

**James A. Fitzpatrick**  
**JOB PERFORMANCE MEASURE**

S/RO	18-1 NRC S/RO COO1	TASK TITLE:	Core Thermal Heat Balance Verification Using Turbine Steam Pressure
APPL. TO	JPM NUMBER		

REV: \_\_\_\_\_ DATE: \_\_\_\_\_ NRC K/A SYSTEM NUMBER: 2.1.19 (3.9/3.8)

ESTIMATED COMPLETION TIME: 12/20 Minutes

SUBMITTED: \_\_\_\_\_ OPERATIONS REVIEW: \_\_\_\_\_

APPROVED: \_\_\_\_\_  
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CANDIDATE NAME: \_\_\_\_\_ LOGIN ID: \_\_\_\_\_

JPM  
Completion

Perform

Location: Classroom

DATE PERFORMED: \_\_\_\_\_ TIME TO COMPLETE: \_\_\_\_\_ Minutes

PERFORMANCE EVALUATION: ☐ Satisfactory ☐ Unsatisfactory

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COMMENTS: (MANDATORY FOR UNSATISFACTORY PERFORMANCE)

EVALUATOR: \_\_\_\_\_  
SIGNATURE/PRINTED

**James A. Fitzpatrick**  
**JOB PERFORMANCE MEASURE**

S/RO	18-1 NRC S/RO COO1	TASK TITLE:	Core Thermal Heat Balance Verification Using Turbine Steam Pressure
APPL. TO	JPM NUMBER		

**I. SAFETY CONSIDERATIONS**

A. None

**II. REFERENCES**

- A. OP-65, Startup and Shutdown Procedure
- B. RAP-7.3.03, Core Thermal Power Evaluation

**III. TOOLS AND EQUIPMENT**

- A. Calculator
- B. Steam Tables

**IV. SET UP REQUIREMENTS**

- A. Provide a copy of RAP-7.3.03 ready to perform section 9.3 and Attachment 2.

**V. EVALUATOR NOTES**

A. None

**VI. TASK CONDITIONS**

- A. A plant startup has just been completed.
- B. Verification of Core Thermal Power is required.
- C. The required plant data is given in the provided handouts.

TASK TITLE: Core Thermal Heat Balance Verification Using Turbine Steam Pressure

**VII. INITIATING CUE**

Inform the candidate, "Verify Core Thermal Power per RAP-7.3.03 Attachment 2."

	<b>STEP</b>	<b>STANDARD</b>	<b>EVALUATION / COMMENT</b>
1.	Obtain and review procedure.	Candidate obtains and reviews RAP-7.3.03. Candidate determines that the start point is Attachment 2.  <b>EVALUATOR:</b> <b>Hand candidate a copy of RAP-7.3.03 ready to perform Section 9.3 and Attachment 2. Provide the EPIC screenshot and 3D Monicore case.</b>	SAT / UNSAT
2.	Obtain and record Turbine first stage pressure from EPIC 1299.	Obtains a value of ~688.1 psig for EPIC point 1299 and records on Attachment 2.	<b>CRITICAL STEP</b> SAT / UNSAT
3.	Calculate and record Reactor power calculated from Turbine first stage pressure.	Calculates ~103% power and records on Attachment 2.	<b>CRITICAL STEP</b> SAT / UNSAT
4.	Obtain and record Reactor power calculated from heat balance.	Obtains a value of ~97.1% for Reactor power and records on Attachment 2.	<b>CRITICAL STEP</b> SAT / UNSAT
5.	Determine if the two methods are within 5% of rated power of each	Determines the two methods differ by more than 5%.	<b>CRITICAL STEP</b> SAT / UNSAT

## TASK TITLE: Core Thermal Heat Balance Verification Using Turbine Steam Pressure

	STEP	STANDARD	EVALUATION / COMMENT
	other.		
6.	Determine need to initiate investigation.	Indicates that an investigation must be initiated.  <b>NOTE:</b> This step may be satisfied by direct report, notification to Shift Manager, notification to Reactor Engineering, initiating a Incident Report, or similar.	<b>CRITICAL STEP</b> SAT / UNSAT
7.	Determine need to notify General Manager Plant Operations.	Indicates that the General Manager Plant Operations must be notified if the difference cannot be explained.  <b>NOTE:</b> This step may be satisfied by direct report, notification to Shift Manager, notification to Reactor Engineering, initiating a Condition Report, or similar.	SAT / UNSAT

**EVALUATOR:** Terminate the task at this point for RO candidates. For SRO candidates, provide the additional SRO Only Conditions and Cue, along with the SRO Only Worksheet.

**Additional SRO Only Conditions:**

Investigation has revealed the following:

- The 3D Monicore Core Thermal Power calculation is erroneous.
- Turbine first stage bowl pressure accurately reflects plant power level.
- Operation at the current power level has been ongoing for three hours.

## TASK TITLE: Core Thermal Heat Balance Verification Using Turbine Steam Pressure

	STEP	STANDARD	EVALUATION / COMMENT
<b>Additional SRO Only Cue:</b>  Complete the provided SRO Only Worksheet regarding requirements associated with the Licensed Power Level.			
8.	<b>SRO ONLY</b> Determine the procedure that contains the specific guidance on both 2 hour and 12 hour thermal power averages.	<b>SRO ONLY</b> Determines RAP-7.3.16 contains the specific guidance on both 2 hour and 12 hour thermal power averages.	<b>CRITICAL STEP</b> SAT / UNSAT
9.	<b>SRO ONLY</b> Determine requirements for 2 hour thermal power average	<b>SRO ONLY</b> Determines requirement for 2 hour thermal power average is: <ul style="list-style-type: none"> <li>• If the 2 hour average exceeds RTP, take timely action to ensure that thermal power is less than or equal to RTP (or similar).</li> </ul>	<b>CRITICAL STEP</b> SAT / UNSAT
10.	<b>SRO ONLY</b> Determine requirement for average Reactor power level for each 12 hour shift	<b>SRO ONLY</b> Determines requirement for average Reactor power level for each 12 hour shift is: <ul style="list-style-type: none"> <li>• The average reactor power level for each 12 hour shift shall not exceed Rated Thermal Power (or similar).</li> </ul>	<b>CRITICAL STEP</b> SAT / UNSAT

TASK TITLE: Core Thermal Heat Balance Verification Using Turbine Steam Pressure

	STEP	STANDARD	EVALUATION / COMMENT
EVALUATOR: Terminate the task at this point for SRO candidates.			

**Task Standard:** Core thermal heat balance determined to be out of tolerance in relation to Turbine steam pressure. For SRO candidates, procedural requirements of RAP-7.3.16, Plant Power Changes, for control of core thermal power determined.

## **SRO Only Key**

1. Identify the plant procedure that contains the specific guidance on both of the questions below.

**RAP-7.3.16**

2. Describe the specific requirement(s) regarding **2 hour thermal power average**, in accordance with plant procedure.

**If the 2 hour average exceeds RTP, take timely action to ensure that thermal power is less than or equal to RTP (or similar).**

3. Describe the specific requirement(s) regarding the **average Reactor power level for each 12 hour shift**, in accordance with plant procedure.

**The average reactor power level for each 12 hour shift shall not exceed Rated Thermal Power (or similar).**

## **SRO Only Key**

# HANDOUT

- **A plant startup has just been completed.**
- **Verification of Core Thermal Power is required.**
- **The required plant data is given in the provided handouts.**

**Verify Core Thermal Power per RAP-7.3.03 Attachment 2.**



# HANDOUT

PAGE 1

FITZPATRICK CY23

CORE POWER AND FLOW LOG

CASEID FMLS1180226075258

ENERGY BALANCE  
POWER (MW)

ELECTRICAL	829.7	97.6%
CORE	2462.4	97.1%
FEED WATER	2450.3	
CR DRIVES	11.2	
CLEAN-UP	3.7	
RADIATIVE LOSS	1.1	
PUMPS	3.8	

ENTHALPY/SUBCOOLING (BTU/LB)

SUBC	24.11
FEEDWATER	398.37
RECIRC INLET	526.21
CLEAN-UP IN	515.62
CLEAN-UP OUT	409.20

LOAD LINE SUMMARY

FLOW (MLB/HR)

TOTAL CORE	63.96	83.1%
MEASURED	63.96	
SUBSTITUTE	63.18	
FEEDWATER	10.55	
CLEAN-UP	0.12	
RECIRC	29.83	
CR DRIVES	0.03	

CORE POWER	97.1%
CORE FLOW	83.1%
LOAD LINE	108.5%
FLOW BASIS	MEAS.
FLLLP	0.947

TEMPERATUER (Deg F)

FEEDWATER	423.3
RECIRC IN	531.7
CLEAN UP IN	523.0
CLEAN UP OUT	431.3
CR DRIVES	95.0

PRESSURE (PSIa)

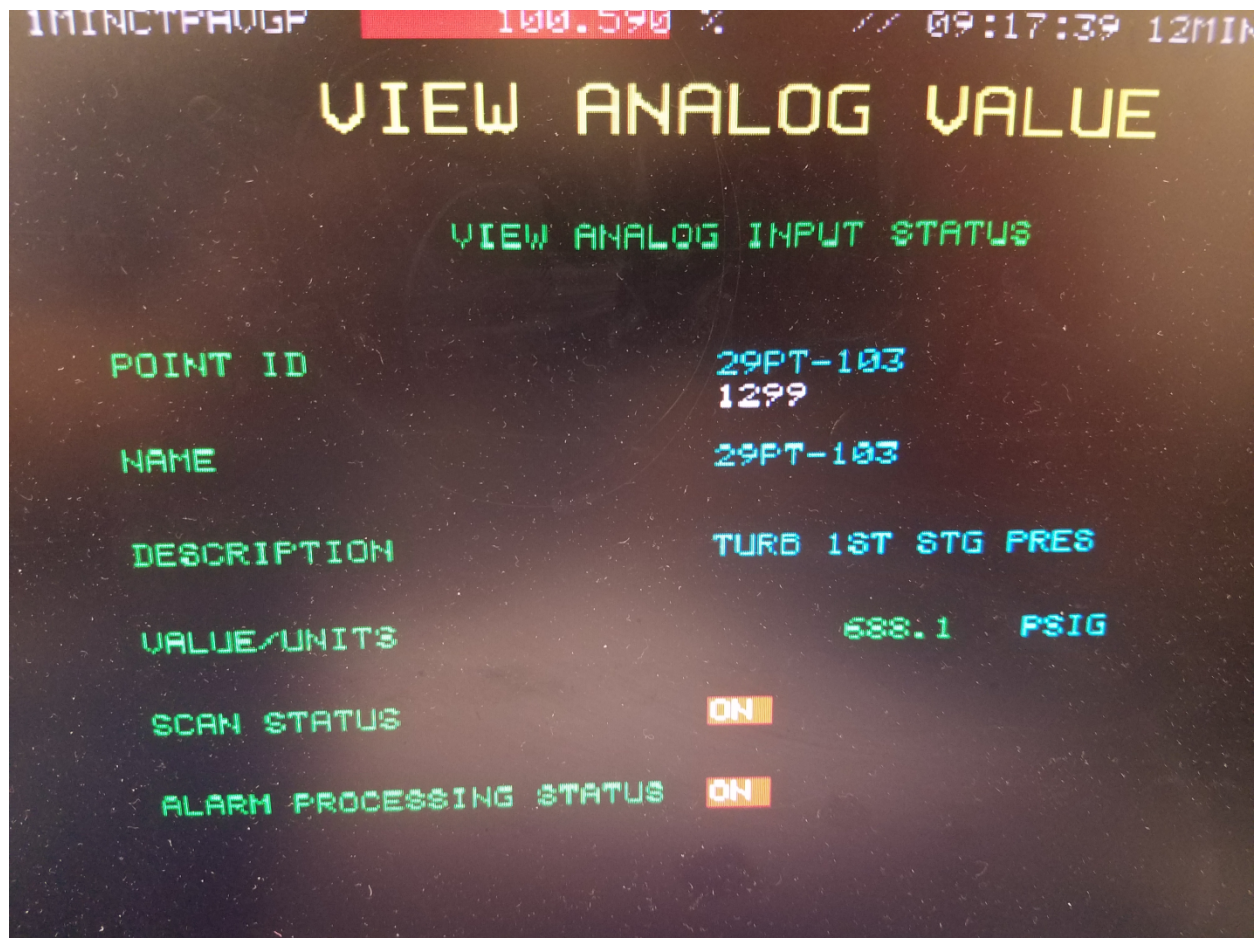
DOME	1054.26
DROP (MEAS)	17.26

APRM CALIBRATION

APRM ID	A	B	C	D	E	F
READING	96.7	95.7	97.3	96.7	96.4	97.5
AGAF	1.004	1.014	0.998	1.004	1.008	0.996
(APRM - %CTP)	-0.4	-1.3	0.2	-0.4	-0.7	0.4

FAILED SENSORS: NONE

## HANDOUT



# **ADDITIONAL SRO ONLY HANDOUT**

**Investigation has revealed the following:**

- **The 3D Monicore Core Thermal Power calculation is erroneous.**
- **Turbine first stage bowl pressure accurately reflects plant power level.**
- **Operation at the current power level has been ongoing for three hours.**

**Complete the provided SRO Only Worksheet regarding requirements associated with the Licensed Power Level.**

## SRO Only Worksheet

1. Identify the plant procedure that contains the specific guidance on both of the questions below.

2. Describe the specific requirement(s) regarding **2 hour thermal power average**, in accordance with plant procedure.

3. Describe the specific requirement(s) regarding the **average Reactor power level for each 12 hour shift**, in accordance with plant procedure.

**James A. Fitzpatrick**  
**JOB PERFORMANCE MEASURE**

RO	18-1 NRC RO COO2	TASK TITLE: Perform RCIC Lineup Verification Per ST-24A
APPL. TO	JPM NUMBER	

REV: \_\_\_\_\_ DATE: \_\_\_\_\_ NRC K/A SYSTEM NUMBER: 2.1.31 (4.6)

ESTIMATED COMPLETION TIME: 15 Minutes

SUBMITTED: \_\_\_\_\_ OPERATIONS REVIEW: \_\_\_\_\_

APPROVED: \_\_\_\_\_

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|                          |                 |
|--------------------------|-----------------|
| CANDIDATE<br>NAME: _____ | LOGIN ID: _____ |
|--------------------------|-----------------|

|                   |           |
|-------------------|-----------|
| JPM<br>Completion | Performed |
|-------------------|-----------|

|           |           |
|-----------|-----------|
| Location: | Simulator |
|-----------|-----------|

DATE PERFORMED: \_\_\_\_\_ TIME TO COMPLETE: \_\_\_\_\_ Minutes

PERFORMANCE EVALUATION:    ☐ Satisfactory    ☐ Unsatisfactory

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COMMENTS: (MANDATORY FOR UNSATISFACTORY PERFORMANCE)

EVALUATOR: \_\_\_\_\_  
SIGNATURE/PRINTED

**James A. Fitzpatrick**  
**JOB PERFORMANCE MEASURE**

RO	18-1 NRC RO COO2	TASK TITLE: Perform RCIC Lineup Verification Per ST-24A
APPL. TO	JPM NUMBER	

**I. SAFETY CONSIDERATIONS**

A. None

**II. REFERENCES**

A. ST-24A, RCIC Monthly Operability Test

**III. TOOLS AND EQUIPMENT**

- None

**IV. SET UP REQUIREMENTS**

- A. Provide a copy of ST-24A completed up to step 8.2.
- B. Reset the simulator to an IC (IC-227) with RCIC in a normal standby lineup, except for the following:
  - a. Set RCIC FLOW CNTRL setpoint dialed to approximately 315 gpm.
  - b. Close PMP DISCH VLV 13MOV-20.
  - c. Close STM LINE DRN TO RADW 13AOV-35.

**V. EVALUATOR NOTES**

- A. If the candidate informs you that the ST cannot be continued due to issues, inform the candidate the deviation has been noted and for them to continue with the rest of the ST.

**VI. TASK CONDITIONS**

- A. ST-24A, RCIC Monthly Operability Test, is in progress.
- B. Other operators have completed ST-24A thru Section 8.1.

TASK TITLE: Perform RCIC Lineup Verification Per ST-24A

**VII. INITIATING CUE**

Inform the candidate, "Complete ST-24A Section 8.2, RCIC Valve Lineup."

	STEP	STANDARD	EVALUATION / COMMENT
1.	Record RCIC FLOW CNTRL output at panel 09-4.	Records RCIC FLOW CNTRL output as greater than or equal to 100%.	SAT/UNSAT
2.	Verify the following lineup at panel 09-4: <ul style="list-style-type: none"> <li>• RCIC FLOW CNTRL setpoint - 410 gpm</li> <li>• RCIC FLOW CNTRL - AUTO</li> <li>• TURB GOV VLV 13HOV-2 - Open</li> <li>• TURB TRIP &amp; THROTTLE VLV 13HOV-1 - Open</li> <li>• TURB TEST 13A-S20 - NORMAL</li> <li>• TEST PWR - OFF</li> <li>• TEST SPEED ADJUST - Full counter clockwise</li> <li>• TURB STM SUPP VLV 13MOV-131 - Closed</li> <li>• OUTBD STM SUPP VLV 13MOV-16 - Open</li> <li>• INBD STM SUPP VLV 13MOV-15 – Open</li> </ul>	Verifies the following lineup at panel 09-4 and documents in ST-24A: <ul style="list-style-type: none"> <li>• <b>RCIC FLOW CNTRL setpoint – approximately 315 gpm</b></li> <li>• RCIC FLOW CNTRL - AUTO</li> <li>• TURB GOV VLV 13HOV-2 - Open</li> <li>• TURB TRIP &amp; THROTTLE VLV 13HOV-1 - Open</li> <li>• TURB TEST 13A-S20 - NORMAL</li> <li>• TEST PWR - OFF</li> <li>• TEST SPEED ADJUST - Full counter clockwise</li> <li>• TURB STM SUPP VLV 13MOV-131 - Closed</li> <li>• OUTBD STM SUPP VLV 13MOV-16 - Open</li> <li>• INBD STM SUPP VLV 13MOV-15 – Open</li> </ul> <p><b>EVALUATOR NOTE:</b> The bolded item above is out-of-spec. Should Candidate inform that ST cannot be continued due to the out of spec value, inform Candidate the deviation has been noted, continue with the ST and the deviation will be corrected by another Operator.</p>	<b>CRITICAL STEP</b> <b>(bolded items only)</b> SAT/UNSAT

TASK TITLE: Perform RCIC Lineup Verification Per ST-24A

	STEP	STANDARD	EVALUATION / COMMENT
	<ul style="list-style-type: none"> <li>• CST SUCT VLV 13MOV-18 - Open</li> <li>• MIN FLOW VLV 13MOV-27 - Closed</li> <li>• PMP DISCH VLV 13MOV-20 - Open</li> <li>• STM LINE DRN TRAP BYP VLV 13AOV-32 - AUTO</li> <li>• INJ VLV 13MOV-21 – Closed</li> <li>• INBD TORUS SUCT VLV 13MOV-41 - Closed</li> <li>• TEST VLV TO CST 13MOV-30 - Closed</li> <li>• OUTBD TORUS SUCT 13MOV-39 - Closed</li> <li>• OIL CLR WTR SUPP 13MOV-132 - Closed</li> <li>• COND PMP DISCH TO RADW 13AOV-12 - AUTO</li> <li>• STM LINE DRN TO RADW 13AOV-34 - Open</li> </ul>	<ul style="list-style-type: none"> <li>• CST SUCT VLV 13MOV-18 - Open</li> <li>• MIN FLOW VLV 13MOV-27 - Closed</li> <li>• <b>PMP DISCH VLV 13MOV-20 - Closed</b></li> <li>• STM LINE DRN TRAP BYP VLV 13AOV-32 - AUTO</li> <li>• INJ VLV 13MOV-21 – Closed</li> <li>• INBD TORUS SUCT VLV 13MOV-41 - Closed</li> <li>• TEST VLV TO CST 13MOV-30 - Closed</li> <li>• OUTBD TORUS SUCT 13MOV-39 - Closed</li> <li>• OIL CLR WTR SUPP 13MOV-132 - Closed</li> <li>• COND PMP DISCH TO RADW 13AOV-12 - AUTO</li> <li>• STM LINE DRN TO RADW 13AOV-34 - Open</li> </ul> <p><b>EVALUATOR NOTE:</b> The bolded item above is out-of-spec. Should Candidate inform that ST cannot be continued due to the out of spec value, inform Candidate the deviation has been noted, continue with the ST and the deviation will be corrected by another Operator.</p>	<p><b>CRITICAL STEP</b> (bolded items only) SAT/UNSAT</p>



TASK TITLE: Perform RCIC Lineup Verification Per ST-24A

	STEP	STANDARD	EVALUATION / COMMENT
3.	Verify the following lineup at panel 09-3: <ul style="list-style-type: none"> <li>COND PMP DISCH TO RADW 13AOV-13 - Open</li> <li>STM LINE DRN TO RADW 13AOV-35 - Open</li> <li>RCIC EXH VAC BKR 13MOV130 - Open</li> </ul>	Verifies the following lineup at panel 09-3 and documents in ST-24A (cont.): <ul style="list-style-type: none"> <li>COND PMP DISCH TO RADW 13AOV-13 - Open</li> <li><b>STM LINE DRN TO RADW 13AOV-35 - Closed</b></li> <li>RCIC EXH VAC BKR 13MOV130 - Open</li> </ul> <p><b>EVALUATOR NOTE:</b> The bolded item above is out-of-spec. Should Candidate inform CRS that ST cannot be continued due to the out of spec value, inform Candidate the deviation has been noted, continue with the ST and the deviation will be corrected by another Operator.</p>	<b>CRITICAL STEP</b> <b>(bolded items only)</b> SAT/UNSAT
<b>EVALUATOR:</b> Terminate the task at this point.			

Task Standard: ST-24A performed with deficiencies in controller setpoint and two valve lineups identified.

# HANDOUT

- **ST-24A, RCIC Monthly Operability Test, is in progress.**
- **Other operators have completed ST-24A thru Section 8.1.**

**Complete ST-24A Section 8.2, RCIC Valve Lineup.**

**James A. Fitzpatrick**  
**JOB PERFORMANCE MEASURE**

S/RO  
APPL. TO

18-1 NRC S/RO EC  
JPM NUMBER

TASK TITLE: Explain RPS Operation Using Electrical

REV: \_\_\_\_\_ DATE: \_\_\_\_\_ NRC K/A SYSTEM NUMBER: 2.2.41 (3.5/3.9)

ESTIMATED COMPLETION TIME: 15/25 Minutes

SUBMITTED: \_\_\_\_\_ OPERATIONS REVIEW: \_\_\_\_\_

APPROVED: \_\_\_\_\_

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CANDIDATE  
NAME: \_\_\_\_\_

LOGIN ID: \_\_\_\_\_

JPM Perform  
Completion

Location: Classroom

DATE PERFORMED: \_\_\_\_\_ TIME TO COMPLETE: \_\_\_\_\_ Minutes

PERFORMANCE EVALUATION: ☐ Satisfactory ☐ Unsatisfactory

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COMMENTS: (MANDATORY FOR UNSATISFACTORY PERFORMANCE)

EVALUATOR: \_\_\_\_\_

\_\_\_\_\_  
SIGNATURE/PRINTED

**James A. Fitzpatrick**  
**JOB PERFORMANCE MEASURE**

S/RO  
APPL. TO

18-1 NRC S/RO EC  
JPM NUMBER

TASK TITLE: Explain RPS Operation Using Electrical

**I. SAFETY CONSIDERATIONS**

A. None

**II. REFERENCES**

- A. Electrical Print 1.60-17 (GE 865E365 Sheet 3)
- B. Electrical Print 1.67-97 (GE 791E456 Sheet 7)
- C. Electrical Print 1.67-99 (GE 791E456 Sheet 9)
- D. Electrical Print 1.67-101 (GE 791E456 Sheet 11)
- E. Technical Specification 3.3.1.1
- F. OP-27A

**III. TOOLS AND EQUIPMENT**

A. None

**IV. SET UP REQUIREMENTS**

A. Ensure sufficient copies of the referenced documents are available.

**V. EVALUATOR NOTES**

A. None

**VI. TASK CONDITIONS**

A. None

TASK TITLE: Explain RPS Operation Using Electrical Drawings

## VII. INITIATING CUE

Inform the candidate of the following:

“Using the provided station electrical prints, explain how an upscale failure of Reactor pressure instrument 02-3PT-55A results in an RPS half scram. You may mark the provided prints and/or write the explanation on this sheet. Identify the electrical components that accomplish this action.”

For SRO candidates, also provide the following:

“Additionally, explain the Technical Specification impact if Reactor pressure instrument 02-3PT-55A fails *downscale* with the plant operating at 100% power.”

	STEP	STANDARD	EVALUATION / COMMENT
		<b>EVALUATOR:</b> Provide working copy of referenced prints.	
1.	Identifies 02-3PT-55A corresponds to relay 5A-K101A on electrical print 1.60-17.	Identifies 02-3PT-55A and relay 5A-K101A on electrical print 1.60-17 (near locations A-2, B-2, and C-2).  <b>EVALUATOR NOTE:</b> This, and all other items in this JPM, may be identified by either marking on the electrical print or writing the electrical print number and location on the response sheet.	<b>CRITICAL STEP</b> SAT / UNSAT
2.	Identifies contact 5A-K101A on electrical print 1.67-97.	Identifies contact 5A-K101A on electrical print 1.67-97 (near location C-4).	<b>CRITICAL STEP</b> SAT / UNSAT

## TASK TITLE: Explain RPS Operation Using Electrical Drawings

	STEP	STANDARD	EVALUATION / COMMENT
3.	Identifies relay 5A-K5A on electrical print 1.67-97.	Identifies relay 5A-K5A on electrical print 1.67-97 (near location E-4).	<b>CRITICAL STEP</b> SAT / UNSAT
4.	Identifies contacts 5A-K5A on electrical print 1.67-99.	Identifies contacts 5A-K5A on electrical print 1.67-99 (near location H-2/3).	<b>CRITICAL STEP</b> SAT / UNSAT
5.	Identifies relays 5A-K14A and 5A-K14E on electrical print 1.67-99.	Identifies relays 5A-K14A and 5A-K14E on electrical print 1.67-99 (near location L-2/3).	<b>CRITICAL STEP</b> SAT / UNSAT
6.	Identifies contacts 5A-K14A and 5A-K14E on electrical print 1.67-101.	<p>Identifies contacts 5A-K14A and 5A-K14E on electrical print 1.67-101 (near locations A-3, A-6, A-9, and A-11).</p> <p><b>EVALUATOR NOTES:</b></p> <ul style="list-style-type: none"> <li>The candidate does not have to identify all four contacts on this sheet, as long as a representative sample is identified and some indication is given that there are multiple contacts.</li> </ul>	<b>CRITICAL STEP</b> SAT / UNSAT

TASK TITLE: Explain RPS Operation Using Electrical Drawings

	STEP	STANDARD	EVALUATION / COMMENT
7.	Identifies relays 3-13-117 (or 03SOV-117) on electrical print 1.67-101.	<p>Identifies solenoids/relays 3-13-117 (or 03SOV-117) on electrical print 1.67-101 (near locations C-2/3, C-4, C-5, C-6, C-8, C-9, C-11, and C-12).</p> <p><b>EVALUATOR NOTES:</b></p> <ul style="list-style-type: none"><li>The candidate does not have to identify all eight solenoids/relays on this sheet, as long as a representative sample is identified and some indication is given that there are multiple solenoids/relays.</li></ul>	<p><b>CRITICAL STEP</b></p> <p>SAT / UNSAT</p>

TASK TITLE: Explain RPS Operation Using Electrical Drawings

	STEP	STANDARD	EVALUATION / COMMENT
8.	Describes how upscale failure of Reactor pressure instrument 02-3PT-55A results in an RPS half scram	<p>Describes the following:</p> <ul style="list-style-type: none"><li>• Relay 5A-K101A de-energizes.</li><li>• Relay 5A-K5A de-energizes.</li><li>• Relay 5A-K14A and 5A-K14E de-energize</li><li>• Solenoids/relays 3-13-117 de-energize at each HCU.</li></ul> <p><b>EVALUATOR NOTE:</b> This is a summary of previous critical steps. The candidate does not have to match this description word-for-word, but must include all concepts in their description.</p>	SAT / UNSAT



TASK TITLE: Explain RPS Operation Using Electrical Drawings

	STEP	STANDARD	EVALUATION / COMMENT
9.	<b>SRO Only</b>  Determines and reports the Technical Specification impact of Reactor pressure instrument 02-3PT-55A failing downscale while at 100% power	<b>SRO Only</b>  Reports that Technical Specification Table 3.3.1.1-1 Function 3 is not met.  Reports that Technical Specification 3.3.1.1 Condition A must be entered and requires either placing a channel in trip or placing the trip system in trip within 12 hours.  <b>EVALUATOR NOTE:</b> The candidate may also reference Technical Specification Table 3.6.1.1-1 Function 6a and Technical Specification 3.3.6.1 Conditions A & F, but this is not critical since at 100% power the required actions are already completed (SDC penetration is isolated).	<b>SRO Only</b>  <b>CRITICAL STEP</b> SAT / UNSAT
<b>EVALUATOR:</b> Terminate the task at this point.			

**Task Standard:** Operation of half scram from 02-3PT-55A explained using electrical prints, including identification of related electrical components. For SRO candidates, Technical Specification 3.3.1.1 impact of inoperable Reactor pressure instrument determined.

# RO HANDOUT

**Using the provided station electrical prints, explain how an upscale failure of Reactor pressure instrument 02-3PT-55A results in an RPS half scram.**

**You may mark the provided prints and/or write the explanation on this sheet.**

**Identify the electrical components that accomplish this action.**

# SRO HANDOUT

Using the provided station electrical prints, explain how an upscale failure of Reactor pressure instrument 02-3PT-55A results in an RPS half scram.

You may mark the provided prints and/or write the explanation on this sheet.

Identify the electrical components that accomplish this action.

Additionally, explain the Technical Specification impact if Reactor pressure instrument 02-3PT-55A fails downscale with the plant operating at 100% power.

**James A. Fitzpatrick**  
**JOB PERFORMANCE MEASURE**

S/RO	18-1 NRC S/RO RC	TASK TITLE: Determine Worker Exposure for Emergent Work
APPL. TO	JPM NUMBER	

REV: \_\_\_\_\_ DATE: \_\_\_\_\_ NRC K/A SYSTEM NUMBER: 2.3.4 (3.2/3.7)

ESTIMATED COMPLETION TIME: 20 Minutes

SUBMITTED: \_\_\_\_\_ OPERATIONS REVIEW: \_\_\_\_\_

APPROVED: \_\_\_\_\_  
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CANDIDATE NAME: \_\_\_\_\_ LOGIN ID: \_\_\_\_\_

JPM Perform  
Completion

Location: Classroom

DATE PERFORMED: \_\_\_\_\_ TIME TO COMPLETE: \_\_\_\_\_ Minutes

PERFORMANCE EVALUATION: ☐ Satisfactory ☐ Unsatisfactory

~~~~~  
COMMENTS: (MANDATORY FOR UNSATISFACTORY PERFORMANCE)

EVALUATOR: \_\_\_\_\_  
SIGNATURE/PRINTED

**James A. Fitzpatrick**  
**JOB PERFORMANCE MEASURE**

S/RO	18-1 NRC	TASK TITLE:	Determine Worker Exposure for Emergent
	S/RO RC		Work
APPL. TO	JPM NUMBER		

**I. SAFETY CONSIDERATIONS**

A. None

**II. REFERENCES**

A. RP-AA-203, Exposure Control and Authorization

**III. TOOLS AND EQUIPMENT**

A. Calculator

**IV. SET UP REQUIREMENTS**

A. Ensure adequate copies of the procedures referenced above are available.

**V. EVALUATOR NOTES**

A. None

**VI. TASK CONDITIONS**

- A. The plant is operating at 100% power.
- B. Two operators are required to enter a locked high radiation area to support an emergent job.
- C. The job is expected to take 45 minutes.
- D. The job site dose rate is 1500 mRem/hr.
- E. Operator #1 has received 1147 mRem of dose so far this year.
- F. Operator #2 has received 450 mRem of dose so far this year.
- G. Neither operator has received any dose extensions so far this year.
- H. Neither operator has any undocumented quarters for this year.
- I. No other Operators are available to perform this job.
- J. No means of reducing area dose rates are available.

TASK TITLE: Determine Worker Exposure for Emergent Work

## VII. INITIATING CUE

Inform the candidate, "Determine the expected dose that each operator will receive while performing this job. Determine if each operator will need a dose extension in order to receive this dose. Report your results on the provided worksheet."

**EXAMINER:** Provide the candidate with the first handout and worksheet.

	STEP	STANDARD	EVALUATION / COMMENT
1.	Obtain required references.	Obtains and utilizes required references, which may include: <ul style="list-style-type: none"> <li>RP-AA-203</li> </ul> <b>EXAMINER NOTE:</b> See provided key for remaining steps.	SAT / UNSAT
2.	Determine the expected dose that each operator will receive while performing this job	Calculates that each operator will receive 1125 mRem while performing this job. $(45 \text{ minutes}/60 \text{ minutes per hour}) \times (1500 \text{ mRem/hour}) = 1125 \text{ mRem}$	<b>CRITICAL STEP</b> SAT / UNSAT
3.	Determine if Operator #1 will need a dose extension in order to receive this dose.	Determines that Operator #1 will need dose extension in order to receive this dose.  $1147 \text{ mRem} + 1125 \text{ mRem} = 2272 \text{ mRem} > 2000 \text{ mRem normal dose limit}$	<b>CRITICAL STEP</b> SAT / UNSAT
4.	Determine if Operator #2 will need a dose extension in order to receive this dose.	Determines that Operator #2 will NOT need dose extension in order to receive this dose.  $450 \text{ mRem} + 1125 \text{ mRem} = 1575 \text{ mRem} < 2000 \text{ mRem normal dose limit}$	<b>CRITICAL STEP</b> SAT / UNSAT

## TASK TITLE: Determine Worker Exposure for Emergent Work

**EXAMINER:** If the candidate correctly complete JPM steps 2-4, provide them with the extra handout, with the following information:

"Operator #1 has been granted a dose extension to 2500 mRem. Operator #2 has NOT been granted a dose extension.

Determine the maximum time allowed for both Operator #1 and for Operator #2, such that they do NOT exceed their full administrative dose limits. Document your results in the worksheet below."

5.	Determine the maximum time allowed for Operator #1 such that full administrative dose limit is NOT exceeded.	<p>Calculates the maximum time for Operator #1 is approximately 54 minutes.</p> $(2500 \text{ mRem} - 1147 \text{ mRem}) / 1500 \text{ mRem/hr} = 0.902 \text{ hours} \times (60 \text{ minutes per hour}) = 54.12 \text{ minutes}$	<b>CRITICAL STEP</b> SAT / UNSAT
6.	Determine the maximum time allowed for Operator #2 such that full administrative dose limit is NOT exceeded.	<p>Calculates the maximum time for Operator #2 is approximately 62 minutes.</p> $(2000 \text{ mRem} - 450 \text{ mRem}) / 1500 \text{ mRem/hr} = 1.033 \text{ hours} (60 \text{ minutes per hour}) = 62 \text{ minutes}$	<b>CRITICAL STEP</b> SAT / UNSAT

**EVALUATOR:** Terminate the task at this point for RO candidates.

**EXAMINER:** For SRO candidates, continue JPM by providing **SRO Only** cue sheet:

**INITIATING CUE for SRO Candidates Only:**

## TASK TITLE: Determine Worker Exposure for Emergent Work

Inform the candidate, "Determine the required actions necessary for Operator #1 to be allowed to receive a dose of 2500 mRem. Report your results below."

	STEP	STANDARD	EVALUATION / COMMENT
7.	<b>[RP-AA-203 Step 4.2.1]</b> <b>USE</b> Attachment 1, Dose Control Level Extension Form, or a computerized equivalent, to authorize exposures for adult individuals in excess of 2000 mrem routine TEDE in a year.	Candidate indicates that Attachment 1 of RP-AA-203 (or computerized equivalent) must be filled out.  <b>Note:</b> The candidate may list individual items from RP-AA-203 and Attachment 1, but the only critical requirement is to identify the procedure and attachment.	<b>CRITICAL STEP</b> SAT / UNSAT

**EVALUATOR:** Terminate the task at this point for SRO candidates.

**Task Standard:** Expected dose, maximum allowable time, and dose extension determined based on given radiological conditions. For SRO candidates, procedural requirement for dose extension identified.



## EVALUATOR'S KEY

**1. Expected dose that each operator will receive while performing this job:**

**1125 mRem**

**2. Will Operator #1 need a dose extension in order to receive the dose calculated above? (circle one)**

**Yes**

**No**

**3. Will Operator #2 need a dose extension in order to receive the dose calculated above? (circle one)**

**Yes**

**No**

## **EVALUATOR'S KEY**

## **EVALUATOR'S KEY**

**1. Maximum time allowed for Operator #1 (record final answer in minutes):**

**54 minutes**

**2. Maximum time allowed for Operator #2 (record final answer in minutes):**

**62 minutes**

## **EVALUATOR'S KEY**

# HANDOUT

## Initial Conditions:

- The plant is operating at 100% power.
- Two operators are required to enter a locked high radiation area to support an emergent job.
- The job is expected to take 45 minutes.
- The job site dose rate is 1500 mRem/hr.
- Operator #1 has received 1147 mRem of dose so far this year.
- Operator #2 has received 450 mRem of dose so far this year.
- Neither operator has received any dose extensions so far this year.
- Neither operator has any undocumented quarters for this year.
- No other Operators are available to perform this job.
- No means of reducing area dose rates are available.

## Initiating Cue:

**Determine the expected dose that each operator will receive while performing this job.**

**Determine if each operator will need a dose extension in order to receive this dose.**

**Report your results on the provided worksheet.**

# WORKSHEET

**1. Expected dose that each operator will receive while performing this job:**

**2. Will Operator #1 need a dose extension in order to receive the dose calculated above? (circle one)**

**Yes**

**No**

**3. Will Operator #2 need a dose extension in order to receive the dose calculated above? (circle one)**

**Yes**

**No**



## EXTRA HANDOUT

Operator #1 has been granted a dose extension to 2500 mRem.  
Operator #2 has NOT been granted a dose extension.

Determine the maximum time allowed for both Operator #1 and for Operator #2, such that they do NOT exceed their full administrative dose limits. Document your results in the worksheet below.

---

## EXTRA WORKSHEET

**1. Maximum time allowed for Operator #1 (record final answer in minutes):**

**2. Maximum time allowed for Operator #2 (record final answer in minutes):**

--



**SRO Candidates Only:**

Determine the required actions necessary for Operator #1 to be allowed to receive a dose of 2500 mRem.

Report your results below.

**James A. Fitzpatrick**  
**JOB PERFORMANCE MEASURE**

<u>SRO</u>	<u>18-1 NRC SRO EP</u>	TASK TITLE:	Determine Emergency Classification and
APPL. TO	JPM NUMBER		Initiate Event Notification (Time Critical)

REV: \_\_\_\_\_ DATE: \_\_\_\_\_ NRC K/A SYSTEM NUMBER: 2.4.40 (4.5)

ESTIMATED COMPLETION TIME: 30 Minutes

SUBMITTED: \_\_\_\_\_ OPERATIONS REVIEW: \_\_\_\_\_

APPROVED: \_\_\_\_\_  
~~~~~

