

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

<u>S/RO</u>	<u>00.GO.1178.101</u>	<u>0</u>	<u>4/24/2015</u>	<u>Classroom</u>
Applicability	JPM Number	Revision	Date	Setting
<u>Generic</u>	<u>2.1.25</u>	<u>3.9/4.2</u>	<u>N</u>	<u>N</u>
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:

Last, First MI

Employee Number

Exam Date:

Exam Duration (Min)

Evaluation Result:

☐

Satisfactory

☐

Unsatisfactory

Evaluator

Name

Signature

Comments



CONFIDENTIAL Examination Material

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.

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR INSTRUCTIONS</u> <ul style="list-style-type: none"> Marking a step as UNSAT requires written comments on respective step. Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *. The time clock starts when the candidate acknowledges the Initiating Cue. This JPM can 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. 				
<u>EVALUATOR CUE</u> 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 <ul style="list-style-type: none"> Determines Steam Dome cooldown rate between 2100 and 2200 exceeds 100°F, actual $\Delta T = 104^\circ F$ Determines Steam Dome cooldown rate between 2115 and 2215 exceeds 100°F, actual $\Delta T = 103^\circ F$ 		
<u>Evaluator Note:</u> TS Required Actions should only be entered if Rx Steam Dome Temperature ΔT 's are > 100°F in any one hour. However, <u>ALL</u> ΔT 's should be maintained <22° in any 15 minute period during cooldown.				

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
4	Additional calculation and 15 minute cooldown rate excursions	<p>Candidate should identify:</p> <ul style="list-style-type: none"> Recirc Loop A ΔT °F: <ul style="list-style-type: none"> 2100-2115 ΔT=27.0 2115-2130 ΔT=23.2 2130-2145 ΔT=23.1 2145-2200 ΔT=27.3 Recirc Loop A ΔT 60 Minute: <ul style="list-style-type: none"> 2100-2200 ΔT=100.6 Recirc Loop B ΔT °F: <ul style="list-style-type: none"> 2100-2115 ΔT=25.3 2115-2130 ΔT=25.0 2130-2145 ΔT=23.2 2145-2200 ΔT=24.2 2200-2215 ΔT=23.1 2330-2345 ΔT=23.3 Bottom Head Drain ΔT °F: <ul style="list-style-type: none"> 2100-2115 ΔT=23.0 2115-2130 ΔT=27.0 2130-2145 ΔT=22.0 2145-2200 ΔT=28.0 2330-2345 ΔT=24.0 Rx Steam Dome ΔT °F: <ul style="list-style-type: none"> 2100-2115 ΔT=25.0 2115-2130 ΔT=26.0 2130-2145 ΔT=25.0 2145-2200 ΔT=28.0 2200-2215 ΔT=24.0 2245-2300 ΔT=25.0 Rx Steam Dome ΔT 60 Minute: <ul style="list-style-type: none"> 2100-2200 ΔT=104.0 2115-2215 ΔT=103.0 		

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
*5	SR 3.4.10 violation	Notifies evaluator that SR 3.4.10 and TS 3.4.10 are applicable for cooldown rate >100°F/hr		
<u>EVALUATOR CUE</u> Record JPM stop time: _____				
<u>EVALUATOR CUE</u> That completes the JPM.				
<u>EVALUATOR NOTE</u> That completes the JPM.				
<u>EVALUATOR:</u> 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 1800 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 1800 through 2345 to confirm procedural compliance and document discrepancies found, if any.

SUSQUEHANNA NUCLEAR, LLC
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:

Last, First MI

Employee Number

Exam Date:

Exam Duration (Min)

Evaluation Result:

☐

Satisfactory

☐

Unsatisfactory

Evaluator

Name

Signature

Comments



CONFIDENTIAL Examination Material

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)

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR INSTRUCTIONS</u> <ul style="list-style-type: none"> Marking a step as UNSAT requires written comments on respective step. Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *. The time clock starts when the candidate acknowledges the Initiating Cue. This JPM 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. 				
<u>EVALUATOR CUE</u> 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: <ul style="list-style-type: none"> 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)		
<u>EVALUATOR NOTE</u> Alert FA1 applies due to potential loss of the RCS barrier as evidenced by unisolable RCS leakage > 50 gpm inside Primary Containment				

PERFORMANCE CHECKLIST

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Examinee _____

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.

PERFORMANCE CHECKLIST

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Examinee _____

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 <u>EVALUATOR NOTE</u> May alternately refer to 10CFR 50.72(b)(3)(iv)(B)(2 & 5) for these reportability requirements.	Within 8 hours
<u>EVALUATOR NOTE</u> 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

Task Title	<u>Review Failed Surveillance Test and Determine Required Action</u>
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25
Validation Time (min)

Comments

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

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR INSTRUCTIONS</u> <ul style="list-style-type: none"> Marking a step as UNSAT requires written comments on respective step. Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *. The time clock starts when the candidate acknowledges the Initiating Cue. This JPM 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. 				
<u>EVALUATOR NOTE</u> The FAULTED step in this JPM is preceded by a fault statement in BOLD TYPE WITH ALL CAPITAL LETTERS .				
<u>EVALUATOR CUE</u> 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.		

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Examinee _____

Step	Action	Standard	Eval	Comments
*4	Notifies Shift Supervision that SO 151-A02 has failed its acceptance criteria.	IAW Attachment A. Under <u>Required Action</u> : Notifies Shift Supervision that SO-151-A02 A CS pump failed its acceptance criteria. AND Initials the Confirm space.		
<u>EVALUATOR NOTE</u> 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. <u>Required Action</u> : 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		

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
6	Ensures applicable action statements are in effect.	<p>Determines TS 3.5.1 Condition A.1 applies.</p> <p>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.</p> <p>AND</p> <p>TS 3.8.1 Condition B.2 applies</p> <p>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)</p> <p>INOPERABLE,</p>		
<u>EVALUATOR CUE</u> 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				

PERFORMANCE CHECKLIST

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Examinee _____

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.

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

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

PERFORMANCE CHECKLIST

00.AD.3274.202 Rev 1

03/27/2015

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR INSTRUCTIONS</u> <ul style="list-style-type: none">• Marking a step as UNSAT requires written comments on respective step.• Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *.• The time clock starts when the candidate acknowledges the Initiating Cue.• This JPM can be performed in the classroom or simulator.• Ensure the following material is available to support performance of this JPM:<ul style="list-style-type: none">○ 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				
<u>EVALUATOR CUE</u> 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.		
<u>EVALUATOR CUE</u> 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.				
<u>EVALUATOR CUE</u> Once candidate turns in list of proposed blocking points, the JPM is complete.				
<u>EVALUATOR NOTE</u> 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.				
<u>EVALUATOR CUE</u> Record JPM stop time: _____				
<u>EVALUATOR NOTE</u> That completes the JPM.				
<u>EVALUATOR:</u> Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

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

[illegible]

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 CTL VLV Bypass VLV	★CLOSED	★Red tag
5. ★209015 Service Wtr Pump A Seal Water Press CTL VLV Inlet ISO VLV <u>OR</u> ★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)*****

SUSQUEHANNA NUCLEAR, LLC
JOB PERFORMANCE MEASURE
APPROVAL AND ADMINISTRATIVE DATA SHEET

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

<u>SRO</u>	<u>00.AD.3274.201</u>	<u>1</u>	<u>03/27/2015</u>	<u>Classroom</u>
Applicability	JPM Number	Revision	Date	Setting
<u>Generic</u>	<u>2.2.41</u>	<u>3.5/3.9</u>	<u>N</u>	<u>N</u>
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

Validated

<u>Greg van den Berg</u>	<u>03/27/2015</u>	<u>Greg van den Berg</u>	<u>05/28/2015</u>
Author	Date	Instructor	Date

Review

Approval

<u>Manu Sivaraman</u>	<u>06/05/2015</u>	<u>Durand Adams</u>	<u>06/03/2015</u>
Operations Management	Date	Nuclear Training Supervisor	Date

25
Validation Time (min)

Examinee Name: _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____
Name Signature

Comments

JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM
1	Revise for 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

PERFORMANCE CHECKLIST

00.AD.3274.201 Rev 1
03/27/2015
Page 1 of 2

Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR INSTRUCTIONS</u> <ul style="list-style-type: none"> Marking a step as UNSAT requires written comments on respective step. Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *. The time clock starts when the candidate acknowledges the Initiating Cue. This JPM can be performed in the classroom or simulator. Ensure the following material is available to support performance of this JPM: <ul style="list-style-type: none"> 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 				
<u>EVALUATOR CUE</u> 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; <ul style="list-style-type: none"> 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; <ul style="list-style-type: none"> 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 		
<u>EVALUATOR CUE</u> Role play the Unit Supervisor and acknowledge the receipt of the corrected blocking and inform candidate that it will be forwarded to the WCC				

PERFORMANCE CHECKLIST

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03/27/2015

Page 2 of 2

Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR CUE</u> Once candidate turns in list of corrected blocking sheet, the JPM is complete.				
<u>EVALUATOR NOTE</u> 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.				
<u>EVALUATOR CUE</u> Record JPM stop time: _____				
<u>EVALUATOR CUE</u> That completes the JPM.				
<u>EVALUATOR NOTE</u> That completes the JPM.				
<u>EVALUATOR:</u> 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

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

Validated

Greg van den Berg	04/28/2015	Rich Bolduc	06/02/2015
Author	Date	Instructor	Date

Review

Approval

Manu Sivaraman	6/5/15	Greg van den Burg	06/03/2015
Operations Management	Date	Nuclear Training Supervisor	Date

20
Validation Time (min)

Examinee Name: _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____
Name Signature

Comments



JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
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

PERFORMANCE CHECKLIST

00.EP.1132.185 Rev 2

08/08/2014

Page 1 of 3

Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR INSTRUCTIONS</u> <ul style="list-style-type: none"> Marking a step as UNSAT requires written comments on respective step. Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *. The time clock starts when the candidate acknowledges the Initiating Cue. This JPM should be performed in the classroom. 				
<u>EVALUATOR CUE</u> 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	<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> Does NOT select Worker A Does NOT select Worker B Selects Worker C Does NOT select Worker D 		

PERFORMANCE CHECKLIST

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08/08/2014

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR NOTE</u> The following rationale supports worker selection: <ul style="list-style-type: none"> 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).		
<u>EVALUATOR NOTE</u> 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.				
<u>EVALUATOR NOTE</u> 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).		

PERFORMANCE CHECKLIST

00.EP.1132.185 Rev 2

08/08/2014

Page 3 of 3

Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR CUE</u> Record JPM stop time: _____				
<u>EVALUATOR CUE</u> That completes the JPM.				
<u>EVALUATOR:</u> 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.

SUSQUEHANNA NUCLEAR, LLC
JOB PERFORMANCE MEASURE
APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title **Emergency Plan communications**

S/RO	00.EP.1135.001	1	04/24/2015	Simulator
Applicability	JPM Number	Revision	Date	Setting
Generic	2.4.39	3.9/3.8	N	Y
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

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

15

Validation Time (min)

Examinee Name:

Last, First MI

Employee Number

Exam Date:

Exam Duration (Min)

Evaluation Result:

☐

Satisfactory

☐

Unsatisfactory

Evaluator

Name

Signature

Comments



CONFIDENTIAL Examination Material

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. EP-PS-126, CR E-Plan Communicator (Revision 35)

3. TASK CONDITIONS

Review Event Notification Report

4. INITIATING CUE

A General Emergency has been declared for Unit 1 as the initial emergency classification due to an airborne radiological release in progress.

Complete the Emergency Notification Report and communicate it to the offsite agencies.

This is a time critical JPM

5. TASK STANDARD

The applicant should obtain appropriate Brief Non-Technical Description (BNTD) sticker and verbally communicate the ENR form to the offsite agencies by utilizing backup telephone numbers within the required 15 minute time frame. The last offsite agency must answer within the 15 minute timeframe.

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

SIMULATOR SETUP INSTRUCTIONS

This JPM requires the use of the E-Plan communications conference lines and phones. These are located on the STA desk in the simulator. The simulator is not required to be in run to support this JPM. The candidate has access to all of the pertinent data required to complete the task without the aid of the simulator.

