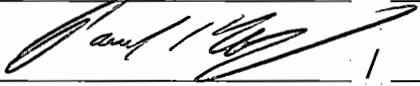





Training ID: 2019 NMP2 NRC RO Admin COO1 Revision: 0.0

Title: Determine Containment Water Level

## Approvals:

	Signature	/	Printed Name	Date
Developed by:		/	Paul Isham	1/16/19
Validated by:		/	Justin Wilcox	8/1/19
Facility Reviewer:		/	Paul Fenn	9/17/19

Approximate Duration: 30 minutes

## Documentation of Performance:

Performer: \_\_\_\_\_

Evaluator: \_\_\_\_\_

Start Time: \_\_\_\_\_ Stop Time: \_\_\_\_\_ Completion Time: \_\_\_\_\_

Grade: **Pass / Fail**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluators Signature: \_\_\_\_\_ Date: \_\_\_\_\_



## References

1. N2-EOP-6.23, Containment Water Level Determination
2. NUREG 1123, 2.1.25 (3.9)

## Instructor Information

### A. JPM Information

#### 1. Description

- a. This JPM tests the operator's ability to analyze and interpret plant data. Given a copy of N2-EOP-6.23, Containment Level Determination, the applicant will interpret given data to determine containment water level.
- b. Critical steps are annotated in the Evaluator standard column with a bolded **\*Pass/Fail**.

#### 2. Task Information:

- a. N2-EOP06-01001-23, Implement N2-EOP-6.23, Containment Level Determination.
- b. K/A 2.1.25 (3.9) Ability to interpret reference materials, such as graphs, curves, tables, etc.

#### 3. Evaluation / Task Criteria

Evaluation Method	Perform
Evaluation Location	Classroom
Time Critical Task	No
Alternate Path	No
LOD >1.0	Yes

#### 4. Recommended Start Location

- a. Training Classroom



5. JPM Setup (if required)

- a. Ensure adequate copies of N2-EOP-6.23 are available, marked complete to step 6.7.
- b. Ensure calculators are available
- c. Ensure a straight edge is available





## **B. Read Before Every JPM Performance**

For the performance of this JPM, I will act as all those you need to talk to. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary. (Note, read the next only if conducting a plant JPM). With the exception of accessing panels, no plant equipment will be physically manipulated. Repositioning of devices will be simulated by discussion and acknowledged by my cues.

## **C. Read Before Each Evaluated JPM**

This evaluated JPM is a measure of your ability to perform this task independently. The US has determined that a verifier is not available and that additional verification will not be provided.



<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"><li>• Approximately one day ago the plant experienced a large break LOCA</li><li>• In order to maintain adequate core cooling, operators have been injecting into the RPV with systems whose suction source is outside the primary containment.</li><li>• The EOP Director has been monitoring the Primary Containment Pressure Limit (PCPL) per N2-EOP-RPV.</li><li>• Primary Containment Water Level has just exceeded 224 feet</li><li>• The EOP Director has directed the performance of N2-EOP-6.23, Containment Level Determination. Steps 6.1 through 6.6 have been completed.</li><li>• The EOP Director has determined Primary Containment Water Level is to be logged every 30 minutes.</li><li>• You are the RO assigned to determine and log Containment Water Level per N2-EOP-6.23.</li><li>• Another operator has been assigned to monitor the Fuel Zone Level Instruments and all instruments are on scale and tracking.</li></ul> <p><b>Evaluator:</b> Ask trainee if he/she has any questions after presenting initial conditions</p>
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<b>INITIATING CUE</b>	<p><b>(Candidate Name)</b>, Given the plant parameters found on the provided log, document the Primary Containment Water Level (PCWL) for 06:00 to 10:00. Additionally, on the log provided, document any required actions based on PCWL trend. Another operator will be taking care of all actions for monitoring the Fuel Zone instruments.</p>
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<b>START TIME</b>	
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	<b>PERFORMANCE</b>	<b>ACT. CODE</b> P / S / NA	<b>EVALUATOR</b>
1.	Provide repeat back of initiating cue <b>Cue:</b> Acknowledge repeat back providing correction if necessary.	P	SAT / UNSAT <b>STD:</b> Proper communications used.



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
2.	Obtain a copy of the reference procedure and review / utilize the correct section of the procedure.	P	SAT / UNSAT <b>STD:</b> N2-EOP-6.23 Obtained.
<b>Evaluator Note:</b>	The Answer Key attached to this JPM provides the grading criteria for the below step. Documentation of the correct $\Delta P$ is not required for successful completion of the below step. The operator need only determine the correct Primary Containment Water Level within $\pm 1$ foot in order to meet the intent of the critical step.		
3.	Using N2-EOP-6.23, Step 6.7 and Figure 1a, determines containment water level.	P	<b>*PASS / FAIL</b> <b>STD:</b> Calculates the $\Delta P$ by subtracting Suppression Chamber Pressure from Primary Containment Inlet N2 Pressure. Uses the $\Delta P$ to determine PCWL on Figure 1a. Documents the PCWL on the provided LOG. PCWL values have to be within $\pm 1$ foot of the value on the answer key. Documents ALL PCWL's from 06:00 to 10:00 on the provided log.
<b>Evaluator Note:</b>	The operator should notice that the $\Delta P$ between 08:00 and 09:00 has remained the same and RPV injection flow has been constant. The operator should identify that Step 6.10 now applies and that the EOP DIRECTOR should be notified of a constant PCWL with no change in injection.		
<b>Evaluator Note:</b>	If the operator informs the EOP DIRECTOR of the constant $\Delta P$ before completion of all PCWL logs, provide the following cue: <b>Cue:</b> The EOP DIRECTOR has been informed, continue logging all PCWL's through 10:00. Ensure you document your notification on the log.		
<b>Evaluator Note:</b>	The critical aspect of the below step is for the operator to determine the EOP DIRECTOR needs to be notified of a constant PCWL with continuous		



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
	injection. It is not necessary to get the exact time frame documented to pass the below step.		
4.	When logging the PCWL, determines the $\Delta P$ has not changed but RPV injection flow has remained constant. Informs the EOP DIRECTOR.	P	<b>*PASS / FAIL</b>  <i><b>STD:</b> Informs the EOP DIRECTOR that the <math>\Delta P</math> has not changed but RPV Injection has remained the same. Documents the need to inform the EOP DIRECTOR on the provided log.</i>

<b>TASK STANDARD</b>	The Operator logged all PCWL readings through 10:00 and documents the need to inform the EOP DIRECTOR of the constant $\Delta P$ with continuous injection.
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<b>STOP TIME</b>	
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Time	RPV Injection Flow	Injection Temperature	2CMS*PI7A SUPPR CHAMBER PRESS	2CPS-PI127, PRIMARY CONTMT INLET N2 PRESS	$\Delta P$	Primary Containment Water Level (Allowed Range)
		°F	PSIG	PSIG	PSID	Feet
6:00	Constant	68	20	20	0	224 ± 1
6:30	Constant	68	22	21	1	226 ± 1
7:00	Constant	68	22	20	2	228 ± 1
7:30	Constant	68	15	12.5	2.5	230 ± 1
8:00	Constant	68	17	13.5	3.5	232 ± 1
8:30	Constant	68	20	16.5	3.5	232 ± 1
9:00	Constant	69	23	19.5	3.5	232 ± 1
9:30	Constant	69	26	21	5	236 ± 1
10:00	Constant	69	32	26.5	5.5	237 ± 1

**Are any actions required to be taken based on the above readings?**

**Document any actions required here:**

**Inform the EOP Director that the  $\Delta P$  was constant with a constant injection rate for a period of time**



## JPM Handout

### INITIAL CONDITIONS

**Given:**

- Approximately one day ago the plant experienced a large break LOCA
- In order to maintain adequate core cooling, operators have been injecting into the RPV with systems whose suction source is outside the primary containment.
- The EOP Director has been monitoring the Primary Containment Pressure Limit (PCPL) per N2-EOP-RPV.
- Primary Containment Water Level has just exceeded 224 feet
- The EOP Director has directed the performance of N2-EOP-6.23, Containment Level Determination. Steps 6.1 through 6.6 have been completed.
- The EOP Director has determined Primary Containment Water Level is to be logged every 30 minutes.
- You are the RO assigned to determine and log Containment Water Level per N2-EOP-6.23.
- Another operator has been assigned to monitor the Fuel Zone Level Instruments and all instruments are on scale and tracking.

**Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

### INITIATING CUE

**(Candidate Name)**, *Given the plant parameters found on the provided log, document the Primary Containment Water Level (PCWL) for 06:00 to 10:00. Additionally, on the log provided, document any required actions based on PCWL trend. Another operator will be taking care of all actions for monitoring the Fuel Zone instruments.*

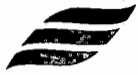


Primary Containment Water Level Log per N2-EOP-6.23, Step 6.7

Time	RPV Injection Flow	Injection Temperature	2CMS*PI7A SUPPR CHAMBER PRESS	2CPS-PI127, PRIMARY CONTMT INLET N2 PRESS	$\Delta P$	Primary Containment Water Level
		°F	PSIG	PSIG	PSID	Feet
6:00	Constant	68	20	20		
6:30	Constant	68	22	21		
7:00	Constant	68	22	20		
7:30	Constant	68	15	12.5		
8:00	Constant	68	17	13.5		
8:30	Constant	68	20	16.5		
9:00	Constant	69	23	19		
9:30	Constant	69	26	21		
10:00	Constant	69	32	26.5		

**Are any actions required to be taken based on the above readings?**

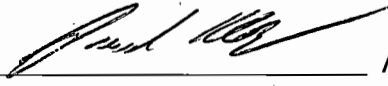

**If yes, document any actions required here:**



Training ID: 2019 NMP2 NRC RO Admin COO2 Revision: 0.0

Title: Determine Heatup Rate During Startup

## Approvals:

	Signature	/	Printed Name	Date
Developed by:		/	Paul Isham	1/16/19
Validated by:		/	Dave Bottorff	9/18/19
Facility Reviewer:		/	Paul Fenn	9/18/19

Approximate Duration: 15 minutes

## Documentation of Performance:

Performer: \_\_\_\_\_

Evaluator: \_\_\_\_\_

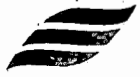
Start Time: \_\_\_\_\_ Stop Time: \_\_\_\_\_ Completion Time: \_\_\_\_\_

Grade: **Pass / Fail**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluators Signature: \_\_\_\_\_ Date: \_\_\_\_\_





## References

1. N2-OP-101A, Plant Startup
2. N2-OSP-RCS-@001, RCS Pressure/Temperature Verification, Attachment 5, HEATUP/COOLDOWN DATA SHEET
3. NUREG 1123, 2.1.43 (4.1)



## Instructor Information

### A. JPM Information

#### 1. Description

- a. This JPM tests the operator's ability to use station procedures to document and analyze plant data. Given a copy of N2-OSP-RCS-@001, RCS Pressure / Temperature Verification, the applicant will document given information appropriately and determine HUR has been violated.
- b. Critical steps are annotated in the Evaluator standard column with a bolded **\*Pass/Fail**.

#### 2. Task Information:

- a. N2-202001-01058, Perform N@-OSP-RCS-@001, RCS Pressure / Temperature Verification.
- b. K/A 2.1.43 (4.1) Ability to use procedures to determine the effects on reactivity of plant changes, such as reactor coolant system temperature, secondary plant, fuel depletion, etc.

#### 3. Evaluation / Task Criteria

Evaluation Method	Perform
Evaluation Location	Classroom
Time Critical Task	No
Alternate Path	No
LOD > 1.0	Yes

#### 4. Recommended Start Location

- a. Training Classroom



5. JPM Setup (if required)

- a. Ensure adequate copies of N2-OSP-RCS@001 are available with prerequisites, section 8.1 and Attachment 5 complete as appropriate.
- b. Ensure calculators are available.



## **B. Read Before Every JPM Performance**

For the performance of this JPM, I will act as all those you need to talk to. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary. (Note, read the next only if conducting a plant JPM). With the exception of accessing panels, no plant equipment will be physically manipulated. Repositioning of devices will be simulated by discussion and acknowledged by my cues.

## **C. Read Before Each Evaluated JPM**

This evaluated JPM is a measure of your ability to perform this task independently. The US has determined that a verifier is not available and that additional verification will not be provided.



<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"><li>• A reactor startup is in progress</li><li>• N2-OSP-RCS-@001, RCS Pressure/Temperature Verification, Attachment 5, HEATUP/COOLDOWN DATA SHEET has been implemented.</li><li>• Readings for 12:30 are as follows:<ol style="list-style-type: none"><li>1. RPV Pressure: 265 psig</li><li>2. Recirc Loop A Temperature: 411°F</li></ol></li></ul> <p><b>Evaluator:</b> Ask trainee if he/she has any questions after presenting initial conditions</p>
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<b>INITIATING CUE</b>	<p><b>(Candidate Name)</b>, document and analyze the 12:30 readings on N2-OSP-RCS-@001, Attachment 5. Report the results to the US.</p>
-----------------------	---

<b>START TIME</b>	
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	<b>PERFORMANCE</b>	<b>ACT. CODE</b> P / S / NA	<b>EVALUATOR</b>
1.	Provide repeat back of initiating cue <b>Cue:</b> Acknowledge repeat back providing correction if necessary.	P	SAT / UNSAT <b>STD:</b> Proper communications used.
2.	Obtain a copy of the reference procedure and review / utilize the correct section of the procedure.	P	SAT / UNSAT <b>STD:</b> Obtains a copy of N2-OSP-RCS-@001 and references the following sections: <ul style="list-style-type: none"><li>• Section 6.0, Precautions and Limitations</li><li>• Section 8.1</li><li>• Attachment 5</li></ul>



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
3.	WHEN data is recorded, calculate heatup OR cooldown rate AND record	P	<b>*PASS / FAIL</b> <b>STD:</b> Calculates heatup rate for last 15 minute interval: $HUR = (411^{\circ}\text{F} - 381^{\circ}\text{F}) * (4)$ $= 120^{\circ}\text{F}/\text{hour}$ Records heatup rate on Attachment 5
4.	IF the calculated heatup or cooldown rate for the time interval exceeds 100°F/HR, THEN action must be taken to ensure that the limit of $\leq 100^{\circ}\text{F}$ in any 1-hour period is not exceeded	P	<b>*PASS / FAIL</b> <b>STD:</b> Recognizes heatup rate for the time interval exceeds 100°F/hour Calculates heatup rate for preceeding hour: $HUR = (411^{\circ}\text{F} - 309^{\circ}\text{F}) / (1 \text{ hour}) = 102^{\circ}\text{F}/\text{hour}$
5.	Determines if heatup rate is less than or equal to 100°F in any 1-hour period	P	<b>*PASS / FAIL</b> <b>STD:</b> Determines heatup rate is above limit
6.	Initial and date Attachment 5 to indicate acceptance criteria is not met	P	SAT / UNSAT <b>STD:</b> Initials Attachment 5
7.	Contact the US or SM and notify them that the plant heatup rate acceptance criteria is not met	P	SAT / UNSAT <b>STD:</b> Informs US or SM that the plant heatup rate acceptance criteria is not met

<b>TASK STANDARD</b>	Calculate RCS heatup rate and determine heatup rate has been exceeded.
----------------------	--



**STOP TIME**

\*\*\*\*\* Answer Key \*\*\*\*\*

Do Not Provide to Candidate

Page 1 of     

Attachment 5, Heatup/Cooldown Data Sheet

Section Performed (circle one) 8.1 8.2 8.3

Time (15 Min Intervals)	RPV Press (PSIG)	Reactor Coolant Temperature (Note 1)		H/U OR C/D Rate (Note 3)	Hourly H/U OR C/D Rate (Note 4)	Performer Initials	1 Hour Press Limit (Note 5)	1 Hour Temp Limit (Note 5)	Independent Verification (SRO)
		Temp	Location (Note 2)						
1000	23	266	A B C D	N/A	N/A	MCA	44	291	RNP
1015	30	274	A B C D	32	N/A	MCA	51	299	RNP
1030	33	279	A B C D	20	N/A	MCA	56	304	RNP
1045	37	284	A B C D	20	N/A	MCA	62	309	RNP
1100	41	287	A B C D	12	21	MCA	65	312	RNP
1115	51	299	A B C D	48	25	MCA	80	324	RNP
1130	61	309	A B C D	40	30	MCA	94	334	RNP
1145	87	329	A B C D	80	45	MCA	127	354	RNP
1200	133	357	A B C D	112	70	MCA	185	382	RNP
1215	184	381	A B C D	96	82	MCA	250	406	RNP
1230	265	411	A B C D	120	102	MCA	350	436	RNP
			A B C D						



## JPM Handout

### INITIAL CONDITIONS

Given:

- A reactor startup is in progress
- N2-OSP-RCS-@001, RCS Pressure/Temperature Verification, Attachment 5, HEATUP/COOLDOWN DATA SHEET has been implemented.
- Readings for 12:30 are as follows:
  1. RPV Pressure: 265 psig
  2. Recirc Loop A Temperature: 411°F

**Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

### INITIATING CUE

**(Candidate Name),** *document and analyze the 12:30 readings on N2-OSP-RCS-@001, Attachment 5. Report the results to the US.*

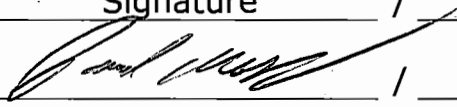





Training ID: **2019 NMP2 NRC SRO Admin COO1** Revision: **0.0**

Title: **Determine the Significance of a Reactivity Event and Actions Required**

## Approvals:

	Signature	/	Printed Name	Date
Developed by:		/	Paul Isham	1/21/19
Validated by:		/	Heath Stickney	8/1/19
Facility Reviewer:		/	Paul Fenn	9/17/19

Approximate Duration: 20 minutes

## Documentation of Performance:

Performer: \_\_\_\_\_

Evaluator: \_\_\_\_\_

Start Time: \_\_\_\_\_ Stop Time: \_\_\_\_\_ Completion Time: \_\_\_\_\_

Grade: **Pass / Fail**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluators Signature: \_\_\_\_\_ Date: \_\_\_\_\_



## References

1. N2-OP-96, Reactor Manual Control and Rod Position Indication System
2. OP-AA-300, Reactivity Management
3. OP-AA-300-1540, Reactivity Management Administration
4. BWROG-TP-09-025, Monitoring of Reactivity Management Issues
5. NUREG 1123 K/A 2.1.37 (4.6)
6. Unit 2 Technical Specifications



## Instructor Information

### A. JPM Information

#### 1. Description

- a. This JPM tests the operator's knowledge of reactivity management processes. It tests the operator's ability to determine the actions necessary for a mispositioned control rod and provide a recommendation for the Reactivity Management Issue Significance Level.
- b. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

#### 2. Task Information:

- a. CNG-OPS301-00006, Report Reactivity Management Incidents
- b. NUREG 1123 K/A 2.1.37 (4.6), Knowledge of procedures, guidelines, or limitations associated with reactivity management.

