIPTION	HPCI Steam Leaks into Reactor Building, Isolation Failures, Room Coolers Fail to Start, Four TBVs Fail Closed

POSITION	TIME	STUDENT ACTIVITIES
US		Enter / re-enter EO-100-104, SECONDARY CONTAINMENT CONTROL, based on HPCI equipment area temperature: • Directs starting ESW, all individual Room Coolers. • Acknowledge failure of HPCI room coolers to start. • Directs manual isolation of HPCI. • Acknowledge failure of HPCI to isolate May direct scram-imminent actions, if time permits. Enter EO-100-102, RPV CONTROL, after determining that a primary system is discharging into an area and cannot be isolated: • **Direct Mode Switch to SHUTDOWN when area temperature approaches or exceeds Maximum Safe temperature.** • Direct Reactor water level controlled +13 to +54" (+20" to +45" preferred band) using Condensate/Feedwater. • Direct Reactor pressure controlled 800-1050 psig using Turbine Bypass Valves. • May direct initiating Reactor cooldown. • May anticipate Rapid Depressurization and direct open all Turbine Bypass Valves. • Acknowledge failure of four of the five Turbine Bypass Valves to open. When HPCI pipe routing area and equipment area temperatures exceed 167°F (2 > max safe): • **Enter EO-000-112, Rapid Depressurization.** • Exit Pressure Leg of EO-100-102. • Answers, "Can RPV Lvl Be Determined?" Yes. • Direct preventing uncontrolled Condensate injection. • Answers, "Is More Than 1 Control Rod > 00?" No. • Answers, "Is Supp Pool Lvl > 5'?" Yes. • **Directs opening all ADS valves.** • Answers, "Are all ADS valves open?" Yes. If Suppression Pool temperature exceeds 90°F, enter / re-enter EO-100-103, Primary Containment Control: • Direct initiation of Suppression Pool cooling.

★ Denotes Critical Task

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UNIT SUPERVISOR TURNOVER SHEET

UNIT 1 *to/dd/yy*
Date

SHIFT 1900 (Start) to 0700 (End)

MODE 1
POWER LEVEL 87 %
GENERATOR OUTPUT 1158 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) 500 days on-line, 20 months into the operating cycle.
2) EHC pump 1B is out of service for maintenance.
3) Power ascension in progress following control rod pattern adjustment.
4) Raise power per RMR Step #4 to 95%.
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	HOTEL	OSCAR
NRC CODE AFTER 0800	FOXTROT	UNIFORM	BRAVO	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

TEAM SUSQUEHANNA Generating Excellence	**PPL–SUSQUEHANNA, LLC LEARNING CENTER**
	SIMULATOR SCENARIO
Scenario Title:	**RRP Speed Drift / Control Rod Drift / Coolant Leak in Drywell / Electrical ATWS / SLC Pump Shaft Shear / Loss of Condensate / HPCI and RCIC Trip**
Scenario Duration:	**75 minutes**
Scenario Number:	**LOC26R-N-02**
Revision / Date:	**0 / December 16, 2014**
Course:	**PC017 SRO License** **PC018 RO License**

Prepared By:	Tom Hooper	12/16/2014
	Instructor	Date
Reviewed By:	Bob Spadoni	12/16/2014
	Operations Training Management	Date
Approved By:	Mike Jacopetti	12/16/2014
	Operations Line Management	Date

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SCENARIO SUMMARY

The scenario begins with Unit 1 at 100% power. CRD pump 1B is out of service for maintenance.

The crew will receive a call from the grid operator requesting a power reduction due to a Minimum Generation Emergency Notification. The crew will lower Reactor power using Recirculation flow. As the crew is performing the power reduction, Reactor Recirculation pump 1B speed will begin to drift low. The crew will identify the unanticipated reactivity change and either lockup the scoop tube to stop the transient or trip Reactor Recirculation pump 1B. The SRO will determine the status of Recirculation loops and ensure compliance with Technical Specification 3.4.1.

One control rod will drift outward from the full-in position. The crew will execute ON-155-001, Control Rod Problems. The control rod will be selected and driven to the full-in position. The control rod HCU will be valved out and the control rod will remain at the full-in position. The SRO will determine compliance with Technical Specification 3.1.3.

A coolant leak will develop in the Drywell. Drywell pressure and temperature will rise. As Drywell pressure approaches 1.72 psig, the crew may lower Reactor power and will attempt to manually scram the Reactor. RPS will fail to scram the Reactor and ARI will also fail to insert control rods. The crew will execute EO-100-113, Level/Power Control. The crew will lower Recirculation flow, trip Recirculation pumps, injection boron using SLC, and lower Reactor water level to lower Reactor power. The first SLC pump started will have a sheared shaft. The crew will diagnose that the pump is not injecting boron. The other SLC pump will be started and inject successfully.

Once Reactor power has been lowered, the Main Generator will trip. Reactor pressure control will shift to the Turbine Bypass Valves and may be augmented initially by use of SRVs. With Drywell pressure >1.72 psig, the Main Generator trip will also cause a trip of all Condensate pumps due to load shedding. The Condensate pumps will fail to re-start, if re-start is attempted. Reactor water level will be able to be maintained using HPCI, RCIC, CRD, and SLC. CRD pump 1A will trip as the crew attempts to use CRD to drift in control rods. The crew will insert all control rods by dispatching an operator to either pull RPS fuses or vent the scram air header.

Once all control rods are inserted, the crew will stop boron injection, exit EO-100-113, and re-enter EO-100-102. The crew will also be in EO-100-103 and will spray the Suppression Chamber and possibly the Drywell. HPCI and RCIC will trip and the coolant leak in the Drywell will degrade. Reactor water level will lower. The crew will be unable to maintain Reactor water level above -161". ADS will fail to automatically initiate on low Reactor water level, if un-bypassed. The crew will perform a Rapid Depressurization per EO-100-112 and restore Reactor water level using low pressure injection systems. The scenario may be terminated when all control rods are inserted, Rapid Depressurization is complete, and Reactor water level has been restored above -161".