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR INSTRUCTIONS</u> <ul style="list-style-type: none"> Marking a step as UNSAT requires written comments on respective step. Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *. The time clock starts when the candidate acknowledges the Initiating Cue. This JPM must be performed in the simulator due to location of the E-Plan communications equipment. Simulator setup I not required. See Simulator Setup Instructions for further explanation. Mark-up a copy of EP-PS-001, Attachment I, and Emergency Notification Report (attached). Fill in the declaration time as two minutes prior to the current time 				
<u>EVALUATOR NOTE</u> Sign the ENR form under approved section on bottom and fill in the current time as the time approved. (when applicant starts the Admin JPM) Remind Simulator Booth Operator to NOT answer any of the Notification calls: All communications will be with the evaluator per the evaluator cues.				
<u>EVALUATOR CUE</u> Record JPM start time: _____ **TIME CRITICAL**				
1	Identifies governing procedure and obtain controlled copy.	Obtains controlled copy of EP-PS-126 and ENR form (to be provided).		
<u>EVALUATOR NOTE</u> Acting as the Emergency Director *ED), provide the candidate with the marked-up ENR Form. If candidate asks to review the form with the ED, notify candidate that ED is not available, continue with the notifications with ENR.				
2	Obtain and review Event Notification Report (ENR) form with the Shift Manager/ED	Candidate reviews ENR report		
<u>EVALUATOR NOTE</u> Pre-printed labels containing the Brief Non-technical Descriptions of the EALs are located in a marked folder in the STA desk drawer.				
*3	If the Shift Manger has not already done so, obtain a label containing the Brief Non-technical Descriptions of the EALs and affix the description to the ENR form in the space on the form.	<ul style="list-style-type: none"> Obtains label for General Emergency containing the brief Non-technical Descriptions of the EALs and Affix the description to the ENR form in the space provided on the form. 		

PERFORMANCE CHECKLIST

00.EP.1135.001 Rev 1

04/24/2015

Page 2 of 5

Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR NOTE</u> The Simulator Booth Operator will not answer the "191" call.				
*4	Within 15 minutes of declaration, transmit the ENR form to the offsite agencies (Dialing 191 will simultaneously connect the listed agencies in a conference call.)	Using the purple colored phone button, dial "191" to transmit the ENR form to the following: (Dialing 191 will simultaneously connect the listed agencies in a conference call.)		
<u>EVALUATOR NOTE</u> The Simulator Booth Operator will not answer the "196" call.				
5	The "191" function does not work, attempt to use conference line "196"	Using the "196" to transmit the ENR form to the following: (Dialing 196 will simultaneously connect the listed agencies in a conference call.)		
<u>EVALUATOR NOTE</u> The Simulator Booth Operator will not answer the calls. Evaluator will role play as the individual agencies (PEMA, LCEMA, CCEMA) when the backup numbers are dialed.				

PERFORMANCE CHECKLIST

00.EP.1135.001 Rev 1

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Page 4 of 5

Examinee _____

Step	Action	Standard	Eval	Comments
*7	Verbally communicate the ENR form to the offsite agencies	<p>When the first agency answers the phone, communicates ENR form verbally to the offsite agencies.</p> <ul style="list-style-type: none">• Identifies His/her Name.• Call back number• Declaration Time• Event Classification (GE)• Unit-1• "The water level inside the Unit 1 reactor has dropped and does not completely cover the uranium fuel. The unit has been shut down prior to the event and remains shut down. Protective actions will be recommended for the public".• "The water level inside the Unit 1 reactor has dropped and does not completely cover the uranium fuel. The unit has been shut down prior to the event and remains shut down. Protective actions will be recommended for the public".• There is an airborne radiological release in progress due to the event.		

PERFORMANCE CHECKLIST

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04/24/2015

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR CUE</u>				
If required(requested by applicant), repeat back applicant message to complete 3 way communication.				
Understand that U1 Declared a GE at (T-2min).				
“The water level inside the Unit 1 reactor has dropped and does not completely cover the uranium fuel. The unit has been shut down prior to the event and remains shut down. Protective actions will be recommended for the public”.				
There is an airborne radiological release in progress due to the event.				
Your call back # is 570-759-4915				
<u>EVALUATOR NOTE</u>				
Once the applicant has successfully communicated the event to the LAST offsite agency, you may END the JPM.				
<u>EVALUATOR CUE</u>				
Record JPM stop time: _____				
<u>EVALUATOR CUE</u>				
That completes the JPM.				
<u>EVALUATOR NOTE</u>				
That completes the JPM.				
EVALUATOR:				
Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

EXAMINEE

TASK CONDITIONS

Review Event Notification Report

INITIATING CUE

A General Emergency has been declared for Unit 1 as the initial emergency classification due to an airborne radiological release in progress.

Complete the Emergency Notification Report and communicate it to the offsite agencies.

This is a time critical JPM

EVALUATOR

TASK CONDITIONS

Review Event Notification Report

INITIATING CUE

A General Emergency has been declared for Unit 1 as the initial emergency classification due to an airborne radiological release in progress.

Complete the Emergency Notification Report and communicate it to the offsite agencies.

This is a time critical JPM

SUSQUEHANNA NUCLEAR, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title Classify an Emergency Condition and Complete Emergency Notification Report

<u>SRO</u>	<u>00.EP.1132.180</u>	<u>2</u>	<u>12/04/2014</u>	<u>Classroom</u>
Applicability	JPM Number	Revision	Date	Setting
<u>Generic</u>	<u>2.4.41</u>	<u>4.6</u>	<u>N</u>	<u>Y</u>
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

Validated

<u>Greg van den Berg</u>	<u>12/04/2014</u>	<u>Rich Bolduc</u>	<u>05/10/2015</u>
Author	Date	Instructor	Date

Review

Approval

<u>Manu Sivaraman</u>	<u>6/5/15</u>	<u>Greg van den Berg</u>	<u>06/03/2015</u>
Operations Management	Date	Nuclear Training Supervisor	Date

15
Validation Time (min)

Examinee Name: _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____
Name Signature

Comments



JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM
1	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.

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR INSTRUCTIONS</u> <ul style="list-style-type: none"> Marking a step as UNSAT requires written comments on respective step. Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *. The time clock starts when the candidate acknowledges the Initiating Cue. Ensure that a copy of EP-RM-004, EP-PS-100 and blank ENR and PAR forms are available. 				
<u>EVALUATOR NOTE</u> This is a TIME CRITICAL JPM.				
<u>EVALUATOR CUE</u> 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: <ul style="list-style-type: none"> I am assuming duties of the Emergency Director [Event] declared based on [EAL summary] Time and Date of Classification 		
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.		

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
7	If not performed earlier, appoints an NRC communicator.	Appoints an NRC Communicator and instructs communicator to perform EP-PS-135, NRC Communicator.		
8	Initiates an ENR form.	Performs the following: <ul style="list-style-type: none">• 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		
<u>EVALUATOR NOTE</u> The time recorded on Line 3 of the ENR form is compared to the start time recorded at the beginning of the JPM to determine if the examinee is successful in meeting the 15 minute event declaration requirement of the JPM.				
*9	Completes Line 3 of the ENR	Performs the following: <ul style="list-style-type: none">• *Places checkmark in the correct event box• 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: <ul style="list-style-type: none">• Records EAL in Classification Description• Records a brief non-technical description of EAL or applies appropriate sticker marked-up to reflect actual event		

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
11	Completes Line 5 of the ENR	Performs the following: <ul style="list-style-type: none">• 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: <ul style="list-style-type: none">• 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: <ul style="list-style-type: none">• Provides the approved ENR to the Emergency Plan Communicator.• Reviews the ENR with the Communicator• Directs the Communicator to complete the notification within 15 minutes of the event declaration time		

EVALUATOR CUE

That completes the JPM.

EVALUATOR:

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

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) (Revision 21)
- 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, step 5.2..

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

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR INSTRUCTIONS</u> <ul style="list-style-type: none"> Marking a step as UNSAT requires written comments on respective step. Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *. The time clock starts when the candidate acknowledges the Initiating Cue. This JPM 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 <u>through</u> Step 5.1. 				
<u>EVALUATOR NOTE</u> The FAULTED step in this JPM is preceded by a fault statement in BOLD TYPE WITH ALL CAPITAL LETTERS .				
<u>EVALUATOR CUE</u> Record JPM start time: _____				
<u>BOOTH OPERATOR CUE</u> 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.		
<u>EVALUATOR NOTE</u> Applicant <u>may</u> perform continuous withdraw from position 46.				
*2	Selects control rod 02–19.	Performs the following using OP-156-001, RMCS: <ul style="list-style-type: none"> *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. 		

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Examinee _____

Step	Action	Standard	Eval	Comments
*3	Inserts control rod 02–19 to position 46.	<p>Performs the following:</p> <ul style="list-style-type: none"> • * 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.	<p>Performs the following:</p> <ul style="list-style-type: none"> • *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 <u>AND</u> position indicated is an even number 		

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
*5	Obtains control rod 02–19 withdraw stall flow and verifies control rod coupled.	<p>Performs the following:</p> <ul style="list-style-type: none"> • *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.	<p>Performs the following:</p> <ul style="list-style-type: none"> • 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 		

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
7	Documents completion of test for control rod 02-19.	Performs the following: <ul style="list-style-type: none"> • 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. 		
<u>EVALUATOR CUE</u> Initial Verify for control rod 02-19 on Attachment A.				
*8	Selects control rod 02–23.	Performs the following using OP-156-001, RMCS: <ul style="list-style-type: none"> • *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. 		

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Examinee _____

Step	Action	Standard	Eval	Comments
*9	Inserts control rod 02–23 to position 46.	<p>Performs the following:</p> <ul style="list-style-type: none"> • * 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.	<p>Performs the following:</p> <ul style="list-style-type: none"> • *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 		

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
*11	Obtains control rod 02–23 withdraw stall flow and verifies control rod coupled.	<p>Performs the following:</p> <ul style="list-style-type: none"> • *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.	<p>Performs the following:</p> <ul style="list-style-type: none"> • 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 		

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
13	Documents completion of test for control rod 02-23.	Performs the following: <ul style="list-style-type: none"> • 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. 		
<u>EVALUATOR CUE</u> Initial Verify for control rod 02-23 on Attachment A.				
*14	Selects control rod 02-27.	Performs the following using OP-156-001, RMCS: <ul style="list-style-type: none"> • *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 02-23 INDICATED on FOUR ROD DISPLAY on CRT and Standby Information Panel 1C652. 		

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>FAULT STATEMENT</u> CONTROL ROD 02-27 WILL DRIFT TO POSITION 10 DURING PERFORMANCE OF THE FOLLOWING STEP				
<u>BOOTH OPERATOR CUE</u> <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> * 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 		
<u>EVALUATOR CUE</u> Respond per procedure.				

PERFORMANCE CHECKLIST

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Examinee _____

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.		
<u>EVALUATOR CUE</u> Unit Supervisor concurs with entry into ON-CRD-101.				
17	Checks for control rod drifts.	Performs the following: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> Depresses the ROD DRIFT RESET PB Observes AR-104-H05 clears 		
21	Ensures cooling water ΔP and flow normal.	Performs the following: <ul style="list-style-type: none"> Observes FC-C12-1R600, indicates ~63 gpm Cooling Water Flow. Observes PV-146-F003, indicates < 50 psid Cooling Water delta P. 		

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
*22	Inserts control rod to position 00.	<p>Performs the following:</p> <ul style="list-style-type: none"> • * 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 <u>AND</u> 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.

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

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR INSTRUCTIONS</u> <ul style="list-style-type: none"> Marking a step as UNSAT requires written comments on respective step. Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *. The time clock starts when the candidate acknowledges the Initiating Cue. This JPM must be performed in the simulator. Reset to exam-specific IC-391, or configure the simulator per the Simulator Setup Instructions. 				
<u>EVALUATOR NOTE</u> The FAULTED step in this JPM is preceded by a fault statement in BOLD TYPE WITH ALL CAPITAL LETTERS .				
<u>EVALUATOR CUE</u> Record JPM start time: _____				
<u>BOOTH OPERATOR CUE</u> 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).		
<u>EVALUATOR NOTE</u> 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%.		

