SUSQUEHANNA NUCLEAR, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Review pressure/temperature plots and determine compliance with TS 3.4.10**

S/RO	00.GO.1178.101	0	4/24/2015	Classroom
Applicability	JPM Number	Revision	Date	Setting

Generic	2.1.25	3.9/4.2	N	N
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared		Validated	
Greg van den Berg	**04/24/2015**	**Greg van den Berg**	**06/02/2015**
Author	Date	Instructor	Date
Review		Approval	
Manu Sivaraman	**06/05/2015**	**Durand Adams**	**06/03/2015**
Operations Management	Date	Nuclear Training Supervisor	Date

25
Validation Time (min)

Examinee Name: **«LastName», «FirstName» («Docket_»)** **«Employee»**
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ _____
Name Signature

Comments

TEAM SUSQUEHANNA Generating 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. SO-100-011, Rx Vessel Temperature and Pressure Recording (Revision 26)

3. TASK CONDITIONS

Unit 1 is in MODE 3

A reactor shutdown/cooldown is in progress

SO-100-011, Rx Vessel Temperature and Pressure Recording, is being conducted

You have just relieved the PCO performing the surveillance; your first set of data has been added to Table 2.

4. INITIATING CUE

Perform a review of the data recorded in SO-100-011 for 2230 through 2345 to confirm procedural compliance and document discrepancies found, if any.

5. TASK STANDARD

This JPM has the operator review surveillance data for temperature/pressure plots recorded during a reactor shutdown/cooldown to determine procedural compliance with all cooldown rates. See attached key.

Examinee **«LastName», «FirstName»**

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 cab be performed in the classroom or simulator. • Mark-up a copy of SO-100-011 complete through Step 5.2. • Ensure Unit 1 Tech Specs and a calculator is available for the candidate.				
EVALUATOR CUE Record JPM start time: _____				
1	**Identifies** governing procedure and obtain controlled copy.	Obtains controlled copy of SO-100-011 and reviews data.		
2	Verify temperature change calculations	Verify cooldown rate calculations for each 15 minute and 1 hour period during which the cooldown was conducted.		
3	Confirm calculated cooldown rates comply with Tech Spec and procedure requirements	Confirm compliance with:<100°F cooldown in any 1 hour period • Determines Steam Dome cooldown rate between 2230 and 2345 does not exceed 100°F		
Evaluator Note: TS Required Actions should only be entered if Rx Steam Dome Temperature ΔT's are > 100°F in any one hour. However, ALL ΔT's should be maintained <22° in any 15 minute period during cooldown.				
*4	Additional calculation and 15 minute cooldown rate excursions	Candidate should identify: • Recirc Loop B ΔT °F: o 2330-2345 ΔT=23.3 • Bottom Head Drain ΔT °F: o 2330-2345 ΔT=24.0		

Examinee **«LastName», «FirstName»**

Step	Action	Standard	Eval	Comments
*5	Identifies Temperature violation	Notifies Supervisor that temperature violation has occurred twice for 15 minute averages. SR 3.4.10 and TS 3.4.10 entry 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

Unit 1 is in MODE 3

A reactor shutdown/cooldown is in progress

SO-100-011, Rx Vessel Temperature and Pressure Recording, is being conducted

You have just relieved the PCO performing the surveillance; your first set of data has been added to Table 2.

INITIATING CUE

Perform a review of the data recorded in SO-100-011 for 2230 through 2345 to confirm procedural compliance and document discrepancies found, if any.

EVALUATOR

TASK CONDITIONS

Unit 1 is in MODE 3

A reactor shutdown/cooldown is in progress

SO-100-011, Rx Vessel Temperature and Pressure Recording, is being conducted

You have just relieved the PCO performing the surveillance; your first set of data has been added to Table 2.

INITIATING CUE

Perform a review of the data recorded in SO-100-011 for 2230 through 2345 to confirm procedural compliance and document discrepancies found, if any.

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	
G.v.	1. Task description and number, JPM description and number are identified.
G.v.	2. Knowledge and Abilities (K/A) references are included.
G.v.	3. Performance location specified. (in-plant, control room, or simulator)
G.v.	4. Initial setup conditions are identified.
G.v.	5. Initiating and terminating cues are properly identified.
G.v.	6. Task standards identified and verified by SME review.
G.v.	7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
G.v.	
G.v.	8. Verify cues both verbal and visual are free of conflict.
G.v.	9. Ensure performance time is accurate.
G.v.	10. Verify the JPM reflects the most current revision of the procedure.

Procedure SO-100-011 Rev 26

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.

JPM ASSEMBLY INSTRUCTIONS

Seq	Item	Copier Program	Binding
1.	Examinee cue sheet and handout	cue	loose
2.	SO-100-011 (marked-up through step 5.2)	exam	staple
3.	Evaluator cue sheet	cue	loose
4.	Answer key	cue	loose
5.	JPM	jpm	loose

SUSQUEHANNA NUCLEAR, 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**	**2**	**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

Greg van den Berg	**12/04/2014**
Author	Date

Validated

Rich Bolduc	**05/10/2015**
Instructor	Date

Review

Manu Sivaraman	**6/5/15**
Operations Management	Date

Approval

Greg van den Berg	**06/03/2015**
Nuclear Training Supervisor	Date

15
Validation Time (min)

Examinee Name: **«LastName», «FirstName» («Docket_»)** (Last, First MI) **«Employee»** (Employee Number)

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ (Name) _____ (Signature)

Comments

TEAM SUSQUEHANNA Generating Excellence

JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM
1	Minor editorial changes
2	Updated references and individual scenario task conditions to accommodate the LOC 27 NRC exam.

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, CR Emergency Director (revision 33)

B. EP-RM-004, EAL CLASSIFICATION BASES (Revision 4)

C. EP-PS-001, EMERGENCY PLANNING FORMS AND SUPPLEMENTARY INSTRUCTIONS (Revision 7)

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 on the cue sheet.

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 **«LastName», «FirstName»**

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 **«LastName», «FirstName»**

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 **«LastName», «FirstName»**

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?				

JPM KEY

Scenario	Classification	EAL	Release
1	Site Area Emergency	FS1	No
2	Site Area Emergency	FS1	Yes
3	Site Area Emergency	MS3	No
4	Unusual Event	MU1/FU1	No

EXAMINEE – SCENARIO 1

TASK CONDITIONS

Unit 1 was at rated power

A reactor coolant leak occurred in the drywell

Unit 1 was manually scrammed – all control rods fully inserted

Unit 1 experienced the following conditions:

- Suppression Chamber and Drywell sprays were placed in service
- RPV level was being maintained with HPCI and RCIC
- HPCI Turbine Tripped
- RPV level lowered below -179"
- Emergency Depressurization was performed
- RPV level was recovered with low pressure ECCS

INITIATING CUE

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

EVALUATOR – SCENARIO 1

TASK CONDITIONS

Unit 1 was at rated power

A reactor coolant leak occurred in the drywell

Unit 1 was manually scrammed – all control rods fully inserted

Unit 1 experienced the following conditions:

- Suppression Chamber and Drywell sprays were placed in service
- RPV level was being maintained with HPCI and RCIC
- HPCI Turbine Tripped
- RPV level lowered below -179"
- Emergency Depressurization was performed
- RPV level was recovered with low pressure ECCS

INITIATING CUE

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

EXAMINEE – SCENARIO 2

TASK CONDITIONS

Unit 1 Reactor Power was approximately 3%

Unit 1 experienced the following conditions:

- An uncoupled control rod dropped causing fuel failure
- The reactor failed to auto scram, requiring a manual scram
- All Control Rods fully inserted when the mode switch was placed in shutdown
- MSIV are isolated due to Main Steam Line High Rad
- SDIV vents and drains failed to close causing a high rad in secondary containment
- RWCU system leak occurred in secondary containment, the system failed to isolate
- Emergency Depressurization was performed due to 2 areas above Max Safe Radiation
- Security reports no blowout panels have ruptured

INITIATING CUE

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

EVALUATOR – SCENARIO 2

TASK CONDITIONS

Unit 1 Reactor Power was approximately 3%

Unit 1 experienced the following conditions:

- An uncoupled control rod dropped causing fuel failure
- The reactor failed to auto scram, requiring a manual scram
- All Control Rods fully inserted when the mode switch was placed in shutdown
- MSIV are isolated due to Main Steam Line High Rad
- SDIV vents and drains failed to close causing a high rad in secondary containment
- RWCU system leak occurred in secondary containment, the system failed to isolate
- Emergency Depressurization was performed due to 2 areas above Max Safe Radiation
- Security reports no blowout panels have ruptured

INITIATING CUE

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

EXAMINEE – SCENARIO 3

TASK CONDITIONS

Unit 1 Reactor Power was approximately 20%

A shutdown was in progress for a turbine outage

Unit 1 experienced the following conditions:

- A loss of Aux Bus 11B occurred.
- Vacuum degraded due to air in leakage into the Main Condenser, which prompted a manual scram
- An ATWS condition occurred with reactor power initially at 10%
- Full scram was achieved by venting the scram air header

INITIATING CUE

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

EVALUATOR – SCENARIO 3

TASK CONDITIONS

Unit 1 Reactor Power was approximately 20%

A shutdown was in progress for a turbine outage

Unit 1 experienced the following conditions:

- A loss of Aux Bus 11B occurred.
- Vacuum degraded due to air in leakage into the Main Condenser, which prompted a manual scram
- An ATWS condition occurred with reactor power initially at 10%
- Full scram was achieved by venting the scram air header

INITIATING CUE

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

EXAMINEE – SCENARIO 4

TASK CONDITIONS

Unit 1 Reactor Power was approximately 97%

Unit 1 experienced the following conditions:

- HPCI is declared INOP due to a spurious start
- A manual scram was inserted due to Main Steam Line steam leak into the Turbine Building
- MSIV 's on 'D' MSL fail to isolate requiring manual isolation to stop steam leak into Turbine Building
- A Loss Of Offsite Power (LOOP) occurred and Emergency Diesel Generators failed to start
- Emergency Diesel Generators were manually started to remove the plant from a station blackout within 5 minutes of the LOOP
- HPCI and RCIC required manual start to control RPV level and pressure
- Security reports no blowout panels have ruptured

INITIATING CUE

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

EVALUATOR – SCENARIO 4

TASK CONDITIONS

Unit 1 Reactor Power was approximately 97%

Unit 1 experienced the following conditions:

- HPCI is declared INOP due to a spurious start
- A manual scram was inserted due to Main Steam Line steam leak into the Turbine Building
- MSIV 's on 'D' MSL fail to isolate requiring manual isolation to stop steam leak into Turbine Building
- A Loss Of Offsite Power (LOOP) occurred and Emergency Diesel Generators failed to start
- Emergency Diesel Generators were manually started to remove the plant from a station blackout within 5 minutes of the LOOP
- HPCI and RCIC required manual start to control RPV level and pressure
- Security reports no blowout panels have ruptured

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.

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		
G.v.	1.	Task description and number, JPM description and number are identified.
G.v.	2.	Knowledge and Abilities (K/A) references are included.
G.v.	3.	Performance location specified. (in-plant, control room, or simulator)
G.v.	4.	Initial setup conditions are identified.
G.v.	5.	Initiating and terminating cues are properly identified.
G.v.	6.	Task standards identified and verified by SME review.
G.v.	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
G.v.	8.	Verify cues both verbal and visual are free of conflict.
G.v.	9.	Ensure performance time is accurate.
G.v.	10.	Verify the JPM reflects the most current revision of the procedure.

Procedure	EP-RM-004	Rev	33
Procedure	EP-PS-100	Rev	4
Procedure	EP-PS-001	Rev	7

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.

JPM ASSEMBLY INSTRUCTIONS

Seq	Item	Copier Program	Binding
1.	Examinee cue sheet	cue	PC*
2.	Evaluator cue sheet	cue	PC*
3.	JPM	jpm	Loose

SUSQUEHANNA NUCLEAR, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Review and Verify Blocking Required per NDAP-QA-0322 "ECP"**

SRO	**00.AD.3274.201**	**1**	**03/27/2015**	**Classroom**
Applicability	JPM Number	Revision	Date	Setting

Generic	**2.2.41**	**3.5/3.9**	**N**	**N**
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

Greg van den Berg	**03/27/2015**
Author	Date

Validated

Greg van den Berg	**05/28/2015**
Instructor	Date

Review

Manu Sivaraman	**06/05/2015**
Operations Management	Date

Approval

Durand Adams	**06/03/2015**
Nuclear Training Supervisor	Date

25
Validation Time (min)

Examinee Name: **«LastName», «FirstName» («Docket_»)** (Last, First MI) **«Employee»** (Employee Number)

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ (Name) _____ (Signature)

Comments

TEAM SUSQUEHANNA Generating Excellence

JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM
1	Revise for TQ procedures format, 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. NDAP-QA-0322, Energy Control Process (Revision 53)
B. E-145 sh. 8
C. E-4 sh. 3
D. M-2109 sheet 1
E. M-2109 sheet 2

3. TASK CONDITIONS

Unit 2 is at 100% power.

2A Service Water Pump has been scheduled for pump seal replacement, but due to an oversight, no clearance package was developed

Database problems within eSoms have prevented development of a clearance order by electronic means

4. INITIATING CUE

Using the appropriate drawings referenced on the proposed clearance, review the requested blocking to ensure it meets the requirements of NDAP-QA-0322 for accuracy and adequacy. If any inaccuracies are identified provide a recommendation for correction(s). The Clearance Order Office will generate the associated Clearance Order when eSoms is returned to service

5. TASK STANDARD

Review the list of proposed blocking for 2A Service Water Pump; discrepancies identified and noted IAW attached Key

Examinee **«LastName», «FirstName»**

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 can be performed in the classroom or simulator. • Ensure the following material is available to support performance of this JPM: o Prints: E-145 sh. 8, E-4 sh. 3, and M-2109 sh. 1 and 2, NDAP-QA-0322, Energy Control Process, Library clearance for SW Pump 2A				
EVALUATOR CUE Record JPM start time: _____				
1	**Identifies** governing procedure and obtain controlled copy.	Obtains controlled copy of NDAP-QA-0322, supporting prints and clearance order.		
*2	Identifies the requested 13.8kV breaker listed (2A10103) is incorrect	Using E-145; • Candidate identifies the requested 13.8kV breaker listed (2A10103) is incorrect • Candidate identifies 2A10106 as correct 13.8kV breaker for 2A Service Water Pump.		
*3	Identifies the requested Service Water Pump vent valve is incorrect and is actually for 2B Service Water Pump (209167)	Using M-2109, Sheet 2; • Candidate identifies the requested Service Water Pump vent valve is incorrect and is actually for 2B Service Water Pump (209167) • Candidate identifies 209166 as the correct 2A Service Water Pump vent valve		
EVALUATOR CUE Role play the Unit Supervisor and acknowledge the receipt of the corrected blocking and inform candidate that it will be forwarded to the WCC				

Examinee **«LastName», «FirstName»**

Step	Action	Standard	Eval	Comments
EVALUATOR CUE Once candidate turns in list of corrected blocking sheet, the JPM is complete.				
EVALUATOR NOTE DUE TO THE NATURE OF THIS JPM OTHER BLOCKING POINTS MAY BE ACCEPTABLE. CONSULT WITH ADDITIONAL SMEs AS NECESSARY TO DETERMINE ACCEPTABILITY OF ALTERNATE BLOCKING POINTS.				
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

Unit 2 is at 100% power.

2A Service Water Pump has been scheduled for pump seal replacement, but due to an oversight, no clearance package was developed

Database problems within eSoms have prevented development of a clearance order by electronic means

INITIATING CUE

Using the appropriate drawings referenced on the proposed clearance, review the requested blocking to ensure it meets the requirements of NDAP-QA-0322 for accuracy and adequacy. If any inaccuracies are identified provide a recommendation for correction(s). The Clearance Order Office will generate the associated Clearance Order when eSoms is returned to service

EVALUATOR

TASK CONDITIONS

Unit 2 is at 100% power.

2A Service Water Pump has been scheduled for pump seal replacement, but due to an oversight, no clearance package was developed

Database problems within eSoms have prevented development of a clearance order by electronic means

INITIATING CUE

Using the appropriate drawings referenced on the proposed clearance, review the requested blocking to ensure it meets the requirements of NDAP-QA-0322 for accuracy and adequacy. If any inaccuracies are identified provide a recommendation for correction(s). The Clearance Order Office will generate the associated Clearance Order when eSoms is returned to service

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	
G.v.	1. Task description and number, JPM description and number are identified.
G.v.	2. Knowledge and Abilities (K/A) references are included.
G.v.	3. Performance location specified. (in-plant, control room, or simulator)
G.v.	4. Initial setup conditions are identified.
G.v.	5. Initiating and terminating cues are properly identified.
G.v.	6. Task standards identified and verified by SME review.
G.v.	7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
G.v.	
G.v.	8. Verify cues both verbal and visual are free of conflict.
G.v.	9. Ensure performance time is accurate.
G.v.	10. Verify the JPM reflects the most current revision of the procedure.

Procedure	NDAP-QA-0322	Rev	53
Procedure	E-145, E-4	Rev	8/17
Procedure	M-2109 Sh 1-2	Rev	46/13

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.

JPM ASSEMBLY INSTRUCTIONS

Seq	Item	Copier Program	Binding
1.	Examinee cue sheet	cue	loose
2.	NDAP-QA-0322	exam	staple
3.	SWP 2a Library Clearance	exam	staple
4.	E-145 (C or 17x22" landscape)	N/A	loose
5.	E-4 (C or 17x22" landscape)	N/A	loose
6.	M-2109 Sh 1 and 2 (C or 17x22" landscape)	N/A	loose
7.	Evaluator cue sheet	cue	loose
8.	JPM	jpm	loose
9.	Procedure (replacement)	sim	PC

SUSQUEHANNA NUCLEAR, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Review and Verify Blocking Required per NDAP-QA-0322 "ECP"**

S/RO	**00.AD.3274.202**	**1**	**03/27/2015**	**Classroom**
Applicability	JPM Number	Revision	Date	Setting

Generic	**2.2.41**	**3.5/3.9**	**N**	**N**
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared		Validated	
Greg van den Berg	**03/27/2015**	**Greg van den Berg**	**05/28/2015**
Author	Date	Instructor	Date
Review		Approval	
Manu Sivaraman	**06/05/2015**	**Durand Adams**	**06/03/2015**
Operations Management	Date	Nuclear Training Supervisor	Date

25
Validation Time (min)

Examinee Name: **«LastName», «FirstName» («Docket_»)** (Last, First MI) **«Employee»** (Employee Number)

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ (Name) _____ (Signature)

Comments

TEAM SUSQUEHANNA Generating Excellence

JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM
1	Revise for TQ procedures format, 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. NDAP-QA-0322, Energy Control Process (Revision 53)
B. E-145 sh. 8
C. E-4 sh. 3
D. M-2109 sheet 1 and 2
E. Provide blank proposed blocking sheet

3. TASK CONDITIONS

Unit 2 is at 100% power.

2A Service Water Pump has been scheduled for pump seal replacement, but due to an oversight, no clearance package was developed

Database problems within eSoms have prevented development of a clearance order by electronic means

4. INITIATING CUE

Using the appropriate drawings, provide a list of proposed blocking that meets the requirements of NDAP-QA-0322. The Clearance Order Office will generate the associated Clearance Order when eSoms is returned to service. Minimum required information for each point must include: Component Number, Component Description, Required Position, and Tag Type

5. TASK STANDARD

Provide a list of proposed blocking for 2A Service Water Pump IAW NDAP-QA-0322 IAW the attached Proposed Blocking List Key

Examinee **«LastName», «FirstName»**

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 can be performed in the classroom or simulator. • Ensure the following material is available to support performance of this JPM: o Prints: E-145 sh. 8, E-4 sh. 3, and M-2109 sh. 1 and 2, NDAP-QA-0322, Energy Control Process, Blank proposed blocking sheet				
EVALUATOR CUE Record JPM start time: _____				
1	**Identifies** governing procedure and obtain controlled copy.	Obtains controlled copy of NDAP-QA-0322, and supporting prints.		
*2	Develops a list of proposed blocking points based upon print review and NDAP-QA-0322 guidance.	Develops proposed blocking list that matches the answer key.		
EVALUATOR CUE Role play the Unit Supervisor and acknowledge the receipt of the proposed blocking points/corrected blocking and inform candidate that it will be forwarded to the WCC.				
EVALUATOR CUE Once candidate turns in list of proposed blocking points, the JPM is complete.				
EVALUATOR NOTE DUE TO THE NATURE OF THIS JPM OTHER BLOCKING POINTS MAY BE ACCEPTABLE. CONSULT WITH ADDITIONAL SMEs AS NECESSARY TO DETERMINE ACCEPTABILITY OF ALTERNATE BLOCKING POINTS.				
EVALUATOR CUE Record JPM stop time: _____				
EVALUATOR NOTE That completes the JPM.				
EVALUATOR: Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

EXAMINEE

TASK CONDITIONS

Unit 2 is at 100% power.

2A Service Water Pump has been scheduled for pump seal replacement, but due to an oversight, no clearance package was developed

Database problems within eSoms have prevented development of a clearance order by electronic means

INITIATING CUE

Using the appropriate drawings, provide a list of proposed blocking that meets the requirements of NDAP-QA-0322. The Clearance Order Office will generate the associated Clearance Order when eSoms is returned to service. Minimum required information for each point must include: Component Number, Component Description, Required Position, and Tag Type

PROPOSED BLOCKING

EVALUATOR

TASK CONDITIONS

Unit 2 is at 100% power.

2A Service Water Pump has been scheduled for pump seal replacement, but due to an oversight, no clearance package was developed

Database problems within eSoms have prevented development of a clearance order by electronic means

INITIATING CUE

Using the appropriate drawings, provide a list of proposed blocking that meets the requirements of NDAP-QA-0322. The Clearance Order Office will generate the associated Clearance Order when eSoms is returned to service. Minimum required information for each point must include: Component Number, Component Description, Required Position, and Tag Type

PROPOSED BLOCKING KEY
DO NOT GIVE TO CANDIDATE

Component	Position	Tag Type
1. ★**2A10106** Service Water Pump A 2P502A 13.8kV breaker	★**OPEN**, ★**RACKED OUT**, (applicant may also request breaker REMOVED)	★Red tag
2. ★**209001** Service Water Pump A Suction ISO VLV	★**CLOSED**	★Red tag
3. ★**209004** Service Water Pump A Discharge ISO VLV	★**CLOSED**	★Red tag
4. ★**209014** Service Wtr Pump A Seal Water Press TL VLV Bypass VLV	★**CLOSED**	★Red tag
ɔ. ★**209015** Service Wtr Pump A Seal Water Press CTL VLV Inlet ISO VLV ***OR*** ★**209016** Service Wtr Pump A Seal Water Press CTL VLV Outlet ISO VLV	★**CLOSED**	★Red tag
6. ★**209166** Service Wtr Pump A Vent VLV	★**CLOSED**	★Red tag
*7. **209801** Service Water Pump A OB Casing Vent VLV*	***OPEN***	*No tag/Pink tag*
*8. **209802** Service Water Pump A IB Casing Vent VLV*	***OPEN***	*No tag/Pink tag*
*9. **209048** Service Water Pump A Drain VLV*	***OPEN***	*No tag/Pink tag*
*10. **209119** Service Water Pump A Drain VLV*	***OPEN***	*No tag/Pink tag*

******Applicant may or may not identify these valves (#7,8,9 and 10)******

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	
G.v.	1. Task description and number, JPM description and number are identified.
G.v.	2. Knowledge and Abilities (K/A) references are included.
G.v.	3. Performance location specified. (in-plant, control room, or simulator)
G.v.	4. Initial setup conditions are identified.
G.v.	5. Initiating and terminating cues are properly identified.
G.v.	6. Task standards identified and verified by SME review.
G.v.	7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
G.v.	8. Verify cues both verbal and visual are free of conflict.
G.v.	9. Ensure performance time is accurate.
G.v.	10. Verify the JPM reflects the most current revision of the procedure.

Procedure	NDAP-QA-0322	Rev	53
Procedure	E-145, E-4	Rev	8/17
Procedure	M-2109 Sh 1-2	Rev	46/13

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.

JPM ASSEMBLY INSTRUCTIONS

Seq	Item	Copier Program	Binding
1.	Examinee cue sheet	cue	loose
2.	NDAP-QA-0322	exam	staple
3.	SWP 2A Library Clearance	exam	staple
4.	E-145 (C or 17x22" landscape)	N/A	loose
5.	E-4 (C or 17x22" landscape)	N/A	loose
6.	M-2109 Sh 1 and 2 (C or 17x22" landscape)	N/A	loose
7.	Evaluator cue sheet	cue	loose
8.	JPM	jpm	loose
9.	Procedure (replacement)	sim	PC

SUSQUEHANNA NUCLEAR, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Calculate and Approve Emergency Exposure**

S/RO	**00.EP.1132.185**	**2**	**08/08/2014**	**Classroom**
Applicability	JPM Number	Revision	Date	Setting

G	**2.3.4**	**3.7**	**N**	**N**
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

Greg van den Berg	**04/28/2015**
Author	Date

Validated

Rich Bolduc	**06/02/2015**
Instructor	Date

Review

Manu Sivaraman	**6/5/15**
Operations Management	Date

Approval

Greg van den Burg	**06/03/2015**
Nuclear Training Supervisor	Date

20
Validation Time (min)

Examinee Name: **«LastName», «FirstName» («LicenseType»)** (Last, First MI) **«Employee»** (Employee Number)

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ (Name) _____ (Signature)

Comments

TEAM SUSQUEHANNA Generating Excellence

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	Updated procedure references. Updated Task Conditions for Worker A; was "planned special exposure" now "Emergency Exposure Extension"

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-001, Emergency Planning Forms and Supplementary Instructions, Attachment H (Revision 7)

3. TASK CONDITIONS

A Site Area Emergency is in progress.

You have assumed the responsibilities of the Emergency Director.

A steam leak from RCIC into the Reactor Building cannot be isolated without manually shutting a valve in the field.

Entry to the Reactor Building is required to manually close this valve to stop a release to the environment.

Time to complete the task for an experienced NPO will be approximately 24 minutes.

Time to complete the task for a new NPO will be approximately 30 minutes.

Radiation levels at the valve are approximately 15 R/hr.

The operator will be wearing a respirator, such that no thyroid dose is expected.

Four (4) individuals are available to perform the task:

- Worker A is a volunteer who is an experienced NPO, has previously received an emergency exposure extension at another facility, and has received a dose of 150 mR this year (Age = 47 years, TLD Badge No. 11111, SSN 111-11-1111).
- Worker B is a volunteer who is an experienced NPO and is a declared pregnant worker and has received a dose of 15 mR this year (Age = 35 years, TLD Badge No. 22222, SSN 222-22-2222).
- Worker C is a volunteer who is an experienced NPO and has received a dose of 1800 mR this year (Age = 46 years, TLD Badge No. 33333, SSN 333-33-3333).
- Worker D is a volunteer who is a new NPO that has received a dose of 500 mR this year (Age = 32 years, TLD Badge No. 44444, SSN 444-44-4444).