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SCENARIO REFERENCES

1.	OP-AD-001	Operations Standards For System And Equipment Operation
2.	OP-AD-002	Standards For Shift Operations
3.	OP-AD-004	Operations Standards For Error And Event Prevention
4.	OP-AD-055	Operations Procedure Program
5.	OP-AD-338	Reactivity Manipulations Standards and Communication Requirements
6.	OP-164-001	Reactor Recirculation System
7.	ON-156-001	Unanticipated Reactivity Change
8.	ON-178-002	Core Flux Oscillations
9.	ON-164-002	Loss of Reactor Recirculation Flow
10.	ON-155-007	Loss of CRD System Flow
11.	ON-155-001	Control Rod Problems
12.	ON-100-101	Scram, Scram Imminent
13.	EO–100–102	RPV Control
14.	EO–100–103	Primary Containment Control
15.	EO–100–112	Rapid Depressurization
16.	EO–100–113	Level/Power Control
17.	EP–RM–004	EAL Classification Levels
18.	TS 3.1.3	Control Rod Operability
19.	TS 3.4.1	Recirculation Loops Operating

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SCENARIO TASKS

Crew Position	Task	Description
PCO	2780	Implement Standards for Shift Operations
	4764	Implement Reactor Power Maneuvering Envelope for Normal Daily Power Operations (ICS)
	4721	Implement Actions to Reduce Reactor Core Flow for Scram Imminent (ICS)
	2383	Implement Manual Operation of Automatic Depressurization System (Adherence Level: STEP-BYSTEP)
	4842	Implement RFP Operating Mode Changes During Transient Conditions
US	1183	Ensure Plant Operates In Accordance With The Operating License, Technical Specifications (TS), and Technical Requirements Manual (TRM)
	1185	Apply Technical Specification (TS) And Technical Requirements Manual (TRM) Requirements
	1125	Implement RPV Control
	1127	Implement Secondary Containment Control
	1129	Implement Rapid Depressurization
ALL	1081	Implement Appropriate Portions Of Operations Standards For System and Equipment Operation
	1091	Implement Operations Standards For Error And Event Prevention
	2784	Implement Reactivity Manipulations Standards and Communication Requirements
	1786	Implement Main Condenser Vacuum and Offgas System Off-Normal Operation

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CRITICAL TASKS

Lower Reactor power using one or more of the following methods IAW EO-100-113: • **Trip Recirculation pumps** • **Inject boron** • **Lower Reactor water level**	
Safety Significance	Lowering Reactor power using one or more of these methods causes an immediate Reactor power reduction, which limits challenges to fission product barriers during a failure to scram prior to control rod insertion.
Consequences for Failure To Perform Task	Failure to lower Reactor power using one or more of these methods raises the potential for damage to fuel and energy addition to the Primary Containment.
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, and Reactor power remains above 5%.
Performance Criteria	Lowers Reactor power by tripping Recirculation pumps, injecting boron, and/or throttling injection to lower Reactor water level.
Performance Feedback	Reactor power lowers.
Insert control rods IAW EO-100-113 Sht. 2.	
Safety Significance	Control rod insertion initiates power reduction and provides for long-term shutdown of the Reactor.
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: Maximize CRD to drift control rods. Drive control rods after bypassing RWM and RSCS. Reset and Scram again by performing ES 158 002 Bypass RPS logic trips. De energizing RPS solenoids by performing ES 158 001. Local venting of Scram Air Header.
Performance Feedback	Successful insertion of control rods will be indicated by: Rod position full in indication for manual insertion of control rods, venting scram air header or de energizing RPS solenoids. Rod position full in after resetting scram, draining scram discharge volume and re scram.

Perform Rapid Depressurization when RPV level drops to -161" IAW EO-100-102.	
Safety Significance	RPV leakage or loss of injection systems impacts the ability to provide continued adequate core cooling through core submergence based on inventory loss.
Consequences for Failure To Perform Task	Failure to take the EOP actions will result in uncovering the core and breach of the fuel clad due to over-heating.
Indications/Cues for Event Requiring Critical Task	Reactor water level trending downward, eventually indicating less than the top of active fuel height on the Fuel Zone Level Indicator.
Performance Criteria	Perform a Rapid Depressurization per EO 100 112 when water level reaches the TAF –161" as read on the Fuel Zone Instrument. Initiate ADS / Manually open all 6 ADS valves
Performance Feedback	Initiating a rapid depressurization causes Reactor pressure to lower to the shutoff head of the low pressure injection systems allowing water level to rise on the Fuel Zone and Wide Range level instruments. Verify ADS valves are open using red light indication, acoustic monitoring, and lowering Reactor pressure and rising reactor water level.

SCENARIO MALFUNCTIONS

Event	Description	Crew Response
2	Reactor Recirculation Pump 1B Speed Drifts Low	Lock scoop tube; ensure Technical Specification compliance
3	One Control Rod Drifts Out	Select and insert control rod; valve out control rod to prevent further drifting; ensure Technical Specification compliance
4	Coolant Leak in Drywell	Lower Reactor power; attempt a Reactor scram; spray Suppression Chamber
5	Electrical ATWS	Attempt ARI; trip Recirculation pumps; inject boron; lower Reactor water level; insert control rods by alternate methods
6	SLC Pump Shaft Shear, CRD Pump Trip	Start other SLC pump; utilize other methods for inserting control rods
7	Main Generator Trip, Loss of All Condensate Pumps	Control Reactor water level using HPCI and/or RCIC
8	HPCI and RCIC Trip, Coolant Leak in Drywell Degrades, ADS Fails to Automatically Initiate; Rapid Depressurization Required Due to Low Reactor Water Level	Rapidly Depressurize the Reactor; inject with low pressure ECCS pumps; spray the Drywell