#### 3. Evaluation / Task Criteria

Evaluation Method	Perform
Evaluation Location	Classroom
Time Critical Task	No
Alternate Path	No
LOD > 1.0	Yes

#### 4. Recommended Start Location

- a. Classroom

#### 5. JPM Setup

- a. Ensure sufficient copies of OP-AA-300, Reactivity Management are available upon request.
- b. Ensure sufficient copies of OP-AA-300-1540, Reactivity Management Administration are available upon request.
- c. Provide sufficient copies of BWROG-TP-09-025, Monitoring of Reactivity Management Issues
- d. Provide sufficient copies of N2-OP-96 for the SRO candidates



## **B. Read Before Every JPM Performance**

1. For the performance of this JPM, I will act as all those you need to talk to. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary. (Note, read the next only if conducting a plant JPM). With the exception of accessing panels, no plant equipment will be physically manipulated. Repositioning of devices will be simulated by discussion and acknowledged by my cues.

## **C. Read Before Each Evaluated JPM**

1. This evaluated JPM is a measure of your ability to perform this task independently. The US has determined that a verifier is not available and that additional verification will not be provided.



## INITIAL CONDITIONS

Given:

- The plant completed a rod pattern exchange at 72% power at 03:00 this morning.
- At 03:15, reactor power was raised to 80%.
- At 7:00, the crew determines control rod 02-43 was supposed to be withdrawn to position 42 per the ReMA but was inadvertently withdrawn to position 44.
- Rod 02-43 has been mispositioned for 2 hours and 45 minutes.
- No predictor case has been run with the Control Rod mispositioned.
- You are the Unit Supervisor (US)

**Evaluator:** Ask trainee if he/she has any questions after presenting initial conditions

## INITIATING CUE

**(Candidate Name),** Determine ALL required actions for this rod mispositioning per N2-OP-96, Reactor Manual Control And Rod Position Indication System. Additionally, provide the recommended Reactivity Management Issue Significance Level for this event per BWROG-TP-09-025, Section 5.0, Monitoring of Reactivity Management Issues. Document all communications and required actions on the provided worksheet.

## START TIME

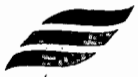
	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
1.	Provide repeat back of initiating cue <b>Cue:</b> Acknowledge repeat back providing correction if necessary.	P	SAT / UNSAT <b>STD:</b> Proper communications used
2.	Obtain a copy of the reference handouts.	P	SAT / UNSAT <b>STD:</b> Obtains any of the following as necessary to determine plant impact. <ul style="list-style-type: none"><li>• OP-AA-300</li><li>• N2-OP-96</li><li>• OP-AA-300-1540</li><li>• BWROG-TP-09-025</li></ul>



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
	<p><b>Evaluator Note:</b></p> <ul style="list-style-type: none"><li>• The following JPM steps may be performed in any order.</li><li>• The Answer Key attached to this JPM may be used to assist in grading of the below steps.</li><li>• When grading the below steps, the operator may choose to use different wording on the worksheet then what is on the answer key to represent the actions taken. This is acceptable, provided the intent and answer is obvious to the Evaluator. If the Evaluator has a question as to what is documented on the worksheet, then the Evaluator may verbally question the operator to determine the intent. If the Evaluator verbally questions the operator as to what is documented, the answers the operator provides may be used to assist with the grading of the below steps.</li><li>• The operator may include additional actions not listed below on the provided worksheet. This is acceptable but only the information in Steps 4 through 8 needs to be on the worksheet.</li></ul>		
3.	<p>Per N2-OP-96, performs the following actions:</p> <p>Notify the SM</p> <p><b>Cue:</b> <i>If contacted as the SM, acknowledge the notification.</i></p>	S	<p>SAT / UNSAT</p> <p><b>STD:</b> <i>Determines per N2-OP-96 section H.1.1.1, that the SM needs to be notified. Documents the SM notification on the provided worksheet.</i></p>
4.	<p>IF a Control Rod was found mispositioned when Control Rod movements were NOT being performed AND a periodic OR predictor case has NOT been run with the Control Rod(s) mispositioned AND Reactor power is above 50%, reduces Reactor power by 40 MWe.</p>	S	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> <i>Determines per N2-OP-96, H.1.1.4, and the turnover that rod movements are not being performed at this time and a predictor case has not been run and power is above 50%. Determines power needs to be lowered by 40MWe. Documents the power reduction on the provided worksheet.</i></p>
	<p><b>Evaluator Note:</b></p>	<p>In the following step, The "General Supervisor Operations" title was changed to "Shift Operations Superintendent". N2-OP-96 does not reflect</p>	



PERFORMANCE		ACT. CODE P / S / NA	EVALUATOR
this change. Either answer is acceptable.			
5.	<p>Contact the following for instructions:</p> <ul style="list-style-type: none"><li>○ On-Call Reactor Engineer</li><li>○ General Supervisor Operations - Unit 2</li></ul> <p><b>Cue:</b> <i>If contacted as the RE or GSO, acknowledge the notification and inform the operator you have no further direction at this time.</i></p>	S	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> <i>Determines per N2-OP-96, H.1.2, that the RE and GSO need to be contacted. Documents the need to notify the RE and GSO on the provided worksheet.</i></p>
6.	<p>Provide the Reactor Engineer with the following information about mispositioned Control Rod(s):</p> <ul style="list-style-type: none"><li>○ Location</li><li>○ Position</li><li>○ Duration</li></ul>	S	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> <i>Determines per N2-OP-96, H.1.4, that the RE needs to be told the following:</i></p> <ul style="list-style-type: none"><li>• Rod Location (02-43)</li><li>• Rod Position (44)</li><li>• Duration (2:45)</li></ul> <p><i>Documents the information on the provided worksheet.</i></p>
7.	<p>Initiate an IR in accordance with PI-AA-125 to document the mispositioned Control Rod event regardless of the apparent cause.</p> <p><b>Cue:</b> <i>If necessary, inform the operator that a CR has been initiated.</i></p>	S	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> <i>Determines per N2-OP-96 section H.1.5, that an IR needs to be initiated. Documents the need for an IR on the provided worksheet.</i></p>
<b>Evaluator Note:</b>		For the following step, BWROG-TP-09-025, Exhibit 2 gives examples of SL 2, Major Reactivity Management Events. Example 2-5 is a mispositioned control rod due to a Personnel Error.	



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
8.	Per BWROG-TP-09-025, Determines a recommended Reactivity Management Issue Significance Level	S	<b>*PASS / FAIL</b>  <b>STD:</b> Determines per BWROG-TP-09-025, Section 5.0 that the recommended Reactivity management Issue Significance Level is LEVEL 2. Documents the SV on the provided worksheet.

<b>TASK STANDARD</b>	Control rod position verification is complete. Mispositioned control rod identified and Significance level classified.
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<b>STOP TIME</b>	
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## Evaluator's Answer Key

Do Not Provide to Candidate

1.	<b>Required Actions and Communications for Mispositioned Control Rod per N2-OP-96 (list ALL required communications and actions):</b>
	<ul style="list-style-type: none"><li>• Notify the Shift Manager</li><li>• Reduce Power by 40 MWe</li><li>• Contact Reactor Engineer (RE) and General Supervisor Operations</li><li>• Provide the RE with the mispositioned rod Location, Position, and Duration (Rod 02-43, At position 44, Been mispositioned for 2 hours and 45 minutes).</li><li>• Initiate a Condition Report (CR)</li></ul>
2.	<b>The Recommended Reactivity Management Issue Significance Level for this event per BWROG-TP-09-025:</b>
	Significance Level 2



## JPM Handout

### INITIAL CONDITIONS

Given:

- The plant completed a rod pattern exchange at 72% power at 03:00 this morning.
- At 03:15, reactor power was raised to 80%.
- At 7:00, the crew determines control rod 02-43 was supposed to be withdrawn to position 42 per the ReMA but was inadvertently withdrawn to position 44.
- Rod 02-43 has been mispositioned for 2 hours and 45 minutes.
- No predictor case has been run with the Control Rod mispositioned.
- You are the Unit Supervisor (US)

**Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

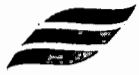
### INITIATING CUE

**(Candidate Name),** *Determine ALL required actions for this rod mispositioning per N2-OP-96, Reactor Manual Control And Rod Position Indication System. Additionally, provide the recommended Reactivity Management Issue Significance Level for this event per BWROG-TP-09-025, Section 5.0, Monitoring of Reactivity Management Issues. Document all communications and required actions on the provided worksheet.*



## JPM Worksheet

<b>1.</b>	<b>Required Actions and Communications for Mispositioned Control Rod per N2-OP-96 (list ALL required communications and actions):</b>
<b>2.</b>	<b>The Recommended Reactivity Management Issue Significance Level for this event per BWROG-TP-09-025:</b>





# Exelon Generation.

Training ID: 2019 NMP2 NRC SRO Admin COO2 Revision: 0.0

Title: Reactivate SRO Licenses In Accordance With OP-AA-105-102

## Approvals:

	Signature	/	Printed Name	Date
Developed by:		/	Paul Isham	1/21/19
Validated by:		/	Heath Stickney	8/1/19
Facility Reviewer:		/	Paul Fenn	9/17/19

Approximate Duration: 15 minutes

## Documentation of Performance:

Performer: \_\_\_\_\_


Evaluator: \_\_\_\_\_

Start Time: \_\_\_\_\_ Stop Time: \_\_\_\_\_ Completion Time: \_\_\_\_\_

Grade: **Pass / Fail**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluators Signature: \_\_\_\_\_ Date: \_\_\_\_\_



## References

1. OP-AA-105-102, NRC Active License Maintenance
2. NUREG 1123, 2.1.4 (3.8)

## Instructor Information

### A. JPM Information

#### 1. Description

- a. This JPM tests the operator's ability to evaluate license reactivation documentation.
- b. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

#### 2. Task Information:

- a. S-ODP-TQS0101-00002, Reactivate an inactive license
- b. K/A 2.1.4 (3.8), Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, "no-solo" operation, maintenance of active license status, 10CFR55, etc.

#### 3. Evaluation / Task Criteria

Evaluation Method	Perform
Evaluation Location	Classroom
Time Critical Task	No
Alternate Path	No
LOD >1.0	Yes

#### 4. Recommended Start Location

- a. Training Classroom

#### 5. JPM Setup (if required)

- a. Provide copy of OP-AA-105-102.
- b. If multiple operators are going to perform the JPM at the same time, ensure each operator has a copy of OP-AA-105-102.
- c. Provide marked up copies of OP-AA-105-102, attachment 2.



## **B. Read Before Every JPM Performance**

1. For the performance of this JPM, I will act as all those you need to talk to. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary. (Note, read the next only if conducting a plant JPM). With the exception of accessing panels, no plant equipment will be physically manipulated. Repositioning of devices will be simulated by discussion and acknowledged by my cues.

## **C. Read Before Each Evaluated JPM**

1. This evaluated JPM is a measure of your ability to perform this task independently. The US has determined that a verifier is not available and that additional verification will not be provided.

<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"> <li>• Due to recent SRO attrition, several SRO licenses are being reactivated.</li> <li>• Two inactive license holders are completing the requirements to reactivate their licenses.</li> <li>• OP-AA-105-102, Attachment 2, Reactivation of License Log is completed up to the Shift Manager review.</li> </ul> <p><b>Evaluator:</b> Ask trainee if he/she has any questions after presenting initial conditions</p>
---------------------------	--

<b>INITIATING CUE</b>	<p><b>(Candidate Name)</b>, perform the Shift Manager review of OP-AA-105-102, Attachment 2, Reactivation of License Log, and document results on JPM handout.</p>
-----------------------	--

<b>START TIME</b>	
-------------------	--

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
1.	Provide repeat back of initiating cue  <b>Cue:</b> Acknowledge repeat back providing correction if necessary.	P	SAT / UNSAT  <b>STD:</b> Proper communications used.
2.	Obtain a copy of the reference procedure and review / utilize the correct section of the procedure.	P	SAT / UNSAT  <b>STD:</b> OP-AA-105-102 obtained
3.	Reviews shift hours for SRO #1	P	SAT / UNSAT  <b>STD:</b> Reviews attachment 2
4.	Determines SRO #1 does not meet the requirements for license reactivation.	P	<b>*PASS / FAIL</b>  <b>STD:</b> Recognize that not all required shift hours were completed in the same calendar quarter, as required in step 4.2.1
5.	Reviews shift hours for SRO #2	P	SAT / UNSAT  <b>STD:</b> Reviews attachment 2





	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
6.	Determines SRO #2 does not meet the requirements for license reactivation.	P	<b>*PASS / FAIL</b> <i><b>STD:</b> Recognize that not all required shift hours were completed in a shift position required by technical specifications, per Step 4, Main Body note.</i>

<b>TASK STANDARD</b>	Shift Manager review of attachment 2, Reactivation of License Log, is complete recognizing neither SRO meets the requirements for license reactivation.
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<b>STOP TIME</b>	
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## SRO JPM Handout

### INITIAL CONDITIONS

Given:

- Due to recent SRO attrition, several SRO licenses are being reactivated.
- Two inactive license holders are completing the requirements to reactivate their licenses.
- OP-AA-105-102, Attachment 2, Reactivation of License Log is completed up to the Shift Manager review.

**Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

### INITIATING CUE

**(Candidate Name)**, *perform the Shift Manager review of OP-AA-105-102, Attachment 2, Reactivation of License Log, and document results on JPM handout.*

**SRO #1**  
**ATTACHMENT 2**  
**Reactivation Of License Log**  
**Page 1 of 2**

Employee Number: E12345License Holder's Name: SRO #1Date to resume "Active License" status: Today

1. Verification that the License Holder is current in the Requal Program and Completion of plant-specific activation guide (if required).

Verified by: Michael Alexander Today  
Operations Training Manager Date

2. Verification that medical / respiratory protection qualifications are current.

Verified by: Tammy Clark Today  
Department Training Coordinator or License Coordinator Date

3. Verification that License Holder is compliant with and concurs with restrictions on current NRC license.

Verified by: SRO #1 Today Luke Revelle Today  
License Holder Date Operations Support Manager Date

4. Completion of the following:

NOTE: For SRO reactivation for fuel handling duties only, steps 4a, 4c, 4d, and 4e must be performed within 1 week of the planned start of core alterations.

NOTE: In the presence and under the sole direct supervision of an active RO or SRO, apply to all steps below as appropriate.

- a. Made a tour of the MCR, reviewing status of applicable systems/panels (ALL)
- b. Made a complete tour of the plant as specified in Step 4.2.1 (RO / SRO only)
- c. Made a tour of refuel floor / fuel handling areas (SRO for fuel handling only)
- d. Attended an Operations shift turnover meeting (SRO for fuel handling only)
- e. Reviewed applicable unit log and Limiting Condition for Operation (LCO) log (SRO for fuel handling only)
- f. Reviewed at least one complete on-coming Shift Turnover and one complete off-going shift turnover while under the direction of the active license holder. (ALL)

Actions 4a, 4b, 4c, 4d, 4e, 4f Completed (as applicable):

SRO #1 Today  
License Holder Date

**SRO #1**  
**ATTACHMENT 2**  
**Reactivation Of License Log**  
**Page 2 of 2**

**5. Hours on Shift**

- a. The SRO / RO License Holder has completed a minimum of 40 hours of shift functions in the presence and under the sole direct supervision of an active RO or SRO, as appropriate, in the position to which the individual will be assigned. Log hours in the Shift Position log.
- b. The SRO license holder being activated for fuel handling only has completed a minimum of one (1) 8 hour shift in the presence and under the sole direct supervision of an active SRO in the position to which the individual will be assigned.

**Shift Position Log**

Date	Shift Position	Shift	Number of Hours	Entered in Appropriate Log	Active License Signature
9/15/19	US	Day	12	(Yes) / No	Todd Kelly
10/15/19	US	Day	12	(Yes) / No	Craig Shawcross
10/20/19	US	Night	12	(Yes) / No	Craig Shawcross
10/21/19	US	Night	12	(Yes) / No	Chris Moorhead
				Yes / No	
10/22/19	Required Action: Perform a complete plant tour under the sole direct supervision of an active license holder as required in Step 4.b. The tour shall be performed during the performance of the required hours on shift listed above. Obtain signature verifying completion.				Patrick Foti

Reviewed by: \_\_\_\_\_  
Shift Manager Date

**Final Review and Approval:**

Shift Operations Superintendent Date Operations Training Manager Date

SRRS 3.D.106

**FORWARD ORIGINAL TO LICENSE HOLDER'S LICENSE FILE**

Handout

**OP-AA-105-102**

Revision 14

Page 7 of 8

**SRO #2**  
**ATTACHMENT 2**  
**Reactivation Of License Log**  
**Page 1 of 2**

Employee Number: E54321License Holder's Name: SRO #2Date to resume "Active License" status: Today

1. Verification that the License Holder is current in the Requal Program and Completion of plant-specific activation guide (if required).

Verified by: Michael Alexander Today  
Operations Training Manager Date

2. Verification that medical / respiratory protection qualifications are current.

Verified by: Tammy Clark Today  
Department Training Coordinator or License Coordinator Date

3. Verification that License Holder is compliant with and concurs with restrictions on current NRC license.

Verified by: SRO #2 Today Luke Revelle Today  
License Holder Date Operations Support Manager Date

4. Completion of the following:

NOTE: For SRO reactivation for fuel handling duties only, steps 4a, 4c, 4d, and 4e must be performed within 1 week of the planned start of core alterations.

NOTE: In the presence and under the sole direct supervision of an active RO or SRO, apply to all steps below as appropriate.

- a. Made a tour of the MCR, reviewing status of applicable systems/panels (ALL)
- b. Made a complete tour of the plant as specified in Step 4.2.1 (RO / SRO only)
- c. Made a tour of refuel floor / fuel handling areas (SRO for fuel handling only)
- d. Attended an Operations shift turnover meeting (SRO for fuel handling only)
- e. Reviewed applicable unit log and Limiting Condition for Operation (LCO) log (SRO for fuel handling only)
- f. Reviewed at least one complete on-coming Shift Turnover and one complete off-going shift turnover while under the direction of the active license holder. (ALL)

Actions 4a, 4b, 4c, 4d, 4e, 4f Completed (as applicable):

SRO #2 Today  
License Holder Date

SRRS 3.D.106

**FORWARD ORIGINAL TO LICENSE HOLDER'S LICENSE FILE**



Handout

OP-AA-105-102

Revision 14

Page 8 of 8

**SRO #2**  
**ATTACHMENT 2**  
**Reactivation Of License Log**  
**Page 2 of 2**

5. Hours on Shift
- The SRO / RO License Holder has completed a minimum of 40 hours of shift functions in the presence and under the sole direct supervision of an active RO or SRO, as appropriate, in the position to which the individual will be assigned. Log hours in the Shift Position log.
  - The SRO license holder being activated for fuel handling only has completed a minimum of one (1) 8 hour shift in the presence and under the sole direct supervision of an active SRO in the position to which the individual will be assigned.