4. INITIATING CUE

Choose an individual to enter the Reactor Building and close the valve, state the reason why that worker was chosen, estimate the expected radiation exposure, and document your authorization for an Emergency Exposure Extension.

5. TASK STANDARD

Generate and approve an Emergency Exposure Authorization Form and estimate exposure

Examinee **«LastName», «FirstName»**

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 should be performed in the classroom.				
EVALUATOR CUE Record JPM start time: _____				
1	**Identifies** governing procedure and obtain controlled copy.	Obtains a controlled copy of the applicable procedure(s).		
2	**Determine** the expected exposure for the task	• For an experienced worker - Calculates that a 24 minute exposure in a 15 R/hr field will cause a dose of 6 R. • For a new worker - Calculates that a 30 minute exposure in a 15 R/hr field will cause a dose of 7.5 R.		
3*	**Select** the best worker to perform the task	Determines the best worker for the task: • Does NOT select Worker A • Does NOT select Worker B • Selects Worker C • Does NOT select Worker D		

Examinee **«LastName», «FirstName»**

Step	Action	Standard	Eval	Comments
EVALUATOR NOTE The following rationale supports worker selection: • Worker A should NOT be chosen due to previously receiving an emergency exposure extension. • Worker B should NOT be chosen due to being a declared pregnant worker. • Worker C should be chosen because both their dose for the emergency exposure (6 R) will be less than that for Worker D; additionally, the dose to the public will be minimized by the shorter task completion time of this experienced worker. • Worker D should NOT be chosen because their dose for the emergency exposure (7.5 R) will be greater than that for Worker C.				
4	State reason for choosing the selected worker	States that Worker C was chosen to minimize dose. States that Worker A was NOT chosen due to a previous emergency exposure extension. States that Worker B was NOT chosen due to being a declared pregnant worker. States that Worker D was NOT chosen due to higher dose.		
5*	**Estimate** expected exposure	Determines Worker C will receive an estimated 6 R while completing the task (24 minutes x 15 R/hr / 60 min/hr).		
EVALUATOR NOTE The examinee may choose to brief the worker on radiological conditions, potential for steam leakage in the area, planned task, applicable ALARA measures, and contingency measures. Role play as Worker C and acknowledge the briefing.				
EVALUATOR NOTE The Candidate may ask for an RWP to be generated. Role play as HP and state that an RWP has been generated.				
6*	**Generate** an Emergency Exposure Extension Request Form.	Completes an Emergency Exposure Extension Request Form (see attached key).		

Examinee **«LastName», «FirstName»**

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

A Site Area Emergency is in progress.

You have assumed the responsibilities of the Emergency Director.

A steam leak from RCIC into the Reactor Building cannot be isolated without manually shutting a valve in the field.

Entry to the Reactor Building is required to manually close this valve to stop a release to the environment.

Time to complete the task for an experienced NPO will be approximately 24 minutes.

Time to complete the task for a new NPO will be approximately 30 minutes.

Radiation levels at the valve are approximately 15 R/hr.

The operator will be wearing a respirator, such that no thyroid dose is expected.

Four (4) individuals are available to perform the task:

- Worker A is a volunteer who is an experienced NPO, has previously received an emergency exposure extension at another facility, and has received a dose of 150 mR this year (Age = 47 years, TLD Badge No. 11111, SSN 111-11-1111).
- Worker B is a volunteer who is an experienced NPO and is a declared pregnant worker and has received a dose of 15 mR this year (Age = 35 years, TLD Badge No. 22222, SSN 222-22-2222).
- Worker C is a volunteer who is an experienced NPO and has received a dose of 1800 mR this year (Age = 46 years, TLD Badge No. 33333, SSN 333-33-3333).
- Worker D is a volunteer who is a new NPO that has received a dose of 500 mR this year (Age = 32 years, TLD Badge No. 44444, SSN 444-44-4444).

INITIATING CUE

Choose an individual to enter the Reactor Building and close the valve, state the reason why that worker was chosen, estimate the expected radiation exposure, and document your authorization for an Emergency Exposure Extension.

EVALUATOR

TASK CONDITIONS

A Site Area Emergency is in progress.

You have assumed the responsibilities of the Emergency Director.

A steam leak from RCIC into the Reactor Building cannot be isolated without manually shutting a valve in the field.

Entry to the Reactor Building is required to manually close this valve to stop a release to the environment.

Time to complete the task for an experienced NPO will be approximately 24 minutes.

Time to complete the task for a new NPO will be approximately 30 minutes.

Radiation levels at the valve are approximately 15 R/hr.

The operator will be wearing a respirator, such that no thyroid dose is expected.

Four (4) individuals are available to perform the task:

- Worker A is a volunteer who is an experienced NPO, has previously received an emergency exposure extension at another facility , and has received a dose of 150 mR this year (Age = 47 years, TLD Badge No. 11111, SSN 111-11-1111).
- Worker B is a volunteer who is an experienced NPO and is a declared pregnant worker and has received a dose of 15 mR this year (Age = 35 years, TLD Badge No. 22222, SSN 222-22-2222).
- Worker C is a volunteer who is an experienced NPO and has received a dose of 1800 mR this year (Age = 46 years, TLD Badge No. 33333, SSN 333-33-3333).
- Worker D is a volunteer who is a new NPO that has received a dose of 500 mR this year (Age = 32 years, TLD Badge No. 44444, SSN 444-44-4444).

INITIATING CUE

Choose an individual to enter the Reactor Building and close the valve, state the reason why that worker was chosen, estimate the expected radiation exposure, and document your authorization for an Emergency Exposure Extension.

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	
G.v.	1. Task description and number, JPM description and number are identified.
G.v.	2. Knowledge and Abilities (K/A) references are included.
G.v.	3. Performance location specified. (in-plant, control room, or simulator)
G.v.	4. Initial setup conditions are identified.
G.v.	5. Initiating and terminating cues are properly identified.
G.v.	6. Task standards identified and verified by SME review.
G.v.	7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
G.v.	8. Verify cues both verbal and visual are free of conflict.
G.v.	9. Ensure performance time is accurate.
G.v.	10. Verify the JPM reflects the most current revision of the procedure.

Procedure EP-PS-001 Att. H Rev 7

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.

This JPM revised to reflect new reference procedure, EP-PS-001.

This JPM was reformatted to the TQ procedure format.

No other changes required following validation.

JPM ASSEMBLY INSTRUCTIONS

Seq	Item	Copier Program	Binding
1.	Examinee cue sheet	cue	loose
2.	Evaluator cue sheet	cue	loose
3.	JPM	jpm	loose
4.	JPM Key	jpm	loose
5.	EP-PS-001, Att. H (replacement)	sim	PC

E-Plan JPM

redacted due to sensitive information included in JPM

SUSQUEHANNA NUCLEAR, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Review Failed Surveillance Test and Determine Required Action**

S/RO	51.SO.1944.151	1	03/27/2015	Classroom
Applicability	JPM Number	Revision	Date	Setting

Generic	2.2.12	3.7/4.1	Y	N
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared		Validated	
Greg van den Berg	**03/27/2015**	**Greg van den Berg**	**06/02/2015**
Author	Date	Instructor	Date
Review		Approval	
Manu Sivaraman	**6/5/15**	**Durand Adams**	**6/3/15**
Operations Management	Date	Nuclear Training Supervisor	Date

25
Validation Time (min)

Examinee Name: **«LastName», «FirstName» («Docket_»)** (Last, First MI) **«Employee»** (Employee Number)

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ (Name) _____ (Signature)

Comments

TEAM SUSQUEHANNA Generating Excellence

JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM
1	Revised to incorporate revised procedure changes and testing requirements.

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-151-A02 Quarterly Core Spray Flow Verification Division 1, (Revision 24)

3. TASK CONDITIONS

Unit 1 is at 100% power.

SO-151-A02, Quarterly Core Spray Flow Verification Division 1, was performed and is ready for review.

4. INITIATING CUE

RO:
Review the provided surveillance testing data for SO-151-A02 in Attachment A and document findings below.

SRO:
Unit 1 was in a normal electrical line up, then B EDG was taken OOS unplanned due to part 21 issue related to agastat relay. Expected recovery time of B EDG is 8 hours. Review and Complete SO-151-A02, Quarterly Core Spray Flow Verification Division 1, Attachment A, to a point where all required actions have been identified. Document all required actions below on the cue sheet.

5. TASK STANDARD

This JPM has the operator review surveillance data for Core Spray pump A and determine its operability. The RO and SRO applicants will determine the pump to be inoperable. The RO will inform the SRO on the operability status. The SRO applicant will also determine that the Core Spray Pump to be inoperable and determine that TS 3.5.1 Action A.1 to Restore low pressure ECCS injection/spray subsystem to OPERABLE status within 7days applies. Also TS 3.8.1 Action B.2 to declare Core Spray Pump B INOPERABLE within 4 hours of entering TS 3.5.1 Action A.1. SRO will further determine that TS 3.5.1 Action I.1 applies when 5 hours has been elapsed since declaring Core Spray Pump A INOPERABLE.

SIMULATOR SETUP INSTRUCTIONS

1. **Reset** the simulator to any rated-power IC.
2. **Run** scenario file XXX.SCN
   file
3. **Other** actions

Examinee **«LastName», «FirstName»**

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 can be performed in the classroom or simulator • Mark-up a copy of SO-151-A02 complete through Step 5.2 to include Attachment A marked up through step 12. • Ensure that pump A discharge pressure is recorded as 262.5 psig (step 5.2.6.c) and calculated delta-p value recorded in Attachment A acceptance criteria 4 is recorded as 264.5 psid.				
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: _____				
1	**Identifies** governing procedure and obtain controlled copy.	Provide marked-up copy of SO-151-A02 through step 5.2 and Attachment A through step 12.		
2	**Reviews** As-Found Column data on Attachment 'A'	Reviews data on SO-151-A02, Quarterly Core Spray Flow Verification Division 1, Attachment A.		
*3	. Identifies that there is a calculation error for calculating CS pump A delta-P. (Attachment A acceptance criteria 4)	Compares the calculated CS pump A delta-P of 264.5 psid with the actual discharge pressure and suction pressure valves (262.5 psig – 8psig) and determines that there is a math error. The actual calculated value would be 254.5 psid, and determines this to be UNACCEPTABLE due to being outside the criteria of 256.5 and 313.5 psid.		

Step	Action	Standard	Eval	Comments
*4	**Notifies** Shift Supervision that SO 151-A02 has failed its acceptance criteria.	IAW Attachment A. Under Required Action: Notifies Shift Supervision that SO-151-A02 A CS pump failed its acceptance criteria. AND Initials the Confirm space.		
EVALUATOR NOTE This completes the JPM for the RO candidate. **If JPM is being used for a SRO candidate, continue the JPM.**				
*5	**Declares** CS pump A inoperable	IAW Attachment B. Required Action: Determines that the measured values of pump delta-P fall outside of their acceptance criteria, and the pump shall be **Declared INOPERABLE**. AND Marks the Surveillance Authorization Sheet (Part VI) as **FAILED**		

Step	Action	Standard	Eval	Comments
6	**Ensures** applicable action statements are in effect.	Determines TS 3.5.1 Condition A.1 applies. One low pressure ECCS injection/spray subsystem inoperable for reasons other than Condition B (One LPCI pump in one or both LPCI subsystems inoperable) Restore low pressure ECCS injection/spray subsystem to OPERABLE status within 7 days. AND TS 3.8.1 Condition B.2 applies When one required DG is inoperable, Declare the required feature(s), supported by the inoperable DG, inoperable when the redundant required feature(s) are inoperable within 4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s) INOPERABLE,		
EVALUATOR CUE Inform the applicant that 5 hours has been elapsed since TS 3.5.1 Action A.1 entry and there is no change in equipment operability status. 'E' EDG is unavailable for substitution. Identify TS required actions				

Examinee **«LastName», «FirstName»**

Step	Action	Standard	Eval	Comments
*7	**Identifies** TS 3.0.3 entry	Determines Condition I Action I.1 is applicable and LCO entry 3.0.3 is required. For Two Core Spray subsystems inoperable TS 3.0.3 Identifies that actions need to be initiated within 1 hour to place Unit 1 in Mode 4 within 37 hours.		
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?				

RO EXAMINEE

TASK CONDITIONS

Unit 1 is at 100% power.

SO-151-A02, Quarterly Core Spray Flow Verification Division 1, was performed and is ready for review.

INITIATING CUE

Review the completed surveillance testing data for SO-151-A02 in Attachment A and document findings below.

RO EVALUATOR

TASK CONDITIONS

Unit 1 is at 100% power.

SO-151-A02, Quarterly Core Spray Flow Verification Division 1, was performed and is ready for review.

INITIATING CUE

Review the completed surveillance testing data for SO-151-A02 in Attachment A and document findings below.

SRO EXAMINEE

TASK CONDITIONS

Unit 1 is at 100% power.

SO-151-A02, Quarterly Core Spray Flow Verification Division 1, was performed and is ready for review.

INITIATING CUE

Unit 1 was in a normal electrical line up, then B EDG was taken OOS unplanned due to part 21 issue related to agastat relay. Expected recovery time of B EDG is 8 hours. Review and Complete SO-151-A02, Quarterly Core Spray Flow Verification Division 1, Attachment A, to a point where all required actions have been identified. Document all required actions below on the cue sheet.

SRO EVALUATOR

TASK CONDITIONS

Unit 1 is at 100% power.

SO-151-A02, Quarterly Core Spray Flow Verification Division 1, was performed and is ready for review.

INITIATING CUE

Unit 1 was in a normal electrical line up, then B EDG was taken OOS unplanned due to part 21 issue related to agastat relay. Expected recovery time of B EDG is 8 hours. Review and Complete SO-151-A02, Quarterly Core Spray Flow Verification Division 1, Attachment A, to a point where all required actions have been identified. Document all required actions below on the cue sheet.

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		
G.v.	1.	Task description and number, JPM description and number are identified.
G.v.	2.	Knowledge and Abilities (K/A) references are included.
G.v.	3.	Performance location specified. (in-plant, control room, or simulator)
G.v.	4.	Initial setup conditions are identified.
G.v.	5.	Initiating and terminating cues are properly identified.
G.v.	6.	Task standards identified and verified by SME review.
G.v.	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
G.v.	8.	Verify cues both verbal and visual are free of conflict.
G.v.	9.	Ensure performance time is accurate.
G.v.	10.	Verify the JPM reflects the most current revision of the procedure.

Procedure SO-151-A02 Rev 24

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.

JPM ASSEMBLY INSTRUCTIONS

Seq	Item	Copier Program	Binding
1.	Examinee cue sheet	cue	loose
2.	Surveillance Authorization form marked up	exam	loose
3.	SO-151-A02 (marked-up through step 5.2 and Att. A marked-up through step 12)	exam	staple
4.	Evaluator cue sheet	cue	loose
5.	JPM	jpm	loose

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JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Determine NRC Notification Requirements**

S/RO	00.AD.1032.001	3	08/05/2014	Classroom
Applicability	JPM Number	Revision	Date	Setting

G	2.1.18	3.8	N	N
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared		Validated	
Greg van den Berg	**4/24/2015**	**Greg van den Berg**	**06/02/2015**
Author	Date	Instructor	Date
Review		Approval	
Manu Sivaraman	**06/05/2015**	**Durand Adams**	**06/03/2015**
Operations Management	Date	Nuclear Training Supervisor	Date

20
Validation Time (min)

Examinee Name: **«LastName», «FirstName» («Docket_»)** (Last, First MI) **«Employee»** (Employee Number)

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ (Name) _____ (Signature)

Comments

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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	Added additional options to the key for 1 hour reportability of a declaration of an emergency

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-0720, Station Report Matrix and Reportability Evaluation Guide (Revision 26)

B. NUREG 1022, Event Reporting Guidelines 10CFR50.72 and 50.73 (Revision3)

C. EP-RM-004, EAL Classification Bases (Revision 4)

3. TASK CONDITIONS

Both Units were operating at 100 percent power with no equipment out of service.

A primary coolant leak developed in the Unit 1 Drywell.

Operators inserted a manual reactor scram.

All control rods inserted.

Reactor water level reached a low of -32" before recovering to the normal band.

RCIC auto-started and performed as designed.

Drywell pressure is now 0.85 psig up slow.

Drywell floor drain in-leakage is 60 gpm up slow.

4. INITIATING CUE

Determine the applicable 10 CFR 50.72 reportability requirements, the reason that they apply, and the associated time limitations for reporting under that category. Record your findings on the sheet provided

5. TASK STANDARD

Determine 10 CFR 50.72 reportability requirements (see answer key)

Examinee **«LastName», «FirstName»**

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 can be performed in the classroom or simulator. • Ensure the following references are available if requested: NDAP-QA-0720, NUREG 1022, and EP-RM-004.				
EVALUATOR CUE Record JPM start time: _____				
1	**Identifies** governing procedure and obtain controlled copy.	Obtain a controlled copy of applicable procedures and/or regulations, which may include: • NDAP-QA-0720. • NUREG 1022. • 10CFR50.72. • EAL Matrix. .		
2*	Locate and identify applicability of 10 CFR 50.72(a)(1)(i) May also select: 10 CFR 50.72(a)(3) 10 CFR 50.72(a)(4)	Identifies reportability per 10 CFR 50.72(a)(1)(i) for declaration of emergency May also select: 10 CFR 50.72(a)(3) 10 CFR 50.72(a)(4)		
EVALUATOR NOTE Alert FA1 applies due to potential loss of the RCS barrier as evidenced by unisolable RCS leakage > 50 gpm inside Primary Containment				

Examinee **«LastName», «FirstName»**

Step	Action	Standard	Eval	Comments
3*	Determine required reporting time for 10 CFR 50.72(a)(1)(i). May also select: 10 CFR 50.72(a)(3) 10 CFR 50.72(a)(4)	Identifies report for 10 CFR 50.72(a)(1)(i) is required immediately after notification of the appropriate State or local agencies and not later than one hour after the time of declaration of the emergency. May also select: 10 CFR 50.72(a)(3) 10 CFR 50.72(a)(4)		
4*	Locate and identify applicability of 10 CFR 50.72(b)(2)(iv)(B).	Identifies reportability per 10 CFR 50.72(b)(2)(iv)(B) for actuation of the Reactor Protection System while the Reactor was critical		
5*	Determine required reporting time for 10 CFR 50.72(b)(2)(iv)(B)	Identifies report for 10 CFR 50.72(b)(2)(iv)(B) is required within four hours		
6*	Locate and identify applicability of 10 CFR 50.72(b)(3)(iv)(A).	Identifies reportability per 10 CFR 50.72(b)(3)(iv)(A) for valid actuation of RCIC and +13" isolation signal		
7*	Determine required reporting time for 10 CFR 50.72(b)(3)(iv)(A)	Identifies report for 10 CFR 50.72(b)(3)(iv)(A) is required within eight hours		

EVALUATOR NOTE

The examinee may identify additional 4 hour and 8 hour reports. The 4 hour report is for making an off-site notification under 10 CFR 50.72(b)(2)(xi) and an 8 hour report under 10 CFR 50.72(b)(3)(ii)(A) for degradation of principle safety barrier (RCS). These reporting criteria are applicable; however, they are bounded by the other notifications. Therefore, they are not included in the grading criteria.

EVALUATOR CUE

Record JPM stop time: _____

EVALUATOR CUE

That completes the JPM.

Examinee **«LastName», «FirstName»**

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

JPM ANSWER KEY

Identify the applicable 10 CFR 50.72 reportability requirements, the reason that they apply, and the associated time limitations for reporting under that category.	
Reportability Requirement and Reason	Time Limit
10 CFR 50.72(a)(1)(i) for declaration of emergency 10 CFR 50.72(a)(3) 10 CFR 50.72(a)(4)	Immediately after notification of the appropriate State or local agencies and not later than one hour after the time of declaration of the emergency.
10 CFR 50.72(b)(2)(iv)(B) for valid Reactor Protection System (RPS) actuation while the Reactor is critical	Within 4 hours
10 CFR 50.72(b)(3)(iv)(A) for valid actuation of RCIC and +13" isolation signal **EVALUATOR NOTE** May alternately refer to 10CFR 50.72(b)(3)(iv)(B)(2 & 5) for these reportability requirements.	Within 8 hours
EVALUATOR NOTE The examinee may identify an additional 4 hour and 8 hour report. The additional 4 hour report is for making an off-site notification under 10 CFR 50.72(b) (2)(xi) and the additional 8 hour report under 10 CFR 50.72(b)(3)(ii)(A) is for degradation of principle safety barrier (RCS). These reporting criteria are applicable; however, they are bounded by the other notifications. Therefore, they are not included in the grading criteria.	

EXAMINEE

TASK CONDITIONS

Both Units were operating at 100 percent power with no equipment out of service.

A primary coolant leak developed in the Unit 1 Drywell.

Operators inserted a manual reactor scram.

All control rods inserted.

Reactor water level reached a low of -32" before recovering to the normal band.

RCIC auto-started and performed as designed.

Drywell pressure is now 0.85 psig up slow.

Drywell floor drain in-leakage is 60 gpm up slow.

INITIATING CUE

Determine the applicable 10 CFR 50.72 reportability requirements, the reason that they apply, and the associated time limitations for reporting under that category. Record your findings on the sheet provided

JPM Answer Sheet for Examinee Use

Identify the applicable 10 CFR 50.72 reportability requirements, the reason that they apply, and the associated time limitations for reporting under that category	
Reportability Requirement and Reason	Time Limit

EVALUATOR

TASK CONDITIONS

Both Units were operating at 100 percent power with no equipment out of service.

A primary coolant leak developed in the Unit 1 Drywell.

Operators inserted a manual reactor scram.

All control rods inserted.

Reactor water level reached a low of -32" before recovering to the normal band.

RCIC auto-started and performed as designed.

Drywell pressure is now 0.85 psig up slow.

Drywell floor drain in-leakage is 60 gpm up slow.

INITIATING CUE

Determine the applicable 10 CFR 50.72 reportability requirements, the reason that they apply, and the associated time limitations for reporting under that category. Record your findings on the sheet provided

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	
G.v.	1. Task description and number, JPM description and number are identified.
G.v.	2. Knowledge and Abilities (K/A) references are included.
G.v.	3. Performance location specified. (in-plant, control room, or simulator)
G.v.	4. Initial setup conditions are identified.
G.v.	5. Initiating and terminating cues are properly identified.
G.v.	6. Task standards identified and verified by SME review.
G.v.	7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
G.v.	
G.v.	8. Verify cues both verbal and visual are free of conflict.
G.v.	9. Ensure performance time is accurate.
G.v.	10. Verify the JPM reflects the most current revision of the procedure.

Procedure	NDAP-QA-0720	Rev	26
Procedure	NUREG 1022	Rev	3
Procedure	EP-RM-004	Rev	4

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.

JPM ASSEMBLY INSTRUCTIONS

Seq	Item	Copier Program	Binding
1.	Examinee cue sheet	cue	loose
2.	JPM Answer Sheet	exam	staple
3.	Evaluator cue sheet	cue	loose
4.	JPM	jpm	loose

SUSQUEHANNA NUCLEAR, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Respond to Control Rod Drift In During Performance of Rod Exercise Test**

S/RO	**55.ON.1998.151**	**2**	**04/28/2015**	**Simulator**
Applicability	JPM Number	Revision	Date	Setting

201003	**A2.03**	**3.4/3.7**	**Y**	**N**
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared		Validated	
Greg van den Berg	**04/28/2015**	**Richard Bolduc**	**03/10/2015**
Author	Date	Instructor	Date

Review		Approval	
Manu Sivaraman	**06/05/2015**	**Greg van den Berg**	**06/03/2015**
Operations Management	Date	Nuclear Training Supervisor	Date

25
Validation Time (min)

Examinee Name: **«LastName», «FirstName» («Docket_»)** (Last, First MI) **«Employee»** (Employee Number)

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ (Name) _____ (Signature)

Comments

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JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM
1	Revise for TQ procedures, minor editorial corrections
2	Revision required for updating JPM with new Off Normal (ON) procedures. Revised power level to 100% to accommodate JPM pairing.

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 (Revision 8)
B. OP-156-001, Reactor Manual Control System (RMCS) (Revision21)
C. ON-CRD-101, Control Rod Malfunction (Revision 0)
D. AR-104-001 (H05), RPS DIV 2 1C651 (Revision 38)

3. TASK CONDITIONS

Unit 1 is at 100% power.

All systems are in service in accordance with their respective OP.

All control rods are operable and have normal withdraw speeds. There are no control rods listed on the Problem Control Rod list.

SO-156-010 has been completed through Step 5.1.

4. INITIATING CUE

Perform Monthly Control Rod exercising for all withdrawn control rods, per SO-156-010.

5. TASK STANDARD

Operator performs Monthly Control Rod exercising for control rods 02-19 and 02-23 per SO-156-010. Inserts control rod 02-27 to position 00 when control rod drifts in, IAW ON-CRD-101, Condition D

SIMULATOR SETUP INSTRUCTIONS

1. **Reset** the simulator to any rated-power IC.
2. **Run** scenario file EVAL55ON1998151.SCN

```
aet ETEVAL55ON1998151
aet ETEVAL55ON1998151A
scn exam¥EVAL55ON1998151-MP
```

EVAL55ON1998151-MP.SCN

```
insmp lssblpos(71)
changemp lssblpos(71) ,,,CONTROL ROD 02-27 POS
insmp diHSC12S3.CurrValue
changemp diHSC12S3.CurrValue ,,bool,SWITCH:DISPLAY RODS DRIFTING
insmp diHSC121S08.CurrValue
changemp diHSC121S08.CurrValue ,,bool,SWITCH:ROD DRIFT RESET
```

ETEVAL55ON1998151.et/scn

```
lssblpos(71) <= 46
IMF mfRD1550040227 f:3
```

ETEVAL55ON1998151A.et/scn

```
;delete drift
lssblpos(71) <= 10
DMF mfRD1550040227
```

SIMULATOR SETUP INSTRUCTIONS FOR LOC 27 NRC EXAM

3. **Reset** the simulator to IC 392.
4. **Verify** ETs and Commands per the above

Examinee **«LastName», «FirstName»**

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-392, or configure the simulator per the Simulator Setup Instructions. • Mark-up a copy of SO-156-010 complete through Step 5.1.				
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.		
EVALUATOR NOTE Applicant may perform continuous withdraw from position 46.				
*2	**Selects** control rod 02–19.	Performs the following using OP-156-001, RMCS: • *Selects rod by depressing the 02 and 19 CONTROL ROD SELECTION PBs • Observes 02 and 19 CONTROL ROD SELECTION PBs illuminated • Observes FULL CORE DISPLAY for control rod 02–19 illuminated GREEN • Present position of 02-19 INDICATED on FOUR ROD DISPLAY on CRT and Standby Information Panel 1C652.		