ABNORMAL EVENTS / MAJOR TRANSIENTS / TECH SPEC

Malfunction	Description
R	Power Reduction Due to Minimum Generation Emergency Notification
AE1	Reactor Recirculation Pump 1B Speed Drifts Low
AE2	One Control Rod Drifts Out
AE3	Coolant Leak in Drywell
MT1	Electrical ATWS
MT2	HPCI and RCIC Trip, Coolant Leak in Drywell Degrades, ADS Fails to Automatically Initiate; Rapid Depressurization Required Due to Low Reactor Water Level
TS1	Reactor Recirculation Pump 1B Speed Drifts Low
TS2	One Control Rod Drifts Out

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SCENARIO SPECIAL INSTRUCTIONS

1. Simulator setup
   a. **Initialize** to an exam-specific IC (IC–399). If an exam-specific IC is not available, then setup the simulator as follows:
      i) **Initialize** to IC-20.
      ii) **Place** the simulator in RUN.
      iii) **Place** appropriate tags for CRD pump 1B OOS.
   b. **Run** SCN file **exam\LOC26R-N02.scn**
   c. **Open** trend files **rat.tnd.**
2. **Verify** the following malfunctions/overrides, event triggers and key assignments:

MF	RF	OR	SCN	ET	COND
10:10	1:1	0:0	0:0	6:0	21

3. **Prepare** the simulator for evaluation
   a. **Complete** a simulator exam checklist, TQ-106-0315
   b. **Reset** ODAs and all Overhead, PICSY, HMI and RWM alarms
   c. **Ensure** EOL CRC book is staged and marked-up for current plant conditions
4. **Prepare** a Turnover Sheet including the following:
   a. Unit 1
      i) Reactor power 100 percent.
      ii) CRD pump 1B out of service for maintenance.
   b. Common
      i) Unit 2 is at rated power
5. **Document** training participation and feedback
   a. **Ensure** all present have signed Security Agreements per NUREG-1021 and TQ-104-0306
   b. **Show** the crew that the Evaluators and Booth Operators are qualified
   c. **Complete** an Operator Fundamental Score Card

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SCENARIO FILES

LOC26R-N02.scn

```
SCN rat_mp
SCN exam\LOC26R-N02-MP
; CRD pump B OOS
IRF crfPM13_1P132B f:OUT
; 'B' Reactor Recirculation Pump Speed
Drifts Low
aet LOC26R-N02-1 / aet LOC26R-N02-2
; Allows manual control of RRP 1B scoop
tube in field
{Key[27]} IRF rfRR164018 f:OFF
{Key[27]} IRF rfRR164020
; One Control Rod Drifts Out
{Key[1]} IMF mfRD1550052239
; NPO valves out HCU for control rod 22-39
{Key[7]} IRF rfRD1550072239 f:DISARM
{Key[7]} DMF mfRD1550052239
; Coolant Leak in Drywell
{Key[2]} IMF mfRR164011A i:0.01 r:4:00
f:0.03
; Electrical ATWS
IMF mfRP158004A / IMF mfRP158004B
IMF mfRP158004C / IMF mfRP158004D
IMF mfRP158003
IMF cmfRL01_63X114725D1
IMF cmfRL01_63X214725D1
; CRD pump 1A trips to prevent crew from
drifting in rods
aet LOC26R-N02-6
; First SLC pump started has sheared shaft
IMF cmfPM05_1P208A
IMF cmfPM05_1P208B
aet LOC26R-N02-4 / aet LOC26R-N02-5
; Main Generator Trip, Loss of All
Condensate Pumps
aet LOC26R-N02-3
; HPCI and RCIC Trip, Coolant Leak
Degrades, ADS Fails to Auto Initiate
{Key[3]} IMF mfRC150011
{Key[3]} IMF mfHP152015
{Key[3]} MMF mfRR164011A d:3:00 i:0.03
r:5:00 f:1
IMF mfAD183001
; NPO pulls RPS A fuses in upper relay room
{Key[10]} IMF cmfFU01_1C609F18C
{Key[10]} IMF cmfFU01_1C609F18G d:5
{Key[10]} IMF cmfFU01_1C609F18A d:15
{Key[10]} IMF cmfFU01_1C609F18E d:20
; NPO pulls RPS B fuses in lower relay room
{Key[20]} IMF cmfFU01_1C611F18D
{Key[20]} IMF cmfFU01_1C611F18H d:5
{Key[20]} IMF cmfFU01_1C611F18B d:15
{Key[20]} IMF cmfFU01_1C611F18F d:20
; NPO vents scram air header
{Key[30]} IRF rfRD155018 f:100
{Key[30]} IRF rfRD155025 d:5 f:0
{Key[30]} IRF rfRD155016 d:10 f:100
; NPO closes charging water header
isolation
{Key[40]} IRF rfRD155017 f:0
```

LOC26R-N02-MP.scn

```
insmp rdsdrposnotch(121)
changemp rdsdrposnotch(121) ,,,Rod 22-39
position
```

LOC26R-N02-1.et/scn

```
;METER:APRM FLUX CHAN A (RED)
aoNRC511R603AA.CurrValue <= 96

IMF annAR102D05 f:ALARM_OFF
IRF rfRR164018 f:OFF
IRF rfRR164020 r:4:00 f:40
```

LOC26R-N02-2.et/scn

```
;SWITCH:SCOOP TUBE B LOCK OR RESET
diHSB311S03B.CurrValue =
#OR.diHSB311S03B.TRIP

ITO rfRR164020

DMF annAR102D05
```

LOC26R-N02-3.et/scn

```
;METER:APRM FLUX CHAN A (RED)
aoNRC511R603AA.CurrValue <= 14

IMF mfEG198004
IMF mfFW144003D d:5
IMF mfFW144003C d:5
IMF mfFW144003B d:5
IMF mfFW144003A d:5
```

LOC26R-N02-4.et/scn

```
;LIGHT:SBLC MANUAL INITIATION (1P208A)
doHSS14804A_2.CurrValue =
#OR.doHSS14804A_2.ON

DMF cmfPM05_1P208B
cet LOC26R-N02-5
```

LOC26R-N02-5.et/scn

```
;LIGHT:SBLC MANUAL INITIATION (1P208B)
doHSS14804B_2.CurrValue =
#OR.doHSS14804B_2.ON

DMF cmfPM05_1P208A
cet LOC26R-N02-4
```

LOC26R-N02-6.et/scn

```
;Trips CRD pump 1A when CRD is being
maximized
ycpxnep02>20

IMF cmfPM03_1P132A
```

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SCENARIO EVENT DESCRIPTION FORM

Initial Conditions: Ensure shift positions are assigned, have the Crew conduct the turnover and perform a panel walk down before the start of the scenario.