CANDIDATE NAME: \_\_\_\_\_ LOGIN ID: \_\_\_\_\_

JPM Perform  
Completion

Location: Classroom

DATE PERFORMED: \_\_\_\_\_ TIME TO COMPLETE: \_\_\_\_\_ Minutes

PERFORMANCE EVALUATION: ☐ Satisfactory ☐ Unsatisfactory

~~~~~  
COMMENTS: (MANDATORY FOR UNSATISFACTORY PERFORMANCE)

EVALUATOR: \_\_\_\_\_  
SIGNATURE/PRINTED

**James A. Fitzpatrick**  
**JOB PERFORMANCE MEASURE**

SRO  
APPL. TO

18-1 NRC SRO EP  
JPM NUMBER

TASK TITLE: Determine Emergency Classification and  
Initiate Event Notification (Time Critical)

**I. SAFETY CONSIDERATIONS**

A. None

**II. REFERENCES**

A. EP-AA-1014

B. EAL Matrix

C. EP-CE-114-100-F-05

D. EP-AA-114-F-08

E. EP-CE-111-F-05

**III. TOOLS AND EQUIPMENT**

A. None

**IV. SET UP REQUIREMENTS**

A. Ensure sufficient copies of the referenced documents are available, including extra copies of the Part 1 notification form.

**V. EVALUATOR NOTES**

A. None

**James A. Fitzpatrick**  
**JOB PERFORMANCE MEASURE**

<u>SRO</u>	<u>18-1 NRC SRO EP</u>	<b>TASK TITLE:</b>	<b>Determine Emergency Classification and</b>
<b>APPL. TO</b>	<b>JPM NUMBER</b>		<b>Initiate Event Notification (Time Critical)</b>

**VI. TASK CONDITIONS**

- A. The plant is initially operating at 100% power.
- B. Severe thunderstorm activity has been occurring in the area.
- C. A spurious Main Generator lockout occurs.
- D. Lines 3 and 4 de-energize immediately after the Main Generator lockout.
- E. EDGs A and C fail to start.
- F. EDGs B and D start and re-energize the 10600 bus.
- G. Then, the 10600 bus de-energizes due to a significant electrical fault.
- H. Maintenance is estimating it will take 6 hours to restore power to either the 10500 or 10600 bus.
- I. Power Control is estimating it will take 8 hours to restore either Line 3 or Line 4.
- J. The following conditions exist now:
  - All control rods are full in.
  - Reactor pressure is 850 psig and slowly lowering on SRVs.
  - Reactor water level is 190" and stable on RCIC.
  - NO elevated radiation levels have been detected.
  - 200' elevation wind speed is 10 mph from 190°.
  - 30' elevation wind speed is 5 mph from 190°.
  - Stability class is E.
  - Nine Mile Point Units 1 and 2 and both operating at 100% power.

**TASK TITLE: Determine Emergency Classification and Initiate Event Notification (Time Critical)****VII. INITIATING CUE**

Inform the candidate of the following:

“Classify the event and complete the Part 1 Notification Fact Sheet. This is a time critical JPM. Your time clock starts once you acknowledge this task.”

	STEP	STANDARD	EVALUATION / COMMENT
1.	Obtain applicable reference documents	<p>Obtains a copy of applicable reference documents, as needed:</p> <ul style="list-style-type: none"> <li>• EP-AA-1014</li> <li>• EAL Matrix</li> <li>• EP-CE-114-100-F-05</li> <li>• EP-AA-114-F-08</li> <li>• EP-CE-111-F-05</li> </ul> <p><b>EVALUATOR:</b> Ensure sufficient copies of these documents are available.</p>	SAT / UNSAT
2.	Classify the event	<p>Classifies the event as General Emergency MG1 within 15 minutes of JPM start time</p> <p>JPM start time: _____</p> <p>Time of classification: _____</p> <p>Time difference: _____</p>	<p><b>CRITICAL STEP</b></p> <p>SAT / UNSAT</p>

**TASK TITLE: Determine Emergency Classification and Initiate Event Notification (Time Critical)**

	STEP	STANDARD	EVALUATION / COMMENT
3.	Completes Part 1 Notification Fact Sheet.	<p>Completes Part 1 Notification Fact Sheet per attached key within 15 minutes of classification time</p> <p>Time of classification: _____</p> <p>Time of offsite notification: _____</p> <p>Time difference: _____</p> <p><b>EVALUATOR NOTES:</b></p> <ul style="list-style-type: none"> <li>• Only item 3, 4, 5, 6, and 7 of the Part 1 Notification Fact Sheet are deemed critical for this JPM.</li> <li>• These items are individually graded in the JPM steps below.</li> <li>• All other items are non-critical.</li> <li>• See attached key.</li> </ul>	<b>CRITICAL STEP</b> SAT / UNSAT
4.	Completes Part 1 Notification step 3	Indicates "GENERAL EMERGENCY" in Part 1 Notification step 3 (see attached key)	<b>CRITICAL STEP</b> SAT / UNSAT
5.	Completes Part 1 Notification step 4	Records today's date and time of declaration in Part 1 Notification step 4 (see attached key)	<b>CRITICAL STEP</b> SAT / UNSAT

**TASK TITLE: Determine Emergency Classification and Initiate Event Notification (Time Critical)**

	STEP	STANDARD	EVALUATION / COMMENT
6.	Completes Part 1 Notification step 5	Indicates "No Release" in Part 1 Notification step 5 (see attached key)	<b>CRITICAL STEP</b> SAT / UNSAT
7.	Completes Part 1 Notification step 6	Indicates "EVACUATE and IMPLEMENT the KI plan..." for ERPAs 1, 2, 3, 26, and 27 in Part 1 Notification step 6 (see attached key)	<b>CRITICAL STEP</b> SAT / UNSAT
8.	Completes Part 1 Notification step 7	Indicates EAL # "MG1" in Part 1 Notification step 7 (see attached key)	<b>CRITICAL STEP</b> SAT / UNSAT
<b>EVALUATOR:</b> Terminate the task at this point.			

**Task Standard:** The emergency event is classified and the Part 1 Notification form is filled out correctly.

# EVALUATOR'S KEY

## PART 1 NOTIFICATION FACT SHEET

Step Change	Step	"This is to report an incident at _____ standby for roll call."					
		<input type="checkbox"/> Nine Mile Point Unit 1		<input type="checkbox"/> Nine Mile Point Unit 2		<input checked="" type="checkbox"/> James A. Fitzpatrick	
		<input type="checkbox"/> NY State	<input type="checkbox"/> Oswego County	<input type="checkbox"/> James A. Fitzpatrick	<input type="checkbox"/> NMP Unit 1	<input type="checkbox"/> NMP Unit 2	Notification #
	1.	This message is being transmitted on: _____ at _____ via: A. RECS B. Other (Date) (Time)					
	2.	This is: A. An actual emergency <b>B. An Exercise</b>					
	3.	The Emergency Classification is: A. Unusual Event B. Alert C. Site Area Emergency <b>D. General Emergency</b> E. Emergency Terminated					
	4.	This Emergency Classification was declared on: (date) <u>(Today's date)</u> at (time) <u>(Now)</u>					
	5.	Release of radioactive Materials due to the classified event: <b>A. No release</b> B. Release below federal limits (ODCM), <input type="checkbox"/> To atmosphere <input type="checkbox"/> To Water C. Release above federal limits (ODCM), <input type="checkbox"/> To atmosphere <input type="checkbox"/> To Water D. Unmonitored release requiring evaluation.					
	6.	The following Protective Actions are recommended to be implemented as soon as practical: A. No need for protective actions outside the site boundary <b>B. EVACUATE and IMPLEMENT</b> the KI Plan for the following ERPAs and all remaining ERPAs monitor the Emergency Alert System. <u>1 2 3</u> 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 <u>26 27</u> 28 29 C. SHELTER and IMPLEMENT the KI Plan for the following ERPAs and all remaining ERPAs monitor the Emergency Alert System. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29					
	7.	<input type="checkbox"/> NMP U1	<input type="checkbox"/> NMP U2	<input checked="" type="checkbox"/> JAF	EAL # <b>MG1</b>	Brief event description and other significant information: (Include any Security Related EAL's if applicable)	
	8.	Reactor Status: <u>NMPU1</u> : A. Operating B. Shutdown (date): _____ at (time): _____ <u>NMPU2</u> : A. Operating B. Shutdown (date): _____ at (time): _____ <u>JAF</u> : A. Operating <b>B. Shutdown</b> (date): <u>(Today's date)</u> at (time): <u>(JPM start time)</u>					
	9.	A. Elevated wind speed <u>10</u> miles/hr			B. Ground wind speed <u>5</u> miles/hr		
	10.	A. Elevated wind direction (from) <u>190</u> deg			B. Ground wind direction (from) <u>190</u> deg		
	11.	A. Elevated Stability Class: A B C D <b>E</b> F G			B. Ground Stability Class: A B C D <b>E</b> F G		

# EVALUATOR'S KEY



# HANDOUT

## **Initial Conditions:**

- The plant is initially operating at 100% power.
- Severe thunderstorm activity has been occurring in the area.
- A spurious Main Generator lockout occurs.
- Lines 3 and 4 de-energize immediately after the Main Generator lockout.
- EDGs A and C fail to start.
- EDGs B and D start and re-energize the 10600 bus.
- Then, the 10600 bus de-energizes due to a significant electrical fault.
- Maintenance is estimating it will take 6 hours to restore power to either the 10500 or 10600 bus.
- Power Control is estimating it will take 8 hours to restore either Line 3 or Line 4.
- The following conditions exist now:
  - All control rods are full in.
  - Reactor pressure is 850 psig and slowly lowering on SRVs.
  - Reactor water level is 190" and stable on RCIC.
  - NO elevated radiation levels have been detected.
  - 200' elevation wind speed is 10 mph from 190°.
  - 30' elevation wind speed is 5 mph from 190°.
  - Stability class is E.
  - Nine Mile Point Units 1 and 2 and both operating at 100% power.

## **Initiating Cue:**

Classify the event and complete the Part 1 Notification Fact Sheet.

This is a time critical JPM.

Your time clock starts once you acknowledge this task.

**James A. Fitzpatrick**  
**JOB PERFORMANCE MEASURE**

SRO	18-1 NRC SRO COO2	TASK TITLE:	Determine Reportability Requirements – Technical Specification Shutdown and Group I Isolation
APPL. TO	JPM NUMBER		

REV: \_\_\_\_\_ DATE: \_\_\_\_\_ NRC K/A SYSTEM NUMBER: 2.1.18 (3.8)

ESTIMATED COMPLETION TIME: 25 Minutes

SUBMITTED: \_\_\_\_\_ OPERATIONS REVIEW: \_\_\_\_\_

APPROVED: \_\_\_\_\_  
~~~~~

CANDIDATE NAME: \_\_\_\_\_ LOGIN ID: \_\_\_\_\_

JPM Perform  
Completion

Location: Classroom

DATE PERFORMED: \_\_\_\_\_ TIME TO COMPLETE: \_\_\_\_\_ Minutes

PERFORMANCE EVALUATION: ☐ Satisfactory ☐ Unsatisfactory

~~~~~  
COMMENTS: (MANDATORY FOR UNSATISFACTORY PERFORMANCE)

EVALUATOR: \_\_\_\_\_  
SIGNATURE/PRINTED

**James A. Fitzpatrick**  
**JOB PERFORMANCE MEASURE**

SRO	18-1 NRC SRO	TASK TITLE:	Determine Reportability Requirements –
	COO2		Technical Specification Shutdown and Group I
APPL. TO	JPM NUMBER		Isolation

**I. SAFETY CONSIDERATIONS**

A. None

**II. REFERENCES**

A. 10 CFR 50.72

B. NUREG 1022

C. LS-AA-1400

**III. TOOLS AND EQUIPMENT**

A. None

**IV. SET UP REQUIREMENTS**

A. Ensure sufficient copies of the referenced documents are available.

**V. EVALUATOR NOTES**

A. Note

**VI. TASK CONDITIONS**

- A. The plant was initially operating at 100% power.
- B. A shutdown was performed to meet Technical Specification requirements.
- C. All control rods were fully inserted with RMCS.
- D. The Reactor mode switch was then placed in SHUTDOWN per OP-65 and OP-18.
- E. Then, a Main Steam leak developed.
- F. A Group I isolation occurred due to high Main Steam tunnel temperature.
- G. All systems responded per design.
- H. Condensate Booster pumps were used to control Reactor water level.
- I. SRVs were used to control Reactor pressure.

TASK TITLE: Determine Reportability Requirements – Technical Specification Shutdown and Group I Isolation

## VII. INITIATING CUE

Inform the candidate of the following:

“List the applicable 10 CFR 50.72 reportability requirements and the associated time limitations for reporting under that category. Record your findings on the sheet provided.”

	STEP	STANDARD	EVALUATION / COMMENT
1.	Obtain a applicable reference documents	<p>Obtains a copy of applicable reference documents:</p> <ul style="list-style-type: none"> <li>• 10 CFR 50.72</li> <li>• NUREG 1022</li> <li>• LS-AA-1400</li> </ul> <p><b>EVALUATOR:</b> Ensure sufficient copies of these documents are available.</p>	SAT / UNSAT
2.	Locate and identify applicability of 10 CFR 50.72(b)(2)(i)	<p>Identifies reportability per 10 CFR 50.72(b)(2)(i)</p> <p><b>EVALUATOR NOTE:</b> This may also be identified as due to the initiation of any nuclear plant shutdown required by the plant's Technical Specifications.</p>	<p><b>CRITICAL STEP</b></p> <p>SAT / UNSAT</p>
3.	Determine notification time requirement for 10 CFR 50.72(b)(2)(i)	Determines 10 CFR 50.72(b)(2)(i) requires notification within 4 hours	<p><b>CRITICAL STEP</b></p> <p>SAT / UNSAT</p>

TASK TITLE: Determine Reportability Requirements – Technical Specification Shutdown and Group I Isolation

	STEP	STANDARD	EVALUATION / COMMENT
4.	Locate and identify applicability of 10 CFR 50.72(b)(3)(iv)(A)	<p>Identifies reportability per 10 CFR 50.72(b)(3)(iv)(A)</p> <p><b>EVALUATOR NOTE:</b> Candidate may alternately refer to 10CFR 50.72(b)(3)(iv)(B)(2) for this reportability requirement.</p> <p><b>EVALUATOR NOTE:</b> This may also be identified as due to the valid actuation of the Group I isolation.</p>	<p><b>CRITICAL STEP</b></p> <p>SAT / UNSAT</p>
5.	Determine notification time requirement for 10 CFR 50.72(b)(3)(iv)(A)	<p>Determines 10 CFR 50.72(b)(3)(iv)(A) requires notification within 8 hours</p> <p><b>EVALUATOR NOTE:</b> Candidate may alternately refer to 10CFR 50.72(b)(3)(iv)(B)(2) for this reportability requirement.</p>	<p><b>CRITICAL STEP</b></p> <p>SAT / UNSAT</p>
<b>EVALUATOR:</b> Terminate the task at this point.			

**Task Standard:** NRC reportability requirements and associated time limits are determined.

# **HANDOUT**

- The plant was initially operating at 100% power.
- A shutdown was performed to meet Technical Specification requirements.
- All control rods were fully inserted with RMCS.
- The Reactor mode switch was then placed in SHUTDOWN per OP-65 and OP-18.
- Then, a Main Steam leak developed.
- A Group I isolation occurred due to high Main Steam tunnel temperature.
- All systems responded per design.
- Condensate Booster pumps were used to control Reactor water level.
- SRVs were used to control Reactor pressure.

**List the applicable 10 CFR 50.72 reportability requirements and the associated time limitations for reporting under that category.**

## Attachment 2

### JPM Scorecard for Candidate Use

List the applicable 10 CFR 50.72 reportability requirements and the associated time limitations for reporting under that category.

**James A. Fitzpatrick**  
**JOB PERFORMANCE MEASURE**

<u>S/RO</u>	<u>18-1 NRC A</u>	TASK TITLE: Isolate Control Room and Relay Room Ventilation
APPL. TO	JPM NUMBER	

REV: \_\_\_\_\_ DATE: \_\_\_\_\_ NRC K/A SYSTEM NUMBER: 290003 A4.01 (3.2/3.2)

ESTIMATED COMPLETION TIME: 10 Minutes

SUBMITTED: \_\_\_\_\_ OPERATIONS REVIEW: \_\_\_\_\_

APPROVED: \_\_\_\_\_

~~~~~  
CANDIDATE NAME: \_\_\_\_\_

JPM Completion      ☐ Simulated      ☒ Performed

Location:              ☐ Plant              ☒ Simulator

DATE PERFORMED: \_\_\_\_\_ TIME TO COMPLETE: \_\_\_\_\_ Minutes

PERFORMANCE EVALUATION:      ☐ Satisfactory      ☐ Unsatisfactory

~~~~~  
COMMENTS: (MANDATORY FOR UNSATISFACTORY PERFORMANCE)

EVALUATOR: \_\_\_\_\_  
SIGNATURE/PRINTED



**IV. SAFETY CONSIDERATIONS**

- A. None

**I. REFERENCES**

- A. OP-55B, Control Room Ventilation and Cooling

**II. TOOLS AND EQUIPMENT**

- A. None

**V. SET UP REQUIREMENTS**

- A. Initialize the simulator to IC-227.
- B. Control Room Ventilation Train 'A' in service.
- C. Relay Room Ventilation Train 'B' in service.

**VI. EVALUATOR NOTES**

- A. None

**VII. TASK CONDITIONS**

- A. An accident at Nine Mile Point has resulted in rising radiation levels in the Control Room ventilation air supply header.

## VII. INITIATING CUE

Inform the candidate, "Isolate Control Room and Relay Room ventilation per OP-55B section G.1."

**NOTE:** All actions performed at Panel 09-75

	STEP	STANDARD	EVALUATION / COMMENT
1.	Obtain a controlled copy of OP-55B, Control Room Ventilation and Cooling.	Obtains a controlled copy of OP-55B.	SAT / UNSAT
2.	(OP-55B step G.1.1) Place Control Room Ventilation ISOL & PURGE CNTRL switch in ISOL.	Places Control Room Ventilation ISOL & PURGE CNTRL switch in ISOL.  <b>Evaluator Note:</b> These controls are in the Control Room Vent area of the 09-75 panel.	<b>CRITICAL STEP</b> SAT / UNSAT
3.	(OP-55B step G.1.2) Verify closed the following dampers and valves: <ul style="list-style-type: none"><li>• EXH 70MOD-109</li><li>• INLET 70MOD-105</li><li>• EXH ISOL 70MOV-107</li><li>• INLET ISOL 70MOV-108</li></ul>	Observes red light off, green light on for the following: <ul style="list-style-type: none"><li>• EXH 70MOD-109</li><li>• INLET 70MOD-105</li><li>• EXH ISOL 70MOV-107</li><li>• INLET ISOL 70MOV-108</li></ul>	SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
4.	(OP-55B step G.1.3) Verify open the following dampers: <ul style="list-style-type: none"> <li>• RECIRC A 70MOD-110A</li> <li>• RECIRC B 70MOD-110B</li> </ul>	Observes red light on, green light off for the following: <ul style="list-style-type: none"> <li>• RECIRC A 70MOD-110A</li> <li>• RECIRC B 70MOD-110B</li> </ul>	SAT / UNSAT
5.	(OP-55B step G.1.4) Verify one of the following control room emergency air supply fans is running with its discharge damper open: <u>Supply Fan</u> FRESH AIR SUPP 70FN-6A FRESH AIR SUPP 70FN-6B <u>Discharge Damper</u> DISCH 70MOD-112A DISCH 70MOD-112B	Observes red light on, green light off for FRESH AIR SUPP SUPP 70FN-6A  Observes red light on, green light off for DISCH 70MOD-112A	SAT / UNSAT
6.	(OP-55B step G.1.5) Close 70DMPR-105 (control room vent supply isol 70MOD-105 manual bypass damper) (located near 70MOV-108).	Direct field operator to close 70DMPR-105. <u>Evaluator Cue:</u> 70DMPR-105 is closed.	<b>CRITICAL STEP</b> SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
7.	(OP-55B step G.1.6) Ensure closed all access doors to Control Room.	Acknowledges cue. <b><u>Evaluator Cue:</u></b> All access doors to the Control Room are closed.	SAT / UNSAT
8.	(OP-55B step G.1.7) IF differential pressure is LESS THAN +0.125 inches water gauge on CNTRL RM DIFF PRESS 70DPI-063, THEN ensure Office Area Ventilation is in normal operation or shutdown per OP-59B.	Observes CNTRL RM DIFF PRESS 70DPI-063 indicates greater than +0.125 inches water gauge.	SAT / UNSAT
9.	(OP-55B step G.1.8) WHILE control room ventilation is operating in isolate mode, perform the following: a. Record control room dP in the narrative log once per shift. b. Notify system engineer if LESS THAN +0.2 inches water gauge.	Acknowledges step. <b><u>Evaluator Cue:</u></b> Another operator will record Control Room dP in the narrative log.  <b><u>Evaluator Note:</u></b> A Note in the procedure allows JPM steps 9 and 10 to be performed after the subsequent JPM steps.	SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
10.	<p>(OP-55B step G.1.9) Hang copy (6 total) of Attachment 5 on the following sets of doors (one copy facing outside on outer fire door, other facing inside on inner vestibule door):</p> <p>76FDR-300-13 MAIN CONTROL ROOM FIRE DOOR and associated inner vestibule door</p> <p>76FDR-300-10 MAIN CONTROL ROOM CORRIDOR FIRE DOOR and associated inner vestibule door</p> <p>76FDR-300-26 CONTROL ROOM ACCESS DOOR FROM NEW ADMIN/SUPPORT FACILITY and associated inner vestibule door</p>	<p>Acknowledges step.</p> <p><b>Evaluator Cue:</b> Another operator has hung the required signs.</p>	SAT / UNSAT
11.	<p>(OP-55B step G.1.10) IF Control Room Ventilation is being isolated as a result of high radiation in the air supply header, OR by direction of AOP-39 OR AOP-40, THEN isolate Relay Room Ventilation as follows:</p> <p>Place the following Relay Room Ventilation control switches in ISOL:</p> <ul style="list-style-type: none"> <li>ISOL &amp; PURGE CNTRL A</li> <li>ISOL &amp; PURGE CNTRL B</li> </ul>	<p><b>Evaluator Note:</b> These controls are in the Relay Room area of the 09-75 panel.</p> <p>Places ISOL &amp; PURGE CNTRL A in ISOL.</p>	<p><b>CRITICAL STEP</b></p> <p>SAT / UNSAT</p>
		<p>Places ISOL &amp; PURGE CNTRL B in ISOL.</p>	<p><b>CRITICAL STEP</b></p> <p>SAT / UNSAT</p>

	STEP	STANDARD	EVALUATION / COMMENT
12.	(OP-55B step G.1.10.b) Verify closed the following dampers and valves: <ul style="list-style-type: none"> <li>• EXH ISOL 70MOV-105</li> <li>• INLET ISOL 70MOV-106</li> <li>• RR VENT DAMPER 70MOD-115</li> </ul>	Observes red light off, green light on for the following: <ul style="list-style-type: none"> <li>• EXH ISOL 70MOV-105</li> <li>• INLET ISOL 70MOV-106</li> <li>• RR VENT DAMPER 70MOD-115</li> </ul>	SAT / UNSAT
13.	(OP-55B step G.1.10.c) IF either 70MOV-105 or 70MOV-106 failed to close...	Determines step is N/A and moves on in procedure.	SAT / UNSAT
14.	(OP-55B step G.1.10.d) IF RR VENT DAMPER 70MOD-115 is not closed...	Determines step is N/A and moves on in procedure.	SAT / UNSAT
15.	(OP-55B step G.1.10.e) Verify open the following dampers: <ul style="list-style-type: none"> <li>• RECIRC A 70MOD-104A</li> <li>• RECIRC B 70MOD-104B</li> </ul>	Observes red light on, green light off for the following: <ul style="list-style-type: none"> <li>• RECIRC A 70MOD-104A</li> <li>• RECIRC B 70MOD-104B</li> </ul>	SAT / UNSAT
16.	(OP-55B step G.1.10.f) Ensure closed all access doors to Relay Room.	Acknowledges cue. <b><u>Evaluator Cue:</u></b> All access doors to the Relay Room are closed.	SAT / UNSAT
<b><u>EVALUATOR:</u></b> Terminate the task at this point.			

**Task Standard:** Control Room and Relay Room ventilation are isolated per OP-55B section G.1.

# **HANDOUT**

- **An accident at Nine Mile Point has resulted in rising radiation levels in the Control Room ventilation air supply header.**

**Isolate Control Room and Relay Room ventilation per OP-55B section G.1.**

**James A. Fitzpatrick**  
**JOB PERFORMANCE MEASURE**

<u>S/RO</u>	<u>NRC 18-1 B</u>	TASK TITLE:	Transfer Feedwater Level Control to Master-Auto, Level Drifts Low
APPL. TO	JPM NUMBER		

REV: \_\_\_\_\_ DATE: \_\_\_\_\_ NRC K/A SYSTEM NUMBER: 259001 A4.01 (3.6/3.5)

ESTIMATED COMPLETION TIME: 20 Minutes

SUBMITTED: \_\_\_\_\_ OPERATIONS REVIEW: \_\_\_\_\_

APPROVED: \_\_\_\_\_

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CANDIDATE NAME: \_\_\_\_\_

JPM Completion      ☐ Simulated      ☒ Performed

Location:            ☐ Plant            ☒ Simulator

DATE PERFORMED: \_\_\_\_\_ TIME TO COMPLETE: \_\_\_\_\_ Minutes

PERFORMANCE EVALUATION:      ☐ Satisfactory      ☐ Unsatisfactory

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COMMENTS: (MANDATORY FOR UNSATISFACTORY PERFORMANCE)

EVALUATOR: \_\_\_\_\_

SIGNATURE/PRINTED



**IV. SAFETY CONSIDERATIONS**

- A. None

**I. REFERENCES**

- A. OP-2A, Feedwater System

**II. TOOLS AND EQUIPMENT**

- A. None

**V. SET UP REQUIREMENTS**

- A. Plant in a startup condition near 5% power (IC-227).
- B. Ensure Feedwater pump A is operating and pump B is secured.
- C. Ensure 34MOV-100A and 34MOV-100B are closed.
- D. Ensure Reactor water level is being maintained in the green band and controlled with 34FCV-137 in MAN and open as needed to stabilize level and other Feedwater controllers in MAN.
- E. Place FDWTR screen on EPIC slave 1 monitor.
- F. Ensure simulator is programmed to insert malfunction FW08 to 60 on event 1.
- G. Ensure simulator is programmed for event 1 = zdi683(3)==1.

**VI. EVALUATOR NOTES**

- A. None

**VII. TASK CONDITIONS**

- A. A plant startup is in progress.
- B. Reactor power is approximately 5%.
- C. Feedwater pump A is running and Feedwater pump B is secured.
- D. FDWTR STARTUP VLV (34FCV-137) 06FIC-130 is in MAN and throttled open.
- E. RFP A FLOW CNTRL 06-84A is in MAN.
- F. RX WTR LVL CNTRL 06LC-83 is in MAN.

## VII. INITIATING CUE

Inform the candidate, "Transfer RFP A FLOW CNTRL 06-84A to master-manual and then master-auto per OP-2A Section D.2. The procedure is in progress up to step D.2.27. Maintain Reactor water level 196.5-206.5".

	STEP	STANDARD	EVALUATION / COMMENT
1.	Obtain a controlled copy of OP-2A.	Obtains a controlled copy of OP-2A.  <b><u>Evaluator Note:</u></b> The candidate may make adjustments to Feedwater controllers throughout the JPM that are not scripted in order to maintain Reactor water level in band.	SAT / UNSAT
2.	(OP-2A step D.2.27) WHEN RFPT A speed is GREATER THAN 2000 rpm, perform the following at the Shift Manager's discretion to transfer RFP A FLOW CNTRL 06-84A to master-manual:  Line up RX WTR LVL CNTRL 06LC-83 as follows:  Verify controller is in MAN.	Observes RX WTR LVL CNTRL 06LC-83 is in MAN.	SAT / UNSAT
3.	(OP-2A step D.2.27.a.2) Ensure setpoint is BETWEEN 55 AND 65% (197 and 203 inches).	Ensures RX WTR LVL CNTRL 06LC-83 setpoint is between 55 AND 65% (197 and 203 inches).	SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
4.	(OP-2A step D.2.27.b) Adjust RX WTR LVL CNTRL 06LC-83 manual control knob to balance RFP A FLOW CNTRL 06-84A.	Rotates 06LC-83 manual control knob to balance RFP A FLOW CNTRL 06-84A, as necessary.	SAT / UNSAT / NA
5.	(OP-2A step D.2.27.c) Place RFP A FLOW CNTRL 06-84A in BAL.	Places RFP A FLOW CNTRL 06-84A in BAL.	<b>CRITICAL STEP</b> SAT / UNSAT
6.	(OP-2A step D.2.27.d) Control RFPT A speed by adjusting RX WTR LVL CNTRL 06LC-83 manual control knob.	Controls RFPT A speed by adjusting RX WTR LVL CNTRL 06LC-83 manual control knob, as necessary.	SAT / UNSAT / NA
7.	(OP-2A step D.2.28) Transfer RFP A FLOW CNTRL 06-84A to master auto as follows:  IF 34FCV-137 is in automatic (BAL), THEN place FDWTR STARTUP VLV (34FCV-137) 06FIC-130 in manual as follows...	Determines 34FCV-137 is NOT in automatic (BAL) and moves to next step.	SAT / UNSAT / NA

	STEP	STANDARD	EVALUATION / COMMENT
8.	(OP-2A step D.2.28.b) Place RX WTR LVL CNTRL 06LC-83 in automatic (BAL) as follows:  Balance controller by adjusting SP ADJUST knob.	Balances RX WTR LVL CNTRL 06LC-83 by adjusting SP ADJUST knob as necessary.	SAT / UNSAT
9.	(OP-2A step D.2.28.b.2) Place controller in BAL.	Places RX WTR LVL CNTRL 06LC-83 in BAL.	<b>CRITICAL STEP</b> SAT / UNSAT
<b>Note:</b> The alternate path is automatically triggered when the candidate completes JPM step #9. Reactor water level will begin drifting low.			
10.	Recognize / report failure of RX WTR LVL CNTRL 06LC-83 in automatic.	Recognizes / reports failure of RX WTR LVL CNTRL 06LC-83 in automatic.  <b>Evaluator cue:</b> If asked for direction, tell candidate to make a recommendation and then carry out that recommendation.	SAT / UNSAT
11.	Stabilize Reactor water level by taking manual control of Feedwater level control.	Places RX WTR LVL CNTRL 06LC-83 in MAN OR Places RFP A FLOW CNTRL 06-84A in MAN  Adjusts as necessary to stabilize Reactor water level.	<b>CRITICAL STEP</b> SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
12.	Maintain Reactor water level within a band of 177-222.5" throughout the evolution.	<p>Maintains Reactor water level within a band of 177-222.5" throughout the evolution.</p> <p><b>EVALUATOR NOTE:</b> This step is used to designate that a critical aspect of the entire JPM is to maintain Reactor water level within a band of 177-222.5". Many of the other steps are partially critical, in that if the candidate makes a significant enough of an error, a Reactor water level transient will occur. If a scram is received on low Reactor water level or a Feedwater pump trip occurs on high Reactor water level, at any point in the JPM, that is considered grounds for failing this critical step.</p>	<p><b>CRITICAL STEP</b> SAT / UNSAT</p>
<p><b><u>EVALUATOR:</u></b> Terminate the task at this point.</p>			

**Task Standard:** RFP A FLOW CNTRL 06-84A is transferred to master-manual and then master-auto per OP-2A Section D.2. Failure of master-auto is detected and Reactor water level is stabilized. Reactor water level is maintained within a band of 177-222.5" throughout the evolution.

# HANDOUT

- A plant startup is in progress.
- Reactor power is approximately 5%.
- Feedwater pump A is running and Feedwater pump B is secured.
- FDWTR STARTUP VLV (34FCV-137) 06FIC-130 is in MAN and throttled open.
- RFP A FLOW CNTRL 06-84A is in MAN.
- RX WTR LVL CNTRL 06LC-83 is in MAN

**Transfer RFP A FLOW CNTRL 06-84A to master-manual and then master-auto per OP-2A Section D.2.**

**The procedure is in progress up to step D.2.27.**

**Maintain Reactor water level 196.5-206.5”.**

**James A. Fitzpatrick**  
**JOB PERFORMANCE MEASURE**

<u>S/RO</u>	<u>18-1 NRC C</u>	TASK TITLE:	Shutdown Core Spray Following
<u>APPL. TO</u>	<u>JPM NUMBER</u>		Terminate/Prevent and Subsequent Injection
REV: _____	DATE: _____	NRC K/A SYSTEM NUMBER: <u>209001 A4.01 (3.8/3.6)</u>	
ESTIMATED COMPLETION TIME: <u>10</u> Minutes			
SUBMITTED: _____		OPERATIONS REVIEW: _____	
APPROVED: _____			
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CANDIDATE NAME: _____			
JPM Completion	<input type="checkbox"/> Simulated	<input checked="" type="checkbox"/> Performed	
Location:	<input type="checkbox"/> Plant	<input checked="" type="checkbox"/> Simulator	
DATE PERFORMED: _____		TIME TO COMPLETE: _____ Minutes	
PERFORMANCE EVALUATION: <input type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory			
~~~~~			
COMMENTS: (MANDATORY FOR UNSATISFACTORY PERFORMANCE)			
EVALUATOR: _____			
SIGNATURE/PRINTED			

**IV. SAFETY CONSIDERATIONS**

- A. None

**I. REFERENCES**

- A. EP-5, Termination and Prevention of RPV Injection
- B. OP-14, Core Spray System

**II. TOOLS AND EQUIPMENT**

- A. None.