Step	Action	Standard	Eval	Comments
*3	**Inserts** control rod 02–19 to position 46.	Performs the following: • * Momentarily Depress INSERT ROD pb until the rod insert light illuminates • ROD INSERT light ILLUMINATES THEN EXTINGUISHES • Insert drive flow of approx. 4-5 gpm during control rod insertion on CRT FOUR ROD DISPLAY • ROD SETLG light ILLUMINATED THEN EXTINGUISHES at end of cycle • Observe at FOUR ROD DISPLAY control rod 02-19 inserts one notch from previous position AND position indicated is an even number.		
*4	**Withdraws** control rod 02–19 to position 48.	Performs the following: • *Momentarily depresses W/DRAW ROD PB until the ROD INSERT light illuminates • ROD INSERT light MOMENTARILY ILLUMINATED • ROD W/DRAWG light ILLUMINATED THEN EXTINGUISHED • Withdrawal drive flow of approx. 2-3 gpm during control rod withdrawal on CRT FOUR ROD DISPLAY • ROD SETLG light ILLUMINATED THEN EXTINGUISHED at end of cycle • Observe at FOUR ROD DISPLAY control rod 02-19 withdraws one notch from previous position AND position indicated is an even number		

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 PPC and SIP 1C652 FOUR ROD DISPLAY indicate control rod 02-19 position 48 • RECORD Drive Water Flow indication in Rod Withdrawal Stall Flow column Attachment A, Data Form • VERIFY rod remains coupled • *Releases W/DRAW ROD and CONT W/DRAW ROD PBs • Observes ROD SETLG light lit, then extinguished • CIRCLE SAT/UNSAT in Rod Coupling Check column Attachment A, Data Form • *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 test button. • VERIFY FULL OUT red indicator ILLUMINATED • OBSERVE control rod 02-19 has returned to position indicated in Rod Position column ATTACHMENT A, Data Sheet		

Step	Action	Standard	Eval	Comments
7	**Documents** completion of test for control rod 02-19.	Performs the following: • RECORD completion of insertion capability check by circling SAT/UNSAT in Operability Check column on Attachment A, Data Form • DOCUMENT completion of specified actions on correct control rod by Initialing in the PERFORMED column on Attachment A, Data Form.		
EVALUATOR CUE Initial Verify for control rod 02-19 on Attachment A.				
*8	**Selects** control rod 02–23.	Performs the following using OP-156-001, RMCS: • *Selects rod by depressing the 02 and 23 CONTROL ROD SELECTION PBs • Observes 02 and 23 CONTROL ROD SELECTION PBs illuminated • Observes FULL CORE DISPLAY for control rod 02–23 illuminated GREEN • Present position of 02-23 INDICATED on FOUR ROD DISPLAY on CRT and Standby Information Panel 1C652.		

Step	Action	Standard	Eval	Comments
*9	**Inserts** control rod 02–23 to position 46.	Performs the following: • * Momentarily Depress INSERT ROD pb until the rod insert light illuminates • ROD INSERT light ILLUMINATES THEN EXTINGUISHES • Insert drive flow of approx. 4-5 gpm during control rod insertion on CRT FOUR ROD DISPLAY • ROD SETLG light ILLUMINATED THEN EXTINGUISHES at end of cycle • Observe at FOUR ROD DISPLAY control rod 02-23 inserts one notch from previous position AND position indicated is an even number.		
*10	**Withdraws** control rod 02–23 to position 48.	Performs the following: • *Momentarily depresses W/DRAW ROD PB until the ROD INSERT light illuminates • ROD INSERT light MOMENTARILY ILLUMINATED • ROD W/DRAWG light ILLUMINATED THEN EXTINGUISHED • Withdrawal drive flow of approx. 2-3 gpm during control rod withdrawal on CRT FOUR ROD DISPLAY • ROD SETLG light ILLUMINATED THEN EXTINGUISHED at end of cycle • Observe at FOUR ROD DISPLAY control rod 02-23 withdraws one notch from previous position AND position indicated is an even number		

Step	Action	Standard	Eval	Comments
*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 PPC and SIP 1C652 FOUR ROD DISPLAY indicate control rod 02-23 position 48 • RECORD Drive Water Flow indication in Rod Withdrawal Stall Flow column Attachment A, Data Form • VERIFY rod remains coupled • *Releases W/DRAW ROD and CONT W/DRAW ROD PBs • Observes ROD SETLG light lit, then extinguished • CIRCLE SAT/UNSAT in Rod Coupling Check column Attachment A, Data Form • *Circles Rod Coupling Check SAT for control rod 02–23 on Attachment A		
12	**Verifies** control rod 02–23 at position 48.	Performs the following: • Depresses DISPLAY RODS FULL–IN FULL–OUT test button. • VERIFY FULL OUT red indicator ILLUMINATED • OBSERVE control rod 02-23 has returned to position indicated in Rod Position column ATTACHMENT A, Data Sheet		

Step	Action	Standard	Eval	Comments
13	**Documents** completion of test for control rod 02-23.	Performs the following: • RECORD completion of insertion capability check by circling SAT/UNSAT in Operability Check column on Attachment A, Data Form • DOCUMENT completion of specified actions on correct control rod by Initialing in the PERFORMED column on Attachment A, Data Form.		
EVALUATOR CUE Initial Verify for control rod 02-23 on Attachment A.				
*14	**Selects** control rod 02–27.	Performs the following using OP-156-001, RMCS: • *Selects rod by depressing the 02 and 27 CONTROL ROD SELECTION PBs • Observes 02 and 27 CONTROL ROD SELECTION PBs illuminated • Observes FULL CORE DISPLAY for control rod 02–27 illuminated GREEN • Present position of 02-27 INDICATED on FOUR ROD DISPLAY on CRT and Standby Information Panel 1C652.		

Examinee **«LastName», «FirstName»**

Step	Action	Standard	Eval	Comments
FAULT STATEMENT **CONTROL ROD 02–27 WILL DRIFT TO POSITION 10 DURING PERFORMANCE OF THE FOLLOWING STEP**				
BOOTH OPERATOR CUE • Ensure Event Trigger ET55ON1998151 fires when control rod 02–27 is at position 46 to drift the control rod in. • Ensure Event Trigger ET55ON1998151A fires when control rod 02–27 is at position 10 to delete the drift malfunction.				
*15	**Inserts** control rod 02–27.	Performs the following: • * Momentarily Depress INSERT ROD pb until the rod insert light illuminates • ROD INSERT light ILLUMINATES THEN EXTINGUISHES • Insert drive flow of approx. 4-5 gpm during control rod insertion on CRT FOUR ROD DISPLAY • Observes AR–104–H05 in alarm • Notifies Unit Supervisor control rod 02-27 is drifting in • Observes control rod 02–27 stop at position 10		
EVALUATOR CUE Respond per procedure.				

Step	Action	Standard	Eval	Comments
16	**Identifies** ON–CRD-101, Control Rod Malfunction is the governing procedure and obtains controlled copy.	Controlled copy of ON–CRD-101 obtained, selects Condition D to perform.		
EVALUATOR CUE Unit Supervisor concurs with entry into ON–CRD-101.				
17	**Checks** for control rod drifts.	Performs the following: • Depresses the DISPLAY RODS DFTING PB • Observes FULL CORE DISPLAY for control rod 02–27 illuminated RED • Releases DISPLAY RODS DFTING PB		
18	**Checks** for scram valves open.	Performs the following: • Depresses the DISPLAY SCRAM VALVES OPEN PB • Observes FULL CORE DISPLAY for any open scram valves • Releases DISPLAY SCRAM VALVES OPEN PB		
19	**Determines** control rod 02–27 position.	SELECT drifted Control Rod to determine position. Control Rod 02-27 is at position 10.		
20	**Resets** control rod drift alarm.	Performs the following: • Depresses the ROD DRIFT RESET PB • Observes AR–104–H05 clears		
21	**Ensures** cooling water ΔP and flow normal.	Performs the following: • Observes FC-C12-1R600, indicates ~63 gpm Cooling Water Flow. • Observes PV-146-F003, indicates < 50 psid Cooling Water delta P.		

Examinee **«LastName», «FirstName»**

Step	Action	Standard	Eval	Comments
*22	**Inserts** control rod to position 00.	Performs the following: • * Depress and Hold INSERT ROD pushbutton • Observes ROD INSERT light ILLUMINATES • Observes insert drive flow of approx. 4-5 gpm during control rod insertion on CRT FOUR ROD DISPLAY • Observes changing rod position indicated on FOUR ROD DISPLAY on CRT and Standby Information Panel 1C652 for 02-27. • Releases ROD INSERT PB • Observes ROD INSERT light EXTINGUISHES • Observes ROD SETLG light ILLUMINATES THEN EXTINGUISHES at end of insert cycle. • Observe control rod 02-27 position on FOUR ROD DISPLAY at desired notch position 00 AND position indicated is an even number		
23	**Hydraulically disarms** 02-27 HCU.	Directs NPO to hydraulically disarm control rod HCU 02-27 per OP-155-001.		

EVALUATOR CUE
Record JPM stop time: _____

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 at 100% power.

All systems are in service in accordance with their respective OP.

All control rods are operable and have normal withdraw speeds. There are no control rods listed on the Problem Control Rod list.

SO-156-010 has been completed through Step 5.1.

INITIATING CUE

Perform Monthly Control Rod exercising for all withdrawn control rods, per SO-156-010.

EVALUATOR

TASK CONDITIONS

Unit 1 is at 100% power.

All systems are in service in accordance with their respective OP.

All control rods are operable and have normal withdraw speeds. There are no control rods listed on the Problem Control Rod list.

SO-156-010 has been completed through Step 5.1.

INITIATING CUE

Perform Monthly Control Rod exercising for all withdrawn control rods, per SO-156-010.

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	
G.v.	1. Task description and number, JPM description and number are identified.
G.v.	2. Knowledge and Abilities (K/A) references are included.
G.v.	3. Performance location specified. (in-plant, control room, or simulator)
G.v.	4. Initial setup conditions are identified.
G.v.	5. Initiating and terminating cues are properly identified.
G.v.	6. Task standards identified and verified by SME review.
G.v.	7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
G.v.	8. Verify cues both verbal and visual are free of conflict.
G.v.	9. Ensure performance time is accurate.
G.v.	10. Verify the JPM reflects the most current revision of the procedure.

Procedure	SO-156-010	Rev	8
Procedure	OP-156-001	Rev	21
Procedure	ON-CRD-101	Rev	0

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.

JPM ASSEMBLY INSTRUCTIONS

Seq	Item	Copier Program	Binding
1.	Examinee cue sheet	cue	loose
2.	SO-156-010 marked-up through step 5.1	exam	staple
3.	Evaluator cue sheet	cue	loose
4.	JPM	jpm	loose

SUSQUEHANNA NUCLEAR, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Quick Recovery of the Condensate System, Respond to a Loss of TBCCW**

S/RO	**44.OP.4652.151**	**0**	**06/20/2015**	**Simulator**
Applicability	JPM Number	Revision	Date	Setting

256000	**A2.12**	**3.1/3.1**	**Y**	**N**
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared		Validated	
Greg van den Berg	**06/19/2015**	**Richard Bolduc**	**06/20/2015**
Author	Date	Instructor	Date

Review		Approval	
Manu Sivaraman	**08/09/2015**	**Greg van den Berg**	**06/25/2015**
Operations Management	Date	Nuclear Training Supervisor	Date

25
Validation Time (min)

Examinee Name: **«LastName», «FirstName» («Docket_»)** (Last, First MI) **«Employee»** (Employee Number)

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ (Name) _____ (Signature)

Comments

TEAM SUSQUEHANNA Generating 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-300, 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-144-001 Attach A, Condensate and Feedwater System (Revision 59)

3. TASK CONDITIONS

Unit 1 has scrammed from rated power.

All 4 Condensate Pumps are tripped, but are available for starting.

RPV pressure has been between 700-800 psig for 1 hour.

4. INITIATING CUE

Perform a quick recovery of the condensate system by placing Condensate Pump 'A' in service in accordance with OP-144-001, section 2.22 OR Attachment A

5. TASK STANDARD

Condensate Pump 'A' is started and available to inject into the RPV with the Recirc Flow controller in AUTO and pump is tripped within 1 minute of exceeding 265°F for any condensate pump bearing temperature. (May be tripped prior to exceeding 265°F once it is determined that TBCCW flow cannot be restored)

SIMULATOR SETUP INSTRUCTIONS

1. Reset the simulator to JPM Specific IC 391. If IC 391 is not available, prepare an IC as follows:

   a. **Reset** the simulator to any low power IC
      - **Scram** the reactor and take actions.
      - **Trip** all condensate and RFPs

2. Run scenario file **LOC27 JPM B.SCN** or insert the following expert commands:

   {Key[1]} IMF cmfPM02_1P103A
   {Key[1]} IMF cmfPM02_1P103B
   {Key[2]} IMF cmfTH02_TE10511A5 r:00:05:00 f:286
   {Key[2]} IMF cmfTH02_TE10511A4 r:00:05:00 f:289

Examinee **«LastName», «FirstName»**

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-391, 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 of OP-144-001.	Obtains controlled copy of OP-144-001 and performs section 2.22 or Attachment A (Hard Card).		
EVALUATOR NOTE Operator may choose to use the governing procedure section 2.22 or the procedure Hard Card, Att A.				
2	**Prevent** uncontrolled Condensate injection	Ensures the Feedwater injection valves (603A,B,C) are closed and the FW LO Load Demand Signal to LV-10641 controller LIC-C32-1R602 is in Manual with a controller output of 0%.		

Step	Action	Standard	Eval	Comments
*3	**Start** Condensate Pump A	• Check OPEN HV-10501A, COND PP A Suct. • *Ensure the Condensate Recirc Flow controller FIC-10508 is in MANUAL, with controller output of 30%. • *Depress the Condensate Pump 'A' START pushbutton. • Observe Cond PP A Vent HV-10560A OPENS immediately upon starting Condensate Pump A • Observe COND PP A Dsch HV-10502A STARTS OPENING within five (5) seconds after Condensate Pump A starts.		
4	Adjust Condensate Recirc Flow	Adjust Condensate Recirc Flow controller FIC-10508 to obtain: • >2,200 gpm of Total Condensate System Flow as indicated on FIC-10508 controller. • <700 psig Condensate Pump Discharge pressure as indicated on FIC-10508 (PT-10514).		
5	Check Condensate Pump motor current	Ensure Condensate Pump A motor current on Computer Point CPI 10 does not exceed 143 amps (PPC FORMAY CNDPP).		

Step	Action	Standard	Eval	Comments
*6	Place Condensate Recirc flow controller in Auto	Place Condensate Recirc Flow controller FIC-10508 in AUTO and ENSURE the controller is maintaining: • >2,200 gpm of Total Condensate System Flow as indicated on FIC-10508 controller. • <700 psig Condensate Pump Discharge Pressure as indicated on FIC-10508 controller (PT-10514)		
FAULT STATEMENT **BOTH TBCCW PUMPS TRIP RESULTING IN A TOTAL LOSS OF TBCCW FLOW**				
BOOTH OPERATOR CUE When directed, **depress KEY 1** to cause a trip of both TBCCW pumps.				
7	**Review** AR-123-01	Reviews AR-123-01 for displayed alarms and enters ON-TBCCW-101		
EVALUATOR CUE State "Carry out actions for ON-TBCCW-101"				
EVALUATOR NOTE Operator will also be acknowledging other alarms on the same panel due the loss of TBCCW .				
EVALUATOR NOTE The Operator should enter ON-TBCCW-101 section A from AR-123-01 .				
8	**Verifies** TBCCW pump status	• Ensures standby TBCCW pump is running (it is tripped) • Checks the TBCCW supply breakers • Verifies no pumps running • Continues to Condition E		NPO will be dispatched to check supply breakers.
EVALUATOR CUE When requested to check the TBCCW pump supply breakers, state, "TBCCW pump supply breakers 1B1160-24 and 1B1260-51 are closed and thermal overloads are tripped."				

EVALUATOR NOTE
Once the operator is monitoring condensate pump bearing, if desired, direct the booth operator to activate KEY 2 to ramp two bearing temperatures which causes exceeding 265°F within 3 minutes.

BOOTH OPERATOR CUE
If directed, **depress KEY 2** to cause a trip of both TBCCW pumps to ramp two bearing temperatures which causes exceeding 265°F within 3 minutes.

EVALUATOR CUE
Once the operator has observed rising Condensate Pump 'A' temperatures on the PPC , state, "Your responsibility is limited to operation of Condensate Pump 'A' , another operator will monitor Instrument Air, CRD and EHC".

9	**Perform** ON-RPR-101	N/A		
10	**Recognizes** Critical Condition and action for condensate pump bearing temperatures	Recognizes critical condition requires tripping condensate pump if bearing temperature ≥ 265°F		
11	**Monitor** Condensate Pump 'A' bearing temperatures.	Monitors PPC Page CNDPP and observes Condensate Pump 'A' bearing temperatures are rising.		
*12	**Remove** Condensate Pump 'A' from service	Secures Condensate Pump 'A' by depressing the stop pushbutton within 1 minute of exceeding 265°F for any condensate pump bearing temperature.		

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

Unit 1 has scrammed from rated power.

All 3 Reactor Feed Pumps have tripped.

RPV pressure has been between 700-800 psig for 1 hour.

INITIATING CUE

Perform a quick recovery of the condensate system by placing Condensate Pump 'A' in service in accordance with OP-144-001, section 2.22 OR Attachment A

EVALUATOR

TASK CONDITIONS

Unit 1 has scrammed from rated power.

All 3 Reactor Feed Pumps have tripped.

RPV pressure has been between 700-800 psig for 1 hour.

INITIATING CUE

Perform a quick recovery of the condensate system by placing Condensate Pump 'A' in service in accordance with OP-144-001, section 2.22 OR Attachment A

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		
G.v.	1.	Task description and number, JPM description and number are identified.
G.v.	2.	Knowledge and Abilities (K/A) references are included.
G.v.	3.	Performance location specified. (in-plant, control room, or simulator)
G.v.	4.	Initial setup conditions are identified.
G.v.	5.	Initiating and terminating cues are properly identified.
G.v.	6.	Task standards identified and verified by SME review.
G.v.	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
G.v.	8.	Verify cues both verbal and visual are free of conflict.
G.v.	9.	Ensure performance time is accurate.
G.v.	10.	Verify the JPM reflects the most current revision of the procedure.

Procedure OP-144-001 Rev 59

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.

JPM ASSEMBLY INSTRUCTIONS

Seq	Item	Copier Program	Binding
1.	Examinee cue sheet	cue	loose
2.	Evaluator cue sheet	cue	loose
3.	JPM	jpm	loose
4.	OP-144-001 (replacement)	sim	PC

SUSQUEHANNA NUCLEAR, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Quarterly Turbine Valve Cycling**

S/RO	**93.SO.2467.101**	**0**	**04/23/2015**	**Simulator**
Applicability	JPM Number	Revision	Date	Setting

241000	**A4.08**	**3.5/3.4**	**N**	**N**
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

Greg van den Berg	**04/23/2015**
Author	Date

Validated

Richard Bolduc	**03/10/2015**
Instructor	Date

Review

Manu Sivaraman	**06/05/2015**
Operations Management	Date

Approval

Greg van den Berg	**06/03/2015**
Nuclear Training Supervisor	Date

20
Validation Time (min)

Examinee Name: **«LastName», «FirstName» («Docket_»)** (Last, First MI) **«Employee»** (Employee Number)

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ (Name) _____ (Signature)

Comments

TEAM SUSQUEHANNA Generating 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. SO-193-001, Quarterly Turbine Valve Cycling (Revision 40)

B. AR-105-001 (F05) (Revision 53)

C. AR-104-001 (E01) (Revision 38)

3. TASK CONDITIONS

Quarterly turbine testing is in progress per SO-193-001. The test is complete through Step 5.3.

A separate PCO has been briefed and will be monitoring turbine vibrations throughout the test.

Reactor Engineering has evaluated the current power level; ops will not violate any core thermal limits while performing this test.

4. INITIATING CUE

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

5. TASK STANDARD

Completes quarterly turbine valve cycling for CV-4 per SO-193-001.

SIMULATOR SETUP INSTRUCTIONS

1. Reset the Simulator to an IC at 63% power or less with the turbine on line.
   A. **Run** scenario file **JPM C.scn** or insert the following expert commands:
      {Key[2]} IRF rfTU193004 f:BYPASS
      IRF rfRP158039 f:BYPASS
      IRF rfRP158040 f:BYPASS
      IRF rfRP158041 f:BYPASS
      IRF rfRP158042 f:BYPASS
2. Ensure MAXIMUM COMBINED FLOW LIMIT vernier set at 12.5 turns (125%)
3. Ensure LOAD LIMIT SET vernier set at 8.9 turns.
4. Setup RTIME screens for Turbine Testing.
5. Provide marked up copy of SO-193-00 completed **through** step 5.3

SIMULATOR SETUP INSTRUCTIONS FOR LOC 27 NRC EXAM

1. **Reset** the simulator to IC 390.
2. **Verify** ETs and Commands per the above

Examinee **«LastName», «FirstName»**

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 SO-193-001 complete **through** Step 5.3.				
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 SO-193-001, and starts at section 5.4.		
2	**Ensure** Reactor power established for surveillance.	References Core Reactivity Control Book and determine reactor power is within the allowed window for performing the surveillance.		
3	**Record** reactor power level	Records reactor power level		
4	**Ensure** MAXIMUM COMBINED FLOW LIMIT vernier set at 12.5 turns (125%)	Perform the following: • Ensure MAXIMUM COMBINED FLOW LIMIT vernier set at 12.5 turns (125%) • Record value of LOAD SET • Record value of LOAD LIMIT SET vernier		
EVALUATOR NOTE LOAD LIMIT SET should be verified to 8.9 turns, as this was already performed earlier in the procedure, but will adjust LOAD SET to maximum value as specified in the standard, which meets the intent of the critical step.				
EVALUATOR NOTE The following step is not critical if the test is performed at power levels <85%.				

Step	Action	Standard	Eval	Comments
*5	**Raise** LOAD SET to maximum value (1400 MW)	Perform the following: • Verifies LOAD LIMIT SET vernier to 8.9 TURNS • * Raise LOAD SET to maximum value (1400 MW) to allow Control Valves to cycle open and limit BYPASS VALVE opening		
6	**Bypass** Main Turbine vibration trips	Perform the following: • Dispatches NPO to Panel 1C6100A, Place HS-11982 to BYPASS • Confirm Annunciator AR105, F05 MAIN TURB VIB OR RFPT VIB/THRUST TRIP BYPASS ALARMS		
BOOTH OPERATOR CUE When requested, bypass turbine vibration trips by **depressing Key 2**. {Key[2]} IRF rfTU193004 f:BYPASS				
EVALUATOR CUE Turbine vibration trips are bypassed.				
EVALUATOR NOTE **IF** any bearing on the Main Turbine exceeds 10 mils, the Test Pushbutton should be released immediately. Candidate may request Attachments B and/or D while performing this portion of the surveillance.				
7	**Observe** PPC points during valve testing	N/A; to be performed by another operator		
8	**IF** the "1XAMPL" value for Bearing 1X, 1Y, 2X or 2Y exceed 6.0 mils during the CV testing portion of the surveillance, **THEN** contact System Engineering	N/A; to be performed by another operator		
*9	**Direct I&C** to install RPS Test Box at 1C611 Relay C72A-K8D IAW att. D part 2 and perform Att B Step1	• RPS Test Box installed and continuity checked.		
EVALUATOR CUE I&C reports test box installed and continuity reading indicates CVTS is **OPEN**				

Examinee **«LastName», «FirstName»**

Step	Action	Standard	Eval	Comments
EVALUATOR NOTE If asked, an NPO is stationed to monitor EHC pump amps.				
10	**Determines/Records** CV-4 pretest position.	Records current CV-4 position		
*11	**Test** Control Valve 4 by depressing and holding the CV-4 TEST pushbutton.	Observe the following: • Confirm CV-4 slow closes then fast closes for the final 10% of travel • Observes annunciator AR104 E01 TURB CV FAST CLOSURE TRIP Alarms		
*12	**Release** CV-4 TEST pushbutton	Observe the following: • Confirms CV-4 returns to pretest position as indicated at CONTROL VLV-4 POSITION indicator • IF half scram condition occurred, Reset half scram condition by placing HS-C72A-1S05 to GRP 1/4, then GRP 2/3; else NA • Confirm annunciator AR104, E01 TURB CV FAST CLOSURE TRIP CLEARS • At 1C601, Confirm four (4) MSIV STATUS LOGIC A through D lights ILLUMINATED		
13	**Direct I&C** to remove RPS Test Box at 1C611 Relay C72A-K8D IAW att. D part 2.	• RPS Test Box removed		
EVALUATOR CUE Record JPM stop time: _____				
EVALUATOR CUE That completes the JPM.				
EVALUATOR NOTE That completes the JPM.				

Examinee **«LastName», «FirstName»**

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

EXAMINEE

TASK CONDITIONS

Quarterly turbine testing is in progress per SO-193-001. The test is complete through Step 5.3.

A separate PCO has been briefed and will be monitoring turbine vibrations throughout the test.

Reactor Engineering has evaluated the current power level; ops will not violate any core thermal limits while performing this test.

INITIATING CUE

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

EVALUATOR

TASK CONDITIONS

Quarterly turbine testing is in progress per SO-193-001. The test is complete through Step 5.3.

A separate PCO has been briefed and will be monitoring turbine vibrations throughout the test.

Reactor Engineering has evaluated the current power level; ops will not violate any core thermal limits while performing this test.

INITIATING CUE

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

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		
G.v.	1.	Task description and number, JPM description and number are identified.
G.v.	2.	Knowledge and Abilities (K/A) references are included.
G.v.	3.	Performance location specified. (in-plant, control room, or simulator)
G.v.	4.	Initial setup conditions are identified.
G.v.	5.	Initiating and terminating cues are properly identified.
G.v.	6.	Task standards identified and verified by SME review.
G.v.	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
G.v.	8.	Verify cues both verbal and visual are free of conflict.
G.v.	9.	Ensure performance time is accurate.
G.v.	10.	Verify the JPM reflects the most current revision of the procedure.

Procedure	SO-193-001	Rev	40
Procedure	AR-105-001	Rev	53
Procedure	AR-104-001	Rev	38

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.

JPM ASSEMBLY INSTRUCTIONS

Seq	Item	Copier Program	Binding
1.	Examinee cue sheet	cue	loose
2.	SO-193-001 (marked-up through step 5.3)	exam	staple
3.	Evaluator cue sheet	cue	loose
4.	JPM	jpm	loose

SUSQUEHANNA NUCLEAR, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Core Spray System Shutdown**

S/RO	**51.OP.1933.101**	**1**	**04/23/2015**	**Simulator**
Applicability	JPM Number	Revision	Date	Setting

209001	**A4.03**	**3.7/3.6**	**N**	**N**
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared		Validated	
Greg van den Berg	**04/20/2015**	**Richard Bolduc**	**03/10/2015**
Author	Date	Instructor	Date
Review		Approval	
Manu Sivaraman	**06/05/2015**	**Greg van den Berg**	**06/03/2015**
Operations Management	Date	Nuclear Training Supervisor	Date

15
Validation Time (min)

Examinee Name: **«LastName», «FirstName» («Docket_»)** **«Employee»**
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ _____
Name Signature

Comments

TEAM SUSQUEHANNA Generating Excellence

JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM
1	Revise for TQ procedure JPM format.