EVENT	TIME	DESCRIPTION
N/A	0	Crew assumes shift
1	5	Power Reduction Due to Minimum Generation Emergency Notification
2	15	Reactor Recirculation Pump 1B Speed Drifts Low
3	25	One Control Rod Drifts Out
4	35	Coolant Leak in Drywell
5-8	45	Electrical ATWS, SLC Pump Shaft Shear, CRD Pump Trip, Main Generator Trip, Loss of All Condensate Pumps, HPCI and RCIC Trip, Coolant Leak in Drywell Degrades, ADS Fails to Automatically Initiate; Rapid Depressurization Required Due to Low Reactor Water Level
N/A	75	Termination

INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENT	1
BRIEF DESCRIPTION	Power Reduction Due to Minimum Generation Emergency Notification

INSTRUCTOR ACTIVITY

1. When directed by Lead Examiner, **make the following report** to initiate event:

"This is Lou Spinelli at GCC. A Minimum Generation Emergency is required and we need Susquehanna Unit 1 to reduce output by 100 MWe as quickly as possible."

ROLE PLAY

Role play any directed actions as required.

EVALUATOR NOTES

1. Event 2 (RRP 1B speed drifts low) automatically activates when Reactor power lowers to approximately 96% on APRMs. Event 2 may also be manually forced if desired to facilitate the scenario.

SCENARIO EVENT FORM

EVENT	1
BRIEF DESCRIPTION	Power Reduction Due to Minimum Generation Emergency Notification

POSITION	TIME	STUDENT ACTIVITIES
TEAM		Acknowledge Minimum Generation Emergency notification from GCC.
PCOM		Reduce power by approximately 100 MWe: • Using the RRP Dual Screen HMI, lower A and B Recirc speeds by depressing the double chevron DEC buttons, as necessary. • Observe diverse plant indications: o APRMs o Core Thermal Power o MWe o RRP parameters o Core flow (Recirc loop mismatch <5%) o Reactor water level • Plot power reduction on Power to Flow Map.
PCOP		Monitor plant parameters. Provide peer checks for reactivity manipulations.
US		May refer to OI-AD-029 attachment D and CRC Book. Direct PCOM to reduce power by 100 MWe with Recirculation flow. Provide oversight of reactivity maneuver.

NOTES	

INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENT	2
BRIEF DESCRIPTION	Reactor Recirculation Pump 1B Speed Drifts Low

INSTRUCTOR ACTIVITY

1. When Reactor power lowers to approximately 96% on APRMs, ensure the following trigger activates to initiate the event.

   aet LOC26R-N02-1

2. When the pushbutton is depressed to lock RRP 1B scoop tube, ensure the following trigger activates to secure the speed drift.

   aet LOC26R-N02-2

3. If dispatched to manually control RRP 1B scoop tube position, wait 3 minutes, then **depress KEY 27**. Then modify the remote function to adjust the scoop tube as requested by crew.

   {Key[27]} IRF rfRR164018 f:OFF
   {Key[27]} IRF rfRR164020

ROLE PLAY

If dispatched to manually control Recirculation pump A scoop tube position, wait 3 minutes, then **depress KEY 27** as described above and report:

"I have manual control of Recirculation pump A scoop tube."
Make subsequent reports regarding scoop tube positioning as applicable.

If asked as **Reactor Engineering, Operations or Plant Management** for permission to lower Recirculation pump A flow, concur with the crew's request to lower Recirculation pump A flow.

As **Reactor Engineering**, acknowledge any reports / requests.

As **WWM** (or equivalent) contacted for assistance, acknowledge request.

Role play any other directed actions as required.

EVALUATOR NOTES

1. The PCOM may lock the scoop tube prior to referencing ON-156-001 because this is an immediate operator action.
2. It is an immediate action of ON-156-001 to lock the scoop tube and/or trip the Recirc pump. It is expected the crew will lock the scoop tube first. Once the scoop tube is locked, generator speed will continue to lower for a moment while scoop tube oil uptake stabilizes. The crew may trip the Recirc pump based on this delay in stabilization.

SCENARIO EVENT FORM

EVENT	2
BRIEF DESCRIPTION	Reactor Recirculation Pump 1B Speed Drifts Low

POSITION	TIME	STUDENT ACTIVITIES
TEAM		Recognize / report: • Reactor power lowers. • Recirc pump 1B speed and flow lower.
PCOM		Executes ON-156-001, Unanticipated Reactivity Change: • IF a rapid speed change is experienced on a Reactor Recirc Pump, take immediate action to Reduce Power AND Lock the affected Scoop Tube OR Trip the affected pump. • Check current rod position, OD 7 against rod patterns provided in the CRC Book to determine drifted or scrammed rods. • IF time permits, Initiate TRA. • AS REQUIRED, Take Action to correct any apparent change in any following variable which could affect reactivity: o Recirculation flow • Notify Reactor Engineering. • Check off gas monitors at discharge of SJAE for change in activity. • Check that applicable nuclear safety limits were not exceeded. • Check that applicable thermal hydraulic limits were not exceeded. (Powerplex Core Monitor). If directed, lower flow on Recirculation pump A to restore flow mismatch to within limits.
PCOP		Monitor plant parameters.