**V. SET UP REQUIREMENTS**

- A. Reset the simulator to IC-229.
- B. Ensure Core Spray has had an automatic start signal and that signal is now clear.
- C. Ensure Core Spray A has been terminated and prevented per EP-5.
- D. Ensure Core Spray A has been realigned for injection per EP-5 with 14MOV-12A throttled partially open.

**VI. EVALUATOR NOTES**

- A. None

**VII. TASK CONDITIONS**

- A. The plant is shutdown following a significant transient.
- B. Core Spray A was previously terminated/prevented.
- C. Core Spray A is now running and aligned for injection.



## VII. INITIATING CUE

Inform the candidate, "Secure Core Spray Loop A per EP-5 section 5.1.3."

	STEP	STANDARD	EVALUATION / COMMENT
1.	Obtain a controlled copy of EP-5.	Obtains a controlled copy of EP-5.	SAT / UNSAT
2.	(EP-5 step 5.1.3.A) Perform Core Spray Loop A Shutdown per Section F of OP-14.	Obtains a controlled copy of OP-14 and selects section F.1.	SAT / UNSAT
3.	(OP-14 step F.1.1) Ensure closed INBD INJ VLV 14MOV-12A.	Rotates 14MOV-12A control switch counterclockwise until green light on, red light off.	<b>CRITICAL STEP</b> SAT / UNSAT
4.	(OP-14 step F.1.2) Ensure open MIN FLOW VLV 14MOV-5A.	Observes MIN FLOW VLV 14MOV-5A green light off, red light on.	SAT / UNSAT
5.	(OP-14 step F.1.3) Stop PMP 14P-1A.	Rotates PMP 14P-1A control switch counterclockwise to STOP.	<b>CRITICAL STEP</b> SAT / UNSAT
6.	(OP-14 step F.1.4) IF Core Spray auto initiated, AND Core Spray initiation conditions are no longer present, THEN reset Core Spray Loop A initiation logic as follows:  Depress LOGIC RESET 14A-S15A pushbutton.	Depresses LOGIC RESET 14A-S15A pushbutton.	<b>CRITICAL STEP</b> SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
7.	(OP-14 step F.1.4.b) Verify white SYS A LOGIC ACTUATED 14A-DS27A light is off.	Observes SYS A LOGIC ACTUATED 14A-DS27A light is off.	SAT / UNSAT
8.	(OP-14 step F.1.5) Ensure Core Spray Loop A is in the standby lineup per Section E, as soon as practicable.	Acknowledges cue and returns to EP-5 section 5.1.3.  <b><u>Evaluator cue:</u></b> Another Operator will perform OP-14 section E while you continue with the remainder of your procedure execution.	SAT / UNSAT
9.	(EP-5 step 5.1.3.B) Ensure 14MOV-11A AUTO ACTUATION BYPASS SW 14A-S16A switch in NORMAL.	Rotates 14MOV-11A AUTO ACTUATION BYPASS SW 14A-S16A switch to NORMAL.	<b>CRITICAL STEP</b> SAT / UNSAT
10.	(EP-5 step 5.1.3.C) Verify 14MOV-11A AUTO ACTUATION BYPASS LT 14A-DS35A white light is off.	Observes 14MOV-11A AUTO ACTUATION BYPASS LT 14A-DS35A white light is off.	SAT / UNSAT
<b><u>EVALUATOR:</u></b> Terminate the task at this point.			

**Task Standard:** Core Spray Loop A secured per EP-5 section 5.1.3 and OP-14 section F.1.

# **HANDOUT**

- **The plant is shutdown following a significant transient.**
- **Core Spray A was previously terminated/prevented.**
- **Core Spray A is now running and aligned for injection.**

**Secure Core Spray Loop A per EP-5 section 5.1.3.**

**James A. Fitzpatrick**  
**JOB PERFORMANCE MEASURE**

<u>S/RO</u>	<u>18-1 NRC D</u>	TASK TITLE:	Restore L34 to Normal Power Source, Loss of
APPL. TO	JPM NUMBER		10400 Bus

REV: \_\_\_\_\_ DATE: \_\_\_\_\_ NRC K/A SYSTEM NUMBER: 262001 A4.01 (3.4/3.7)

ESTIMATED COMPLETION TIME: 12 Minutes

SUBMITTED: \_\_\_\_\_ OPERATIONS REVIEW: \_\_\_\_\_

APPROVED: \_\_\_\_\_

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CANDIDATE NAME: \_\_\_\_\_

JPM Completion      ☐ Simulated      ☒ Performed

Location:              ☐ Plant              ☒ Simulator

DATE PERFORMED: \_\_\_\_\_ TIME TO COMPLETE: \_\_\_\_\_ Minutes

PERFORMANCE EVALUATION:      ☐ Satisfactory      ☐ Unsatisfactory

~~~~~  
COMMENTS: (MANDATORY FOR UNSATISFACTORY PERFORMANCE)

EVALUATOR: \_\_\_\_\_  
SIGNATURE/PRINTED

**IV. SAFETY CONSIDERATIONS**

- A. None

**I. REFERENCES**

- A. OP-46A, 4160 V and 600 V Normal AC Power Distribution
- B. AOP-17, Loss of 10400 Bus

**II. TOOLS AND EQUIPMENT**

- A. Sync key

**V. SET UP REQUIREMENTS**

- A. Reset to a power-operating IC (IC-228).
- B. Ensure L34 has been transferred to the alternate supply per OP-46A section G.8.6.
- C. Place malfunction ED19:D on Trigger 1 with a 4 second time delay.
- D. Setup event trigger 1 to actuate when the control switch for breaker 13404 is taken to OFF.

**VI. EVALUATOR NOTES**

- A. None

**VII. TASK CONDITIONS**

- A. The plant is operating at power.
- B. L34 is currently being supplied by the 10300 bus.

## VII. INITIATING CUE

Inform the candidate, "Restore L34 to the normal power source per OP-46A section G.12. The procedure is in progress up to step G.12.3.d."

	STEP	STANDARD	EVALUATION / COMMENT
1.	Obtain a controlled copy of OP-46A.	Obtains a controlled copy of OP-46A.  Proceeds to step G.12.3.d.	SAT / UNSAT
2.	(OP-46A step G.12.3.d) Ensure closed L14 L24 L34 L44 4KV FDR BKR 10440.	Observes L14 L24 L34 L44 4KV FDR BKR 10440 green light off, red light on.	SAT / UNSAT
3.	(OP-46A step G.12.3.e) Place L33 L34 TIE SYNCH SW switch in ON.	Inserts sync key for L33 L34 TIE SYNCH SW.  Rotates sync key clockwise to ON.	<b>CRITICAL STEP</b> SAT / UNSAT
4.	(OP-46A step G.12.3.f) WHEN incoming and running voltages are matched, AND synchroscope is at approximately 12 o'clock, perform the following bus transfer using the same hand, without unnecessary delay, to perform each breaker operation:  Close L34 600V FDR BKR 13402.	Rotates L34 600V FDR BKR 13402 control switch clockwise to CLOSE.	<b>CRITICAL STEP</b> SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
5.	(OP-46A step G.12.3.f.2) Open L33-L34 TIE BKR 13404.	Rotates L33-L34 TIE BKR 13404 control switch counterclockwise to OPEN.	<b>CRITICAL STEP</b> SAT / UNSAT
		<b>Alternate Path</b> begins here which is a loss of the 10400 bus.	
6.	Recognize / report loss of 10400 bus.	Recognize / report loss of 10400 bus.  <b>Evaluator note:</b> If candidate asks for direction on how to proceed, direct them to make a recommendation and then carry out that recommendation.	SAT / UNSAT
7.	Determines need to perform AOP-17 immediate actions.	Determines need to perform AOP-17 immediate actions.  <b>Evaluator note:</b> Since the following actions are immediate actions, the candidate may perform them prior to referencing the procedure.	SAT / UNSAT
8.	(AOP-17 step D.1) IF 10300 Bus is energized, THEN cross tie 10400 Bus L Gear with 10300 Bus L Gear per Attachment 1 (sync switch required).	Proceeds to complete AOP-17 attachment 1 (posted attachment).	SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
9.	(AOP-17 att.1 step 1) Verify closed L13 L23 L33 L43 4KV FDR BKR 10340.	Observes L13 L23 L33 L43 4KV FDR BKR 10340 green light off, red light on.	SAT / UNSAT
10.	(AOP-17 att.1 step 2) Cross tie L44 with L43 as follows: Place L44 600V FDR BKR 14402 in PULL TO LOCK.	Places L44 600V FDR BKR 14402 control switch in PULL TO LOCK.	<b>CRITICAL STEP</b> SAT / UNSAT
11.	(AOP-17 att.1 step 2.b) Close L43 L44 TIE BKR 14304.	Rotates L43 L44 TIE BKR 14304 control switch clockwise to CLOSE.  <b>Note:</b> The sync key must be used to accomplish this step.	<b>CRITICAL STEP</b> SAT / UNSAT
12.	(AOP-17 att.1 step 3) Cross tie L34 with L33 as follows: Place L34 600V FDR BKR 13402 in PULL TO LOCK.	Places L34 600V FDR BKR 13402 control switch in PULL TO LOCK.	<b>CRITICAL STEP</b> SAT / UNSAT
13.	(AOP-17 att.1 step 3.b) Close L33 L34 TIE BKR 13404.	Rotates L33 L34 TIE BKR 13404 control switch clockwise to CLOSE.  <b>Note:</b> The sync key must be used to accomplish this step.	<b>CRITICAL STEP</b> SAT / UNSAT
14.	(AOP-17 att.1 step 4) Cross tie L24 with L23 as follows: Place L24 600V FDR BKR 12402 in PULL TO LOCK.	Places L24 600V FDR BKR 12402 control switch in PULL TO LOCK	<b>CRITICAL STEP</b> SAT / UNSAT



	STEP	STANDARD	EVALUATION / COMMENT
15.	(AOP-17 att.1 step 4.b) Close L23 L24 TIE BKR 12404.	Rotates L23 L24 TIE BKR 12404 control switch clockwise to CLOSE.  <b>Note:</b> The sync key must be used to accomplish this step.	<b>CRITICAL STEP</b> SAT / UNSAT
16.	(AOP-17 att.1 step 5) Cross tie L14 with L13 as follows: Place RBC PMP B 15P-2B control switch in PULL TO LOCK.	Places RBC PMP B 15P-2B control switch in PULL TO LOCK.	<b>CRITICAL STEP</b> SAT / UNSAT
17.	(AOP-17 att.1 step 5.b) Place L14 600V FDR BKR 11402 in PULL TO LOCK.	Places L14 600V FDR BKR 11402 control switch in PULL TO LOCK.	<b>CRITICAL STEP</b> SAT / UNSAT
18.	(AOP-17 att.1 step 5.d) Close L13 L14 TIE BKR 11304.	Rotates L13 L14 TIE BKR 11304 control switch clockwise to CLOSE.  <b>Note:</b> The sync key must be used to accomplish this step.	<b>CRITICAL STEP</b> SAT / UNSAT
19.	(AOP-17 att.1 step 6) Ensure closed CIRC WTR PMP DISCH VLV 36MOV-100B.	Observes green light on, red light off for CIRC WTR PMP DISCH VLV 36MOV-100B.	SAT / UNSAT
<b>EVALUATOR:</b> Terminate the task at this point.			

**Task Standard:** L34 restored to service on Bus 10400 per OP-46A. Then, after loss of Bus 10400, 10400 Bus L Gear cross-tied with 10300 Bus L Gear per AOP-17.

# **HANDOUT**

- **The plant is operating at power.**
- **L34 is currently being supplied by the 10300 bus.**

**Restore L34 to the normal power source per OP-46A section G.12.**

**The procedure is in progress up to step G.12.3.d.**

**James A. Fitzpatrick**  
**JOB PERFORMANCE MEASURE**

<u>S/RO</u>	<u>18-1 NRC E</u>	TASK TITLE:	Reset Group 2 Isolation, Restore RWCU, RWCU Steam Leak
APPL. TO	JPM NUMBER		

REV: \_\_\_\_\_ DATE: \_\_\_\_\_ NRC K/A SYSTEM NUMBER: 223002 A4.03 (3.6/3.5)

ESTIMATED COMPLETION TIME: 15 Minutes

SUBMITTED: \_\_\_\_\_ OPERATIONS REVIEW: \_\_\_\_\_

APPROVED: \_\_\_\_\_

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CANDIDATE NAME: \_\_\_\_\_

JPM Completion      ☐ Simulated      ☒ Performed

Location:              ☐ Plant              ☒ Simulator

DATE PERFORMED: \_\_\_\_\_ TIME TO COMPLETE: \_\_\_\_\_ Minutes

PERFORMANCE EVALUATION:      ☐ Satisfactory      ☐ Unsatisfactory

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COMMENTS: (MANDATORY FOR UNSATISFACTORY PERFORMANCE)

EVALUATOR: \_\_\_\_\_

SIGNATURE/PRINTED

**IV. SAFETY CONSIDERATIONS**

- A. None

**V. REFERENCES**

- A. AOP-15, Isolation Verification and Recovery
- B. OP-28, Reactor Water Clean-Up System

**VI. TOOLS AND EQUIPMENT**

- A. None

**VII. SET UP REQUIREMENTS**

- A. Reset to a power operating IC (IC-229).
- B. Insert a Reactor scram.
- C. Restore Reactor water level above 177".
- D. Trip both Recirculation pumps.
- E. Ensure simulator has the following programming:
  - Malfunction CU07 on trigger 1 to 50 over 15 seconds
  - Malfunctions CU10 and CU12 preset
  - Event 1 = zlo12as3(2)==1

**VIII. EVALUATOR NOTES**

- A. None

**IX. TASK CONDITIONS**

- A. Both Recirculation pumps have tripped.
- B. A Reactor scram has been inserted.
- C. Reactor water level lowered to 140 inches.
- D. Reactor water level has been recovered above 177 inches and is high.
- E. Other operators have completed isolation verifications per AOP-15 Attachments 1 & 2.

## VII. INITIATING CUE

Inform the candidate, "Reset the Group 2 isolation per AOP-15 section F.1. Then, restore RWCU per OP-28 section G.4. Establish gravity blowdown flow to the Main Condenser."

	STEP	STANDARD	EVALUATION / COMMENT
1.	Obtain a controlled copy of AOP-15.	Obtains a controlled copy of AOP-15. Refers to section F.1.	SAT / UNSAT
2.	(AOP-15 step F.1.1) WHEN it has been determined that an undesired release will not occur when isolation is reset, continue with procedure.	Continues with procedure.  <b>EVALUATOR CUE:</b> If the candidate requests assistance determining an undesired release will not occur, then inform the candidate "An undesired release will not occur when isolation is reset".	SAT / UNSAT
3.	(AOP-15 step F.1.2) Place control switch for DW FLOOR DRN 20AOV-83 in CLOSE.	Rotates control switch for DW FLOOR DRN 20AOV-83 to CLOSE.	SAT / UNSAT
4.	(AOP-15 step F.1.3) Place control switch for DW EQUIP DRN 20AOV-95 to CLOSE, spring return to AUTO.	Rotates control switch for DW EQUIP DRN 20AOV-95 to CLOSE, then releases.	SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
5.	(AOP-15 step F.1.4) Simultaneously rotate the following PCIS VLV RESET switches to both RESET positions, spring return to NORM: <ul style="list-style-type: none"> <li>• 16A-S32</li> <li>• 16A-S33</li> </ul>	Simultaneously rotates PCIS VLV RESET switches 16A-S32 and 16A-S33 to clockwise positions.	<b>CRITICAL STEP</b> SAT / UNSAT
		Simultaneously rotates PCIS VLV RESET switches 16A-S32 and 16A-S33 to counterclockwise positions.  <b>EVALUATOR NOTE:</b> These switches may be rotated in either direction first.	<b>CRITICAL STEP</b> SAT / UNSAT
6.	(AOP-15 step F.1.5) Restore RWCU System, if necessary, per Section G of OP-28.	Obtains a controlled copy of OP-28. Refers to section G.4 per initiating cue.	SAT / UNSAT
7.	(OP-28 step G.4.1) IF boron was injected per the EOPs, THEN Subsection G.4 cannot be performed.	Determines no boron has been injected.  <b>EVALUATOR CUE:</b> If asked about boron injection, report that no boron has been injected.	SAT / UNSAT
8.	(OP-28 step G.4.2) Ensure Subsection G.2 is complete.	Indicates need to ensure Subsection G.2 is complete.  <b>EVALUATOR CUE:</b> OP-28 section G.2 have been completed by another operator.	SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
9.	(OP-28 step G.4.3) Ensure one of the following RWCU pumps is isolated by performing one of the following:	<p>Determines RWCU pump A is the preferred pump to isolate.</p> <p><b>EVALUATOR NOTE:</b> A note in OP-28 identifies RWCU pump A as the preferred pump to isolate.</p> <p><b>EVALUATOR CUE:</b> If asked about which pump to isolate, direct the candidate to isolate RWCU pump A.</p>	SAT / UNSAT
10.	<p>(OP-28 step G.4.3.a) IF RWCU Pump A will be the isolated pump, THEN ensure closed the following valves:</p> <ul style="list-style-type: none"> <li>• 12RWC-19A (RWCU pump A suct inner isol valve)</li> <li>• 12RWC-73A (RWCU pump A suct outer isol valve)</li> <li>• 12RWC-29A (RWCU pump A disch isol valve)</li> <li>• 12RWC-87A (outlet block valve 12FE-20A)</li> <li>• 12RWC-38A (RWCU pump A disch check valve RWC-28A bypass valve)</li> </ul>	<p>Directs operator to close valves to isolate RWCU pump A (may reference OP-28 step G.4.3.a).</p> <p><b>EVALUATOR CUE:</b> OP-28 step G.4.3.a has been completed to isolate RWCU pump A.</p>	SAT / UNSAT
11.	(OP-28 step G.4.4) Reset isolation per AOP-15, if necessary.	Determines isolation has been reset per AOP-15.	SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
12.	(OP-28 step G.4.5) Ensure closed 12RWC-63 (RWCU return line manual isol valve).	<p>Directs operator to ensure closed 12RWC-63 (may reference OP-28 step G.4.5).</p> <p><b>EVALUATOR CUE:</b> 12RWC-63 is closed.</p>	SAT / UNSAT
13.	(OP-28 step G.4.6) IF 12MOV-15 is closed, AND the reactor is in Mode 5, THEN perform the following:	Determines the Reactor is NOT in Mode 5 and skips step.	SAT / UNSAT
14.	(OP-28 step G.4.7) IF 12MOV-15 is closed, AND the reactor is not in Mode 5, THEN perform Subsection G.35 for opening 12MOV-15 and 12MOV-18.	Transitions to section G.35.	SAT / UNSAT



	STEP	STANDARD	EVALUATION / COMMENT
15.	(OP-28 step G.35.1) Open the following valves: <ul style="list-style-type: none"> <li>• 12RWC-16 (RWCU pumps suct header 12MOV-18 inner LLRT connection isol valve)</li> <li>• 12RWC-17 (RWCU pumps suct header 12MOV-18 outer LLRT connection isol valve)</li> <li>• 12RWC-718 (12MOV-18 manual bypass isolation valve)</li> <li>• 12RWC-706 (RWCU MOV-18 LLRT conn valve)</li> <li>• 12RWC-707 (RWCU MOV-18 LLRT conn valve)</li> <li>• 12RWC-719 (12MOV-18 manual bypass isolation valve)</li> </ul>	Directs operator to open valves (may reference OP-28 step G.35.1).  <b>EVALUATOR CUE:</b> OP-28 step G.35.1 has been completed.	SAT / UNSAT
16.	(OP-28 step G.35.2) Slowly open 12RWC-120 (12MOV-18 bypass valve).	Directs operator to slowly open 12RWC-120 (may reference OP-28 step G.35.2).  <b>EVALUATOR CUE:</b> 12RWC-120 is open.	SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
17.	(OP-28 step G.35.3) WHEN pressure on 12PI-116 (12MOV-18 manual bypass pressure indicator) is equal to pressure on 12PI-115 (12MOV-18 manual bypass pressure indicator), close 12RWC-120.	<p>Directs operator to close 12RWC-120 when pressure on 12PI-116 is equal to pressure on 12PI-115 (may reference OP-28 step G.35.3).</p> <p><b>EVALUATOR CUE:</b> If asked, pressure on 12PI-116 is equal to pressure on 12PI-115.</p> <p><b>EVALUATOR CUE:</b> When directed, 12RWC-120 is closed.</p>	SAT / UNSAT
18.	(OP-28 step G.35.4) Throttle open CLN UP SUCT 12MOV-18 for 1 second each minute UNTIL pressure is stable on 12PI-115 AND 12PI-116.	<p>Throttles open CLN UP SUCT 12MOV-18 for 1 second by rotating control switch clockwise to OPEN.</p> <p><b>EVALUATOR CUE:</b> Time compression is in effect, pressure is stable on 12PI-115 AND 12PI-116.</p>	SAT / UNSAT
19.	(OP-28 step G.35.5) Open CLN UP SUCT 12MOV-18.	Opens 12MOV-18 by rotating control switch clockwise to OPEN.	<b>CRITICAL STEP</b> SAT / UNSAT
20.	(OP-28 step G.35.6) WHEN pressure on 12PI-115 is 10 psig GREATER THAN RPV pressure, throttle open 12MOV-15 for 1 second each minute UNTIL pressure is stable on 12PI-115.	<p><b>EVALUATOR CUE:</b> If asked, pressure on 12PI-115 is 10 psig GREATER THAN RPV pressure.</p> <p>Throttles open 12MOV-15 for 1 second by rotating control switch clockwise to OPEN.</p> <p><b>EVALUATOR CUE:</b> Time compression is in effect, pressure is stable on 12PI-115.</p>	SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
21.	(OP-28 step G.35.7) Open 12MOV-15.	Opens 12MOV-15 by rotating control switch clockwise to OPEN.	<b>CRITICAL STEP</b> SAT / UNSAT
22.	(OP-28 step G.35.8) Close the following valves: <ul style="list-style-type: none"> <li>• 12RWC-718</li> <li>• 12RWC-719</li> </ul>	Directs operator to close 12RWC-718 and 12RWC-719 (may reference OP-28 step G.35.8).  <b>EVALUATOR CUE:</b> 12RWC-718 and 12RWC-719 are closed.	SAT / UNSAT
23.	(OP-28 step G.35.9) Close and lock 12RWC-16.	Directs operator to close and lock 12RWC-16 (may reference OP-28 step G.35.9).  <b>EVALUATOR CUE:</b> 12RWC-16 is closed and locked.	SAT / UNSAT
24.	(OP-28 step G.35.10) Close and lock 12RWC-17.	Directs operator to close and lock 12RWC-17 (may reference OP-28 step G.35.10).  <b>EVALUATOR CUE:</b> 12RWC-17 is closed and locked.	SAT / UNSAT
25.	(OP-28 step G.35.11) Close 12RWC-706.	Directs operator to close 12RWC-706 (may reference OP-28 step G.35.11).  <b>EVALUATOR CUE:</b> 12RWC-706 is closed.	SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
26.	(OP-28 step G.35.12) Close 12RWC-707.	<p>Directs operator to close 12RWC-707 (may reference OP-28 step G.35.12).</p> <p><b>EVALUATOR CUE:</b> 12RWC-707 is closed.</p>	SAT / UNSAT
27.	<p>(OP-28 step G.35.13) Independently verify the following AND record independent verification in the narrative logs:</p> <ul style="list-style-type: none"> <li>• 12RWC-16 closed and locked</li> <li>• 12RWC-17 closed and locked</li> <li>• 12RWC-706 closed</li> <li>• 12RWC-707 closed</li> </ul>	<p>Directs operator to independently verify valve positions (may reference OP-28 step G.35.13).</p> <p><b>EVALUATOR CUE:</b> OP-28 step G.35.13 is complete.</p> <p><b>EVALUATOR CUE:</b> This is the end of OP-28 section G.35. The candidate will now transition back to OP-28 step G.4.8.</p>	SAT / UNSAT
28.	<p>(OP-28 step G.4.8) IF plant conditions permit as determined by the SM, THEN ensure seal purge flow rate to the unisolated RWCU pump as follows:</p> <p>IF seal purge flow is for 12P-1B only, THEN throttle 12RWC-88B as necessary (bypass regulating valve 12P-1B) to establish a flow rate BETWEEN 1.8 and 2.2 gpm as indicated on 12FI-20 (RWCU pumps mini purge flow indic).</p>	<p>Directs operator to establish seal purge flow for RWCU pump A (may reference OP-28 step G.4.8).</p> <p><b>EVALUATOR CUE:</b> If asked, SM has determined plant conditions permit establishing seal purge flow.</p> <p><b>EVALUATOR CUE:</b> RWCU pump seal purge is 2 gpm.</p>	SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
29.	(OP-28 step G.4.9) Ensure ST-26J, Heatup and Cooldown Temperature Checks, is in progress prior to establishing blowdown flow.	Acknowledges cue.  <b>EVALUATOR CUE:</b> Another operator is performing ST-26J.	SAT / UNSAT
30.	(OP-28 step G.4.10) Slowly establish a gravity blowdown flow rate of LESS THAN OR EQUAL TO 30 gpm per Subsection G.5.	Proceeds to OP-28 section G.5.	SAT / UNSAT
31.	(OP-28 step G.5.1) Direct RP to ensure posting requirements are met to support the blowdown operation.	Directs RP to ensure posting requirements are met to support the blowdown operation.  <b>EVALUATOR CUE:</b> RP reports that posting requirements are met.	SAT / UNSAT
32.	(OP-28 step G.5.2) IF reactor coolant temperature is LESS THAN 212°F, THEN ensure RPV is vented to prevent drawing a vacuum inside RPV.	Determines Reactor coolant temperature is greater than 212°F.	SAT / UNSAT
33.	(OP-28 step G.5.3) At the discretion of the Shift Manager, contact the Reactor Analyst prior to commencing blowdown to turn off core thermal monitoring.	Acknowledges cue.  <b>EVALUATOR CUE:</b> The Shift Manager directs continuing with the procedure prior to contacting the Reactor Analyst.	SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
34.	(OP-28 step G.5.4) IF RPV pressure is GREATER THAN 50 psig, THEN ensure closed BLOWDOWN ORIFICE BYP 12MOV-53.	Observes 12MOV-53 green light on, red light off.	SAT / UNSAT
35.	(OP-28 step G.5.5) IF RPV pressure is LESS THAN 50 psig, THEN open BLOWDOWN ORIFICE BYP 12MOV-53.	Determines RPV pressure is greater than 50 psig.	SAT / UNSAT
36.	(OP-28 step G.5.6) IF blowdown will be routed to Waste Collector Tank, THEN perform the following:	Determines blowdown will not be routed to Waste Collector Tank per initiating cue.	SAT / UNSAT
37	(OP-28 step G.5.7) IF blowdown will be routed to Main Condenser, THEN perform the following:  Ensure closed BLOWDOWN TO RADW 12MOV-57.	Observes 12MOV-57 green light on, red light off.	SAT / UNSAT
38.	(OP-28 step G.5.7.b) Open BLOWDOWN TO MAIN CNDSR 12MOV-56.	Opens 12MOV-56 by rotating control switch clockwise to OPEN.	<b>CRITICAL STEP</b> SAT / UNSAT

**Note:** The alternate path begins when 12MOV-56 is opened. This inserts a steam leak into the Reactor Building. JPM steps 39-41 are provided below for completeness, but may not be performed once the candidate recognizes the steam leak.

	STEP	STANDARD	EVALUATION / COMMENT
39.	<p>(OP-28 step G.5.8) Establish blowdown flow as follows:</p> <p>IF gravity blowdown will be used, THEN perform the following:</p> <p>Ensure closed 12RWC-63 (RWCU return line manual isol valve).</p>	<p>Directs operator to ensure closed 12RWC-63 or determines it is closed from earlier cue (may reference OP-28 step G.5.8.a.1).</p> <p><b>EVALUATOR CUE:</b> If asked, report that 12RWC-63 is closed.</p>	SAT / UNSAT / NA
40.	<p>(OP-28 step G.5.8.a.2) Throttle open FILTER DEMIN BYP 12MOV-74 until red open light comes on (dual position indication).</p>	Throttles open 12MOV-74 by rotating control switch clockwise to OPEN.	SAT / UNSAT / NA
41.	<p>(OP-28 step G.5.8.b) Adjust CLN UP BLOWDOWN FLOW CNTRL 12FCV-55 until desired blowdown flow rate is established.</p>	Throttles open 12FCV-55 by rotating potentiometer clockwise.	SAT / UNSAT / NA

	STEP	STANDARD	EVALUATION / COMMENT
42.	Recognize / report steam leak in Reactor Building.	<p>Recognizes / reports steam leak in Reactor Building.</p> <p><b>EVALUATOR CUE:</b> If asked how to proceed, tell the candidate to make a recommendation and then carry out that recommendation.</p>	SAT / UNSAT
43.	Isolate RWCU steam leak.	<p>Closes 12MOV-15 by rotating control switch counterclockwise to CLOSE.</p> <p><b>Note:</b> 12MOV-18 will likely also be closed, but it is not critical due to location of the steam leak.</p>	<p><b>CRITICAL STEP</b></p> <p>SAT / UNSAT</p>
<p><b><u>EVALUATOR:</u></b> Terminate the task at this point.</p>			

**Task Standard:** PCIS Group 2 isolation is reset. RWCU gravity blowdown flow to the Main Condenser is established at least up to the point of opening 12MOV-56. RWCU steam leak into Reactor Building isolated.



# **HANDOUT**

- **Both Recirculation pumps have tripped.**
- **A Reactor scram has been inserted.**
- **Reactor water level lowered to 140 inches.**
- **Reactor water level has been recovered above 177 inches and is high.**
- **Other operators have completed isolation verifications per AOP-15 Attachments 1 & 2.**

**Reset the Group 2 isolation per AOP-15 section F.1.**

**Then, restore RWCU per OP-28 section G.4.**

**Establish gravity blowdown flow to the Main Condenser.**

**James A. Fitzpatrick**  
**JOB PERFORMANCE MEASURE**

S/RO  
APPL. TO

18-1 NRC F  
JPM NUMBER

TASK TITLE: Restore CRD to Normal Alignment Following  
ATWS (Alt Path)

REV: \_\_\_\_\_ DATE: \_\_\_\_\_ NRC K/A SYSTEM NUMBER: 201001 A2.07 (3.2/3.1)

ESTIMATED COMPLETION TIME: 15 Minutes

SUBMITTED: \_\_\_\_\_ OPERATIONS REVIEW: \_\_\_\_\_

APPROVED: \_\_\_\_\_