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

The plant is operating at 100% power
Core Spray Loop B has spuriously initiated
The cause of the spurious initiation has been found and corrected
Misoperation in AUTOMATIC MODE has been confirmed by at least two (2) independent indications
Adequate core cooling is assured by at least two (2) independent indications
Switch Collar Core Spray Loop B MAN INIT HS-E211S16B is NOT ARMED

4. INITIATING CUE

The Unit Supervisor has directed you to shutdown 'B' Core Spray Loop in accordance with OP-151-001, section 2.4.

5. TASK STANDARD

Core Spray system shutdown IAW OP-151-001

SIMULATOR SETUP INSTRUCTIONS

1. **Reset** the simulator to any full power IC.

2. **Initiate** Core Spray loop B. Place the Manual Initiation Pushbutton collar back to disarm once Core Spray B has been initiated.

SIMULATOR SETUP INSTRUCTIONS FOR LOC 27 NRC EXAM

3. **Reset** the simulator to IC 392.
4. **Verify** conditions above.

Examinee **«LastName», «FirstName»**

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-392, 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	Identifies OP-151-001 is the governing procedure.	Obtains copy of OP-151-001, selects section 2.4.		
2	**If** Switch collar was placed in ARMED, place the switch collar in the NOT ARMED position.	Collar not in ARMED per cue sheet		
*2	Resets Core Spray B Initiation signal	Applicant: a. Depresses CORE SPRAY LOOP B INIT SIG RESET HS-E211S17B b. Observe Core Spray Loop B INIT SIG RESET HS-E211S17B Green Initiation light EXTINGUISHES.		
EVALUATOR NOTE Roleplay as Unit Supervisor and acknowledge applicant request to enter TRO 3.8.2.1				
3	Enter TRO 3.8.2.1	Applicant notifies Unit Supervisor of need to enter TRO 3.8.2.1		
*4	Place CORE SPRAY LOOP B MOV OL BYPS HS-E211S12B to TEST position	Applicant acquires key from below bench board, inserts key and turns CORE SPRAY LOOP B MOV OL BYPS HS-E211S12B to TEST position		

Step	Action	Standard	Eval	Comments
EVALUATOR NOTE CORE SPRAY LOOP B OUT OF SERVICE (AR-113-001 B02) and CORE SPRAY LOOP B MOV'S IN TEST (BIS) are expected alarms				
EVALUATOR NOTE Inboard injection valve will be closed due to spurious initiation and low pressure valve permissive signal not active				
5	Close Core Spray Loop B injection valve	Close CORE SPRAY LOOP B IB INJ SHUTOFF HV-152F005B.		
EVALUATOR NOTE Min flow valve will already be open due to spurious initiation				
6	Observes Core Spray Loop B minimum flow	When flow is <635 gpm, Observe CORE SPRAY LOOP B MIN FLOW HV-152F031B OPENS.		
7	Place LO RX PRESS PERM Switch HS-15249B to NORM	Verifies LO RX PRESS PERM Switch HS-15249B in NORM position		
*8	Stop CORE SPRAY PUMP 1P206B	Turns CORE SPRAY PUMP 1P206B control switch to STOP and returns to AUTO.		
*9	Stop CORE SPRAY PUMP 1P206D	Applicant turns CORE SPRAY PUMP 1P206D control switch to STOP and returns to AUTO		

Examinee **«LastName», «FirstName»**

Step	Action	Standard	Eval	Comments
10	Observes following indications:	Observes following indications as applicable: a. CORE SPRAY LOOP B IB INJ SHUTOFF HV-152F005B indicates CLOSED and whiter light EXTINGUISHED b. CORE SPRAY LOOP B ACTUATED alarm CLEARED. c. Core Spray Room Unit Coolers 1V211B and D STOP indicated on Heating and Ventilation Panel 1C681.		
EVALUATOR NOTE Steps 2.4.13 and 2.4.14 are N/A. Not being aligned to the CST or Suppression Pool. • 2.4.13; If Core Spray suction is being aligned to the CST, Return to "Alignment and Operation of Core Spray System for Taking Suction From CST" section. **N/A** • If Core Spray suction is being aligned to the Suppression Pool, Return to " Re-alignment of Core Spray System From Taking Suction From CST" section. **N/A**				
*11	Place CORE SPRAY LOOP B MOV OL BYPS HS-E211S12B to NORM position	After 2 minutes, Place CORE SPRAY LOOP B MOV OL BYPS HS-E211S12B to NORM position.		
12	Clear TRO 3.8.2.1	Applicant notifies Unit Supervisor of need to enter TRO 3.8.2.1		
EVALUATOR NOTE Roleplay as Unit Supervisor and acknowledge applicant request to clear TRO 3.8.2.1				

Examinee **«LastName», «FirstName»**

Step	Action	Standard	Eval	Comments
13	Observe following indications:	Observe following indications: a. CORE SPRAY LOOP B OUT OF SERVICE alarm CLEARS b. CORE SPRAY LOOP B MOV'S IN TEST status light EXTINGUISHED c. No CORE SPRAY STATUS DIV 2 status indication lights ILLUMINATED		
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

The plant is operating at 100% power
Core Spray Loop B has spuriously initiated
The cause of the spurious initiation has been found and corrected
Misoperation in AUTOMATIC MODE has been confirmed by at least two (2) independent indications
Adequate core cooling is assured by at least two (2) independent indications
Switch Collar Core Spray Loop B MAN INIT HS-E211S16B is NOT ARMED

INITIATING CUE

The Unit Supervisor has directed you to shutdown 'B' Core Spray Loop in accordance with OP-151-001, section 2.4.

EVALUATOR

TASK CONDITIONS

The plant is operating at 100% power
Core Spray Loop B has spuriously initiated
The cause of the spurious initiation has been found and corrected
Misoperation in AUTOMATIC MODE has been confirmed by at least two (2) independent indications
Adequate core cooling is assured by at least two (2) independent indications
Switch Collar Core Spray Loop B MAN INIT HS-E211S16B is NOT ARMED

INITIATING CUE

The Unit Supervisor has directed you to shutdown 'B' Core Spray Loop in accordance with OP-151-001, section 2.4.

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		
G.v.	1.	Task description and number, JPM description and number are identified.
G.v.	2.	Knowledge and Abilities (K/A) references are included.
G.v.	3.	Performance location specified. (in-plant, control room, or simulator)
G.v.	4.	Initial setup conditions are identified.
G.v.	5.	Initiating and terminating cues are properly identified.
G.v.	6.	Task standards identified and verified by SME review.
G.v.	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
G.v.	8.	Verify cues both verbal and visual are free of conflict.
G.v.	9.	Ensure performance time is accurate.
G.v.	10.	Verify the JPM reflects the most current revision of the procedure.

Procedure OP-151-001 Rev 36

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.

JPM ASSEMBLY INSTRUCTIONS

Seq	Item	Copier Program	Binding
1.	Examinee cue sheet	cue	loose
2.	Evaluator cue sheet	cue	loose
3.	JPM	jpm	loose
4.	OP-151-001 (replacement)	sim	PC

SUSQUEHANNA NUCLEAR, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Shutdown Cooling Temperature Control**

S/RO	**49.ON.1869.151**	**3**	**04/23/2015**	**Simulator**
Applicability	JPM Number	Revision	Date	Setting

223002	**K1.08**	**3.4/3.5**	**Y**	**N**
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared		Validated	
Greg van den Berg	**04/23/2015**	**Richard Bolduc**	**03/10/2015**
Author	Date	Instructor	Date
Review		Approval	
Manu Sivaraman	**06/05/2015**	**Greg van den Berg**	**06/03/2015**
Operations Management	Date	Nuclear Training Supervisor	Date

25
Validation Time (min)

Examinee Name: **«LastName», «FirstName» («Docket_»)** (Last, First MI) **«Employee»** (Employee Number)

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ (Name) _____ (Signature)

Comments

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JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM
1	Revise for TQ procedures and conversion of NRC JPM template to SSES JPM template
2	Revise for OP/ON revisions
3	Revised to incorporate the new Off Normal (ON) procedures. Updated Simulator set-up page with new IC number and .scn file, Incorporated validation comments.

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-149-002, RHR Shutdown Cooling (Revision 67)

B. ON-SDC-101, Loss of Shutdown Cooling (Revision 1)

C. AOP-149-001, RHR Abnormal Operating Procedure (Revision 0)

3. TASK CONDITIONS

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

Reactor coolant temperature is 170 °F.

Time to 200 °F is approximately 45 minutes.

No core alterations are in progress

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

TRO 3.8.2.1 has been entered for SDC temperature control.

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

4. INITIATING CUE

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

5. TASK STANDARD

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

SIMULATOR SETUP INSTRUCTIONS

1. Reset the simulator to JPM Specific IC 388. If IC 388 is not available, prepare an IC as follows:
   a. **Reset** the simulator to IC 272 'B' Loop of RHR in Shutdown Cooling
      - **Place** the simulator in RUN.
      - **Open** RHR F048B
      - **Adjust** RHR flow to 10,000 gpm and RHRSW flow to 9000 gpm.

   b. **Run** scenario file **LOC27 JPM E SETUP.SCN** to lower ESW temperature. The scenario will take 5 min to complete.

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

   c. **Run** scenario file **LOC27 JPM E.SCN**

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

Examinee **«LastName», «FirstName»**

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	**Identifies** governing procedure and obtain controlled copy.	Obtains controlled copy of OP-149-002 Att. E, SDC Temperature Control.		
2	**Ensure** TRO 3.8.2.1 is entered.	Confirms TRO 3.8.2.1 is entered per initial conditions		
3	**Places** HS-E11-1S62B RHR LOOP B MOV OL BYPS keyswitch to TEST	Place keyswitch to TEST		
EVALUATOR NOTE Due to RHR conditions (F003B and F047B open and RHRSW and RHR at maximum flow), the only option for lowering temperature is to throttle closed F048B)				
*4	**Operates** RHR B to lower reactor coolant temperature	Throttle Closed on HV-151-F048B RHR HX B SHELL SIDE BYPS		
EVALUATOR NOTE Candidate may not place HS-E11-1S62B RHR Loop B MOV OL BYP keyswitch to normal with temperature at 140F.				
5	AFTER 2 minutes, **Place** HS-E11-1S62B RHR LOOP B MOV OL BYPS keyswitch to NORM	AFTER 2 minutes, place keyswitch to NORM		

Examinee **«LastName», «FirstName»**

Step	Action	Standard	Eval	Comments
FAULT STATEMENT **HV-151-F009, SDC SUCTION IB ISOLATION VALVE SPURIOUS CLOSURE OCCURS WHILE LOWERING REACTOR COOLANT TEMPERATURE**				
BOOTH OPERATOR CUE After reactor coolant temperature begins to lower (indicated by RHR HX Inlet temperature) or when directed by the evaluator, **depress Key 1** to initiate spurious isolation of F009 and cause a loss of SDC.				
EVALUATOR NOTE Examinee will investigate isolation of HV-151-F009				
6	Enters and obtains a copy of ON-SDC-101 for Loss of Shutdown Cooling for automatic isolation of HV-151-F009.	Enters ON-SDC-101 based on isolation of HV-151-F009 and loss of SDC flow.		
EVALUATOR CUE If the applicant does not recognize to enter ON-SDC-101, ask, "What procedure will the SRO direct you to enter in this condition?" Then direct Entry for ON-SDC-101.				
EVALUATOR CUE Once the examinee has determined that HV-151-F009 is closed, provide report as the US that "Electrical maintenance has determined that F009 experienced a spurious closure. The cause of the spurious closure has been found and corrected." If the examinee does not recognize that a quick recovery can be performed due to the F009 being closed, as the US direct the examinee to "Restore shutdown cooling in accordance with AOP-149-001 Attachment A."				
7	**Determines** cause for the loss of RHR was due to spurious isolation of HV-151-F009.	Recognizes that Condition B of ON-SDC-101 is applicable to restore RHR LOOP B to shutdown cooling.		

Step	Action	Standard	Eval	Comments
EVALUATOR NOTE Resetting PCIS and SDC is not critical for this JPM since isolation logic was not actuated				
8	**IF** in Mode 4 AND RHR aligned PER OP 149 002 (OPERATION OF SDC IN MODE 4 OR 5 section), THEN PERFORM Attachment E while continuing with the remaining Actions	Attachment E is being performed by another operator		
9	**Perform** SO-100-011	SO-100-011 is being performed by another operator.		
10	**IF** in Mode 4, THEN DETERMINE estimated time to 200°F PER Attachment B.	Attachment B is being performed by another operator		
11	**ESTABLISH** reactor coolant circulation using ONE of the following alternate methods: •**MAINTAIN** water level ≥ 45 inches. [C 2] •**ENSURE** Reactor Recirculation System in service. (OP 164 001)	N/A		
12	**IF** SDC was lost due to Loss of RPS, THEN PERFORM the following:	N/A		
13	**RESTORE** a RHR Pump in the previously in-service loop of RHR to SDC	**IF** conditions permit restoring a RHR Pump in the previously in-service loop of RHR to SDC, **THEN PERFORM** Quick Recovery of Previously Inservice Shutdown Cooling Loop. (AOP-149-001)		
14	**Enter** LCO	Unit Supervisor Enters LCO		
15	**Perform** AOP-149-001, Attachment A	Selects AOP-149-001, RHR Abnormal Operating Procedure, Attachment A for Quick Recovery of Previously In-service Shutdown Cooling Loop.		

Step	Action	Standard	Eval	Comments
16	**Reset** PCIS isolation logic	Performs the following • Depress HS-B21-1S32 MN STM LINE DIV 1 ISO RESET. • Depress HS-B21-1S33 MN STM LINE DIV 2 ISO RESET.		
17	**Reset** SDC isolation logic	• Depress HS-E11-1S32A RHR LOOP A SHUTDOWN CLG RESET. • Depress HS-E11-1S32B RHR LOOP B SHUTDOWN CLG RESET.		
18	**Place** MOV controls in TEST	• Place HS-E11-1S62B, RHR LOOP B MOVS OL BYPS in TEST. • Place HS-B21-1S37A, AC MOV OL BYPS in TEST. • Place HS-B21-1S37B, DC MOV OL BYPS in TEST.		
19	**Verify** valve alignment prepared for SDC restoration.	• Ensure CLOSED HV-151-F015B. • Ensure CLOSED HV-151-F049 RW OB Isolation. • Ensure CLOSED HV-151-F040 RW IB Isolation. • Ensure CLOSED HV-151-F007B RHR PUMPS B&D DISCHARGE MIN FLOW VLV TO SUPP POOL.		
20	**Determines** that loop voiding is not suspected	Marks step 7 N/A		
*21	**Opens** shutdown cooling suction isolation valve F009.	• Ensure Open HV-151-F008 OPEN SHUTDOWN CLG SUCT OB ISO. • Ensure Open HV-151-F009 SHUTDOWN CLG SUCT IB ISO.		
*22	**Lines up** RHR injection valves for pump start.	• Close HV-151-F017B RHR INJ FLOW CTL. • Open HV-151-F015B RHR INJ OB ISO.		

Step	Action	Standard	Eval	Comments
*23	**Starts** an RHR pump	Starts RHR PUMP 1P202B or D.		
*24	**Establishes** approximately 5000 GPM of RHR flow.	Throttle OPEN HV-151-F017B RHR INJ FLOW CTL to promptly establish flow approximately 5,000 gpm.		
EVALUATOR NOTE Candidate may choose **not** to perform the next step to allow for operation of valves for restoring cooling. HV-151-F007B was previously closed for the SDC lineup. The breaker for the valve is open.				
25	**Place** MOV controls in NORM	• Place HS E11 1S62B, RHR LOOP B MOVS OL BYPS in NORM. • Place HS B21 1S37A, AC MOV OL BYPS in NORM. • Place HS B21 1S37B, DC MOV OL BYPS in NORM.		
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, 2 days into an outage.

Reactor coolant temperature is 170 °F.

Time to 200 °F is approximately 45 minutes.

No core alterations are in progress

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

TRO 3.8.2.1 has been entered for SDC temperature control.

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

INITIATING CUE

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

EVALUATOR

TASK CONDITIONS

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

Reactor coolant temperature is 170 °F.

Time to 200 °F is approximately 45 minutes.

No core alterations are in progress

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

TRO 3.8.2.1 has been entered for SDC temperature control.

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

INITIATING CUE

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

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		
G.v.	1.	Task description and number, JPM description and number are identified.
G.v.	2.	Knowledge and Abilities (K/A) references are included.
G.v.	3.	Performance location specified. (in-plant, control room, or simulator)
G.v.	4.	Initial setup conditions are identified.
G.v.	5.	Initiating and terminating cues are properly identified.
G.v.	6.	Task standards identified and verified by SME review.
G.v.	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
G.v.	8.	Verify cues both verbal and visual are free of conflict.
G.v.	9.	Ensure performance time is accurate.
G.v.	10.	Verify the JPM reflects the most current revision of the procedure.

Procedure	ON-SDC-101	Rev	1
Procedure	OP-149-002	Rev	67
Procedure	AOP-149-001	Rev	0

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.

JPM ASSEMBLY INSTRUCTIONS

Seq	Item	Copier Program	Binding
1.	Examinee cue sheet	cue	loose
2.	OP-149-002 Attachment E	exam	staple
3.	Evaluator cue sheet	cue	loose
4.	JPM	jpm	loose
5.	ON-SDC-101 (replacement)	sim	PC
6.	AOP-149-001 (replacement)	sim	PC

SUSQUEHANNA NUCLEAR , LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Swap RBCCW Pumps, Respond to a Loss of RBCCW**

S/RO	**14.OP.1335.150**	**0**	**04/23/2015**	**Simulator**
Applicability	JPM Number	Revision	Date	Setting

295018	**AK3.03**	**3.1/3.3**	**Y**	**N**
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared		Validated	
Greg van den Berg	**04/23/2015**	**Richard Bolduc**	**03/10/2015**
Author	Date	Instructor	Date
Review		Approval	
Manu Sivaraman	**06/05/2015**	**Greg van den Berg**	**06/03/2015**
Operations Management	Date	Nuclear Training Supervisor	Date

25
Validation Time (min)

Examinee Name: **«LastName», «FirstName» («Docket_»)** **«Employee»**
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ _____
Name Signature

Comments

TEAM SUSQUEHANNA Generating 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-114-001, Reactor Building Closed Cooling Water System (Revision 24)

B. ON-RBCCW-101, Loss of Reactor Building Closed Cooling Water (Revision 0)

3. TASK CONDITIONS

Unit 1 has Scrammed

RBCCW Pump 1A is in service.

RBCCW Pump 1B is in standby.

The NPO has reported that the RBCCW Pump 1A is exhibiting signs of high vibrations

4. INITIATING CUE

Place RBCCW Pump 1B in service and secure RBCCW Pump 1A due to high vibrations. In accordance with OP-114-001, section 2.2.

5. TASK STANDARD

Unit 1 RBCCW Pump 1B will be placed in service. Following a loss of RBCCW, both Reactor Recirc Pumps will be manually tripped due to rising temperatures.

SIMULATOR SETUP INSTRUCTIONS

1. Reset the simulator to JPM Specific IC 389. If IC 389 is not available, prepare an IC as follows:

   a. **Reset** the simulator to any low power IC
      - **Scram** the reactor and take actions.
      - **Ensure** both recirc pumps are running

2. Run scenario file **LOC27 JPM F.SCN** or insert the following expert commands:

   insmp rwvp113062
   changemp rwvp113062 ,,,RBCCW PP A DISCH VLV POS
   insmp rwvp113068
   changemp rwvp113068 ,,,RBCCW PP B DISCH VLV POS
   insmp rwpi11306a
   changemp rwpi11306a ,,,RBCCW PP 1A DSCH PR
   insmp rwpi11306b
   changemp rwpi11306b ,,,RBCCW PP 1B DSCH PR
   {Key[1]} IRF rfRW114001 r:30 f:0
   {Key[3]} IRF rfRW114001 r:30 f:100
   {Key[3]} IMF cmfPM02_1P210B d:45
   {Key[3]} IMF cmfTH02_TE14357A1A2 d:45 r:10:00 f:290
   {Key[3]} IMF cmfTH02_TE14357B1B2 d:45 r:10:00 f:290Ensure the following
   aet ET14OP
   IMF cmfPM04_1P210A

Examinee **«LastName», «FirstName»**

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-389, 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–114–001 Section 2.2 is governing procedure and obtains controlled copy.	Controlled copy of OP–114–001 obtained, select Section 2.2.		
*2	**Starts** RBCCW Pump 1B.	Depress RBCCW PUMP 1P210B START push button.		
3	**Verifies** RBCCW Pump 1B discharge pressure 90-110 psig.	Direct NPO to verify RBCCW Pump 1B discharge pressure between 90-110 psig on local pressure gage PI-11306B.		
EVALUATOR CUE Pump discharge pressure is 95 psig, steady.				
4	**Closes** RBCCW Pump 1A discharge valve.	Direct NPO to slowly close RBCCW Pump 1A Dsch 113062.		
BOOTH OPERATOR CUE When directed, **depress KEY 1** to close RBCCW Pump 1A discharge valve 113062. Notify evaluator when 113062 is fully closed.				
EVALUATOR CUE When 113062 is reported closed by Booth Operator, notify candidate that Pump discharge valve is closed.				

Step	Action	Standard	Eval	Comments
*5	**Stops** RBCCW Pump 1A.	Depress RBCCW PUMP 1P210A STOP push button.		
6	**Opens RBCCW Pump 1A discharge valve.**	Direct NPO to slowly open RBCCW Pump 1A Dsch 113062.		
BOOTH OPERATOR CUE When directed, **depress KEY 3** to open RBCCW Pump 1A discharge valve 113062 and initiate the fault. Notify evaluator promptly after 113062 is fully open.				
EVALUATOR CUE When 113062 is reported open by Booth Operator, promptly notify candidate that Pump discharge valve is open.				
EVALUATOR NOTE Shortly after report of RBCCW Pump 1A discharge valve 113062 open, B pump will trip initiating the below described fault.				

Examinee **«LastName», «FirstName»**

Step	Action	Standard	Eval	Comments
FAULT STATEMENT **THE ALTERNATE PUMP (1B) TRIPS AND PUMP 1A DOES NOT AUTO START – AFTER MANUALLY STARTING, PUMP 1A TRIPS.**				
6	**Identifies** trip of the running 1B Pump and failure of auto start of the 1A alternate pump.	Responds to 1B Pump trip and identifies 1A alternate pump fails to auto start.		
*7	**Starts** RBCCW Pump 1A	Depress RBCCW PUMP 1P210A START push button.		
8	**Identifies** loss of RBCCW Flow	Enters ON-RBCCW-101, Loss of RBCCW Condition A.		
9	**Ensure** standby RBCCW pump is running	N/A		
10	**Monitor** Reactor Recirc Pump temperatures	Monitor Reactor Recirc Pump Motor Bearing and Seal Cavity Temperatures on TRSH-B31-1R601. BACK PANEL – Recirc Temp Recorder		
11	**IF** RBCCW Pump has tripped, then check tripped RBCCW Pump breakers • 1B216103 • 1B237093	N/A		
12	**Monitors** Rx Recirc Pump Motor Bearing Temps	**Monitors** Rx Recirc Pump Motor Bearing temperature(s) ≥ 195°F **OR** Seal Cavity temperatures ≥ 200°F		
*13	**Trips** both Rx Recirc Pumps	**TRIP** BOTH Rx Recirc Pumps when Rx Recirc Pump Motor Bearing temperature(s) ≥ 195°F **OR** Seal Cavity temperatures ≥ 200°F		
EVALUATOR CUE Record JPM stop time: _____				

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 has Scrammed

RBCCW Pump 1A is in service.

RBCCW Pump 1B is in standby.

The NPO has reported that the RBCCW Pump 1A is exhibiting signs of high vibrations

INITIATING CUE

Place RBCCW Pump 1B in service and secure RBCCW Pump 1A due to high vibrations. In accordance with OP-114-001, section 2.2.

EVALUATOR

TASK CONDITIONS

Unit 1 has Scrammed

RBCCW Pump 1A is in service.

RBCCW Pump 1B is in standby.

The NPO has reported that the RBCCW Pump 1A is exhibiting signs of high vibrations

INITIATING CUE

Place RBCCW Pump 1B in service and secure RBCCW Pump 1A due to high vibrations. In accordance with OP-114-001, section 2.2.

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		
G.v.	1.	Task description and number, JPM description and number are identified.
G.v.	2.	Knowledge and Abilities (K/A) references are included.
G.v.	3.	Performance location specified. (in-plant, control room, or simulator)
G.v.	4.	Initial setup conditions are identified.
G.v.	5.	Initiating and terminating cues are properly identified.
G.v.	6.	Task standards identified and verified by SME review.
G.v.	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
G.v.	8.	Verify cues both verbal and visual are free of conflict.
G.v.	9.	Ensure performance time is accurate.
G.v.	10.	Verify the JPM reflects the most current revision of the procedure.

Procedure	OP-114-001	Rev	24
Procedure	ON-RBCCW-101	Rev	0
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.

JPM ASSEMBLY INSTRUCTIONS

Seq	Item	Copier Program	Binding
1.	Examinee cue sheet	cue	loose
2.	Evaluator cue sheet	cue	loose
3.	JPM	jpm	loose
4.	ON-RBCCW-101 (replacement)	sim	PC

SUSQUEHANNA NUCLEAR, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Restore Offgas System IAW ON-143-001**

S/RO	**72.ON.1786.151**	**0**	**01/08/2015**	**Simulator**
Applicability	JPM Number	Revision	Date	Setting

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

Prepared		Validated	
Greg van den Berg	**04/12/02015**	**Richard Bolduc**	**05/10/2015**
Author	Date	Instructor	Date
Review		Approval	
Manu Sivaraman	**06/05/2015**	**Greg van den Berg**	**06/03/2015**
Operations Management	Date	Nuclear Training Supervisor	Date

15
Validation Time (min)

Examinee Name: **«LastName», «FirstName» («Docket_»)** **«Employee»**
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ _____
Name Signature

Comments

TEAM SUSQUEHANNA Generating 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. ON-143-001, Main Condenser Vacuum and Offgas System (Revision 40)

B. OP-172-001, SJAE and OFFGAS System (Revision 68)

3. TASK CONDITIONS

Unit 1 is operating in Mode 1 at approximately 62% power.

Steam Seal Evaporator is out of service

Auxiliary Steam is supplying the Steam Seals

Main Steam was supplying the SJAE when a spurious closure of HV-10721 occurred, causing an ARESD

ON-143-001 has been entered

The cause of the spurious isolation of HV-10721 has been corrected and the ARESD signal is clear.