**Shift Position Log**

Date	Shift Position	Shift	Number of Hours	Entered in Appropriate Log	Active License Signature
10/1/19	US	Night	12	(Yes) / No	Bob Beaumont
10/16/19	US	Night	12	(Yes) / No	Ryan Loomis
10/25/19	STA	Day	12	(Yes) / No	Bob Beaumont
10/27/19	US	Day	12	(Yes) / No	Ryan Loomis
				Yes / No	
10/28/19	Required Action: Perform a complete plant tour under the sole direct supervision of an active license holder as required in Step 4.b. The tour shall be performed during the performance of the required hours on shift listed above. Obtain signature verifying completion.				Michael Storms

Reviewed by: \_\_\_\_\_  
Shift Manager Date

**Final Review and Approval:**

Shift Operations Superintendent Date

Operations Training Manager Date

SRRS 3.D.106

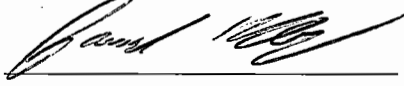

**FORWARD ORIGINAL TO LICENSE HOLDER'S LICENSE FILE**



Training ID: 2019 NMP2 NRC SRO Admin EP Revision: 0.0

Title: Security Event Re-Classification Notification

## Approvals:

	Signature	/	Printed Name	Date
Developed by:		/	Paul Isham	1/21/19
Validated by:		/	Bob Beaumont	9/13/19
Facility Reviewer:		/	Paul Fenn	9/17/19

Approximate Duration: 15 minutes

## Documentation of Performance:

Performer: \_\_\_\_\_

Evaluator: \_\_\_\_\_

Start Time: \_\_\_\_\_ Stop Time: \_\_\_\_\_ Completion Time: \_\_\_\_\_

Grade: **Pass / Fail**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluators Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## References

1. NUREG 1123 K/A 2.4.41, (4.6)
2. EP-CE-111, Emergency Classification and Protective Action Recommendations
3. EP-AA-1013, Addendum 4, Nine Mile Point Nuclear Station Unit 2 Emergency Classification Technical Bases
4. EP-AA-1013, Addendum 4, Appendix 1, NMP Unit 2 EAL Wallboard



## Instructor Information

### A. JPM Information

1. Description
  - a. This JPM tests the SRO's knowledge of the station's Emergency Preparedness program. The SRO will re-classify a security event within 15 minutes of indications being made available that an EAL has been exceeded. The SRO will complete a Part 1 notification fact sheet indicating the upgraded emergency condition.
  - b. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.
2. Task Information:
  - a. NS-EP101-03018, Prepare and Approve a Part 1 Notification Fact Sheet For An Emergency Classification.
  - b. NUREG 1123 K/A 2.4.41 (4.6), Knowledge of the emergency action level thresholds and classifications.
3. Evaluation / Task Criteria

Evaluation Method	Perform
Evaluation Location	Classroom
Time Critical Task	Yes
Alternate Path	No
LOD >1.0	Yes

4. Recommended Start Location
  - a. Training Classroom
5. JPM Setup
  - a. Provide sufficient copies of EAL Wallboards and the Shift Emergency Director packages.



## **B. Read Before Every JPM Performance**

1. For the performance of this JPM, I will act as all those you need to talk to. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary. (Note, read the next only if conducting a plant JPM). With the exception of accessing panels, no plant equipment will be physically manipulated. Repositioning of devices will be simulated by discussion and acknowledged by my cues.

## **C. Read Before Each Evaluated JPM**

1. This evaluated JPM is a measure of your ability to perform this task independently. The US has determined that a verifier is not available and that additional verification will not be provided.



**Given:**

- You are the Unit 2 Shift Manager.
- Unit 1 is operating at 100% power.
- Unit 2 is operating at 100% power.
- JAF is operating at 100% power.
- The following conditions have occurred:
  - 50 minutes ago, authorities notified security and plant management that a terrorist group has threatened to interfere with the operation of Nine Mile Point Nuclear Station.
  - This is considered a credible threat.
  - The Emergency Plan has been entered and an Unusual Event was declared 50 minutes ago based on the security threat
  - The next Part 1 Notification update is due in 15 minutes.
- Security just called and notified you that a hostile action is in progress because an explosive device has been discovered in the Unit 2 screenhouse. The device is of sufficient size that if it should detonate, the traveling screens would be destroyed. All personnel have been evacuated from the area.

## Attachment 1: Meteorological Data

NMP:JAF

Emergency Meteorology Report

Delta Temperature: -1.7°F

Date: Today

Time (Local): Now

200	Wind Speed (Main)	10	(mph)	200	Wind Speed (Main)	10	(mph)
200	Wind Direction (Main)	000	(deg)	200	Wind Direction (Main)	000	(deg)
500	Delta Temperature	-1.7°F	(deg F)	500	Delta Temperature (Main)	-1.7°F	(deg F)
	Stability Class	5			Stability Class	5	
500	Air Temperature	70	(deg F)		Precipitation (15 min)	0.00	(in)

Emission Index

Hazardous

**Evaluator:** Ask trainee if he/she has any questions after presenting initial conditions :

**INITIATING  
CUE**

**(Candidate Name)**, based on the above conditions, determine if an EAL change is required. Complete a Part 1 Notification Fact Sheet as appropriate. This is a time critical task.

**START TIME**

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
1.	Provide repeat back of initiating cue <b>Cue:</b> Acknowledge repeat back providing correction if necessary.	P	SAT / UNSAT <b>STD:</b> Proper communications used
2.	Obtain a copy of the reference procedure and review/utilize the correct section. <b>Evaluator Note:</b> The references will be provided by the evaluator.	P	SAT / UNSAT <b>STD:</b> Obtains EAL Wallboard and a Part 1 Notification Fact Sheet.
3.	Determine that an SAE exists based on Hostile Action occurring in the Protected Area.	P	<b>*PASS / FAIL</b> <b>STD:</b> Determines SAE, HS1, due to hostile action occurring in the Protected Area. <b>The time difference below must be 15 minutes or less:</b> JPM start time: _____ Declaration time: _____



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
4.	<p>Completes EP-CE-114-100-F-05, NMP Notification Fact Sheet – Part 1</p> <p><b>Cue:</b> <i>If asked about the status of Unit 1 and JAF, cue that Unit 1 and JAF are still operating at 100% power.</i></p> <p><b>EXAMINER NOTE:</b> Time difference must be 15 minutes or less to pass this critical step.</p> <p><b>Role Play:</b> <i>If requested to perform peer check of Part 1, concur with candidate regardless of Part 1 accuracy.</i></p> <p><b>Role Play:</b> <i>If directed as Shift Communicator to notify State and Local, acknowledge direction.</i></p>	P (Step 1.3.4)	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> <i>Completes EP-CE-114-100-F-05 as shown in the KEY. Only blocks 3, 4 and 7 of the KEY should be considered critical.</i></p> <p><b>The time difference below must be 15 minutes or less:</b></p> <p><i>Declaration time:</i> _____</p> <p><i>Part 1 Complete:</i> _____</p>
<b>Termination Cue:</b>	When the Part 1 Notification form has been completed, inform the applicant their task is complete.		
<b>TASK STANDARD</b>	The event has been re-classified as an SAE and the Part 1 Notification form has been completed.		
<b>STOP TIME</b>			



## JPM Handout

### INITIAL CONDITIONS

Given:

- You are the Unit 2 Shift Manager.
- Unit 1 is operating at 100% power.
- Unit 2 is operating at 100% power.
- JAF is operating at 100% power.
- The following conditions have occurred:
  - 50 minutes ago, authorities notified security and plant management that a terrorist group has threatened to interfere with the operation of Nine Mile Point Nuclear Station.
  - This is considered a credible threat.
  - The Emergency Plan has been entered and an Unusual Event was declared 50 minutes ago based on the security threat
  - The next Part 1 Notification update is due in 15 minutes.
- Security just called and notified you that a hostile action is in progress because an explosive device has been discovered in the Unit 2 greenhouse. The device is of sufficient size that if it should detonate, the traveling screens would be destroyed. All personnel have been evacuated from the area.

### Attachment 1: Meteorological Data

Emergency Meteorology Report								NMP:JAF	
Data from Nine Mile Point Nuclear Station									
Date: Today					Time (Local): Now				
237	Wind Speed (Main)	10	(mph)	237	Wind Speed (Main)	10	(mph)		
237	Wind Direction (Main)	090	(deg)	237	Wind Direction (Main)	090	(deg)		
237	Delta Temperature	-1.78	(deg F)	237	Delta Temperature (Main)	-0.50	(deg F)		
	Stability Class	D			Stability Class	D			
237	Air Temperature	72	(deg F)		Precipitation (15 min)	0.00	(in)		
Report generated by: [Signature]									
Report generated by: [Signature]									

**Evaluator:** Ask trainee if he/she has any questions after presenting initial conditions



**INITIATING  
CUE**

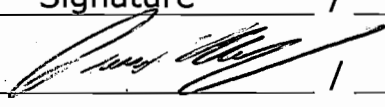
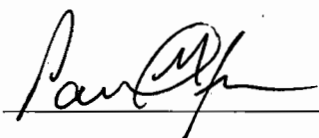
**(Candidate Name)**, based on the above conditions, determine if an EAL change is required. Complete a Part 1 Notification Fact Sheet as appropriate. This is a time critical task.



Training ID: 2019 NMP2 NRC RO-SRO Admin EC Revision: 0.0

Title: Perform Off-Site AC Breaker Alignment Verification

## Approvals:

	Signature	/	Printed Name	Date
Developed by:		/	Paul Isham	1/14/19
Validated by:		/	J. Lai / P. Foti	9/18/19
Facility Reviewer:		/	Paul Fenn	9/18/19

Approximate Duration: 20 minutes

## Documentation of Performance:

Performer: \_\_\_\_\_

Evaluator: \_\_\_\_\_

Start Time: \_\_\_\_\_ Stop Time: \_\_\_\_\_ Completion Time: \_\_\_\_\_

Grade: **Pass** / **Fail**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluators Signature: \_\_\_\_\_ Date: \_\_\_\_\_





## References

1. N2-OSP-LOG-W001, Weekly Checks
2. Unit 2 Technical Specifications
3. NUREG 1123, 2.2.15 (3.9/4.3)



## Instructor Information

### A. JPM Information

#### 1. Description

- a. This JPM tests the operator's ability to analyze and evaluate expected plant configuration. Given a copy of N2-OSP-LOG-W001, Weekly Checks, Attachment 3, the applicant will compare off-site power breaker positions against the Off-Site Breaker Alignment Verification checklist. SROs will evaluate applicable Technical Specifications.
- b. Critical steps are annotated in the Evaluator standard column with a bolded **\*Pass/Fail**.

#### 2. Task Information:

- a. N2-277001-01005, Perform N2-OSP-LOG-W001, Weekly Checks
- b. K/A 2.2.15 (3.9/4.3) Ability to determine the expected plant configuration using design and configuration control documentation, such as drawings, line-ups, tag-outs, etc..

#### 3. Evaluation / Task Criteria

Evaluation Method	Perform
Evaluation Location	Simulator
Time Critical Task	No
Alternate Path	No
LOD > 1.0	Yes

#### 4. Recommended Start Location

- a. Training Classroom



5. JPM Setup (if required)

- a. Ensure adequate copies of N2-OSP-LOG-W001 are available with the prerequisites complete and a note on Attachment 3 indicating breaker 101-13 is expected to be open.
- b. Ensure N2-OP-70 is available
- c. Ensure Tech Specs are available
- d. Starting from normal full power IC-20:
  - i. Verify three Div II Service Water Pumps are running
  - ii. Verify breaker 101-2 is open
  - iii. Verify breaker 18-2 is closed
  - iv. Verify 4KV Emer Bus 103 Volts is overridden to read 3800V (below TS 3.3.8.1 degraded voltage band)



## **B. Read Before Every JPM Performance**

For the performance of this JPM, I will act as all those you need to talk to. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary. (Note, read the next only if conducting a plant JPM). With the exception of accessing panels, no plant equipment will be physically manipulated. Repositioning of devices will be simulated by discussion and acknowledged by my cues.

## **C. Read Before Each Evaluated JPM**

This evaluated JPM is a measure of your ability to perform this task independently. The US has determined that a verifier is not available and that additional verification will not be provided.



<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"><li>• The Plant is operating at 100% power.</li><li>• N2-OP-70, Attachment 11, Removing Line 5, 2RTX-XSR1A and TB#1 from Service, is in progress.</li><li>• Breaker 2ENS*SWG101-13 has just been opened per Attachment 11, requiring performance of N2-OSP-LOG-W001, Attachment 3.</li></ul> <p><b>Evaluator:</b> Ask trainee if he/she has any questions after presenting initial conditions</p>
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<b>INITIATING CUE</b>	<p><b>(Candidate Name)</b>, Perform N2-OSP-LOG-W001, Attachment 3, Off-Site AC Breaker Alignment Verification.</p> <p>When completed, report completion and findings, if any, to the Examiner.</p>
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<b>START TIME</b>	
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	<b>PERFORMANCE</b>	<b>ACT. CODE</b> P / S / NA	<b>EVALUATOR</b>
1.	Provide repeat back of initiating cue <b>Cue:</b> Acknowledge repeat back providing correction if necessary.	P	SAT / UNSAT <b>STD:</b> Proper communications used.
<b>Evaluator Note:</b>		Evaluator is to provide to the applicant, a copy of N2-OSP-LOG-W001 with prerequisites complete for the completion of attachment 3.	
2.	Obtain a copy of the reference procedure and review / utilize the correct section of the procedure	P	SAT / UNSAT <b>STD:</b> N2-OSP-LOG-W001, Attachment 3, Off-Site AC Breaker Alignment Verification Obtained.
3.	Determines status of the Off-Site AC Breaker Alignment.  Reviews Attachment 3, Off-Site AC Breaker Alignment Verification and identifies the following:		



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
<b>Evaluator Note:</b>	The following issues do not need to be found or reported in the order listed. Additionally, the applicant may provide the examiner with verbal reports versus documenting them in writing.		
3a.	Identifies first Off-Site AC Breaker Alignment issue  <b>Cue:</b> <i>If asked, report that local meter indication at 2ENS*SWG103 reads the same as the control room indication.</i>	P	<b>*PASS / FAIL</b>  <b>STD:</b> <i>Identifies that 2ENS*SWG103 bus voltage is low out of band.</i>
3b.	Identifies second Off-Site AC Breaker Alignment issue	P	<b>*PASS / FAIL</b>  <b>STD:</b> <i>Identifies Breaker 18-2, 4KV Alt Feed to SWG101 or 103, is CLOSED and should be OPEN.</i>
3c.	Identifies third Off-Site AC Breaker Alignment issue	P	<b>*PASS / FAIL</b>  <b>STD:</b> <i>Identifies Breaker 101-2, 4KV Feed to 2EJS*X1B, is OPEN and should be CLOSED.</i>
3d.	Recognizes/records MDS10 and MDS20 alignments are contrary to Attachment 3, Off-Site AC Breaker Alignment, but are in a procedurally allowed configuration	P	<b>SAT / UNSAT</b>  <b>STD:</b> <i>Recognizes and records that MDS10 is OPEN and should be closed per Attachment 3, but is procedurally allowed to be OPEN and that MDS20 is CLOSED and should be opened per Attachment 3, but is procedurally allowed to be CLOSED.</i>

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
3e.	Recognizes/records breaker 101-13, 4KV Normal Feed to SWG101 alignment is contrary to Attachment 3, Off-Site AC Breaker Alignment, but is in a procedurally allowed configuration	P	SAT / UNSAT  <b>STD:</b> Recognizes and records that breaker 101-13 is OPEN and should be closed per Attachment 3, but is procedurally allowed to be OPEN to support the Off-Site 115 KV line 5 outage.
4.	Notify appropriate Plant Management.  <b>Cue:</b> Acknowledge the information presented	P	SAT / UNSAT  <b>STD:</b> Notifies <b>EXAMINER / Ops Director</b> or designee of issues identified.
<b>Evaluator Note:</b>		The following JPM step is for SRO's only. RO's will complete the JPM through step 4 and SRO's will complete all steps of the JPM.	
5.	<p><b>SRO ONLY:</b> After the SRO reports their findings, direct them to determine any applicable technical specifications for the identified issues.</p> <p><b>Cue:</b> If the applicant attempts to evaluate operability of the bus due to the low bus voltage, inform the applicant that another operator will evaluate any specifications associated with the bus inoperability.</p> <p><b>Note:</b> This evaluation would require input from other sources and is beyond the intended scope of this JPM.</p> <p><b>Note:</b> With 2ENS*SWG103 voltage below the degraded voltage band given on TS table 3.3.8.1-1, 2EGS*EG3 should have started and did not.</p>	P	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> Identifies failure of EGS*EG3 to start, requiring the channel to be placed in trip within 1 hour OR declaring the associated DG inoperable immediately, per TS 3.3.8.1.</p>



<b>TASK STANDARD</b>	Determination has been made as unsat for both the 4KV Emer Bus 103 voltage and breaker positions in accordance with N2-OSP-LOG-W001. Additionally, for SROs, EGS*EG3 has been declared inoperable.
<b>STOP TIME</b>	





## JPM Handout

### INITIAL CONDITIONS

Given:

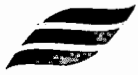
- The Plant is operating at 100% power.
- N2-OP-70, Attachment 11, Removing Line 5, 2RTX-XSR1A and TB#1 from Service, is in progress.
- Breaker 2ENS\*SWG101-13 has just been opened per Attachment 11, requiring performance of N2-OSP-LOG-W001, Attachment 3.

**Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

### INITIATING CUE

**(Candidate Name)**, *Perform N2-OSP-LOG-W001, Attachment 3, Off-Site AC Breaker Alignment Verification.*



*When completed, report completion and findings, if any, to the Examiner.*



Training ID: 2019 NMP2 NRC RO-SRO Admin RC Revision: 0.0

Title: Radiological and Heat Stress Requirements Related to Operator Work In High Radiation Areas - Valve leak in RWCU Pump Room

## Approvals:

	Signature	/	Printed Name	Date
Developed by:		/	Paul Isham	1/18/19
Validated by:		/	J. Wilcox / B. Beaumont	9/13/19
Facility Reviewer:		/	Paul Fenn	9/17/19

Approximate Duration: 20 minutes

## Documentation of Performance:

Performer: \_\_\_\_\_

Evaluator: \_\_\_\_\_

Start Time: \_\_\_\_\_ Stop Time: \_\_\_\_\_ Completion Time: \_\_\_\_\_

Grade: **Pass / Fail**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluators Signature: \_\_\_\_\_ Date: \_\_\_\_\_



## References

1. RP-AA-10, Radiation Protection Process Description
2. RP-AA-11, External Dose Control Program Description
3. RP-AA-12, Internal Dose Control Program Description
4. RP-AA-203, Exposure Control and Authorization
5. RP-AA-403, Administration of the Radiation Work Permit Program
6. RP-AA-460, Controls for High and Locked High Radiation Areas
7. RP-AA-460-001, Controls for Very High Radiation Areas
8. SA-AA-111, Heat Stress Control
9. NISP-RP-013, Radiation Protection Standard Glossary of Terms
10. NUREG 1123, 2.3.7 (3.5/3.6)



## Instructor Information

### A. JPM Information

#### 1. Description

- a. This JPM is used to test knowledge in calculation of overall dose and control mechanisms to allow the operators to continue or perform work in high dose areas. This JPM tests basic mathematics and understanding of heat stress stay times and remaining dose limitations.
- b. Critical steps are annotated in the Evaluator standard column with a bolded **\*Pass/Fail**.

#### 2. Task Information:

- a. GAP-RPP07-00002, Comply with administrative exposure limits
- b. K/A 2.3.7 (3.5/3.6), Ability to comply with radiation work permit requirements during normal or abnormal conditions.