~~~~~  
CANDIDATE NAME: \_\_\_\_\_

JPM Completion      ☐ Simulated      ☒ Performed

Location:      ☐ Plant      ☒ Simulator

DATE PERFORMED: \_\_\_\_\_ TIME TO COMPLETE: \_\_\_\_\_ Minutes

PERFORMANCE EVALUATION:      ☐ Satisfactory      ☐ Unsatisfactory

~~~~~  
COMMENTS: (MANDATORY FOR UNSATISFACTORY PERFORMANCE)

EVALUATOR: \_\_\_\_\_  
SIGNATURE/PRINTED

**IV. SAFETY CONSIDERATIONS**

- A. None

**I. REFERENCES**

- A. EP-3, Backup Control Rod Insertion
- B. OP-25, Control Rod Drive Hydraulic System

**II. TOOLS AND EQUIPMENT**

- A. None

**V. SET UP REQUIREMENTS**

- A. Reset to an appropriate IC (IC-230).
- B. Ensure the Reactor is scrammed, but RPS is reset.
- C. Ensure both CRD pumps are running.
- D. Ensure full open CRD Drive Water Pressure Control Valve 03MOV-20.
- E. Ensure full closed CRD Cooling Water Pressure Control Valve 03MOV-22.
- F. Ensure CRD Flow Control tapeset is run to maximum.
- G. Ensure override RD ZAI3FC301(2), CRD FLOW CONTROLLER - AUTO, is preset at a high value (>95).

**VI. EVALUATOR NOTES**

- A. None

**VII. TASK CONDITIONS**

- A. An ATWS has occurred.
- B. Control rods were inserted by raising CRD drive water and cooling water differential pressure.
- C. Another operator is assigned Reactor water level control.

## VII. INITIATING CUE

Inform the candidate, "Perform EP-3 Section 5.15, CRD Hydraulic System Restoration. The procedure has been completed up to step 5.15.4. Secure CRD pump B and leave CRD pump A running."

	STEP	STANDARD	EVALUATION / COMMENT
1.	Obtain a controlled copy of EP-3.	Obtains a controlled copy of EP-3.	SAT / UNSAT
2.	(EP-3 step 5.15.4) IF both CRD pumps are running, THEN shut down one of the CRD pumps.	Stops CRD pump B by rotating control switch counterclockwise.	<b>CRITICAL STEP</b> SAT / UNSAT
3.	(EP-3 step 5.15.5) Establish normal CRD Hydraulic System operating values per Section E of OP-25.	Obtains a controlled copy of OP-25 Section E.  <b>EVALUATOR NOTE:</b> JPM steps 4-9 may be performed in any order, but each has the potential to affect CRD parameters established in other steps. JPM steps 7 and 8 should only be graded SAT if the associated parameter is ensured in band at the completion of the JPM. This may require the candidate to re-adjust the associated controls.	SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
		<b>Alternate Path begins here:</b>	
4.	(OP-25 step E.1) Establish normal CRD system flow.	<p>Attempts to adjust tapeset on CRD FLOW CNTRL 03FIC-301 to lower CRD system flow.</p> <p><b>EVALUATOR NOTE:</b> The tapeset on 03FIC-301 is failed, such that the controller will not respond to the operator's adjustments while in AUTO. OP-AA-101-111 provides guidance for the operator to take manual control of a controller that has failed in automatic.</p>	<b>CRITICAL STEP</b> SAT / UNSAT
5.	Recognize / report CRD Flow Control Valve failure.	<p>Reports CRD Flow Control Valve failure.</p> <p><b>EVALUATOR NOTE:</b> If candidate asks how to proceed, direct them to make a recommendation and then carry out that recommendation.</p>	SAT / UNSAT
6.	Places CRD FLOW CNTRL 03FIC-301 in MAN.	Rotates CRD FLOW CNTRL 03FIC-301 selector clockwise to MAN.	<b>CRITICAL STEP</b> SAT / UNSAT
7.	Establish normal CRD system flow.	Adjusts knob on CRD FLOW CNTRL 03FIC-301 to establish between 59 and 61 gpm (on 03FI-310).	<b>CRITICAL STEP</b> SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
8.	(OP-25 step E.6) Establish normal CRD drive water differential pressure.	Throttles closed CRD Drive Water Motor Operated Pressure Control Valve 03MOV-20 by rotating control switch counterclockwise.  Adjusts 03MOV-20 as required to establish 260 to 270 psid drive water differential pressure (on 03DPI-303).	<b>CRITICAL STEP</b> SAT / UNSAT
9.	(OP-25 step E.7) Establish normal CRD cooling water valve alignment.	Fully opens CRD Cooling Water Motor Operated Pressure Control Valve 03MOV-22 by rotating control switch clockwise.  <b>EVALUATOR CUE:</b> If necessary, report CRD stabilizing valve flow is 6 gpm.	SAT / UNSAT
<b><u>EVALUATOR:</u></b> Terminate the task at this point.			

**Task Standard:** The CRD system is restored to normal parameter values. The CRD flow controller is operated in manual due to failure of the automatic setpoint tape to respond to changes in operator demand.

# **HANDOUT**

- **An ATWS has occurred.**
- **Control rods were inserted by raising CRD drive water and cooling water differential pressure.**
- **Another operator is assigned Reactor water level control.**

**Perform EP-3 Section 5.15, CRD Hydraulic System Restoration.**

**The procedure has been completed up to step 5.15.4.**

**Secure CRD pump B and leave CRD pump A running.**

**James A. Fitzpatrick**  
**JOB PERFORMANCE MEASURE**

<u>S/RO</u>	<u>18-1 NRC G</u>	TASK TITLE: Perform Main Steam Shutdown Lineup
APPL. TO	JPM NUMBER	
REV: _____	DATE: _____	NRC K/A SYSTEM NUMBER: <u>239001 A4.01 (4.2/4.0)</u>
ESTIMATED COMPLETION TIME: <u>15</u> Minutes		
SUBMITTED: _____		OPERATIONS REVIEW: _____
APPROVED: _____		
~~~~~		
CANDIDATE NAME: _____		
JPM Completion	<input type="checkbox"/> Simulated	<input checked="" type="checkbox"/> Performed
Location:	<input type="checkbox"/> Plant	<input checked="" type="checkbox"/> Simulator
DATE PERFORMED: _____		TIME TO COMPLETE: _____ Minutes
PERFORMANCE EVALUATION: <input type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory		
~~~~~		
COMMENTS: (MANDATORY FOR UNSATISFACTORY PERFORMANCE)		
EVALUATOR: _____		
SIGNATURE/PRINTED		



**IV. SAFETY CONSIDERATIONS**

- A. None

**V. REFERENCES**

- A. OP-1, Main Steam System

**VI. TOOLS AND EQUIPMENT**

- A. None.

**VII. SET UP REQUIREMENTS**

- A. Reset the simulator to IC-230 (shutdown in progress, Reactor pressure <5 psig).
- B. If there are cycle-specific tags on 29MOV-74 and 29MOV-77, remove them.
- C. Have all MSIVs closed except for 29AOV-80A.

**VIII. EVALUATOR NOTES**

- A. None

**IX. TASK CONDITIONS**

- A. A shutdown is in progress.
- B. The plant is expected to remain offline for 3 days.
- C. LLRT is NOT being performed during the shutdown.
- D. It is desired to slow-close inboard MSIVs.
- E. All MSIVs have been closed with the exception of 29AOV-80A.

## VII. INITIATING CUE

Inform the candidate, "Complete the Main Steam Shutdown Lineup per OP-1 Section F. The procedure is complete up to steps F.1.3 and G.13.2."

	STEP	STANDARD	EVALUATION / COMMENT
1.	Obtain a controlled copy of OP-1.	Obtains a controlled copy of OP-1.	SAT / UNSAT
2.	(OP-1 step G.13.2) IF Slow Closing inboard isolation valve 29AOV-80A(B)(C)(D), THEN perform the following:  Verify proper plant conditions for valve(s) to be closed.	Determines 29AOV-80A needs to be closed.  Determines plant conditions support closing 29AOV-80A.	SAT / UNSAT
3.	(OP-1 step G.13.2.b) Depress and hold MSIV SLOW CLOSE 29AOV-80A(B)(C)(D) pushbutton.	Depresses and holds MSIV SLOW CLOSE 29AOV-80A pushbutton.	<b>CRITICAL STEP</b> SAT / UNSAT
4.	(OP-1 step G.13.2.c) WHEN 29AOV-80A(B)(C)(D) indicates closed, place MSIV 29AOV-80A(B)(C)(D) in CLOSE.	Observes 29AOV-80A green light on, red light off.  Places MSIV 29AOV-80A control switch in CLOSE.	<b>CRITICAL STEP</b> SAT / UNSAT
5.	(OP-1 step G.13.2.d) Release MSIV SLOW CLOSE 29AOV-80A(B)(C)(D) pushbutton.	Releases MSIV SLOW CLOSE 29AOV-80A pushbutton.	SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
6.	(OP-1 step F.2) Open the following valves: <ul style="list-style-type: none"> <li>MAIN STM DRN VLV 29MOV-101A</li> </ul>	Opens MAIN STM DRN VLV 29MOV-101A by depressing OPEN pushbutton until green light off, red light on.	<b>CRITICAL STEP</b> SAT / UNSAT
7.	<ul style="list-style-type: none"> <li>MAIN STM DRN VLV 29MOV-101B</li> </ul>	Opens MAIN STM DRN VLV 29MOV-101B by depressing OPEN pushbutton until green light off, red light on.	<b>CRITICAL STEP</b> SAT / UNSAT
8.	<ul style="list-style-type: none"> <li>MAIN STM DRN VLV 29MOV-101C</li> </ul>	Opens MAIN STM DRN VLV 29MOV-101C by depressing OPEN pushbutton until green light off, red light on.	<b>CRITICAL STEP</b> SAT / UNSAT
9.	<ul style="list-style-type: none"> <li>MAIN STM DRN VLV 29MOV-101D</li> </ul>	Opens MAIN STM DRN VLV 29MOV-101D by depressing OPEN pushbutton until green light off, red light on.	<b>CRITICAL STEP</b> SAT / UNSAT
10.	<ul style="list-style-type: none"> <li>RX VENT 02AOV-17</li> </ul>	Opens RX VENT 02AOV-17 by rotating control switch clockwise to OPEN.	<b>CRITICAL STEP</b> SAT / UNSAT
11.	<ul style="list-style-type: none"> <li>RX VENT 02AOV-18</li> </ul>	Opens RX VENT 02AOV-18 by rotating control switch clockwise to OPEN.	<b>CRITICAL STEP</b> SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
12.	(OP-1 step F.3) IF the plant will be shutdown for GREATER THAN 1 week, THEN drain main steam line low points per Subsection G.10.	Determines plant will not be shutdown for greater than 1 week.	SAT / UNSAT
<b><u>EVALUATOR:</u></b> Terminate the task at this point.			

**Task Standard:** Main Steam shutdown lineup complete per OP-1 section F.

# **HANDOUT**

- **A shutdown is in progress.**
- **The plant is expected to remain offline for 3 days.**
- **LLRT is NOT being performed during the shutdown.**
- **It is desired to slow-close inboard MSIVs.**
- **All MSIVs have been closed with the exception of 29AOV-80A.**

**Complete the Main Steam Shutdown Lineup per OP-1 Section F.**

**The procedure is complete up to steps F.1.3 and G.13.2.**

**James A. Fitzpatrick**  
**JOB PERFORMANCE MEASURE**

<u>S/RO</u>	<u>18-1 NRC H</u>	TASK TITLE: Bypass LPRM
APPL. TO	JPM NUMBER	

REV: \_\_\_\_\_ DATE: \_\_\_\_\_ NRC K/A SYSTEM NUMBER: 215005 A4.06 (3.6/3.8)

ESTIMATED COMPLETION TIME: 15 Minutes

SUBMITTED: \_\_\_\_\_ OPERATIONS REVIEW: \_\_\_\_\_

APPROVED: \_\_\_\_\_