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
*3	Start Condensate Pump A	<ul style="list-style-type: none">• 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: <ul style="list-style-type: none">• >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).		

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Examinee _____

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: <ul style="list-style-type: none"> >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) 		
<u>FAULT STATEMENT</u> BOTH TBCCW PUMPS TRIP RESULTING IN A TOTAL LOSS OF TBCCW FLOW				
<u>BOOTH OPERATOR CUE</u> 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		
<u>EVALUATOR CUE</u> State "Carry out actions for ON-TBCCW-101"				
<u>EVALUATOR NOTE</u> Operator will also be acknowledging other alarms on the same panel due the loss of TBCCW .				
<u>EVALUATOR NOTE</u> The Operator should enter ON-TBCCW-101 section A from AR-123-01 .				
8	Verifies TBCCW pump status	<ul style="list-style-type: none"> 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.
<u>EVALUATOR CUE</u> 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."				

PERFORMANCE CHECKLIST

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Examinee _____

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 $\geq 265^{\circ}\text{F}$		
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

SUSQUEHANNA NUCLEAR, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

Task Title Quarterly Turbine Valve Cycling

<u>S/RO</u>	<u>93.SO.2467.101</u>	<u>0</u>	<u>04/23/2015</u>	<u>Simulator</u>
Applicability	JPM Number	Revision	Date	Setting
<u>241000</u>	<u>A4.08</u>	<u>3.5/3.4</u>	<u>N</u>	<u>N</u>
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

Validated

<u>Greg van den Berg</u>	<u>04/23/2015</u>	<u>Richard Bolduc</u>	<u>03/10/2015</u>
Author	Date	Instructor	Date

Review

Approval

<u>Manu Sivaraman</u>	<u>06/05/2015</u>	<u>Greg van den Berg</u>	<u>06/03/2015</u>
Operations Management	Date	Nuclear Training Supervisor	Date

20
Validation Time (min)

Examinee Name: _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____
Name Signature

Comments



JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
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.

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

Main Turbine tripped by candidate upon sustained vibration >10 mils after releasing CV test pushbutton

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 rRP158039 f:BYPASS
 IRF rRP158040 f:BYPASS
 IRF rRP158041 f:BYPASS
 IRF rRP158042 f:BYPASS
2. Ensure MAXIMUM COMBINED FLOW LIMIT vernier set at 12.5 turns (125%)
3. Ensure LOAD LIMIT SET vernier set at 8.9 turns.
4. Setup RTIME screens for Turbine Testing.
5. Provide marked up copy of SO-193-00 completed **through** step 5.3

SIMULATOR SETUP INSTRUCTIONS FOR LOC 27 NRC EXAM

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

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR INSTRUCTIONS</u> <ul style="list-style-type: none"> Marking a step as UNSAT requires written comments on respective step. Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *. The time clock starts when the candidate acknowledges the Initiating Cue. This JPM 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. 				
<u>EVALUATOR NOTE</u> The FAULTED step in this JPM is preceded by a fault statement in BOLD TYPE WITH ALL CAPITAL LETTERS .				
<u>EVALUATOR CUE</u> Record JPM start time: _____				
<u>BOOTH OPERATOR CUE</u> 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: <ul style="list-style-type: none"> Ensure MAXIMUM COMBINED FLOW LIMIT vernier set at 12.5 turns (125%) Record value of LOAD SET Record value of LOAD LIMIT SET vernier 		
<u>EVALUATOR NOTE</u> 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.				

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR NOTE</u> The following step is not critical if the test is performed at power levels <85%.				
*5	Raise LOAD SET to maximum value (1400 MW)	Perform the following: <ul style="list-style-type: none"> Verifies LOAD LIMIT SET vernier to 8.9 TURNS * Raise LOAD SET to maximum value (1400 MW) to allow Control Valves to cycle open and limit BYPASS VALVE opening 		
6	Bypass Main Turbine vibration trips	Perform the following: <ul style="list-style-type: none"> Dispatches NPO to Panel 1C6100A, Place HS-11982 to BYPASS Confirm Annunciator AR105, F05 MAIN TURB VIB OR RFPT VIB/THRUST TRIP BYPASS ALARMS 		
<u>BOOTH OPERATOR CUE</u> When requested, bypass turbine vibration trips by depressing Key 2. {Key[2]} IRF rTU193004 f:BYPASS				
<u>EVALUATOR CUE</u> Turbine vibration trips are bypassed.				
<u>EVALUATOR NOTE</u> 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	<ul style="list-style-type: none"> RPS Test Box installed and continuity checked. 		

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Examinee _____

Step	Action	Standard	Eval	Comments
EVALUATOR CUE I&C reports test box installed and continuity reading indicates CVTS is OPEN				
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: <ul style="list-style-type: none"> Confirm CV-4 slow closes then fast closes for the final 10% of travel Observes annunciator AR104 E01 TURB CV FAST CLOSURE TRIP Alarms 		
*12	Release CV-4 TEST pushbutton	Observe the following: <ul style="list-style-type: none"> Confirms CV-4 returns to pretest position as indicated at CONTROL VLV-4 POSITION indicator <u>IF</u> half scram condition occurred, Reset half scram condition by placing HS-C72A-1S05 to GRP 1/4, then GRP 2/3; else NA Confirm annunciator AR104, E01 TURB CV FAST CLOSURE TRIP CLEARS At 1C601, Confirm four (4) MSIV STATUS LOGIC A through D lights ILLUMINATED 		
13	Direct I&C to remove RPS Test Box at 1C611 Relay C72A-K8D IAW att. D part 2.	<ul style="list-style-type: none"> RPS Test Box removed 		
EVALUATOR CUE Record JPM stop time: _____				
EVALUATOR CUE That completes the JPM.				

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR NOTE</u> That completes the JPM.				
<u>EVALUATOR:</u> 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.

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.

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.

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: _____
 Last, First MI _____ Employee Number _____

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____
 Name _____ Signature _____

Comments



JPM REVISION SUMMARY

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

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR INSTRUCTIONS</u> <ul style="list-style-type: none"> Marking a step as UNSAT requires written comments on respective step. Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *. The time clock starts when the candidate acknowledges the Initiating Cue. This JPM must be performed in the simulator. Reset to exam-specific IC-392, or configure the simulator per the Simulator Setup Instructions. 				
<u>EVALUATOR CUE</u> Record JPM start time: _____				
<u>BOOTH OPERATOR CUE</u> 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.		
<u>EVALUATOR NOTE</u> 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		

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR NOTE</u> CORE SPRAY LOOP B OUT OF SERVICE (AR-113-001 B02) and CORE SPRAY LOOP B MOV'S IN TEST (BIS) are expected alarms				
<u>EVALUATOR NOTE</u> 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.		
<u>EVALUATOR NOTE</u> 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		

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
10	Observes following indications:	<p>Observes following indications as applicable:</p> <ul style="list-style-type: none"> 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. 		
<p>EVALUATOR NOTE Steps 2.4.13 and 2.4.14 are N/A. Not being aligned to the CST or Suppression Pool.</p> <ul style="list-style-type: none"> • 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		
<p>EVALUATOR NOTE Roleplay as Unit Supervisor and acknowledge applicant request to clear TRO 3.8.2.1</p>				

PERFORMANCE CHECKLIST

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Examinee _____

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		
<u>EVALUATOR CUE</u> Record JPM stop time: _____				
<u>EVALUATOR CUE</u> That completes the JPM.				
<u>EVALUATOR NOTE</u> That completes the JPM.				
<u>EVALUATOR:</u> 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.

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: _____
 Last, First MI _____ Employee Number _____

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____
 Name _____ Signature _____

Comments _____



JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM
1	Revise for TQ procedures 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
```

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR INSTRUCTIONS</u> <ul style="list-style-type: none"> Marking a step as UNSAT requires written comments on respective step. Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *. The time clock starts when the candidate acknowledges the Initiating Cue. This JPM must be performed in the simulator. Reset to exam-specific IC-388, or configure the simulator per the Simulator Setup Instructions. 				
<u>EVALUATOR NOTE</u> The FAULTED step in this JPM is preceded by a fault statement in BOLD TYPE WITH ALL CAPITAL LETTERS .				
<u>EVALUATOR CUE</u> Record JPM start time: _____				
<u>BOOTH OPERATOR CUE</u> 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		
<u>EVALUATOR NOTE</u> 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		
<u>EVALUATOR NOTE</u> Candidate may not place HS-E11-1S62B RHR Loop A MOV OL BYP keyswitch to operate with temperature at 140F.				
5	AFTER 2 minutes, Place HS-E11-1S62B RHR LOOP B MOV OL BYPS keyswitch to OPERATE	AFTER 2 minutes, place keyswitch to OPERATE		

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>FAULT STATEMENT</u> HV-151-F009, SDC SUCTION OB ISOLATION VALVE SPURIOUS CLOSURE OCCURS WHILE LOWERING REACTOR COOLANT TEMPERATURE				
<u>BOOTH OPERATOR CUE</u> 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.				
<u>EVALUATOR NOTE</u> 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.		
<u>EVALUATOR CUE</u> 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.				
<u>EVALUATOR CUE</u> 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.		

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR NOTE</u> 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.		

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
16	Reset PCIS isolation logic	Performs the following <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> Ensure Open HV-151-F008 OPEN SHUTDOWN CLG SUCT OB ISO. Ensure Open HV-151-F009 SHUTDOWN CLG SUCT IB ISO. 		

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
*22	Lines up RHR injection valves for pump start.	<ul style="list-style-type: none"> Close HV-151-F017B RHR INJ FLOW CTL. Open HV-151-F015B RHR INJ OB ISO. 		
*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	<ul style="list-style-type: none"> 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.

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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:

Last, First MI

Employee Number

Exam Date:

Exam Duration (Min)

Evaluation Result:

☐

Satisfactory

☐

Unsatisfactory

Evaluator

Name

Signature

Comments



CONFIDENTIAL Examination Material

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-144-001, 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 rwp113062
changemp rwp113062 ,,RBCCW PP A DISCH VLV POS
insmp rwp113068
changemp rwp113068 ,,RBCCW PP B DISCH VLV POS
insmp rwp11306a
changemp rwp11306a ,,RBCCW PP 1A DSCH PR
insmp rwp11306b
changemp rwp11306b ,,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:290
aet ET14OP
IMF cmfPM04_1P210A

```

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR INSTRUCTIONS</u> <ul style="list-style-type: none"> Marking a step as UNSAT requires written comments on respective step. Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *. The time clock starts when the candidate acknowledges the Initiating Cue. This JPM must be performed in the simulator. Reset to exam-specific IC-389, or configure the simulator per the Simulator Setup Instructions. 				
<u>EVALUATOR NOTE</u> The FAULTED step in this JPM is preceded by a fault statement in BOLD TYPE WITH ALL CAPITAL LETTERS .				
<u>EVALUATOR CUE</u> Record JPM start time: _____				
<u>BOOTH OPERATOR CUE</u> 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.		
<u>EVALUATOR CUE</u> Pump discharge pressure is 95 psig, steady.				
4	Closes RBCCW Pump 1A discharge valve.	Direct NPO to slowly close RBCCW Pump 1A Dsch 113062.		
<u>BOOTH OPERATOR CUE</u> When directed, depress KEY 1 to close RBCCW Pump 1A discharge valve 113062. Notify evaluator when 113062 is fully closed.				
<u>EVALUATOR CUE</u> When 113062 is reported closed by Booth Operator, notify candidate that Pump discharge valve is closed.				

PERFORMANCE CHECKLIST

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Examinee _____

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.		
<u>BOOTH OPERATOR CUE</u> 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.				
<u>EVALUATOR CUE</u> When 113062 is reported open by Booth Operator, promptly notify candidate that Pump discharge valve is open.				
<u>EVALUATOR NOTE</u> Shortly after report of RBCCW Pump 1A discharge valve 113062 open, B pump will trip initiating the below described fault.				