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 13.
2. **Ensure** both Aux Boilers are in service
3. **Swap** steam seals from Main Steam to Aux Steam IAW OP-192-001
4. **Insert** the following expert commands;
   IMF cmfAV04_PV10701A f:0
   IMF cmfAV04_PV10701B f:4.0
   IMF cmfAV04_PV10752 f:0
   {Key[1]} IMF cmfAV04_PV10752 c:61 r:60 i:0 f:42
5. **Close** HV-10721, SJAE Discharge Isolation

SIMULATOR SETUP INSTRUCTIONS FOR LOC 27 NRC EXAM

6. **Reset** the simulator to IC 390.
7. **Verify** ETs and Commands per the above

PERFORMANCE CHECKLIST

Examinee **«LastName», «FirstName»**

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 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** 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.		
FAULT STATEMENT **STEAM PRESSURE WILL BE <110 PSIG ON PI-10701, SJAE STM SUP PRESS**				
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 If asked, as the US direct the candidate to transfer steam supply to the alternate source				

Examinee **«LastName», «FirstName»**

Step	Action	Standard	Eval	Comments
EVALUATOR NOTE Prerequisites of section 2.7 are satisfied.				
EVALUATOR CUE If asked by candidate, as Unit Supervisor, inform candidate that prerequisites are satisfied.				
5	**Identifies** OP-172-001 is the governing procedure and obtains controlled copy.	Obtains controlled copy of OP-172-001, selects step 2.7 to transfer SJAE/Recombiner Steam Supply From Main to Aux.		
6	**Verifies** Aux Steam Header Pressure	At Panel 0C653, Check greater than 200 psig on PI 02118 Aux Boiler Header Press		
7	**IF** steam seals are NOT being supplied by Aux Boiler, THEN at Area 05 699', Throttle Open 121008 Su Stm Vlv To SJAE and Sealing Stm to allow warm up of Aux Steam Line	N/A		
8	**IF** steam seals are NOT being supplied by Aux Boiler, THEN at Area 01 699' CDSR, Open 107077 Aux Stm Supply to SJAE ISO	N/A		
9	**Ensures** Main Steam Supply Isolations are closed	• Ensure HV-10701A SJAE Mn Stm Sup Iso CLOSED • Ensure HV-10701B SJAE Mn Stm Sup Iso CLOSED		
10	**Observe** the following **CLOSED** (due to low dilution steam flow)	• HV 10716 SJAE Suct Iso • HV 10717 SJAE Suct Iso • HV 10718 SJAE Suct Iso • HV 10719 SJAE Suct Iso		
11*	**Isolates** Main Steam to the SJAE	Close HV-10107 Mn Stm SJAE Iso		

Examinee **«LastName», «FirstName»**

12	**Lineup** Aux Steam to SJAE	Open HV-10752 SJAE Aux Stm Sup Iso		
*13	**Open** Aux Stm Supply to SJAE ISO.	Dispatches NPO to Area 01-699' CDSR to SLOWLY Open 107077 Aux Stm Supply to SJAE ISO.		
BOOTH OPERATOR CUE When NPO is dispatched to SLOWLY OPEN 107077 Aux Stm Supply to SJAE Iso, **INSERT KEY 1**				
14	**Verify** steam supply pressure	Check steam supply pressure at 110 - 130 psig on PI-10701 SJAE Stm Sup Press		
*15	**Open** SJAE suction isolation valves	Open HV-10716, HV-10717, HV-10718 and HV-10719 SJAE Suct Iso by depressing HS-10716 OPEN Pushbutton		
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

Unit 1 is operating in Mode 1 at approximately 62% power.

Steam Seal Evaporator is out of service

Auxiliary Steam is supplying the Steam Seals

Main Steam was supplying the SJAE when a spurious closure of HV-10721 occurred, causing an ARESD

ON-143-001 has been entered

The cause of the spurious isolation of HV-10721 has been corrected and the ARESD signal is clear.

INITIATING CUE

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

EVALUATOR

TASK CONDITIONS

Unit 1 is operating in Mode 1 at approximately 62% power.

Steam Seal Evaporator is out of service

Auxiliary Steam is supplying the Steam Seals

Main Steam was supplying the SJAE when a spurious closure of HV-10721 occurred, causing an ARESD

ON-143-001 has been entered

The cause of the spurious isolation of HV-10721 has been corrected and the ARESD signal is clear.

INITIATING CUE

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

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		
G.v.	1.	Task description and number, JPM description and number are identified.
G.v.	2.	Knowledge and Abilities (K/A) references are included.
G.v.	3.	Performance location specified. (in-plant, control room, or simulator)
G.v.	4.	Initial setup conditions are identified.
G.v.	5.	Initiating and terminating cues are properly identified.
G.v.	6.	Task standards identified and verified by SME review.
G.v.	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
G.v.	8.	Verify cues both verbal and visual are free of conflict.
G.v.	9.	Ensure performance time is accurate.
G.v.	10.	Verify the JPM reflects the most current revision of the procedure.

Procedure	ON-143-001	Rev	40
Procedure	OP-172-001	Rev	68
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.

Operator comments incorporated from validation. Key one added for field actions and typos corrected.

JPM ASSEMBLY INSTRUCTIONS

Seq	Item	Copier Program	Binding
1.	Examinee cue sheet	cue	loose
2.	ON-143- 001 (marked-upto step 3.6.7)	exam	staple
3.	Evaluator cue sheet	cue	loose
4.	JPM	jpm	loose

SUSQUEHANNA NUCLEAR, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **APRM Gain Adjustment**

S/RO	**78.OP.3677.101**	**4**	**02/18/2015**	**Simulator**
Applicability	JPM Number	Revision	Date	Setting

215005	**A1.07**	**3.0/3.4**	**N**	**N**
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

Greg van den Berg	**02/18/2015**
Author	Date

Validated

Richard Bolduc	**05/10/2015**
Instructor	Date

Review

Manu Sivaraman	**06/05/2015**
Operations Management	Date

Approval

Greg van den Berg	**06/03/2015**
Nuclear Training Supervisor	Date

15
Validation Time (min)

Examinee Name: **«LastName», «FirstName» («Docket_»)** (Last, First MI) **«Employee»** (Employee Number)

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ (Name) _____ (Signature)

Comments

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JPM REVISION SUMMARY

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

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-178-002, PRNMS (Revision 7)

3. TASK CONDITIONS

APRM Channel 3 is reading approximately 60%.

Core thermal power from the OD-3 heat balance has been verified to to be 63%

APRM Channel 3 has already been bypassed by the PCO.

4. INITIATING CUE

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

5. TASK STANDARD

Successfully perform manual APRM GAF adjustments for APRM 3.

SIMULATOR SETUP INSTRUCTIONS

1. **Reset** Simulator to any power IC and adjust reactor power to 63%.
   - **Adjust** APRM 3 GAF to indicate ≈60%
   - **Bypass** APRM 3.

SIMULATOR SETUP INSTRUCTIONS FOR LOC 27 NRC EXAM

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

Examinee **«LastName», «FirstName»**

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. • A replacement copy of OP-178-002 section 2.2.				
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-178-002, determines section 2.2.5 applies. Verifies prerequisites and precautions are met.		
EVALUATOR NOTE Role-play as PCO or SRO to avoid using plant page system during the JPM				
2	Establish communications with PCO	Establishes communications using plant page.		
EVALUATOR CUE State that all communications will be with examiner role playing as PCO or SRO to avoid using plant page system during the JPM				
EVALUATOR CUE When operator is confirming BYPASS LED status state, "Channel 13 BYPASSED LEDs for APRM 11, 12, and 14 are lit."				
3	**Verifies** APRM 3 bypassed	Confirms all four 2/4 voters, BYPASSED LEDs for bypassed APRM are illuminated		
*4	**Adjust** the display to the proper screen	Press ETC button to display ENTER SET MODE		
*5	**Accept** the proper display screen	Press ENTER SET MODE key		
*6	**Enter** the password	Enter password "1234" and press ENT		

Examinee **«LastName», «FirstName»**

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

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

Examinee **«LastName», «FirstName»**

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

APRM Channel 3 is reading approximately 60%.

Core thermal power from the OD-3 heat balance has been verified to to be 63%

APRM Channel 3 has already been bypassed by the PCO.

INITIATING CUE

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

EVALUATOR

TASK CONDITIONS

APRM Channel 3 is reading approximately 60%.

Core thermal power from the OD-3 heat balance has been verified to to be 63%

APRM Channel 3 has already been bypassed by the PCO.

INITIATING CUE

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

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	
G.v.	1. Task description and number, JPM description and number are identified.
G.v.	2. Knowledge and Abilities (K/A) references are included.
G.v.	3. Performance location specified. (in-plant, control room, or simulator)
G.v.	4. Initial setup conditions are identified.
G.v.	5. Initiating and terminating cues are properly identified.
G.v.	6. Task standards identified and verified by SME review.
G.v.	7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
G.v.	8. Verify cues both verbal and visual are free of conflict.
G.v.	9. Ensure performance time is accurate.
G.v.	10. Verify the JPM reflects the most current revision of the procedure.

Procedure OP-178-002 Rev 7

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.

JPM ASSEMBLY INSTRUCTIONS

Seq	Item	Copier Program	Binding
1.	Examinee cue sheet	cue	loose
2.	Evaluator cue sheet	cue	loose
3.	JPM	jpm	loose
4.	OP-178-002 Section 2.2	sim	PC

SUSQUEHANNA NUCLEAR, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Venting Unit 2 Scram Air Header during ATWS**

S/RO	**00.EO.1996.202**	**1**	**02/18/2015**	**Plant**
Applicability	JPM Number	Revision	Date	Setting

295037	**EA1.05**	**3.9/4.0**	**N**	**N**
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

Greg van den Berg	**02/18/2015**
Author	Date

Validated

Greg van den Berg	**05/13/2015**
Instructor	Date

Review

Manu Sivaraman	**06/05/2015**
Operations Management	Date

Approval

Durand Adams	**06/03/2015**
Nuclear Training Supervisor	Date

15
Validation Time (min)

Examinee Name: **«LastName», «FirstName» («Docket_»)** (Last, First MI) **«Employee»** (Employee Number)

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ (Name) _____ (Signature)

Comments

TEAM SUSQUEHANNA Generating Excellence

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. EO-000-113, Level/Power Control, Attachment G (Revision 14)

3. TASK CONDITIONS

Unit 2 has just received a reactor scram signal; however RPS has failed to actuate.

All control rods are withdrawn and power is ~100 percent.

Both channels of RPS are energized.

Manual initiation of ARI has failed to depressurize the Scram Air Header.

4. INITIATING CUE

Vent the Unit 2 Scram Air Header to insert control rods. Notify Control Room just prior to venting scram air header.

5. TASK STANDARD

Air supply valves to the Unit 2 scram air header simulated closed, with vent valve simulated uncapped and open.

Examinee **«LastName», «FirstName»**

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.				
EVALUATOR CUE Record JPM start time: _____				
1	**Identifies** governing procedure as posted instructions	Applicant may use the local posted instructions to vent the Unit 2 Scram Air Header or provided Hard Card (see attached).		
*2	Bypass the scram header block valves.	Open ARI Solenoid Valve Bypass Valve 247021. • Undoes the locking mechanism • Turns handle to the left 90°		
*3	Isolate the Scram Air Header.	Close SCRAM AIR SUPPLY Valves 247002A and 247002B. • Turns SCRAM AIR SUPPLY Valves 2470002A and 247002B CLOCKWISE to CLOSE.		

Examinee **«LastName», «FirstName»**

Step	Action	Standard	Eval	Comments
*4	Vent off the Scram Air Header.	Uncap and open SCRAM AIR HDR VENT Valve 247007. • Turns cap Counter Clockwise (Looking Up from floor to ceiling view)		
5	Verify air is being vented.	Check for air at discharge vent.		
EVALUATOR CUE Inform applicant that the sound of air venting can be heard.				
6	Notify Control Room that Air Header is vented.	Contact Control Room by Radio or Page that air is venting from the 247007 Valve.		
EVALUATOR CUE Inform applicant Control Room has been notified and all control rods have inserted.				
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

Unit 2 has just received a reactor scram signal; however RPS has failed to actuate.

All control rods are withdrawn and power is ~100 percent.

Both channels of RPS are energized.

Manual initiation of ARI has failed to depressurize the Scram Air Header

INITIATING CUE

Vent the Unit 2 Scram Air Header to insert control rods. Notify Control Room just prior to venting scram air header.

EVALUATOR

TASK CONDITIONS

Unit 2 has just received a reactor scram signal; however RPS has failed to actuate.

All control rods are withdrawn and power is ~100 percent.

Both channels of RPS are energized.

Manual initiation of ARI has failed to depressurize the Scram Air Header

INITIATING CUE

Vent the Unit 2 Scram Air Header to insert control rods. Notify Control Room just prior to venting scram air header.

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		
G.v.	1.	Task description and number, JPM description and number are identified.
G.v.	2.	Knowledge and Abilities (K/A) references are included.
G.v.	3.	Performance location specified. (in-plant, control room, or simulator)
G.v.	4.	Initial setup conditions are identified.
G.v.	5.	Initiating and terminating cues are properly identified.
G.v.	6.	Task standards identified and verified by SME review.
G.v.	7.	Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
G.v.	8.	Verify cues both verbal and visual are free of conflict.
G.v.	9.	Ensure performance time is accurate.
G.v.	10.	Verify the JPM reflects the most current revision of the procedure.

Procedure EO-000-113 Rev 14

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.

JPM ASSEMBLY INSTRUCTIONS

Seq	Item	Copier Program	Binding
1.	Examinee cue sheet	cue	loose
2.	procedure (marked-up)	exam	staple
3.	Evaluator cue sheet	cue	loose
4.	JPM	jpm	loose
5.	Procedure (replacement)	sim	PC

SUSQUEHANNA NUCLEAR, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Maintaining RCIC Suction Supply With Loss of AC and DC Power (LOC 27 Unit 2)**

S/RO	50.EO.2567.003	1	04/18/2015	Plant
Applicability	JPM Number	Revision	Date	Setting

217000	A2.16	3.4/3.5	N	N
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared		Validated	
Greg van den Berg	**04/18/2015**	**Greg van den Berg**	**05/13/2015**
Author	Date	Instructor	Date
Review		Approval	
Manu Sivaraman	**06/05/2015**	**Durand Adams**	**06/03/2015**
Operations Management	Date	Nuclear Training Supervisor	Date

25
Validation Time (min)

Examinee Name: **«LastName», «FirstName» («Docket_»)** (Last, First MI) **«Employee»** (Employee Number)

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ (Name) _____ (Signature)

Comments

TEAM SUSQUEHANNA Generating Excellence

JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM
1	Revise for TQ procedures format, 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. ES-250(150)-003, RCIC Manual Injection With Loss of AC and DC Power (Revision 13)

3. TASK CONDITIONS

A Station Blackout has been in progress for 1 hour.

All 250V DC power was lost on both Units.

RCIC has been started on both Units per ES–250–003.

Unit 1 and 2 CST levels are low and cannot be crosstied to the RWST.

ES–250(150)–003 Attachment C is in progress on both Units (another operator is performing ES-150-003 for Unit 1 RCIC)

4. INITIATING CUE

Realign Unit 2 RCIC suction to the Suppression Pool per ES–250–003.

5. TASK STANDARD

Unit 2 RCIC suction aligned to the Suppression Pool and isolated from the CST per ES–250–003.

Examinee **«LastName», «FirstName»**

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. • Mark-up a copy of ES-250-003 complete through Step 4.4.				
EVALUATOR CUE Record JPM start time: _____				
1	**Identifies** governing procedure and obtain controlled copy.	Obtains controlled copy of ES-250-003.		
2	**Verifies** ES–250–003 Step 4.4 is governing procedure and obtains controlled copy.	Controlled copy of ES–250–003 obtained, selects Step 4.4.		
3	**Verifies** Attachment C in progress to supply cooling to Unit 2 RCIC.	Per Task Conditions.		
4	**Opens** RCIC PUMP SUCTION CST SUPPLY VLV HV-249F010 breaker, 2D254–041	At 2D254 (32–670'), places control paddle for breaker 2D254–041 to the OFF position.		
EVALUATOR CUE Breaker 2D254–041 is open.				
5	**Opens** RCIC PUMP SUCTION SUPP POOL SUPPLY VLV HV-249F031 breaker, 2D254–042	Places control paddle for breaker 2D254–042 to the OFF position.		
EVALUATOR CUE Breaker 2D254–042 is open.				

Examinee **«LastName», «FirstName»**

Step	Action	Standard	Eval	Comments
*6	**Opens** HV–249F031, RCIC Pump Suction Supp Pool Supply Vlv	Performs the following at HV–249F031, RCIC PUMP SUCTION SUPP POOL SUPPLY VLV (33–645') • Depresses the MOV manual operation clutch lever • Rotates the MOV handwheel in the counter–clockwise direction until resistance is felt		
*7	**Closes** HV–249F010, RCIC Pump Suction CST Supply Vlv	Performs the following at HV–249F010, RCIC PUMP SUCTION CST SUPPLY VLV (33–645') • Depresses the MOV manual operation clutch lever • Rotates the MOV handwheel in the clockwise direction until resistance is felt		

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 Station Blackout has been in progress for 1 hour.

All 250V DC power was lost on both Units.

RCIC has been started on both Units per ES–250–003.

Unit 1 and 2 CST levels are low and cannot be crosstied to the RWST.

ES–250(150)–003 Attachment C is in progress on both Units (another operator is performing ES-150-003 for Unit 1 RCIC)

INITIATING CUE

Realign Unit 2 RCIC suction to the Suppression Pool per ES–250–003.

EVALUATOR

TASK CONDITIONS

A Station Blackout has been in progress for 1 hour.

All 250V DC power was lost on both Units.

RCIC has been started on both Units per ES–250–003.

Unit 1 and 2 CST levels are low and cannot be crosstied to the RWST.

ES–250(150)–003 Attachment C is in progress on both Units (another operator is performing ES-150-003 for Unit 1 RCIC)

INITIATING CUE

Realign Unit 2 RCIC suction to the Suppression Pool per ES–250–003.

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	
G.v.	1. Task description and number, JPM description and number are identified.
G.v.	2. Knowledge and Abilities (K/A) references are included.
G.v.	3. Performance location specified. (in-plant, control room, or simulator)
G.v.	4. Initial setup conditions are identified.
G.v.	5. Initiating and terminating cues are properly identified.
G.v.	6. Task standards identified and verified by SME review.
G.v.	7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
G.v.	8. Verify cues both verbal and visual are free of conflict.
G.v.	9. Ensure performance time is accurate.
G.v.	10. Verify the JPM reflects the most current revision of the procedure.

Procedure ES-250-003 Rev 13

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.

JPM ASSEMBLY INSTRUCTIONS

Seq	Item	Copier Program	Binding
1.	Examinee cue sheet	cue	loose
2.	ES-250-003 (marked-up through step 4.4)	exam	staple
3.	Evaluator cue sheet	cue	loose
4.	JPM	jpm	loose
5.	Procedure (replacement)	sim	PC

SUSQUEHANNA NUCLEAR, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Manual Emergency Shutdown of Diesel Generator 'A' from Panel 0C521A**

S/RO	24.OP.1443.051	1	06/25/2015	Plant
Applicability	JPM Number	Revision	Date	Setting

264000	A4.04	3.7/3.7	N	Y
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

Greg Schrad	06/25/2015
Author	Date

Validated

Greg Schrad	07/20/2015
Instructor	Date

Review

Operations Management	Date

Approval

Greg van den Berg	07/20/2015
Nuclear Training Supervisor	Date

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Validation Time (min)

Examinee Name: **«LastName», «FirstName» («Docket_»)** (Last, First MI) **«Employee»** (Employee Number)

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____ (Name) _____ (Signature)

Comments

TEAM SUSQUEHANNA Generating Excellence

JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM
1	Changed to new TQ format Updated procedures to the latest 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-300, Administration of 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-024-001 Diesel Generators (Rev. 76)

3. TASK CONDITIONS

A. The Rx has experienced a small Loss of Coolant Accident.

B. Drywell pressure is 2.1 psig up slow.

C. All Emergency Diesel Generators (DG) have started in Emergency Mode, 1 minute ago.

D. DG 'A' output breaker failed to close and cannot be closed.

E. There is no Emergency Service Water (ESW) cooling being supplied to DG 'A'.

4. INITIATING CUE

The Control Room directs a Manual Emergency Shutdown of Diesel Generator 'A' in accordance with OP-024-001, section 2.7.

5. TASK STANDARD

DG 'A' is shutdown using the Overspeed Fuel Shutdown Valve and Fuel Quadrant Lever due to Emergency Stop pushbutton failing to stop DG 'A'.

Examinee **«LastName», «FirstName»**

Step	Action	Standard	Eval	Comments
EVALUATOR INSTRUCTIONS • Marking a step as UNSAT requires written comments on respective step. • This is a time critical JPM • 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 A DG bay. • Have a copy of OP-024-001, section 2.7				
EVALUATOR NOTE The FAULTED step in this JPM is preceded by a fault statement in **BOLD TYPE WITH ALL CAPITAL LETTERS**. **This JPM is Time Critical**. Step 7 must be completed by 7 minutes after candidate acknowledges the Initiating Cue.				
EVALUATOR CUE Record JPM start time: _____				
1	**Identifies** governing procedure and obtain controlled copy.	**Obtains** controlled copy of OP-024-001, Section 2.7.		
2*	If diesel generator running in Emergency Mode, **Place** DG 'A' 43CM Control Mode Select Switch in Local.	**Places** 43CM switch clockwise to Local.		
EVALUATOR CUE 43CM switch in the Local position.				
3	At Diesel Engine Control Panel 0C521A, **Depress** 5ES Emergency Stop pushbutton.	**Depresses** the Emergency Stop pushbutton.		
EVALUATOR CUE Emergency Stop pushbutton is depressed and stayed depressed.				
FAULT STATEMENT **THE NEXT STEP HAS THE STUDENT OBSERVE THE DG STOPS. THE EVALUATOR WILL CUE THE STUDENT THAT THE DG CONTINUES TO RUN. THE STUDENT WILL TAKE FURTHER ACTIONS TO SHUTDOWN THE DG.**				

Step	Action	Standard	Eval	Comments
4	At Diesel Engine Control Panel 0C521A, **Observe** following: a. Master Trip Circuit Tripped Green light Illuminates b. Running Idle light Extinguishes c. At 280 rpm, DG 'A' Pre-Lube Pump 0P532A Starts	Student **monitors** for DG shutdown. Student **determines** that DG is still running and continues in procedure.		
EVALUATOR CUE a. Master Trip Circuit Tripped Green light - **NOT LIT** b. Running Idle light - **LIT** c. DG Engine speed - **600 rpm and stable**				
5	**WARNING** Personnel safety must be considered before proceeding with this step. Do not perform if area is not safe.	**Evaluates** if the area is safe		
EVALUATOR CUE Inform student that Maintenance is present to assist in the following step and the area is safe.				
*6	If the diesel engine fails to stop as expected, Obtain maintenance assistance and **Perform** the following: a. **Pull** the black knob labeled SX-03483A, Overspeed Fuel Shutdown Vlv Reset. This knob is located on top of engine on the right side by the overspeed governor.	**Pulls** SX-03483A.		
EVALUATOR CUE SX-03483A is pulled to end of travel.				

Step	Action	Standard	Eval	Comments
*7	b. **Pull** the fuel quadrant lever down and hold until the engine comes to a complete stop. The fuel quadrant lever is located on the engine left side above the turning gear motor.	**Pulls** and **holds** the Fuel quadrant lever. There is a pushbutton on top of the lever that needs to be depressed to allow movement.		
EVALUATOR CUE *If Student depresses the pushbutton on the lever, provide this cue:* Fuel quadrant lever is pulled down to end of travel and is being held in that position. The sound of the engine's speed is lowering. The engine has stopped. *If Student does not depress the pushbutton on the lever, provide this cue:* Fuel quadrant lever did not move				
EVALUATOR CUE Record JPM step completion time: _____ This time must be ≤ 7 minutes after the recorded start time.				
8	c. When diesel generator comes to stop, **reset** SX-03483A by pushing-in the plunger	**Resets** SX-03483A by pushing-in plunger		
EVALUATOR CUE SX-03483A is reset and pushed-in				
9	When diesel generator comes to stop, **Depress** Emergency Stop Reset pushbutton	**Depresses** Emergency Stop Reset pushbutton.		
EVALUATOR CUE Emergency Stop Reset pushbutton is depressed and stays depressed.				
10	**Depress** Reset pushbutton for Annunciator and System Reset to reset emergency trip.	**Depresses** Reset pushbutton.		

Examinee **«LastName», «FirstName»**

Step	Action	Standard	Eval	Comments
EVALUATOR CUE If Student asks if any Protective Relays are tripped on 0C519A, inform student all relays on 0C519A are as indicated. Spring resistance is felt, the pushbutton "bottomed out" and returned to normal when released. Red label next to Reset pushbutton states, "Protective Relay Seal-In Reset Pushbutton (0C519) must be Reset Prior to Ann & System Reset". It is not necessary to perform this if no relays are tripped.				
11	**Observe** DG A Master Trip Circuit Reset Amber light Illuminates.	**Observes** DG A Master Trip Circuit Reset Amber light Illuminated.		
EVALUATOR CUE Amber light is lit.				
12	**Observe** DG A Master Trip Circuit Tripped Green light extinguishes.	**Observes** DG A Master Trip Circuit Tripped Green light extinguished.		
EVALUATOR CUE Green light is not lit.				
13	**Comply** with TS 3.8.1 for Unit 1 and Unit 2.	**Informs** SRO of TS.		
EVALUATOR CUE SRO has been informed and is complying.				
14	**Ensure** auto initiation signal Reset.	**Inquires** about DW pressure.		
EVALUATOR CUE High DW pressure condition still present. No further DG manipulations required.				
EVALUATOR CUE Record JPM stop time: _____				
EVALUATOR CUE That completes the JPM.				

Examinee **«LastName», «FirstName»**

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

EXAMINEE

TASK CONDITIONS

A. The Rx has experienced a small Loss of Coolant Accident.

B. Drywell pressure is 2.1 psig up slow.

C. All Emergency Diesel Generators (DG) have started in Emergency Mode, 1 minute ago.

D. DG 'A' output breaker failed to close and cannot be closed.

E. There is no Emergency Service Water (ESW) cooling being supplied to DG 'A'.

INITIATING CUE

The Control Room directs a Manual Emergency Shutdown of Diesel Generator 'A' in accordance with OP-024-001, section 2.7.

EVALUATOR

TASK CONDITIONS

A. The Rx has experienced a small Loss of Coolant Accident.

B. Drywell pressure is 2.1 psig up slow.

C. All Emergency Diesel Generators (DG) have started in Emergency Mode, 1 minute ago.

D. DG 'A' output breaker failed to close and cannot be closed.

E. There is no Emergency Service Water (ESW) cooling being supplied to DG 'A'.

INITIATING CUE

The Control Room directs a Manual Emergency Shutdown of Diesel Generator 'A' in accordance with OP-024-001, section 2.7.

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.