POSITION	TIME	STUDENT ACTIVITIES
US		Enter ON-156-001, Unanticipated Reactivity Change. Direct lockup of Recirculation pump 1B scoop tube. May direct trip of Recirculation pump 1B. • Enter ON-164-002, Loss of Reactor Recirculation Flow • Enter ON-178-002, Core Flux Oscillations Analyze compliance with Technical Specification 3.4.1: • Requires ≤ 5 Mlbm/hr mismatch when operating at ≥ 75 Mlbm/hr total core flow o If mismatch not within limits, enter Condition B (declare the loop with lower flow "not in operation" within 2 hours). • If Recirc pump tripped, requires establishing single loop limits within 12 hours. If Recirc pump tripped, determine TRO 3.4.6 requires core flow <54 Mlbm/hr within 2 hours. May direct lowering Recirculation pump A flow to restore mismatch to within limits.

NOTES	

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INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENT	3
BRIEF DESCRIPTION	One Control Rod Drifts Out

OPERATOR ACTIVITY

1. When directed by Lead Examiner, **depress KEY 1** to initiate event.

   {Key[1]} IMF mfRD1550052239

2. When directed as NPO to disarm HCU 22-39, wait 3 minutes, then **depress KEY 7**.

   {Key[7]} IRF rfRD1550072239 f:DISARM
   {Key[7]} DMF mfRD1550052239

ROLE PLAY

As **NPO** dispatched to disarm HCU 22-39, wait 3 minutes, then **depress KEY 7** as described above, and **report**,

"HCU 22-39 has been hydraulically disarmed."

As **WWM** (or equivalent) contacted for assistance, acknowledge request.

Role play any other directed actions as required.

EVALUATOR NOTES

1. The control rod will continue to drift out if the insert pushbutton is released prior to valving out the HCU. The crew will need to hold the insert pushbutton until the field operator reports the HCU is valved out.

SCENARIO EVENT FORM

EVENT	3
BRIEF DESCRIPTION	One Control Rod Drifts Out

POSITION	TIME	STUDENT ACTIVITIES
TEAM		Recognize / report: • Annunciator AR-104-H05, ROD DRIFT • Control rod 22-39 moves out with no withdraw signal
PCOM		Execute ON-155-001, Control Rod Problems: • IF three or more rods have drifted or scrammed from their target positions, Immediately Scram Reactor IAW ON-100-101, Scram, Scram Imminent. • Proceed to section 4.4 for rod drift. • Check Full Core Display for identification of any drifting control rod by Depressing DISPLAY RODS DFTING pushbutton. • Check for any open scram valves by Depressing DISPLAY SCRAM VALVES OPEN pushbutton. • Select each drifted or scrammed rod to determine position. • Reset the Rod Drift Alarm as follows: o Depress the Rod Drift Reset pushbutton. o Verify Rod Drift Alarm CLEARS. • Ensure proper cooling water diff/pressure being maintained by observing PDI-C12-1R603 Cooling Water Diff Pressure indicator and FI-C12-1R605 Cooling Water Flow. • Perform the following for any drifted or partially scrammed rod(s): o Promptly Insert rod to position 00. o Hydraulically Disarm HCU in accordance with OP-155-001 Control Rod Drive Hydraulic System. o IF drifted rod cannot be maintained at position 00: ▪ Immediately Re Arm HCU in accordance with OP-155-001 AND ▪ Proceed to Step 4.4.11. o Declare rod inoperable. o Comply with TS 3.1.3 Condition C. • Contact Reactor Engineering.
PCOP		Monitor plant parameters.

POSITION	TIME	STUDENT ACTIVITIES
US		Enter ON-155-001, Control Rod Problems. Determine control rod 22-39 is inoperable. Determines Technical Specification 3.1.3 Condition C applies and is met with the control rod fully inserted and disarmed.

NOTES	

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INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENT	4
BRIEF DESCRIPTION	Coolant Leak in Drywell

OPERATOR ACTIVITY

1. When directed by Lead Examiner, **depress KEY 2** to initiate event.

   {Key[2]} IMF mfRR164011A i:0.01 r:4:00 f:0.03

ROLE PLAY

As **WWM** (or equivalent) contacted for assistance, acknowledge request.

Role play any other directed actions as required.

EVALUATOR NOTES

1. If the crew attempts to reset the locked scoop tube on RRP 1B, the scoop tube lock with NOT reset properly, limiting the ability to lower RRP 1B speed.
2. When the crew attempts to scram the Reactor, actions will then continue in the next event.

SCENARIO EVENT FORM

EVENT	4
BRIEF DESCRIPTION	Coolant Leak in Drywell

POSITION	TIME	STUDENT ACTIVITIES
TEAM		Recognize / report rising: • Drywell leakage • Drywell temperature • Drywell pressure
PCOM		As directed / time permits, perform scram imminent actions of ON-100-101, Scram, Scram Imminent: • REDUCE Reactor Power PER RE Instructions in the CRC Book: o INITIATE the required Flow/Power reduction by performing either of the following: ▪ INITIATE a Manual Rx Recirc Limiter #2 Runback using CORE POWER OFF NORMAL POWER REDUCTION HARD CARD (OP-164-001 Attachment E), OR ▪ TOUCH double chevron DEC buttons on REACTOR RECIRC PUMP A SPEED controllers SY-B31-1R621A as required to establish the final Core Flow value stated in the CRC Book. o INSERT Control Rods, as necessary, to obtain a Rod Line which is less than the value stated in the CRC Book. • NOTIFY GCC that the Unit is coming Off Line. Rotate Mode Switch to SHUTDOWN.
PCOP		Monitor plant parameters.
US		Enter ON-100-101, Scram, Scram Imminent. May direct scram-imminent actions, if time / plant conditions permit. Direct a manual Reactor scram.