#### 3. Evaluation / Task Criteria

Evaluation Method	Perform
Evaluation Location	Classroom
Time Critical Task	No
Alternate Path	No
LOD > 1.0	Yes

#### 4. Recommended Start Location

- a. Training Classroom



5. JPM Setup (if required)

a. Ensure sufficient copies of the following procedures are available in the exam area:

- RP-AA-10
- RP-AA-11
- RP-AA-12
- RP-AA-203
- RP-AA-403
- RP-AA-460
- RP-AA-460-001
- SA-AA-111
- NISP-RP-013

b. Ensure calculators are available.



## **B. Read Before Every JPM Performance**

1. For the performance of this JPM, I will act as all those you need to talk to. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary. (Note, read the next only if conducting a plant JPM). With the exception of accessing panels, no plant equipment will be physically manipulated. Repositioning of devices will be simulated by discussion and acknowledged by my cues.

## **C. Read Before Each Evaluated JPM**

1. This evaluated JPM is a measure of your ability to perform this task independently. The US has determined that a verifier is not available and that additional verification will not be provided.

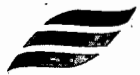


<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"><li>• The plant is at 100% power.</li><li>• A valve leak has developed in the WCS-P1B room.</li><li>• Entry into the room is required to assist Maintenance with repairing valve WCS-V29B.</li><li>• An updated survey map is provided.</li><li>• Your current year-to-date exposure is 1800 mRem TEDE.</li><li>• You have not received any dose extension this year.</li><li>• Job conditions are as follows:<ul style="list-style-type: none"><li>○ You will be performing Moderate Work for a total of 45 minutes at valve WCS-V29B.</li><li>○ You will be wearing vapor-impermeable coveralls over your work clothes.</li><li>○ Radiation Protection has determined that a respirator is not required.</li><li>○ The wet bulb temperature in the room is 93°F.</li></ul></li></ul> <p><b>Evaluator:</b> Ask trainee if he/she has any questions after presenting initial conditions</p>
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<b>INITIATING CUE</b>	<p><b>(Candidate Name)</b>, address the radiological and heat stress aspects of performing this work, and record your findings on the provided scorecard.</p>
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<b>START TIME</b>	
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	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
1.	Provide repeat back of initiating cue <b>Cue:</b> Acknowledge repeat back providing correction if necessary.	P	SAT / UNSAT <b>STD:</b> Proper communications used.
2.	Obtain a copy of the reference procedures and review / utilize the correct section of the procedures.	P	SAT / UNSAT <b>STD:</b> Associated procedures obtained.
3.	Evaluates Scorecard questions		



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
3a.	Evaluates Scorecard Question #1: <i>Classify the room based on radiation level.</i>	P	<b>*PASS / FAIL</b> <b>STD:</b> Determines area is a Locked High Radiation Area.
3b.	Evaluates Scorecard Question #2: <i>Determine the highest dose rate in the room and the location.</i>	P	<b>*PASS / FAIL</b> <b>STD:</b> 2,000 mrem/hr by the pump.
3c.	Evaluates Scorecard Question #3: <i>Determine the dose rate at the work location.</i>	P	<b>*PASS / FAIL</b> <b>STD:</b> 500 mrem/hr.
3d.	Evaluates Scorecard Question #4: <i>Determine the highest contamination level in the area and the location.</i>	P	<b>*PASS / FAIL</b> <b>STD:</b> 20,000 dpm/100cm <sup>2</sup> at location circle 5.
3e.	Evaluates Scorecard Question #5: <i>Determine the contamination level at the work location.</i>	P	<b>*PASS / FAIL</b> <b>STD:</b> 6,000 dpm/100cm <sup>2</sup> .
3f.	Evaluates Scorecard Question #6: <i>Determine the expected dose for the duration of the job.</i>	P	<b>*PASS / FAIL</b> <b>STD:</b> 375 mrem (500 mrem/hr x .75 hr).
3g.	Evaluates Scorecard Question #7: <i>Determine the heat stress action time limit.</i>	P	<b>*PASS / FAIL</b> <b>STD:</b> 20 minutes per SA-AA-111, Attachment 3.
<b>Evaluator Note:</b>		<ul style="list-style-type: none"> <li>The following JPM step is for SRO's only. RO's will complete the JPM through step 3 and SRO's will complete all steps of the JPM.</li> <li>Provide SRO candidates with the SRO Only cue sheet.</li> </ul>	
4.	Evaluates SRO Only Scorecard questions		



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
4a.	Evaluates SRO Only Scorecard Question #1:  <i>Is a dose extension required?</i>	P	<b>*PASS / FAIL</b>  <b>STD:</b> Determines that the answer is "YES" because annual exposure will exceed 2000 mRem dose control level. (1800 mRem + 375 mRem = 2175 mRem).
4b.	Evaluates SRO Only Scorecard Question #2:  <i>Determine expected margin to dose limit upon completion of the job.</i>	P	<b>*PASS / FAIL</b>  <b>STD:</b> Determines that a dose extension is required, therefore there is no margin to the dose limit upon completion of the job and proceeds to SRO Only Scorecard questions 3 and 4.
4c.	Evaluates SRO Only Scorecard Question #3:  <i>Identify the form required to be completed for the dose extension.</i>	P	<b>*PASS / FAIL</b>  <b>STD:</b> Determines that RP-AA-203, Attachment 1 is the required form for dose extensions.
4d.	Evaluates SRO Only Scorecard Question #4:  <i>Check all appropriate boxes below for the approvals required for this dose extension.</i>	P	<b>*PASS / FAIL</b>  <b>STD:</b> Determines the following as the required approvals: <ul style="list-style-type: none"> <li>• Work Group Supervisor</li> <li>• Radiation Protection Manager</li> </ul>

<b>TASK STANDARD</b>	Radiological and heat stress requirements related to work in the WCS-P1B room addressed.
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<b>STOP TIME</b>	
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## JPM Handout

### INITIAL CONDITIONS

**Given:**

- The plant is at 100% power.
- A valve leak has developed in the WCS-P1B room.
- Entry into the room is required to assist Maintenance with repairing valve WCS-V29B.
- An updated survey map is provided.
- Your current year-to-date exposure is 1800 mRem TEDE.
- You have not received any dose extension this year.
- Job conditions are as follows:
  - You will be performing Moderate Work for a total of 45 minutes at valve WCS-V29B.
  - You will be wearing vapor-impermeable coveralls over your work clothes.
  - Radiation Protection has determined that a respirator is not required.
  - The wet bulb temperature in the room is 93°F.

**Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

### INITIATING CUE

**(Candidate Name)**, *address the radiological and heat stress aspects of performing this work, and record your findings on the provided scorecard.*

**Scorecard**

***Answer the following when performing this task:***

**1.**

Classify the room based on radiation level (check one):

- ☐ Radiation Area
- ☐ High Radiation Area
- ☐ Locked High Radiation Area
- ☐ Very High Radiation Area

**2.**

Determine the highest dose rate in the room and the location:

**3.**

Determine the dose rate at the work location:

**4.**

Determine the highest contamination level in the area and the location:

**5.**

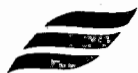
Determine the contamination level at the work location:

**6.**

Determine the expected dose for the duration of the job:

**7.**

Determine the heat stress action time limit:



## Examiner Scorecard. Do Not Provide to Applicant.

**Answer the following when performing this task:**

1.

Classify the room based on radiation level (check one):

- ☐ Radiation Area
- ☐ High Radiation Area
- ☒ **Locked High Radiation Area**
- ☐ Very High Radiation Area

2.

Determine the highest dose rate in the room and the location:

**2000 mrem/hr near the pump**

3.

Determine the dose rate at the work location:

**500 mRem/hr**

4.

Determine the highest contamination level in the area and the location:

**20,000 dpm/100cm<sup>2</sup> at circle 5**

5.

Determine the contamination level at the work location:

**6,000 dpm/100cm<sup>2</sup>**

6.

Determine the expected dose for the duration of the job:

**375 mRem**

7.

Determine the heat stress stay time:

**20 minutes**



## SRO Only Handout

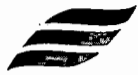
<b>INITIATING CUE</b>	<p><b>(Candidate Name)</b>, determine if a dose extension is required to perform this work. If no extension is required, identify the expected margin to the dose limit upon completion of the task. If an extension is required, identify the form required to be completed for the dose extension and the levels of approval needed for the dose extension. Record your findings on the scorecard below."</p>
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## SRO Only Scorecard

<b>Answer the following when performing this task:</b>	
1.	Is a dose extension required? <input type="checkbox"/> No (answer question 2 below only) <input type="checkbox"/> Yes (answer questions 3 and 4 below only)
2.	Determine expected margin to dose limit upon completion of the job.
3.	Identify the form required to be completed for the dose extension.
4.	Check all appropriate boxes below for the approvals required for this dose extension. <input type="checkbox"/> Work Group Supervisor <input type="checkbox"/> Radiation Protection Manager <input type="checkbox"/> Plant Manager <input type="checkbox"/> Site Vice President

**Examiner Scorecard. Do Not Provide to Applicant.**



1.
Is a dose extension required? <input type="checkbox"/> No (answer question 2 below only) <input checked="" type="checkbox"/> <b>Yes (answer questions 3 and 4 below only)</b>
2.
Determine expected margin to dose limit upon completion of the job.  <b>N/A</b>
3.
Identify the form required to be completed for the dose extension.  <b>RP-AA-203 Attachment 1</b>
4.
Check all appropriate boxes below for the approvals required for this dose extension.  <input checked="" type="checkbox"/> <b>Work Group Supervisor</b> <input checked="" type="checkbox"/> <b>Radiation Protection Manager</b> <input type="checkbox"/> Plant General Manager <input type="checkbox"/> Site Vice President



Training ID: 2019 NMP2 NRC Simulator JPM S-1 Revision: 0.0

Title: Start 2FWS-P1A and Transfer Feedwater Level Control to 2FWS-LV55A.

## Approvals:

	Signature	/	Printed Name	Date
Developed by:		/	Mike Alexander	4/22/19
Validated by:		/	Jim Lai	7/30/19
Facility Reviewer:		/	Paul Fenn	9/16/19

Approximate Duration: 25 minutes

## Documentation of Performance:

Performer: \_\_\_\_\_

Evaluator: \_\_\_\_\_

Start Time: \_\_\_\_\_ Stop Time: \_\_\_\_\_ Completion Time: \_\_\_\_\_

Grade: **Pass / Fail**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluators Signature: \_\_\_\_\_ Date: \_\_\_\_\_



## References

1. N2-OP-3, Rev. 05100, Condensate and Feedwater System
2. NUREG 1123 K/A 259001 A4.05 (4.0/3.9)





## Instructor Information

### A. JPM Information

#### 1. Description

- a. This JPM tests the candidate's ability to manipulate controls associated with the Feedwater System. The operator will start Reactor Feed Pump A and transfer Feedwater Level Control to 2FWS-LV55A in accordance with N2-OP-3.
- b. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

#### 2. Task Information:

- a. N2-259002-01004, Establish / Maintain Level Control During Initial Feedwater Pump Startup.

#### 3. Evaluation / Task Criteria

License Level: (Target Audience)	<input checked="" type="checkbox"/> SRO <input checked="" type="checkbox"/> RO <input type="checkbox"/> EO <input type="checkbox"/> N/A		
Evaluation Method:	<input checked="" type="checkbox"/> Perform <input type="checkbox"/> Simulate		
Evaluation Location:	<input type="checkbox"/> Plant <input checked="" type="checkbox"/> Simulator <input type="checkbox"/> Classroom		
Time Critical Task:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Alternate Path:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Safety Function:	2		Reactor Water Inventory Control

<b>LOD Value:</b> (Must be >1.0) (Ref. NRC 71111.11 Inspection Manual, APP. C)		<b>3</b>	
<b>K/A Statement:</b> (Add justification statement below for K/A's < 3.0)	259001 A4.05 Ability to manually operate and/or monitor in the control room: Reactor water level		
<b>K/A Importance Rating:</b>	<b>RO</b>	<b>4.0</b>	<b>SRO 3.9</b>

4. K/A Justification:

a. N/A

5. Recommended Start Location

a. NLC Classroom

6. Simulator Setup

a. IC Number

1) IC-011

b. Presets / With Triggers

1) Malfunctions

a) None

2) Remotes

a) **FW03A**, FW AUX Lube Oil Pump A,  
 FINAL = Auto

**TRG1**

3) Overrides

a) None

4) Annunciators

a) None



## 5) Event Triggers

Event #	Event Action	Command
N/A	None	N/A

## 6) Equipment Out of Service

- a) None

## 7) Support Documentation

- a) Prepare a copy of N2-OP-3, section E.3.0 with section E.2.0 completed & E.3.0 placekept as complete up through and including E.3.20. Next step to be performed is E.3.21.

## 8) Miscellaneous

- a) IC-203 (For ILT 18-1, not paired)

**-OR-**

- b) IC setup:

- (1) Reset to IC-011

- (2) Start 2nd Condensate Booster Pump by:

- (a) Placing 2CNM-P2B control switch to normal-after-start (Red Flagged)

- (b) Need to have 2 Condensate and 2 Condensate Booster pumps running

- (3) Ensure CNM-LV137 is setup controlling reactor water level in AUTO

## 7. Strategy Code

- a. None



8. Tools and Equipment

a. None

9. Commitments

a. None

10. Prerequisites

a. None

11. Applicable Operator Fundamental Knowledge Check Question(s)

a. None



## **B. Read Before Every JPM Performance**

1. For the performance of this JPM, I will act as all those you need to talk to. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary. (Note, read the next only if conducting a plant JPM). With the exception of accessing panels, no plant equipment will be physically manipulated. Repositioning of devices will be simulated by discussion and acknowledged by my cues.

## **C. Read Before Each Evaluated JPM**

1. This evaluated JPM is a measure of your ability to perform this task independently. The Unit Supervisor has determined that a verifier is not available and that additional verification will not be provided.



<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"><li>• A startup is in progress.</li><li>• Reactor power is at approximately 2%.</li><li>• N2-OP-3 is complete through step E.3.20.</li></ul> <p><b>Evaluator:</b> Ask trainee if he/she has any questions after presenting initial conditions</p>
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<b>INITIATING CUE</b>	<p><b>(Candidate Name)</b>, start 2FWS-P1A and transfer Feedwater Level Control to 2FWS-LV55A in accordance with N2-OP-3, beginning at Step E.3.21 and ending when 2FWS-LV55A is in automatic.</p>
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<b>START TIME</b>	
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	<b>PERFORMANCE</b>	<b>ACT. CODE</b> P / S / NA	<b>EVALUATOR</b>
1.	<p>Provide repeat back of initiating cue</p> <p><b>Cue:</b> Acknowledge repeat back providing correction if necessary</p>	P	<p>SAT / UNSAT</p> <p><b>STD:</b> Proper communications used.</p>
<b>Procedure Note:</b>	<ul style="list-style-type: none"><li>• 2CNM-LV137 has the potential to throttle from less than 70% open to 100% open on Feedwater Pump start until Booster Pump minimum flow valves close.</li><li>• A standby operator shall be available for contingency flow augmentation using 2FWS-LV55A(B) per step E.2.36 should Reactor Water level continue to lower after the Feed Pump start.</li><li>• 2FWS-P1A(B,C) will not start until the minimum flow valve is approximately 19% open.</li><li>• The first feedwater pump should be started as close to 480 psig Reactor pressure as possible to allow 2CNM-LV137 to pass enough flow on initial feedwater pump start to maintain Reactor Level while allowing 2CNM-LV55A(B) to open against the differential pressure across the valve.</li></ul>		



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
2.	Starts 2FWS-P1A, REACTOR FW PMP 1A, by placing the control switch to Normal-After-START (Red flagged).	P (E.3.21)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for 2FWS-P1A, REACTOR FW PMP 1A on 2CEC*PNL851 in the clockwise direction to the START position and verifies the RED light lit and the GREEN light not lit after 2FWR-FV2A opens.  <b>Failure =</b> 2FWS-P1A RED light ON and GREEN light OFF not achieved.
3.	Confirms 2FWR-FV2A, REACTOR FD P1A RECIRC VLV, starts to open	P (E.3.22)	SAT / UNSAT  <b>STD:</b> Observes 2FWR-FV2A, REACTOR FD P1A RECIRC VLV % Valve Position meter on 2CEC*PNL851 sweeping to the right as 2FWR-FV2A opens.
4.	WHEN 2FWR-FV2A is partially open, THEN confirms 2FWS-P1A starts.	P (E.3.23)	SAT / UNSAT  <b>STD:</b> Observes 2FWS-P1A, REACTOR FW PMP 1A on 2CEC*PNL851 RED light lit and the GREEN light not lit after 2FWR-FV2A opens.
5.	Using 2CNM-FI68A, RX FD WTR P1A confirms 2FWS-P1A flow is approximately 9,500 gpm.	P (E.3.24)	SAT / UNSAT  <b>STD:</b> Observes 2CNM-FI68A, RX FD WTR P1A FLOW meter on 2CEC*PNL851 indicating approximately 9,500 gpm.
<b>Evaluator Note:</b>		The following JPM step will require booth operator action to initiate <b>TRG1</b> . This will stop 2FWL-P2A, 2FWS-P1A Auxiliary Lube Oil Pump.	