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

Procedure OP-024-001 Rev 76

Procedure _____ Rev _____

Procedure _____ Rev _____

_____ 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.).

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

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

JPM ASSEMBLY INSTRUCTIONS

Seq	Item	Copier Program	Binding
1.	Examinee cue sheet	cue	loose
2.	OP-024-001 section 2.7	exam	staple
3.	Evaluator cue sheet	cue	loose
4.	JPM	jpm	loose

SUSQUEHANNA NUCLEAR, LLC
OPERATIONS TRAINING PROGRAM

SCENARIO EXAMINATION GUIDE

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

SCN# LOC28-NRC-01
Revision 1

04/14/2016

Examination Material

TEAM SUSQUEHANNA
Generating Excellence

Lesson Information

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

Approval

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

[1]If required, otherwise N/A

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

Revision History

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

Table of Contents

Scenario Overview

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

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

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

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

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

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

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

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

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

Objectives

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

A. Terminal Objective

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

During the specified mode of plant / system operation

Without error and in accordance with site procedures and management expectations

B. Generic Performance Objectives

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

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

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

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

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

   Applying the correct procedure to operate equipment and respond to abnormalities

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

   Demonstrating the ability to:

   Apply the correct procedure to the situation

   Use place keeping for accurate implementation

   Identify any and all areas for procedure improvement

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

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

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

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

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

   (SRO) Champion activities that are biased conservatively

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

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

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

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

   Validate parameters by observing multiple independent indications

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

   Notify supervision of any change to critical parameters

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

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

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

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

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

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

C. Simulator Performance Objectives

1. Operational Actions and Annunciator Response

   Correctly identify plant annunciators and indications and perform appropriate remedial actions

2. System Operation, Controls and Instrumentation

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

3. Facility Design and Operating Characteristics

   Demonstrate the following:

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

4. System Loss and Component Level Malfunctions

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

5. Heat Removal Component Operation

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

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

6. Auxiliary and Emergency Component Operations

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

7. Reactivity Management

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

8. Technical Specifications

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

   Identify the deviation and any required actions / notifications

9. Emergency Plan (if required)

   During plant operation in an emergency condition

   Recognize conditions covered by the Emergency Plan

   (SRO) Demonstrate the ability to:

   - Identify and Implement the appropriate Emergency Action Level
   - Use the applicable bases to support an Event Classification on the specified Emergency Action Level~~Recognize conditions covered by the Emergency Plan~~
   - ~~(SRO) Demonstrate the ability to:~~
   - ~~Identify and Implement the appropriate Emergency Action Level~~
   - ~~Use the applicable bases to support an Event Classification on the specified Emergency Action Level~~

10. Control Room Duties

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

11. Control Room Team Work

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

D. Task List

Task Title	ID
Licensed Operator	
Apply Technical Specification (TS) And Technical Requirements Manual (TRM) Requirements	S-COO-00-1185
Implement Reactivity Manipulations Standards and Communication Requirements	S-COO-00-2784
Implement Appropriate Portions Of Operations Standards For System and Equipment Operation	S-COO-00-1081
Implement Operations Standards For Error And Event Prevention	S-ADM-00-1091
Implement Standards for Shift Operations	S-COO-00-2780
Implement Appropriate Portions of Conduct of Operations	S-COO-00-1015
Implement Appropriate Portions of Secondary Containment Integrity Control	S-COO-00-1020
Implement EOP Cautions	S-COO-00-2566
Implement Operations Directives	S-COO-00-3130
Ensure Plant Operates IAW the Operating License, Technical Specifications (TS), and Technical Requirements Manual (TRM)	S-COO-00-1183
Implement HUMAN PERFORMANCE (HuP) – Standards for Error and Event Prevention	S-EPP-00-3068
Reactor Operator	
Implement Withdraw Control Rod One Notch	S-201002-01-005
Implement Test of Standby Main and Emergency Oil Pumps	S-259001-01-100
Operate a Single Reactor Feed Pump in Manual	S-259001-01-037
Perform Speed Adjustment of Reactor Recirc Pump During Normal Operation	S-202001-01-008
Direct RBCCW Heat Exchanger Manual Transfer Of Service Water And Emergency Service Water	S-276000-01-003
Inhibit ADS from actuating	S-218000-01-006
Bypass the MSIV and CIG Interlocks	S-239001-01-025
Inject Liquid Poison Using Pump 1P208A(B)/2P208A(B)	S-211000-01-006
Perform the Required Actions to Maximize CRD Flow	S-201001-01-044
Start an Individual Reactor Feed Pump Turbine following a Trip	S-259001-01-045
Perform a Manual Startup of RCIC Using Turbine Trip and Throttling Valve	S-217000-01-035
Perform Actions Required to Override RCIC Injection	S-217000-01-060

Task Title	ID
Perform HPCI System Override Injection	S-206000-01-062
Direct the Actions for Unanticipated Reactivity Change	S-201002-01-009
Direct Actions for Core Flux Oscillations	S-215005-01-017
Direct Actions for Loss of RBCCW Flow	S-208000-01-007
Direct the Actions for RPS and ARI Trip Bypass	S-212000-01-038
Perform Required Actions for a Reactor Recirculation Pump Runback	S-202002-01-022
Enter EOP RPV Control	S-EOPRR-01-006
Enter Level/Power Control EO Procedure	S-EOPRPV-01-004
Confirm Reactor Scram	S-EOPRPV-01-002
Confirm Reactor Shutdown	S-EOPRPV-01-003
Ensure All Isolations and Actuations Occur	S-EOPRPV-01-005
Enter Primary Containment Control	S-EOPPCC-01-002
Scram the Reactor	S-EOPRR-01-005

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

Scenario Attributes

A. Critical Tasks

1. Inject SLC	
Safety Significance	Early boron injection has the following benefits: • Stop or prevent large magnitude Limit Cycle Oscillations which can lead to core damage. • Limit fuel damage from uneven flux patterns that could result from partial rod inserts.
Consequences for Failure to Perform Task	Failure to inject Boron can result in • Cycle Oscillations which can lead to core damage. • Fuel damage from uneven flux patterns that could result from partial rod inserts.
Indications/Cues for Event Requiring Critical Task	ATWS with initial reactor power level greater than 5% APRM power.
Performance Criteria	Inject SLC by inserting key into keylock switch and turning to start selected SLC pump, fire the Squib valves and close the Reactor Water Cleanup isolation valve.
Performance Feedback	Successful SLC injection would be indicated by a lowering SLC tank level and a corresponding power level decrease.
2. Lowers RPV level to <-60" and maintains until EO-000-113 directs otherwise	
Safety Significance	Core damage due to unstable operation can be prevented or at least mitigated by promptly reducing Feedwater flow so that level is lowered below the Feedwater spargers.
Consequences for Failure to Perform Task	A General Electric Company study (NEDO-32047) indicates that the major threat to fuel integrity from ATWS is caused by large-amplitude power/flow instabilities. The power oscillations can become large enough to cause melting of fuel in high-power bundles.
Indications/Cues for Event Requiring Critical Task	ATWS with initial reactor power level greater than 5% APRM power.
Performance Criteria	Lower reactor water level by manually controlling injection rate from Feedwater, HPCI and/or RCIC.
Performance Feedback	Reducing vessel injection will result in Wide Range level indications lowering to –60 to –110 inches and will result in power level lowering as indicated on the Average Power Range Monitors.

3. Insert Control Rods IAW EO-000-113	
Safety Significance	Control rod insertion initiates power reduction immediately.
Consequences for Failure to Perform Task	Failure to insert control rods allows power to remain elevated with resultant power oscillations and potential core damage.
Indications/Cues for Event Requiring Critical Task	Exceeding a RPS scram setting with NO reactor scram signal, or RPS/ARI fail to fully insert all control rods.
Performance Criteria	Insert Control Rods by one or more of the following methods: • Drive control rods after bypassing RWM • Reset and Scram again by performing ES-158-002 Bypass RPS logic trips
Performance Feedback	Successful insertion of control rods will be indicated by: • Rod position full in indication for manual insertion of control rods • Rod position showing control rod insertion after resetting scram, draining scram discharge volume and re-scram • Power level lowering as indicated on the Average Power Range Monitors

B. Scenario Malfunctions

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

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

C. Abnormal Events and Major Transients

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

D. EOP and EOP Contingencies Used

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

E. Technical Specifications

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

References

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

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

Setup Instructions

A. Required Materials

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

B. Simulator Initialization

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

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

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

6. **Ensure** FW Control is selected to LEFM
7. **Reset** ODAs and all Overhead, PICSY, HMI and RWM alarms
8. **Ensure** horns and annunciators are on
9. **Ensure** Overhead Lights Override is off

C. Simulator Preparation

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

D. Document Training and Performance Feedback

1. **Record** crew position assignments in G:\NTGOPS\LOR\REQUAL\Info Tracking\ (LOR)
2. **Record** crew position assignments per TQ-104 (ILO)
3. **Complete** simulator exam checklist

E. Scenario Execution

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

F. Simulator Files

LOC28-NRC-01

delmp
SCN rat_mp

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

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

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

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

insmp fx1BRFP_B115.MA

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

insmp rwtt11305
changemp rwtt11305 ,,,RBCCW HX OUTLET TEMP

insmp swvsptv11028
changemp swvsptv11028 ,,,RBCCW HX TCV POS

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

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

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

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

;B CRM spurious alarm suppressed
IMF annAR112G04 f:ALARM_OFF

;E DG subst for A
IRF rfDG024001 f:A

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

;Hyd-block ATWS
IMF mfRD155017

;CRD PCV binding
IMF cmfMV07_PV146F003 f:Asls

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

ETLOC28-NRC01-I
rrlwr < -50
IMF cmfTR01_LT14201A

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

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

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

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

Event 2 – Control Rod Pattern Adjustment

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

Event 2 – Control Rod Pattern Adjustment

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

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

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

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

Instructor Activities	Operator Activities	Notes
Booth Operator When power has been raised 5% or at the Lead Examiner's direction, **Insert Key 1** to initiate high vibrations on 'B' RFP. **{Key[1]} IMF mfFW145007B r:180 f:10 'B' RFP vibration** **Monitor** 'B' RFP vibration in Monitored Parameters. **Ensure** Event Trigger **ETLOC28-NRC01-B** fires when a Recirc LIM2 is actuated by the 'B' RFP trip, to fail the APRM 2 drive flow input from Recirc Loop 'A'.		
Role Play As **FUS/NPO** dispatched to 'B' RFP, wait 2 minutes and report ***The 'B' RFP sounds out-of-balance and it feels like there are higher vibrations around the pump.*** **Role Play** As **FUS/NPO** contacted for 'B' RFP status post-trip, report ***'B' RFP is coasting down on the turning gear. I don't see anything abnormal.*** **Role Play** As **NPO** dispatched to the Lower Relay Room to report the status of APRMS, wait 2 minutes and report ***No APRMs indicate any alarms.***	**PCOM** ☐ Performs AR-101-A16 for 'B' RFP vibs ☐ Reports Reactor Power, pressure, and water level ☐ If directed, lowers 'B' RFP speed IAW OP-145-006 by taking manual control and lowering speed ☐ If directed, lowers Core power IAW OP-164-002 by manually lowering RRPs speed ☐ Observes AR-101-A12 and reports 'B' RFP Tripped ☐ Plots position on Power/Flow map ☐ Performs ON-PWR-101 to monitor OPRMs for instabilities ☐ If directed, inserts control rods IAW OP-156-001 and OP-AD-338 ☐ Performs AR-104-H03 and AR-103-E06 for 'A' & 'B' RBM and APRM 2 ☐ Directs NPO to investigate APRMs	

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

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

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

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

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

Event 5 – RBCCW TCV failure

Instructor Activities	Operator Activities	Notes

Booth Operator

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

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

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

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

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

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

Role Play

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

Role Play

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

Role Play

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

Role Play

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

PCOM

- ☐ Reports Reactor power, pressure, and water level

PCOP

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

Event 5 – RBCCW TCV failure

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

Instructor Note

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

Event 6 – Complete loss of RBCCW/ SCRAM

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

Event 6 – Complete loss of RBCCW/ SCRAM

Instructor Activities	Operator Activities	Notes

Instructor Note

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

Event 7, 8 & 9 – Hydraulic-block ATWS

Instructor Activities	Operator Activities	Notes

Booth Operator

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

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

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

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

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

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

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

Critical Task
Inject SLC

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

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

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

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

PCOM

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

Event 7, 8 & 9 – Hydraulic-block ATWS

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

Event 7, 8 & 9 – Hydraulic-block ATWS

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

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

Event 7A – Control Rod Insertion

Instructor Activities	Operator Activities	Notes

Booth Operator

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

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

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

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

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

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

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

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

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

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

Critical Task
Insert Control Rods IAW EO-000-113

Role Play

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

Role Play

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

PCOM

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

Event 7A – Control Rod Insertion

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

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

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

Event 10 – RFP Trip

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

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

TEAM SUSQUEHANNA Generating Excellence	**SUSQUEHANNA LEARNING CENTER** **SIMULATOR SCENARIO**
Scenario Title:	**NR Instrument Failure / Loss of Aux Bus 11B / Loss Of Vacuum / ATWS / Failure of CRD and SBLC**
Scenario Duration:	**75 minutes**
Scenario Number:	**LOC27-N-03**
Revision / Date:	**0 / April 20, 2015**
Course:	**PC017 SRO License** **PC018 RO License**

Prepared By:	Rich Bolduc Instructor	04/20/2015 Date
Reviewed By:	Greg van den Berg Operations Training Management	05/06/15 Date
Approved By:	Manu Sivaraman Operations Line Management	05/06/15 Date

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SCENARIO SUMMARY

The scenario begins with a reactor shutdown in progress in preparation for a turbine outage. Reactor power is approximately 23%. Unit 2 is at rated power.

After the crew takes the shift, reactor power is lowered to 20%. At 20% power the Auxiliary Busses are transferred from the Main Generator to Startup Bus 10. After the Auxiliary Busses have been transferred, a Narrow Range Level Instrument begins to fail by slowly drifting low. The crew will respond in accordance with ON-LVL-101 and remove the affected Narrow Range Level Instrument from service.

After actions for the Narrow Range Level Instrument failure are complete, a loss of Auxiliary Bus 11B occurs. The crew responds to the loss of Auxiliary Bus 11B in accordance with ON-AUXBUS-101. Technical Specifications will be addressed for single recirc loop operation.

After the crew restarts a 2nd condensate pump, an air leak in the Main Condenser develops that causes lowering condenser vacuum. Condenser back pressure will rise and enter the five-minute turbine operation region. This requires the crew to scram the reactor and to trip the turbine within 5 minutes of the low vacuum condition.

When the crew scrams reactor, a failure of RPS and ARI will result in an ATWS. The crew will respond in accordance with the LEVEL/POWER CONTROL EOP including initiation of Standby Liquid Control (SBLC) System, reducing reactor level, and use of alternate control rod insertion methods. SBLC will not inject due to failure of both SBLC pumps.

Attempts to drift control rods using elevated CRD cooling water pressure will not be successful due to a CRD pump trip and a CRD flow control valve failure. Individual control rod insertion can be performed once the CRD pump is started. Due to the symptoms of an electrical ATWS, the crew will prioritize depressurization of the scram air header and removal RPS fuses. After reactor level has been lowered into the prescribed band for the ATWS, a full scram will occur due to either depressurization of the scram air header or removal of RPS fuses.

The scenario is terminated after the crew has transitioned from the LEVEL/POWER CONTROL EOP to the RPV Control EOP and reactor level has been restored to the normal band.

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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-055	Operations Procedure Program
4.	OP-AD-300	Administration of Operations
5.	OP-AD-338	Reactivity Manipulations Standards and Communication Requirements
6.	GO-100-004	Plant Shutdown to Minimum Power
7.	OP-156-001	Reactor Manual Control System (RMCS)
8.	OP-145-005	Infrequent Manual RFP System Operations
9.	OP-103-001	13.8KV Electrical System
10.	ON-AUXBUS-101	Loss of/Undervoltage Condition on 13 KV Bus 11A OR 11B
11.	ON-RECIRC-101	Reactor Recirculation Malfunction
12.	ON-SCRAM-101	Reactor Scram
13.	ON-LVL-101	RPV Level Control System Malfunction
14.	ON-143-001	Main Condenser Vacuum and Offgas System off Normal Operation
15.	ON-CRD-101	Control Rod Malfunction
16.	EO-100-102	RPV Control
17.	EO-000-113	Level Power Control
18.	EP-RM-004	EAL Classification Levels
19.	TS 3.3.2.2	Feedwater - Main Turbine High Water Level Trip Instrumentation
20.	TS 3.4.1	Recirculation Loops Operating

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CRITICAL TASKS

Lowers RPV level to < -60" but > -179"	
Safety Significance	Core damage due to unstable operation can be prevented or at least mitigated by promptly reducing feedwater flow so that level is lowered below the feedwater spargers.
Consequences for Failure To Perform Task	A General Electric Company study (NEDO-32047) indicates that the major threat to fuel integrity from ATWS is caused by large-amplitude power/flow instabilities. The power oscillations can become large enough to cause melting of fuel in high-power bundles.
Indications/Cues for Event Requiring Critical Task	ATWS with initial reactor power level greater than 5% APRM power.
Performance Criteria	Stop and prevent all injection into the RPV except from RCIC, CRD and SBLC until less than -60". Maintain reactor level in a prescribed band greater than -179 inches by manually controlling injection rate from Feedwater, HPCI and/or RCIC.
Performance Feedback	Lowering water level to less than -60" and maintaining it in a prescribed band will result in power level lowering as indicated on the Average Power Range Monitors.
Inserts control rods IAW EO-100-113	
Safety Significance	Control rod insertion initiates power reduction immediately.
Consequences for Failure To Perform Task	Failure to insert control rods allows power to remain elevated with resultant power oscillations and potential core damage.
Indications/Cues for Event Requiring Critical Task	Exceeding a RPS scram setting and RPS/ARI fail to insert control rods.
Performance Criteria	Insert Control Rods by one or more of the following methods: Drive control rods after bypassing RWM 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.

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SCENARIO MALFUNCTIONS

Event	Description	Crew Response
3	Narrow Range Instrument Failure	Remove the narrow range instrument from service and determine Technical Specification impact.
4	Loss of Auxiliary Bus 11B	Re-energize bus 11B, respond to recirculation pump and condensate pump trips. Restart a condensate pump. Determine Technical Specification impact for single recirculation loop.
5	Loss of Vacuum	Lower power. Scram the reactor and trip the turbine within 5 minutes of entering the low vacuum region.
6	ATWS due to RPS and ARI Failing to Actuate	Scram the Reactor, initiation of SBLC, reducing reactor level, and use of alternate control rod insertion methods.
7	SBLC Fails to Inject	Inject boron solution with RCIC
8	CRD Pump Trip and Flow Control Valve Failure	Start CRD pump and swap flow control valves

ABNORMAL EVENTS / MAJOR TRANSIENTS / TECH SPEC

Malfunction	Description
R	Lower Reactor Power by Inserting Control Rods
N	Transfer Auxiliary Busses
AE1	Narrow Range Instrument Failure
AE2	Loss of Auxiliary Bus 11B
AE3	Loss of Vacuum
MT2	ATWS due to RPS and ARI Failing to Actuate
TS1	Narrow Range Instrument Failure
TS2	Loss of Auxiliary Bus 11B

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SCENARIO SPECIAL INSTRUCTIONS

1. Simulator setup
   a. **Initialize** to an exam-specific IC (IC–397). If an exam-specific IC is not available, then setup the simulator as follows:
      i) **Initialize** to IC-263 (20% EOL shutdown).
      ii) **Place** the simulator in RUN.
      iii) **Raise** power to 23%
   b. **Run** SCN file **exam\LOC27-N03.scn**
2. **Verify** the following malfunctions/overrides, event triggers and key assignments:

MF	RF	OR	SCN	ET	COND
11:11	1:1	4:4	0:0	4:0	21

3. **Prepare** the simulator for evaluation
   a. **Complete** a simulator exam checklist, TQ-106-0315
   b. **Reset** ODAs and all Overhead, PPC, HMI and RWM alarms
   c. **Ensure EOL** control rod shutdown sequence is available and marked up to current control rod
   d. **Ensure** the RWM is bypassed.
   e. **Markup** GO-100-004 to step 5.25
4. **Prepare** a Turnover Sheet including the following:
   a. Unit 1
      i) A Reactor Shutdown is in progress in preparation for a turbine outage.
      ii) Reactor power is approximately 23%.
      iii) GO-100-004 is complete through step 5.25
      iv) RBCCW Pump "A" is OOS and is not available.
      v) The directions to the shift are to:
         (1) - Reduce reactor power to 20%
         (2) - Transfer the auxiliary busses to the startup transformer
   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

LOC27-N03.scn

```
; Monitored parameters
SCN rat_mp

; SET UP FOR ELECTRICAL ATWS
SCN exam¥LOC27-N03-A

;DISABLE FUEL POOL COOLING ALARMS
IMF annAR016H14 f:ALARM_OFF
IMF annAR106A17 f:ALARM_OFF

;RBCCW A OOS
IRF rfDB106275 f:OPEN

; ARI Div 2 fails to actuate
IMF cmfRL01_63X114725D2
IMF cmfRL01_63X214725D2

; CRD PCV Fail when Mode Sw to SD
aet ETLOC27-N03-1

; ARI Div 1 power loss on init
aet ETLOC27-N03-1A

; DEL  "B"  SLC PP MALF & TRIGGER
aet ETLOC27-N03-2

; DEL  "A"  SLC PP MALF & TRIGGER
aet ETLOC27-N03-3

;OVERRIDE LIGHTS FOR VAC BREAKER AND OG ISOL VLVS
IOR doHS10716_1 f:AsIs
IOR doHS10716_2 f:AsIs
IOR doHS10716A_1 f:OFF
IOR doHS10716A_2 f:ON
IMF annAR121F01 f:ALARM_OFF

;AUX BUS AUTO TRANSFER PERM TO OFF
{Key[19]} IRF rfDS003002 f:OFF

; NR Level C Drifts Low
{Key[1]} IMF cmfTD04_PDTC321N004C r:240 I:0 f:-15

;Loss of Aux Bus B
{Key[2]} IOR diHS00012B c:2 f:TRP

;Loss of Vacuum
{Key[3]} IMF cmfMV07_HV10742A R:240 I:3 f:8
{Key[3]} IMF cmfMV07_HV10742B R:240 I:3 f:8
{Key[3]} IMF cmfMV07_HV10742C R:240 I:3 f:8
{Key[3]} IMF cmfMV07_HV10716 r:240 i:100 f:20
{Key[3]} IMF cmfMV07_HV10717 r:240 i:100 f:20
{Key[3]} IMF cmfMV07_HV10718 r:240 i:100 f:20
{Key[3]} IMF cmfMV07_HV10719 r:240 i:100 f:20

;OPEN CRD F047B
{Key[4]} IRF rfRD155021 r:60 f:100

; Vent SAH
{Key[8]} SCN exam¥RDB_VSAH

; Restore SAH vent
{Key[9]} SCN exam¥RDB_RSAH

; Close CRD 146F034
{Key[5]}  IRF rfRD155017 d:60 f:0

; Pull Div 1 RPS Fuses
{Key[6]}  SCN exam¥RPB_ES158001A

; Pull Div 2 RPS Fuses
{Key[7]}  SCN exam¥RPB_ES158001B

; Restore Div 2 RPS Fuses
{Key[16]} SCN exam¥RPB_ES158001BR

; Restore Div 1 RPS Fuses
{Key[17]} SCN exam¥RPB_ES158001AR

; Open CIG X-Tie Valves
{Key[12]}  IRF rfPC125001 d:120 f:OPEN

; Reset CIG
{Key[13]} SCN exam¥LOC27-N03-E

{Key[22]} IRF crfPM16_1P502B f:RESET
```

LOC27-N03-A.scn

```
IMF mfRP158003     ;  RPS FAIL TO SCRAM
IMF cmfRL03_63X114725D2 ;  ARI DIV 2 INITIATION
;RELAR FAIL AS IS
IMF cmfRL03_63X214725D2;  ARI DIV 2 INITIATION RELAR
;FAIL AS IS
```

LOC27-N03-E.scn

```
IOR diHSM44131PB_Q f:RESET
+2 MOR diHSM44131PB_Q f:NORM
+2 DOR diHSM44131PB_Q
+2 IOR di1C239RST_Q f:RESET
+2 MOR di1C239RST_Q f:NORMAL
+2 DOR di1C239RST_Q
```

LOC27-N03-1.et/scn

```
; ;SWITCH:MODE SWITCH
diHSC72A1S01.CurrValue = #OR.diHSC72A1S01.SHUTDN

; FAIL CRD FLOW CONTROL VALVE CLOSED and Trip A CRD
Pump
IMF cmfAV04_FV146F002A f:0
IMF cmfPM03_1P132A
```

LOC27-N03-1A.et/scn

```
 SWITCH:ARI DIV I MAN TRIP (NORM,INIT)
diHS147103A1A.CurrValue != #OR.diHS147103A1A.NORM

;  ARI DIV 1 LOGIC FUSE OUT
IMF cmfFU01_1CB224AFU1
```

LOC27-N03-2.et/scn

```
;SWITCH:SBLC MANUAL INITIATION
diHSS14804.CurrValue = #OR.diHSS14804.START_A

 cet ETLOC27-N03-3
IMF cmfPM03_1P208A
IMF cmfPM03_1P208B d:60
```

LOC27-N03-3.et/scn

```
;SWITCH:SBLC MANUAL INITIATION
diHSS14804.CurrValue = #OR.diHSS14804.START_B

cet ETETLOC27-N03-2
IMF cmfPM03_1P208B
IMF cmfPM03_1P208A d:60
```

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	0	Lower Reactor Power by Inserting Control Rods
2	10	Transfer Auxiliary Busses
3	15	Narrow Range Instrument Failure
4	25	Loss of Auxiliary Bus 11B
5	45	Loss of Vacuum
6	55	ATWS due to RPS and ARI Failing to Actuate
7-8	65	SBLC Fails to Inject/ CRD Pump Trip and Flow Control Valve Failure
N/A	75	Termination

INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENT	1
BRIEF DESCRIPTION	Lower Reactor Power by Inserting Control Rods

INSTRUCTOR ACTIVITY

1. None

ROLE PLAY

Role play any directed actions as required.

EVALUATOR NOTES

1. None.

SCENARIO EVENT FORM

EVENT	1
BRIEF DESCRIPTION	Lower Reactor Power by Inserting Control Rods

POSITION	TIME	STUDENT ACTIVITIES
PCOM		Insert control rods per the shutdown control rod sequence using continuous insertion to full in accordance with OP-156-001 and OP-AD-338: • Manipulator SELECT control rod. (5.4.3.a) • Verifier CONFIRM correct control rod selected. (5.4.3.b) • Manipulator STATE intended move AND correct control rod number. (5.4.3.c) • Manipulator PLACE fingers adjacent to associated button(s) on reactor benchboard. (5.4.3.d) • Verifier CONFIRM the Manipulator is positioned adjacent to the correct directionalcontrol button(s). (5.4.3.e) • Verifier STATE intended move AND correct control rod number. (5.4.3.f) • Verifier STATES PROCEED. (5.4.3.g) • * Manipulator DEPRESS appropriate button(s) AND OBSERVES directional control lights on reactor benchboard prior to looking at control rod position indication. (5.4.3.h) • AND • Verifier OBSERVE control rod position indication on Standby Information Panel. (5.4.3.i) Monitor diverse indications: • RPIS / IRMs / APRMs / • Reactor water level / Reactor pressure
PCOP		Provide verifier checks for control rod movement. Monitors plant parameters, including CRD parameters
US		Direct PCOM to perform control rod insertion per the shutdown control rod sequence to 20% power Provide oversight for reactivity manipulation.

INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENT	2
BRIEF DESCRIPTION	Transfer Auxiliary Busses

INSTRUCTOR ACTIVITY

1. None

ROLE PLAY

2. As NPO, when requested to to take AUX BUS AUTO TRANSFER PERM TO OFF, wait 1 minute and **depress KEY** 19 and report completion to the control room.

   {Key[19]} IRF rfDS003002 f:OFF

   Role play any directed actions as required.

EVALUATOR NOTES

1. None

SCENARIO EVENT FORM

EVENT	2
BRIEF DESCRIPTION	Transfer Auxiliary Busses

POSITION	TIME	STUDENT ACTIVITIES
PCOM		Monitors plant parameters
PCOP		Transfers Auxiliary Busses Startup Bus 10 by performing the following: **Ensure** TIE BUS TO BUS 10 BKR OA10303 is **CLOSED.** **Ensure** TIE BUS OA106 **ENERGIZED by Observing** WHITE LIGHT **ILLUMINATED** on mimic bus on Panel OC653 **OR by Checking** TIE BUS OA106 voltage on voltmeter XI-00005 is nominally 14KV. **Ensure** all synchroscope switches **OFF** on OC653. **Insert** synchronizing key into TIE BUS TO BUS 11A SYNC SEL HS-00021A **AND Place** switch to **ON.** **Ensure** voltages MATCHED by **Observing** Diesel Gen Bus Diff Volts XI-00036, < 600 volts **OR Compare** Aux Bus 11A voltage on voltmeter XI-00009A with TIE BUS OA 106 voltage on voltmeter XI-00005. **Ensure** sources IN PHASE by **Observing** synchroscope XI-00037 is at 12 o'clock position± 5 minutes. **Close** TIE BUS TO BUS 11A BKR 1A10104 by **Placing** switch to **CLOSE AND Hold** until BKR 1A 10104 indicates **CLOSED.** **Observe** when switch spring returns to **NORMAL,** AUX XFMR 11 TO BUS 11A BKR 1A10101 automatically **OPENS.** **Reset** breaker flag for AUX XFMR 11 TO BUS 11A BKR 1A10101 by **Placing** switch to **OPEN.** **Return** TIE BUS TO BUS 11A SYNC SEL HS-00021A to **OFF AND Remove** synchronizing key. **Insert** synchronizing key into TIE BUS TO BUS 11B SYNC SEL HS-00021 B **AND Place** switch to **ON.** **Ensure** voltages MATCHED by **Observing** Diesel Gen Bus Diff Volts, XI-00036, < 600 volts **OR Compare** Aux Bus 11 B voltage on voltmeter XI-00009B with TIE BUS OA 106 voltage on voltmeter XI-00005. **Ensure** sources IN PHASE by **Observing** synchroscope XI-00037 is at 12 o'clock position ± 5 minutes. **Close** TIE BUS TO BUS 11B BKR 1A10204 by **Placing** switch to **CLOSE AND Hold** until BKR 1A10204 indicates **CLOSED.** **Observe** when switch spring returns to **NORMAL,** AUX XFMR 11 TO BUS 11B BKR 1A10201 automatically **OPENS.** **Reset** breaker flag for AUX XFMR 11 TO BUS 11 B BKR 1A10201 by **Placing** switch to **OPEN.** **Return** TIE BUS TO BUS 11 B SYNC SEL HS-00021 B to **OFF, AND Remove** synchronizing key. **Store** synchronizing key in TIE BKR SYNC SEL HS-00018 keylock switch. At OA10303, **Place** Auto Transfer Permissive switch HS-101 to **OFF**
US		Direct PCOP to transfer Auxiliary Busses Startup Bus 10 IAW OP-103-001

INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENT	3
BRIEF DESCRIPTION	Narrow Range Instrument Failure

INSTRUCTOR ACTIVITY

1. When directed by Lead Examiner, **depress KEY 1** to initiate NR Level C Drifts Low.

   {Key[1]} IMF cmfTD04_PDTC321N004C r:240 I:0 f:-15

ROLE PLAY

As **WWM** (or equivalent) contacted for assistance to investigate NR Level C, acknowledge request.

Role play any other directed actions as required.

EVALUATOR NOTES

1. None

SCENARIO EVENT FORM

EVENT	3
BRIEF DESCRIPTION	Narrow Range Instrument Failure

POSITION	TIME	STUDENT ACTIVITIES
TEAM		Recognize / report: • NR Level indications are drifting • Determines that NR Level C is malfunctioning. • When NR Level C deviates by greater than 10 inches. It is deselected by ICS.
PCOM		Monitor plant parameters.
PCOP		Executes ON-LVL-101 Section E: EVALUATE all RPV Level Transmitter inputs: NRLA (PT C32 1N004A) NRLB/BB (PT C32 1N004B) NRLC (PT C32 1N004C) UPSETLVL/B (PDT C32 1N017) Determines that NR Level C is malfunctioning. **PLACES** NRLC in MAINTENANCE BYPASS IAW OP-131-003
US		Enters and direct actions for ON-LVL-101 Section E Evaluates Technical Specifications and identifies a 7 day LCO for TS 3.3.2.2.A.

NOTES	

INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENT	4
BRIEF DESCRIPTION	Loss of Auxiliary Bus 11B

OPERATOR ACTIVITY

1. When directed by Lead Examiner, **depress KEY 2** to initiate loss of Auxiliary Bus 11B.

   {Key[2]} IOR diHS00012B c:2 f:TRP

2. If the crew is going to restart Cond Pump B, as the NPO when requested to reset the lockout for condensate pump B, wait1 minute and **depress KEY 22.**

   {Key[22]} IRF crfPM16_1P502B f:RESET

ROLE PLAY

1. As **NPO** dispatched to Aux Bus 11B, **wait** 2 minutes and **report**

   No bus lockout devices are tripped. The lockout for condensate pump B is tripped due to undervoltage from the loss of Aux Bus 11B.

2. As **WWM** (or Electrical Maintenance) contacted for assistance with Aux Bus 11B, **wait** 5 minutes and **report**

   Electrical reports Aux Bus 11B has checked and has determined that it can be reenergized.

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

Role play any other directed actions as required.

EVALUATOR NOTES

1. None.

SCENARIO EVENT FORM

EVENT	4
BRIEF DESCRIPTION	Loss of Auxiliary Bus 11B

POSITION	TIME	STUDENT ACTIVITIES
TEAM		Recognize / report: • Loss of Auxiliary Bus 11B • Trip of Recirculation Pump B • Trip of Condensate Pump B •
PCOM		Monitor plant parameters. Executes ON-RECIRC-101, Reactor Recirculation Malfunction Section B • DISPLAY Core Pressure Drop via PPC computer point NJP51 Core PL Press or if PPC unavailable via XR 14301 Point 5, Recirc: Core Plate DP. • DETERMINE actual core flow using Form GO 100 009 2 "Core Flow vs. Core Pressure Drop" curve. • PLOT position on Power/Flow Map. Concurrently PERFORM GO-100-009. • PERFORM the following: COMPLY with TRO 3.8.2.1. • PLACE RECIRC B MOV OL BYPS key switch HV-143-F031B/F032B to TEST • ENSURE Recirc Pump Discharge Bypass valve HV-143-F032B is OPEN: • CLOSE Recirc Pump Discharge Valve HV-143-F031B • WITHIN 5 minutes, OPEN Recirc Pump Discharge Valve HV-143-F031B WHEN 2 minutes have elapsed THEN PLACE RECIRC B MOV OL BYPS key switch HV-143-F031B/F032B to NORM. NOTIFY Shift Supervision to evaluate exiting TRO 3.8.2.1.

POSITION	TIME	STUDENT ACTIVITIES
PCOP		Executes ON-AUXBUS-101 Loss of/Undervoltage Condition on 13 KV Bus 11A OR 11B: • Directs NPO to check for protective relaying and lockouts on Auxiliary Bus 11B • When directed to restore Auxiliary Bus 11B, re-energizes Auxiliary Bus 11B IAW OP-103-001 Closes Breaker 1A10204 to energize Auxiliary Bus 11B by performing the following: • Ensure TIE BUS OA106 ENERGIZED by Observing WHITE LIGHT ILLUMINATED on mimic bus on Panel OC653 OR by Checking TIE BUS OA106 voltage on voltmeter XI-00005 is nominally 14KV. • Ensure all synchroscope switches OFF on OC653. • Insert key AND Place TIE BUS TO BUS 11 B SYNC SEL HS-00021 B keyswitch to ON. • Close TIE BUS TO BUS 11 B BKR 1A 10204 by Placing switch to CLOSE. • Observe TIE BUS TO BUS 11B BKR 1A10204 CLOSES • Return TIE BUS TO BUS 11 B SYNC SEL HS-00021 B to OFF AND Remove key. • Observe UNIT AUX BUS 11 B WHITE LIGHT ILLUMINATED on Panel OC653. • Check AUX BUS 11 B voltage on voltmeter XI-00009B is nominally 14KV. Starts a 2nd condensate pump IAW OP-144-001 as follows: • Check Open the selected COND PP SUCT HV-10501 • Depress the selected CONDENSATE PUMP START pushbutton • Observe the selected COND PP B(D) DSCH HV -10502 STARTS OPENING within five (5) seconds after Condensate Pump 1P102B(D) starts
US		Enter ON-AUXBUS-101 Loss of/Undervoltage Condition on 13 KV Bus 11A OR 11B Directs PCOP to perform ON-AUXBUS-101 Enters ON-RECIRC-101, Reactor Recirculation Malfunction Directs PCOM to perform ON-RECIRC-101 Determine Technical Specification 3.4.1 Condition B applicable for single recirculation loop operations. When report received that Auxiliary Bus 11B has been cleared by electrical maintenance to re-energize, directs the PCOP to re-energize Auxiliary Bus 11B. When Auxiliary Bus 11B is reenergized, directs PCOP to start a 2nd condensate pump IAW OP-144-001.

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INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENT	5
BRIEF DESCRIPTION	Loss of Vacuum

OPERATOR ACTIVITY

1. When directed by Lead Examiner, **depress KEY 3** to initiate loss of vacuum.

{Key[3]} IMF cmfMV07_HV10742A R:240 I:3 f:8
{Key[3]} IMF cmfMV07_HV10742B R:240 I:3 f:8
{Key[3]} IMF cmfMV07_HV10742C R:240 I:3 f:8
{Key[3]} IMF cmfMV07_HV10716 r:240 i:100 f:20
{Key[3]} IMF cmfMV07_HV10717 r:240 i:100 f:20
{Key[3]} IMF cmfMV07_HV10718 r:240 i:100 f:20
{Key[3]} IMF cmfMV07_HV10719 r:240 i:100 f:20

ROLE PLAY

As **NPO** dispatched to investigate main condenser vacuum breakers, wait 2 minutes and report:

"The main condenser vacuum breakers appear to be stuck partially open. There does not appear to be any way to close them "

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

Role play any other directed actions as required.

EVALUATOR NOTES

1. None.

SCENARIO EVENT FORM

EVENT	5
BRIEF DESCRIPTION	Loss of Vacuum

POSITION	TIME	STUDENT ACTIVITIES
TEAM		Recognize / report: ▪ lowering condenser vacuum ▪ main condenser vacuum breakers partially open
PCOM		Recognizes/reports lowering Main Condenser Vacuum. Recognizes/reports AR-105-B02, CONDENSER HI PRESSURE. Reduces reactor power by inserting control rods. Scrams the reactor and trip the turbine when directed.
PCOP		Performs ON-143-001, Main Condenser Vacuum and Offgas System Off-Normal Operation. Performs Section 3.9 of ON-143-001 for air in leakage Brings up VAC display (backpressure limits) on PPC Monitors and reports backpressure trend Checks Vacuum Breaker position indication and recognizes vacuum breakers are partially open. • At 1C668, Attempts to Close by depressing CLOSE pushbutton HV-10742 A, B, C Cdsr Vac Bkr. Directs NPO to investigate stuck open vacuum breakers. Reports when back pressure has entered the Max 5 Minutes of Operation region of the back pressure limit graph.
US		Enters ON-143-001, Main Condenser Vacuum and Offgas System Off-Normal Operation. Directs PCOP to execute ON-143-001 Directs PCOM to lower power by inserting control rods. Assigns a critical parameter for main condenser vacuum. When report received that the Max 5 Minutes of Operation region of the back pressure limit graph has been entered, directs the PCOM to scram the reactor and trip the turbine (within 5 minutes of entering Max 5 Minutes region.)

INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENTS	6
BRIEF DESCRIPTION	ATWS due to RPS and ARI Failing to Actuate

OPERATOR ACTIVITY

1. **Ensure** Event Trigger **ETLOC27-N03-1A** initiates when Div 1 of ARI is initiated to cause a logic power failure.
2. **Ensure** Event Trigger **ETLOC27-N03-2 and ETLOC27-N03-2** initiates with SLC Pump A(B) is started to trip the pump immediately, and the standby pump after 1 minutes.
3. When RPV level has been stabilized below -60 inches, and 5 minutes have elapsed since the request for maintenance assistance, **perform** the Role Play for venting the scram air header. **Depress KEY 8** to vent the scram air header when directed.
   {Key[8]} SCN exam\RDB_VSAH
4. When directed, **depress KEY 9** to restore from venting the scram air header
   {Key[9]} SCN exam\RDB_RSAH

ROLE PLAY

As **NPO** sent to investigate CRD PCV, **wait** 2 minutes and **report**
There is a burnt smell coming from the motor of HV-146-F003 but it looks normal.
If directed to manually operate the PCV, **wait** 2 minutes and **report**
I can't get the handwheel to move more than 3 turns.
If directed to place the B FCV in-service, **depress KEY 4** to place B FCV in-service**, wait** 2 minutes and **report**
B FCV has been lined up and is ready to be placed in service
As **WWM** directed to investigate the CRD Pump trip, **wait** 10 minutes and **report**
The A CRD Pump motor has an internal fault and will have to be replaced.
As **WWM** directed to investigate the A(B) SLC Pump trip, **wait** 5 minutes and **report**
The A SLC Pump shaft is frozen. I don't know how long it will take to fix. The B SLC pump has an electrical fault and will need to be repaired.
As **NPO** dispatched to vent the scram air header, **wait** 2 minutes and **report**
The cap on the Scram Air Header vent line will not come off. I need help from Maintenance.
When directed by Instructor Activity 4, as **NPO** dispatched to vent the scram air header **contact** the Control Room and **report**
Maintenance has removed the cap from 147007. We're ready to vent the Unit 1 scram air header.
As **FUS** contacted to perform ES-158-001, **acknowledge** the request and take no further action. If contacted for status, **report** that the Unit 2 TB NPO was dispatched. If the Control Room attempts to contact the Unit 2 TB NPO, do not reply.
Role play any other directed actions as required.

EVALUATOR NOTES

Recommended termination point is after the crew has transitioned from the LEVEL/POWER CONTROL EOP to the RPV Control EOP and reactor level is being restored to the normal band.

SCENARIO EVENT FORM

EVENTS	6
BRIEF DESCRIPTION	ATWS due to RPS and ARI Failing to Actuate

POSITION	TIME	STUDENT ACTIVITIES
★TEAM		**Inserts control rods IAW EO-000-113** **Lowers RPV level to < -60" but > -179"**
PCOM		Stops and prevents injection from feedwater. Establishes injection with feedwater, to maintain -60 to -110. Attempts to drive control rods per EO-100-113, observes CRD Pump trip. After the CRD pump B has been started and drive water pressure established, manually inserts control rods in accordance with EO-000-113, sheets 2 Observes all control rods fully inserted when scram air header vented
PCOP		Initiates ARI and determines that one division has lost power and that the other division has failed to initiate. Initiates standby liquid control. When selected pump trips, starts the other pump and observes that it also trips. Inhibits ADS and overrides MSIV isolation Stops and prevents injection from HPCI. Starts the B CRD pump and recognizes that the FCV is failed closed. Operates the CRD pressure control valve to obtain sufficient drive pressure for manually driving rods but insufficient for drifting rods. Directs the NPO to vent the scram air header. Directs the FUS to pull RPS fuses IAW ES-158-001.
US		Enters EO-000-102 and transitions to EO-000-113 for level power control. Directs PCOP to stop and preventing injection from systems with the exception of CRD, SLC, and RCIC Directs PCOM to stop and preventing injection from feedwater Directs PCOM to maintain reactor level between -60 and –110 When scram air header is vented and all control rods are inserted, transitions to EO-000-102.

★ Denotes Critical Task

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TEAM SUSQUEHANNA. Generating Excellence	**SUSQUEHANNA LEARNING CENTER** **SIMULATOR SCENARIO**
Scenario Title:	**APRM Failure / Inadvertent HPCI Initiation / Fault on Bus 1A201 / Main Steam Leak / LOOP / EDG Failures / HPCI and RCIC Failures**
Scenario Duration:	**75 minutes**
Scenario Number:	**LOC27-N-04**
Revision / Date:	**0 / April 20, 2015**
Course:	**PC017 SRO License** **PC018 RO License**

Prepared By:	Rich Bolduc Instructor	04/20/2015 Date
Reviewed By:	Greg van den Berg Operations Training Management	05/06/15 Date
Approved By:	Manu Sivaraman Operations Line Management	05/06/15 Date

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SCENARIO SUMMARY

The scenario begins with Unit 1 at approximately 97% power following control rod exercising.

The first activity for the crew will be to raise Reactor power by raising recirculation flow to 100% power. During the power ascension, an APRM fails upscale and causes a control rod block. The crew will bypass the APRM to clear the rod block. The SRO will review the Technical Specification impact of the failed APRM.

After Technical Specifications have been addressed for the failed APRM, HPCI will inadvertently initiate due to a momentary, spurious start signal. The crew will secure HPCI to prevent uncontrolled injection to the Reactor. The SRO will declare HPCI inoperable and determine the Technical Specification impact.

A report will be received that the HPCI spurious initiation signal to have seen has been corrected and that HPCI can be shut down and placed in a standby lineup. The BOP will shut down HPCI in accordance with the operating procedure and place the system in a standby lineup.

After HPCI has been shut down, an electrical fault will develop on ESS Bus 1A (1A201). This results in the loss of Core Spray pump A, RHR pump A, and RHR loop A Containment Spray ability. The crew will respond per ON-4KV-101, Loss of 4KV Bus, and multiple other off-normal procedures. The crew will cross-tie Instrument Air to Containment Instrument Gas, place RPS Bus A on the alternate supply, reset a half scram and half isolation, and start the 1B CRD pump. The SRO will determine the Technical Specification impact.

Next, a leak will develop from the Main Steam lines into the Turbine Building. The crew will lower Reactor power as time allows and manually scram the Reactor. An MSIV isolation signal will be received on high temperature, however Main Steam Line D will fail to isolate. The crew will manually isolate Main Steam Line D by closing at least one of the two MSIVs.

Once the MSIVs are closed, a loss of all off-site power will occur. Emergency Diesel Generator A is unable to supply its bus due to the earlier fault on 1A201. Emergency Diesel Generator C will start, but then trip. Emergency Diesel Generators B and D will fail to automatically start, but be available to manually start. This will result in momentary Station Blackout conditions until the crew manually starts Emergency Diesel Generator B and/or D. The crew will take actions per ON-LOOP-101, Unit 1 Loss of All Offsite Power.

Reactor water level control will be complicated by failures of HPCI and RCIC. HPCI and RCIC will fail to automatically start. Additionally, the manual initiation pushbuttons for HPCI and RCIC will fail to function correctly. The crew will be able to manually start RCIC and/or HPCI to restore and maintain Reactor water level and assist in controlling Reactor pressure. Reactor pressure control will be complicated by closure of the MSIVs. SRVs will initially be required to control Reactor pressure. The scenario may be terminated when all control rods are inserted, the Main Steam Lines are isolated, at least one ESS Bus is re-energized, Reactor water level is being controlled above -161", and Reactor pressure is being controlled below 1087 psig.

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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-055	Operations Procedure Program
4.	OP-AD-300	Administration of Operations
5.	OP-AD-338	Reactivity Manipulations Standards and Communication Requirements
6.	GO-100-002	Plant Startup, Heatup and Power Operation
7.	OP-156-001	Reactor Manual Control System (RMCS)
8.	OP-145-001	RFP and RFP Lube Oil System
9.	AR-103-A06	APRM Upscale or INOP Trip
10.	AR-103-B06	APRM Upscale
11.	ON-4KV-101	Loss of 4KV Bus
12.	AR-114-E02	HPCI Pump Dsch Lo Flow
13.	ON-PWR-101	Reactor Power
14.	ON-RPR-101	Rapid Power Reduction
15.	ON-SCRAM-101	Reactor Scram
16.	EO–000–102	RPV Control
17.	ON-LOOP-101	Unit 1 Loss of All Offsite Power
18.	EP–RM–004	EAL Classification Levels
19.	TS 3.3.1.1	Reactor Protection System (RPS) Instrumentation
20.	TS 3.5.1	ECCS – Operating
21.	TS 3.8.7	Distribution Systems - Operating
22.	TS 3.6.2.3	Residual Heat Removal (RHR) Suppression Pool Cooling
23.	TS 3.6.2.4	Residual Heat Removal (RHR) Suppression Pool Spray

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CRITICAL TASKS

Manually isolate a Main Steam Line break.	
Safety Significance	High energy leakage into the Turbine Building impacts the ability to safely operate the plant. Action is taken to isolate systems that are discharging into the Turbine Building to terminate possible sources of radioactivity release. Minimizing radioactive release to the Turbine Building also helps accomplish the objective of precluding a radioactive release outside Turbine Building under conditions where Turbine Building integrity cannot be maintained.
Consequences for Failure To Perform Task	Failure to take actions to mitigate the energy released to the Turbine Building directly affects the radiation dose to the General Public.
Indications/Cues for Event Requiring Critical Task	Simplex Fire Detection alarms; room area temperature annunciation; feedback from plant personnel. High radiation annunciation for affected areas/rooms. Other indication of steam line break: lowering steam supply pressure, depressurization of the RPV; level transient on RPV.
Performance Criteria	Manually close at least one MSIV in each Main Steam line.
Performance Feedback	Initiating an isolation of the affected system results in Control Room/PPC indications of lowering area temperatures and radiation levels. Successful isolation is indicated on Control Room panel by full closed light indication for operated valves.
Restore power to an ESS Bus by manually starting an emergency diesel generator.	
Safety Significance	Manually starting an emergency diesel generator and re-energizing an ESS bus removes the plant from a Station Blackout.
Consequences for Failure To Perform Task	Continued Station Blackout conditions will lead to a significant challenge to fuel cladding, the Reactor coolant system, and the Primary Containment. Fission product release to the environment is highly likely during a prolonged Station Blackout.
Indications/Cues for Event Requiring Critical Task	AC electrical power is lost to all plant components. No emergency diesel generator is running.
Performance Criteria	Manually start an emergency diesel generator and re-energize an ESS bus.
Performance Feedback	Emergency diesel generator speed and electrical output rise. AC power is restored to multiple plant components.

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SCENARIO MALFUNCTIONS

Event	Description	Crew Response
2	APRM Fails Upscale	Bypass APRM; determine Technical Specification impact
3	Inadvertent HPCI Initiation	Secure HPCI; determine Technical Specification impact
5	Electrical Fault on ESS Bus 1A (1A201)	Cross-tie IA to CIG; restore RPS bus A; reset half scram and isolations; start CRD pump B; determine Technical Specification impact
6	Main Steam Leak into Turbine Building	Scram the Reactor
7	MSIVs Fail to Automatically Close	Close MSIVs
8	Loss of Offsite Power	Respond to multiple equipment losses, including Feedwater/Condensate
9	EDG C Fails to Start, EDGs B and D Fail to Auto-Start	Start EDG(s) to exit Station Blackout
10	HPCI and RCIC Fail to Auto-Initiate and Manual Initiation Pushbuttons Fail	Perform manual start of RCIC and/or HPCI

ABNORMAL EVENTS / MAJOR TRANSIENTS / TECH SPEC

Malfunction	Description
R	Raise Reactor Power with Recirc Flow
N	Shutdown HPCI and Place in a Standby Lineup
AE1	Electrical Fault on ESS Bus 1A (1A201)
AE2	Inadvertent HPCI Initiation
MT1	Main Steam Leak into Turbine Building
MT2	Loss of Offsite Power
TS1	APRM Fails Upscale
TS2	Inadvertent HPCI Initiation

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SCENARIO SPECIAL INSTRUCTIONS

1. Simulator setup
   a. **Initialize** to an exam-specific IC (IC–400). If an exam-specific IC is not available, then setup the simulator as follows:
      i) **Initialize** to IC-21. (100% power MOL)
      ii) **Place** the simulator in RUN.
      iii) **Reduce** power with Recirc to 97%.
      iv) **Insert** .13 leak on SRV P
      v) **Allow** SRV tailpipe temperature to stabilize at 235°
   b. **Run** SCN file **exam\LOC27-N04.scn**
   c. **Open** trend files **rat.tnd.**
2. **Verify** the following malfunctions/overrides, event triggers and key assignments:

MF	RF	OR	SCN	ET	COND
6:6	1:1	3:3	0:0	5:0	5

3. **Prepare** the simulator for evaluation
   a. **Complete** a simulator exam checklist, TQ-106-0315
   b. **Reset** ODAs and all Overhead, PPC, HMI and RWM alarms
4. **Prepare** a Turnover Sheet including the following:
   a. Unit 1
      i) Reactor power 97% following deep rod exercising.
      ii) SRV P is leaking. Tailpipe temperature is approximately 235°F
   b. Common
      i) Unit 2 is at rated power
   c. Directions to the shift is to raise power to 100% using recirculation flow per the RMR.
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

LOC27-N04.scn

```
SCN rat_mp
SCN exam\LOC27-N04-MP

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

; Electrical Fault on ESS Bus 1A (1A201)
{Key[2]} IMF cmfEB01_1A201

; Xtie IA to CIG
{Key[12]} IRF rfPC125001 f:OPEN

; Inadvertent HPCI Initiation
{Key[3]} IMF mfHP152004 c:10

; Main Steam Leak into Turbine Building
{Key[4]} IMF mfMS183008 r:10:00 f:0.25

; D MSIVs Fail to Automatically Close
IMF cmfAV06_HV141F028D f:AsIs
IMF cmfAV06_HV141F022D f:AsIs
aet LOC27-N04-1
aet LOC27-N04-2

; D MSIVs Leak to cause slight inventory loss
IMF cmfAV05_HV141F022D f:5
IMF cmfAV05_HV141F028D f:5

; Loss of Offsite Power
; EDG C Fails to Start, EDGs B and D Fail to
Auto-Start
aet LOC27-N04-5

; EDG B and D will start with control room PB
aet LOC27-N04-3
aet LOC27-N04-4

; RCIC and HPCI Fail to Auto-Initiate,
Initiation PBs Fail to ARM
IMF mfRC150001
{Key[4]} IMF mfHP152002
IOR diHS15012CB f:NORM
IOR diHSS15677B f:NORM
```

LOC27-N04-MP.scn

LOC27-N04-1.et/scn

```
;SWITCH:MAIN STEAM LINE D ISOLATION
diHS14123D.CurrValue = #OR.diHS14123D.CLS

dmf cmfAV06_HV141F022D
```

LOC27-N04-2.et/scn

```
;SWITCH:MAIN STEAM LINE D ISOLATION
diHS14129D.CurrValue = #OR.diHS14129D.CLS

dmf cmfAV06_HV141F028D
```

LOC27-N04-3.et/scn

```
;SWITCH:DG B START BLACK PB
diHS00051B.CurrValue = #OR.diHS00051B.RESET

DMF mfDG024001B
```

LOC27-N04-4.et/scn

```
;SWITCH:DG D START BLACK PB
diHS00051D.CurrValue = #OR.diHS00051D.RESET

DMF mfDG024001D
```

LOC27-N04-5.et/scn

```
;LIGHT:MAIN STEAM LINE D ISOLATION
(doHS14123D_2.CurrValue =
#OR.doHS14123D_2.OFF)&&(doHS14129D_2.CurrValue
= #OR.doHS14129D_2.OFF)

IMF mfDS003007 d:30
IMF mfDS003008 d:30
IMF mfDG024008C d:45
IMF mfDG024001B d:30
IMF mfDG024001D d:30
IMF annAR015C13 f:ALARM_OFF d:30
IMF annAR015E13 f:ALARM_OFF d:30
IMF annAR016C03 f:ALARM_OFF d:30
IMF annAR016E03 f:ALARM_OFF d:30
```

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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	0	Raise Reactor Power with Recirc Flow
2	10	APRM Fails Upscale
3	15	Inadvertent HPCI Initiation
4	25	Shutdown HPCI and Place in a Standby Lineup
5	40	Electrical Fault on ESS Bus 1A (1A201)
6-7	55	Main Steam Leak into Turbine Building, MSIVs Fail to Automatically Close
8-10	65	Loss of Offsite Power, EDG C Fails to Start, EDGs B and D Fail to Auto-Start, HPCI and RCIC Fail to Auto-Initiate and Manual Initiation Pushbuttons Fail
N/A	75	Termination

INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENT	1
BRIEF DESCRIPTION	Raise Reactor Power with Recirc Flow

INSTRUCTOR ACTIVITY

1. None

ROLE PLAY

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

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

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

   Raise power 1 percent power per minute.