~~~~~

CANDIDATE NAME: \_\_\_\_\_

JPM Completion      ☐ Simulated      ☒ Performed

Location:            ☐ Plant            ☒ Simulator

DATE PERFORMED: \_\_\_\_\_ TIME TO COMPLETE: \_\_\_\_\_ Minutes

PERFORMANCE EVALUATION:      ☐ Satisfactory      ☐ Unsatisfactory

~~~~~

COMMENTS: (MANDATORY FOR UNSATISFACTORY PERFORMANCE)

EVALUATOR: \_\_\_\_\_

SIGNATURE/PRINTED

**IV. SAFETY CONSIDERATIONS**

- A. None

**V. REFERENCES**

- A. OP-16, Neutron Monitoring

**VI. TOOLS AND EQUIPMENT**

- A. None

**VII. SET UP REQUIREMENTS**

- A. Reset to a power operating IC (IC-228).
- B. Ensure no APRMs or LPRMs are bypassed.
- C. Ensure alarm typer is up and running.
- D. Ensure all applicable sections of OP-16 are provided/available – E.11, E.16, and E.17.
- E. Ensure the following simulator programming:
  - Malfunction NM11:4C0421, LPRM (4C-04-21) Failure, 0% (Preset)

**VIII. EVALUATOR NOTES**

- A. None

**IX. TASK CONDITIONS**

- A. LPRM 4C-04-21 has failed downscale.
- B. LPRM 4C-04-21 is assigned to APRM A.

## VII. INITIATING CUE

Inform the candidate, "Bypass LPRM 4C-04-21 per OP-16."

	STEP	STANDARD	EVALUATION / COMMENT
1.	Obtain a controlled copy of OP-16.	Obtains a controlled copy of OP-16.	SAT / UNSAT
2.	(OP-16 step E.11.1) Bypass associated APRM per Subsection E.16.	Moves to OP-16 Section E.16.  <b>Evaluator note:</b> If asked about desire to also bypass APRM B, state that it is not desired to also bypass APRM B.	SAT / UNSAT
3.	(OP-16 step E.16.1) Place APRM BYP switch in (*).	Places APRM BYP switch in A position.	<b>CRITICAL STEP</b> SAT / UNSAT
4.	(OP-16 step E.16.2) Verify APRM (*) is bypassed using one or both of the following: <ul style="list-style-type: none"><li>• APRM (*) BYPASS indicating light is on</li><li>• APRM (*) EPIC alarm indicates bypassed</li></ul>	Observes APRM A BYPASS light is on.  and/or  Observes APRM A EPIC alarm indicates bypassed.	SAT / UNSAT



	STEP	STANDARD	EVALUATION / COMMENT
5.	(OP-16 step E.16.3) Verify the other two APRM channels associated with the same APRM BYP switch are in service using one or both of the following: <ul style="list-style-type: none"> <li>• APRM BYPASS indicating lights are off for the other two APRMs</li> <li>• No EPIC bypassed alarms for the other two APRMs</li> </ul>	Observes APRM BYPASS indicating lights are off for APRMs C and E.  and/or  Observes no EPIC bypassed alarms for APRMS C and E.  <b>EVALUATOR NOTE:</b> The candidate will now move back to OP-16 Section E.11.	SAT / UNSAT
6.	(OP-16 step E.11.2) Verify BYP light for APRM (*) is on at top of panel 09-14.	Observe BYP light for APRM A is on at top of panel 09-14.	SAT / UNSAT
7.	(OP-16 step E.11.3) Select LPRM for display on APRM (*) meter as follows: <ul style="list-style-type: none"> <li>• Place left hand METER FUNCTION switch (S3) in numerical position for LPRM.</li> </ul>	Places APRM A S3 switch in position 4.	<b>CRITICAL STEP</b> SAT / UNSAT
8.	<ul style="list-style-type: none"> <li>• Place right hand METER FUNCTION switch (S2) in alphabetical position for LPRM.</li> </ul>	Places APRM A S2 switch in position C.	<b>CRITICAL STEP</b> SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
9.	(OP-16 step E.11.4) Place LPRM amplifier card switch in BY.	Places LPRM 4C-04-21 amplifier card switch in BY.	<b>CRITICAL STEP</b> SAT / UNSAT
10.	(OP-16 step E.11.5) Verify the following: <ul style="list-style-type: none"> <li>Downscale light is on for LPRM (middle white light at top of panel)</li> </ul>	Observes LPRM 4C-04-21 middle white light is lit.	SAT / UNSAT
11.	<ul style="list-style-type: none"> <li>Bypass light is on for LPRM (left hand white light at top of panel)</li> </ul>	Observes LPRM 4C-04-21 left hand white light is lit.	SAT / UNSAT
12.	<ul style="list-style-type: none"> <li>LPRM BYPASSED light is on (white light on left hand side of meter)</li> </ul>	Observes LPRM BYPASSED light is lit for APRM A.	SAT / UNSAT
13.	<ul style="list-style-type: none"> <li>APRM (*) meter indicates zero</li> </ul>	Observes APRM A meter indicates 0.	SAT / UNSAT
14.	(OP-16 step E.11.6) Place right hand METER FUNCTION switch (S2) in AVERAGE.	Places APRM A S2 switch in AVERAGE.	<b>CRITICAL STEP</b> SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
15.	(OP-16 step E.11.7) Perform the following at the 09-5 panel: Ensure ROD SEL PWR switch is in ON.	Observes ROD SEL PWR switch is in ON.	SAT / UNSAT
16.	(OP-16 step E.11.7.b) Select a control rod near the bypassed LPRM by depressing rod select pushbutton on ROD SEL matrix.	Selects a control rod near LPRM 4C-04-21.  <b>Evaluator note:</b> Attachment 4 identifies the following rods as being near LPRM 4C-04-21 – 02-19, 02-23, 06-19, 06-23.	<b>CRITICAL STEP</b> SAT / UNSAT
17.	(OP-16 step E.11.7.c) Verify the following: <ul style="list-style-type: none"> <li>• Select pushbutton is brightly backlit</li> <li>• Control rod indicating light is on (light with coordinates on FULL CORE DISPLAY)</li> <li>• Meter at the level of the bypassed LPRM indicates downscale.</li> </ul>	Observes selected control rod pushbutton is brightly backlit.  Observes selected control rod indicating light is lit.  Observes C level LPRM meter indicates downscale.	SAT / UNSAT
18.	(OP-16 step E.11.7.d) Place ROD SEL PWR switch in OFF.	Rotates ROD SEL PWR switch counterclockwise to OFF.	<b>CRITICAL STEP</b> SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
19.	(OP-16 step E.11.7.e) Place ROD SEL PWR switch in ON.	Rotates ROD SEL PWR switch clockwise to ON.	<b>CRITICAL STEP</b> SAT / UNSAT
20.	(OP-16 step E.11.8) Identify core location of the "bypassed LPRM", and all its adjacent LPRMs at the same level.  IF these LPRMs are bypassed...	Determines no other LPRMs are bypassed.	SAT / UNSAT
21.	(OP-16 step E.11.9) Perform the following at LPRM amplifier card section of APRM (*): <ul style="list-style-type: none"><li>Count and note total number of operable LPRMs.</li></ul>	Determines all LPRMs assigned to APRM A except 4C-04-21 are operable.  <b>Evaluator note:</b> 16 of 17 are operable.	SAT / UNSAT
22.	(OP-16 step E.11.9.b) Count and note the number of operable LPRMs which are at the same detector level as the LPRM that was bypassed.	Determines all LPRMs assigned to APRM A except 4C-04-21 are operable.  <b>Evaluator note:</b> 16 of 17 are operable.	SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
23.	<p>(OP-16 step E.11.9.c) IF either of the following conditions exist:</p> <ul style="list-style-type: none"> <li>the total number of operable LPRMs EQUALS 12</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>the number of operable LPRMs which are at the same detector level as the bypassed LPRM EQUALS 2</li> </ul> <p>THEN perform the following...</p>	<p>Determines adequate LPRMs remain operable.</p> <p><b>Evaluator note:</b> &gt;12 are operable.</p> <p><b>Evaluator note:</b> All other LPRMs are operable.</p>	SAT / UNSAT
24.	<p>(OP-16 step E.11.9.d) IF either of the following conditions exist:</p> <ul style="list-style-type: none"> <li>the total number of operable LPRMs is LESS THAN 11</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>the number of operable LPRMs which are at the same detector level as the bypassed LPRM is LESS THAN 2,</li> </ul> <p>THEN perform the following...</p>	<p>Determines adequate LPRMs remain operable.</p> <p><b>Evaluator note:</b> &gt;12 are operable.</p> <p><b>Evaluator note:</b> All other LPRMs are operable.</p>	SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
25.	(OP-16 step E.11.9.e) IF the number of operable LPRMs is EQUAL TO 11, THEN perform the following...	Determines adequate LPRMs remain operable.	SAT / UNSAT
26.	(OP-16 step E.11.10) IF plant conditions will permit calibrating APRMs per ST-5D, THEN calibrate APRMs per ST-5D.	Indicates need to calibrate APRMs.  <b>EVALUATOR CUE:</b> Another operator has calibrated all APRMs.	SAT / UNSAT
27.	(OP-16 step E.11.11) Return APRM (*) to service per Subsection E.17.	Moves to OP-16 Section E.17.	SAT / UNSAT
28.	(OP-16 step E.17.1) Verify the following lights for APRM (*) are off at panel 09-14: <ul style="list-style-type: none"> <li>• INOP</li> <li>• UPSCL NEUT TRIP</li> <li>• UPSCL THERM TRIP</li> </ul>	Observes APRM A INOP, UPSCL NEUT TRIP, and UPSCL THERM TRIP lights are off.	SAT / UNSAT
29.	(OP-16 step E.17.2) Place APRM BYP switch for APRM (*) in center position.	Places APRM A BYP switch in center position.	<b>CRITICAL STEP</b> SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
30.	(OP-16 step E.17.3) Verify APRM (*) is returned to service using one or both of the following: <ul style="list-style-type: none"> <li>• APRM (*) BYPASS indicating light is off</li> <li>• No EPIC bypassed alarm for APRM (*)</li> </ul>	Observes APRM A BYPASS light is off.  and/or  Observes no EPIC bypassed alarm for APRM A.	SAT / UNSAT
31.	(OP-16 step E.17.4) Verify all three APRM channels associated with the same APRM BYP switch are in service using one or both of the following: <ul style="list-style-type: none"> <li>• APRM BYPASS indicating lights are off for the three APRMs</li> <li>• No EPIC bypassed alarms for the three APRMs</li> </ul>	Observes APRM A, C, and E BYPASS lights are off.  and/or  Observes no EPIC bypassed alarm for APRMs A, C, and E.	SAT / UNSAT
<b><u>EVALUATOR:</u></b> Terminate the task at this point.			

**Task Standard:** APRM A is bypassed, then LPRM 4C-04-21 is bypassed per OP-16, then APRM A is returned to service.

# **HANDOUT**

- **LPRM 4C-04-21 has failed downscale.**
- **LPRM 4C-04-21 is assigned to APRM A.**

**Bypass LPRM 4C-04-21 per OP-16.**



**James A. Fitzpatrick**  
**JOB PERFORMANCE MEASURE**

S/RO

18-1 NRC I

TASK TITLE: Restore H<sub>2</sub>O<sub>2</sub> Monitors Following Isolation  
(Alt Path)

APPL. TO

JPM NUMBER

REV: \_\_\_\_\_

DATE: \_\_\_\_\_

NRC K/A SYSTEM NUMBER: 223002 A2.09 3.6/3.7

ESTIMATED COMPLETION TIME: 10 Minutes

SUBMITTED: \_\_\_\_\_

OPERATIONS REVIEW: \_\_\_\_\_

APPROVED: \_\_\_\_\_

CANDIDATE NAME: \_\_\_\_\_

LOGIN ID:

JPM Completion ☒ Simulated ☐ Performed

Location: ☒ Plant ☐ Simulator

DATE PERFORMED: \_\_\_\_\_ TIME TO COMPLETE: \_\_\_\_\_ Minutes

PERFORMANCE EVALUATION: ☐ Satisfactory ☐ Unsatisfactory

COMMENTS: (MANDATORY FOR UNSATISFACTORY PERFORMANCE)

EVALUATOR: \_\_\_\_\_  
SIGNATURE/PRINTED

**IV. SAFETY CONSIDERATIONS**

- A. None

**I. REFERENCES**

- A. OP-37, Containment Atmosphere Dilution System.
- B. EP-2, Isolation/Interlock Overrides.

**II. TOOLS AND EQUIPMENT**

- A. None

**V. SET UP REQUIREMENTS**

- A. Obtain SM permission prior to performing this task.
- B. Obtain a controlled copy of EP-2 Isolation/Interlock Overrides.
- C. Obtain a controlled copy of OP-37, Reinitializing Hydrogen/Oxygen Monitor Panel.

**VI. EVALUATOR NOTES**

- A. None

**VI. TASK CONDITIONS**

- A. A Primary Containment isolation has occurred due to High Drywell Pressure (2.7 psig).
- B. The cause of the isolation has been determined.
- C. The Shift Manager directs restoration of H<sub>2</sub>/O<sub>2</sub> monitors.

## VII. INITIATING CUE

Inform the candidate, "Override the High Drywell Pressure Isolation per Section 5.25 of EP-2 and then reinitialize 27PCX-101A per section D.2 of OP-37."

	STEP	STANDARD	EVALUATION / COMMENT
1.	Obtain a controlled copy of EP-2, ISOLATION/INTERLOCK OVERRIDES.	Obtains a controlled copy of EP-2.  <b>EVALUATOR:</b> Provide working copy of EP-2.	SAT \ UNSAT
2.	(EP-2 Step 5.25.1) Place EMERG MANUAL OVERRIDE SYSTEM A keylock switch in OVER/RI at panel 27MAP.  (PA2-35 key)	At Panel 27MAP, places EMERG MANUAL OVERRIDE SYSTEM A switch in OVER/RI.  <b>EVALUATOR CUE:</b> Inform candidate keylock switch is in override.	<b>CRITICAL STEP</b> SAT \ UNSAT
3.	(EP-2 Step 5.25.1) Place EMER MANUAL OVERRIDE SYSTEM B keylock switch in OVER/RI at panel 27MAP.  (PA2-35 key)	At Panel 27MAP, places EMERG MANUAL OVERRIDE SYSTEM B switch in OVER/RI.  <b>EVALUATOR CUE:</b> Inform candidate keylock switch is in override.	<b>CRITICAL STEP</b> SAT \ UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
4.	(EP-2 Step 5.25.2) Reinitialize hydrogen/oxygen monitor panel per Section D of OP-37.	Exits EP-2 and enters OP-37.  <b>EVALUATOR:</b> Provide working copy of OP-37.	SAT \ UNSAT
5.	(OP-37 Step D.2.1) Ensure LOCAL POWER switch is in OFF.	Observes LOCAL power switch in OFF.	SAT \ UNSAT

**EVALUATOR:** Inform the Candidate all valves referenced in Section D.2.2 are found with their green light on, red light off.

	STEP	STANDARD	EVALUATION / COMMENT
6.	(OP-37 Step D.2.2) Ensure open one set of the following valve pairs: <ul style="list-style-type: none"> <li>SAMPLE GAS SUPP POOL SAMP VALVE 27SOV-119E1</li> <li>SAMPLE GAS SUPP POOL SAMP VALVE 27SOV-119E2</li> </ul>	<p><b>EVALUATOR NOTE \ CUE:</b> If Candidate asks which Sample Path to use: inform Candidate to use “<b>normal path</b>”.</p> <p>(The normal path is the Supp Pool 27SOV-119E1/E2)</p> <p>Attempts to open one of the following pairs of valve by placing control switches to OPEN:</p> <ul style="list-style-type: none"> <li>SAMPLE GAS SUPP POOL SAMP VALVE 27SOV-119E1</li> <li>SAMPLE GAS SUPP POOL SAMP VALVE 27SOV-119E2</li> </ul> <p><b>EVALUATOR CUE:</b> When the candidate moves the first control switch to open, state the red light is on, green light off.</p> <p style="text-align: center;"><b>Alternate Path begins here:</b></p> <p><b>EVALUATOR CUE:</b> When the <b>second valve</b> (of the pair) control switch is placed to open, state the <b>red light is off</b> and the <b>green light remains on</b>.</p> <p><b>EVALUATOR CUE:</b> If Candidate asks how to proceed, tell them to “reinitialize 27PCX-101A per section D.2 of OP-37”. If asked specifically which Sample Path to use, tell them to use “DW mid sample path”.</p>	<p><b>CRITICAL STEP</b> SAT \ UNSAT</p>
6a.	Note: Candidate may re-close first valve previously opened.	<b>EVALUATOR CUE:</b> If the first valve previously opened is taken to close, state the <b>green light is on, the red light is off</b> .	SAT \ UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
7.	<p>(OP-37 Step D.2.2) Ensure open one set of the following valve pairs:</p> <ul style="list-style-type: none"> <li>SAMPLE GAS DRYW LOW SAMP VALVE 27SOV-123E1</li> <li>SAMPLE GAS DRYW LOW SAMP VALVE 27SOV-123E2</li> </ul> <p>-OR-</p> <ul style="list-style-type: none"> <li>SAMPLE GAS DRYW MID SAMP VALVE 27SOV-120E1</li> <li>SAMPLE GAS DRYW MID SAMP VALVE 27SOV-120E2</li> </ul> <p>-OR-</p> <ul style="list-style-type: none"> <li>SAMPLE GAS DRYW UP SAMP VALVE 27SOV-122E1</li> <li>SAMPLE GAS DRYW UP SAMP VALVE 27SOV-122E2</li> </ul>	<p><b>EVALUATOR CUE:</b> If Candidate asks which Sample Path to use: inform Candidate to use <b>"DW mid sample path"</b>.</p> <p>Opens any one set of the following valves by placing control switches to OPEN:</p> <ul style="list-style-type: none"> <li>SAMPLE GAS DRYW LOW SAMP VALVE 27SOV-123E1</li> <li>SAMPLE GAS DRYW LOW SAMP VALVE 27SOV-123E2</li> </ul> <p>-OR-</p> <ul style="list-style-type: none"> <li>SAMPLE GAS DRYW MID SAMP VALVE 27SOV-120E1</li> <li>SAMPLE GAS DRYW MID SAMP VALVE 27SOV-120E2</li> </ul> <p>-OR-</p> <ul style="list-style-type: none"> <li>SAMPLE GAS DRYW UP SAMP VALVE 27SOV-122E1</li> <li>SAMPLE GAS DRYW UP SAMP VALVE 27SOV-122E2</li> </ul> <p><b>EVALUATOR CUE:</b> For each valve in the second pair, when the candidate indicates the control switch is moved to open, then inform the candidate that the <b>red light came on</b> the <b>green light is off</b>.</p>	<p><b>CRITICAL STEP</b> SAT \ UNSAT</p>

	STEP	STANDARD	EVALUATION / COMMENT
8.	(OP-37 Step D.2.3) Ensure open the following valves at MAP: <ul style="list-style-type: none"> <li>SAMPLE GAS RETURN SAMP VALVE 27SOV-124E1</li> <li>SAMPLE GAS RETURN SAMP VALVE 27SOV-124E2</li> </ul>	Places the control switch to the OPEN position for: <ul style="list-style-type: none"> <li>SAMPLE GAS RETURN SAMP VALVE 27SOV-124E1</li> <li>SAMPLE GAS RETURN SAMP VALVE 27SOV-124E2</li> </ul> <b>EVALUATOR CUE:</b> For each valve, when the candidate indicates the control switch is moved to open inform the candidate that the <b>red light is on</b> , the <b>green light is off</b> .	<b>CRITICAL STEP</b> SAT \ UNSAT
9.	(OP-37 Step D.2.4) Ensure PUMP switch is in RUN.	Places PUMP switch in RUN.  <b>EVALUATOR CUE:</b> Inform the candidate it is in RUN.	<b>CRITICAL STEP</b> SAT \ UNSAT
10.	(OP-37 Step D.2.5) Ensure POWER keylock switch is in ON.  (PA2-35 key)	Places POWER keylock switch in ON.  <b>EVALUATOR CUE:</b> Inform the candidate the keylock switch is in ON.	<b>CRITICAL STEP</b> SAT \ UNSAT
11.	(OP-37 Step D.2.6.a) Depress 6.	Depresses 6 on 27PCX-101A keypad.  <b>EVALUATOR CUE:</b> When indicates 6 would be depressed, then inform the candidate "6 has been depressed and 'ENTER ACCESS CODE' appears on CRT screen".	<b>CRITICAL STEP</b> SAT \ UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
12.	(OP-37 Step D.2.6.b) When "ENTER ACCESS CODE" appears on CRT screen, perform the following: 1) Depress 8. 2) Depress 2. 3) Depress ENTER.	Depresses 8, then 2, and then Enter key on 27PCX-101A keypad.  <b>EVALUATOR CUE:</b> When the candidate indicates 8, 2 and Enter keys would be depressed, then state the "monitor" display appears on CRT screen.	<b>CRITICAL STEP</b> SAT \ UNSAT
13.	(OP-37 Step D.2.6.c) WHEN monitor display appears on CRT screen, perform the following: 1) Depress 1. 2) Depress ESC.	Depresses 1 and then ESC key on 27PCX-101A keypad.  <b>EVALUATOR CUE:</b> When the candidate states they would depress 1 then ESC, inform the candidate that the 27PCX-101 graphic display is now visible.	<b>CRITICAL STEP</b> SAT \ UNSAT
14.	(OP-37 Step D.2.7) Verify the following on 27PCX-101A display: <ul style="list-style-type: none"> <li>SV-1 is open</li> <li>SV-6 is open</li> <li>Flow indication for P1 (red light on)</li> </ul>	Observes the following: <ul style="list-style-type: none"> <li>SV-1 open</li> <li>SV-6 open</li> <li>P1 running</li> </ul> <b>EVALUATOR CUE:</b> If asked, inform the candidate SV-1 and SV-6 indicate open and P1 red light is on.	SAT \ UNSAT

EVALUATOR: Terminate the task at this point.

**Task standard:** High Drywell Pressure Isolation is overridden per Section 5.25 of EP-2. 27PCX-101A re-initialized and aligned to Drywell per section D.2 of OP-37.



# HANDOUT

- **A Primary Containment isolation has occurred due to High Drywell Pressure (2.7 psig).**
- **The cause of the isolation has been determined.**
- **The Shift Manager directs restoration of H<sub>2</sub>/O<sub>2</sub> monitors.**

**Override the High Drywell Pressure Isolation per Section 5.25 of EP-2 and then reinitialize 27PCX-101A per section D.2 of OP-37.**

**James A. Fitzpatrick**  
**JOB PERFORMANCE MEASURE**

<u>S/RO</u>	<u>18-1 NRC J</u>	TASK TITLE:	Perform In-Plant Actions for Station Blackout (AOP-49 Attachment 3) (Time Critical)
APPL. TO	JPM NUMBER		
REV: _____	DATE: _____	NRC K/A SYSTEM NUMBER: <u>295003 AA1.04 (3.6/3.7)</u>	
ESTIMATED COMPLETION TIME: <u>30</u> Minutes			
SUBMITTED: _____		OPERATIONS REVIEW: _____	
APPROVED: _____			
~~~~~			
CANDIDATE NAME: _____			
JPM Completion	<input checked="" type="checkbox"/> Simulated	<input type="checkbox"/> Performed	
Location:	<input checked="" type="checkbox"/> Plant	<input type="checkbox"/> Simulator	
DATE PERFORMED: _____		TIME TO COMPLETE: _____ Minutes	
PERFORMANCE EVALUATION: <input type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory			
~~~~~			
COMMENTS: (MANDATORY FOR UNSATISFACTORY PERFORMANCE)			
EVALUATOR: _____			
SIGNATURE/PRINTED			

S/RO

14-1 NRC J

TASK TITLE: Perform In-Plant Actions for Station Blackout  
(AOP-49 Attachment 3) (Time Critical)

APPL. TO

JPM NUMBER

**SAFETY CONSIDERATIONS**

- A. Part of this task involves simulating the operation of circuit breakers. The proper electrical PPE should be made available to the Candidate.

**REFERENCES**

- A. AOP-49, Station Blackout

**TOOLS AND EQUIPMENT**

- A. Gloves

**SET UP REQUIREMENTS**

- A. Provide a working copy of AOP-49 Attachment 3 pages 4 of 8 (Battery Room Actions) and 8 of 8 (Turbine Building Actions).

**EVALUATOR NOTES**

- A. None

**TASK CONDITIONS**

- A. A station blackout is in progress.
- B. AOP-49, Station Blackout, Attachment 3 is in progress.

## VII. INITIATING CUE

Inform the candidate, "Perform the in-plant actions of AOP-49 Attachment 3 for the Battery Rooms and the Turbine Building. This is a time critical task. Your time starts now."

**Note:** This JPM is time critical. All steps must be completed within 30 minutes.

	STEP	STANDARD	EVALUATION / COMMENT
1.	Obtain a controlled copy of AOP-49, Station Blackout, Attachment 3.	Obtains AOP-49 Attachment 3 from the evaluator.  <b>EVALUATOR:</b> Provide candidate a current copy of AOP-49 Attachment 3 pages 4 of 8 (Battery Room Actions) and 8 of 8 (Turbine Building Actions).	SAT / UNSAT
<b>EVALUATOR NOTE:</b> AOP-49 Attachment 3 allows steps to be performed in any order or concurrently.			
<b>EVALUATOR NOTE:</b> The following steps are performed at 71BCB-2A in the A Battery Charger Room on Admin Building elevation 272.			
2.	(AOP-49 Att. 3 Page 4 Step 1) Place the following circuit breakers in OFF at 71BCB-2A BATTERY CONTROL BOARD A in A Battery Charger Room:  • FEED TO 71LPERDC2 REACTOR BUILDING EMERGENCY LIGHTING DISTRIBUTION PANEL	Simulates re-positioning FEED TO 71LPERDC2 REACTOR BUILDING EMERGENCY LIGHTING DISTRIBUTION PANEL to OFF.  <b>EVALUTOR CUE:</b> The indicated circuit breaker is in OFF.	<b>CRITICAL STEP</b> SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
3.	(AOP-49 Att. 3 Page 4 Step 1) <ul style="list-style-type: none"> <li>FEED TO 71LPEADC1 ADMIN BUILDING EMERGENCY LIGHTING DISTRIBUTION PANEL</li> </ul>	Simulates re-positioning FEED TO 71LPEADC1 ADMIN BUILDING EMERGENCY LIGHTING DISTRIBUTION PANEL to OFF.  <b>EVALUTOR CUE:</b> The indicated circuit breaker is in OFF.	<b>CRITICAL STEP</b> SAT / UNSAT
4.	(AOP-49 Att. 3 Page 4 Step 1) <ul style="list-style-type: none"> <li>FEED TO 71LPESWDC1 SCREENWELL EMERGENCY LIGHTING DISTRIBUTION PANEL</li> </ul>	Simulates re-positioning FEED TO 71LPESWDC1 SCREENWELL EMERGENCY LIGHTING DISTRIBUTION PANEL to OFF.  <b>EVALUTOR CUE:</b> The indicated circuit breaker is in OFF.	<b>CRITICAL STEP</b> SAT / UNSAT
5.	(AOP-49 Att. 3 Page 4 Step 1) <ul style="list-style-type: none"> <li>FEED TO 71LPE1 ADMIN BUILDING EMERGENCY LIGHTING DISTRIBUTION PANEL</li> </ul>	Simulates re-positioning FEED TO 71LPE1 ADMIN BUILDING EMERGENCY LIGHTING DISTRIBUTION PANEL to OFF.  <b>EVALUTOR CUE:</b> The indicated circuit breaker is in OFF.	<b>CRITICAL STEP</b> SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
<b>EVALUATOR NOTE:</b> The following steps are performed at 71BCB-2B in the B Battery Charger Room on Admin Building elevation 272.			
6.	(AOP-49 Att. 3 Page 4 Step 2) Place the following circuit breakers in OFF at 71BCB-2B BATTERY CONTROL BOARD B in B Battery Charger Room: <ul style="list-style-type: none"> <li>71LPEHB1 FEEDWATER HEATER BAY EMERGENCY LIGHTING DISTRIBUTION PANEL</li> </ul>	Simulates re-positioning 71LPEHB1 FEEDWATER HEATER BAY EMERGENCY LIGHTING DISTRIBUTION PANEL to OFF.  <b>EVALUTOR CUE:</b> The indicated circuit breaker is in OFF.	<b>CRITICAL STEP</b> SAT / UNSAT
7.	(AOP-49 Att. 3 Page 4 Step 2) <ul style="list-style-type: none"> <li>71LPERDC3 REACTOR BUILDING EMERGENCY LIGHTING DISTRIBUTION PANEL</li> </ul>	Simulates re-positioning 71LPERDC3 REACTOR BUILDING EMERGENCY LIGHTING DISTRIBUTION PANEL to OFF.  <b>EVALUTOR CUE:</b> The indicated circuit breaker is in OFF.	<b>CRITICAL STEP</b> SAT / UNSAT
8.	(AOP-49 Att. 3 Page 4 Step 2) <ul style="list-style-type: none"> <li>71LPERW1 &amp; 25 ASP-4 RADWASTE BUILDING EMERGENCY LIGHTING AUX SHUTDOWN PANEL</li> </ul>	Simulates re-positioning 71LPERW1 & 25 ASP-4 RADWASTE BUILDING EMERGENCY LIGHTING AUX SHUTDOWN PANEL to OFF.  <b>EVALUTOR CUE:</b> The indicated circuit breaker is in OFF.	<b>CRITICAL STEP</b> SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
<b>EVALUATOR NOTE:</b> The following steps are performed at panel 94HSC on Turbine Building elevation 252.			
9.	(AOP-49 Att. 3 Page 8 Step 1) Depressurize main generator casing and secure Emergency Seal Oil Pump 94P-13 as follows:  (AOP-49 Att. 3 Page 8 Step 1.a) Close the following valves: <ul style="list-style-type: none"> <li>89H2S-G-05 (main generator hydrogen 89RO-112 bypass valve)</li> </ul>	Simulates closing 89H2S-G-05 by rotating valve operator clockwise.  <b>EVALUTOR CUE:</b> 89H2S-G-05 has been rotated and has reached a stop.	<b>CRITICAL STEP</b> SAT / UNSAT
10.	(AOP-49 Att. 3 Page 8 Step 1.a) <ul style="list-style-type: none"> <li>89H2S-G-07 (main generator hydrogen 89RO-112 outlet isolation valve)</li> </ul>	Simulates closing 89H2S-G-07 by rotating valve operator clockwise.  <b>EVALUTOR CUE:</b> 89H2S-G-07 has been rotated and has reached a stop.	<b>CRITICAL STEP</b> SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
11.	(AOP-49 Att. 3 Page 8 Step 1.b) Open the following valves: <ul style="list-style-type: none"> <li>89H2S-G-02 (main generator casing gas vent isol valve)</li> </ul>	Simulates opening 89H2S-G-02 by rotating valve operator counterclockwise.  <b>EVALUTOR CUE:</b> 89H2S-G-02 has been rotated and has reached a stop.	<b>CRITICAL STEP</b> SAT / UNSAT
12.	(AOP-49 Att. 3 Page 8 Step 1.b) <ul style="list-style-type: none"> <li>89H2S-G-03 (main generator casing gas vent valve)</li> </ul>	Simulates opening 89H2S-G-03 by rotating valve operator counterclockwise.  <b>EVALUTOR CUE:</b> 89H2S-G-03 has been rotated and has reached a stop.  <b>EVALUTOR CUE:</b> Main generator casing pressure indicates 0 psig.	<b>CRITICAL STEP</b> SAT / UNSAT
13.	(AOP-49 Att. 3 Page 8 Step 1.c) WHEN main generator casing is depressurized, Request the Control Room place EMERG SEAL OIL PMP 94P-13 control switch in PULL TO LOCK.	Contacts Control Room to place EMERG SEAL OIL PMP 94P-13 control switch in PULL TO LOCK.  <b>EVALUTOR CUE:</b> Inform Candidate that the Control Room has placed 94P-13 control switch in PULL TO LOCK.	<b>CRITICAL STEP</b> SAT / UNSAT
<b>EVALUATOR:</b> Terminate the task at this point.			

**Task Standard:** Station Blackout load shedding actions for Main Generator depressurization, Emergency Seal Oil pump, and Battery Control Boards A and B are completed.



# **HANDOUT**

- **A station blackout is in progress.**
- **AOP-49, Station Blackout, Attachment 3 is in progress.**

**Perform the in-plant actions of AOP-49 Attachment 3 for the Battery Rooms and the Turbine Building.**

**This is a time critical task.**

**Your time starts now.**

**James A. Fitzpatrick**  
**JOB PERFORMANCE MEASURE**

<u>S/RO</u>	<u>18-1 NRC K</u>	TASK TITLE: <u>Swap CRD Flow Control Valves</u>
APPL. TO	JPM NUMBER	
REV: _____	DATE: _____	NRC K/A SYSTEM NUMBER: <u>201001 2.1.20 4.6/4.6</u>
ESTIMATED COMPLETION TIME: <u>15</u> Minutes		
SUBMITTED: _____		OPERATIONS REVIEW: _____
APPROVED: _____		
~~~~~		
CANDIDATE NAME: _____		
JPM Completion	<input checked="" type="checkbox"/> Simulated	<input type="checkbox"/> Performed
Location:	<input checked="" type="checkbox"/> Plant	<input type="checkbox"/> Simulator
DATE PERFORMED: _____		TIME TO COMPLETE: _____ Minutes
PERFORMANCE EVALUATION: <input type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory		
~~~~~		
COMMENTS: (MANDATORY FOR UNSATISFACTORY PERFORMANCE)		
EVALUATOR: _____		
SIGNATURE/PRINTED		

**. SAFETY CONSIDERATIONS**

A. None

**I. REFERENCES**

A. OP-25, Control Rod Drive Hydraulic System

**II. TOOLS AND EQUIPMENT**

A. None

**V. SET UP REQUIREMENTS**

A. JPM is written with flow control valve 03FCV-19A in-service.

**VI. EVALUATOR NOTES**

A. None

**VI. INITIAL CONDITIONS**

- The Control Rod Drive Hydraulic System is in operation.
- The "A" CRD Flow Control Valve (03FCV-19A) is currently in service.
- The standby CRD Flow Control Valve must be placed in-service in order to verify its ability to operate correctly in automatic.

## VII. INITIATING CUE

Inform the candidate, "Swap CRD Flow Control Valves per OP-25 (Control Rod Drive Hydraulic System), Section G.14 (Changing Inservice CRD Flow Control Valves)".

	STEP	STANDARD	EVALUATION / COMMENT
1.	Obtain a controlled copy of OP-25.	Applicant obtains a controlled copy of OP-25.  <b>EVALUATOR:</b> Provide a working copy of OP-25.	SAT / UNSAT
2.	Select the correct section to perform the task.	Selects Section G.14 of OP-25.  <b>EVALUATOR NOTE:</b> All actions are <u>simulated</u> performed on Rx Bldg 272' area west of the West HCU's.	SAT / UNSAT
3.	(G.14.1) Establish communication between Flow Control Hand Select Station and the Control Room.	The candidate goes to the Rx Building 272' level to the area West of the West HCU's. When the candidate states that he/she would establish communications between the Control Room and the master control station using either the West HCU area Gaitronics or nearby sound powered phone jack or cell phone. <b><u>Evaluator Cue:</u></b> Communications with the Control Room are ESTABLISHED.	SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
4.	<p>(G.14.2)</p> <p>Line up CRD FLOW CNTRL 03FIC-301 per the following steps:</p> <p>a. Ensure controller is in AUTO.</p> <p>b. Adjust controller setpoint to zero gpm.</p>	<p>a. Contacts the Control Room to ensure the controller is in AUTO.</p> <p><b><u>Evaluator Cue:</u></b> Controller is in AUTO.</p> <p>b. Requests the Control Room place the CRD flow controller setpoint to zero gpm</p> <p><b><u>Evaluator Cue:</u></b> The CRD Flow Controller setpoint is at zero gpm.</p>	SAT / UNSAT
5.	<p>(G.14.3.a)</p> <p>Perform the following for the flow control valve to be placed in service:</p> <p>a. Verify open inlet isolation valve:</p> <ul style="list-style-type: none"> <li>03CRD-68B (CRD water 03FCV-19B inlet isol valve)</li> </ul>	<p>Verifies 03CRD-68B is open by rotating handwheel in the clockwise (closed) direction then rotating handwheel in the counterclockwise (open) direction.</p> <p><b><u>Evaluator Cue:</u></b> Valve 03CRD-68B is open.</p>	SAT / UNSAT
6.	<p>(G.14.3.b)</p> <p>Slowly open outlet isolation valve: 03CRD-69B (CRD water 03FCV-19B outlet isol valve)</p>	<p>Opens 03CRD-69B by rotating handwheel full counterclockwise.</p> <p><b><u>Evaluator Cue:</u></b> 03CRD-69B is open.</p>	<p><b>CRITICAL STEP</b></p> <p>SAT / UNSAT</p>

	STEP	STANDARD	EVALUATION / COMMENT
7.	(G.14.4) Close outlet isolation valve for flow control valve to be removed from service. <ul style="list-style-type: none"> <li>• 03CRD-69A (CRD water 03CRD-69A outlet isolation valve).</li> </ul>	Closes 03CRD-69A by rotating handwheel full clockwise.  <u><b>Evaluator Cue:</b></u> 03CRD-69A is closed.	<b>CRITICAL STEP</b> SAT / UNSAT
8.	(G.14.5) Place AUTO-MAN select knob in AUTO for inservice flow control valve: <ul style="list-style-type: none"> <li>• AUTO-MAN select knob at 03HSS-245B</li> </ul>	Places AUTO-MAN knob to AUTO at 03HSS-245B.  <u><b>Evaluator Cue:</b></u> AUTO-MAN knob is in AUTO.	<b>CRITICAL STEP</b> SAT / UNSAT
9.	G.14.6 Ensure AUTO-MAN select knob is in MAN for standby flow control valve. <ul style="list-style-type: none"> <li>• AUTO-MAN select knob at 03HSS-245A</li> </ul>	Places AUTO-MAN knob to MAN at 03HSS-245A.  <u><b>Evaluator Cue:</b></u> AUTO-MAN knob is in MAN.	<b>CRITICAL STEP</b> SAT / UNSAT

	STEP	STANDARD	EVALUATION / COMMENT
10.	(G.14.7) Slowly raise setpoint on CRD FLOW CNTRL 03FIC-301 to establish 59 to 61 gpm on 03FI-310.	Requests Control Room slowly raises setpoint on 03FIC-301 to 59-61 gpm.  <b><u>Evaluator Cue:</u></b> 03FIC-301 is set to 60 gpm; flow is 60 gpm and steady	SAT / UNSAT
11.	(G.14.8) Verify normal operating values on the following indicators at panel 09-5: <ul style="list-style-type: none"> <li>• CHG WTR PRESS 03PI-302: BETWEEN 1390 and 1580 psig, not to exceed 1670 psig</li> <li>• DRV WTR DIFF PRESS 03DPI-303: 260 to 270 psid</li> <li>• CLG WTR DIFF PRESS 03DPI-304: approximately 10 to 26 psid</li> <li>• DRV WTR FLOW 03FI-305: zero when no CRD is being driven</li> <li>• FLOW 03FI-306: 59 to 61 gpm</li> </ul>	Requests Control Room verifies parameters.  <b><u>Evaluator Cue:</u></b> All parameters on the 09-5 panel are satisfactory.	SAT / UNSAT
<b><u>EVALUATOR:</u></b> Terminate the task at this point.			

**Task Standard:** The B CRD Flow Control valve is in service, in automatic at 60 gpm and the A CRD FCV is in manual and valved out of service.

# HANDOUT

## **Initial Conditions:**

- The Control Rod Drive Hydraulic System is in operation.
- The “A” CRD Flow Control Valve (03FCV-19A) is currently in service.
- The standby CRD Flow Control Valve must be placed in-service in order to verify its ability to operate correctly in automatic.

## **Initiating Cue:**

Swap CRD Flow Control Valves per OP-25 (Control Rod Drive Hydraulic System), Section G.14 (Changing Inservice CRD Flow Control Valves).



# JAMES A. FITZPATRICK NUCLEAR POWER PLANT

## LOI 18-1 NRC EXAMINATION SCENARIO 1

**TITLE:** LOI 18-1 NRC EXAMINATION SCENARIO 1

**SCENARIO NUMBER:** NRC 1

**PATH:** STAND ALONE

**Validation:** \_\_\_\_\_ **Training:** \_\_\_\_\_ **Operations:** \_\_\_\_\_

	CANDIDATES
CRS	
ATC	
BOP	

A. **TITLE:** LOI 18-1 NRC EXAMINATION SCENARIO 1

B. **SCENARIO SETUP:**

1. IC-221

2. Special Instructions:

- a. The plant is operating at approximately 93% power.
- b. RBCLC pump A is out of service for maintenance.
- c. SRV A is inoperable.
- d. Line 3 is out of service and ready to be restored.

3. Preset Conditions:

<SCHEDULE>

<ITEM row = "1">

<TIME>0</TIME>

<ACTION>Insert malfunction ED44 on event 1</ACTION>

<DESCRIPTION>LOSS OF 115KV SYSTEM</DESCRIPTION>

</ITEM>

<ITEM row = "2">

<TIME>0</TIME>

<ACTION>Insert malfunction AD06:C on event 2</ACTION>

<DESCRIPTION>RX PRESS RELIEF VALVE (2E-RV-71C) INADVERTENTLY  
OPENS</DESCRIPTION>

</ITEM>

<ITEM row = "3">

<TIME>0</TIME>

<ACTION>Insert remote AD07:C to LOCAL on event 25</ACTION>

<DESCRIPTION>&apos;C&apos; SRV ISOLATION SWITCH AT REMOTE PANEL  
25ASP-5</DESCRIPTION>

</ITEM>

<ITEM row = "4">

<TIME>0</TIME>

<ACTION>Insert remote AD02:C to OUT on event 26</ACTION>

<DESCRIPTION>&apos;C&apos; SRV FUSE PULL OUT</DESCRIPTION>

</ITEM>

<ITEM row = "5">

<TIME>0</TIME>

<ACTION>Insert malfunction FW05:A on event 3</ACTION>

<DESCRIPTION>RX FEEDWTR PMP A HIGH VIBRATION</DESCRIPTION>  
</ITEM>

<ITEM row = "6">  
    <TIME>0</TIME>  
    <ACTION>Insert malfunction FW01:A on event 16</ACTION>  
    <DESCRIPTION>RX FEEDWTR PMP A TRIP</DESCRIPTION>  
</ITEM>

<ITEM row = "7">  
    <TIME>0</TIME>  
    <ACTION>Insert malfunction MS02:A to 2.50000 in 90 on event 4</ACTION>  
    <DESCRIPTION>(MSL A) STM LEAKAGE INSIDE PRIM  
CONTNMT</DESCRIPTION>  
</ITEM>

<ITEM row = "8">  
    <TIME>0</TIME>  
    <ACTION>Insert malfunction RR15:A after 420 to 32.00000 in 600 on event  
5</ACTION>  
    <DESCRIPTION>COOLANT (A) LEAKAGE INSIDE PRIMARY  
CONTAINMENT</DESCRIPTION>  
</ITEM>

<ITEM row = "9">  
    <TIME>0</TIME>  
    <ACTION>Insert malfunction HP02 after 600 on event 5</ACTION>  
    <DESCRIPTION>HPCI TURBINE TRIP</DESCRIPTION>  
</ITEM>

<ITEM row = "10">  
    <TIME>0</TIME>  
    <ACTION>Insert remote RH55 to OUT on event 17</ACTION>  
    <DESCRIPTION>10-MOV-38A BREAKER RACKOUT</DESCRIPTION>  
</ITEM>

<ITEM row = "11">  
    <TIME>0</TIME>  
    <ACTION>Insert remote RH56 to OUT on event 18</ACTION>  
    <DESCRIPTION>10-MOV-38B BREAKER RACKOUT</DESCRIPTION>  
</ITEM>

<ITEM row = "12">  
    <TIME>0</TIME>  
    <ACTION>Event Events/18-1 NRC/Scenario 1.evt</ACTION>  
    <DESCRIPTION></DESCRIPTION>

</ITEM>

<ITEM row = "13">

<TIME>0</TIME>

<ACTION>Insert malfunction SW09:A</ACTION>

<DESCRIPTION>RBCLC PUMP A TRIP</DESCRIPTION>

</ITEM>

<ITEM row = "14">

<TIME>0</TIME>

<ACTION>Insert malfunction AD04:A</ACTION>

<DESCRIPTION>RX PRESS RELIEF VALVE (2E-RV2-71A) SOLENOID  
FAILURE</DESCRIPTION>

</ITEM>

<ITEM row = "15">

<TIME>0</TIME>

<ACTION>Insert override AD-ZLO271A(1) to OFF</ACTION>

<DESCRIPTION>DEPRESSURIZATION 2-71A (GREEN)</DESCRIPTION>

</ITEM>

</SCHEDULE>

<EVENT>

<TRIGGER id="5" description="SCRAM full scram">(zlo5ads8a == 0) & & (zlo5ads8b == 0)</TRIGGER>

<TRIGGER id="16" description="fwvrfpt(1)>8">fwvrfpt(1)>8</TRIGGER>

<TRIGGER id="17" description="zdi10as13a(2)==1">zdi10as13a(2)==1</TRIGGER>

<TRIGGER id="18" description="zdi10as13b(2)==1">zdi10as13b(2)==1</TRIGGER>

</EVENT>

**C. SCENARIO SUMMARY:**

The scenario will begin at approximately 93% power with RBCLC pump A out of service. SRV A is inoperable. Line 3 is out of service and ready to be restored. The crew will begin by restoring Line 3 to service per OP-44. Then, the crew will raise Reactor power using Recirculation flow.

During power ascension, all 115KV power will be lost. The crew will execute AOP-72. The SRO will determine the Technical Specification impact.

SRV C will inadvertently open. The crew will execute AOP-36. The crew will take action to close the SRV. The SRO will determine the Technical Specification impact.

High vibrations will develop on Feedwater pump A. The crew will attempt to mitigate the vibrations by lowering Reactor power. Once vibrations exceed 6 mils, the crew will trip Feedwater pump A. If the crew does not trip Feedwater pump A by approximately 8 mils, it will spuriously trip.

After the plant is stabilized, a steam leak inside the Drywell develops. The crew will insert a manual Reactor scram due to rising Drywell pressure. The crew will control Reactor water level with HPCI and/or RCIC due to the loss of all Condensate and Feedwater, since 115KV power is unavailable from the earlier event.

Approximately 7 minutes after the scram, the steam leak will degrade further into a significant loss of coolant accident. Rising inventory losses will require additional injection to the Reactor. Degrading Containment parameters will require Torus and then Drywell sprays. The first Torus spray valve attempted will fail to open, requiring the crew to switch to the other RHR loop for Torus spray.

Approximately 10 minutes after the scram HPCI will trip. The crew will maximize other injection systems (RCIC, CRD, SLC), but will be unable to keep up with lowering Reactor water level. The crew will execute the Alternate Level Control leg of EOP-2 to attempt to maintain Reactor water level above the Top of Active Fuel (zero inches).

Due to lowering Reactor water level and insufficient high pressure injection sources, the crew will perform an Emergency Depressurization to allow low pressure injection sources to restore and/or maintain Reactor water level >0 inches.

The scenario will be terminated when all control rods are inserted, Emergency Depressurization is in progress, and Reactor water level is being controlled above 0 inches.

## Shift Turnover

The plant is operating at approximately 93% power.

RBCLC pump A is out of service for maintenance.

SRV A is inoperable.

Line 3 is out of service and ready to be restored.

When you take the shift:

1. Restore Line 3 to service per OP-44 section G.9. The procedure is in progress up to step G.9.12.
2. Raise Reactor power using Recirculation flow per the provided reactivity instructions.

Critical Tasks/Standards
<p><b>Critical Task #1:</b>      <b>Given a coolant leak inside the Containment, the crew will spray the Drywell, in accordance with EOP-4. Drywell spray must be initiated within 15 minutes of Torus pressure exceeding 15 psig.</b></p> <p><b>Critical Task #2:</b>      <b>Given a coolant leak, a loss of high pressure injection system and the inability to restore and maintain Reactor water level above the Top of Active Fuel (TAF), the crew will initiate actions for an Emergency RPV Depressurization, in accordance with EOP-2. Reactor water level must be restored and maintained above TAF within 30 minutes of lowering below TAF.</b></p>

**D. TERMINATION CUES:**

- All control rods are inserted
- Emergency Depressurization is in progress
- Reactor water level is being controlled above 0"

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
Simulator in RUN Recorder and Alarm Power ON Simulator Checklist Complete			
Provide Turnover (Attach. 1)			
After the shift turnover, allow no more than five minutes for panel walkdown	All	<ul style="list-style-type: none"> <li>Walkdown the control panels and assume the watch</li> </ul>	
<b><u>Event 1</u></b> <b>Restore Line 3 to Service</b>	SRO	<ul style="list-style-type: none"> <li>Perform Crew Brief</li> <li>Direct BOP to restore Line 3 to service per OP-44 G.9 starting at step G.9.12:</li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>Restore Line 3 to service per OP-44 G.9, starting at step G.9.12:</li> <li>Verify voltage is 117 to 121 KILOVOLTS on the following voltmeters: <ul style="list-style-type: none"> <li>LHH-FITZ 115 KV LINE 3</li> <li>NMP-FITZ 115 KV LINE 4</li> </ul> </li> <li>Verify frequency is approximately 60 Hz on both incoming 115 KV lines by selecting input selector switch for 115 KV FREQ meter to the following positions: <ul style="list-style-type: none"> <li>POS 1 LHH-FITZ LINE 3</li> <li>POS 2 NMP-FITZ LINE 4</li> </ul> </li> </ul>	



INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<p><b>Role Play:</b></p> <p>If contacted as Power Control, give permission to close Breaker 10022 and to activate auto-reclosure.</p>		<ul style="list-style-type: none"> <li>• Verify RECLOSER CUTOFF BKR 10022 switch is in OFF</li> <li>• Obtain permission from Power Control to close FitzPatrick Lighthouse 3 115 KV Line Breaker 71BRK-10022.</li> <li>• Place 115 KV BKR 10022 SYNCH SW switch in ON.</li> <li>• Verify voltage is matched on NON-EMERG BKRS INCOMING and RUNNING voltmeters.</li> <li>• Verify frequency is in phase on NON-EMERG BKRS SYNCHROSCOPE.</li> <li>• Close LHH-FITZ 115 KV LINE 3 BKR 10022.</li> <li>• Verify voltage is 117 to 121 KILOVOLTS on the following voltmeters:               <ul style="list-style-type: none"> <li>○ LHH-FITZ 115 KV LINE 3(EPIC-A-1570)</li> <li>○ NMP-FITZ 115 KV LINE 4 (EPIC-A-1569)</li> </ul> </li> <li>• Place 115 KV BKR 10022 SYNCH SW switch in OFF.</li> <li>• Obtain permission from Power Control to activate auto-reclosure for FitzPatrick Lighthouse Line 3 115 KV Breaker 71BRK-10022.</li> <li>• Place RECLOSER CUTOFF BKR 10022 switch in ON.</li> <li>• Report 115 KV System status to the following parties:               <ul style="list-style-type: none"> <li>○ Power Control</li> <li>○ Nine Mile Point Unit One Control Room</li> </ul> </li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<b>Event 2</b> Raise Reactor Power with Recirculation Flow	SRO	<ul style="list-style-type: none"> <li>• Direct ATC to raise power to 98% with Recirc flow</li> <li>• Provide oversight of reactivity manipulation</li> </ul>	
	ATC	<ul style="list-style-type: none"> <li>• Raise Recirc flow alternately with RWR MG A(B) SPEED CNTRL</li> <li>• Monitor APRMs, CTP, Recirc flow, Reactor water level, Core Map</li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<b>Event 3</b> <b>On Lead Examiner Cue:</b> <b>ACTIVATE TRIGGER 1</b> Loss of Offsite Power	BOP / ATC	<ul style="list-style-type: none"> <li>Recognize / report loss of Lines 3 and 4</li> </ul>	
	SRO	<ul style="list-style-type: none"> <li>Acknowledge report</li> <li>Enter AOP-72 (115KV)</li> <li>Determine Technical Specification 3.8.1 Condition C must be entered (restore one offsite circuit to operable within 7 days)</li> <li>Brief crew on impact of plant shutdown without offsite power</li> </ul>	
<b>Role Play:</b> When contacted as National Grid, acknowledge that Lines 3 and 4 have de-energized and are investigating.  When contacted as NMP, acknowledge report.  When contacted as Security, report that Security will	BOP	<ul style="list-style-type: none"> <li>Execute AOP-72 (115KV) <ul style="list-style-type: none"> <li>Notify the following of electrical status and request rapid restoration of 115 KV line voltage: <ul style="list-style-type: none"> <li>National Grid Power Control</li> <li>Nine Mile Point Unit One Control Room</li> </ul> </li> <li>Notify Security there has been an unplanned loss or degradation of the 115 KV system</li> <li>Monitor 115 KV System parameters</li> <li>May dispatch Operator to investigate switchyard</li> </ul> </li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
investigate the switchyard.			
<b>Event 4</b> <b>On Lead Examiner Cue:</b> <b>ACTIVATE TRIGGER 2</b> SRV C Inadvertently Opens	BOP \ ATC	<ul style="list-style-type: none"> <li>Recognize / report annunciators:               <ul style="list-style-type: none"> <li>09-4-1-16, SRV Leaking</li> <li>09-4-2-6, SRV Sonic Mon Alarm Hi</li> </ul> </li> <li>Recognize / report SRV C open</li> <li>Recognize / report low DW/Torus D/P</li> </ul>	
<b>Note:</b> The lead examiner may delay the closing of SRV C to allow sufficient heatup of the Torus to drive placing Torus Cooling in service (Torus temp of 90-95°F).	SRO	<ul style="list-style-type: none"> <li>Acknowledge report</li> <li>Enter AOP-36, Stuck Open Relief Valve</li> <li>If Torus water temperature exceeds 95°F or Torus water level exceeds 14.0 feet, enter EOP-4, Primary Containment Control</li> <li>May enter AOP-32 (Unplanned Power Change)</li> <li>Direct initiation of Torus Cooling</li> <li>Determine SRV C is inoperable and is an ADS valve per Technical Specification 3.5.1</li> <li>Enter TS LCO 3.5.1.E (14 day LCO for ADS)</li> <li>Enter TS 3.6.2.4.A (8 hour LCO for DW/Torus D/P)</li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<p><b>Role Play:</b> When directed to place SRV C isolation switch in LOCAL, wait 2 minutes, insert Trigger 25, wait approximately 15 seconds, then report task completion.</p> <p><b>Role Play:</b> When directed to remove SRV C fuses, wait 1 minute, insert Trigger 26, then report task completion.</p> <p><b>Role Play:</b> When directed to place SRV C isolation switch in REMOTE, wait 1 minute, re-insert remote <b>AD07:C</b> in <b>REMOTE</b>, wait</p>	BOP	<ul style="list-style-type: none"> <li>• Execute AOP-36 <ul style="list-style-type: none"> <li>○ Identify open SRV</li> <li>○ Determine annunciator 09-4-2-37 is NOT in alarm</li> <li>○ Determine annunciator 09-4-3-3 is NOT in alarm</li> <li>○ Cycle SRV C control switch at panel 09-4</li> <li>○ Direct Operator to place SRV C isolation switch in LOCAL at panel 25ASP-5</li> <li>○ Determine SRV C closed</li> <li>○ Direct Operator to remove the four control power fuses for SRV C at panel 09-45</li> <li>○ Direct Operator to place SRV C isolation switch in REMOTE at panel 25ASP-5</li> <li>○ Monitor Torus water temperature</li> </ul> </li> <li>• May direct Torus vent</li> <li>• Initiate Torus Cooling per OP-13B posted attachment:</li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<p>approximately 15 seconds, then report task completion.</p> <p><b>Role Play:</b> If Torus vent directed, wait 2 minutes, start a SBGT fan in the simulator, then run applicable schedule.</p>	BOP cont.	<ul style="list-style-type: none"> <li>○ Ensure at least one of the RHR pumps is running</li> <li>○ Open RHR TEST TORUS CLG &amp; SPRAY 10MOV-39A(B)</li> <li>○ Throttle RHR TEST &amp; TORUS CLG 10MOV-34A(B) to establish desired/flow</li> <li>○ WHEN RHR Loop A(B) flow is GREATER THAN 1500 gpm, ensure closed MIN FLOW VLV 10MOV-16A(B)</li> <li>○ Establish RHRSW flow and temperature control</li> </ul> <ul style="list-style-type: none"> <li>● Initiate RHRSW per OP-13C posted attachment:</li> <li>● Establish RHRSW flow and temperature control:               <ul style="list-style-type: none"> <li>○ Start one of the RHRSW pumps</li> <li>○ Throttle RHRSW DISCH VLV FROM HX A(B) 10MOV-89A(B) to establish 2500 to 4000 gpm</li> <li>○ Start the second RHRSW pump if desired</li> <li>○ Throttle RHRSW DISCH VLV FROM HX A(B) 10MOV-89A(B) to establish 5000 to 8000 gpm</li> <li>○ Close HX A(B) BYP VLV 10MOV-66A(B)</li> </ul> </li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<b>Event 5</b> <b>On Lead Examiner Cue:</b> <b>ACTIVATE TRIGGER 3</b> Feedwater Pump Vibration and Delayed Pump Trip	ATC / BOP	<ul style="list-style-type: none"> <li>Recognize / report EPIC alarms</li> <li>Recognize / report annunciator 09-6-4-11, RFPT A VIB HI</li> <li>Recognize / report rising Feedwater pump A vibrations</li> </ul>	SAT / UNSAT / NA
<b>Note:</b> The ARP directs tripping Feedwater pump A if vibration reaches 6 mils. There is no automatic trip on vibration, however the pump will spuriously trip in	SRO	<ul style="list-style-type: none"> <li>Acknowledge report</li> <li>Direct ARP response</li> <li>May direct emergency power reduction with Recirculation flow (43-45 Mlbm/hr) and/or CRAM rods</li> <li>Direct trip of Feedwater pump A</li> <li>Enter AOP-41 (Feedwater Malfunction)</li> </ul>	SAT / UNSAT / NA

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
this scenario if vibration reaches ~8 mils.		<ul style="list-style-type: none"> <li>• May enter AOP-8 (Unexpected Change in Core Flow)</li> </ul>	
<p><b>Note:</b> Recirculation pumps will likely runback to the 44% limiter due to only one Feedwater pump operating and Reactor water level lowering to 196.5".</p> <p><b>Role Play:</b> If dispatched to investigate, wait 2 minutes, then report that Feedwater pump A is vibrating, but there is no obvious cause.</p>	BOP	<ul style="list-style-type: none"> <li>• Execute ARP 09-6-4-11 <ul style="list-style-type: none"> <li>○ Monitor vibration level and trend</li> <li>○ When vibration approaches/exceeds 6 mils, trip Feedwater pump A</li> </ul> </li> <li>• Coordinate with ATC to lower Reactor power with Recirculation flow, as required / directed</li> </ul>	SAT / UNSAT / NA
<p><b>Note:</b> Following the trip of Feedwater pump A, Reactor power will likely stabilize between 65-70% power. The crew may decide to lower Reactor power further by inserting CRAM rods, since during a startup the second Feedwater pump is started prior to exceeding 50% power.</p>	ATC	<ul style="list-style-type: none"> <li>• Coordinate with BOP to lower Reactor power with CRAM rods, as required / directed</li> <li>• Monitor for thermal-hydraulic instabilities (THI) <ul style="list-style-type: none"> <li>○ May select control rod(s) to monitor LPRMs</li> </ul> </li> <li>• Monitor Turbine vibrations</li> </ul>	SAT / UNSAT / NA



INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<b>Role Play:</b> If the crew is not taking action to lower Reactor power by inserting CRAM rods, when crew informs Ops Management or Reactor Engineering of event, direct crew to lower Reactor power to 50% using RAP-7.3.16.			
<b>Event 6</b> <b>On Lead Examiner Cue:</b> <b>ACTIVATE TRIGGER 4</b> Steam Leak in Drywell	ALL	<ul style="list-style-type: none"> <li>Recognize / report rising Drywell pressure and temperature</li> <li>Recognize / report EPIC alarm 358, DW Cam Hi Rad</li> </ul>	
<b>Note:</b>	SRO	<ul style="list-style-type: none"> <li>Acknowledge reports</li> <li>Direct Reactor scram</li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<p>If Torus vent is in service and it is desired to speed up this event, modify the severity of malfunction MS02:A to 3.5.</p>		<ul style="list-style-type: none"> <li>• Enter AOP-1 (Reactor Scram)</li> <li>• Enter AOP-39 (Loss of Coolant)</li> <li>• Enter EOP-2 (RPV Control) on low Reactor water level and high Drywell pressure (as they occur)</li> <li>• Enter EOP-4 (Primary Containment Control) on high Drywell pressure and high Drywell temperature (as they occur)</li> <li>• Direct Reactor water level controlled 180-220" using HPCI, RCIC, CRD, and/or SLC</li> <li>• Direct Reactor pressure controlled 800-1000# using SRVs</li> <li>• Direct Control Room and Relay Room Ventilation isolated per OP-55B Section G within 30 minutes</li> <li>• Direct TSC filtered ventilation started per Section D of OP-59B within 60 minutes</li> <li>• May direct Core Spray and RHR injection prevented per EP-5</li> </ul>	
	ATC	<ul style="list-style-type: none"> <li>• Enter AOP-1</li> <li>• Depress MANUAL SCRAM A and MANUAL SCRAM B pushbuttons</li> <li>• Place RX MODE switch in SHUTDOWN</li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
		<ul style="list-style-type: none"> <li>Fully insert IRMs and SRMs</li> <li>Observe Reactor power lowering</li> <li>Ensure closed SDIV vent and drain valves</li> <li>Ensure Main Turbine is tripped</li> <li>May control Reactor pressure on SRVs</li> <li>May begin Reactor depressurization</li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>Enter AOP-1</li> <li>Control Reactor water level 180-220" using HPCI, RCIC, CRD, and/or SLC</li> <li>Control Reactor pressure on SRVs</li> <li>May begin Reactor depressurization</li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>If needed to manually start HPCI, then per OP-15: <ul style="list-style-type: none"> <li>Ensure reset RPV high level light</li> </ul> </li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
		<ul style="list-style-type: none"> <li>○ Ensure desired suction path open</li> <li>○ Ensure open 23MOV-16</li> <li>○ Ensure running 23P-140</li> <li>○ Perform the following steps without unnecessary delay:</li> <li>○ If 09-3-3-28 is in, then depress 23A-S17</li> <li>○ Ensure running 23P-150</li> <li>○ Ensure open 23MOV-19</li> <li>○ Adjust thumbwheel for desired flow</li>   <li>● If needed to manually start RCIC, then per OP-19:               <ul style="list-style-type: none"> <li>○ Verify Annunciator 09-4-0-32 RCIC LOGIC RX LVL HI is clear</li> <li>○ Verify CST SUCT VLV 13MOV-18 open</li> <li>○ Start VAC PMP 13P-3</li> <li>○ Open OIL CLR WTR SUPP 13MOV-132</li> <li>○ Perform the following without unnecessary delay:</li> <li>○ Open TURB STM SUPP VLV 13MOV-131</li> <li>○ Open INJ VLV 13MOV-21</li> <li>○ Adjust RCIC FLOW CNTRL 13FIC-91 to desired flow rate</li> </ul> </li> </ul>	



**Critical Task #2 Standard:** Open at least 5 SRVs.

	SRO	<ul style="list-style-type: none"> <li>• Acknowledge reports</li> <li>• Re-enter EOP-2 (RPV Control) on low Reactor water level, as necessary</li> <li>• When Primary Containment pressure exceeds 2.7 psig and before Torus pressure exceeds 15 psig, direct initiation of Torus Spray</li> <li>• <b>When Torus pressure exceeds 15 psig, direct Drywell spray</b></li> <li>• Determine Reactor water level cannot be maintained above 0"</li> <li>• Enter Alternate RPV Level Control leg of EOP-2</li> <li>• Direct override of ADS</li> <li>• Direct SLC injection, if not done previously</li> <li>• <b>When Reactor water level reaches 0", enter Emergency RPV Depressurization leg of EOP-2</b></li> <li>• Direct opening all ADS valves</li> <li>• Direct opening two additional SRVs</li> <li>• Direct Reactor water level restored and maintained 180-220" using Core Spray and/or LPCI</li> <li>• As time allows, directs re-start of Drywell spray</li> </ul>	<p>Critical Task #1</p>       <p>Critical Task #2</p>
	ATC / BOP	<ul style="list-style-type: none"> <li>• Recognize / report trip of HPCI</li> <li>• Attempt to control Reactor water level 180-220" using RCIC, CRD, and/or SLC</li> </ul>	

		<ul style="list-style-type: none"> <li>Recognize / report inability to maintain Reactor water level with available injection systems</li> </ul>	
<p><b><u>Note:</u></b> The first Torus spray valve (10MOV-38A(B)) attempted will fail to open. The crew will then spray with the other RHR system.</p> <p><b><u>Booth Operator:</u></b> Once the first Torus spray valve (10MOV-38A(B)) has failed to open, delete the remote on the other Torus spray valve (RH55/56).</p> <p><b><u>Note:</u></b> Once the crew has sprayed</p>	ATC / BOP	<ul style="list-style-type: none"> <li>Initiate Torus spray: <ul style="list-style-type: none"> <li>Place SPRAY CNTRL 10A-S17A(B) switch to MANUAL, spring return to normal</li> <li>Verify white SPRAY PERM 10A-DS67A(B) light is on</li> <li>Ensure available RHR pumps in RHR Loop A(B) are running</li> <li>Open RHR TEST TORUS CLG &amp; SPRAY 10MOV-39A(B)</li> <li>Throttle TORUS SPRAY INBD VLV 10MOV-38A(B) to establish desired torus spray flow rate</li> <li>Recognize / report failure of 10MOV-38A(B) and switch to spraying with other RHR loop</li> <li>WHEN RHR Loop A(B) flow is GREATER THAN 1500 gpm, ensure closed MIN FLOW VLV 10MOV-16A(B)</li> <li>Throttle RHR TEST &amp; TORUS CLG 10MOV-34A(B) to divert excess flow to the torus to maintain &gt; 6,500 gpm RHR Loop A(B) flow with one RHR pump operating or &gt; 13,000 gpm RHR Loop A(B) flow with two RHR pumps operating</li> </ul> </li> <li>Establish RHRSW flow and temperature control: <ul style="list-style-type: none"> <li>Establish RHRSW flow and temperature control:</li> <li>Start one of the RHRSW pumps</li> <li>Throttle RHRSW DISCH VLV FROM HX A(B) 10MOV-89A(B) to establish 2500 to 4000 gpm</li> </ul> </li> </ul>	

the Drywell, the lead examiner may direct tripping HPCI earlier than previously programmed to move the scenario along. Additionally, the lead examiner may direct ramping the coolant leak faster than previously programmed.

- Start the second RHRSW pump if desired
- Throttle RHRSW DISCH VLV FROM HX A(B) 10MOV-89A(B) to establish 2500 to 4000 gpm per RHRSW pump
- IF drywell or torus sprays are in service, THEN establish 4000 gpm per RHRSW pump
- Close HX A(B) BYP VLV 10MOV-66A(B)



	ATC / BOP	<ul style="list-style-type: none"> <li>• Ensure Recirc pumps tripped</li> <li>• Ensure Drywell Cooling fans tripped</li> <li>• <b>Initiate Drywell spray:</b></li> <li>• Place SPRAY CNTRL 10A-S17A(B) switch to MANUAL, spring return to normal <ul style="list-style-type: none"> <li>▪ Verify white SPRAY PERM 10A-DS67A(B) light is on</li> <li>▪ Ensure available RHR pumps in RHR Loop A(B) are running</li> <li>▪ Open DW SPRAY OUTBD VLV 10MOV-26A(B)</li> <li>▪ Throttle DW SPRAY INBD VLV 10MOV-31A(B) to establish desired drywell spray flow rate</li> </ul> </li> <li>• Override ADS: <ul style="list-style-type: none"> <li>▪ Place ADS LOGIC OVERRIDE &amp; RESET LOGIC A 2E-S2A in OVERRIDE</li> <li>▪ Place ADS LOGIC OVERRIDE &amp; RESET LOGIC B 2E-S2B in OVERRIDE</li> <li>▪ Verify annunciator 09-4-1-27 ADS OVERRIDE SW IN OVERRIDE is in alarm</li> <li>▪ Verify white ADS LOGIC OVERRIDDEN 2E-DS10 light is on</li> </ul> </li> <li>• Initiate SLC injection, if not done previously</li> <li>• Verify isolations per AOP-15</li> <li>• As time permits, execute AOP-39 (Loss of Coolant)</li> </ul>	<b>Critical Task #1</b>
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	ATC / BOP	<ul style="list-style-type: none"> <li>• <b>Open all ADS valves and two additional SRVs</b></li> <li>• Restore and maintain Reactor water level 180-220" using available injection systems</li> <li>• Control LPCI injection by throttling 10MOV-27A(B)</li> <li>• Control CS injection by throttling 14MOV-12A(B)</li> <li>• Secure RHR pumps if needed</li> </ul>	<b>Critical Task #2</b>
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### Termination Criteria:

All control rods are inserted, Emergency Depressurization is in progress and Reactor water level is being controlled above 0 inches.

## Shift Turnover

The plant is operating at approximately 93% power.

RBCLC pump A is out of service for maintenance.

SRV A is inoperable.

Line 3 is out of service and ready to be restored.

When you take the shift:

1. Restore Line 3 to service per OP-44 section G.9. The procedure is in progress up to step G.9.12.
2. Raise Reactor power using Recirculation flow per the provided reactivity instructions.

**REACTIVITY MANEUVER INSTRUCTION FORMS**

**Sheet 1 of 1**

Reactivity/monitoring Steps – (site specific RWR control sheet format is to be used)

**Power Ascension  
Today**

**Page 1 of 1**

Init	Step	Action	Rod	From Notch	To Notch	Method	Cplg Chk	RSCS Grp	Notes
	1	Raise power to 98% RTP	-	-	-	RWR	NA	-	

**Prepared By:** Joe Allen  
(RxEng)

**SM Approval:** Dave Roe  
(Shift Manager)

**Reviewed By:** Bob Jones  
(RxEng or SRO)

**Stamps**

**CONTROL ROOM OPERATOR**

---

**REACTIVITY MANEUVER INSTRUCTION FORMS**

---

**Sheet 1 of 1**

Reactivity/monitoring Steps – (site specific RWR control sheet format is to be used)

**Power Ascension  
Today****Page 1 of 1**

Init	Step	Action	Rod	From Notch	To Notch	Method	Cplg Chk	RSCS Grp	Notes
	1	Raise power to 98% RTP	-	-	-	RWR	NA	-	

**Prepared By:** Joe Allen  
(RxEng)**SM Approval:** Dave Roe  
(Shift Manager)**Reviewed By:** Bob Jones  
(RxEng or SRO)**Stamps****INDEPENDENT VERIFIER**

**REACTIVITY MANEUVER INSTRUCTION FORMS**

**Sheet 1 of 1**

Reactivity/monitoring Steps – (site specific RWR control sheet format is to be used)

**Power Ascension  
Today**

**Page 1 of 1**

Init	Step	Action	Rod	From Notch	To Notch	Method	Cplg Chk	RSCS Grp	Notes
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**Prepared By:** Joe Allen  
(RxEng)

**SM Approval:** Dave Roe  
(Shift Manager)

**Reviewed By:** Bob Jones  
(RxEng or SRO)

**Stamps**

**UNIT SUPERVISOR**

# JAMES A. FITZPATRICK NUCLEAR POWER PLANT

## LOI 18-1 NRC EXAMINATION SCENARIO 2

**TITLE:** LOI 18-1 NRC EXAMINATION SCENARIO 2

**SCENARIO NUMBER:** NRC 2

**PATH:** STAND ALONE

**Validation:** \_\_\_\_\_ **Training:** \_\_\_\_\_ **Operations:** \_\_\_\_\_

	CANDIDATES
CRS	
ATC	
BOP	

A. **TITLE:** LOI 18-1 NRC EXAMINATION SCENARIO 2

B. **SCENARIO SETUP:**

1. IC-222

2. Special Instructions:

- a. The plant is operating at approximately 70% power.
- b. RBCLC pump A is out of service for maintenance.
- c. Feedwater level column is selected to A.

3. Preset Conditions:

<SCHEDULE>

<ITEM row = "1">  
    <TIME>0</TIME>  
    <ACTION>Insert malfunction RD03:A to 0 on event 1</ACTION>  
    <DESCRIPTION>CRD FLOW CONTROL VALVE FAILURE (A)</DESCRIPTION>  
</ITEM>

<ITEM row = "2">  
    <TIME>0</TIME>  
    <ACTION>Insert remote RD09 to OPEN on event 21</ACTION>  
    <DESCRIPTION>3-68B, 3-69B FCV-19B ISOLATING VALVES</DESCRIPTION>  
</ITEM>

<ITEM row = "3">  
    <TIME>0</TIME>  
    <ACTION>Insert remote RD12 to B on event 22</ACTION>  
    <DESCRIPTION>3-FCV-19A OR 3-FCV-19B SELECT</DESCRIPTION>  
</ITEM>

<ITEM row = "4">  
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</ITEM>

<ITEM row = "5">  
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    <DESCRIPTION>RECIRCULATION FLOW UNIT B FAILS</DESCRIPTION>  
</ITEM>



<ITEM row = "6">  
     <TIME>0</TIME>  
     <ACTION>Insert malfunction SW01:B on event 3</ACTION>  
     <DESCRIPTION>LOSS OF RBCLC FLOW TO RECIRCULATION PUMP  
     B</DESCRIPTION>  
 </ITEM>

<ITEM row = "7">  
     <TIME>0</TIME>  
     <ACTION>Insert malfunction RX03 to 15.00000 in 120 on event 4</ACTION>  
     <DESCRIPTION>CORE THERMAL HYDRAULIC INSTABILITIES</DESCRIPTION>  
 </ITEM>

<ITEM row = "8">  
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     <ACTION>Insert malfunction RD22:A to 100.00000</ACTION>  
     <DESCRIPTION>WEST SDV HYDRAULIC LOCK</DESCRIPTION>  
 </ITEM>

<ITEM row = "9">  
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     <ACTION>Insert malfunction RD22:B to 100.00000</ACTION>  
     <DESCRIPTION>EAST SDV HYDRAULIC LOCK</DESCRIPTION>  
 </ITEM>

<ITEM row = "11">  
     <TIME>0</TIME>  
     <ACTION>Insert malfunction SL01:A on event 16</ACTION>  
     <DESCRIPTION>STANDBY LIQUID CONTROL PUMP 11P-2A BREAKER  
     TRIP</DESCRIPTION>  
 </ITEM>

<ITEM row = "12">  
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     <ACTION>Insert malfunction SL01:B on event 17</ACTION>  
     <DESCRIPTION>STANDBY LIQUID CONTROL PUMP 11P-2B BREAKER  
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 </ITEM>

<ITEM row = "13">  
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     <DESCRIPTION></DESCRIPTION>  
 </ITEM>

<ITEM row = "14">

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    <DESCRIPTION>RBCLC PUMP A TRIP</DESCRIPTION>
</ITEM>

<ITEM row = "15">
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    <ACTION>Insert remote RP21:A1 to IN on event 26</ACTION>
    <DESCRIPTION>RPS JUMPER - A1 LOGIC - 5A-K14A & 5A-
    K14E</DESCRIPTION>
</ITEM>

<ITEM row = "16">
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    <ACTION>Insert remote RP21:A2 to IN on event 26</ACTION>
    <DESCRIPTION>RPS JUMPER - A2 LOGIC - 5A-K14C & 5A-
    K14G</DESCRIPTION>
</ITEM>

<ITEM row = "17">
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    K14F</DESCRIPTION>
</ITEM>

<ITEM row = "18">
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    K14H</DESCRIPTION>
</ITEM>

<ITEM row = "19">
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</ITEM>

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</SCHEDULE>

<EVENT>

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    <TRIGGER id="4" description="zlo2as1b(1)==1">zlo2as1b(1)==1</TRIGGER>
    <TRIGGER id="30" description="SCRAM full scram">(zlo5ads8a == 0) & & (zlo5ads8b ==
    0)</TRIGGER>