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
6.	<p>At 2FWS-P1A, places the Auxiliary Lube Oil Pump control switch 2FWL-LCS752 to AUTO AND verifies 2FWL-P2A stops.</p> <p><b>Cue:</b> Auxiliary Lube Oil Pump control switch 2FWL-LCS752 has been placed in the AUTO position.</p>	<p>P (E.3.25)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> Directs field operator to locally place Auxiliary Lube Oil Pump control switch 2FWL-LCS752 to the AUTO position and observes AUX LUBE OIL PMP 2A FWL-P2A on 2CEC*PNL851 GREEN light lit and the RED light not lit. Acknowledges field operator report and placekeeps step.</p>
<b>Evaluator Note:</b>		The following JPM step will involve a Role Play from a field operator only. No Booth Operator trigger initiation is required.	
7.	<p>At the operating Feedwater Pump, closes 2FWS-V25A, FD WTR PUMP 1A WRMUP LN ISOLATION.</p> <p><b>Cue:</b> 2FWS-V25A, FD WTR PUMP 1A WRMUP LN ISOLATION is closed.</p>	<p>P (E.3.26)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> Directs field operator to locally close 2FWS-V25A, FD WTR PUMP 1A WRMUP LN ISOLATION. Acknowledges field operator report and placekeeps step.</p>
8.	<p>At the operating feedwater pump, verifies 2FWS-V103A, FEEDWATER PUMP 1A LOW FLOW LINE ISOL is open.</p> <p><b>Cue:</b> 2FWS-V103A, FEEDWATER PUMP 1A LOW FLOW LINE ISOL is open.</p>	<p>P (E.3.27)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> Directs field operator to locally verify 2FWS-V103A, FEEDWATER PUMP 1A LOW FLOW LINE ISOL is open. Acknowledges field operator report and placekeeps step.</p>





	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
9.	<p>Stations a person to monitor seal water temperatures at seal water temperature recorder 2FWP-TR12A, located at the south side of 2FWS-P1A.</p> <p><b>Cue:</b> <i>Field Operator is standing by seal water temperature recorder 2FWP-TR12A, located at the south side of 2FWS-P1A to monitor seal water temperatures.</i></p>	P (E.3.28)	<p>SAT / UNSAT</p> <p><b>STD:</b> <i>Directs field operator to locally monitor seal water temperatures at seal water temperature recorder 2FWP-TR12A, located at the south side of 2FWS-P1A. Acknowledges field operator report and placekeeps step.</i></p>
10.	<p>Stations a person to monitor seal water flow at 2FWP-FI12F.</p> <p><b>Cue:</b> <i>Field Operator is standing by 2FWP-FI12F, to monitor seal water flow.</i></p>	P (E.3.29)	<p>SAT / UNSAT</p> <p><b>STD:</b> <i>Directs field operator to locally monitor seal water flow at 2FWP-FI12F. Acknowledges field operator report and placekeeps step.</i></p>
	<p><b>Procedure Note:</b></p> <ul style="list-style-type: none"><li>• Inboard seal water outlet temperature is monitored at 2FWP-TR12A(B) channel 4.</li><li>• Maintaining Seal Water Injection flow in the optimum band of 0.5 to 3.0 gpm will limit pump inboard shaft vibration and seal leakage.</li><li>• When adjusting the seal injection flow the flow changes should be slow (0.1 to 0.2 gpm per minute). Rapid flow changes could result in pressure transient that could impact the seal stability.</li></ul>		
11.	<p>Throttles 2FWP-V66A to establish AND maintain seal water injection flow 0.5 up to 3.0 gpm, but as low as achievable WHILE maintaining Inboard Seal Water Outlet Temperature less than 160°F.</p> <p><b>Cue:</b> <i>2FWP-V66A has been throttled to establish AND maintain seal water injection flow at 2.0 gpm, with Inboard Seal Water Outlet Temperature at 140°F.</i></p>	P (E.3.30)	<p>SAT / UNSAT</p> <p><b>STD:</b> <i>Directs field operator to locally throttle 2FWP-V66A as necessary to establish AND maintain seal water injection flow 0.5 up to 3.0 gpm, but as low as achievable WHILE maintaining Inboard Seal Water Outlet Temperature less than 160°F. Acknowledges field operator report and placekeeps step.</i></p>



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR				
12.	IF Inboard Seal Water Outlet Temperature can NOT be maintained at OR below 160°F with injection flow at or below 3.0 gpm, THEN performs the following:	P (E.3.31)	SAT / UNSAT  <b>STD:</b> Determines from previous step that seal water injection flow is at 2.0 gpm, with Inboard Seal Water Outlet Temperature at 140°F and placekeeps the "N/A, Inboard Seal Water Outlet Temperature can be maintained at OR below 160°F with injection flow at or below 3.0 gpm" portion of the step.				
13.	Stations a person to monitor seal water flow at 2FWP-FI12E.	P (E.3.32)	SAT / UNSAT  <b>STD:</b> Directs field operator to locally monitor seal water flow at 2FWP-FI12E. Acknowledges field operator report and placekeeps step.				
<table><tr><td><b>Procedure Note:</b></td><td colspan="3"><ul style="list-style-type: none"><li>• Outboard seal water outlet temperature is monitored at 2FWP-TR12A(B) channel 3.</li><li>• Maintaining Seal Water Injection flow in the optimum band of 0.5 to 3.0 gpm will limit pump inboard shaft vibration and seal leakage.</li><li>• When adjusting the seal injection flow the flow changes should be slow (0.1 to 0.2 gpm per minute). Rapid flow changes could result in pressure transient that could impact the seal stability.</li></ul></td></tr></table>				<b>Procedure Note:</b>	<ul style="list-style-type: none"><li>• Outboard seal water outlet temperature is monitored at 2FWP-TR12A(B) channel 3.</li><li>• Maintaining Seal Water Injection flow in the optimum band of 0.5 to 3.0 gpm will limit pump inboard shaft vibration and seal leakage.</li><li>• When adjusting the seal injection flow the flow changes should be slow (0.1 to 0.2 gpm per minute). Rapid flow changes could result in pressure transient that could impact the seal stability.</li></ul>		
<b>Procedure Note:</b>	<ul style="list-style-type: none"><li>• Outboard seal water outlet temperature is monitored at 2FWP-TR12A(B) channel 3.</li><li>• Maintaining Seal Water Injection flow in the optimum band of 0.5 to 3.0 gpm will limit pump inboard shaft vibration and seal leakage.</li><li>• When adjusting the seal injection flow the flow changes should be slow (0.1 to 0.2 gpm per minute). Rapid flow changes could result in pressure transient that could impact the seal stability.</li></ul>						



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
14.	<p>Throttles 2FWP-V68A to establish AND maintain seal water injection flow 0.5 up to 3.0 gpm, but as low as achievable WHILE maintaining Seal Water Outlet Temperature less than 160°F.</p> <p><b>Cue:</b> 2FWP-V68A has been throttled to establish AND maintain seal water injection flow at 2.0 gpm, with Inboard Seal Water Outlet Temperature at 140°F.</p>	P (E.3.33)	<p>SAT / UNSAT</p> <p><b>STD:</b> Directs field operator to locally throttle 2FWP-V68A as necessary to establish AND maintain seal water injection flow 0.5 up to 3.0 gpm, but as low as achievable WHILE maintaining Seal Water Outlet Temperature less than 160°F. Acknowledges field operator report and placekeeps step.</p>
15.	<p>IF Outboard Seal Water Outlet Temperature can NOT be maintained at OR below 160°F with injection flow at or below 3.0 gpm, THEN perform the following:</p>	P (E.3.34)	<p>SAT / UNSAT</p> <p><b>STD:</b> Determines from previous step that seal water injection flow is at 2.0 gpm, with Inboard Seal Water Outlet Temperature at 140°F and placekeeps the "N/A, Outboard Seal Water Outlet Temperature can be maintained at OR below 160°F with injection flow less than or equal to 3.0 gpm." portion of the step.</p>
16.	<p>IF 2FWS-LV10B is being used to support level control with 2FWS-LV55B, per Step E.2.36, THEN performs the following to transfer level control to 2FWS-LV55A:</p>	P (E.3.35)	<p>SAT / UNSAT</p> <p><b>STD:</b> Determines that 2FWS-LV10B is not being used to support level control with 2FWS-LV55B and placekeeps the "Otherwise Mark these steps N/A" portion of the step.</p>



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
17.	Throttles 2FWS-LV55A, HI PRESS LO FLOW FD WTR A CONTROL VLV, by using the OPEN / CLOSED detent pushbutton on 2FWS-LV55A controller as needed to maintain required level band.	P (E.3.36)	<b>*PASS / FAIL</b>  <b>STD:</b> Depresses the OPEN/CLOSE pushbuttons on 2FWS-LIC1055A controller on 2CEC*PNL603 as necessary to maintain RPV level in desired band.  <b>Failure</b> = Reactor scrams on level 3 or level 8 signal.
<b>Procedure Note:</b>		To maintain Reactor Water level in desired band in Step 3.36, 2CNM-HIC137, FEEDWATER LO FLOW CONTROLLER tape setpoint may be adjusted.	
18.	IF CNM-LV137 controlling in AUTO, THEN maintains Reactor water level in the desired band AND confirms 2CNM-LV137 closes as 2FWS-LV55A is opened.	P (E.3.37)	SAT / UNSAT  <b>STD:</b> Determines that CNM-LV137 is controlling in AUTO and observes 2CNM-LIK1137 on 2CEC*PNL603 % Valve Position meter lowering as 2FWS-LV55A is being opened.
19.	IF CNM-LV137 controlling in AUTO, THEN place 2CNM-LV137 controller in Manual (M) AND close 2CNM-LV137 by using the CLOSE detent pushbutton.	P (E.3.38)	<b>*PASS / FAIL</b>  <b>STD:</b> Determines that CNM-LV137 is controlling in AUTO and depresses the MANUAL pushbutton on 2CNM-LIK1137 on 2CEC*PNL603 and then depresses the CLOSE detent pushbutton until % Valve Position meter indicates 0%.  <b>Failure</b> = 2CNM-LIK1137 controller in MANUAL and closed not achieved.
<b>Procedure Note:</b>		2FWS-LV55A(B) should be greater than 5% open before placing it in Auto or sluggish valve operation could occur.	



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
20.	WHEN 2FWS-LV55A is greater than 5% open, THEN adjusts 2CNM-HIC137, FEEDWATER LO FLOW CONTROLLER, tape setpoint to obtain equal signals as read in the input (vertical) AND output (horizontal) signal on 2FWS-LV55A controller.	P (E.3.39)	<b>*PASS / FAIL</b>  <b>STD:</b> Adjusts 2CNM-HIC137, FEEDWATER LO FLOW CONTROLLER on 2CEC*PNL603, tape setpoint to obtain equal signals as read in the input (vertical) AND output (horizontal) signal on 2FWS-LV55A controller.  <b>Failure =</b> Equal signals as read in the input (vertical) AND output (horizontal) signal on 2FWS-LV55A controller not achieved.
21.	Verifies 2CNM-HIC137 indicator is in the green band.	P (E.3.40)	SAT / UNSAT  <b>STD:</b> Observes that 2CNM-HIC137, FEEDWATER LO FLOW CONTROLLER on 2CEC*PNL603 indicates red pointer in the GREEN band on vertical meter indication.
22.	Depresses Auto (A) pushbutton on 2FWS-LV55A controller.	P (E.3.41)	<b>*PASS / FAIL</b>  <b>STD:</b> Depresses the AUTO pushbutton on 2FWS-LIC1055A controller on 2CEC*PNL603 and verifies GREEN automatic controller indication light is ON and amber MANUAL indication light is OFF.  <b>Failure =</b> 2FWS-LIC1055A controller GREEN automatic controller indication light ON not achieved.



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
23.	Verifies Reactor water level is being maintained at the desired setpoint.	P (E.3.42)	SAT / UNSAT  <b>STD:</b> Observes reactor water level indications on 2CEC*PNL603 and ensures that reactor water level is stable and at desired setpoint.
<b>Evaluator Note:</b>		After the candidate verifies that reactor water level is being maintained at the desired setpoint, provide the following cue:  <b>Cue:</b> Your task is complete, another operator will complete any remaining actions.	
<b>TASK STANDARD</b>		2FWS-P1A is running and reactor water level is being maintained by 2FWS-LV55A in automatic.	
<b>STOP TIME</b>			



## JPM Handout

### INITIAL CONDITIONS

Given:

- A startup is in progress.
- Reactor power is at approximately 2%.
- N2-OP-3 is complete through step E.3.20.

**Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

### INITIATING CUE

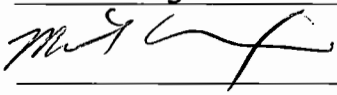

**(Candidate Name)**, start 2FWS-P1A and transfer Feedwater Level Control to 2FWS-LV55A in accordance with N2-OP-3, beginning at Step E.3.21 and ending when 2FWS-LV55A is in automatic.



Training ID: 2019 NMP2 NRC Simulator JPM S-2 Revision: 0.0

Title: Manual Initiation of Control Bldg. Special Filter Train (Alternate Path)

## Approvals:

	Signature	/	Printed Name	Date
Developed by:		/	Mike Alexander	4/22/19
Validated by:		/	Jim Lai	7/30/19
Facility Reviewer:		/	Paul Fenn	9/16/19

Approximate Duration: 15 minutes

## Documentation of Performance:

Performer: \_\_\_\_\_

Evaluator: \_\_\_\_\_

Start Time: \_\_\_\_\_ Stop Time: \_\_\_\_\_ Completion Time: \_\_\_\_\_

Grade: **Pass / Fail**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluators Signature: \_\_\_\_\_ Date: \_\_\_\_\_





## References

1. N2-OP-53A, Rev. 01600, Control Building Ventilation System
2. NUREG 1123 K/A 290003 A4.01, (3.2/3.2)



## Instructor Information

### A. JPM Information

#### 1. Description

- a. This JPM tests the candidate's ability to manually initiate Control Building Special Filter Train A per N2-OP-53A, section H.6.0.
- b. This JPM is considered alternate path because when HVC\*MOV1B is placed in the closed position, a high drywell pressure initiation signal will occur which will cause an automatic initiation of both control room special filter trains. The candidate will recognize that both special filter trains start and recall precaution and limitation D.19.0 which states "If both special filters start due to a valid initiation signal, one of the running special filter trains must be secured within 20 minutes after the booster fan starts. This is to prevent exceeding maximum dose to Control Room operators." and secure HVC\*FN2B by placing its control switch in normal after stop.
- c. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

#### 2. Task Information:

- a. N2-288003-01047, Perform Manual Initiation of Control Building Special Filter Train

#### 3. Evaluation / Task Criteria

License Level: (Target Audience)	<input checked="" type="checkbox"/> SRO <input checked="" type="checkbox"/> RO <input type="checkbox"/> EO <input type="checkbox"/> N/A
Evaluation Method:	<input checked="" type="checkbox"/> Perform <input type="checkbox"/> Simulate
Evaluation Location:	<input type="checkbox"/> Plant <input checked="" type="checkbox"/> Simulator <input type="checkbox"/> Classroom



Time Critical Task:		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Alternate Path:		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Safety Function:	9	Radioactivity Release			
LOD Value: (Must be >1.0) (Ref. NRC 71111.11 Inspection Manual, APP. C)		3			
K/A Statement: (Add justification statement below for K/A's < 3.0)		290003 A4.01 Ability to manually operate and/or monitor in the control room: Initiate/reset system			
K/A Importance Rating:		RO	3.2	SRO	3.2

4. K/A Justification:

a. N/A

5. Recommended Start Location

a. NLC Classroom

6. Simulator Setup

a. IC Number

a. IC-021 or equivalent

b. Presets / With Triggers

a. Malfunctions

a) **RR20**, RR Loop Rupture – DBA LOCA,  
FIANL=0.003

**Inserted**

b. Remotes

a) None



c. Overrides

a) None

d. Annunciators

a) None

e. Event Triggers

Event #	Event Action	Command
3	zdpc1hvcb03(1)==1	imf rr20 1

f. Equipment Out of Service

a) None

g. Support Documentation

a) Prepare a copy of N2-OP-53A with no steps placekept as complete.

h. Miscellaneous

a) IC-201 (For ILT 18-1, paired with S-8)

**-OR-**

b) IC setup

(1) Reset to IC-021, "100% Power MOC Fuel Cycle 16"

(2) Insert RR20 to obtain ~0.58 psig Drywell pressure then stabilize by adjusting as necessary

7. Strategy Code

a. None

8. Tools and Equipment

a. None



9. Commitments

- a. None

10. Prerequisites

- a. None

11. Applicable Operator Fundamental Knowledge Check Question(s)

- a. None

## **B. Read Before Every JPM Performance**

1. For Plant JPM's:

- a. For the performance of this JPM, I will act as all those you need to talk to. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary.
- b. With the exception of accessing panels, no plant equipment will be physically manipulated. Repositioning of devices will be simulated by discussion and acknowledged by my cues.

2. For Simulator JPM's:

- a. For the performance of this JPM, I will act as all those you need to talk to. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will provide cues as necessary.



## **C. Read Before Each Evaluated JPM**

1. This evaluated JPM is a measure of your ability to perform this task independently. The Unit Supervisor has determined that a verifier is not available and that additional verification will not be provided.

**INITIAL  
CONDITIONS**

Given:

- EOPs have been entered
- Drywell Pressure is currently 0.58 psig and rising slowly
- Control Building radiation levels are 6E-6  $\mu$ ci/cc and rising

**Evaluator:** Ask trainee if he/she has any questions after presenting initial conditions

**INITIATING  
CUE**

**(Candidate Name)**, Manually initiate Control Building Special Filter Train 'A' and verify proper operation per N2-OP-53A, section H.6.0.

**START TIME**

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
1.	Provide repeat back of initiating cue  <b>Cue:</b> Acknowledge repeat back providing correction if necessary	P	SAT / UNSAT  <b>STD:</b> Proper communications used
<b>Procedure Note:</b>		<ul style="list-style-type: none"><li>• Performance of this procedure may be required by the EOPs. Changes to this section of the procedure (including renumbering) are required to be reviewed by the EOP Coordinator (N2-EOP-MSL).</li><li>• Isolation of normal outdoor makeup air is done automatically upon receipt of a high radiation signal or a LOCA signal.</li></ul>	
2.	Closes 2HVC*MOV1A, CONTROL ROOM AC FLT TRAIN BYP VLV at 2CEC*PNL870.	P (H.6.1)	<b>*PASS / FAIL</b>  <b>STD:</b> At 2CEC*PNL870, rotates 2HVC*MOV1A, CONTROL ROOM AC FLT TRAIN BYP VLV control switch counter clockwise to the CLOSE position and observes RED light not lit and GREEN light lit.  <b>Failure</b> = 2HVC*MOV1A, RED light OFF and GREEN light ON not achieved.



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
<b>Alternate Path:</b>	In the next step, when 2HVC*MOV1B is placed in the closed position, a high drywell pressure initiation signal will occur which will cause an automatic initiation of both control room special filter trains. The candidate will recognize that both special filter trains start and recall precaution and limitation D.19.0 which states "If both special filters start due to a valid initiation signal, one of the running special filter trains must be secured within 20 minutes after the booster fan starts. This is to prevent exceeding maximum dose to Control Room operators." and secure HVC*FN2B by placing its control switch in normal after stop.		
3.	Closes 2HVC*MOV1B, CONTROL ROOM AC FLT TRAIN BYP VLV at 2CEC*PNL871.	P (H.6.2)	<b>*PASS / FAIL</b>  <b>STD:</b> At 2CEC*PNL871, rotates 2HVC*MOV1B, CONTROL ROOM AC FLT TRAIN BYP VLV control switch counter clockwise to the CLOSE position and observes RED light not lit and GREEN light lit.  <b>Failure =</b> 2HVC*MOV1B, RED light OFF and GREEN light ON not achieved.
<b>Instructor Note:</b>	A high drywell pressure initiation signal occurs when 2HVC*MOV1B control switch is taken to close.		