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>FAULT STATEMENT</u> 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. <u>BACK PANEL – Recirc Temp Recorder</u>		
11	IF RBCCW Pump has tripped, then check tripped RBCCW Pump breakers <ul style="list-style-type: none"> • 1B216103 • 1B237093 	N/A		
12	Monitors Rx Recirc Pump Motor Bearing Temps	Monitors Rx Recirc Pump Motor Bearing temperature(s) $\geq 195^{\circ}\text{F}$ <u>OR</u> Seal Cavity temperatures $\geq 200^{\circ}\text{F}$		
*13	Trips both Rx Recirc Pumps	TRIP BOTH Rx Recirc Pumps when Rx Recirc Pump Motor Bearing temperature(s) $\geq 195^{\circ}\text{F}$ <u>OR</u> Seal Cavity temperatures $\geq 200^{\circ}\text{F}$		
<u>EVALUATOR CUE</u> Record JPM stop time: _____				

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR CUE</u> That completes the JPM.				
<u>EVALUATOR NOTE</u> That completes the JPM.				
<u>EVALUATOR:</u> 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-144-001, 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-144-001, section 2.2.

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 ARES

ON-143-001 has been entered

The cause of the spurious isolation of HV-10721 has been corrected and the ARES 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, SJAĒ 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

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR INSTRUCTIONS</u> <ul style="list-style-type: none"> Marking a step as UNSAT requires written comments on respective step. Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *. The time clock starts when the candidate acknowledges the Initiating Cue. This JPM 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. 				
<u>EVALUATOR NOTE</u> The FAULTED step in this JPM is preceded by a fault statement in BOLD TYPE WITH ALL CAPITAL LETTERS				
<u>EVALUATOR CUE</u> Record JPM start time: _____				
<u>BOOTH OPERATOR CUE</u> 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.		

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
2*	IF Offgas System Automatic Isolation OR an ARES D Signal occurred, THEN Performs following:	<ul style="list-style-type: none"> • 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 ARES D Signal THEN Perform following: <ul style="list-style-type: none"> ○ *IF on Main Steam, THEN Ensure following valves are OPEN: ○ *HV 10721 SJAE Dsch Iso. ○ *HV 10702 SJAE Sec. Eject Iso. ○ *HV 10701A SJAE Mn Stm Sup Iso. ○ *HV 10701B SJAE Mn Stm Sup Iso. ○ *HV 10107 Mn Stm SJAE Iso. ○ *HV 10722 SJAE Sup. Pri. Eject Iso. 		
<u>FAULT STATEMENT</u> 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		
<u>EVALUATOR NOTE</u> If asked, as the US direct the candidate to transfer steam supply to the alternate source				

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR NOTE</u> Prerequisites of section 2.7 are satisfied.				
<u>EVALUATOR CUE</u> 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	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> 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		

PERFORMANCE CHECKLIST

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Examinee _____

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.		
<u>BOOTH OPERATOR CUE</u> 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		
<u>EVALUATOR CUE</u> Record JPM stop time: _____				
<u>EVALUATOR CUE</u> That completes the JPM.				
<u>EVALUATOR NOTE</u> That completes the JPM.				
<u>EVALUATOR:</u> 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 ARES

ON-143-001 has been entered

The cause of the spurious isolation of HV-10721 has been corrected and the ARES 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 ARES

ON-143-001 has been entered

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

INITIATING CUE

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

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

Validated

Greg van den Berg

02/18/2015

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:

Last, First MI

Employee Number

Exam Date:

Exam Duration (Min)

Evaluation Result:

☐

Satisfactory

☐

Unsatisfactory

Evaluator

Name

Signature

Comments



JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
0	New JPM
1	Revise for TQ procedures, minor editorial corrections
2	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 $\approx 60\%$
 - **Bypass** APRM 3.

SIMULATOR SETUP INSTRUCTIONS FOR LOC 27 NRC EXAM

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

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR INSTRUCTIONS</u> <ul style="list-style-type: none"> Marking a step as UNSAT requires written comments on respective step. Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *. The time clock starts when the candidate acknowledges the Initiating Cue. This JPM 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. 				
<u>EVALUATOR CUE</u> Record JPM start time: _____				
<u>BOOTH OPERATOR CUE</u> 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.		
<u>EVALUATOR NOTE</u> Role-play as PCO or SRO to avoid using plant page system during the JPM				
5	Establish communications with PCO	Establishes communications using plant page.		
<u>EVALUATOR CUE</u> State that all communications will be with examiner role playing as PCO or SRO to avoid using plant page system during the JPM				
<u>EVALUATOR CUE</u> When operator is confirming BYPASS LED status state, "Channel 13 BYPASSED LEDs for APRM 11, 12, and 14 are lit."				
6	Verifies APRM 3 bypassed	Confirms all four 2/4 voters, BYPASSED LEDs for bypassed APRM are illuminated		
*7	Adjust the display to the proper screen	Press ETC button to display ENTER SET MODE		
*8	Accept the proper display screen	Press ENTER SET MODE key		
*9	Enter the password	Enter password "1234" and press ENT		

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
*10	Select proper indication to change	Using the cursor keys, highlight the APRM GAIN		
*11	Setup display for gain adjustment	<ul style="list-style-type: none"> Press SET PARAMETERS key Verify APRM indicates SET PARAMETERS: APRM GAIN 		
*12	Adjust APRM 3 GAF to the target gain	Performs the following IAW section 2.2.5: <ul style="list-style-type: none"> Adjust the APRM GAIN DESIRED UNTIL PROJECTED FLUX (%) is $\pm 2\%$ of calculated CTP using using ($\downarrow\uparrow$) CURSOR keys to scroll Press the ACCEPT key 		
*13	Confirm APRM 3 target gain is selected	<ul style="list-style-type: none"> Confirm the APRM GAIN PRESENT changes to equal the APRM GAIN DESIRED Confirm ACTUAL FLUX (%) is $\pm 2\%$ of calculated CTP 		
14	Exit the setup displays	<ul style="list-style-type: none"> Press EXIT key Press EXIT SET MODE key Press YES key 		
15	Confirms APRM 3 display indicates OPERATE	Confirms APRM upper display section indicates OPERATE on top right corner of display		
16	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.

EVALUATOR CUE

Record JPM stop time: _____

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR CUE</u> That completes the JPM.				
<u>EVALUATOR:</u> 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.

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

Validated

Greg van den Berg	02/18/2015	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

15

Validation Time (min)

Examinee Name: _____
 Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____
 Name Signature

Comments



JPM REVISION SUMMARY

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

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.

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
EVALUATOR INSTRUCTIONS <ul style="list-style-type: none"> Marking a step as UNSAT requires written comments on respective step. Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *. The time clock starts when the candidate acknowledges the Initiating Cue. This JPM 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. <ul style="list-style-type: none"> Undoes the locking mechanism Turns handle to the left 90° 		
*3	Isolate the Scram Air Header.	Close SCRAM AIR SUPPLY Valves 247002A and 247002B. <ul style="list-style-type: none"> Turns SCRAM AIR SUPPLY Valves 2470002A and 247002B CLOCKWISE to CLOSE. 		

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
*4	Vent off the Scram Air Header.	Uncap and open SCRAM AIR HDR VENT Valve 247007. <ul style="list-style-type: none">• Turns cap Counter Clockwise (Looking Up from floor to ceiling view)		
5	Verify air is being vented.	Check for air at discharge vent.		
<u>EVALUATOR CUE</u> 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.		
<u>EVALUATOR CUE</u> Inform applicant Control Room has been notified and all control rods have inserted.				
<u>EVALUATOR CUE</u> Record JPM stop time: _____				
<u>EVALUATOR CUE</u> That completes the JPM.				
<u>EVALUATOR NOTE</u> 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.

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)

<u>S/RO</u>	<u>50.EO.2567.003</u>	<u>1</u>	<u>04/18/2015</u>	<u>Plant</u>
Applicability	JPM Number	Revision	Date	Setting
<u>217000</u>	<u>A2.16</u>	<u>3.4/3.5</u>	<u>N</u>	<u>N</u>
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

Validated

<u>Greg van den Berg</u>	<u>04/18/2015</u>	<u>Greg van den Berg</u>	<u>05/13/2015</u>
Author	Date	Instructor	Date

Review

Approval

<u>Manu Sivaraman</u>	<u>06/05/2015</u>	<u>Durand Adams</u>	<u>06/03/2015</u>
Operations Management	Date	Nuclear Training Supervisor	Date

25
Validation Time (min)

Examinee Name: _____
Last, First MI Employee Number

Exam Date: _____ Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory ☐ Unsatisfactory

Evaluator _____
Name Signature

Comments



JPM REVISION SUMMARY

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

PERFORMANCE CHECKLIST

50.EO.2567.0u3 Rev 1
04/18/2015
Page 1 of 2

Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR INSTRUCTIONS</u> <ul style="list-style-type: none"> Marking a step as UNSAT requires written comments on respective step. Critical steps are marked with a *. If elements of the Standard are non-critical, the critical elements of the Standard are marked with a *. The time clock starts when the candidate acknowledges the Initiating Cue. This JPM must be performed in the plant. Obtain Shift Manager Authorization to proceed. Mark-up a copy of ES-250-003 complete through Step 4.3. 				
<u>EVALUATOR CUE</u> 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.		
<u>EVALUATOR CUE</u> 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.		
<u>EVALUATOR CUE</u> Breaker 2D254-042 is open.				

PERFORMANCE CHECKLIST

50.EO.2567.003 Rev 1

04/18/2015

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Examinee _____

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') <ul style="list-style-type: none">• 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') <ul style="list-style-type: none">• 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.

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

Validated

HA Likel 6/25/2015
Author Date

HA Likel 7/20/2015
Instructor Date

Review

Approval

JGO 8/9/15
Operations Management Date

M B 7/20/2015
Nuclear Training Supervisor Date

20

Validation Time (min)

Examinee Name:

Last, First MI

Employee Number

Exam Date: _____

Exam Duration (Min) _____

Evaluation Result: ☐ Satisfactory

☐ Unsatisfactory

Evaluator

Name

Signature

Comments



CONFIDENTIAL Examination Material

SUSQUEHANNA NUCLEAR, LLC

JOB PERFORMANCE MEASURE

APPROVAL AND ADMINISTRATIVE DATA SHEET

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

<u>S/RO</u>	<u>24.OP.1443.051</u>	<u>1</u>	<u>06/25/2015</u>	<u>Plant</u>
Applicability	JPM Number	Revision	Date	Setting
<u>264000</u>	<u>A4.04</u>	<u>3.7/3.7</u>	<u>N</u>	<u>Y</u>
NUREG-1123 E/APE / Sys	K/A Number	K/A Importance	Alternate Path	Time Critical

Prepared

Validated

Greg Schrad

06/25/2015

Greg Schrad

07/20/2015

Author

Date

Instructor

Date

Review

Approval

Manu Sivaraman

8/9/2015

Greg van den Berg

07/20/2015

Operations Management

Date

Nuclear Training Supervisor

Date

20

Validation Time (min)

Examinee Name:

Last, First MI

Employee Number

Exam Date:

Exam Duration (Min)

Evaluation Result:

☐

Satisfactory

☐

Unsatisfactory

Evaluator

Name

Signature

Comments



JPM REVISION SUMMARY

Revision	Description/Purpose of Revision
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'.

PERFORMANCE CHECKLIST

24.OP.1443.051 Rev 1

06/25/2015

Page 1 of 5

Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR INSTRUCTIONS</u> <ul style="list-style-type: none"> Marking a step as UNSAT requires written comments on respective step. 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 				
<u>EVALUATOR NOTE</u> 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.				
<u>EVALUATOR CUE</u> 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.		
<u>EVALUATOR CUE</u> 43CM switch in the Local position.				
3	At Diesel Engine Control Panel 0C521A, Depress 5ES Emergency Stop pushbutton.	Depresses the Emergency Stop pushbutton.		
<u>EVALUATOR CUE</u> Emergency Stop pushbutton is depressed and stayed depressed.				
<u>FAULT STATEMENT</u> 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.				