```

</EVENT>

**C. SCENARIO SUMMARY:**

The scenario will begin at approximately 70% power with RBCLC pump A out of service for maintenance. The crew will begin the shift by swapping Feedwater level columns from A to B per OP-2A.

Following completion of the test, the crew will perform a control rod pattern adjustment. During the control rod movements, the in-service CRD flow control valve will fail closed. This will lower CRD drive water pressure and prevent moving control rods. The crew will swap CRD flow control valves, re-establish normal CRD parameters, and then continue control rod moves.

Recirculation flow unit B will fail downscale. This will result in a rod block and half scram. The SRO will determine the Technical Specification impact. The crew will bypass Recirculation flow unit B and reset the half scram.

All RBCLC flow to Recirculation pump B will isolate. This will cause multiple high temperature alarms. If left unmitigated, this will cause degradation of both Recirculation pump B seals and loss of coolant into the Drywell. The crew will secure Recirculation pump B. If damage has occurred to both pump seals, the crew will also isolate Recirculation pump B to stop the loss of coolant. The crew will execute AOP-8 due to the reduction in core flow. The SRO will determine the Technical Specification impact.

A thermal hydraulic instability will develop. The crew will execute AOP-32 for unplanned power changes. The Reactor power oscillations will exceed the scram criteria in AOP-32. The crew will attempt insert a manual scram.

Following the manual scram attempt, all control rods do not fully insert (hydraulic ATWS). Reactor power will initially be approximately 40-50%. The crew will execute EOP-3 (Failure to Scram). The ATWS is complicated due to the first SLC pump started trips shortly after start. Execution of EOP-3 will eventually result in Reactor power being reduced to <2.5%.

The scenario will be terminated when Reactor power is downscale on APRMs, all control rods are inserted, and Reactor water level is controlled above 0".

The plant is operating at approximately 70% power.

RBCLC pump A is out of service for maintenance.

When you take the shift:

1. Swap Feedwater level columns from A to B per OP-2A section G.27. It is desired to place Feedwater level control in manual during the swap and then restore it to automatic.
2. Perform a control rod pattern adjustment per the provided reactivity instructions.

#### Critical Tasks/Standards

- Critical Task #1:**      **Given a failure to scram with Reactor power above 2.5%, the crew will lower reactor power by one or more of the following methods, in accordance with EOP-3:**
- Terminating and preventing all RPV injection except SLC, RCIC and CRD
  - Tripping Recirculation pumps
  - Injecting boron
- The Reactor power reduction must be initiated within five minutes of the start of the failure to scram.**
- 
- Critical Task #2:**      **Given a failure to scram, the crew will initiate Control Rod insertion, in accordance with EOP-3. All insertable control rods must be inserted within one hour of the start of the failure to scram.**

#### **D. TERMINATION CUES:**

- Reactor power is downscale on APRMs
- All control rods are inserted

- Reactor water level is controlled above 0"

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
Simulator in RUN Recorder and Alarm Power ON Simulator Checklist Complete			
Provide Turnover (Attach. 1)			
After the shift turnover, allow no more than five minutes for panel walkdown	All	<ul style="list-style-type: none"> <li>Walkdown the control panels and assume the watch</li> </ul>	
<b>Event 1</b> <b>Swap Feedwater Level Columns</b>	SRO	<ul style="list-style-type: none"> <li>Direct BOP to swap Feedwater level columns per OP-2A</li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>Obtain OP-2A Section G.27</li> <li>Place Feedwater level control in MANUAL per Section G.40.2 <ul style="list-style-type: none"> <li>Balance RX WTR LVL CNTRL 06LC-83 controller</li> <li>Place RX WTR LVL CNTRL 06LC-83 controller in MAN</li> </ul> </li> <li>Place RX WTR LVL COLUMN SEL 06-S1 switch in B-LEVEL</li> <li>Observe RPV water level stable</li> <li>Place Feedwater level control in AUTO per Section G.40.7 <ul style="list-style-type: none"> <li>Balance RX WTR LVL CNTRL 06LC-83 controller by adjusting SP ADJUST knob</li> <li>Place RX WTR LVL CNTRL 06LC-83 controller in BAL</li> </ul> </li> </ul>	



INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<b>Event 2</b> <b>Perform Control Rod Pattern Adjustment</b>	SRO	<ul style="list-style-type: none"> <li>• Direct ATC to position control rods per provided instructions</li> <li>• Provide oversight of reactivity manipulation</li> </ul>	
<b>Note:</b> The reactivity instructions require moving control rods 18-35, 34-35, 34-19, and 18-19 from 04 to 08.	ATC	<ul style="list-style-type: none"> <li>• While withdrawing control rods, monitor the following:               <ul style="list-style-type: none"> <li>○ Nuclear instrumentation</li> <li>○ Control rod position indication</li> </ul> </li> <li>• Ensure ROD SEL PWR switch is in ON</li> <li>• Ensure control rod to be moved is selected by depressing rod select pushbutton on ROD SEL matrix, if necessary</li> <li>• Verify the following:               <ul style="list-style-type: none"> <li>○ Select pushbutton is brightly backlit</li> <li>○ Control rod indicating light is on</li> <li>○ ROD OUT PERM light is on</li> </ul> </li> <li>• Place ROD MOVEMENT CNTRL switch to OUT NOTCH, spring return to OFF</li> <li>• Verify control rod latches in the expected even numbered position before ROD SETTLE light goes off</li> <li>• Verify ROD SETTLE light is off</li> <li>• Repeat as necessary</li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<b>Event 3</b> <b>CRD Flow Control Valve Fails Closed</b> (on Lead Examiner Cue: ACTIVATE TRIGGER 1)	ATC / BOP	<ul style="list-style-type: none"> <li>Recognize / report CRD flow control valve failure</li> </ul>	
<b>Role Play:</b> If dispatched to investigate CRD flow control valves, report that it appears flow control valve A is lined up but failed closed.	SRO	<ul style="list-style-type: none"> <li>Acknowledge CRD flow control valve failure</li> <li>Direct swapping CRD flow control valves per OP-25</li> </ul>	
<b>Role Play:</b> When directed to un-isolate CRD flow control valve B, wait 1 minute, insert <b>Trigger 21</b> , then report task completion.  When directed to select CRD flow control valve B (AUTO-MAN select knob at 03HSS-245B in AUTO), wait 1 minute, insert <b>Trigger 22</b> , then report task completion.	ATC	<ul style="list-style-type: none"> <li>Swap CRD flow control valves per OP-25 section G.14</li> <li>Establish communication between Flow Control Hand Select Station and the Control Room</li> <li>Line up CRD FLOW CNTRL 03FIC-301 per the following steps:               <ul style="list-style-type: none"> <li>Ensure controller is in AUTO</li> <li>Adjust controller setpoint to zero gpm</li> </ul> </li> <li>Direct operator to verify open inlet isolation valve 03CRD-68B (CRD water 03FCV-19B inlet isol valve)</li> <li>Direct operator to slowly open outlet isolation valve 03CRD-69B (CRD water 03FCV-19B outlet isol valve)</li> <li>Direct operator to close outlet isolation valve for 03FCV-</li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<p>When directed to isolate CRD flow control valve A, wait 1 minute, insert <b>Trigger 23</b>, then report task completion.</p> <p>If all of these orders are given at once, wait 2 minutes, insert all three Triggers, then report task completion.</p>	ATC cont.	<p>19A</p> <ul style="list-style-type: none"> <li>• Direct operator to place AUTO-MAN select knob at 03HSS-245B in AUTO</li> <li>• Direct operator to ensure AUTO-MAN select knob is in MAN for 03FCV-19A</li> <li>• Slowly raise setpoint on CRD FLOW CNTRL 03FIC-301 to establish 59 to 61 gpm on 03FIC-301 or 03FI-310</li> <li>• Verify normal operating values on the following indicators at panel 09-5:               <ul style="list-style-type: none"> <li>○ CHG WTR PRESS 03PI-302: BETWEEN 1390 and 1580 psig, not to exceed 1670 psig</li> <li>○ DRV WTR DIFF PRESS 03DPI-303: 260 to 270 psid</li> <li>○ CLG WTR DIFF PRESS 03DPI-304: approximately 10 to 26 psid</li> </ul> </li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<b>Event 4</b> <b>Recirc Flow Unit Failure</b> (on Lead Examiner Cue: ACTIVATE TRIGGER 2)	ATC	<ul style="list-style-type: none"> <li>• Recognize / report multiple annunciators, including 09-5-2-25, FLOW REF OFF NORM</li> <li>• Recognize / report APRMs B, D, and F indicate normally but have an upscale trip</li> <li>• Recognize / report half scram</li> </ul>	
	SRO	<ul style="list-style-type: none"> <li>• Acknowledge report</li> <li>• Direct ARP response</li> <li>• Direct bypassing Recirc flow unit B per OP-16</li> <li>• Direct reset of half scram</li> <li>• Determine one of two required channels of Technical Specification Table 3.3.1.1-1 Function 2b is not operable with an inoperable Recirc flow unit</li> <li>• Determine Technical Specification 3.3.1.1 Condition A must be entered (place channel in trip or place associated trip system in trip within 12 hours)</li> <li>• Determine one of four required channels of TRM Table T3.3.B-1 Function 1b is not operable with an inoperable Recirc flow unit (prior to bypassing only)</li> <li>• Determine TRM 3.3.B Condition A must be entered (restore inoperable channel within 7 days) (prior to bypassing only)</li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
	ATC	<ul style="list-style-type: none"> <li>• Coordinate with BOP to bypass Recirc flow unit B per OP-16 Section E.21:               <ul style="list-style-type: none"> <li>○ Place RWR FLOW UNIT BYP switch in B</li> <li>○ Verify the following FLOW UNIT indications:                   <ul style="list-style-type: none"> <li>▪ Associated BYPASS indicating light is on</li> <li>▪ Associated UPSC OR INOP light is off</li> <li>▪ Associated COMPAR light is off</li> </ul> </li> <li>○ Verify BYPASS light is off for other flow unit channel on same side</li> <li>○ Verify white BYP light in on at top of panel 09-14 for FLOW UNIT B</li> <li>○ IF a flow unit is declared inoperable, THEN one of the two required APRM Neutron Flux-High (flow biased) Channels in the associated trip system must be considered inoperable</li> <li>○ Coordinate with BOP to place switch S-1 on FLOW UNIT B to INT TEST at panel 09-14</li> </ul> </li> <li>• Reset half scram per ARP:               <ul style="list-style-type: none"> <li>○ Place RX SCRAM RESET switch to GROUP 2 &amp; 3, then to GROUP 1 &amp; 4, spring return to NORM</li> <li>○ Verify RPS B SCRAM GROUPS 1, 2, 3, and 4 lights are on</li> </ul> </li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
	BOP	<ul style="list-style-type: none"> <li>• Assist ATC with actions and/or plant monitoring, as required</li> <li>• Place switch S-1 on FLOW UNIT B to INT TEST at panel 09-14</li> </ul>	
<b>Events 5 &amp; 6</b> <b>Loss of RBCLC Flow to Recirculation Pump B; Thermal Hydraulic Instability</b> (on Lead Examiner Cue: ACTIVATE TRIGGER 3)	BOP / ATC	<ul style="list-style-type: none"> <li>• Recognize / report EPIC low flow alarm</li> <li>• Recognize / report multiple annunciators, including:               <ul style="list-style-type: none"> <li>○ 09-4-3-16, RWR PMP B SEAL CLR FLOW LO</li> <li>○ 09-4-3-26, RWR PUMP B MTR WINDING CLR FLOW LO</li> <li>○ 09-4-3-33, RWR PMP A OR B TEMP HI</li> </ul> </li> </ul>	
<b>Note:</b> Once the scram is inserted,	SRO	<ul style="list-style-type: none"> <li>• Acknowledge reports</li> <li>• Direct ARP execution</li> <li>• <b>Direction shutdown of Recirculation pump B per OP-27</b></li> <li>• Enter AOP-8 (Unexpected Change in Core Flow)</li> <li>• Determine TRO 3.3.B Condition C entry is required (1 hour to establish single loop limits for APRM flow biased scram and rod block) (as time permits)</li> <li>• May determine Technical Specification 3.4.1 Condition B is also applicable (24 hour action statement)</li> <li>• Acknowledge report of thermal-hydraulic instability</li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
the subsequent actions for the failure to scram are continued in the next event.		<ul style="list-style-type: none"> <li>• Enter AOP-32 (Unplanned Power Change)</li> <li>• Direct inserting a manual scram</li> </ul>	
<p><b>Note:</b> Some indication for 15FIS-102B is available on EPIC screen RWRB1.</p> <p><b>Role Play:</b> If dispatched to check RBC flow rate to RWR pump B, wait 2 minutes, then report that there is no RBC flow to RWR pump B.</p>	BOP	<ul style="list-style-type: none"> <li>• Execute ARP 09-4-3-16, as time permits:               <ul style="list-style-type: none"> <li>○ Monitor seal cavity temps on 02TR-031 (points 20 &amp; 21)</li> <li>○ If seal cavity temp increases to 250°F, then shutdown B RWR pump per Section G of OP-27</li> <li>○ Ensure open 15AOV-132B and 15AOV-133B</li> <li>○ Verify RBC flow rate &gt;300 gpm on 15FIS-102B</li> <li>○ Monitor DW leakage for signs of seal leakage</li> </ul> </li> <li>• Execute ARP 09-4-3-26, as time permits:               <ul style="list-style-type: none"> <li>○ Monitor temps on 02-2TR-31</li> <li>○ Verify RBC flow rate &gt;300 gpm on 15FIS-102B</li> <li>○ If RBC flow cannot be restored and RWR pump and motor temps are rising, then shut down RWR loop B per OP-27 Section G</li> <li>○ Monitor DW sump levels</li> </ul> </li> <li>• Execute ARP 09-4-3-33, as time permits:               <ul style="list-style-type: none"> <li>○ Check 02-2TR-31</li> <li>○ Check RBC temp</li> <li>○ Check RBC lineup and verify at least 300 gpm on 15-FIS-102B</li> </ul> </li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<p><b>Note:</b> If Recirculation pump B is secured before damage to the seals results in coolant leakage into the Drywell, isolation of the pump is not required to meet the critical task.</p> <p><b>Role Play:</b> If dispatched to close 02-2RWR-39B, wait 2 minutes, then report task completion.</p>	BOP cont.	<ul style="list-style-type: none"> <li>○ Monitor computer and annunciators for problem</li> <li>○ Monitor DW leakage for possible leak in RBC system</li> <li>○ If any RWR motor bearing exceeds 220°F, then shut down RWR pump per Section G of OP-27</li>   <li>● Secure Recirculation pump B per OP-27:               <ul style="list-style-type: none"> <li>○ Close RWR PMP B DISCH 02MOV-53B</li> <li>○ Verify RWR PMP 02-2P-1B is tripped</li> <li>○ Place RWR PMP 02-2P-1B control switch in PULL TO LOCK</li> <li>○ Verify open RWR MG B GEN FIELD BKR</li> <li>○ IF loop B isolation is required, THEN ensure closed the following valves:                   <ul style="list-style-type: none"> <li>▪ RWR PMP B DISCH 02MOV-53B</li> <li>▪ RWR PMP B SUCT 02MOV-43B</li> <li>▪ 02-2RWR-39B (RWR pump B seal purge upstr isol valve)</li> </ul> </li> </ul> </li> <li>● Coordinate with ATC to execute AOP-8, as time permits</li> </ul>	



INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
		<ul style="list-style-type: none"> <li>• Ensure RPV water level returns to normal and stabilizes</li> <li>• Determine operating point on Power-Flow Map (as time permits)</li> </ul>	
	ATC	<ul style="list-style-type: none"> <li>• Monitor Reactor power</li> <li>• Monitor for thermal-hydraulic instability</li> <li>• Recognize / report thermal-hydraulic instability</li> <li>• Depress manual scram pushbuttons</li> <li>• Place Reactor Mode switch in SHUTDOWN</li> <li>• Manually initiates ARI</li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>• Control reactor water level to prevent turbine trips</li> </ul>	
<b>Events 7 and 8</b> <b>Hydraulic Failure to Scram;</b> <b>First SLC Pump Delayed Trip</b>	ATC	<ul style="list-style-type: none"> <li>• Recognize / report failure to scram</li> </ul>	
<b>Critical Task #1</b>		<p><b>Given a failure to scram with Reactor power above 2.5%, the crew will lower reactor power by one or more of the following methods, in accordance with EOP-3:</b></p> <ul style="list-style-type: none"> <li>• Terminating and preventing all RPV injection except SLC, RCIC and CRD</li> <li>• Tripping Recirculation pumps</li> <li>• Injecting boron</li> </ul> <p><b>The Reactor power reduction must be initiated within five</b></p>	<b>Pass / Fail</b>





INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<p><b>Booth Operator:</b> When the first SLC pump is started, wait 5-10 seconds, then insert the appropriate trigger to trip that pump (A=16, B=17).</p> <p><b>Role Play:</b> If directed to reset ARI, insert Remote RP20 to TEST.</p> <p><b>Role Play:</b> If directed to install RPS jumpers, run the applicable schedule.</p>	<p>ATC cont.</p>	<ul style="list-style-type: none"> <li>○ Verify white SQUIB VLVS READY lights are on</li> <li>○ Note level on TK LVL 11LI-66</li> <li>○ Place SLC pump keylock switch in START SYS-A or START SYS-B</li> <li>○ Verify red SLC pump running light is on</li> <li>○ Verify SLC pump discharge pressure on DISCH PRESS 11PI-65 is greater than or equal to RPV pressure</li> <li>○ Verify the following: <ul style="list-style-type: none"> <li>○ CLN UP SUCT 12MOV-18 is closed</li> <li>○ CLN UP RETURN ISOL VALVE 12MOV-69 is closed</li> </ul> </li> <li>○ Recognize / report trip of first SLC pump started</li> <li>○ Start 2<sup>nd</sup> SLC pump</li> <li>● Insert IRMs and SRMs</li> <li>● Range IRMs as necessary</li> <li>● Perform EP-3 Backup Control Rod Insertion Actions <ul style="list-style-type: none"> <li>○ Direct NPO to reset ARI per Subsection 5.4</li> <li>○ Reset Reactor scram per Subsection 5.5 <ul style="list-style-type: none"> <li>▪ Direct installing RPS jumpers</li> <li>▪ Place SDIV HI LVL TRIP switch in BYPASS</li> <li>▪ Place RX SCRAM RESET switch to GROUP 2&amp;3, then to GROUP 1&amp;4, spring return to NORM</li> <li>▪ Verify the following lights are on: <ul style="list-style-type: none"> <li>● RPS A SCRAM GROUPS 1, 2, 3, and 4</li> <li>● RPS B SCRAM GROUPS 1, 2, 3, and 4</li> </ul> </li> <li>▪ Verify closed all scram inlet/outlet valves using one</li> </ul> </li> </ul> </li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<p><b>Role Play:</b> If directed to close 03CRD-56 and 91, insert Remote and report those valves closed.</p>	<p>ATC cont.</p>	<ul style="list-style-type: none"> <li>or a combination of the following:               <ul style="list-style-type: none"> <li>• Blue SCRAM lights are off at FULL CORE DISPLAY</li> <li>• Local valve position indication</li> </ul> </li> <li>○ May insert rods using RMCS per Subsection 5.7:</li> <li>○ Place RWM keylock switch in BYPASS</li> <li>○ If reactor scram can be reset, then reset reactor scram as follows:               <ul style="list-style-type: none"> <li>▪ Place SDIV HI LVL TRIP switch in BYPASS</li> <li>▪ Place RX SCRAM RESET switch to GROUP 2&amp;3, then to GROUP 1&amp;4, spring return to NORM</li> </ul> </li> <li>○ Verify the following lights are on:               <ul style="list-style-type: none"> <li>▪ RPS A SCRAM GROUPS 1, 2, 3, and 4</li> <li>▪ RPS B SCRAM GROUPS 1, 2, 3, and 4</li> </ul> </li> <li>○ Raise CRD drive water differential pressure using one or more of the following methods:               <ul style="list-style-type: none"> <li>▪ Closing 03CRD-56, if the scram cannot be reset</li> <li>▪ Starting second CRD pump</li> <li>▪ Closing CRD DRV WTR PRESS VLV 03MOV-20</li> <li>▪ Raising CRD System flow rate using CRD FLOW CNTRL 03FIC-301</li> </ul> </li> <li>○ Attempt to insert each control rod as follows, in the order specified on Attachment 1 and/or Attachment 2:               <ul style="list-style-type: none"> <li>▪ Select control rod on ROD SEL matrix.</li> <li>▪ Insert control rod using one of the following switches:                   <ul style="list-style-type: none"> <li>• ROD MOVEMENT CNTRL</li> </ul> </li> </ul> </li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
		<ul style="list-style-type: none"> <li>• ROD EMERG IN NOTCH OVERRIDE               <ul style="list-style-type: none"> <li>▪ Repeat Steps A through B to insert control rods, as required.</li> </ul> </li> <li>○ May insert rods by raising dP using CRD cooling water per Subsection 5.8:               <ul style="list-style-type: none"> <li>▪ May direct NPO to close 03CRD-56</li> <li>▪ Direct NPO to close 03CRD-91</li> <li>▪ Ensure open CRD DRV WTR PRESS VLV 03MOV-20</li> <li>▪ Ensure closed CRD CLG WTR PRESS CNTRL VLV 03MOV-22</li> <li>▪ Start 2<sup>nd</sup> CRD pump</li> <li>▪ Place CRD FLOW CNTRL 03FIC 301 placed in MANUAL</li> <li>▪ Raise CRD FLOW CNTRL 03FIC 301 output signal to maximum.</li> </ul> </li> <li>○ May attempt repeated manual scrams</li> <li>○ Recognize / report control rods inserting</li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>• <b>Terminate and prevent all injection except SLC, RCIC and CRD per EP-5</b> <ul style="list-style-type: none"> <li>○ <b>Feedwater</b> <ul style="list-style-type: none"> <li>○ If RFP A is running:                   <ul style="list-style-type: none"> <li>○ Ensure RFP A FLOW CNTRL 06-84A is in MAN</li> <li>○ Lower RFP A FLOW CNTRL 06-84A to minimum</li> <li>○ Ensure open RFP A MIN FLOW 34FCV-135A</li> </ul> </li> </ul> </li> </ul> </li> </ul>	<b>Critical Task #1</b>

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
	BOP cont.	<ul style="list-style-type: none"> <li>○ If RFP B is running: <ul style="list-style-type: none"> <li>○ Ensure RFP B FLOW CNTRL 06-84B is in MAN</li> <li>○ Lower RFP BFLOW CNTRL 06-84B to minimum</li> <li>○ Ensure open RFP B MIN FLOW 34FCV-135B</li> </ul> </li> <li>○ Ensure closed: <ul style="list-style-type: none"> <li>○ RFP A DISCH 34MOV-100A</li> <li>○ RFP B DISCH 34MOV-100B</li> </ul> </li> <li>○ Ensure FDWTR STARTUP VLV 34FCV-137 in MANUAL</li> <li>○ Ensure closed FDWTR STARTUP VLV 34FCV-137</li>   <li>○ <b>HPCI</b> <ul style="list-style-type: none"> <li>○ Trip HPCI by depressing TURB TRIP 23A-S19 pushbutton</li> </ul> </li> <li>○ RHR Loop A(B) (may not T&amp;P low pressure systems) <ul style="list-style-type: none"> <li>○ Place 10MOV-27A(B) AUTO CONTROL BYPASS 10A-S23A(B)</li> <li>○ Verify white light above 10MOV-27A(B) AUTO CONTROL BYPASS 10A-S23A(B) is on</li> </ul> </li> </ul>	<b>Critical Task #1</b>

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
		<ul style="list-style-type: none"> <li>○ Ensure closed LPCI OUTBD INJ VLV 10MOV-27A(B)</li> <li>○ Ensure RHR Loop A(B) pumps which are not required to be running are stopped</li> <li>○ Core Spray Loop A(B) (may not T&amp;P low pressure systems)</li> <li>○ Place 14MOV-11A(B) AUTO ACTUATION BYPASS SW 14A-S16A(B) switch in BYPASS</li> <li>○ Verify white 14MOV-11A(B) AUTO ACTUATION BYPASS LT 14A-DS35A(B) light is on</li> <li>○ Ensure closed OUTBD INJ VLV 14MOV-11A(B)</li> <li>○ Ensure PMP 14P-1A(B) is stopped</li> <li>● Report Reactor water level is less than 110" to CRS</li> <li>● Control Reactor water level between -19" and 110" with only Group 1 Water Level Control Systems (HPCI, RCIC, SLC)</li> </ul>	

**Termination Criteria:**

Reactor power is downscale on APRMs, all control rods are inserted, and Reactor water level is controlled above 0".