NOTES	

INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENTS	5-8
BRIEF DESCRIPTION	Electrical ATWS, SLC Pump Shaft Shear, Main Generator Trip, Loss of All Condensate Pumps, HPCI and RCIC Trip, Coolant Leak in Drywell Degrades

OPERATOR ACTIVITY

1. When the crew attempts to start the first SLC pump, ensure one of the following triggers activates to allow the second SLC pump to operate properly.

   aet LOC26R-N02-4 / aet LOC26R-N02-5

2. When Reactor power lowers to approximately 15% on APRMs, ensure the following trigger activates to trip the Main Generator and prevent re-start of Condensate pumps.

   aet LOC26R-N02-3

3. When CRD is being maximized, ensure the following trigger activates to trip CRD pump 1A.

   aet LOC26R-N02-6

4. When requested to pull RPS fuses, wait until given permission from lead examiner, then **depress Keys 10 and 20** as described in role play below (and when directed to re-install fuses, immediately delete these malfunctions):

   {Key[10]} IMF cmfFU01_1C609F18C / {Key[10]} IMF cmfFU01_1C609F18G d:5
   {Key[10]} IMF cmfFU01_1C609F18A d:15 / {Key[10]} IMF cmfFU01_1C609F18E e:20
   {Key[20]} IMF cmfFU01_1C611F18D / {Key[20]} IMF cmfFU01_1C611F18H d:5
   {Key[20]} IMF cmfFU01_1C611F18B d:15 / {Key[20]} IMF cmfFU01_1C611F18F d:20

5. When requested to vent scram air header, wait until given permission from lead examiner, then **depress Key 30**:

   {Key[30]} IRF rfRD155018 f:100 / {Key[30]} IRF rfRD155025 d:5 f:0
   {Key[30]} IRF rfRD155016 d:10 f:100

6. If requested to close CRD charging water header isolation valve, wait 2 minutes, depress Key 7, then report task completion:

   {Key[40]} IRF rfRD155017 f:0

7. Once all control rods are inserted and when directed by Lead Examiner (and recommended as soon as all control rods are inserted), **depress KEY 3** to trip HPCI and RCIC and make the coolant leak worse.

   {Key[3]} IMF mfRC150011 / {Key[3]} IMF mfHP152015
   {Key[3]} MMF mfRR164011A d:3:00 i:0.03 r:5:00 f:1

ROLE PLAY

As **NPO** dispatched to pull RPS fuses, wait at least 2 minutes and obtain Lead Examiner permission, then report,

"I am about to pull RPS Channel A fuses, expect BACKUP/GROUP SYSTEM A POWER FAILURE alarms on 1C651."

Then **depress Key 10** as described above. Wait one minute, then report,

"I am about to pull RPS Channel B fuses, expect BACKUP/GROUP SYSTEM B POWER FAILURE alarms on 1C651."

Then **depress Key 20** as described above and report,

"The RPS fuses have been pulled per ES-158-001."

As **NPO** dispatched to vent scram air header, wait at least 3 minutes and obtain Lead Examiner permission. Contact the crew and report you are ready to vent the scram air header. When given permission **depress Key 30** as described above and report,

"The scram air header has been depressurized."

As **NPO** dispatched to investigate CRD or Condensate pumps, wait 2 minutes and report:

"Condensate(CRD) pump(s) have tripped on overcurrent."

As **NPO** dispatched to crosstie to Unit 2 CRD, acknowledge report.

As **NPO** dispatched to investigate HPCI or RCIC after it trips, wait 2 minutes and report:

"It looks like the HPCI(RCIC) turbine is damaged."

Role play any other directed actions as required.

EVALUATOR NOTES

1. HPCI and RCIC should not be tripped (KEY 3) until all control rods are in.
2. If Containment Sprays are in service prior to the Rapid Depressurization, the crew will need to re-align RHR to LPCI mode and then eventually back to Containment Sprays.
3. Recommended termination criteria:
    - All control rods inserted.
    - ADS valves open.
    - Reactor water level controlled in assigned band above -161".
    - Containment pressure controlled per EO-100-103.

SCENARIO EVENT FORM

EVENTS	5-8
BRIEF DESCRIPTION	Electrical ATWS, SLC Pump Shaft Shear, Main Generator Trip, Loss of All Condensate Pumps, HPCI and RCIC Trip, Coolant Leak in Drywell Degrades

POSITION	TIME	STUDENT ACTIVITIES
★TEAM		**Lower Reactor power using one or more of the following methods IAW EO-100-113:** • **Trip Recirculation pumps** • **Inject boron** • **Lower Reactor water level** **Insert control rods IAW EO-100-113 Sht. 2.** **Perform Rapid Depressurization when RPV level drops to -161" IAW EO-100-102.**
TEAM		Recognize / report failure to scram
PCOM		ARM AND DEPRESS Manual Scram pushbuttons: • RPS MAN SCRAM CHAN A1 HS C72A 1S03A • RPS MAN SCRAM CHAN B1 HS C72A 1S03B • RPS MAN SCRAM CHAN A2 HS C72A 1S03C • RPS MAN SCRAM CHAN B2 HS C72A 1S03D ARM AND DEPRESS ARI Pushbuttons to initiate ARI: • ARI DIV 1 MAN TRIP HS 147103A1 TRIP • ARI DIV 2 MAN TRIP HS 147103B1 TRIP Report failure of RPS pushbuttons and ARI to insert control rods. Insert SRMs/IRMs. Runs Recirc to minimum From any RRP HMI screen by: • Selects MANUAL FLOW REDUCTION INITIATION. • Selects RRP SPEED TO MINIMUM. • Selects INITIATE RRP FLOW REDUCTION. **Trips Recirculation pumps A and B one at a time.**