PERFORMANCE CHECKLIST

24.OP.1443.051 Rev 1
06/25/2015
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Examinee _____

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.		
<u>EVALUATOR CUE</u> a. Master Trip Circuit Tripped Green light - NOT LIT b. Running Idle light - LIT c. DG Engine speed - 600 rpm and stable				
5	<u>WARNING</u> Personnel safety must be considered before proceeding with this step. Do not perform if area is not safe.	Evaluates if the area is safe		
<u>EVALUATOR CUE</u> 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.		
<u>EVALUATOR CUE</u> SX-03483A is pulled to end of travel.				

PERFORMANCE CHECKLIST

24.OP.1443.051 Rev 1
06/25/2015
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Examinee _____

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.		
<u>EVALUATOR CUE</u> <i>If Student depresses the pushbutton on the lever, provide this cue:</i> 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. <i>If Student does not depress the pushbutton on the lever, provide this cue:</i> Fuel quadrant lever did not move				
<u>EVALUATOR CUE</u> 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		
<u>EVALUATOR CUE</u> SX-03483A is reset and pushed-in				
9	When diesel generator comes to stop, Depress Emergency Stop Reset pushbutton	Depresses Emergency Stop Reset pushbutton.		
<u>EVALUATOR CUE</u> 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.		

PERFORMANCE CHECKLIST

24.OP.1443.051 Rev 1
06/25/2015
Page 4 of 5

Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR CUE</u> 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.		
<u>EVALUATOR CUE</u> 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.		
<u>EVALUATOR CUE</u> Green light is not lit.				
13	Comply with TS 3.8.1 for Unit 1 and Unit 2.	Informs SRO of TS.		
<u>EVALUATOR CUE</u> SRO has been informed and is complying.				
14	Ensure auto initiation signal Reset.	Inquires about DW pressure.		
<u>EVALUATOR CUE</u> High DW pressure condition still present. No further DG manipulations required.				
<u>EVALUATOR CUE</u> Record JPM stop time: _____				

PERFORMANCE CHECKLIST

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Examinee _____

Step	Action	Standard	Eval	Comments
<u>EVALUATOR CUE</u> That completes the JPM.				
<u>EVALUATOR NOTE</u> That completes the JPM.				
<u>EVALUATOR:</u> 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.

	SUSQUEHANNA LEARNING CENTER	
	SIMULATOR SCENARIO	
Scenario Title:	Uncoupled Control Rod / Control Rod Drop / Fuel Failure Max Safe Rad in Two Areas/ Emergency Depressurization	
Scenario Duration:	75 minutes	
Scenario Number:	LOC27-N-02	
Revision / Date:	0 / April 20, 2015	
Course:	PC017 SRO License PC018 RO License	
Prepared By:	Rich Bolduc	04/20/2015
	Instructor	Date
Reviewed By:	Greg van den Berg	05/06/15
	Operations Training Management	Date
Approved By:	Manu Sivaraman	05/06/15
	Operations Line Management	Date

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SCENARIO SUMMARY

The scenario begins with a reactor startup in progress following a refueling outage. Reactor power is approximately 3%. Unit 2 is at rated power.

After the crew takes the shift, the steam jet air injectors are placed in service and mechanical vacuum pump is secured. After the steam jet air injectors are in-service, control rods are withdrawn in preparation for placing the mode switch in RUN.

While withdrawing control rods, an uncoupled rod is discovered. An attempt to re-couple the rod in accordance with ON-CRD-101 is unsuccessful. When the crew prepares to fully insert the mechanism for the uncoupled control rod, a critical fault of Rod Worth Minimizer (RWM) occurs blocking all control rod motion. Technical Specifications are addressed for the uncoupled control rod and RWM.

While the crew is preparing to bypass the RWM, the blade for the uncoupled control rod drops causing a reactor power spike exceeding the IRM/APRM auto scram setpoints. The reactor fails to scram requiring the crew to manually scram the reactor.

The power spike from the control rod drop causes a fuel failure. Main steam line high radiation will require the crew to close MSIVs and steam line drains in accordance with ON-179-001.

Following the scram, the Scram Discharge Volume (SDV) vent and drain valves fail to close. When the SDIV vent and drain valves fail to close, due to the fuel failure, radioactive steam will be released to the reactor building causing a high radiation condition requiring secondary containment control EOP actions. Attempts to reset RPS to isolate the reactor coolant leak will be unsuccessful.

After initial actions for the steam leak from the SDIV are initiated, a pipe break in the Reactor Water Cleanup system will occur causing area high temperatures and high radiation levels. The Reactor Water Cleanup (RWCU) will fail to auto isolate. When an attempt is made to manually isolate RWCU, the isolation valves will bind in mid-position and fail to close. The loss of coolant from RWCU break will require additional makeup from available injection systems.

The high radiation from the SDIV steam leak combined with the high radiation in the RWCU area will exceed maximum safe radiation levels into areas requiring emergency depressurization in accordance with the Secondary Containment Control EOP.

The scenario is terminated following emergency depressurization when reactor level and pressure have been stabilized.

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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. AR-104-H06 Rod Overtravel
9. ON-CRD-101 Control Rod Malfunction
10. ON-SCRAM-101 Reactor Scram
11. ON-179-001 Increasing Offgas / MSL Rad Levels
12. AR-101-F01 RWCU HI FLOW ISOLATION
13. AR-101-A04 RWCU SYSTEM PRE-ISOLATION HI TEMP/HI DIFF TEMP
14. AR-101-A02 RWCU LEAK DET ISO LOGIC A HI TEMP
15. AR-101-A03 RWCU LEAK DET ISO LOGIC B HI TEMP
16. EO-000-102 RPV Control
17. EO-000-104 Secondary Containment Control
18. EO-000-112 Emergency Depressurization
19. EP-RM-004 EAL Classification Levels
20. TS 3.1.3.c Control Rod Coupling
21. TS 3.3.2.1.c Bypassing Rod Worth Minimizer

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CRITICAL TASKS

Recognize a failure to scram condition and initiate a manual scram within 60 seconds from the time that a neutron monitoring RPS setpoint is exceeded.

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 the potential for core damage.
Indications/Cues for Event Requiring Critical Task	Exceeding a RPS scram setting and RPS fails to fully insert all control rods.
Performance Criteria	Initiate a manual scram within 60 seconds from the time that an RPS scram setting is exceeded.
Performance Feedback	Successful insertion of control rods will be indicated by rod position full in indication following manual initiation of a scram.

Perform Emergency Depressurization when Two Secondary Containment areas exceed maximum safe radiation levels with a Primary System discharging into Secondary Containment.

Safety Significance	Action is taken to isolate systems that are discharging into secondary containment to terminate possible sources of radioactivity release. Minimizing radioactive release to secondary containment also helps accomplish the objective of precluding a radioactive release outside secondary containment under conditions where secondary containment integrity cannot be maintained. Previous containment control actions have not, for whatever reason, mitigated the event and now potentially large areas of the secondary containment have been challenged.
Consequences for Failure To Perform Task	The criteria of "2 or more areas" identifies the increase in radiation trend as a wide spread problem which may pose a direct and immediate threat to secondary containment integrity, equipment located in the secondary containment, or continued safe operation of the plant.
Indications/Cues for Event Requiring Critical Task	Plant Process Computer formats indicating radiation values greater than Max Safer values.
Performance Criteria	Perform a Emergency Depressurization per EO-000-112 when two or more RB areas exceed max safe radiation per EO-000-104 Table 9 (10 R/hr for all areas)
Performance Feedback	Initiating an emergency depressurization causes Reactor pressure to lower which lowers the driving force of any primary system breach. Verify ADS valves are open using light red light indication, acoustic monitoring and lowering Reactor pressure and rising reactor water level.

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SCENARIO MALFUNCTIONS

Event	Description	Crew Response
3	Uncoupled Control Rod	Inserts control rod to attempt to re-couple the rod IAW ON-CRD-101. The control rod does not re-couple. The SRO will address Technical Specifications for the uncoupled control rod.
4	Rod Worth Minimizer Failure	Bypass the RWM. The SRO will address Technical Specifications for the inoperative RWM.
5	Control Rod Drop	Reactor power spike exceeds the IRM/APRM auto scram setpoints. The reactor fails to scram requiring the ATC to insert a manual scram.
6	Fuel Failure	Scram the Reactor
7	SDIV Vent and Drain Valves Fail to Close	Mitigate leak by taking actions for Secondary Containment Control
8	Reactor Water Cleanup Pipe Break Without Auto Isolation	Attempt manual isolation of RWCU
9	Reactor Water Cleanup Isolation Valves Fail to Close	Perform Emergency Depressurization when Two Secondary Containment areas exceed maximum safe radiation levels

ABNORMAL EVENTS / MAJOR TRANSIENTS / TECH SPEC

Malfunction	Description
N	Place Off Gas in Service
R	Raise Reactor Power by Withdrawing Control Rods
AE1	Uncoupled Control Rod
AE2	Rod Worth Minimizer Failure
MT	SDIV Vent and Drain Valves Fail to Close
TS1	Uncoupled Control Rod
TS2	Rod Worth Minimizer Failure

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SCENARIO SPECIAL INSTRUCTIONS

1. Simulator setup
 - a. **Initialize** to an exam-specific IC (IC-394). If an exam-specific IC is not available, then setup the simulator as follows:
 - i) **Initialize** to IC-12.
 - ii) **Place** the simulator in RUN.
 - iii) **Insert** steps 317 and 318
 - iv) **Run** SCN file exam\LOC27-N02.scn
 - v) **Withdraw** CRDMs from step 317 to above step 332, but before withdrawing rod 14-07 (blades are stuck and uncoupled)
 - vi) **Perform** actions to prepare for transferring from MVP to OG OP-172-001 2.1.22
 - b. **Run** SCN file exam\LOC27-N02.scn
2. **Verify** the following malfunctions/overrides, event triggers and key assignments:

MF	RF	OR	SCN	ET	COND
53:53	2:2	1:1	0:0	3:0	6
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** startup control rod sequence is available and marked up to current control rod
 - d. **Ensure** the RWM is initialized and the rod block annunciator is clear.
 - e. **Ensure** two copies of the control rod pull sheet are available.
 - f. **Fill out** an SO-156-007 for current rod pattern
 - g. **Fill out** an OP-172-001 to 2.1.22
4. **Prepare** a Turnover Sheet including the following:
 - a. Unit 1
 - i) A Reactor Startup is in progress following a refueling outage.
 - ii) The Reactor Mode Switch is in Startup.
 - iii) Reactor power is approximately 3% with the IRMs on Range 9.
 - iv) Reactor Pressure is 940 psig with 1/4 bypass valve open.
 - v) GO-100-002 is complete to step 5.59.2
 - vi) Main condenser back pressure has lowered to allow placing Off Gas in service.
 - vii) The Off Gas system is prepared for placing SJAE in-service.
 - viii) The directions to the shift are to:
 - (1) - Place Off Gas in service IAW OP-172-001 starting at step 2.1.22.
 - (2) - Secure the Mechanical Vacuum Pump
 - (3) - Continue the reactor startup
 - b. Common
 - (1) 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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LOC27-N02.scn

```
; Monitored parameters
SCN rat_mp
SCN exam\LOC27-N02-MP
SCN exam\LOC27-N02-MP1

; RWCU F001/F004 auto-isol failure and valve
binding
IMF cmfMV09_HV144F001 f:80
IMF cmfMV09_HV144F004 f:80
IMF cmfMV06_HV144F004
IMF cmfMV06_HV144F001

;RWCU F100/F102/F106 valve binding
IMF cmfMV09_HV144F100 f:80
IMF cmfMV09_HV144F102 f:80
IMF cmfMV09_HV144F106 f:80

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

{Key[1]} scn exam\LOC27-N02-INOP RWM

{Key[2]} scn exam\LOC27-N02-Delete Stuck Rods
{Key[2]} scn exam\LOC27-N02-NM Spike

;Bypass AUTO Scram
IRF rFRP158039 f:BYPASS
IRF rFRP158040 f:BYPASS

;Restore Auto scram when MS in SD
AET ETLOC27-N02-1

; Initiates Fuel Failure and SDV rad from leak
when MS in SD
aet ETLOC27-N02-2

; MSL rads lower after isolation
aet ETLOC27-N02-3

; SDV drain valves stuck open
IMF mFRD155018

; RPS reset HS failed
IOR diHSC72A1S05 f:NORM

; Initiate RWCU Leak AND Rads
{Key[3]} scn exam\LOC27-N02-B

; Local evacuation
{Key[10]} SCN exam\LOCAL_EVAC_ALARM

; ADS keylock switches
{Key[11]} SCN exam\ADB_ADSKEYS
```