### **Shift Turnover**

The plant is operating at approximately 70% power.

RBCLC pump A is out of service for maintenance.

When you take the shift:

1. Swap Feedwater level columns from A to B per OP-2A section G.27. It is desired to place Feedwater level control in manual during the swap and then restore it to automatic.
2. Perform a control rod pattern adjustment per the provided reactivity instructions.

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REACTIVITY MANEUVER INSTRUCTION FORMS

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Sheet 1 of 1

Reactivity/monitoring Steps – (site specific control rod movement control sheet format is to be used)

**Control Rod Pattern Adjustment  
Today**

Page 1 of 1

Init	Step	Action	Rod	From Notch	To Notch	Method	Cplg Chk	RSCS Grp	Notes
	1	Withdraw	<b>18-35</b>	04	08	Notch	NA	-	
	2	Withdraw	<b>34-35</b>	04	08	Notch	NA	-	
	3	Withdraw	<b>34-19</b>	04	08	Notch	NA	-	
	4	Withdraw	<b>18-19</b>	04	08	Notch	NA	-	

Prepared By: Joe Allen  
(RxEng)

SM Approval: Dave Roe  
(Shift Manager)

Reviewed By: Bob Jones  
(RxEng or SRO)

**Stamps**

**CONTROL ROOM OPERATOR**

---

**REACTIVITY MANEUVER INSTRUCTION FORMS**

---

Sheet 1 of 1

Reactivity/monitoring Steps – (site specific control rod movement control sheet format is to be used)

**Control Rod Pattern Adjustment  
Today**

Page 1 of 1

Init	Step	Action	Rod	From Notch	To Notch	Method	Cplg Chk	RSCS Grp	Notes
	1	Withdraw	<b>18-35</b>	04	08	Notch	NA	-	
	2	Withdraw	<b>34-35</b>	04	08	Notch	NA	-	
	3	Withdraw	<b>34-19</b>	04	08	Notch	NA	-	
	4	Withdraw	<b>18-19</b>	04	08	Notch	NA	-	

Prepared By: Joe Allen  
(RxEng)

SM Approval: Dave Roe  
(Shift Manager)

Reviewed By: Bob Jones  
(RxEng or SRO)

**Stamps**

**INDEPENDENT VERIFIER**

---

REACTIVITY MANEUVER INSTRUCTION FORMS

---

Sheet 1 of 1

Reactivity/monitoring Steps – (site specific control rod movement control sheet format is to be used)

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Today**

Page 1 of 1

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	3	Withdraw	<b>34-19</b>	04	08	Notch	NA	-	
	4	Withdraw	<b>18-19</b>	04	08	Notch	NA	-	

Prepared By: Joe Allen  
(RxEng)

SM Approval: Dave Roe  
(Shift Manager)

Reviewed By: Bob Jones  
(RxEng or SRO)

**Stamps**

**UNIT SUPERVISOR**

# JAMES A. FITZPATRICK NUCLEAR POWER PLANT

## LOI 18-1 NRC EXAMINATION SCENARIO 3

**TITLE:** LOI 18-1 NRC EXAMINATION SCENARIO 3

**SCENARIO NUMBER:** NRC 3

**PATH:** STAND ALONE

**Validation:** \_\_\_\_\_ **Training:** \_\_\_\_\_ **Operations:** \_\_\_\_\_

	CANDIDATES
CRS	
ATC	
BOP	

A. **TITLE:** LOI 18-1 NRC EXAMINATION SCENARIO 3

B. **SCENARIO SETUP:**

1. IC-223

2. Special Instructions:

- a. The plant is operating at approximately 100% power.
- b. RBCLC pump A is out of service for maintenance.
- c. TBCLC pumps A and B are in service and C is in standby.

3. Preset Conditions:

<SCHEDULE>

<ITEM row = "1">  
    <TIME>0</TIME>  
    <ACTION>Insert malfunction FW25:C on event 1</ACTION>  
    <DESCRIPTION>CONDENSATE BOOSTER PUMP 33-P9C TRIP</DESCRIPTION>  
</ITEM>

<ITEM row = "2">  
    <TIME>0</TIME>  
    <ACTION>Insert malfunction NM14:A to 80.09080</ACTION>  
    <DESCRIPTION>APRM CHANNEL A FAILURE</DESCRIPTION>  
</ITEM>

<ITEM row = "3">  
    <TIME>0</TIME>  
    <ACTION>Insert malfunction HP05 on event 2</ACTION>  
    <DESCRIPTION>HPCI INADVERTENT INITIATION</DESCRIPTION>  
</ITEM>

<ITEM row = "4">  
    <TIME>0</TIME>  
    <ACTION>Insert override HP-ZDI23AS19 to NORMAL</ACTION>  
    <DESCRIPTION>TURB TRIP 23A-S19</DESCRIPTION>  
</ITEM>

<ITEM row = "5">  
    <TIME>0</TIME>  
    <ACTION>Insert malfunction HP02 on event 3</ACTION>  
    <DESCRIPTION>HPCI TURBINE TRIP</DESCRIPTION>  
</ITEM>

<ITEM row = "6">  
    <TIME>0</TIME>  
    <ACTION>Insert malfunction YC01 on event 3</ACTION>  
    <DESCRIPTION>EMERGENCY AND PLANT INFORMATION COMPUTER  
    FAILS</DESCRIPTION>

</ITEM>

<ITEM row = "7">

<TIME>0</TIME>

<ACTION>Insert malfunction FW25:B on event 4</ACTION>

<DESCRIPTION>CONDENSATE BOOSTER PUMP 33-P9B TRIP</DESCRIPTION>

</ITEM>

<ITEM row = "8">

<TIME>0</TIME>

<ACTION>Insert malfunction FW25:A after 20 on event 4</ACTION>

<DESCRIPTION>CONDENSATE BOOSTER PUMP 33-P9A TRIP</DESCRIPTION>

</ITEM>

<ITEM row = "9">

<TIME>0</TIME>

<ACTION>Insert malfunction RC02</ACTION>

<DESCRIPTION>RCIC SYSTEM FAILURE TO AUTO START (ON LOW LEVEL)</DESCRIPTION>

</ITEM>

<ITEM row = "10">

<TIME>0</TIME>

<ACTION>Insert malfunction RR33:B after 210 to 50.00000 on event 5</ACTION>

<DESCRIPTION>Reference Leg Leak N12B Inside Containment</DESCRIPTION>

</ITEM>

<ITEM row = "11">

<TIME>0</TIME>

<ACTION>Insert malfunction MS02:A after 210 to 35.00000 in 180 on event 5</ACTION>

<DESCRIPTION>(MSL A) STM LEAKAGE INSIDE PRIM CONTNMNT</DESCRIPTION>

</ITEM>

<ITEM row = "12">

<TIME>0</TIME>

<ACTION>Insert malfunction RR17:A after 60 on event 6</ACTION>

<DESCRIPTION>RX VESSEL FUEL ZONE LEVEL 02-3-LIS-73 FAILURE</DESCRIPTION>

</ITEM>

<ITEM row = "13">

<TIME>0</TIME>

<ACTION>Insert malfunction RR17:B after 90 on event 6</ACTION>

<DESCRIPTION>RX VESSEL FUEL ZONE LEVEL 02-3-LIS-79 FAILURE</DESCRIPTION>

</ITEM>

<ITEM row = "14">

<TIME>0</TIME>

<ACTION>Insert malfunction RR18 after 120 on event 6</ACTION>

<DESCRIPTION>REFUEL GEMAC VESSEL LEVEL INDICATOR 02-LI-86 FAILS</DESCRIPTION>

</ITEM>

<ITEM row = "15">

<TIME>0</TIME>

<ACTION>Insert malfunction RR19:A after 120 to 0 on event 6</ACTION>

<DESCRIPTION>RX VESSEL LVL TRANSMITTER 06LT-52A FAILURE TO FDWTR  
CONTROL</DESCRIPTION>

</ITEM>

<ITEM row = "16">

<TIME>0</TIME>

<ACTION>Insert malfunction RR19:C after 120 to 0 on event 6</ACTION>

<DESCRIPTION>RX VESSEL LVL TRANSMITTER 06LT-52C FAILURE TO FDWTR  
CONTROL</DESCRIPTION>

</ITEM>

<ITEM row = "17">

<TIME>0</TIME>

<ACTION>Insert malfunction RR31:A2 after 120 on event 6</ACTION>

<DESCRIPTION>DNSCL FAILURE OF 02-3LT83A</DESCRIPTION>

</ITEM>

<ITEM row = "18">

<TIME>0</TIME>

<ACTION>Insert malfunction RR31:C2 after 120 on event 6</ACTION>

<DESCRIPTION>DNSCL FAILURE OF 02-3LT83C</DESCRIPTION>

</ITEM>

<ITEM row = "19">

<TIME>0</TIME>

<ACTION>Insert malfunction RR16:A on event 6</ACTION>

<DESCRIPTION>RX VESSEL WD RNG LVL TRANSMITTER 02-3-LI-85A FAILS  
DNSCL</DESCRIPTION>

</ITEM>

<ITEM row = "20">

<TIME>0</TIME>

<ACTION>Insert malfunction RR16:B on event 6</ACTION>

<DESCRIPTION>RX VESSEL WD RNG LVL TRANSMITTER 02-3-LI-85B FAILS  
DNSCL</DESCRIPTION>

</ITEM>

<ITEM row = "21">

<TIME>0</TIME>

<ACTION>Insert malfunction RR16:C5 on event 6</ACTION>

<DESCRIPTION>RX VSL WD RNG LVL XMTR 02-3LT-72A FAILS DNSCL</DESCRIPTION>

</ITEM>

<ITEM row = "22">

<TIME>0</TIME>



<ACTION>Insert malfunction RR16:C7 on event 6</ACTION>  
<DESCRIPTION>RX VSL WD RNG LVL XMTR 02-3LT-72C FAILS DNSCL</DESCRIPTION>  
</ITEM>

<ITEM row = "23">  
    <TIME>0</TIME>  
    <ACTION>Insert malfunction AN951\_06 after 120 to On on event 6</ACTION>  
    <DESCRIPTION>PCIS SYS A RX LVL LO-LO</DESCRIPTION>  
</ITEM>

<ITEM row = "24">  
    <TIME>0</TIME>  
    <ACTION>Insert malfunction AN951\_07 after 120 to On on event 6</ACTION>  
    <DESCRIPTION>PCIS SYS B RX LVL LO-LO</DESCRIPTION>  
</ITEM>

<ITEM row = "25">  
    <TIME>0</TIME>  
    <ACTION>Insert malfunction AN951\_28 after 120 to On on event 6</ACTION>  
    <DESCRIPTION>RX WTR LVL ALARM HI OR LO  
    (&lt;196.5&quot;&gt;206.5&quot;&gt;)</DESCRIPTION>  
</ITEM>

<ITEM row = "26">  
    <TIME>0</TIME>  
    <ACTION>Insert malfunction AN951\_31 after 120 to On on event 6</ACTION>  
    <DESCRIPTION>RPS RX VESSEL LO LVL TRIP-RED</DESCRIPTION>  
</ITEM>

<ITEM row = "27">  
    <TIME>0</TIME>  
    <ACTION>Insert malfunction AD01</ACTION>  
    <DESCRIPTION>ADS TIMER FAILS TO START</DESCRIPTION>  
</ITEM>

<ITEM row = "28">  
    <TIME>0</TIME>  
    <ACTION>Event Events/18-1 NRC/Scenario 3.evt</ACTION>  
    <DESCRIPTION></DESCRIPTION>  
</ITEM>

<ITEM row = "29">  
    <TIME>0</TIME>  
    <ACTION>Insert malfunction SW09:A</ACTION>  
    <DESCRIPTION>RBCLC PUMP A TRIP</DESCRIPTION>  
</ITEM>

</SCHEDULE>

<EVENT>

<TRIGGER id="5" description="SCRAM full scram">(zlo5ads8a == 0) &amp&amp (zlo5ads8b == 0)</TRIGGER>  
<TRIGGER id="6" description="Containment spray flow">(rhfcntsprya&lt-10) | (rhfcntspryb&lt-10)</TRIGGER>

</EVENT>

**C. SCENARIO SUMMARY:**

The scenario will begin at approximately 100% power with RBCLC pump A out of service for maintenance. The crew will begin the shift by swapping TBCLC pumps per OP-41.

Condensate Booster pump C trips. This will require the crew to lower Reactor power to approximately 65%. APRM A fails as-is prior to the power reduction. During the power reduction, the crew will recognize that APRM A is not trending lower with the rest of the APRMs. The crew will bypass APRM A per OP-16.

HPCI will inadvertently initiate. The crew will take action to trip HPCI per AOP-77. The first method (pushbutton) will fail, so the crew will take alternate actions to trip HPCI. The SRO will determine the Technical Specification impact of the resulting HPCI inoperability.

Next, the Emergency Plant Information Computer (EPIC) system will fail. This will result in no Process Computer displays being available. The SRO will address Technical Specifications.

A second Condensate Booster pump trips, followed by the third pump 20 seconds later. The crew will scram the Reactor and enter AOP-1 due to the loss of Feedwater injection. EOP-2 (RPV Control) will be entered. RCIC will fail to automatically start, but RCIC can be manually started for RPV injection. HPCI will fail to start if the crew attempts to manually start it.

The scram transient causes a steam leak and a Reactor water level instrument reference leg to break in the Drywell. EOP-4 (Primary Containment Control) will be entered.

Degrading Primary Containment parameters will require the Drywell to be sprayed. When Drywell spray is placed in service, all RPV water level instruments will sequentially fail. This requires EOP-7 (RPV Flooding) to be entered.

The crew will open 7 ADS valves, close steam isolation valves, and then flood the Reactor with Condensate, Core Spray, and/or LPCI.

The scenario will be terminated when the RPV is flooded to the Main Steam Lines.

### Shift Turnover

The plant is operating at approximately 100% power.

RBCLC pump A is out of service for maintenance.

When you take the shift, swap TBCLC pumps per OP-41 section G.1. Start TBCLC pump C and secure TBCLC pump A.

Critical Tasks/Standards
<p>Critical Task #1: Given a coolant leak inside the Containment, the crew will spray the Drywell, in accordance with EOP-4. Drywell spray must be initiated within 15 minutes of Torus pressure exceeding 15 psig.</p> <p>Critical Task #2: Given an unknown Reactor water level, the crew will flood the RPV, in accordance with EOP-7. The RPV must be flooded to the Main Steam Lines within 30 minutes of when Reactor water level becomes unknown.</p>

**D. TERMINATION CUES:**

- Seven SRVs have been opened

- Indications of a flooded RPV are observed (eg. Reactor re-pressurizes after initial depressurization, SRVs re-open after closing)

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
Simulator in RUN Recorder and Alarm Power ON Simulator Checklist Complete			
Provide Turnover (Attach. 1)			
After the shift turnover, allow no more than five minutes for panel walkdown	All	<ul style="list-style-type: none"> <li>Walkdown the control panels and assume the watch</li> </ul>	
<b>Event 1</b> <b>Swap TBCLC Pumps</b>	SRO	<ul style="list-style-type: none"> <li>Perform Crew Brief</li> <li>Direct BOP to start TBCLC pump B and secure TBCLC pump A per OP-41 section G.1.</li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>Start TBCLC pump C</li> <li>Verify pump motor current is LESS THAN maximum normal amps</li> <li>Place and hold control switch for TBCLC pump A in STOP until TBCLC header pressure stabilizes GREATER THAN 95 psig, then release control switch</li> <li>Verify pump motor current for the running TBCLC pumps is LESS THAN maximum normal amps</li> <li>Ensure TBCLC header pressure is BETWEEN 95 and 135 psig per Section E of this procedure</li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<b>Event 2</b> <b>Condensate Booster Pump Trips</b> (on Lead Examiner Cue: insert TRIGGER 1)	ATC \ BOP	<ul style="list-style-type: none"> <li>Recognize / report annunciator 09-6-3-22, COND BSTR PMP 33P-9C OVERLOAD OR TRIP</li> <li>Recognize / report trip of Condensate Booster pump C</li> </ul>	
<b>Note:</b> Reactor water level will be able to be maintained with just two Condensate Booster pumps at 100% power, however both Condensate Booster pumps will be above their red-line current rating. Reactor power will need to be lowered to approximately 80% to restore pump currents within limits.	SRO	<ul style="list-style-type: none"> <li>Acknowledge reports</li> <li>Enter AOP-41, Feedwater Malfunction</li> <li>Direct Reactor power reduction to within capacity of running Condensate Booster pumps (RWR and Cram Rods)</li> </ul>	
<b>Role Play:</b> If dispatched to investigate Condensate Booster pump C trip, wait 2 minutes, then report that the breaker is tripped on overcurrent, but there is no abnormal indication at the pump.	ATC	<ul style="list-style-type: none"> <li>Lower Reactor power using Recirculation flow</li> <li>May insert Cram Rods</li> </ul>	



INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
	BOP	<ul style="list-style-type: none"> <li>Execute ARP 09-6-3-22</li> </ul>	
<b>Event 3</b> APRM Fails As-Is	ATC	<ul style="list-style-type: none"> <li>Recognize / report APRM A is not lowering during the power reduction</li> <li>Recognize / report annunciators 09-5-2-2, Rod Withdrawal Block, and 09-5-2-44, APRM Upscale, if power is lowered enough prior to bypassing APRM A</li> </ul>	
	SRO	<ul style="list-style-type: none"> <li>Acknowledge report</li> <li>Direct execution of ARPs (if annunciators received)</li> <li>Determine Technical Specification Table 3.3.1.1-1 Functions 2b, c, and d are met with APRM A out of service</li> <li>Determine TRM Table T3.3.B-1 Functions 1a, b, and c are met with APRM A out of service</li> <li>Directs bypassing APRM A per OP-16</li> </ul>	
	ATC	<ul style="list-style-type: none"> <li>Bypass APRM A per OP-16 Section E.16:               <ul style="list-style-type: none"> <li>Place APRM BYP switch in A</li> <li>Verify APRM A is bypassed using one or both of the following:                   <ul style="list-style-type: none"> <li>APRM A BYPASS indicating light is on</li> </ul> </li> </ul> </li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
		<ul style="list-style-type: none"> <li>▪ APRM A EPIC alarm indicates bypassed</li> <li>○ Verify the other two APRM channels associated with the same APRM BYP switch are in service using one or both of the following:               <ul style="list-style-type: none"> <li>▪ APRM BYPASS indicating lights are off for the other two APRMs</li> <li>▪ No EPIC bypassed alarms for the other two APRMs</li> </ul> </li> </ul>	
<b><u>Event 4</u></b> <b>HPCI Inadvertently Initiates, Trip Pushbutton Fails to Work, Trip Fails to Reset</b> (on Lead Examiner Cue: insert TRIGGER 2)	ALL	<ul style="list-style-type: none"> <li>• Recognize / report spurious HPCI initiation</li> <li>• Recognize / report Reactor power rise, if applicable</li> <li>• Recognize / report Reactor water level rise, if applicable</li> </ul>	
	SRO	<ul style="list-style-type: none"> <li>• Acknowledge report</li> <li>• Enter AOP-77 (Inadvertent Initiation of ECCS or RCIC)</li> <li>• Verify HPCI injection not required</li> <li>• Direct trip of HPCI</li> <li>• May enter AOP-32 (Unexplained/Unanticipated Reactivity Change)</li> <li>• Declare HPCI inoperable</li> <li>• Determine Technical Specification 3.5.1 Condition C requires restoring HPCI to operable within 14 days</li> <li>• Declare the secured train of Standby Gas Treatment inoperable</li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
		<ul style="list-style-type: none"> <li>Determine Technical Specification 3.6.4.3 Condition A requires restoring Standby Gas Treatment to operable within 7 days</li> </ul>	
<p><b>Role Play:</b> If dispatched to investigate HPCI, wait two minutes, then report there is no obvious reason why HPCI started and there is no observable damage to the system.</p>	BOP	<ul style="list-style-type: none"> <li>Execute AOP-77</li> <li>Observe Reactor water level and Drywell pressure indications to verify HPCI injection not required</li> <li>Attempt to trip HPCI using pushbutton</li> <li>Recognize / report failure of HPCI trip pushbutton to work</li> <li>May lower HPCI flow rate to 0</li> <li>Take keylock switch 23A-S2A, 23MOV-16 AUTO CONTROL BYPASS, to BYPASS</li> <li>Close OUTBD STM SUPP VLV 23MOV-16</li> <li>Close STM LINE WARMING ISOL VLV 23MOV-60</li> <li>AFTER turbine comes to a complete stop, place AUX OIL PMP 23P-150 control switch in PULL-TO-LOCK</li> <li>Secure one train of Standby Gas</li> <li>For the running Standby Gas train, open 01-125MOV-11(12)</li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
		<ul style="list-style-type: none"> <li>May execute AOP-32 (Unexplained/Unanticipated Reactivity Change) <ul style="list-style-type: none"> <li>Determine HPCI initiation was only cause of reactivity change</li> </ul> </li> </ul>	
<b>Event 5</b> <b>EPIC Fails</b> (On Lead Examiner cue, insert Trigger 3)	BOP \ ATC	<ul style="list-style-type: none"> <li>Recognize / report annunciator 09-8-1-4, COMPUTER CNTRL VOLT TROUBLE</li> <li>Recognize / report loss of EPIC screens</li> </ul>	
<b>Role Play:</b> When contacted to investigate / restore EPIC, acknowledge request.	SRO	<ul style="list-style-type: none"> <li>Acknowledge reports</li> <li>Ensure ARP execution</li> <li>Enter ST-40C (Computer Out of Service Surveillance) <ul style="list-style-type: none"> <li>Conduct crew briefing on effect of EPIC inoperability</li> <li>Direct crew to review EP-1</li> <li>Notify computer specialist</li> </ul> </li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
		<ul style="list-style-type: none"> <li>• Determine Technical Specification Surveillance Requirement 3.6.1.5.1 (Drywell average air temperature) must be met by manual calculation</li> <li>• May determine Technical Specification Table 3.3.2.1-1 Function 2 (RWM rod block) is inoperable but not applicable with Reactor power &gt; 10%</li> <li>• Determine monitoring for SPDES permit must be met by manual calculation</li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>• Execute ARP 09-8-1-4: <ul style="list-style-type: none"> <li>○ Contact Instrument and Control</li> <li>○ Notify SRO to perform ST-40C</li> </ul> </li> </ul>	
<p><b><u>Events 6, 7, 8, &amp; 9</u></b>  <b>On Lead Examiner Cue:</b>  (insert Trigger 4)  Remaining Condensate  Booster Pumps Trip, RCIC  Fails to Automatically Start,  Steam Leak in Drywell,  Multiple Level Instrument  Failures</p>	BOP \ ATC	<ul style="list-style-type: none"> <li>• Recognize / report annunciators: <ul style="list-style-type: none"> <li>○ 09-6-3-12, COND BSTR PMP 33P-9B OVERLOAD OR TRIP (first)</li> <li>○ 09-6-3-02, COND BSTR PMP 33P-9A OVERLOAD OR TRIP (20 seconds later)</li> </ul> </li> <li>• Recognize / report trip of Condensate Booster pumps</li> <li>• Recognize / report degrading Primary Containment parameters (delayed)</li> <li>• Recognize / report loss of Reactor water level instruments (delayed)</li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<b>Critical Task #1</b>		<b>Given a coolant leak inside the Containment, the crew will spray the Drywell, in accordance with EOP-4. Drywell spray must be initiated within 15 minutes of Torus pressure exceeding 15 psig.</b>	<b>Pass / Fail</b>
<b>Critical Task #1 Standard:</b>		<b>Initiate Drywell spray.</b>	
<b>Critical Task #2</b>		<b>Given an unknown Reactor water level, the crew will flood the RPV, in accordance with EOP-7. The RPV must be flooded to the Main Steam Lines within 30 minutes of when Reactor water level becomes unknown.</b>	<b>Pass / Fail</b>
<b>Critical Task #2 Standard:</b>		<b>Open 7 SRVs.</b>	
	SRO	<ul style="list-style-type: none"> <li>• Direct a manual Reactor scram</li> <li>• Enter AOP-1, Reactor Scram</li> <li>• Enter EOP-2 (RPV Control) on low Reactor water level, high Drywell pressure, and high Drywell temperature (as occur)</li> <li>• Enter EOP-4 (Primary Containment Control) on high Drywell pressure and high Drywell temperature (as they occur)</li> <li>• Acknowledge RCIC failure to auto start</li> <li>• Direct Reactor water level control 180-220" using RCIC, SLC, and/or CRD</li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<p><b><u>Role Play:</u></b></p> <p>When directed to place Control Room, Relay Room, and/or TSC filtered ventilation in service, acknowledge direction.</p>		<ul style="list-style-type: none"> <li>• Direct Reactor pressure control 800-1000 psig using TBVs</li> <li>• Enter AOP-39 (Loss of Coolant)</li> <li>• Direct Control Room and Relay Room Ventilation isolated per OP-55B Section G within 30 minutes</li> <li>• Direct TSC filtered ventilation started per Section D of OP-59B within 60 minutes</li> <li>• May direct Core Spray and RHR injection prevented per EP-5</li> <li>• When Primary Containment pressure exceeds 2.7 psig and before Torus pressure exceeds 15 psig, direct Torus Spray</li> <li>• When Torus pressure exceeds 15 psig:               <ul style="list-style-type: none"> <li>○ Verify Recirculation pumps tripped</li> <li>○ Verify trip of Drywell cooling fans</li> <li>○ <b>Direct initiation of Drywell Spray</b></li> </ul> </li> </ul>	<p><b>Critical Task #1</b></p>
	SRO cont.	<ul style="list-style-type: none"> <li>• Acknowledges failure of Reactor water level instruments</li> <li>• Acknowledge that Reactor water level cannot be determined</li> <li>• Exit EOP-2</li> <li>• Enter EOP-7 (RPV Flooding) Shutdown Flooding Leg</li> <li>• <b>Direct open all 7 ADS valves</b></li> <li>• Direct closed the following valves:               <ul style="list-style-type: none"> <li>○ MSIVs</li> <li>○ Main steam line drain valves</li> </ul> </li> </ul>	<p><b>Critical Task #2</b></p>

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
		<ul style="list-style-type: none"> <li>○ RCIC steam isolation valves per EP-2</li> <li>○ HPCI steam isolation valves per EP-2</li> <li>• Direct Reactor injection using Condensate, Core Spray, and/or LPCI to flood the Reactor to the main steam lines</li> <li>• Once Reactor is flooded to the main steam lines, direct controlling Reactor injection flow rate as low as possible</li> </ul>	
	ATC	<ul style="list-style-type: none"> <li>• Enter AOP-1</li> <li>• Depress MANUAL SCRAM A and MANUAL SCRAM B pushbuttons</li> <li>• Place RX MODE switch in SHUTDOWN</li> <li>• Fully insert IRMs and SRMs</li> <li>• Observe Reactor power lowering</li> <li>• Ensure closed SDIV vent and drain valves</li> <li>• Ensure Main Turbine is tripped</li> <li>• May control Reactor pressure on SRVs</li> <li>• May begin Reactor depressurization</li> </ul>	
	ATC / BOP	<ul style="list-style-type: none"> <li>• Attempt to maintain Reactor water level with RCIC, SLC and/or CRD</li> <li>• Initiate Torus spray:               <ul style="list-style-type: none"> <li>○ IF RPV water level is LESS THAN 10 inches on fuel zone water level indication, AND the EOPs permit diverting LPCI flow, THEN place DW &amp; TORUS SPRAY VLV OVERRIDE OF FUEL ZONE LVL 10A-S18A(B) keylock switch in MANUAL OVERRD</li> <li>○ Place SPRAY CNTRL 10A-S17A(B) switch to MANUAL,</li> </ul> </li> </ul>	



INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
	ATC / BOP cont.	<p>spring return to normal</p> <ul style="list-style-type: none"> <li>○ Verify white SPRAY PERM 10A-DS67A(B) light is on</li> <li>○ Ensure available RHR pumps in RHR Loop A(B) are running</li> <li>○ Open RHR TEST TORUS CLG &amp; SPRAY 10MOV-39A(B)</li> <li>○ Throttle TORUS SPRAY INBD VLV 10MOV-38A(B) to establish desired torus spray flow rate</li> <li>○ WHEN RHR Loop A flow is GREATER THAN 1500 gpm, ensure closed MIN FLOW VLV 10MOV-16A(B)</li> <li>○ Throttle RHR TEST &amp; TORUS CLG 10MOV-34A(B) to divert excess flow to the torus to maintain &gt; 6,500 gpm RHR Loop A(B) flow with one RHR pump operating or &gt; 13,000 gpm RHR Loop A(B) flow with two RHR pumps operating</li> <li>• Establish RHRSW flow and temperature control: <ul style="list-style-type: none"> <li>▪ Start one of the RHRSW pumps</li> <li>▪ Throttle RHRSW DISCH VLV FROM HX A(B) 10MOV-89A(B) to establish 2500 to 4000 gpm</li> <li>▪ Start the second RHRSW pump if desired</li> <li>▪ Throttle RHRSW DISCH VLV FROM HX A(B) 10MOV-89A(B) to establish 2500 to 4000 gpm per RHRSW pump</li> </ul> </li> <li>• IF drywell or torus sprays are in service, THEN establish 4000 gpm per RHRSW pump</li> <li>• Close HX A(B) BYP VLV 10MOV-66A(B)</li> <li>• Ensure Recirc pumps tripped</li> <li>• Ensure Drywell Cooling fans tripped</li> <li>• <b>Initiate Drywell spray:</b> <ul style="list-style-type: none"> <li>○ IF RPV water level is LESS THAN 10 inches on fuel zone water level indication, AND the EOPs permit diverting LPCI</li> </ul> </li> </ul>	<b>Critical Task #1</b>

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
		<p>flow, THEN place DW &amp; TORUS SPRAY VLV OVERRIDE OF FUEL ZONE LVL 10A-S18A(B) keylock switch in MANUAL OVERRD</p> <ul style="list-style-type: none"> <li>○ Place SPRAY CNTRL 10A-S17A(B) switch to MANUAL, spring return to normal</li> <li>○ Verify white SPRAY PERM 10A-DS67A(B) light is on</li> <li>○ Ensure available RHR pumps in RHR Loop A(B) are running</li> <li>○ Open DW SPRAY OUTBD VLV 10MOV-26A(B)</li> <li>○ Throttle DW SPRAY INBD VLV 10MOV-31A(B) to establish desired drywell spray flow rate</li> </ul>	
	ATC / BOP	<ul style="list-style-type: none"> <li>● Recognize / report failure of Reactor water level instruments.</li> <li>● Recognize / report that Reactor water level cannot be determined</li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
	ATC / BOP cont.	<ul style="list-style-type: none"> <li>• <b>Open 7 ADS valves</b></li> <li>• Close the following valves:               <ul style="list-style-type: none"> <li>○ MSIVs</li> <li>○ Main steam line drain valves</li> <li>○ RCIC steam isolation valves per EP-2 section 5.12:                   <ul style="list-style-type: none"> <li>▪ Place 13MOV-16 AUTO CONTROL BYPASS switch 13A-S2A in bypass</li> <li>▪ Ensure closed the following valves:                       <ul style="list-style-type: none"> <li>• 13MOV-15 INBD STM SUPP VLV</li> <li>• 13MOV-16 OUTBD STM SUPP VLV</li> </ul> </li> </ul> </li> <li>○ HPCI steam isolation valves per EP-2 section 5.11:                   <ul style="list-style-type: none"> <li>▪ Place the following HPCI steam supply isolation valve auto control bypass switches in BYPASS:                       <ul style="list-style-type: none"> <li>• 23MOV-15 AUTO CONTROL BYPASS 23A-S1A</li> <li>• 23MOV-16 AUTO CONTROL BYPASS 23A-S2A</li> </ul> </li> <li>▪ Ensure closed the following valves:                       <ul style="list-style-type: none"> <li>• STM LINE WARMING ISOL VLV 23MOV-60</li> <li>• INBD STM SUPP VLV 23MOV-15</li> <li>• OUTBD STM SUPP VLV 23MOV-16</li> </ul> </li> </ul> </li> </ul> </li> <li>• Recognize / report indications of Reactor flooded to the main steam lines</li> </ul>	<b>Critical Task #2</b>

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
		<ul style="list-style-type: none"> <li>• Lowers Reactor injection flow rate of Core Spray, LPCI, and Condensate while maintaining Reactor flooded</li> </ul>	

### Termination Criteria:

- Seven SRVs have been opened
- Indications of a flooded RPV are observed (eg. Reactor re-pressurizes after initial depressurization, SRVs re-open after closing)

## ATTACHMENT 1

### Shift Turnover

The plant is operating at approximately 100% power.