POSITION	TIME	STUDENT ACTIVITIES
PCOM (cont.)		**Throttles and prevents RPV injection from FW and Cond until level is between -60" and -110" per OP-145-001 hard card:** • IF RFP A(B)(C) is operating in FCM: o Place FW LO LOAD DEMAND SIGNAL TO LV-10641, controller LIC-C32-1R602 in MANUAL with a controller output of 0%. o Place FW LEVEL CTL/DEMAND SIGNAL controller LIC-C32-1R600 in MANUAL. o Perform following for RFP A(B)(C) which will continue feeding: ▪ Touch A(B)(C) RFPT MAN VLV CTL button. ▪ Place feeding RFP A(B)(C) SPD CTL/DEMAND SIGNAL controller SIC-C32-1R601A(B)(C) in MANUAL. o Lower FW LEVEL CTL/DEMAND SIGNAL controller LIC-C32-1R600 output by ~ 20%. o Place remaining in service RFP B(C)(A) in IDLE MODE. (Fast Rate) o Adjust INC/DEC buttons on feeding RFP A(B)(C) SPD CTL/DEMAND SIGNAL controller SIC-C32-1R601A(B)(C) in MANUAL to establish and maintain assigned level band. • IF RFP A(B)(C) is in DPM, or transfer to DPM is in progress: o Control level in MANUAL via LV-10641 FW Startup Control Vlv controller LIC-C32-1R602. o As required, Adjust INC/DEC button on feeding RFP A(B)(C) SPD CTL/DEMAND SIGNAL controller SIC C32 1R601A(B)(C) in MANUAL to establish and maintain assigned level band. (2.19.9b) • Stop Condensate pumps as necessary to leave 2 pumps in operation. **Maintains Reactor water level between -60" and -161" using Table 15 systems (SLC, FW, Cond, CRD, RCIC, HPCI).** **Dispatch NPO to pull RPS fuses.** **Dispatch NPO to vent scram air header.** Recognize / report all control rods inserted.

POSITION	TIME	STUDENT ACTIVITIES
PCOM (cont.)		Once all control rods are inserted, attempt to slowly raise injection to restore and maintain Reactor water level -60" to -161" using Table 15 systems (SLC, FW, Cond, HPCI). May reset Main Generator lockouts. May attempt to restart Condensate pumps. • Recognize / report failure of Condensate pumps to restart. Recognize / report trip of HPCI and/or RCIC. Recognize / report lowering Reactor water level and degraded injection capability. Recognize / report Reactor water level <-161". After Rapid Depressurization, restore and maintain Reactor water level >-161" using RHR and/or CS (+13" to +54" band normal).

POSITION	TIME	STUDENT ACTIVITIES
PCOP		Inject SLC per OP-153-001: • Place HS-14804 SBLC MANUAL INITIATION keylock control switch to A(B) START. • Observe SBLC PUMPS 1P208A(B) STARTS. Recognize / report first SLC pump started does not develop discharge pressure (sheared shaft) **Start alternate SLC pump.** Inhibit ADS by placing ADS A and ADS B LOGIC CONTROL switches in INHIBIT. Maximize CRD per OP-155-001: • Using FC-C12-1R600, CRD Flow Controller, in MANUAL, fully Opens FV-146-F002A(B), CRD Flo Ctl. • Fully Open THTLG PV-146-F003, DRIVE WTR PRESS THTLG valve. • Recognize/report trip of CRD pump 1A. Override RCIC per OP-150-001: • To prevent Auto Injection if RCIC NOT initiated, Close RCIC TURBINE TRIP AND THROTTLING HV-15012. Override HPCI per OP-152-001: • To prevent auto injection if HPCI not initiated, Place HPCI TURBINE FLOW CONTROL FC-E41-1R600 in MANUAL AND Reduce demand to zero (0). Bypass MSIV and CIG interlocks per OP-184-001: • Bypass MSIV Low Water Level 1 Isolation at 1C645 by Placing the following to BYPASS: o HS-B21-S38A Rx Wtr Lvl 1 MSIV Bypass Logic A. o HS-B21-S38C Rx Wtr Lvl 1 MSIV Bypass Logic C. • Bypass CIG Low Water Level 1 and High Drywell Pressure Isolation by Placing the following to BYPASS: o At 1C645, HS-12694 Low Lvl 1/Hi Drywell Press CIG Bypass (HV-12603) o At 1C645, HS-12695 Low Lvl 1/Hi Drywell Press CIG Bypass (SV-12651) o At 1C644, HS-12696 Low Lvl 1/Hi Drywell Press CIG Bypass (SV-12605) • IF 1.72# High Drywell Pressure isolation has occurred, Restore CIG as follows: o Open Instr Gas Cmp Suct Iso HV-12603. o Open Instr Gas To Contn Iso SV-12651. o Open Instr Gas Cmp OB Suct ISO SV-12605.

POSITION	TIME	STUDENT ACTIVITIES
PCOP (cont.)		As time permits, initiate Suppression Chamber spray per OP-149-004: • IF available, Place Emergency Service Water System in operation supplying RHR Room Cooler and RHR Pump to be placed in service. • IF LOCA signal present, Place HS-E11-1S17A(B) LOCA ISOLATION MANUAL OVERRIDE Switch to OVERRIDE. o Observe White Indicating Light ILLUMINATED above HS-E11-1S17A(B) LOCA ISOLATION MANUAL OVERRIDE. o Observe LOCA ISO SWITCH LOOP (A)B MANUAL OVERRIDE (AR-109(113)-C5) Annunciator alarms. • Open HV-151-F028A(B) SUPP CHMBR SPR TEST SHUTOFF. • Close HV-151-F017A(B)RHR INJ FLOW CTL. • IF a RHR Pump not in service, Start 1P202A(B)(C)(D)RHR PUMP. • Throttle Open HV-151-F027A(B) SUPP POOL SPRAY CTL, as necessary, to maintain ≤ 500 GPM as indicated on FI-15120A(B) CONTN SPRAY DIV 1(2) AND maintain total loop flowrate ≤ 10,000 gpm. • Monitor Suppression Chamber pressure. • IF Suppression Chamber pressure drops to 0 psig, THEN Stop Suppression Chamber Sprays. • IF required, Place RHRSW in service to RHR HX per section 4.0: o Place RHR Service Water in service to the RHR Heat Exchanger per OP-116-001 OR as follows: ▪ Ensure Closed Unit 2 HV-21210A(B) RHRSW Hx A(B) INLET. ▪ Open HV-11210A(B) Unit 1 RHRSW Hx A(B) INLET to 10% Open. ▪ OPEN HV-11215A(B) Unit 1 RHRSW Hx A(B) OUTLET. ▪ IF required, Place HS-11202A3(B3) RHRSW PUMP A(B) LOCA TRIP switch to RESET. ▪ Start 1P506A(B) RHRSW Pump A(B). ▪ Throttle HV-11210A(B) Unit 1 RHRSW Hx A(B) INLET to establish 8000 to 9000 gpm on FI-E11-1R602A(B) RHRSW HX A(B) INLET FLOW. o Place HV-151-F048A(B) HX A(B) SHELL SIDE BYPS Control Switch to OFF/LOCA RESET position. o Observe White Indicating Light ILLUMINATED above HV-151-F048A(B) Control Switch. o Close HV-151-F048A(B) HX A(B) SHELL SIDE BYPS.