	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
4.	Recognizes high drywell pressure automatic initiation of both special filter trains	P	SAT / UNSAT  <b>STD:</b> Observes the following: <ul style="list-style-type: none"><li>• Annunciator 871312, CONTROL BLDG BSTR FAN 2B AUTO START</li><li>• Annunciator 870312, CONTROL BLDG BSTR FAN 2A AUTO START</li><li>• 2HVC*MOV1A closed</li><li>• 2HVC*MOV1B closed</li><li>• 2HVC*FN2A green flagged with RED light lit and GREEN light not lit</li><li>• 2HVC*FN2B green flagged with RED light lit and GREEN light not lit</li></ul>
<b>Instructor Note:</b>		N2-OP-53A section H.1.0 covers the actions to be used to address the alternate path. The candidate may use the following annunciator response procedures in parallel with performing the N2-OP-53A H.1.0 steps: <ul style="list-style-type: none"><li>• Annunciator response for 870312</li><li>• Annunciator response for 871312</li></ul>	
5.	References N2-OP-53A, section H.1.0, "Automatic Initiation of Control Building Special Filter Train"	P (H.1.0)	SAT / UNSAT  <b>STD:</b> N2-OP-53A, section H.1.0 obtained. Step H.1.1 identified as starting point.
<b>Procedure Note:</b>		Control Building Special Filter Train booster fan HVC*FN2A(B) will automatically start and its respective Filter Train Bypass Valve HVC*MOV1A(B) will automatically close on either of the following initiation signals: <ul style="list-style-type: none"><li>• 2HVC*RE18A(B) AND 2HVC*RE18C(D) either exceeding the alarm setpoint or failed.</li><li>• LOCA signal - high drywell pressure (<math>\geq 1.68</math> psig) or low reactor vessel water level - Level 2 (<math>\leq 108.8</math> inches).</li></ul>	

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
<b>Procedure Caution:</b>	Both Special Filter Trains start simultaneously on a valid LOCA/Hi Rad signal. Failure to shut down one of the operating fans 2HVC*FN2A(B) within 20 minutes of Actuation can result in the Control Room personnel receiving excessive Radiation Exposure.		
6.	AFTER an automatic initiation, THEN verifies the following:	P (H.1.1)	SAT / UNSAT  <b>STD:</b> Reads, reviews and placekeeps step.
7.	2HVC*FN2A(B), CONTROL ROOM AC BOOSTER FAN, starts as indicated by control switch indicating lights.	P (H.1.1, first bullet)	SAT / UNSAT  <b>STD:</b> At 2CEC*PNL870/871, verifies 2HVC*FN2A & B RED lights lit and GREEN lights not lit.
8.	2HVC*MOV1A(B), CONTROL ROOM AC FLT TRAIN BYP VLV, closes as indicated by control switch indicating lights.	P (H.1.1, second bullet)	SAT / UNSAT  <b>STD:</b> At 2CEC*PNL870/871, verifies 2HVC*MOV1A & B GREEN lights lit and RED lights not lit.
9.	Annunciator 870312 (871312), CONTROL BLDG BSTER FAN 2A(B) AUTO START, in alarm	P (H.1.1, third bullet)	SAT / UNSAT  <b>STD:</b> At 2CEC*PNL870/871, verifies Annunciator 871312, CONTROL BLDG BSTR FAN 2B AUTO START & Annunciator 870312, CONTROL BLDG BSTR FAN 2A AUTO START are in alarm.

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
10.	Places 2HVC*FN2A(B), CONTROL ROOM AC BOOSTER FAN, control switch to Normal-After-START.	P (H.1.2)	SAT / UNSAT  <b>STD:</b> At 2CEC*PNL870, rotates 2HVC*FN2A, CONTROL ROOM AC BOOSTER FAN control switch clockwise to the NORMAL-AFTER-START position.
11.	Places 2HVC*FN2B(A), CONTROL ROOM AC BOOSTER FAN, control switch to Normal-After-START.	P (H.1.2)	SAT / UNSAT  <b>STD:</b> At 2CEC*PNL871, rotates 2HVC*FN2B, CONTROL ROOM AC BOOSTER FAN control switch clockwise to the NORMAL-AFTER-START position.
12.	Observes 2HVC*FR10A, FILTER TRAIN HVC*FLT2A INLET AIR FLOW (red pen), should indicate approximately 63% of full-scale (corresponds to approximately 2250 scfm).	P (H.1.3)	SAT / UNSAT  <b>STD:</b> At 2CEC*PNL870, verifies recorder 2HVC*FR10A, FILTER TRAIN HVC*FLT2A INLET AIR FLOW (red pen), indicates approximately 63% of full-scale.
13.	Observes 2HVC*FR10B, FILTER TRAIN HVC*FLT2B INLET AIR FLOW (red pen), should indicate approximately 63% of full-scale (corresponds to approximately 2250 scfm).	P (H.1.3)	SAT / UNSAT  <b>STD:</b> At 2CEC*PNL871, verifies recorder 2HVC*FR10B, FILTER TRAIN HVC*FLT2B INLET AIR FLOW (red pen), indicates approximately 63% of full-scale.
<b>Instructor Note:</b>		In the following step, the magnehelic gauge that is used in the main control room is not modeled in the Unit #2 simulator, therefore the a cue is provided.	



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
14.	<p>Confirms that Control Room/Atmosphere d/p is greater than or equal to +0.125 in WG as read on 2HVC-PDI147 located in Control Room behind 2CEC-PNL849.</p> <p><b>Cue:</b> 2HVC-PDI147 reads +0.130 in WG</p>	<p>P (H.1.4)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> Verifies magnehelic gauge 2HVC-PDI147 for Control Room/Atmosphere d/p reads greater than or equal to +0.125 in WG by acknowledging instructor cue and placekeeping step.</p>
15.	<p>Observes the following at 2HVC*PNLCH7A(B):</p>	<p>P (H.1.5)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> Reads, reviews and placekeeps step.</p>
16.	<p>ON INDICATOR red light illuminated</p> <p><b>Cue:</b> ON INDICATOR at 2HVC*PNLCH7A &amp; B red lights are illuminated</p>	<p>P (H.5, first bullet)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> Verifies the ON INDICATOR at 2HVC*PNLCH7A &amp; B RED lights are illuminated by acknowledging instructor cue and placekeeping step.</p>
17.	<p>LOW AIRFLOW INDICATOR green light off</p> <p><b>Cue:</b> LOW AIRFLOW INDICATOR green lights at 2HVC*PNLCH7A &amp; B are off</p>	<p>P (H.5, second bullet)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> Verifies the LOW AIRFLOW INDICATOR GREEN lights at 2HVC*PNLCH7A &amp; B are off by acknowledging instructor cue and placekeeping step.</p>
18.	<p>OVERTEMPERATURE INDICATOR green light off</p> <p><b>Cue:</b> OVERTEMPERATURE INDICATOR green lights at 2HVC*PNLCH7A &amp; B are off</p>	<p>P (H.5, third bullet)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> Verifies the OVERTEMPERATURE INDICATOR GREEN lights at 2HVC*PNLCH7A &amp; B are off by acknowledging instructor cue and placekeeping step.</p>



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
<b>Instructor Note:</b>	In the following step, a cue is provided if the candidate does not proceed with procedure section.		
19.	BEFORE 20 minutes has elapsed from initiation of 2HVC*FN2B(A), verifies control switch for fan (2HVC*FN2B(A)) is placed in Normal-After STOP.  <b>Cue:</b> 15 minutes has elapsed	P (H.1.6)	<b>*PASS / FAIL</b>  <b>STD:</b> Acknowledges instructor cue (if used) and at 2CEC*PNL871, rotates 2HVC*FN2B, CONTROL ROOM AC BOOSTER FAN control switch counter clockwise to the NORMAL-AFTER-STOP position and observes RED light not lit and GREEN light lit.  <b>Failure</b> = 2HVC*FN2B; RED light OFF and GREEN light ON not achieved.
<b>Evaluator Note:</b>	Once the candidate has placed the control switch for 2HVC*FN2B in the NORMAL-AFTER-STOP position, provide the following cue:  <b>Cue:</b> Your task is complete. Another operator will complete any remaining actions.		
<b>TASK STANDARD</b>	Control Building Special Filter Train 'A' is in service and proper operation has been verified per N2-OP-53A.		
<b>STOP TIME</b>			



## JPM Handout

<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"><li>• EOPs have been entered</li><li>• Drywell Pressure is currently 0.58 psig and rising slowly</li><li>• Control Building radiation levels are 6E-6 <math>\mu</math>ci/cc and rising</li></ul> <p><b>Evaluator:</b> Ask trainee if he/she has any questions after presenting initial conditions</p>
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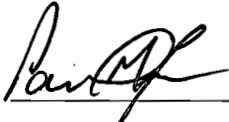
<b>INITIATING CUE</b>	<p><b>(Candidate Name)</b>, Manually initiate Control Building Special Filter Train 'A' and verify proper operation per N2-OP-53A, section H.6.0.</p>
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Training ID: 2019 NMP2 NRC Simulator JPM S-3 Revision: 0.0

Title: Main Steam Line Warmup Operation (Alternate Path)

## Approvals:

	Signature	/	Printed Name	Date
Developed by:		/	Mike Alexander	4/22/19
Validated by:		/	Jim Lai	7/30/19
Facility Reviewer:		/	Paul Fenn	9/16/19

Approximate Duration: 15 minutes

## Documentation of Performance:

Performer: \_\_\_\_\_

Evaluator: \_\_\_\_\_

Start Time: \_\_\_\_\_ Stop Time: \_\_\_\_\_ Completion Time: \_\_\_\_\_

Grade: **Pass / Fail**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluators Signature: \_\_\_\_\_ Date: \_\_\_\_\_



References

1. N2-OP-1, Rev. 02000, Main Steam System
2. NUREG 1123 K/A 239001 A4.02 (3.2/3.2)



## Instructor Information

### A. JPM Information

#### 1. Description

- a. This JPM tests the candidate's ability to manipulate controls associated with the Main Steam System. The operator will perform a Startup of the Main Steam System per N2-OP-1 Section E.2.0.
- b. This JPM is considered alternate path because when the last outboard MSIV is opened a steam leak will occur with a failure of the MSIV's and Drain valves to automatically isolate (Group 1). The candidate will have to recognize the steam leak indications and the failure of the isolation to occur and manually close the MSIV's and drain valves per N2-SOP-83 or the associated ARP.
- c. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

#### 2. Task Information:

- a. N2-239001-01001, Startup MSS, Main Steam System

#### 3. Evaluation / Task Criteria

License Level: (Target Audience)	<input checked="" type="checkbox"/> SRO <input checked="" type="checkbox"/> RO <input type="checkbox"/> EO <input type="checkbox"/> N/A
Evaluation Method:	<input checked="" type="checkbox"/> Perform <input type="checkbox"/> Simulate
Evaluation Location:	<input type="checkbox"/> Plant <input checked="" type="checkbox"/> Simulator <input type="checkbox"/> Classroom
Time Critical Task:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No



Alternate Path:		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Safety Function:	3	Reactor Pressure Control			
LOD Value: (Must be >1.0) (Ref. NRC 71111.11 Inspection Manual, APP. C)		3			
K/A Statement: (Add justification statement below for K/A's < 3.0)		239001 A4.02 Ability to manually operate and/or monitor in the control room: Main steam line drain valves			
K/A Importance Rating:	RO	3.2	SRO	3.2	

4. K/A Justification:

a. N/A

5. Recommended Start Location

a. NLC Classroom

6. Simulator Setup

a. IC Number

1) IC-007

b. Presets / With Triggers

1) Malfunctions

a) **MS13**, MSIV Isolation Failure, FINAL  
= TRUE

**Inserted**

b) **MS02**, Steam Line Rupture Outside  
Primary Containment (DBA), FINAL =  
5

**TRG1**



## 2) Remotes

- a) **MS03**, Cond Low Vac Bypass Switch (A-D), FINAL = ON **Inserted**
- b) **MS05B**, 2MSS\*MOV112 Appendix R Ckt Breaker, FINAL = Close **Inserted**
- c) **MS05A**, 2MSS\*SOV97A-D Appendix R Ckt Breaker, FINAL = Close **TRG1**

## 3) Overrides

- a) None

## 4) Annunciators

- a) None

## 5) Event Triggers

Event #	Event Action	Command
1	hzlms028d(2)==1 .AND. hzlms028a(2)==1==1	Left Blank

## 6) Equipment Out of Service

- a) None

## 7) Support Documentation

- a) Prepare a copy of N2-OP-1, section E.2.0 with no steps placekept as complete.

## 8) Miscellaneous

- a) IC-204 (For ILT 18-1, not paired)

**-OR-**

- b) IC setup:



(1) Reset to IC-007

7. Strategy Code

a. None

8. Tools and Equipment

a. None

9. Commitments

a. None

10. Prerequisites

a. None

11. Applicable Operator Fundamental Knowledge Check Question(s)

a. None



## **B. Read Before Every JPM Performance**

1. For the performance of this JPM, I will act as all those you need to talk to. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary. (Note, read the next only if conducting a plant JPM). With the exception of accessing panels, no plant equipment will be physically manipulated. Repositioning of devices will be simulated by discussion and acknowledged by my cues.

## **C. Read Before Each Evaluated JPM**

1. This evaluated JPM is a measure of your ability to perform this task independently. The Unit Supervisor has determined that a verifier is not available and that additional verification will not be provided.



## INITIAL CONDITIONS

### Given:

- The plant is starting up.
- MSS\*SOV97A through D, BETWEEN MSIV LINES DRAIN VLVs, are operable and unisolated.
- N2-OP-19-LINEUPS, Attachment 1, Walkdown Valve Lineup is complete.
- N2-OP-19-LINEUPS, Attachment 2, Walkdown Electric Lineup is complete.
- Pneumatic supply to MSIV valve lineup per N2-OP-19-LINEUPS, Attachment 1 Walkdown Valve Lineup is complete.
- N2-RESP-10 Attachment 2, Restoration Valve Lineup, has been completed.
- 2EHS\*MCC102-7A, MAIN STEAM LINE DRAIN OUTBD 2MSS\*MOV112 has been closed.
- 2EHS\*MCC102-7A, ALARM CIRCUIT control switch has been placed in ENABLE.

**Evaluator:** Ask trainee if he/she has any questions after presenting initial conditions

## INITIATING CUE

**(Candidate Name)**, perform a Startup of the Main Steam System per N2-OP-1 Section E.2.0.

## START TIME

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
1.	Provide repeat back of initiating cue  <b>Cue:</b> Acknowledge repeat back providing correction if necessary	P	SAT / UNSAT  <b>STD:</b> Proper communications used.
<b>Procedure Note:</b>	Main Steam System Startup will be performed in conjunction with N2-OP-101A.		



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
2.	IF required, THEN verifies N2-OP-19-LINEUPS, Attachment 1, Walkdown Valve Lineup is complete.	P (E.2.1)	SAT / UNSAT  <b>STD:</b> Recalls from the Initial Conditions that N2-OP-19-LINEUPS, Attachment 1, Walkdown Valve Lineup is complete and placekeeps step.
3.	IF required, THEN verify N2-OP-19-LINEUPS, Attachment 2, Walkdown Electric Lineup is complete.	P (E.2.2)	SAT / UNSAT  <b>STD:</b> Recalls from the Initial Conditions that N2-OP-19-LINEUPS, Attachment 2, Walkdown Electric Lineup is complete and placekeeps step.
4.	IF required, THEN verify pneumatic supply to MSIV valve lineup per N2-OP-19-LINEUPS, Attachment 1 Walkdown Valve Lineup is complete.	P (E.2.3)	SAT / UNSAT  <b>STD:</b> Recalls from the Initial Conditions that pneumatic supply to MSIV valve lineup per N2-OP-19-LINEUPS, Attachment 1 Walkdown Valve Lineup is complete and placekeeps step.
5.	Energize MSS*MOV112, MAIN STM LINE DRAIN ISOL VLV, by completing the following:	P (E.2.4)	SAT / UNSAT  <b>STD:</b> Reads/reviews and placekeeps step.
6.	<ul style="list-style-type: none"><li>Closes 2EHS*MCC102-7A, MAIN STEAM LINE DRAIN OUTBD 2MSS*MOV112</li></ul>	P (E.2.4.1)	SAT / UNSAT  <b>STD:</b> Recalls from the Initial Conditions that 2EHS*MCC102-7A, MAIN STEAM LINE DRAIN OUTBD 2MSS*MOV112 has been closed and placekeeps step.



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
7.	<ul style="list-style-type: none"> <li>Places 2EHS*MCC102-7A, ALARM CIRCUIT control switch to ENABLE.</li> </ul>	P (E.2.4.2)	SAT / UNSAT  <b>STD:</b> Recalls from the Initial Conditions that 2EHS*MCC102-7A, ALARM CIRCUIT control switch has been placed in ENABLE and placekeeps step.
8.	IF MSS*SOV97A through D, BETWEEN MSIV LINES DRAIN VLVs, are operable, un-isolated AND are NOT open, THEN performs the following:	P (E.2.5)	SAT / UNSAT  <b>STD:</b> Reads/reviews and placekeeps step.
<div> <div>Evaluator Note:</div> <div>           In the following step, remote function:           <ul style="list-style-type: none"> <li><b>MS05A</b>, 2MSS*SOV97A-D Appendix R Ckt Breakers, FINAL = Close will be used (on TRG1) as directed by the candidate to energize 2MSS*SOV97A, B, C, D.</li> </ul> </div> </div>			
9.	<ul style="list-style-type: none"> <li>Places 2SCI-PNLA101-23 to ON.</li> </ul> <p><b>Cue:</b> 2SCI-PNLA101-23 has been placed in the ON position.</p>	P (E.2.5.1)	SAT / UNSAT  <b>STD:</b> Directs field operator to locally place 2SCI-PNLA101-23 to ON. Acknowledges field operator report and placekeeps step.
10.	At 2CEC-PNL824, OPENS the following valves:	P (E.2.5.2)	SAT / UNSAT  <b>STD:</b> Reads/reviews and placekeeps step.