RBCLC pump A is out of service for maintenance.

When you take the shift, swap TBCLC pumps per OP-41 section G.1. Start TBCLC pump C and secure TBCLC pump A.

# JAMES A. FITZPATRICK NUCLEAR POWER PLANT

## LOI 18-1 NRC EXAMINATION SCENARIO 4

**TITLE:** LOI 18-1 NRC EXAMINATION SCENARIO 4

**SCENARIO NUMBER:** NRC 4

**PATH:** STAND ALONE

**Validation:** \_\_\_\_\_ **Training:** \_\_\_\_\_ **Operations:** \_\_\_\_\_

	CANDIDATES
CRS	
ATC	
BOP	

A. **TITLE:** LOI 18-1 NRC EXAMINATION SCENARIO 4

B. **SCENARIO SETUP:**

1. IC-224

2. Special Instructions:

- a. The plant is operating at approximately 90% power.
- b. RBCLC pump A is out of service for maintenance.
- c. Torus Cooling is in service on RHR A following completion of RCIC surveillance testing.

3. Preset Conditions:

<SCHEDULE>

<ITEM row = "1">  
    <TIME>0</TIME>  
    <ACTION>Insert malfunction SW04:A after 15 on event 1</ACTION>  
    <DESCRIPTION>RHR SERVICE WATER PUMP A TRIP</DESCRIPTION>  
</ITEM>

<ITEM row = "2">  
    <TIME>0</TIME>  
    <ACTION>Insert malfunction RD10:26:43</ACTION>  
    <DESCRIPTION>CONTROL ROD (26-43) BLADE STUCK</DESCRIPTION>  
</ITEM>

<ITEM row = "3">  
    <TIME>0</TIME>  
    <ACTION>Insert malfunction RC09 to 2.00000 on event 2</ACTION>  
    <DESCRIPTION>RCIC STEAM LINE BREAK</DESCRIPTION>  
</ITEM>

<ITEM row = "5">  
    <TIME>0</TIME>  
    <ACTION>Insert malfunction MC01 from 25.00000 to 40.00000 in 480 on event  
        3</ACTION>  
    <DESCRIPTION>MAIN CONDENSER AIR IN LEAKAGE</DESCRIPTION>  
</ITEM>

<ITEM row = "6">  
    <TIME>0</TIME>  
    <ACTION>Insert malfunction CU09 after 150 to 30.00000 in 90 on event  
4</ACTION>

<DESCRIPTION>RWCU INLET PIPE FAILURE</DESCRIPTION>  
 </ITEM>

<ITEM row = "7">  
 <TIME>0</TIME>  
 <ACTION>Insert malfunction RD13:30:39</ACTION>  
 <DESCRIPTION>CONTROL ROD (30-39) FAILURE TO SCRAM</DESCRIPTION>  
 </ITEM>

<ITEM row = "8">  
 <TIME>0</TIME>  
 <ACTION>Insert malfunction RD13:30:43</ACTION>  
 <DESCRIPTION>CONTROL ROD (30-43) FAILURE TO SCRAM</DESCRIPTION>  
 </ITEM>

<ITEM row = "9">  
 <TIME>0</TIME>  
 <ACTION>Insert malfunction RD13:30:47</ACTION>  
 <DESCRIPTION>CONTROL ROD (30-47) FAILURE TO SCRAM</DESCRIPTION>  
 </ITEM>

<ITEM row = "10">  
 <TIME>0</TIME>  
 <ACTION>Insert malfunction RD13:34:39</ACTION>  
 <DESCRIPTION>CONTROL ROD (34-39) FAILURE TO SCRAM</DESCRIPTION>  
 </ITEM>

<ITEM row = "11">  
 <TIME>0</TIME>  
 <ACTION>Insert malfunction RD13:34:43</ACTION>  
 <DESCRIPTION>CONTROL ROD (34-43) FAILURE TO SCRAM</DESCRIPTION>  
 </ITEM>

<ITEM row = "12">  
 <TIME>0</TIME>  
 <ACTION>Insert malfunction RD13:34:47</ACTION>  
 <DESCRIPTION>CONTROL ROD (34-47) FAILURE TO SCRAM</DESCRIPTION>  
 </ITEM>

<ITEM row = "13">  
 <TIME>0</TIME>  
 <ACTION>Insert malfunction RD13:38:39</ACTION>  
 <DESCRIPTION>CONTROL ROD (38-39) FAILURE TO SCRAM</DESCRIPTION>  
 </ITEM>

<ITEM row = "14">



```

    <TIME>0</TIME>
    <ACTION>Insert malfunction RD13:38:43</ACTION>
    <DESCRIPTION>CONTROL ROD (38-43) FAILURE TO SCRAM</DESCRIPTION>
</ITEM>

<ITEM row = "15">
    <TIME>0</TIME>
    <ACTION>Insert malfunction RD13:38:47</ACTION>
    <DESCRIPTION>CONTROL ROD (38-47) FAILURE TO SCRAM</DESCRIPTION>
</ITEM>

<ITEM row = "16">
    <TIME>0</TIME>
    <ACTION>Insert malfunction RD13:30:51</ACTION>
    <DESCRIPTION>CONTROL ROD (30-51) FAILURE TO SCRAM</DESCRIPTION>
</ITEM>

<ITEM row = "17">
    <TIME>0</TIME>
    <ACTION>Insert malfunction FW01:A after 300 on event 4</ACTION>
    <DESCRIPTION>RX FEEDWTR PMP A TRIP</DESCRIPTION>
</ITEM>

<ITEM row = "18">
    <TIME>0</TIME>
    <ACTION>Insert malfunction FW01:B after 300 on event 4</ACTION>
    <DESCRIPTION>RX FEEDWTR PMP B TRIP</DESCRIPTION>
</ITEM>

<ITEM row = "19">
    <TIME>0</TIME>
    <ACTION>Insert malfunction HP01</ACTION>
    <DESCRIPTION>HPCI FAILURE TO AUTO START</DESCRIPTION>
</ITEM>

<ITEM row = "20">
    <TIME>0</TIME>
    <ACTION>Event Events/18-1 NRC/Scenario 4.evt</ACTION>
    <DESCRIPTION></DESCRIPTION>
</ITEM>

<ITEM row = "21">
    <TIME>0</TIME>
    <ACTION>Insert malfunction SW09:A</ACTION>
    <DESCRIPTION>RBCLC PUMP A TRIP</DESCRIPTION>
</ITEM>

```

```
<ITEM row = "22">
  <TIME>0</TIME>
  <ACTION>Insert malfunction AN933_31 to Off</ACTION>
  <DESCRIPTION>STM LEAK DET LOGIC A IN TEST</DESCRIPTION>
</ITEM>

<ITEM row = "23">
  <TIME>0</TIME>
  <ACTION>Insert malfunction AN933_32 to Off</ACTION>
  <DESCRIPTION>STM LEAK DET LOGIC B IN TEST</DESCRIPTION>
</ITEM>

<ITEM row = "24">
  <TIME>0</TIME>
  <ACTION>Insert override LD-ZDI2FS5A to TEST</ACTION>
  <DESCRIPTION>RCIC STM LEAK AUTO ISOL DIV I 2F-S5A</DESCRIPTION>
</ITEM>

<ITEM row = "25">
  <TIME>0</TIME>
  <ACTION>Insert override LD-ZDI2FS5B to TEST</ACTION>
  <DESCRIPTION>RCIC STM LEAK AUTO ISOL DIV II 2F-S5B</DESCRIPTION>
</ITEM>

<ITEM row = "26">
  <TIME>0</TIME>
  <ACTION>Insert remote RC03 to OUT</ACTION>
  <DESCRIPTION>RELAY 13A-K32 AA-69 OR AA-70 LEAD</DESCRIPTION>
</ITEM>

<ITEM row = "27">
  <TIME>0</TIME>
  <ACTION>Insert remote RC04 to OUT</ACTION>
  <DESCRIPTION>RELAY 13A-K12 AA-22 OR AA-23 LEAD</DESCRIPTION>
</ITEM>

<ITEM row = "28">
  <TIME>0</TIME>
  <ACTION>Insert override RD-ZDI3BS1 to NORM on event 4</ACTION>
  <DESCRIPTION>CRD DRIVE WTR PRESS 3-MOV-20</DESCRIPTION>
</ITEM>

</SCHEDULE>
```

<EVENT>

<TRIGGER id="1" description="zlo10as12a(2)==0">zlo10as12a(2)==0</TRIGGER>

<TRIGGER id="4" description="SCRAM full scram">(zlo5ads8a == 0) &amp&amp  
(zlo5ads8b == 0)</TRIGGER>

</EVENT>

**C. SCENARIO SUMMARY:**

The scenario will begin at approximately 90% power. RBCLC pump A is out of service for maintenance. Torus Cooling is in service on RHR A following completion of RCIC surveillance testing. The crew will begin the shift by securing Torus Cooling. While securing Torus Cooling, RHRSW pump A will spuriously trip. The SRO will determine the Technical Specification impact.

Following completion of this evolution, the crew will raise Reactor power using control rods and Recirculation flow. During the control rod withdrawals, the second rod will be stuck. The crew will raise drive water differential pressure to un-stick the control rod and complete the rod pattern adjustment.

A steam leak will develop from RCIC into the Reactor Building. RCIC will fail to automatically isolate on high temperature. The crew will enter EOP-5 (Secondary Containment Control) and isolate RCIC.

Elevated Main Condenser air in-leakage will occur. Main Condenser vacuum will degrade. The crew will enter AOP-31 and eventually insert a manual Reactor scram.

Following the manual scram attempt, all control rods do not fully insert (10 rods fail to scram but can be manually inserted). The crew will execute EOP-3 (Failure to Scram). Eventually, the 10 control rods will be inserted and the crew will transition from EOP-3 to EOP-2 (RPV Control). During this time, a coolant leak will develop in the Drywell. EOP-4 will also be executed due to the coolant leak. The crew will spray the Torus and Drywell.

Approximately 5 minutes after the scram, both Feedwater pumps will trip. Additionally, HPCI will fail to automatically start. The crew will control Reactor water level with HPCI, Condensate, CRD, and/or SLC.

The scenario will be terminated when all control rods are inserted, Containment pressure is being controlled per EOP-4, and Reactor water level is controlled above 0".

The plant is operating at approximately 90% power.

RBCLC pump A is out of service for maintenance.

Torus Cooling is in service following completion of RCIC surveillance testing.

When you take the shift:

1. Secure Torus Cooling per OP-13B.
2. Raise Reactor power using control rods and Recirculation flow per the provided reactivity instructions.

Critical Tasks/Standards	
<b>Critical Task #1:</b>	<b>Given a coolant leak inside the Containment, the crew will spray the Drywell, in accordance with EOP-4. Drywell spray must be initiated within 15 minutes of Torus pressure exceeding 15 psig.</b>
<b>Critical Task #2:</b>	<b>Given a coolant leak inside the Containment and degraded high pressure injection sources, the crew will establish injection to the Reactor, in accordance with EOP-2 and/or EOP-3. Injection must be established such that Reactor water level does not lower below -19".</b>
<b>Critical Task #3:</b>	<b>Given a failure to scram, the crew will initiate Control Rod insertion, in accordance with EOP-3. All insertable control rods must be inserted within one hour of the start of the failure to scram.</b>

**D. TERMINATION CUES:**

- All control rods are inserted
- Containment pressure controlled per EOP-4
- Reactor water level is controlled above 0"

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
Simulator in RUN Recorder and Alarm Power ON Simulator Checklist Complete			
Provide Turnover (Attach. 1)			
After the shift turnover, allow no more than five minutes for panel walkdown	All	<ul style="list-style-type: none"> <li>Walkdown the control panels and assume the watch</li> </ul>	
<b><u>Events 1 &amp; 2</u></b> <b>Secure Torus Cooling; RHRSW Pumps Trip</b>	SRO	<ul style="list-style-type: none"> <li>Perform Crew Brief</li> <li>Direct BOP to secure Torus Cooling per OP-13B sections F.1 and F.7</li> <li>Acknowledge report of RHRSW pump A trip</li> <li>Ensure ARP execution</li> <li>Declare RHRSW pump A inoperable</li> <li>Determine Technical Specification 3.7.1 Condition A must be entered (30 days)</li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<p><b>Note:</b> Trigger 1 automatically initiates when 10MOV-34A red light turns off to initiate event 2.</p>	BOP	<ul style="list-style-type: none"> <li>• Close RHR TEST &amp; TORUS CLG 10MOV-34A</li> <li>• IF RHR Loop A flow is LESS THAN 1500 gpm, THEN ensure open MIN FLOW VLV 10MOV-16A</li> <li>• IF RHR Loop A operation is not required, THEN shut down RHR Loop A per Subsection F.7</li> <li>• Ensure one of the RHR Loop A keep-full systems is in service as follows: <ul style="list-style-type: none"> <li>○ RHR KEEP-FULL PMP 10P-2A is running, OR</li> <li>○ 10RHR-274 (RHR loop A reactor head spray keep-full cond xfer connection valve) is throttled open</li> </ul> </li> <li>• Ensure closed the following valves: <ul style="list-style-type: none"> <li>○ RHR TEST &amp; TORUS CLG 10MOV-34A</li> <li>○ TORUS SPRAY INBD VLV 10MOV-38A</li> <li>○ DW SPRAY INBD VLV 10MOV-31A</li> </ul> </li> <li>• Ensure the following RHR pumps are stopped: <ul style="list-style-type: none"> <li>○ RHR PMP 10P-3A</li> <li>○ RHR PMP 10P-3C</li> </ul> </li> <li>• Ensure closed the following valves: <ul style="list-style-type: none"> <li>○ RHR TEST TORUS CLG &amp; SPRAY 10MOV-39A</li> <li>○ DW SPRAY OUTBD VLV 10MOV-26A</li> </ul> </li> <li>• Ensure open MIN FLOW VLV 10MOV-16A</li> <li>• Ensure open HX A BYP VLV 10MOV-66A</li> <li>• IF RHRSW Loop A operation is not required, THEN shut down RHRSW Loop A as follows: <ul style="list-style-type: none"> <li>○ Close RHRSW DISCH VLV FROM HX A 10MOV-89A</li> </ul> </li> </ul>	



INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<p><b><u>Role Play:</u></b> If dispatched to investigate RHRSW pump A, wait 2 minutes, then report that their breaker is tripped, but there are no other abnormal indications at the breaker or pump.</p>	BOP cont.	<ul style="list-style-type: none"> <li>○ Ensure the following RHRSW pumps are stopped:               <ul style="list-style-type: none"> <li>▪ RHRSW PMP 10P-1A</li> <li>▪ RHRSW PMP 10P-1C</li> </ul> </li> <li>• Recognize / report Annunciator 09-3-1-25</li> <li>• Recognize / report trip of RHRSW pump A</li> <li>• Dispatch operator to investigate</li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<b>Events 3 &amp; 4</b> <b>Raise Reactor Power with Control Rods and Recirculation Flow; Stuck Control Rod</b>	SRO	<ul style="list-style-type: none"> <li>• Direct ATC to withdraw control rods per provided instructions</li> <li>• Provide oversight of reactivity manipulation</li> <li>• Acknowledge control rod 26-43 is stuck</li> <li>• Direct moving control rod 26-43 with raised drive water pressure per OP-25</li> <li>• Acknowledge control rod 26-43 has moved</li> <li>• Direct ATC to raise Reactor power to 98% with Recirculation flow</li> </ul>	
<b>Note:</b> Control rods 10-27, 26-43, 42-27, and 26-11 are to be moved from 08 to 10. Control rods 26-43 will initially be stuck and fail to move at normal drive water pressure.  <b>Role Play:</b> If dispatched to investigate, wait 2 minutes and then report nothing is obviously abnormal at HCU 26-43.	ATC	<ul style="list-style-type: none"> <li>• While withdrawing control rods, monitor the following: <ul style="list-style-type: none"> <li>○ Nuclear instrumentation</li> <li>○ Control rod position indication</li> </ul> </li> <li>• Ensure ROD SEL PWR switch is in ON</li> <li>• Ensure control rod to be moved is selected by depressing rod select pushbutton on ROD SEL matrix, if necessary</li> <li>• Verify the following: <ul style="list-style-type: none"> <li>○ Select pushbutton is brightly backlit</li> <li>○ Control rod indicating light is on</li> <li>○ ROD OUT PERM light is on</li> </ul> </li> <li>• Repeat for other rods</li> <li>• Recognize / report control rod 26-43 is stuck</li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<p><b>Booth Operator:</b> Once drive water pressure has been raised <math>\geq 300</math> psig, delete malfunction RD10:26:43.</p> <p><b><u>Note:</u></b> It is recommended to move on to the next event after a few Recirc flow manipulations have been observed.</p>		<ul style="list-style-type: none"> <li>• Raises CRD drive water differential pressure in 50 psid increments per OP-25, Section E.6</li> <li>• Attempt to withdraw rod 26-43</li> <li>• Report rod 26-43 moved to position 10</li> <li>• Restore CRD drive water differential pressure to 260-270 psid</li> <li>• Continue rod pattern adjustments</li> <li>• Report completion of control rod withdrawals</li> <li>• Raise Reactor power to 98% using Recirculation flow:               <ul style="list-style-type: none"> <li>○ Raise Recirc flow alternately with RWR MG A(B) SPEED CNTRL</li> <li>○ Monitor APRMs, CTP, Recirc flow, Reactor water level</li> </ul> </li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<b>Event 5</b> <b>RCIC Steam Leak, Fails to Automatically Isolate</b> (on Lead Examiner Cue: ACTIVATE TRIGGER 2)	BOP / ATC	<ul style="list-style-type: none"> <li>Recognize / report EPIC alarms for high area temperatures</li> <li>Recognize / report annunciators 09-3-3-2(12), DIV I(II) AMBIENT TEMP HI</li> <li>Recognize / report annunciator 09-4-1-22, RCIC ISOL TRIP LOGIC INITIATED</li> <li>Recognize / report RCIC has failed to automatically isolate</li> </ul>	
<b>Note:</b> HPCI may automatically isolate on high area temperature depending on the timing of the manual RCIC isolation. HPCI may also be manually isolated due to the given high temperature indications in an area common to HPCI and RCIC. If HPCI is isolated, there will be additional Technical Specification entries (3.5.1 Conditions C and G, 3.5.3	SRO	<ul style="list-style-type: none"> <li>Acknowledge reports</li> <li>Enter EOP-5 (Secondary Containment Control) on high area temperature</li> <li>Direct isolation of RCIC</li> <li>Declare RCIC inoperable</li> <li>Determine Technical Specification 3.5.3 Condition A must be entered (verify HPCI operable immediately, restore RCIC to operable within 14 days)</li> <li>If HPCI automatically isolates, determine Technical Specification 3.5.1 Conditions C and G (12 hours) must be entered, along with Technical Specification 3.5.3 Condition B (12 hours)</li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
Condition B). In this case, HPCI can be manually restored after area temperatures lower.			
	BOP	<ul style="list-style-type: none"> <li>Isolate RCIC: <ul style="list-style-type: none"> <li>Close 13MOV-15</li> <li>Close 13MOV-16</li> </ul> </li> <li>May perform RCIC isolation verification section of OP-19 section G, as time permits</li> </ul>	
<b><u>Events 6, 7, 8, and 9</u></b> <b>Loss of Main Condenser Vacuum; Coolant Leak in Drywell; Ten Control Rods Fail to Scram; CRD Drive Water Pressure Control Valve Fails As-Is; Feedwater Pumps Trip; HPCI Fails to Automatically Start</b> (on Lead Examiner Cue: ACTIVATE TRIGGER 3)	BOP / ATC	<ul style="list-style-type: none"> <li>Recognize / report annunciator 09-3-1-28 Offgas Recombiner Trouble</li> <li>Recognize / report lowering Main Condenser vacuum</li> </ul>	
<b>Critical Task #1</b>		Given a coolant leak inside the Containment, the crew will spray the Drywell, in accordance with EOP-4. Drywell spray must be initiated within 15 minutes of Torus pressure exceeding 15 psig.	<b>Pass / Fail</b>
<b>Critical Task #2</b>		Given a coolant leak inside the Containment and degraded high pressure injection sources, the crew will establish injection to the Reactor, in accordance with EOP-2 and/or EOP-3. Injection must be established such that Reactor	<b>Pass / Fail</b>

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
		<b>water level does not lower below -19”.</b>	
<b>Critical Task #3</b>		<b>Given a failure to scram, the crew will initiate Control Rod insertion, in accordance with EOP-3. All insertable control rods must be inserted within one hour of the start of the failure to scram.</b>	<b>Pass / Fail</b>
<p><b>Note:</b> The coolant leak starts 2.5 minutes after the scram. Feedwater pumps trip 5 minutes after the scram.</p> <p><b>Role Play:</b> If directed to insert MSIV low level jumpers, run EP2_MSIVLEVEL schedule.</p>	SRO	<ul style="list-style-type: none"> <li>• Acknowledge report</li> <li>• Enter AOP-31 (Loss of Condenser Vacuum)</li> <li>• Direct power reduction per RAP-7.3.16 to maintain Main Condenser vacuum within Normal Operating Region, as time permits</li> <li>• Direct Reactor scram</li> <li>• Enter EOP-2 (RPV Control) on low Reactor water level</li> <li>• Acknowledge failure of multiple control rods to insert</li> <li>• Determine the Reactor will NOT remain shutdown under all conditions without boron</li> <li>• Exit EOP-2</li> <li>• Enter EOP-3 (Failure to Scram)</li> <li>• Direct EOP-3 Failure to Scram Actions</li> <li>• May direct bypassing MSIV low RPV water level isolation interlocks per EP-2</li> <li>• Direct Reactor water level controlled between -19” and</li> </ul>	



INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<p><b>Role Play:</b> If directed to reset ARI, insert Remote RP20 to TEST.</p>	ATC	<ul style="list-style-type: none"> <li>• Lower Reactor power with recirculation flow and/or CRAM rods, as required / directed</li> <li>• Depress manual scram pushbuttons</li> <li>• Place Reactor Mode switch in SHUTDOWN</li> <li>• Manually initiates ARI</li> <li>• Recognize / report multiple control rods fail to insert</li> <li>• Perform EOP-3 Failure to Scram Actions:               <ul style="list-style-type: none"> <li>○ Ensure Rx Mode Switch in SHUTDOWN</li> <li>○ Ensure ARI initiated</li> <li>○ Ensure recirculation flow is runback to minimum</li> <li>○ Determine Rx power less than 2.5%</li> </ul> </li> </ul>	
	ATC cont.	<ul style="list-style-type: none"> <li>○ Override ADS:               <ul style="list-style-type: none"> <li>▪ Place ADS LOGIC OVERRIDE &amp; RESET LOGIC A 2E-S2A in OVERRIDE</li> <li>▪ Place ADS LOGIC OVERRIDE &amp; RESET LOGIC B 2E-S2B in OVERRIDE</li> <li>▪ Verify annunciator 09-4-1-27 ADS OVERRIDE SW IN OVERRIDE is in alarm</li> <li>▪ Verify white ADS LOGIC OVERRIDDEN 2E-DS10 light is on</li> </ul> </li> <li>• Insert IRMs and SRMs</li> <li>• Range IRMs as necessary</li> </ul>	



INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<p><b>Role Play:</b> If directed to close 03CRD-56 and 91, insert Remote and report those valves closed.</p>	<p>ATC cont.</p>	<ul style="list-style-type: none"> <li>• Perform EP-3 Backup Control Rod Insertion Actions               <ul style="list-style-type: none"> <li>○ Direct NPO to reset ARI per Subsection 5.4</li> <li>○ Reset Reactor scram per Subsection 5.5                   <ul style="list-style-type: none"> <li>▪ Direct installing RPS jumpers</li> <li>▪ Place SDIV HI LVL TRIP switch in BYPASS</li> <li>▪ Place RX SCRAM RESET switch to GROUP 2&amp;3, then to GROUP 1&amp;4, spring return to NORM</li> <li>▪ Verify the following lights are on:                       <ul style="list-style-type: none"> <li>• RPS A SCRAM GROUPS 1, 2, 3, and 4</li> <li>• RPS B SCRAM GROUPS 1, 2, 3, and 4</li> </ul> </li> <li>▪ Verify closed all scram inlet/outlet valves using one or a combination of the following:                       <ul style="list-style-type: none"> <li>• Blue SCRAM lights are off at FULL CORE DISPLAY</li> <li>• Local valve position indication</li> </ul> </li> </ul> </li> <li>○ <b>Insert rods using RMCS per Subsection 5.7:</b></li> <li>○ Place RWM keylock switch in BYPASS</li> <li>○ If reactor scram can be reset, then reset reactor scram as follows:                   <ul style="list-style-type: none"> <li>▪ Place SDIV HI LVL TRIP switch in BYPASS</li> <li>▪ Place RX SCRAM RESET switch to GROUP 2&amp;3, then to GROUP 1&amp;4, spring return to NORM</li> </ul> </li> <li>○ Verify the following lights are on:                   <ul style="list-style-type: none"> <li>▪ RPS A SCRAM GROUPS 1, 2, 3, and 4</li> <li>▪ RPS B SCRAM GROUPS 1, 2, 3, and 4</li> </ul> </li> <li>○ Raise CRD drive water differential pressure using one or more of the following methods:</li> </ul> </li></ul>	<p><b>Critical Task #3</b></p>

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
<p><b>Note:</b> CRD DRV WTR PRESS VLV 03MOV-20 is failed as-is, which will prevent drifting in control rods by raising cooling water D/P.</p>		<ul style="list-style-type: none"> <li>▪ Closing 03CRD-56, if the scram cannot be reset</li> <li>▪ Starting second CRD pump</li> <li>▪ Closing CRD DRV WTR PRESS VLV 03MOV-20 (won't work due to malfunction)</li> <li>▪ Raising CRD System flow rate using CRD FLOW CNTRL 03FIC-301</li> <li>○ Attempt to insert each control rod as follows, in the order specified on Attachment 1 and/or Attachment 2:               <ul style="list-style-type: none"> <li>▪ Select control rod on ROD SEL matrix.</li> <li>▪ Insert control rod using one of the following switches:                   <ul style="list-style-type: none"> <li>• ROD MOVEMENT CNTRL</li> <li>• ROD EMERG IN NOTCH OVERRIDE</li> </ul> </li> <li>▪ Repeat Steps A through B to insert control rods, as required.</li> </ul> </li> <li>○ May attempt to insert rods by raising dP using CRD cooling water per Subsection 5.8:               <ul style="list-style-type: none"> <li>▪ May direct NPO to close 03CRD-56</li> <li>▪ Direct NPO to close 03CRD-91</li> <li>▪ Ensure open CRD DRV WTR PRESS VLV 03MOV-20</li> <li>▪ Ensure closed CRD CLG WTR PRESS CNTRL VLV 03MOV-22</li> <li>▪ Start 2<sup>nd</sup> CRD pump</li> <li>▪ Place CRD FLOW CNTRL 03FIC 301 placed in MANUAL</li> <li>▪ Raise CRD FLOW CNTRL 03FIC 301 output signal to maximum.</li> </ul> </li> <li>○ May attempt repeated manual scrams (won't work for</li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
		given rod malfunction)	
	BOP	<ul style="list-style-type: none"> <li>• Coordinate with ATC to lower Reactor power with Recirculation flow, as required / directed</li> <li>• Terminate and prevent Core Spray Loop A(B), as time permits               <ul style="list-style-type: none"> <li>○ Place 14MOV-11A(B) AUTO ACTUATION BYPASS SW 14A-S16A(B) switch in BYPASS</li> <li>○ Verify white 14MOV-11A(B) AUTO ACTUATION BYPASS LT 14A-DS35A(B) light is on</li> <li>○ Ensure closed OUTBD INJ VLV 14MOV-11A(B)</li> <li>○ Ensure PMP 14P-1A(B) is stopped</li> </ul> </li> <li>• Control Reactor pressure 800-1000 psig using TBVs</li> <li>• <b>Control Reactor water level between -19" and 222.5" with only Group 1 Water Level Control Systems (Condensate/Feedwater, HPCI, CRD, SLC)</b></li> <li>• Recognize / report failure of HPCI to automatically start</li> <li>• Manually starts HPCI:               <ul style="list-style-type: none"> <li>○ Ensure open 23MOV-16</li> <li>○ Ensure running 23P-140</li> <li>○ Ensure open 23MOV-14</li> <li>○ Perform the following without unnecessary delay:                   <ul style="list-style-type: none"> <li>▪ If 09-3-3-28 is in, then depress 23A-S17</li> <li>▪ Ensure running 23P-150</li> <li>▪ Ensure open 23MOV-19</li> </ul> </li> </ul> </li> </ul>	<b>Critical Task #2</b>

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
		<ul style="list-style-type: none"> <li>Recognize / report trip of Feedwater pumps</li> <li>May reduce Reactor pressure to get within shutoff head of Condensate Booster pumps</li> </ul>	
	ATC / BOP	<ul style="list-style-type: none"> <li>Initiate Torus spray: <ul style="list-style-type: none"> <li>Place SPRAY CNTRL 10A-S17B switch to MANUAL, spring return to normal</li> <li>Verify white SPRAY PERM 10A-DS67B light is on</li> <li>Ensure available RHR pumps in RHR Loop B are running (recognize/report failure to automatically start)</li> <li>Open RHR TEST TORUS CLG &amp; SPRAY 10MOV-39B</li> <li>Throttle TORUS SPRAY INBD VLV 10MOV-38B to establish desired torus spray flow rate</li> <li>WHEN RHR Loop B flow is GREATER THAN 1500 gpm, ensure closed MIN FLOW VLV 10MOV-16B</li> <li>Throttle RHR TEST &amp; TORUS CLG 10MOV-34B to divert excess flow to the torus to maintain &gt; 6,500 gpm RHR Loop B flow with one RHR pump operating or &gt; 13,000 gpm RHR Loop B flow with two RHR pumps operating</li> </ul> </li> <li>Establish RHRSW flow and temperature control: <ul style="list-style-type: none"> <li>Establish RHRSW flow and temperature control:</li> <li>Start one of the RHRSW pumps</li> <li>Throttle RHRSW DISCH VLV FROM HX B 10MOV-89B to establish 2500 to 4000 gpm</li> <li>Start the second RHRSW pump if desired</li> </ul> </li> </ul>	

INSTRUCTOR ACTIVITY	POSITION	OPERATOR ACTIONS/STANDARD	COMMENTS/EVALUATION
		<ul style="list-style-type: none"> <li>▪ Throttle RHRSW DISCH VLV FROM HX B 10MOV-89B to establish 2500 to 4000 gpm per RHRSW pump</li> <li>• IF drywell or torus sprays are in service, THEN establish 4000 gpm per RHRSW pump</li> <li>• Close HX B BYP VLV 10MOV-66B</li> <li>• Ensure Recirc pumps tripped</li> <li>• Ensure Drywell Cooling fans tripped</li> <li>• <b>Initiate Drywell spray:</b></li> <li>• Place SPRAY CNTRL 10A-S17B switch to MANUAL, spring return to normal <ul style="list-style-type: none"> <li>▪ Verify white SPRAY PERM 10A-DS67B light is on</li> <li>▪ Ensure available RHR pumps in RHR Loop B are running</li> <li>▪ Open DW SPRAY OUTBD VLV 10MOV-26B</li> <li>▪ Throttle DW SPRAY INBD VLV 10MOV-31B to establish desired drywell spray flow rate</li> </ul> </li> </ul>	<b>Critical Task #1</b>

### Termination Criteria:

All control rods are inserted, Containment pressure controlled per EOP-4, and Reactor water level is controlled above 0".

### **Shift Turnover**

The plant is operating at approximately 90% power.

RBCLC pump A is out of service for maintenance.

Torus Cooling is in service following completion of RCIC surveillance testing.

When you take the shift:

1. Secure Torus Cooling per OP-13B.
2. Raise Reactor power using control rods and Recirculation flow per the provided reactivity instructions.

**REACTIVITY MANEUVER INSTRUCTION FORMS**

Sheet 1 of 1

Reactivity/monitoring Steps – (site specific control rod movement control sheet format is to be used)

**Power Ascension  
Today**

Page 1 of 1

Init	Step	Action	Rod	From Notch	To Notch	Method	Cplg Chk	RSCS Grp	Notes
	1	Withdraw	<b>10-27</b>	08	10	Notch	NA	-	
	2	Withdraw	<b>26-43</b>	08	10	Notch	NA	-	
	3	Withdraw	<b>42-27</b>	08	10	Notch	NA	-	
	4	Withdraw	<b>26-11</b>	08	10	Notch	NA	-	
	5	Raise power to 98% RTP	-	-	-	RWR	-	-	

Prepared By: Joe Allen  
(RxEng)

SM Approval: Dave Roe  
(Shift Manager)

Reviewed By: Bob Jones  
(RxEng or SRO)

**Stamps**

**CONTROL ROOM OPERATOR**





**REACTIVITY MANEUVER INSTRUCTION FORMS**

Sheet 1 of 1

Reactivity/monitoring Steps – (site specific control rod movement control sheet format is to be used)

**Power Ascension**

**Today**

Page 1 of 1

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	4	Withdraw	<b>26-11</b>	08	10	Notch	NA	-	
	5	Raise power to 98% RTP	-	-	-	RWR	-	-	

Prepared By: Joe Allen  
(RxEng)

SM Approval: Dave Roe  
(Shift Manager)

Reviewed By: Bob Jones  
(RxEng or SRO)

**Stamps**

**INDEPENDENT VERIFIER**

**REACTIVITY MANEUVER INSTRUCTION FORMS**

Sheet 1 of 1

Reactivity/monitoring Steps – (site specific control rod movement control sheet format is to be used)

**Power Ascension**

**Today**

Page 1 of 1

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	4	Withdraw	<b>26-11</b>	08	10	Notch	NA	-	
	5	Raise power to 98% RTP	-	-	-	RWR	-	-	

Prepared By: Joe Allen  
(RxEng)

SM Approval: Dave Roe  
(Shift Manager)

Reviewed By: Bob Jones  
(RxEng or SRO)

**Stamps**

**UNIT SUPERVISOR**