POSITION	TIME	STUDENT ACTIVITIES
PCOP (cont.)		As time permits, initiate Drywell spray per OP-149-001, with flow limited to between 1000 and 2800 gpm for first 30 seconds: • Open HV-151-F021A(B) DRYWELL SPRAY IB ISO. • Ensure both RX Recirc Pumps, all DW Coolers and Fans are Shutdown. • Throttle HV-151-F016A(B) DRYWELL SPRAY OB ISO, as necessary, to establish a flowrate BETWEEN 1000 AND 2800 GPM for the first 30 seconds as indicated on FI-15120A(B) CONTN SPRAY DIV 1(2) AND maintain total loop flowrate ≤ 10,000 gpm. • AFTER 30 seconds, Throttle Open HV-151-F016A(B) to establish a total loop flowrate 9,500 to 10,000 GPM as indicated on FI-E11-1R603A(B) RHR A/C(B/D) FLOW. • Monitor Drywell pressure. • IF Suppression Chamber pressure drops to 0 psig, THEN Stop Suppression Chamber Sprays. • IF required, Place RHRSW in service to RHR HX per section 4.0. • AFTER Primary Containment parameters show a decreasing trend, IF DESIRED, Throttle HV-151-F016A(B) DRYWELL SPRAY OB ISO to establish a reduced flowrate. **Open all 6 ADS valves.**

SCENARIO EVENT FORM

EVENTS	5-8
BRIEF DESCRIPTION	Electrical ATWS, SLC Pump Shaft Shear, Main Generator Trip, Loss of All Condensate Pumps, HPCI and RCIC Trip, Coolant Leak in Drywell Degrades

POSITION	TIME	STUDENT ACTIVITIES
US		Enter EO-100-102, RPV Control, on high power and/or high Drywell pressure. Exit EO-100-102 and enter EO-100-113, Level/Power Control: • Direct ARI initiated. • Record initial ATWS power level. • Execute Power Leg: o Answer, "Is initial ATWS pwr >5% or cannot be determined?" Yes o Direct SLC injection. ▪ Acknowledge failure of first SLC pump started. ▪ Direct start of other SLC pump. o Direct ADS inhibited. o Ensure RWCU isolated. o Ensure SRMs and IRMs inserted. o Direct Recirc run back to minimum. o Direct Recirc pumps tripped. o Direct CRD maximized. ▪ Acknowledge trip of CRD pump 1A. ▪ May enter ON-155-007 and direct crosstie with Unit 2. o Enter EO-100-113 sheet 2 for control rod insertion: ▪ Answer, "Is more than 1 rod >00?" Yes. ▪ Determine ATWS is electrical. ▪ **Direct control rod insertion by pulling RPS fuses and/or venting scram air header.** • Execute Level Leg: o Direct verification of isolations and initiations. o Answer, "Is initial ATWS pwr >5% or cannot be determined?" Yes o Direct overriding RCIC and HPCI injection o **Direct injection throttled and prevented until level between -60" and -110".** o Direct bypassing of MSIV and CIG interlocks. o **Direct Reactor water level controlled -60" to -161" using Table 15 systems (SLC, FW, Cond, CRD, HPCI, RCIC).**

POSITION	TIME	STUDENT ACTIVITIES

US (cont.)		• Execute Pressure Leg:
		  o Direct Reactor pressure controlled 800-1050 psig using Turbine Bypass Valves.
		
		As time permits, enter EO-100-103, Primary Containment Control, due to high Drywell pressure and temperature:
		• Direct initiation of Suppression Chamber Spray.
		• When Suppression Chamber pressure exceeds 13 psig or Drywell average temperature approaches 340°F:
		  o Ensure shutdown of Drywell coolers and fans.
		  o Direct initiation of Drywell sprays with flow limited to between 1000 and 2800 gpm for first 30 seconds.
		• Determine Containment parameters are within the Pressure Suppression Limit.
		
		Acknowledge all control rods are inserted.
		
		Direct stopping boron injection.
		
		Exit EO-100-113 and enter EO-100-102, RPV Control.
		
		Direct Reactor water level restored and maintained +13" to +54".
		
		Acknowledge trip of HPCI and/or RCIC.
		
		May direct reset of Main Generator lockouts.
		
		May direct restart of Condensate pumps.
		• Acknowledge failure of Condensate pumps to restart.
		
		Determine Reactor water level cannot be maintained above -129".
		
		Direct lineup for injection and starting of pumps for all Table 3 injections systems.
		
		Determine more than 1 injection subsystem is lined up with a pump running.
		
		When Reactor water level drops to -161", enter EO-100-112, Rapid Depressurization:
		• Exit EO-100-102 pressure leg.
		• Determine Suppression Pool level is >5'.
		• **Direct opening all ADS valves.**
		• Determine all ADS valves are open.
		
		Direct Reactor water level restored and maintained >-161" using LPCI, Core Spray, and/or SLC (+13" to +54" normal band).

★ Denotes Critical Task

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UNIT SUPERVISOR TURNOVER SHEET

UNIT 1 to/dd/yy
Date

SHIFT 1900 (Start) to 0700 (End)

MODE 1
POWER LEVEL 100 %
GENERATOR OUTPUT 1339 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) 500 days on-line, 20 months into the operating cycle.
2) CRD pump 1B is out of service for maintenance.
3)
4)
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	HOTEL	OSCAR
NRC CODE AFTER 0800	FOXTROT	UNIFORM	BRAVO	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