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
11.	<ul style="list-style-type: none"> <li>2MSS*SOV97A</li> </ul>	P (E.2.5.2 first bullet)	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> Rotates the control switch for 2MSS*SOV97A, BETWEEN MSIV LINES DRAIN VLV on 2CEC*PNL824 in the clockwise direction to the OPEN position and verifies the RED light lit and the GREEN light not lit.</p> <p><b>Failure =</b> 2MSS*SOV97A RED light ON and GREEN light OFF not achieved.</p>
12.	<ul style="list-style-type: none"> <li>2MSS*SOV97B</li> </ul>	P (E.2.5.2 second bullet)	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> Rotates the control switch for 2MSS*SOV97B, BETWEEN MSIV LINES DRAIN VLV on 2CEC*PNL824 in the clockwise direction to the OPEN position and verifies the RED light lit and the GREEN light not lit.</p> <p><b>Failure =</b> 2MSS*SOV97B RED light ON and GREEN light OFF not achieved.</p>
13.	<ul style="list-style-type: none"> <li>2MSS*SOV97C</li> </ul>	P (E.2.5.2 third bullet)	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> Rotates the control switch for 2MSS*SOV97C, BETWEEN MSIV LINES DRAIN VLV on 2CEC*PNL824 in the clockwise direction to the OPEN position and verifies the RED light lit and the GREEN light not lit.</p> <p><b>Failure =</b> 2MSS*SOV97C RED light ON and GREEN light OFF not achieved.</p>



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
14.	<ul style="list-style-type: none"> <li>2MSS*SOV97D</li> </ul>	<p>P</p> <p>(E.2.5.2 fourth bullet)</p>	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> Rotates the control switch for 2MSS*SOV97D, BETWEEN MSIV LINES DRAIN VLV on 2CEC*PNL824 in the clockwise direction to the OPEN position and verifies the RED light lit and the GREEN light not lit.</p> <p><b>Failure =</b> 2MSS*SOV97D RED light ON and GREEN light OFF not achieved.</p>
<p><b>Evaluator Note:</b> For the following 5 JPM steps, the CNSR LOW VAC BYPASS switches at 2CEC*PNL609 &amp; 2CEC*PNL611 are not modeled. Satisfactory performance of the JPM steps will be completed by candidate communications with evaluator Role Plays.</p>			
15.	Verifies the following four control switches are in BYPASS:	<p>P</p> <p>(E.2.6)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> Reads/reviews and placekeeps step.</p>
16.	<ul style="list-style-type: none"> <li>B22H-S24A CNSR LOW VAC BYPASS at 2CEC*PNL609</li> </ul> <p><b>Cue:</b> B22H-S24A CNSR LOW VAC BYPASS switch at 2CEC*PNL609 has been placed in the ON position.</p>	<p>P</p> <p>(E.2.6 first bullet)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> Directs field operator to locally place B22H-S24A CNSR LOW VAC BYPASS switch at 2CEC*PNL609 to ON. Acknowledges field operator report and placekeeps step.</p>
17.	<ul style="list-style-type: none"> <li>B22H-S24B CNSR LOW VAC BYPASS at 2CEC*PNL609</li> </ul> <p><b>Cue:</b> B22H-S24B CNSR LOW VAC BYPASS switch at 2CEC*PNL609 has been placed in the ON position.</p>	<p>P</p> <p>(E.2.6 second bullet)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> Directs field operator to locally place B22H-S24B CNSR LOW VAC BYPASS switch at 2CEC*PNL609 to ON. Acknowledges field operator report and placekeeps step.</p>



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
18.	<ul style="list-style-type: none"><li>B22H-S24C CNSR LOW VAC BYPASS at 2CEC*PNL611</li></ul> <p><b>Cue:</b> B22H-S24C CNSR LOW VAC BYPASS switch at 2CEC*PNL611 has been placed in the ON position.</p>	P (E.2.6 third bullet)	SAT / UNSAT  <b>STD:</b> Directs field operator to locally place B22H-S24C CNSR LOW VAC BYPASS switch at 2CEC*PNL611 to ON. Acknowledges field operator report and placekeeps step.
19.	<ul style="list-style-type: none"><li>B22H-S24D CNSR LOW VAC BYPASS at 2CEC*PNL611</li></ul> <p><b>Cue:</b> B22H-S24D CNSR LOW VAC BYPASS switch at 2CEC*PNL611 has been placed in the ON position.</p>	P (E.2.6 fourth bullet)	SAT / UNSAT  <b>STD:</b> Directs field operator to locally place B22H-S24D CNSR LOW VAC BYPASS switch at 2CEC*PNL611 to ON. Acknowledges field operator report and placekeeps step.
20.	WHEN Reactor pressure reaches 5 psig, THEN performs the following:	P (E.2.7)	SAT / UNSAT  <b>STD:</b> Reads/reviews and placekeeps step.
21.	<ul style="list-style-type: none"><li>IF N2-RESP-10 Attachment 1, Initial Valve Lineup, was performed during the startup, THEN Verify N2-RESP-10 Attachment 2, Restoration Valve Lineup, has been completed.</li></ul>	P (E.2.7.1)	SAT / UNSAT  <b>STD:</b> Recalls from the Initial Conditions that N2-RESP-10 Attachment 2, Restoration Valve Lineup, has been completed and placekeeps step.
22.	<ul style="list-style-type: none"><li>At 2CEC*PNL602, closes the following:</li></ul>	P (E.2.7.2)	SAT / UNSAT  <b>STD:</b> Reads/reviews and placekeeps step.



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
23.	<ul style="list-style-type: none"><li>2MSS*MOV118, REACTOR VENT THROTTLE</li></ul>	P (E.2.7.2 first bullet)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for 2MSS*MOV118, REACTOR VENT THROTTLE on 2CEC*PNL602 in the counter clockwise direction to the CLOSE position and verifies the GREEN light lit and the RED light not lit.  <b>Failure =</b> 2MSS*MOV118 GREEN light ON and RED light OFF not achieved.
24.	<ul style="list-style-type: none"><li>2MSS*MOV119, REACTOR VENT THROTTLE</li></ul>	P (E.2.7.2 second bullet)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for 2MSS*MOV119, REACTOR VENT THROTTLE on 2CEC*PNL602 in the counter clockwise direction to the CLOSE position and verifies the GREEN light lit and the RED light not lit.  <b>Failure =</b> 2MSS*MOV119 GREEN light ON and RED light OFF not achieved.
25.	Opens MSS*MOV108, REACTOR VESSEL VENT THROTTLE, at 2CEC*PNL602	P (E.2.8)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for 2MSS*MOV108, REACTOR VESSEL VENT THROTTLE on 2CEC*PNL602 in the clockwise direction to the OPEN position and verifies the RED light lit and the GREEN light not lit.  <b>Failure =</b> 2MSS*MOV108 RED light ON and GREEN light OFF not achieved.



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
26.	<p>IF reactor is greater than or equal to 212°F, THEN ensures Condensate AND Feedwater Systems are aligned AND able to maintain water level PRIOR to opening MSIVs OR drain valves.</p> <p><b>Cue:</b> <i>Condensate and feedwater are aligned and are able to maintain water level while opening the MSIVs or drain valves.</i></p>	P (E.2.9)	SAT / UNSAT  <b>STD:</b> <i>Acknowledges Cue and placekeeps step.</i>
27.	Verifies the following open:	P (E.2.10)	SAT / UNSAT  <b>STD:</b> <i>Reads/reviews and placekeeps step.</i>
28.	<ul style="list-style-type: none"><li>At 2CEC-PNL824, MSS*MOV207, INSIDE MSIV'S UPSTREAM DRAIN VLV THROTTLE</li></ul>	P (E.2.10 first bullet)	<b>*PASS / FAIL</b>  <b>STD:</b> <i>Rotates the control switch for 2MSS*MOV207, INSIDE MSIV'S UPSTREAM DRAIN VLV on 2CEC*PNL824 in the clockwise direction to the OPEN position and verifies the RED light lit and the GREEN light not lit.</i>  <b>Failure =</b> <i>2MSS*MOV207 RED light ON and GREEN light OFF not achieved.</i>



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
29.	<ul style="list-style-type: none"><li>At 2CEC*PNL602, MSS*MOV111, MAIN STM LINE DRAIN ISOL VLV</li></ul>	P (E.2.10 second bullet)	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> Inserts key and rotates the control switch for 2MSS*MOV111, MAIN STM LINE DRAIN ISOL VLV on 2CEC*PNL602 in the clockwise direction to the OPEN position and then releases and verifies the RED light lit and the GREEN light not lit.</p> <p><b>Failure =</b> 2MSS*MOV111 RED light ON and GREEN light OFF not achieved.</p>
30.	<ul style="list-style-type: none"><li>At 2CEC*PNL602, MSS*MOV112, MAIN STM LINE DRAIN ISOL VLV</li></ul>	P (E.2.10 third bullet)	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> Inserts key and rotates the control switch for 2MSS*MOV112, MAIN STM LINE DRAIN ISOL VLV on 2CEC*PNL602 in the clockwise direction to the OPEN position and then releases and verifies the RED light lit and the GREEN light not lit.</p> <p><b>Failure =</b> 2MSS*MOV112 RED light ON and GREEN light OFF not achieved.</p>



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
31.	IF 2MSS*SOV97A, B, C, and D, valves are operable AND un-isolated, THEN verifies MSS*MOV208, MSIV DRAIN VLV open	P (E.2.11)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for 2MSS*MOV208, MSIV DRAIN VLV on 2CEC*PNL602 in the clockwise direction to the OPEN position and verifies the RED light lit and the GREEN light not lit.  <b>Failure =</b> 2MSS*MOV208 RED light ON and GREEN light OFF not achieved.
32.	At 2CEC*PNL602, Verify the following open:	P (E.2.12)	SAT / UNSAT  <b>STD:</b> Reads/reviews and placekeeps step.
33.	<ul style="list-style-type: none"><li>2MSS*AOV6A</li></ul>	P (E.2.12 first bullet)	SAT / UNSAT  <b>STD:</b> Observes the RED light ON and GREEN light OFF for MSIV 2MSS*AOV6A on 2CEC*PNL602.
34.	<ul style="list-style-type: none"><li>2MSS*AOV6B</li></ul>	P (E.2.12 second bullet)	SAT / UNSAT  <b>STD:</b> Observes the RED light ON and GREEN light OFF for MSIV 2MSS*AOV6B on 2CEC*PNL602.
35.	<ul style="list-style-type: none"><li>2MSS*AOV6C</li></ul>	P (E.2.12 third bullet)	SAT / UNSAT  <b>STD:</b> Observes the RED light ON and GREEN light OFF for MSIV 2MSS*AOV6C on 2CEC*PNL602.



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
36.	<ul style="list-style-type: none"><li>2MSS*AOV6D</li></ul>	P (E.2.12 fourth bullet)	SAT / UNSAT  <b>STD:</b> Observes the RED light ON and GREEN light OFF for MSIV 2MSS*AOV6D on 2CEC*PNL602.
37.	At 2CEC*PNL602, verifies the following open:	P (E.2.13)	SAT / UNSAT  <b>STD:</b> Reads/reviews and placekeeps step.
38.	<ul style="list-style-type: none"><li>2MSS*AOV7A</li></ul>	P (E.2.13 first bullet)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for MSIV 2MSS*AOV7A on 2CEC*PNL602 in the clockwise direction to the AUTO position and verifies the RED light lit and the GREEN light not lit.  <b>Failure =</b> 2MSS*AOV7A RED light ON and GREEN light OFF not achieved.
39.	<ul style="list-style-type: none"><li>2MSS*AOV7B</li></ul>	P (E.2.13 second bullet)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for MSIV 2MSS*AOV7B on 2CEC*PNL602 in the clockwise direction to the AUTO position and verifies the RED light lit and the GREEN light not lit.  <b>Failure =</b> 2MSS*AOV7B RED light ON and GREEN light OFF not achieved.



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
40.	<ul style="list-style-type: none"> <li>2MSS*AOV7C</li> </ul>	<p>P (E.2.13 third bullet)</p>	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> Rotates the control switch for MSIV 2MSS*AOV7C on 2CEC*PNL602 in the clockwise direction to the AUTO position and verifies the RED light lit and the GREEN light not lit.</p> <p><b>Failure =</b> 2MSS*AOV7C RED light ON and GREEN light OFF not achieved.</p>
<p><b>Alternate Path:</b></p>		<p>During the next step when the last outboard MSIV is opened a steam leak will occur with a failure of the MSIV's and Drain valve to automatically isolate (Group 1). The candidate will have to recognize the steam leak indications and the failure of the isolation to occur and manually close the MSIV's and drain valves per N2-SOP-83 or the associated ARP. The following annunciators will alarm:</p> <ul style="list-style-type: none"> <li>602228 – MN STM TUNNEL TEMP HI-HI</li> <li>602234 – MN STM LINE PIPE TUNNEL DIFF TEMP HI</li> </ul>	
41.	<ul style="list-style-type: none"> <li>2MSS*AOV7D</li> </ul>	<p>P (E.2.13 fourth bullet)</p>	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> Rotates the control switch for MSIV 2MSS*AOV7D on 2CEC*PNL602 in the clockwise direction to the AUTO position and verifies the RED light lit and the GREEN light not lit.</p> <p><b>Failure =</b> 2MSS*AOV7D RED light ON and GREEN light OFF not achieved.</p>
42.	In accordance with N2-ARP-602200 or N2-SOP-83, Primary Containment Isolation Failure/Reset, closes the following MSIVs and drain valves that should have automatically isolated:	<p>P (N2-ARP-602200)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> Reads/reviews and placekeeps step.</p>



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
43.	<ul style="list-style-type: none"><li>2MSS*AOV6A</li></ul>	P (N2-ARP-602200)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for MSIV 2MSS*AOV6A on 2CEC*PNL602 in the counter clockwise direction to the CLOSE position and verifies the GREEN light lit and the RED light not lit.  <b>Failure =</b> 2MSS*AOV6A GREEN light ON and RED light OFF not achieved.
44.	<ul style="list-style-type: none"><li>2MSS*AOV6B</li></ul>	P (N2-ARP-602200)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for MSIV 2MSS*AOV6B on 2CEC*PNL602 in the counter clockwise direction to the CLOSE position and verifies the GREEN light lit and the RED light not lit.  <b>Failure =</b> 2MSS*AOV6B GREEN light ON and RED light OFF not achieved.
45.	<ul style="list-style-type: none"><li>2MSS*AOV6C</li></ul>	P (N2-ARP-602200)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for MSIV 2MSS*AOV6C on 2CEC*PNL602 in the counter clockwise direction to the CLOSE position and verifies the GREEN light lit and the RED light not lit.  <b>Failure =</b> 2MSS*AOV6C GREEN light ON and RED light OFF not achieved.

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
46.	<ul style="list-style-type: none"> <li>2MSS*AOV6D</li> </ul>	P (N2-ARP-602200)	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> Rotates the control switch for MSIV 2MSS*AOV6D on 2CEC*PNL602 in the counter clockwise direction to the CLOSE position and verifies the GREEN light lit and the RED light not lit.</p> <p><b>Failure =</b> 2MSS*AOV6D GREEN light ON and RED light OFF not achieved.</p>
47.	<ul style="list-style-type: none"> <li>2MSS*AOV7A</li> </ul>	P (N2-ARP-602200)	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> Rotates the control switch for MSIV 2MSS*AOV7A on 2CEC*PNL602 in the counter clockwise direction to the CLOSE position and verifies the GREEN light lit and the RED light not lit.</p> <p><b>Failure =</b> 2MSS*AOV7A GREEN light ON and RED light OFF not achieved.</p>
48.	<ul style="list-style-type: none"> <li>2MSS*AOV7B</li> </ul>	P (N2-ARP-602200)	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> Rotates the control switch for MSIV 2MSS*AOV7B on 2CEC*PNL602 in the counter clockwise direction to the CLOSE position and verifies the GREEN light lit and the RED light not lit.</p> <p><b>Failure =</b> 2MSS*AOV7B GREEN light ON and RED light OFF not achieved.</p>



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
49.	<ul style="list-style-type: none"><li>2MSS*AOV7C</li></ul>	P (N2-ARP-602200)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for MSIV 2MSS*AOV7C on 2CEC*PNL602 in the counter clockwise direction to the CLOSE position and verifies the GREEN light lit and the RED light not lit.  <b>Failure =</b> 2MSS*AOV7C GREEN light ON and RED light OFF not achieved.
50.	<ul style="list-style-type: none"><li>2MSS*AOV7D</li></ul>	P (N2-ARP-602200)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for MSIV 2MSS*AOV7D on 2CEC*PNL602 in the counter clockwise direction to the CLOSE position and verifies the GREEN light lit and the RED light not lit.  <b>Failure =</b> 2MSS*AOV7D GREEN light ON and RED light OFF not achieved.
51.	<ul style="list-style-type: none"><li>At 2CEC*PNL602, MSS*MOV111, MAIN STM LINE DRAIN ISOL VLV</li></ul>	P (N2-ARP-602200)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for 2MSS*MOV111, MAIN STM LINE DRAIN ISOL VLV on 2CEC*PNL602 in the counter clockwise direction to the CLOSE position and verifies the GREEN light lit and the RED light not lit.  <b>Failure =</b> 2MSS*MOV111 GREEN light ON and RED light OFF not achieved.

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
52.	<ul style="list-style-type: none"> <li>At 2CEC*PNL602, MSS*MOV112, MAIN STM LINE DRAIN ISOL VLV</li> </ul>	P (N2-ARP-602200)	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> Rotates the control switch for 2MSS*MOV112, MAIN STM LINE DRAIN ISOL VLV on 2CEC*PNL602 in the counter clockwise direction to the CLOSE position and verifies the GREEN light lit and the RED light not lit.</p> <p><b>Failure =</b> 2MSS*MOV112 GREEN light ON and RED light OFF not achieved.</p>
53.	At 2CEC*PNL602, MSS*MOV208, MSIV DRAIN VLV	P (N2-ARP-602200)	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> Rotates the control switch for 2MSS*MOV208, MSIV DRAIN VLV on 2CEC*PNL602 in the counter clockwise direction to the CLOSE position and verifies the GREEN light lit and the RED light not lit.</p> <p><b>Failure =</b> 2MSS*MOV208 GREEN light ON and RED light OFF not achieved.</p>
<b>Evaluator Note:</b> After the candidate closes all of the above listed main steam valves, provide the following cue:  <b>Cue:</b> Your task is complete, another operator will complete any remaining actions.			

<b>TASK STANDARD</b>	All Group 1 Isolation valves have been manually closed.
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<b>STOP TIME</b>	
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## JPM Handout

### INITIAL CONDITIONS

Given:

- The plant is starting up.
- MSS\*SOV97A through D, BETWEEN MSIV LINES DRAIN VLVs, are operable and unisolated.
- N2-OP-19-LINEUPS, Attachment 1, Walkdown Valve Lineup is complete.
- N2-OP-19-LINEUPS, Attachment 2, Walkdown Electric Lineup is complete.
- Pneumatic supply to MSIV valve lineup per N2-OP-19-LINEUPS, Attachment 1 Walkdown Valve Lineup is complete.
- N2-RESP-10 Attachment 2, Restoration Valve Lineup, has been completed.
- 2EHS\*MCC102-7A, MAIN STEAM LINE DRAIN OUTBD 2MSS\*MOV112 has been closed.
- 2EHS\*MCC102-7A, ALARM CIRCUIT control switch has been placed in ENABLE.