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

   The reactivity manipulation may proceed.

Role play any directed actions as required.

EVALUATOR NOTES

1. None.

SCENARIO EVENT FORM

EVENT	1
BRIEF DESCRIPTION	Raise Reactor Power with Recirc Flow

POSITION	TIME	STUDENT ACTIVITIES
PCOM		Raises reactor power with recirc flow in accordance with OP-AD-338 ATT. K
		Per GO-100-012, plots power change on power/flow map
		Depresses 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)
		Monitors diverse indications of reactor power (APRMs, heat balance, Main Generator output) per OP-AD-001 Attachment G
		Reports power/pressure/level to US following reactivity manipulation
PCOP		Verifier confirms the correct RRP, Direction, Intended Manipulation as directed by OP-AD-338
US		Contacts RE for assistance with raising reactor power using recirc flow
		Obtains permission from Shift Manager prior to commencing reactivity manipulation
		Performs Reactivity Brief to raise Reactor power to 100% using recirc flow
		Performs crew update for commencing reactivity manipulations
		Directs PCOM to raise reactor power using recirc flow in accordance with RE and OP-AD-338
		Directs PCOP to provide peer check to PCOM during power ascension
		Conducts Crew Update after recirc flow manipulation is complete

INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENT	2
BRIEF DESCRIPTION	APRM Fails Upscale

INSTRUCTOR ACTIVITY

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

   {Key[1]} IMF mfNM178007A f:125

ROLE PLAY

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

Role play any other directed actions as required.

EVALUATOR NOTES

1. None

INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENT	2
BRIEF DESCRIPTION	APRM Fails Upscale

INSTRUCTOR ACTIVITY

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

   {Key[1]} IMF mfNM178007A f:125

ROLE PLAY

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

Role play any other directed actions as required.

EVALUATOR NOTES

2. None

SCENARIO EVENT FORM

EVENT	2
BRIEF DESCRIPTION	APRM Fails Upscale

POSITION	TIME	STUDENT ACTIVITIES
TEAM		Recognize / report: • Annunciator AR-103-A06, APRM UPSCALE OR INOP TRIP • Annunciator AR-103-B06, APRM UPSCALE • Annunciator AR-103-C04, RBM UPSCALE OR INOP ROD BLOCK • Annunciator AR-104-H03, ROD OUT BLOCK • APRM 1 indicates upscale. • Other Reactor power indications indicate normal values.
PCOM		Execute ARs. Determine APRM 1 has failed upscale. Bypass APRM 1 by moving APRM BYPASS joystick up to CH 1 position.
PCOP		Monitor plant parameters.
US		Ensure execution of ARs. Determine Technical Specification 3.3.1.1 only requires 3 APRMs, which allows bypassing of APRM 1. Direct bypass of APRM 1.

NOTES	

INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENT	3
BRIEF DESCRIPTION	Inadvertent HPCI Initiation

OPERATOR ACTIVITY

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

   {Key[3]} IMF mfHP152004 c:10

ROLE PLAY

As **NPO** dispatched to investigate HPCI, wait 2 minutes and report:

"There are no abnormal indications in the HPCI room."

If asked as **I&C or WWM** to investigate the HPCI spurious start, wait 3 minutes, then report:

"HPCI started due to a spurious initiation signal. Recommend shutting down HPCI and placing in a standby lineup. Operations management has concurred with this recommendation"

Role play any other directed actions as required.

EVALUATOR NOTES

None

SCENARIO EVENT FORM

EVENT	3
BRIEF DESCRIPTION	Inadvertent HPCI Initiation

POSITION	TIME	STUDENT ACTIVITIES
TEAM		Recognize / report: ▪ AR-114-E02, HPCI PUMP DSCH LO FLOW. ▪ HPCI initiation. ▪ Reactor water level rises (if HPCI injects). ▪ Reactor power rises (if HPCI injects). ▪ Drywell pressure and Reactor water level are SAT and HPCI injection is not required.
PCOM		Monitor Reactor power and water level. May reduce Recirculation flow to restore Reactor power. Perform ON-PWR-101 actions as directed.
PCOP		Override HPCI injection: • Ensure HPCI AUXILIARY PUMP 1P213 switch placed to START. • Place HPCI TURBINE FLOW CONTROL FC-E41-1R600 in MANUAL. • Reduce demand to stop HPCI flow. Will likely maintain HPCI running on min flow during troubleshooting efforts, but may shutdown HPCI per OP-152-001 section 2.10.
US		Direct overriding HPCI injection. Direct action to lower Reactor power, if necessary. Enter ON-PWR-101. Declare HPCI inoperable. Determine Technical Specification 3.5.1 Condition D must be entered (verify RCIC operable immediately, restore HPCI within 14 days. Determine Technical Specification 3.5.1 Condition E must be entered (due to inop CS A – restore CS A or HPCI within 72 hours.

INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENT	4
BRIEF DESCRIPTION	Shutdown HPCI and Place in a Standby Lineup

OPERATOR ACTIVITY

None

ROLE PLAY

Role play any other directed actions as required.

EVALUATOR NOTES

SCENARIO EVENT FORM

EVENT	4
BRIEF DESCRIPTION	Shutdown HPCI and Place in a Standby Lineup

POSITION	TIME	STUDENT ACTIVITIES
PCOM		Monitor plant parameters during shutdown of HPCI
PCOP		Shuts down HPCI in accordance with OP-152-001 Section 2.10: Depress HS-E41-1S17 to RESET Initiation Signal. Ensure HPCI AUXILIARY OIL PUMP 1P213 switch placed to START. Ensure following overload bypass switches placed to TEST. Place HPCI TURBINE FLOW CONTROLLER FC-E41-1R600 in MANUAL. Manually Reduce HPCI Pump flow (speed) with HPCI TURBINE FLOW CONTROL FC-E41-1R600 to reduce Turbine speed to -2200 rpm. Open HPCI Room Floor Drain Valve 161119. Check Closed HPCI TEST LINE TO CST isolation valves. Depress and Maintain HPCI TURB TRIP HS-E41-1S19 pushbutton DEPRESSED. Ensure HPCI INJECTION HV-155-F006 CLOSES. Ensure HPCIINJECTION HV-155-F006 CLOSES. Observe HPCI AUXILIARY OIL PUMP 1P213 STARTS as HPCI Turbine coasts down. WHEN HPCI TURBINE STEAM SUPPLY HV-155-F001 indicates Fully Closed Release HPCI TURB TRIP pushbutton. Ensure HPCI STM LINE DRN TO CDSR IB ISO HV-155-F028 OPENS. Ensure HPCI STM LINE DRN TO CDSR OB ISO HV-155-F029 OPENS. Ensure HPCI BARO CDSR COND PP DSCH DRN HV-156-F026 Ensure HPCI ROOM UNIT COOLER 1V209A(B) STOPS. Ensure HPCI L-0 CLG WTR HV-156-F059 CLOSED. Reset HPCI TURBINE FLOW CONTROL FC-E41-1R600 to 5100 gpm and in AUTO. AFTER 2 minutes, return overload bypass switches to NORM
US		Direct PCOP to shutdown HPCI in accordance with OP-152-001.

INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENT	5
BRIEF DESCRIPTION	Electrical Fault on ESS Bus 1A (1A201)

OPERATOR ACTIVITY

1. After HPCI shutdown and when directed by Lead Examiner, **depress KEY 2** to initiate event.

   {Key[2]} IMF cmfEB01_1A201

2. When dispatched as NPO to crosstie Intrument Air to CIG, wait 2 minutes, then **depress KEY 12**:

   {Key[12]} IRF rfPC125001 f:OPEN

ROLE PLAY

If dispatched as NPO to investigate ESS Bus 1A, wait 2 minutes, then report,

"The normal supply breaker to ESS Bus 1A tripped on overcurrent."

When dispatched as **NPO** to crosstie Instrument Air to CIG, wait 2 minutes, then **depress KEY 12** as described above and **report**:

"Instrument Air has been cross-tied to CIG."

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

Role play any other directed actions as required.

EVALUATOR NOTES

1. Recommend moving to the next event once RPS is on the alternate supply, the half scram is reset, RBCW is restored, CRD is restored, and the Technical Specification call is made.

SCENARIO EVENT FORM

EVENT	4
BRIEF DESCRIPTION	Electrical Fault on ESS Bus 1A (1A201)

POSITION	TIME	STUDENT ACTIVITIES
TEAM		Recognize / report: • Annunciator AR-015-A08, 4KV BUS 1A (1A201) LO VOLT/PROT CKT TROUBLE • Annunciator AR-015-D08, 4KV BUS 1A BUS LOCKOUT RELAY TRIP • Annunciator AR-015-D10, DG A SUPPLY BKR TO BUS 1A/2A TRIP • Annunciators AR-109-B02(B09), CORE SPRAY (RHR) LOOP A OUT OF SERVICE • Half scram. • Loss of ESS Bus 1A
PCOM		Monitor plant parameters. Once RPS A is placed on alternate supply, reset half scram by momentarily positioning REACTOR SCRAM RESET HS-C72A-1S05 to GROUP 1/4 position AND THEN to GROUP 2/3 position.

PCOP		Execute ON-4KV-101, Loss of 4KV Bus:
		• Reference Attachment D for automatic actions.
		• Perform Attachment C.
		• Crosstie Instrument Air to CIG 90# header in accordance with ON-125-001, Loss of CIG:
		  o Dispatch NPO to perform OP-125-001, Containment Instrument Gas System, section 2.8.
		• Ensure ESW in service to provide cooling to diesel generator in accordance with OP-054-001, ESW System:
		  o Start at least one ESW pump.

POSITION	TIME	STUDENT ACTIVITIES
PCOP (cont.)		• Start CRD pump B in accordance with ON-CRD-101, Control Rod Malfunction: o Close CRD Flow Control Valve FV 146 F002A(B) as follows: ▪ Place CRD Flow Controller FC-C12-1R600 in MANUAL. ▪ Set CRD Flow Controller FC-C12-1R600 to 0% DEMAND SIGNAL. ▪ Verify CRD Flow Control Valve FV-146-F002A(B) CLOSED. o Start standby CRD Pump 1P132B by placing control switch to RUN position. o With CRD Pump 1P132B in operation, Establish system flow ~ 63 gpm using CRD Flow Controller FC-C12-1R600. o Place CRD Flow Controller FC-C12-1R600 in AUTO. • Transfer RPS bus A to alternate supply and Restore containment isolation in accordance with ON-RPS-101, Loss of RPS: o Ensure ALTERNATE A FEED White indicating light ILLUMINATED. o Ensure RPS M G SET TRANSFER SWITCH HS-C72B-S1 in NORM position. o Place RPS M G SET TRANSFER SWITCH HS-C72B-S1 in ALT A position. o Reset the Main Steam Line Rad Monitors at Panel 1C606. o Coordinates with ATC to reset A RPS half scram by momentarily positioning REACTOR SCRAM RESET HS-C72A-1S05 to GROUP 1/4 position AND THEN to GROUP 2/3 position. o Depress MN STM LINE DIV 1 ISO RESET HS-B21-1S32. o Depress MN STM LINE DIV 2 ISO RESET HS-B21-1S33. o Recover from RBCW isolation: ▪ Ensure RRP A CLG WTR OB ISO VALVES HV-18791A1&A2 CLOSED. ▪ Ensure RRP B CLG WTR IB ISO VALVES HV-18792A1&A2 CLOSED. ▪ Depress HV-18791A1&A2 ISOLATION RESET. ▪ Depress HV-18792A1&A2 ISOLATION RESET. ▪ Ensure RRP A CLG WTR OB ISO VALVES HV-18791A1&A2 OPEN. ▪ Ensure RRP B CLG WTR IB ISO VALVES HV-18792A1&A2 OPEN. • Ensure Automatic Actions occurred in accordance with Attachment D.

POSITION	TIME	STUDENT ACTIVITIES
US		Enter ON-4KV-101, Loss of 4KV Bus. Enter ON-125-001, Loss of Containment Instrument Gas. Enter ON-CRD-101, Control Rod Malfunction. Enter ON-RPS-101, Loss of RPS. Determine Technical Specification 3.8.7 Condition A Required Action 1 is applicable for loss of ESS Bus 1A (8 hours to restore). May reference Technical Specifications 3.5.1, 3.6.2.3, and 3.6.2.4.

NOTES	

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INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENTS	6-7
BRIEF DESCRIPTION	Main Steam Leak into Turbine Building, MSIVs Fail to Automatically Close

OPERATOR ACTIVITY

1. When directed by Lead Examiner, **depress KEY 4** to initiate event, **then make first Role Play below**.

   {Key[4]} IMF mfMS183008 r:10:00 f:0.25

2. When the crew attempts to manually close MSIV(s) in D MSL, ensure the following trigger(s) activate(s) to allow the MSIV(s) to close.

   aet LOC27-N04-1 / aet LOC27-N04-2

ROLE PLAY

Upon event initiation, call the crew as an **NPO** in the Turbine Building and report:
"There is a lot of steam in the Turbine Building. It appears to be coming from the vicinity of the Main Steam Tunnel."

If dispatched as **NPO** to investigate abnormal conditions in the Turbine Building, wait 2 minutes, then report:
"There was elevated temperature and a lot of steam as soon as I got into the Turbine Building. I have exited the building." (if after MSIVs closed, instead report steam seems to be clearing)

If dispatched as **NPO/Security** to check TB blowout panels, wait 2 minutes, then report:
"No Turbine Building blowout panels have ruptured."

Role play any other directed actions as required.

EVALUATOR NOTES

1. MSIVs may be closed based on Operator standards to backup automatic actions that fail or on guidance in EO-000-102, RPV Control, step RC/L-1.
2. A small amount of leak-by will occur on the D MSL MSIVs even after closure. This is programmed to cause a small Reactor coolant inventory loss, which achieves the desired Reactor water level response to ensure the crew must inject with HPCI and/or RCIC later in the scenario.
3. When both D MSL MSIVs are closed, an automatic event trigger will cause the loss of offsite power that leads to the next event. If desired by Lead Examiner to facilitate scenario completion, this automatic event trigger may be manually forced.

SCENARIO EVENT FORM

EVENTS	6-7
BRIEF DESCRIPTION	Main Steam Leak into Turbine Building, MSIVs Fail to Automatically Close

POSITION	TIME	STUDENT ACTIVITIES
★TEAM		**Manually isolate a Steam Line break.**
TEAM		Recognize / report: • Notification of steam in Turbine Building • Rising temperature in Main Steam Tunnel in Turbine Building • Annunciator AR-111-F02, STEAM TUNNEL TURBINE AREA HI TEMP • Annunciators AR-111(112)-B02, STEAM TUNNEL LOGIC A/C (B/D) HI TEMP • Annunciators AR-111(112)-B03, MS STM LINE LEAK DETECTION HI TEMP • Annunciators AR-111-D01(E01), MSIV LOGIC A/C (B/D) ISO INITIATED • Failure of Inboard and Outboard MSIVs on Main Steam Line D to close.
PCOM		As time / power level permits, perform ON-RPR-101, Rapid Power Reduction: • INSERT Control Rods, as necessary • NOTIFY GCC that the Unit is coming Off Line. Place the Mode Switch in SHUTDOWN. Execute scram actions of ON-SCRAM-101, Reactor Scram: • 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. • Check status of MSIVs. Control Reactor water level between +13" and +54" (+20" to +45" preferred band) using Condensate/Feedwater (prior to LOOP, as time allows), CRD, HPCI and/or RCIC. May initiate Reactor cooldown.

POSITION	TIME	STUDENT ACTIVITIES
PCOP		Recognize / report D MSIVs fail to close. **Manually close D MSIVs (HV-141-F022D and F028D).**
US		Enter ON-SCRAM-101, Reactor Scram. As time/power level allows, direct power reduction for ON-RPR-101, Rapid Power Reduction by initiating #2 Recirc Speed Limiter. As time allow, directs manual Reactor scram. May enter EO-000-102, RPV Control, on low Reactor water level and/or high Reactor pressure, as applicable. Direct closure of MSIVs and Main Steam Line drains. As time permits, direct Reactor water level controlled +13" to +54" (+20" to +45" preferred band) using HPCI, RCIC, CRD, SLC, and/or Condensate/Feedwater (while available prior to LOOP). As time permits, direct Reactor pressure controlled 800-1050 psig using SRVs. Direct evacuation of the Turbine Building.

★ Denotes Critical Task

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INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENTS	8-10
BRIEF DESCRIPTION	Loss of Offsite Power, EDG C Fails to Start, EDGs B and D Fail to Auto-Start, HPCI and RCIC Fail to Auto-Initiate and Manual Initiation Pushbuttons Fail

OPERATOR ACTIVITY

1. When the crew closes the D MSL MSIVs, ensure the following trigger activates to initiate the event (may be manually forced if directed by Lead Examiner).

   aet LOC27-N04-5

2. When the crew attempts to manually start EDG B and/or D, ensure the following trigger(s) activate(s) to allow the EDG(s) to start.

   aet LOC27-N04-3 / aet LOC27-N04-4

ROLE PLAY

If directed as **NPO** to check EDG C, wait 2 minutes, then **report**,
"EDG C tripped on overspeed and there appears to be extensive damage to the governor and generator."

If directed as **NPO** to check EDG B(D), wait 2 minutes, then **report**,
"EDG B(D) looks fine. It appears that EDG B(D) is in a normal standby condition."

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

Role play any other directed actions as required.

EVALUATOR NOTES

1. The crew may start B and/or D EDGs before pulling out procedures due to failed automatic action. In this case, entry into EO-100-030 may be avoided.
2. Numerous recovery actions are included above for completeness. However, based on the expected progression of the scenario, the crew will not complete all of these recovery actions.
3. Recommended termination criteria:
   - All control rods inserted.
   - Main Steam Lines isolated.
   - At least one ESS bus re-energized.
   - Reactor water level controlled in assigned band above -161".
   - Reactor pressure controlled below 1087 psig.

SCENARIO EVENT FORM

EVENTS	8-10
BRIEF DESCRIPTION	Loss of Offsite Power, EDG C Fails to Start, EDGs B and D Fail to Auto-Start, HPCI and RCIC Fail to Auto-Initiate and Manual Initiation Pushbuttons Fail

POSITION	TIME	STUDENT ACTIVITIES
★TEAM		**Restore power to an ESS Bus by manually starting an emergency diesel generator.**

TEAM		Recognize / report:
		• Multiple annunciators, including:
		  o AR-015-A01, START-UP XFMR 10 TROUBLE
		  o AR-015-A02, AUX XFMR 11 TROUBLE
		  o AR-015-A07, START-UP XFMR 20 TROUBLE
		• EDG C starts and then trips.
		• EDGs B & D do not start.
		• No cooling to EDG A requiring securing EDG which will result in a loss of all AC power (Station Blackout).
		• HPCI and RCIC fail to automatically start.

PCOM / PCOP		May execute EO-100-030, Unit 1 Response to Station Blackout:
		• Manually Attempt to Start all Diesel Generators OG501A(B)(C)(D), as follows:
		  o At 0C653, Place D/G A(B)(C)(D) GOV MODE SEL HS-00055A(B)(C)(D) in ISOCH.
		  o **To start diesel at 0C653, Depress DG A(B)(C)(D) START HS-00051A(B)(C)(D) pushbutton.**
		• For each Diesel Generator that starts:
		  o Observe auto closure of DG A(B)(C)(D) Unit 1 and Unit 2 bus supply breakers.
		  o IF any breaker does not auto close and Associated Bus is NOT LOCKED OUT:
		  ▪ Ensure all SYNC SEL switches for bus supply breakers in OFF.
		  ▪ Place DG A(B)(C)(D) SYNC SEL HS-00039A(40A)(41A)(42A) to ON.
		  ▪ Close DG A(B)(C)(D) supply breaker, 1A201-04 (1A202-04) (1A203-04) (1A204-04)
		  ▪ Return DG A(B)(C)(D) SYNC SEL HS-00039A(40A) (41A) (42A) to OFF.
		  o Observe ESW PUMP OP504A(B)(C)(D) STARTS in approximately 40(40)(44)(48) seconds.

POSITION	TIME	STUDENT ACTIVITIES
PCOM / PCOP (cont.)		• For each Diesel Generator that fails to start: o Maintain Control Mode Select Switch in Local until directed otherwise, AND o Depress Local Emerg Stop for A D Diesel Generators. • Exit this procedure and Enter EO-000-031, if any Diesel Generator is reliably energizing a Unit 1 ESS Bus. May manually initiate RCIC per OP-150-001 using either manual pushbutton method or component-by-component startup: If attempts RCIC start using manual pushbutton, recognize / report RCIC initiation pushbutton fails. <u>Starting RCIC Component-by-Component</u> • Place RCIC TURBINE FLOW CONTROL FC-E51-1R600 in MANUAL and set for MINIMUM SPEED. • Start RCIC BARO CDSR VACUUM PP 1P219. • Open RCIC L O COOLER WTR SUPPLY HV-150-F046. • Open STEAM TO RCIC TURBINE HV-150-F045. • Observe RCIC Turbine accelerate. • When RCIC Pump discharge pressure > 190 psig with flow < 75 gpm, Observe MIN FLOW TO SUPP POOL FV-149-F019 OPENS. • Using RCIC TURBINE FLOW CONTROL FC-E51-1R600, Raise RCIC pump discharge pressure within 50 psig of reactor pressure. • Open RCIC INJECTION HV-149-F013. • Using RCIC TURBINE FLOW CONTROL FC-E51-1R600, Establish desired flow. • Ensure MIN FLOW TO SUPP POOL FV-149-F019 CLOSES. • When desired flow established: o Null RCIC TURBINE FLOW CONTROL FC-E51-1R600. o Place RCIC TURBINE FLOW CONTROL FC-E51-1R600 in AUTO.

POSITION	TIME	STUDENT ACTIVITIES
PCOM / PCOP (cont.)		As time permits, execute EO-000-031, Station Power Restoration: • Perform section 2.2. • IF ESSW pumphouse ventilation NOT in service, Perform OP-128-001 Section 2.2 to provide cooling within 2 hours. • Perform following to cool containment: o Suppression pool cooling per Step 2.5. o Drywell cooling when all ESS busses energized per Step 2.6. • Load diesel generator to extent practical based on priority loading of EOPs OR Attachment A or B of this procedure in accordance with OP-024-001, Diesel Generator. As time permits, execute ON-LOOP-101, Unit 1 Loss of All Offsite Power: • Ensure proper Diesel Generator operation in accordance with OP-024-001. • IF Diesel Generator A, B or C fail to start, Perform Attachment A to ensure 4 hour capacity of 250V DC batteries 1D650 and 1D660. • Ensure ESW Pumps 0P504A, B, C, D operating in accordance with OP-054-001 after Diesel Generators start and re-energize Emergency Busses. • On direction of Shift Supervision, Transfer following systems cooling water supply from Service Water to Emergency Service Water in accordance with OP-111-001: o Restore Reactor Building Closed Cooling Water in accordance with ON-RBCCW-101 Loss of RBCCW. • Restore Instrument Air System in accordance with ON-118-001 Loss of Instrument Air. • Restore RPS in accordance with ON-RPS-101 Loss of RPS • Check shift of Drywell Cooling from Reactor Building Chille Water to Reactor Building Closed Cooling Water: • RBCCW Supply Vlv FV-18771D OPEN. • RBCCW Return Vlv FV-18771C OPEN. • Chilled Water Supply Vlv to Drywell Coolers FV-18771B CLOSE. • Chilled Water Return Vlv from Drywell Coolers FV-1877' CLOSE. • IF desired, Align control switch for Drywell Cooling Wate Control Valves to the RBCCW position at panel 1C279. • Ensure following Drywell Cooler Isolation Valves OPEN • A Clrs Clg Wtr OB Iso Valves HV-18781A1&A2. • A Clrs Clg Wtr IB Iso Valves HV-18782B1&B2. • B Clrs Clg Wtr IB Iso Valves HV-18782A1&A2. • B Clrs Clg Wtr OB Iso Valves HV-18781B1&B2.

POSITION	TIME	STUDENT ACTIVITIES
PCOM / PCOP (cont.)		• Ensure Containment Instrument Gas Isolation valves OPEN: • Instr Gas Cmp OB Suct Iso SV-12605. • Instr Gas to Contn Iso SV-12651. • Restart Control Rod Drive System by starting CRD Pump in accordance with ON-CRD-101, Control Rod Malfunction. • Restore affected systems to desired status in accordance with ON-RPS-001 Loss of RPS.
US		Enter ON-LOOP-101, Unit 1 Response to Loss of All Offsite Power. Direct start of EDG B and/or D. Direct Reactor water level controlled +13" to +54" (+20" to +45" preferred band) using RCIC and/or HPCI.

Note: UNUSUAL EVENT on EAL FU1 or MU1

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