LOC27-N-02 SETUP.scn

```
;Reset to IC 12
;Insert steps 317 and 318
;RUN scn then withdraw mechs from step 317 to
332
IMF mFRD1550061851 f:AsIs
IMF mFRD1550071851
IMF mFRD1550064251 f:AsIs
IMF mFRD1550074251
IMF mFRD1550064211 f:AsIs
IMF mFRD1550074211
IMF mFRD1550061811 f:AsIs
IMF mFRD1550071811
IMF mFRD1550061407 f:AsIs
IMF mFRD1550071407
IMF mFRD1550064655 f:AsIs
IMF mFRD1550074655
IMF mFRD1550064607 f:AsIs
IMF mFRD1550074607
IMF mFRD1550061455 f:AsIs
IMF mFRD1550071455
IMF mFRD1550060647 f:AsIs
IMF mFRD1550070647
IMF mFRD1550065415 f:AsIs
IMF mFRD1550075415
IMF mFRD1550065447 f:AsIs
IMF mFRD1550075447
IMF mFRD1550060615 f:AsIs
IMF mFRD1550070615
IMF mFRD1550060227 f:AsIs
IMF mFRD1550070227
IMF mFRD1550065835 f:AsIs
IMF mFRD1550075835
IMF mFRD1550062603 f:AsIs
IMF mFRD1550072603
IMF mFRD1550063459 f:AsIs
IMF mFRD1550073459
```

LOC27-N-02-A.scn

```
IMF mFRR179003 f:10
IMF cmfTR02_RIT13705 r:480 f:1000
IMF cmfTR02_RIT13706 d:20 r:480 f:1000
IMF cmfTR02_RIT13750 d:440 r:480 f:13.32
IMF cmfTR02_RIT13751 d:460 r:480 f:12.24
```

```
+120 IMF mFRM179004A r:60 f:12048
IMF mFRM179004B r:60 f:13589
IMF mFRM179004C r:60 f:11048
IMF mFRM179004D r:60 f:12048
```

```
+60 MMF mFRM179004A r:300 f:14048
MMF mFRM179004B r:300 f:15589
MMF mFRM179004C r:300 f:12048
MMF mFRM179004D r:300 f:14048
```

LOC27-N-02-B.scn

```
IMF cmfTR02_RIT13708 r:60 f:100
IMF cmfTR02_RIT13752 d:60 r:240 f:15
IMF mFCU161007 r:270 f:50
```

LOC27-N-02-Delete Stuck Rods.scn

MF mFRM179004D r:300 f:14048
DMF mFRD1550061407
DMF mFRD1550060647
DMF mFRD1550060615
DMF mFRD1550060227
DMF mFRD1550061455
DMF mFRD1550061811
DMF mFRD1550061851
DMF mFRD1550062603
DMF mFRD1550063459
DMF mFRD1550064211
DMF mFRD1550064251
DMF mFRD1550064607
DMF mFRD1550064655
DMF mFRD1550065415
DMF mFRD1550065447
DMF mFRD1550065835

LOC27-N-02-INOP RWM.scn

IOR diHSC12J600NM c:1 f:BYPASS
IOR diHSC12J600S1 f:OFF

LOC27-N-02-NM Spike.scn

IMF mFNM178004A c:2 r:2 f:125
IMF mFNM178004B c:2 r:2 f:125
IMF mFNM178004C c:2 r:2 f:125
IMF mFNM178004D c:2 r:2 f:125
IMF mFNM178004E c:2 r:2 f:125
MF mFNM178004F c:2 r:2 f:125
MF mFNM178004G c:2 r:2 f:125
IMF mFNM178004H c:2 r:2 f:125
IMF mFNM178007A c:2 r:1 f:21
IMF mFNM178007B c:2 r:1 f:21
IMF mFNM178007C c:2 r:1 f:21
IMF mFNM178007D c:2 r:1 f:21
IMF mFNM178002A c:2 r:1 f:2000
IMF mFNM178002B c:2 r:1 f:2000
IMF mFNM178002C c:2 r:1 f:2000
IMF mFNM178002D c:2 r:1 f:2000

ETLOC27-N02-1 et/scn

;SWITCH:MODE SWITCH TO SD
diHSC72A1S01.CurrValue =
#OR.diHSC72A1S01.SHUTDN

IRF rFRP158039 f:NORM
IRF rFRP158040 f:NORM

ETLOC27-N02-2 et/scn

;SWITCH:MODE SWITCH
diHSC72A1S01.CurrValue =
#OR.diHSC72A1S01.SHUTDN exam\LOC27-N02-A
;RAISE CRD RAD5

ETLOC27-N02-3 et/scn

;SWITCH:MAIN STEAM LINE A ISOLATION
diHS14123A.CurrValue = #OR.diHS14123A.CLS
abort exam\LOC27-N02-A
MMF mFRM179004A r:30 f:1204
MMF mFRM179004B r:30 f:1358
MMF mFRM179004C r:30 f:1104
MMF mFRM179004D r:30 f:1204

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SCENARIO EVENT DESCRIPTION FORM

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

EVENT	TIME	DESCRIPTION
N/A	0	Crew assumes shift
1	5	Place Off Gas in Service
2	10	Raise Reactor Power by Withdrawing Control Rods
3-4	20	Uncoupled Control Rod/ Rod Worth Minimizer Failure
5	40	Control Rod Drop
6	45	Fuel Failure
7	50	SDIV Vent and Drain Valves Fail to Close
8-9	65	Reactor Water Cleanup Pipe Break Without Auto Isolation/ Isolation Valves Fail to Close
N/A	75	Termination

INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENT	1
BRIEF DESCRIPTION	Place Off Gas in Service

INSTRUCTOR ACTIVITY

1. None

ROLE PLAY

1. When requested to perform the below local operations for placing off gas in service, wait 2 minutes and report, **"The local operations for placing off gas in service are complete."**

Place TIC-16937 Offgas Reb Inlet Temp Ctlr in AUTO SET AT 270°F.

Place TV-16937 Preheater Steam Bleed Control to AUTO.

Using PIC-16984 Motive Stm Jet In Offgas Press in MANUAL,

Adjust PV-16984 Motive Stm Jet In Offgas to- -4.8 psig on PIC-16984.

WHEN, Motive Stm Jet In Offgas Press stable at- -4.8 psig on PIC-16984, THEN Place PIC-16984 in AUTO SET AT -4.8 psig.

Role play any directed actions as required.

EVALUATOR NOTES

1. None

SCENARIO EVENT FORM

EVENT	1
BRIEF DESCRIPTION	Place Off Gas in Service

POSITION	TIME	STUDENT ACTIVITIES
PCOP		<p>Places Off Gas in service in accordance with OP-172-001 as follows:</p> <p>Place steam jet air ejector in service as follows:</p> <ul style="list-style-type: none"> Ensure Unit 1 Recombiner offgas isolation signal not present by observing Unit 1 Offgas Permissive White Light ILLUMINATED. <p>At Control Panel 1 C668:</p> <ul style="list-style-type: none"> Open HV-10722 SJAE Sup Pri Eject Iso. Check pressure on PI-10701 SJAE Stm Sup Press 110-130 psig. At 1C668 Control Panel, Depress HS-10716 SJAE Suct Iso Pushbutton to Open HV-10716, HV-10717, HV-10718 and HV-10719. Check SJAE flow stable on FI-10724 SJAE Cdsr Flow. <p>WHEN offgas Rec inlet temp stable at- 270°F or above on TIC-16937 Offgas Reb Inlet Temp Ctlr, THEN have the NPO:</p> <ul style="list-style-type: none"> Place TIC-16937 Offgas Reb Inlet Temp Ctlr in AUTO SET AT 270°F. Place TV-16937 Preheater Steam Bleed Control to AUTO. Using PIC-16984 Motive Stm Jet In Offgas Press in MANUAL, Adjust PV-16984 Motive Stm Jet In Offgas to- -4.8 psig on PIC-16984. WHEN, Motive Stm Jet In Offgas Press stable at- -4.8 psig on PIC-16984, THEN Place PIC-16984 in AUTO SET AT - 4.8 psig. <p>WHEN SJAE operation stable, THEN Close HV-16904 Offgas Recycle.</p> <p>Check main condenser vacuum IMPROVING (absolute pressure going down).</p> <p>Shut Down Mechanical Vacuum Pump 1P105 in accordance with OP-143-001 as follows:</p> <p>Depress 1P105 Vacuum Pump STOP pushbutton.</p> <p>Observe following automatic actions occur:</p> <ul style="list-style-type: none"> HV-10731 Vac Pump Suct CLOSES. 1P138 Seal Wtr Pump STOPS. 1P141 Seal Wtr Clr Chw PP STOPS. 1 P1 05 Vacuum Pump STOPS. <p>Close HV-10734A and HV-10734B Vac PP Suct Iso by depressing common CLOSE pushbutton.</p>

PCOM		Monitors plant parameters.
US		Direct PCOP to place Off Gas in service in accordance with OP-172-001 , starting at step 2.1.22 and secure the Mechanical Vacuum Pump

NOTES	
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INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES
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EVENT	2
BRIEF DESCRIPTION	Raise Reactor Power by Withdrawing Control Rods

INSTRUCTOR ACTIVITY

1. None

ROLE PLAY

Role play any directed actions as required.

EVALUATOR NOTES

1. None.

SCENARIO EVENT FORM

EVENT	2
BRIEF DESCRIPTION	Raise Reactor Power by Withdrawing Control Rods

POSITION	TIME	STUDENT ACTIVITIES
PCOM		<p>Withdraw control rods per the startup control rod sequence steps 333 to 336 from position 00 to 12 one notch at a time in accordance with OP-156-001 and OP-AD-338:</p> <ul style="list-style-type: none"> • 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 directional control 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) <p>Monitor diverse indications:</p> <ul style="list-style-type: none"> • RPIS / IRMs / APRMs / • Reactor water level / Reactor pressure
PCOP		<p>Provide verifier checks for control rod movement. Monitors plant parameters, including CRD parameters.</p>
US		<p>Direct PCOM to perform control rod withdrawals per the startup control rod sequence and GO-100-002.</p> <p>Provide oversight for reactivity manipulation.</p>

INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENT	3-4
BRIEF DESCRIPTION	Uncoupled Control Rod/ Rod Worth Minimizer Failure

INSTRUCTOR ACTIVITY

1. Just prior to the PCOM fully inserting rod 14-07, **depress KEY 1** to initiate the RWM failure.

{Key[1]} scn exam\LOC27-N02-INOP RWM

ROLE PLAY

As **WWM** (or equivalent) contacted for assistance for the uncoupled control rod, acknowledge request.

As **RE** (or equivalent) contacted for guidance for fully inserting the uncoupled control rod report:

I concur with fully inserting rod 14-07

As **WWM** or Computer Group contacted for assistance for failure of the RWM wait 3 minutes and report:

The RWM has an unrecoverable software fault. Repair of the RWM is estimated to be greater than one day.

Role play any other directed actions as required.

EVALUATOR NOTES

1. None

SCENARIO EVENT FORM

EVENT	3-4
BRIEF DESCRIPTION	Uncoupled Control Rod/ Rod Worth Minimizer Failure

POSITION	TIME	STUDENT ACTIVITIES
TEAM		<p>Recognize / report:</p> <ul style="list-style-type: none"> • Control rod 14-07 is determined to be uncoupled when it is fully withdrawn
PCOM		<p>When control rod 14-07 reaches full out, recognizes and reports that the control Rod is uncoupled and refers to AR-104-H06 Rod Overtravel.</p> <p>Takes action per OP-CRD-101 to re-couple the rod:</p> <ol style="list-style-type: none"> a. INSERT control rod to Position 46. b. WITHDRAW control rod to Position 48. c. Concurrently DEPRESS and HOLD the following pushbuttons: <ul style="list-style-type: none"> • W/DRAW ROD • CONT W/DRAW ROD <p>When control rod 14-07 is withdrawn from position 46, recognizes and reports that the control Rod is still uncoupled.</p> <p>When preparing to fully insert the control Rod, recognizes and reports that an RWM failure is causing an insert and withdraw block.</p> <p>Bypasses the RWM IAW OP-131-001 as follows:</p> <ul style="list-style-type: none"> • Insert key into Normal/Bypass keylock • Turn fully clockwise to BYPASS position. <p>Observe status of following RWM indicator lights:</p> <ul style="list-style-type: none"> • Manual Bypass indicator light ILLUMINATED. • Insert Error digital display window BLANK. • Withdraw Error digital display window BLANK. • Latched GRP digital display window BLANK. • RWM and Program section of Inop/Reset indicator light ILLUMINATED.
PCOP		Monitor plant parameters.

POSITION	TIME	STUDENT ACTIVITIES
US		<p>Enters ON-CRD-101 for the uncoupled control rod.</p> <p>Directs PCOM to recouple rod 14-07 IAW ON-CRD-101.</p> <p>When the control rod fails to recouple, determines Technical Specification 3.1.3.c requires fully inserting the control rod.</p> <p>Directs PCOM to fully insert control Rod 14-07 and carry out the additional actions directed by ON-CRD-101 for an uncoupled control Rod.</p> <p>When the report is received that the RWM has an unrecoverable software fault, determines Technical Specification 3.3.2.1.c allows bypassing the RWM.</p> <p>Directs PCOM to bypass the RWM IAW OP-131-001.</p>
NOTES		

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INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENT	5
BRIEF DESCRIPTION	Control Rod Drop

INSTRUCTOR ACTIVITY

1. After the RWM is bypassed, and prior to inserting control rods 14-07, **depress KEY 2** to initiate the control rod drop.

{Key[2]} scn exam\LOC27-N02-Delete Stuck Rods

{Key[2]} scn exam\LOC27-N02-NM Spike

ROLE PLAY

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

Role play any other directed actions as required.

EVALUATOR NOTES

SCENARIO EVENT FORM

EVENT	5
BRIEF DESCRIPTION	Control Rod Drop

POSITION	TIME	STUDENT ACTIVITIES
TEAM		<p>* Recognize a failure to scram condition and initiate a manual scram within 60 seconds from the time that a neutron monitoring RPS setpoint is exceeded. (Critical task)</p> <p>Recognizes that all IRM's momentarily pegged upscale and that APRM's exceeded 20% power.</p> <p>Recognizes that the Neutron Monitoring Trip alarm was received without a scram signal occurring.</p>
PCOM		<p>As soon as it is determined that the reactor failed to scram, announces ATWS and takes the mode switch to SHUTDOWN.</p> <p>Carries out PCOM actions IAW ON-SCRAM-101.</p> <p>Verify control rods fully insert</p> <p>Insert IRMs and SRMs</p> <p>Verify scram discharge volume vent and drain valves are closed</p>
PCOP		<p>Carries out PCOP actions IAW ON-SCRAM-101</p> <ul style="list-style-type: none"> • Verify expected isolations and initiations have occurred • Monitor for abnormal conditions
US		<p>As soon as it is determined that the reactor failed to scram, directs that a manual scram be initiated by taking the mode switch to shutdown.</p> <p>Enters and directs actions be carried out for ON-SCRAM-101.</p> <p>Enters EO-000-102, RPV control, due to the failure to scram.</p> <ul style="list-style-type: none"> • Assign reactor level band of +20" to +45" with feedwater. • Assigns a reactor pressure band of 800 psig to 1050 psig using bypass valves. • Directs that isolations and initiations be verified.

NOTES	
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INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENT	6
BRIEF DESCRIPTION	Fuel Failure

INSTRUCTOR ACTIVITY

1. When the mode switch is taken to SHUTDOWN, verify that the following event triggers fire:

aet ETLOC27-N02-2 (to initiate a fuel failure and SDV rad)

aet ETLOC27-N02-1 (Restore Auto scram when MS in SD)

2. When the MSIVs are isolated for the fuel failure, verify that the following event trigger fires:

aet ETLOC27-N02-3 (lowers MSL after isolation)

3. When requested as **Unit 2 PCO** to perform evacuation, **depress KEY 10** to sound the local evacuation alarm and then **perform** OP-009-004 Attachment A for a local evacuation as requested by the crew.

{Key[10]} SCN exam\LOCAL_EVAC_ALARM

Local evacuation

ROLE PLAY

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

Role play any other directed actions as required.

EVALUATOR NOTES

none

SCENARIO EVENT FORM

EVENT	6
BRIEF DESCRIPTION	Fuel Failure

POSITION	TIME	STUDENT ACTIVITIES
TEAM		Recognize / report: <ul style="list-style-type: none"> ▪ Rising reactor building radiation levels ▪ Rising containment, MSL, and Off Gas rad levels ▪
PCOM		Recognizes SDV vent and drain valves fail to isolate. Reports when MSL Rad Hi-Hi alarm received.
PCOP		Closes MSIVs and drains when directed After MSIVs are closed controls reactor pressure and level using SRVs and RCIC/HPCI for reactor level control.
US		Enters EO-000-104 on high RB rad levels Enters ON-179-001, Increasing Off Gas MSL Rad Levels due to fuel failure symptoms. Directs scram reset to stop release from SDV Directs evacuation of the Unit 1 Reactor Building Directs that MSIVs and drains be closed when MSL Rad Hi-Hi alarm received IAW ON-179-001. Directs transitioning to SRVs for pressure control and RCIC/HPCI for reactor level control.

Note: SITE AREA EMERGENCY on EAL FS1, RCS 2.c POTENTIAL LOSS, PC 3.c LOSS

INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENTS	7
BRIEF DESCRIPTION	SDIV Vent and Drain Valves Fail to Close

INSTRUCTOR ACTIVITY**ROLE PLAY**

If dispatched as **NPO** to investigate abnormal conditions in the Reactor Building, wait 2 minutes, then report:

There was elevated temperature and a lot of steam in the vicinity of the CRD HCU's. I have exited the building.

If dispatched as **NPO/Security** to check RB blowout panels, wait 2 minutes, then report:

"No, Reactor Building blowout panels have ruptured."

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

Role play any other directed actions as required.

EVALUATOR NOTES

1. None.

SCENARIO EVENT FORM

EVENTS	7
BRIEF DESCRIPTION	SDIV Vent and Drain Valves Fail to Close

POSITION	TIME	STUDENT ACTIVITIES
TEAM		Recognize / report: <ul style="list-style-type: none"> CRD N&S Areas exceed Max Safe levels, rad levels rising in additional areas
PCOM		Reports SDV drain valves failed to isolate Attempts to reset RPS and observes scram cannot be reset
PCOP		Monitors Reactor Building radiation levels Starts area coolers for EO-000-104 Initiates a reactor cool down with SRV's.
US		Direct actions for EO-000-104, secondary containment control. Directs PCOP to start area coolers Recognizes that a primary system is discharging into secondary containment. Directs a reactor cooldown, not to exceed 100° per hour

Note: SITE AREA EMERGENCY on EAL FS1, RCS 2.c POTENTIAL LOSS, PC 3.c LOSS

INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES

EVENTS	8-9
BRIEF DESCRIPTION	Reactor Water Cleanup Pipe Break Without Auto Isolation/ Isolation Valves Fail to Close

INSTRUCTOR ACTIVITY

1. When directed by the lead examiner, **depress KEY 3** to initiate the RWCU pipe break.

{Key[3]} scn exam\LOC27-N02-B

ROLE PLAY

As **NPO** directed to investigate RWCU isolation valves, wait 5 minutes and report:

(locally at valve) **The motor operators are hot.**

(Locally at MCC) **Everything looks normal**

As **WWM** (or equivalent) contacted for assistance, acknowledge request and take no action.

Role play any other directed actions as required.

EVALUATOR NOTES

Termination criteria:

Recommend terminating the scenario after emergency depressurization has been initiated, and reactor level is stabilized with either low pressure ECCS or condensate.


SCENARIO EVENT FORM

EVENTS	8-9
BRIEF DESCRIPTION	Reactor Water Cleanup Pipe Break Without Auto Isolation/ Isolation Valves Fail to Close

POSITION	TIME	STUDENT ACTIVITIES
★ TEAM		Perform Emergency Depressurization when Two Secondary Containment areas exceed maximum safe radiation levels with a Primary System discharging into Secondary Containment.
TEAM		Recognize / report: <ul style="list-style-type: none"> • Rising RWCU area temperatures and radiation levels • RWCU fails to isolate from isolation signal
PCOM / PCOP		Attempts to manually isolate RWCU Recognizes isolation valve dual indication and diagnoses that RWCU has not isolated. Reports when RWCU area exceeds 10 R per hour Opens 6 ADS/SRVs Maintains RPV level > -161" using available injection systems Places both loops of RHR in Suppression Pool cooling per OP-149-005
US		When it is determined that a RWCU pipe break occurred or when report received that RWCU failed to isolate: <ul style="list-style-type: none"> • Directs manual isolation of reactor water cleanup • Assigns a critical parameter to monitor RWCU greater than 10 R per hour (max safe) • When it is determined that RWCU will not manually isolate, contacts the WWM for assistance. • Declares rad levels exceed Max Safe in 2 areas • Enters EO-000-112, verifies Suppression Pool level >5' and directs an Emergency Depressurization by opening 6 ADS/SRVs • Directs maintaining RPV level +20" to +45" using available injection systems • Enters EO-000-103 on high Suppression Pool temperature • Directs maximizing Suppression Pool cooling

★ Denotes Critical Task

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

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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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% BOL 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** MOL 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 cmfRRL01_63X114725D2
IMF cmfRRL01_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 cmfRRL03_63X114725D2 ; ARI DIV 2 INITIATION
RELAR FAIL AS IS
MF cmfRRL03_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
MF 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		<p>Insert control rods per the shutdown control rod sequence using continuous insertion to full in accordance with OP-156-001 and OP-AD-338:</p> <ul style="list-style-type: none"> • 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 directional control 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) <p>Monitor diverse indications:</p> <ul style="list-style-type: none"> • RPIS / IRMs / APRMs / • Reactor water level / Reactor pressure
PCOP		<p>Provide verifier checks for control rod movement. Monitors plant parameters, including CRD parameters</p>
US		<p>Direct PCOM to perform control rod insertion per the shutdown control rod sequence to 20% power</p> <p>Provide oversight for reactivity manipulation.</p>

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		<p>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 \pm 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 \pm 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</p>
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 l: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: <ul style="list-style-type: none"> • 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.

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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, wait 1 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: <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • 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. <ul style="list-style-type: none"> • 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		<p>Executes ON-AUXBUS-101 Loss of/Undervoltage Condition on 13 KV Bus 11A OR 11B:</p> <ul style="list-style-type: none"> • 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 <p>Closes Breaker 1A10204 to energize Auxiliary Bus 11B by performing the following:</p> <ul style="list-style-type: none"> • 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. <p>Starts a 2nd condensate pump IAW OP-144-001 as follows:</p> <ul style="list-style-type: none"> • 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		<p>Enter ON-AUXBUS-101 Loss of/Undervoltage Condition on 13 KV Bus 11A OR 11B</p> <p>Directs PCOP to perform ON-AUXBUS-101</p> <p>Enters ON-RECIRC-101, Reactor Recirculation Malfunction</p> <p>Directs PCOM to perform ON-RECIRC-101</p> <p>Determine Technical Specification 3.4.1 Condition B applicable for single recirculation loop operations.</p> <p>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.</p> <p>When Auxiliary Bus 11B is reenergized, directs PCOP to start a 2nd condensate pump IAW OP-144-001.</p>

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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: <ul style="list-style-type: none"> ▪ 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. <ul style="list-style-type: none"> • 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
PCOM		<p>Stops and prevents injection from feedwater.</p> <p>Establishes injection with feedwater, to maintain -60 to -110.</p> <p>Attempts to drive control rods per EO-100-113 Sht 2, observes CRD Pump trip.</p> <p>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</p> <p>Observes all control rods fully inserted when scram air header vented</p>
PCOP		<p>Initiates ARI and determines that one division has lost power and that the other division has failed to initiate.</p> <p>Initiates standby liquid control. When selected pump trips, starts the other pump and observes that it also trips.</p> <p>Inhibits ADS and overrides MSIV isolation</p> <p>Stops and prevents injection from HPCI.</p> <p>Starts the B CRD pump and recognizes that the FCV is failed closed.</p> <p>Operates the CRD pressure control valve to obtain sufficient drive pressure for manually driving rods but insufficient for drifting rods.</p> <p>Directs the NPO to vent the scram air header.</p> <p>Directs the FUS to pull RPS fuses IAW ES-158-001.</p>
US		<p>Enters EO-000-102 and transitions to EO-000-113 for level power control.</p> <p>Directs PCOP to stop and preventing injection from systems with the exception of CRD, SLC, and RCIC</p> <p>Directs PCOM to stop and preventing injection from feedwater</p> <p>Directs PCOM to maintain reactor level between -60 and -110</p> <p>When scram air header is vented and all control rods are inserted, transitions to EO-000-102.</p>

★ Denotes Critical Task

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	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.

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.

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 1A 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 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.
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

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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		<p>Recognize / report:</p> <ul style="list-style-type: none"> • 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		<p>Execute ARs.</p> <p>Determine APRM 1 has failed upscale.</p> <p>Bypass APRM 1 by moving APRM BYPASS joystick up to CH 1 position.</p>
PCOP		Monitor plant parameters.
US		<p>Ensure execution of ARs.</p> <p>Determine Technical Specification 3.3.1.1 only requires 3 APRMs, which allows bypassing of APRM 1.</p> <p>Direct bypass of APRM 1.</p>

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INSTRUCTOR ACTIVITIES / ROLE PLAY / NOTES
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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		<p>Recognize / report:</p> <ul style="list-style-type: none"> ▪ 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		<p>Monitor Reactor power and water level.</p> <p>May reduce Recirculation flow to restore Reactor power.</p> <p>Perform ON-PWR-101 actions as directed.</p>
PCOP		<p>Override HPCI injection:</p> <ul style="list-style-type: none"> • 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. <p>Will likely maintain HPCI running on min flow during troubleshooting efforts, but may shutdown HPCI per OP-152-001 section 2.10.</p>
US		<p>Direct overriding HPCI injection.</p> <p>Direct action to lower Reactor power, if necessary.</p> <p>Enter ON-PWR-101.</p> <p>Declare HPCI inoperable.</p> <p>Determine Technical Specification 3.5.1 Condition D must be entered (verify RCIC operable immediately, restore HPCI within 14 days.</p> <p>Determine Technical Specification 3.5.1 Condition E must be entered (due to inop CS A – restore CS A or HPCI within 72 hours.</p>

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		<p>Shuts down HPCI in accordance with OP-152-001 Section 2.10:</p> <p>Depress HS-E41-1S17 to RESET Initiation Signal.</p> <p>Ensure HPCI AUXILIARY OIL PUMP 1P213 switch placed to START.</p> <p>Ensure following overload bypass switches placed to TEST.</p> <p>Place HPCI TURBINE FLOW CONTROLLER FC-E41-1R600 in MANUAL.</p> <p>Manually Reduce HPCI Pump flow (speed) with HPCI TURBINE FLOW CONTROL FC-E41-1R600 to reduce Turbine speed to -2200 rpm.</p> <p>Open HPCI Room Floor Drain Valve 161119.</p> <p>Check Closed HPCI TEST LINE TO CST isolation valves.</p> <p>Depress and Maintain HPCI TURB TRIP HS-E41-1S19 pushbutton DEPRESSED.</p> <p>Ensure HPCI INJECTION HV-155-F006 CLOSSES.</p> <p>Ensure HPCI INJECTION HV-155-F006 CLOSSES.</p> <p>Observe HPCI AUXILIARY OIL PUMP 1P213 STARTS as HPCI Turbine coasts down.</p> <p>WHEN HPCI TURBINE STEAM SUPPLY HV-155-F001 indicates Fully Closed Release HPCI TURB TRIP pushbutton.</p> <p>Ensure HPCI STM LINE DRN TO CDSR IB ISO HV-155-F028 OPENS.</p> <p>Ensure HPCI STM LINE DRN TO CDSR OB ISO HV-155-F029 OPENS.</p> <p>Ensure HPCI BARO CDSR COND PP DSCH DRN HV-156-F026</p> <p>Ensure HPCI ROOM UNIT COOLER 1V209A(B) STOPS.</p> <p>Ensure HPCI L-0 CLG WTR HV-156-F059 CLOSED.</p> <p>Reset HPCI TURBINE FLOW CONTROL FC-E41-1R600 to 5100 gpm and in AUTO.</p> <p>AFTER 2 minutes, return overload bypass switches to NORM</p>
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 Instrument Air to CIG, wait 2 minutes, then **depress KEY 12**:

{Key[12]} IRF rPC125001 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		<p>Recognize / report:</p> <ul style="list-style-type: none"> 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		<p>Monitor plant parameters.</p> <p>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.</p>
PCOP		<p>Execute ON-4KV-101, Loss of 4KV Bus:</p> <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> Start at least one ESW pump.

POSITION	TIME	STUDENT ACTIVITIES
PCOP (cont.)		<ul style="list-style-type: none"> • Start CRD pump B in accordance with ON-CRD-101, Control Rod Malfunction: <ul style="list-style-type: none"> ○ Close CRD Flow Control Valve FV 146 F002A(B) as follows: <ul style="list-style-type: none"> ▪ Place CRD Flow Controller FC-C12-1R600 in MANUAL. ▪ Set CRD Flow Controller FC-C12-1R600 to 0% DEMAND SIGNAL. ▪ Verify CRD Flow Control Valve FV-146-F002A(B) CLOSED. ○ Start standby CRD Pump 1P132B by placing control switch to RUN position. ○ With CRD Pump 1P132B in operation, Establish system flow ~ 63 gpm using CRD Flow Controller FC-C12-1R600. ○ Place CRD Flow Controller FC-C12-1R600 in AUTO. • Transfer RPS bus A to alternate supply and Restore containment isolation in accordance with ON-RPS-101, Loss of RPS: <ul style="list-style-type: none"> ○ Ensure ALTERNATE A FEED White indicating light ILLUMINATED. ○ Ensure RPS M G SET TRANSFER SWITCH HS-C72B-S1 in NORM position. ○ Place RPS M G SET TRANSFER SWITCH HS-C72B-S1 in ALT A position. ○ Reset the Main Steam Line Rad Monitors at Panel 1C606. ○ Coordinates with 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. ○ Depress MN STM LINE DIV 1 ISO RESET HS-B21-1S32. ○ Depress MN STM LINE DIV 2 ISO RESET HS-B21-1S33. ○ Recover from RBCW isolation: <ul style="list-style-type: none"> ▪ Ensure RRP A CLG WTR OB ISO VALVES HV-18791A1&A2 CLOSED. ▪ Ensure RRP B CLG WTR IB ISO VALVES HV-18792A1&A2 CLOSED. ▪ Depress HV-18791A1&A2 ISOLATION RESET. ▪ Depress HV-18792A1&A2 ISOLATION RESET. ▪ Ensure RRP A CLG WTR OB ISO VALVES HV-18791A1&A2 OPEN. ▪ Ensure RRP B CLG WTR IB ISO VALVES HV-18792A1&A2 OPEN. • 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.

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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		<p>Recognize / report:</p> <ul style="list-style-type: none"> • 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		<p>As time / power level permits, perform ON-RPR-101, Rapid Power Reduction:</p> <ul style="list-style-type: none"> • INSERT Control Rods, as necessary • NOTIFY GCC that the Unit is coming Off Line. <p>Place the Mode Switch in SHUTDOWN.</p> <p>Execute scram actions of ON-SCRAM-101, Reactor Scram:</p> <ul style="list-style-type: none"> • Observe all Control Rods indicate fully inserted (using two indications, OD 7 completed as soon as possible). • Insert IRMs and SRMs. • Observe Scram Discharge Volume Vent and Drain valves CLOSED. • Check Reactor water level between 13" and 54". • Check Reactor pressure <1087 psig. • Check status of MSIVs. <p>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.</p> <p>May initiate Reactor cooldown.</p>

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		<p>Recognize / report:</p> <ul style="list-style-type: none"> • Multiple annunciators, including: <ul style="list-style-type: none"> ○ AR-015-A01, START-UP XFMR 10 TROUBLE ○ AR-015-A02, AUX XFMR 11 TROUBLE ○ 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		<p>May execute EO-100-030, Unit 1 Response to Station Blackout:</p> <ul style="list-style-type: none"> • Manually Attempt to Start all Diesel Generators OG501A(B)(C)(D), as follows: <ul style="list-style-type: none"> ○ At 0C653, Place D/G A(B)(C)(D) GOV MODE SEL HS-00055A(B)(C)(D) in ISOCH. ○ To start diesel at 0C653, Depress DG A(B)(C)(D) START HS-00051A(B)(C)(D) pushbutton. • For each Diesel Generator that starts: <ul style="list-style-type: none"> ○ Observe auto closure of DG A(B)(C)(D) Unit 1 and Unit 2 bus supply breakers. ○ IF any breaker does not auto close and Associated Bus is NOT LOCKED OUT: <ul style="list-style-type: none"> ▪ 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. ○ Observe ESW PUMP OP504A(B)(C)(D) STARTS in approximately 40(40)(44)(48) seconds.

POSITION	TIME	STUDENT ACTIVITIES
PCOM / PCOP (cont.)		<ul style="list-style-type: none"> • For each Diesel Generator that fails to start: <ul style="list-style-type: none"> ○ Maintain Control Mode Select Switch in Local until directed otherwise, AND ○ 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. <p>May manually initiate RCIC per OP-150-001 using either manual pushbutton method or component-by-component startup:</p> <p>If attempts RCIC start using manual pushbutton, recognize / report RCIC initiation pushbutton fails.</p> <p><u>Starting RCIC Component-by-Component</u></p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> ○ Null RCIC TURBINE FLOW CONTROL FC-E51-1R600. ○ Place RCIC TURBINE FLOW CONTROL FC-E51-1R600 in AUTO.

POSITION	TIME	STUDENT ACTIVITIES
PCOM / PCOP (cont.)		<p>As time permits, execute EO-000-031, Station Power Restoration:</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> ○ Suppression pool cooling per Step 2.5. ○ 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. <p>As time permits, execute ON-LOOP-101, Unit 1 Loss of All Offsite Power:</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> ○ 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 Chilled 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-18771A CLOSE. • IF desired, Align control switch for Drywell Cooling Water Control Valves to the RBCCW position at panel 1C279. • Ensure following Drywell Cooler Isolation Valves OPEN: <ul style="list-style-type: none"> • 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.)		<ul style="list-style-type: none">• 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		<p>Enter ON-LOOP-101, Unit 1 Response to Loss of All Offsite Power.</p> <p>Direct start of EDG B and/or D.</p> <p>Direct Reactor water level controlled +13" to +54" (+20" to +45" preferred band) using RCIC and/or HPCI.</p>

Note: UNUSUAL EVENT on EAL SU1.1 for LOOP

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