**Evaluator:** Ask trainee if he/she has any questions after presenting initial conditions

### INITIATING CUE



**(Candidate Name)**, perform a Startup of the Main Steam System per N2-OP-1 Section E.2.0.



Training ID: 2019 NMP2 NRC Simulator JPM S-4 Revision: 0.0

Title: Restore Shutdown Cooling to Service (Alternate Path)

## Approvals:

	Signature	/	Printed Name	Date
Developed by:		/	Mike Alexander	2/14/19
Validated by:		/	Dave Bottorff	9/18/19
Facility Reviewer:		/	Paul Fenn	9/18/19

Approximate Duration: 15 minutes

## Documentation of Performance:

Performer: \_\_\_\_\_

Evaluator: \_\_\_\_\_

Start Time: \_\_\_\_\_ Stop Time: \_\_\_\_\_ Completion Time: \_\_\_\_\_

Grade: **Pass / Fail**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluators Signature: \_\_\_\_\_ Date: \_\_\_\_\_



## References

1. N2-OP-31, Rev. 03600, Residual Heat Removal System
2. N2-SOP-31, Rev. 00601 Loss of Shutdown Cooling
3. NUREG 1123 K/A 205000 A4.01 (3.7/3.7)



## Instructor Information

### A. JPM Information

#### 1. Description

- a. This JPM tests the operator's ability to manipulate controls associated with RHR. The operator will restore SDC per the Operating Procedure.
- b. This JPM is considered alternate path. When the SDC pump is started, the injection valve will fail to open. The operator will need to establish alternate shutdown cooling in order to prevent exceeding 200°F reactor water temperature.
- c. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

#### 2. Task Information:

- a. N2-205000-01003, Initiate RHR Shutdown Cooling Operation

#### 3. Evaluation / Task Criteria

License Level: (Target Audience)	<input checked="" type="checkbox"/> SRO <input checked="" type="checkbox"/> RO <input type="checkbox"/> EO <input type="checkbox"/> N/A
Evaluation Method:	<input checked="" type="checkbox"/> Perform <input type="checkbox"/> Simulate
Evaluation Location:	<input type="checkbox"/> Plant <input checked="" type="checkbox"/> Simulator <input type="checkbox"/> Classroom
Time Critical Task:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Alternate Path:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No



Safety Function:	4	Heat Removal From Reactor Core			
LOD Value: (Must be >1.0) (Ref. NRC 71111.11 Inspection Manual, APP. C)		3			
K/A Statement: (Add justification statement below for K/A's < 3.0)		205000 A4.01 Ability to manually operate and/or monitor in the control room: SDC/RHR pumps			
K/A Importance Rating:		RO	3.7	SRO	3.7

4. K/A Justification:

a. N/A

5. Recommended Start Location

a. NLC Classroom

6. Simulator Setup

a. IC Number

1) IC-029

b. Presets / With Triggers

1) Malfunctions

a) None

2) Remotes

a) **RH33**, RHS\*MOV24A 600 V Bkr  
Status, FINAL = OPEN

**TRG2**

b) **RH10**, OP32.H.9 2RHS\*MOV24A  
Injection Throttle, FINAL = THROTTLE

**TRG2**

3) Overrides

a) **01A2S145DI0468**, Close RHR  
Shutdown Cooling Injection Isol Vlv  
MOV 40B, FINAL = ON

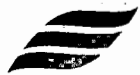
**Inserted**



- b) **01A2S145DI0469**, Open RHR Shutdown Cooling Injection Isol Vlv MOV 40B, FINAL = OFF **Inserted**
- c) **01A2DS162LO06710**, Off RHR Shutdown Cooling Injection Isol Vlv MOV, FINAL = OFF **Inserted**
- d) **01A2DS163LO06711**, On RHR Shutdown Cooling Injection Isol Vlv MOV, FINAL = OFF **Inserted**
- e) **01A1S163DI076**, On SDC A Inject MOV 40A Inop Amber, FINAL = ON **Inserted**
- 4) Annunciators
  - a) None
- 5) Event Triggers

Event #	Event Action	Command
N/A	None	N/A

- 6) Equipment Out of Service
  - a) RHS\*MOV40A is tagged out of service
- 7) Support Documentation
  - a) Prepare a copy of N2-OP-31, section H.4.0 with steps H.4.1 placekept as complete. Next step to be performed is H.4.2.
- 8) Miscellaneous
  - a) IC-202 (For ILT 18-1, not paired)  
**-OR-**
  - b) IC setup:
    - (1) Reset to IC-029



(2) Ensure SDC is secured in accordance with N2-OP-31 section H.3.0.

(3) Ensure stopwatch is available

7. Strategy Code

a. None

8. Tools and Equipment

a. None

9. Commitments

a. None

10. Prerequisites

a. None

11. Applicable Operator Fundamental Knowledge Check Question(s)

a. None



## **B. Read Before Every JPM Performance**

1. For the performance of this JPM, I will act as all those you need to talk to. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary. (Note, read the next only if conducting a plant JPM). With the exception of accessing panels, no plant equipment will be physically manipulated. Repositioning of devices will be simulated by discussion and acknowledged by my cues.

## **C. Read Before Each Evaluated JPM**

1. This evaluated JPM is a measure of your ability to perform this task independently. The Unit Supervisor has determined that a verifier is not available and that additional verification will not be provided.

<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"> <li>The plant is in Mode 4.</li> <li>SDC has been secured in accordance with N2-OP-31 Section H.3.0.</li> <li>2RHS*MOV40A is out of service for maintenance.</li> <li>RDS Backfill is in service to all RPV level reference legs.</li> </ul> <p><b>Evaluator:</b> Ask trainee if he/she has any questions after presenting initial conditions</p>
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<b>INITIATING CUE</b>	<b>(Candidate Name)</b> , Restart RHR Loop "B" in Shutdown Cooling per N2-OP-31, Section H.4.0.
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<b>START TIME</b>	
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	<b>PERFORMANCE</b>	<b>ACT. CODE</b> P / S / NA	<b>EVALUATOR</b>
1.	<p>Provide repeat back of initiating cue</p> <p><b>Cue:</b> Acknowledge repeat back providing correction if necessary</p>	P	<p>SAT / UNSAT</p> <p><b>STD:</b> Proper communications used.</p>
	<p><b>Procedure Caution:</b></p> <p>During a refueling outage, total drive flow through the jet pumps should be less than 5700 gpm when incore instrumentation is not fully surrounded (all four corners) by fuel and/or blade guides to preclude incore instrumentation from damage due to flow induced vibration. This includes RHR Shutdown Cooling and Recirculation Drive Flow.</p>		
2.	<p>IF RDS Backfill Injection is out of service to one OR more RPV Level reference legs in Mode 3, THEN enter N2-OP-101C, Attachment 1, RPV Cooldown Flow Chart AND performs concurrently with this Section to monitor for possible RPV level instrumentation notching.</p>	P (H.4.1)	<p>SAT / UNSAT</p> <p><b>STD:</b> Recalls from the Initial Conditions that RDS Backfill is in service to all RPV level reference legs and placekeeps the "N/A, RDS Backfill Injection is NOT out of service" portion of the step.</p>

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
<b>Procedure Caution:</b>	The RHR pump is without minimum flow protection, Minimum flow of greater than or equal to 1000 gpm must be established within 40 seconds of pump start. Use of a stopwatch is recommended to ensure the pump is tripped within the required time if minimum flow is not achieved. Running pump for more 15 seconds deadheaded is prohibited.		
3.	At 2CEC*PNL601, starts 2RHS*P1B.	P (H.4.2)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for 2RHS*P1B, PMP 1B on 2CEC*PNL601 in the clockwise direction to the START position and verifies the RED light lit and the GREEN light not lit.  <b>Failure =</b> 2RHS*P1B RED light ON and GREEN light OFF not achieved.
<b>Alternate Path:</b>	The alternate path begins when the operator attempts to open RHS*MOV40B. The valve will not respond as expected.		
4.	Throttles RHS*MOV40B, SDC B RETURN THROTTLE open to greater than or equal to 1000 gpm	P (H.4.3)	SAT / UNSAT  <b>STD:</b> Rotates the control switch for 2RHS*MOV40B, SDC B RETURN THROTTLE on 2CEC*PNL601 in the clockwise direction to the OPEN position and observes GREEN light ON and RED light ON indication.



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
5.	<p>IF RHS*MOV40B does NOT begin to open in 15 seconds OR system flow is NOT greater than or equal to 1000 gpm 40 seconds after pump start, THEN places RHS*P1B control switch to STOP AND release to Normal-After-Stop.</p> <p><b>Cue:</b> Reactor Coolant Temperature is 195°F and slowly rising.</p>	P (H.4.4)	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> Rotates the control switch for 2RHS*MOV40B, SDC B RETURN THROTTLE on 2CEC*PNL601 in the counter clockwise direction to the STOP position and verifies the GREEN light lit and the RED light not lit. Rotates 2RHS*P1B control switch counter clockwise to the Normal-After-Stop (Green Flagged) position.</p> <p><b>Failure =</b> 2RHS*MOV40B GREEN light ON and RED light OFF and 2RHS*P1B GREEN light ON and RED light OFF not achieved.</p>
6.	Enters N2-SOP-31, Loss of Shutdown Cooling	P (N2-SOP-31)	<p>SAT / UNSAT</p> <p><b>STD:</b> Determines the need to Enter N2-SOP-31, Loss of Shutdown Cooling.</p>
<b>Evaluator Note:</b>	If the operator indicates the necessity to monitor Reactor coolant temperature (N2-OSP-RCS-@001), report another operator will monitor temperature.		
<b>Evaluator Note:</b>	If the operator indicates the necessity to initiate actions to restore Secondary Containment, report Secondary Containment is restored.		



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
7.	<p>Enters and executes N2-SOP-31 and determines that IF/THEN statement that says "If in Mode 4 AND coolant temperature can NOT be maintained &lt;200°F, THEN Place Alternate Shutdown Cooling in service to maintain temperature &lt;200°F per Attachment 1 (preferred) OR Attachment 2 applies.</p> <p><b>Cue:</b> <i>If requested, or if the operator attempts to use the non-preferred method of alternate shutdown cooling, direct the use of the preferred method with RHR Loop 'A'.</i></p>	<p>P (N2-SOP-31)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> <i>Reads, reviews and placekeeps step. If requested, acknowledges evaluator cue.</i></p>
	<p><b>Procedure Note:</b></p> <ul style="list-style-type: none"> <li>• If time permits, Operations Management should be consulted prior to initiation of Alternate Shutdown Cooling.</li> <li>• This Subsection should be utilized only if normal shutdown cooling can not be established and it is determined that Alternate Shutdown Cooling is required. This section requires either RHS Loop A or B available for LPCI injection via the RHS Heat Exchanger.</li> <li>• Cooldown limits can be violated if a significant temperature differential exists between the Suppression Pool and RPV. Injection flow should be throttled as necessary to maintain cooldown limits.</li> </ul>		
8.	<p>Reduces Reactor pressure as low as possible using Bypass Valves OR SRVs with a cooldown rate less than OR equal to 100°F/hr.</p> <p><b>Cue:</b> <i>Another operator will lower reactor pressure as necessary.</i></p>	<p>P (N2-SOP-31, Att. 1, step 1.0)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> <i>Acknowledges evaluator cue and placekeeps step.</i></p>
	<b>Evaluator Note:</b>	The following step would require lifting leads.	
	<b>Evaluator Note:</b>	If the candidate attempts to make 2RHS*MOV24B, LPCI B INJECTION VLV throttleable, repeat the cue in JPM step 7.	

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
9.	<p>Makes one of the following LPCI Injection Valves throttleable per Attachment 3:</p> <ul style="list-style-type: none"> <li>2RHS*MOV24A, LPCI A INJECTION VLV</li> <li>2RHS*MOV24B, LPCI B INJECTION VLV</li> </ul> <p><b>Booth Operator:</b> <i>Insert TRG2, then toggle RH33 back to <b>close</b>.</i></p> <p><b>Cue:</b> <i>Report 2RHS*MOV24A, LPCI A INJECTION VLV has been made throttleable in accordance with N2-SOP-31, Attachment 3.</i></p>	<p>P (N2-SOP-31, Att. 1, step 2.0)</p>	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> <i>Directs field operator to make 2RHS*MOV24A, LPCI A INJECTION VLV throttleable per N2-SOP-31, Attachment 3. Observes both RED and GREEN lights go out as the supply breaker is opened and leads are lifted. Observes GREEN light lit and RED light not lit when breaker power is restored. Acknowledges field operator report and placekeeps step.</i></p> <p><b>Failure =</b> <i>Direction to and acknowledgement from field operator to make 2RHS*MOV24A, LPCI A INJECTION VLV throttleable not performed.</i></p>
10.	<p>At 2CEC*PNL602, verifies closed the following valves:</p>	<p>P (N2-SOP-31, Att. 1, step 3.0)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> <i>Reads/reviews and placekeeps step.</i></p>
11.	<p>RPV Head Vents</p> <ul style="list-style-type: none"> <li>2MSS*MOV108, REACTOR VESSEL VENT</li> </ul>	<p>P (N2-SOP-31, Att. 1, step 3.0 first bullet)</p>	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> <i>Rotates the control switch for 2MSS*MOV108, REACTOR VESSEL VENT on 2CEC*PNL602 in the counter clockwise direction to the CLOSE position and verifies the GREEN light lit and the RED light not lit.</i></p> <p><b>Failure =</b> <i>2MSS*MOV108, REACTOR VESSEL VENT GREEN light ON and RED light OFF not achieved.</i></p>



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
12.	<ul style="list-style-type: none"><li>2MSS*MOV118, REACTOR VESSEL VENT</li></ul>	P (N2-SOP-31, Att. 1, step 3.0 second bullet)	SAT / UNSAT  <b>STD:</b> Observes the GREEN light ON and RED light OFF for 2MSS*MOV118, REACTOR VESSEL VENT on 2CEC*PNL602.
13.	<ul style="list-style-type: none"><li>2MSS*MOV119, REACTOR VESSEL VENT</li></ul>	P (N2-SOP-31, Att. 1, step 3.0 third bullet)	SAT / UNSAT  <b>STD:</b> Observes the GREEN light ON and RED light OFF for 2MSS*MOV119, REACTOR VESSEL VENT on 2CEC*PNL602.
14.	Main Steam Line Drains <ul style="list-style-type: none"><li>2MSS*MOV111, MAIN STM LINE DRAIN ISOL VLV</li></ul>	P (N2-SOP-31, Att. 1, step 3.0 first bullet)	SAT / UNSAT  <b>STD:</b> Observes the GREEN light ON and RED light OFF for 2MSS*MOV111, MAIN STM LINE DRAIN ISOL VLV on 2CEC*PNL602.
15.	<ul style="list-style-type: none"><li>2MSS*MOV112, MAIN STM LINE DRAIN ISOL VLV</li></ul>	P (N2-SOP-31, Att. 1, step 3.0 second bullet)	SAT / UNSAT  <b>STD:</b> Observes the GREEN light ON and RED light OFF for 2MSS*MOV112, MAIN STM LINE DRAIN ISOL VLV on 2CEC*PNL602.



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
16.	MSIVs <ul style="list-style-type: none"><li>2MSS*AOV6A, MSIV-6A</li></ul>	P (N2-SOP-31, Att. 1, step 3.0 first bullet)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for MSIV 2MSS*AOV6A on 2CEC*PNL602 in the counter clockwise direction to the CLOSE position and verifies the GREEN light lit and the RED light not lit.  <b>Failure =</b> 2MSS*AOV6A GREEN light ON and RED light OFF not achieved.
17.	<ul style="list-style-type: none"><li>2MSS*AOV6B, MSIV-6B</li></ul>	P (N2-SOP-31, Att. 1, step 3.0 second bullet)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for MSIV 2MSS*AOV6B on 2CEC*PNL602 in the counter clockwise direction to the CLOSE position and verifies the GREEN light lit and the RED light not lit.  <b>Failure =</b> 2MSS*AOV6B GREEN light ON and RED light OFF not achieved.
18.	<ul style="list-style-type: none"><li>2MSS*AOV6C, MSIV-6C</li></ul>	P (N2-SOP-31, Att. 1, step 3.0 third bullet)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for MSIV 2MSS*AOV6C on 2CEC*PNL602 in the counter clockwise direction to the CLOSE position and verifies the GREEN light lit and the RED light not lit.  <b>Failure =</b> 2MSS*AOV6C GREEN light ON and RED light OFF not achieved.



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
19.	<ul style="list-style-type: none"><li>2MSS*AOV6D, MSIV-6D</li></ul>	P (N2-SOP-31, Att. 1, step 3.0 fourth bullet)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for MSIV 2MSS*AOV6D on 2CEC*PNL602 in the counter clockwise direction to the CLOSE position and verifies the GREEN light lit and the RED light not lit.  <b>Failure =</b> 2MSS*AOV6D GREEN light ON and RED light OFF not achieved.
20.	<ul style="list-style-type: none"><li>2MSS*AOV7A, MSIV-7A</li></ul>	P (N2-SOP-31, Att. 1, step 3.0 fourth bullet)	SAT / UNSAT  <b>STD:</b> Observes the GREEN light ON and RED light OFF for MSIV 2MSS*AOV7A on 2CEC*PNL602.
21.	<ul style="list-style-type: none"><li>2MSS*AOV7B, MSIV-7B</li></ul>	P (N2-SOP-31, Att. 1, step 3.0 fourth bullet)	SAT / UNSAT  <b>STD:</b> Observes the GREEN light ON and RED light OFF for MSIV 2MSS*AOV7B on 2CEC*PNL602.
22.	<ul style="list-style-type: none"><li>2MSS*AOV7C, MSIV-7C</li></ul>	P (N2-SOP-31, Att. 1, step 3.0 fourth bullet)	SAT / UNSAT  <b>STD:</b> Observes the GREEN light ON and RED light OFF for MSIV 2MSS*AOV7C on 2CEC*PNL602.
23.	<ul style="list-style-type: none"><li>2MSS*AOV7D, MSIV-7D</li></ul>	P (N2-SOP-31, Att. 1, step 3.0 fourth bullet)	SAT / UNSAT  <b>STD:</b> Observes the GREEN light ON and RED light OFF for MSIV 2MSS*AOV7D on 2CEC*PNL602.



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
24.	At 2CEC*PNL601, verifies closed the following RCIC Steam Isolation Valves:	P (N2-SOP-31, Att. 1, step 4.0)	SAT / UNSAT  <b>STD:</b> Reads/reviews and placekeeps step.
25.	<ul style="list-style-type: none"> <li>2ICS*MOV121, TURB STM SUPPLY OUTBOARD ISOL VLV</li> </ul>	P (N2-SOP-31, Att. 1, step 4.0 first bullet)	SAT / UNSAT  <b>STD:</b> Observes the GREEN light ON and RED light OFF for 2ICS*MOV121, TURB STM SUPPLY OUTBOARD ISOL VLV on 2CEC*PNL601.
26.	<ul style="list-style-type: none"> <li>2ICS*MOV128, TURBINE STM SUPPLY INBOARD ISOL VLV</li> </ul>	P (N2-SOP-31, Att. 1, step 4.0 second bullet)	SAT / UNSAT  <b>STD:</b> Observes the GREEN light ON and RED light OFF for 2ICS*MOV128, TURBINE STM SUPPLY INBOARD ISOL VLV on 2CEC*PNL601.
27.	<ul style="list-style-type: none"> <li>2ICS*MOV170, TURBINE STM SUPPLY INBOARD WARM-UP</li> </ul>	P (N2-SOP-31, Att. 1, step 4.0 third bullet)	SAT / UNSAT  <b>STD:</b> Observes the GREEN light ON and RED light OFF for 2ICS*MOV170, TURBINE STM SUPPLY INBOARD WARM-UP on 2CEC*PNL601.
28.	Establish SWP flow to RHR*E1A(B) as follows:  <b>Cue:</b> Another operator will establish SWP flow to RHR*E1A, steps 5.1-5.4.	P (N2-SOP-31, Att. 1, step 5.0)	SAT / UNSAT  <b>STD:</b> Reads/reviews, acknowledges cue and placekeeps step.
<b>Procedure Caution:</b>		Flow through the SRVs should be initiated with Reactor Pressure as low as possible. Two phase flow may cause excessive loads on the SRV discharge tailpipe.	



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
29.	At 2CEC*PNL601, places two SRV keylock switches to OPEN	P (N2-SOP-31, Att. 1, step 6.0)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the keylock switch for SAFETY/RELIEF VLV 2MSS*PSVXXX and 2MSS*PSVXXX on. 2CEC*PNL601 in the clockwise direction to the OPEN position and verifies the RED light lit and the GREEN light not lit.  <b>Failure =</b> A minimum of two OPEN SRV's not achieved.
30.	Slowly raises RPV water level to approximately 255 inches on Shutdown Range Indication.  <b>Cue:</b> RPV water level is approximately 255 inches on Shutdown Range indication.	P (N2-SOP-31, Att. 1, step 7.0)	SAT / UNSAT  <b>STD:</b> Reads/reviews, acknowledges cue and placekeeps step.
<b>Procedure Caution:</b>		Cooldown limits can be violated if a significant temperature differential exists between the Suppression Pool and RPV. Injection flow should be throttled as necessary to maintain cooldown limits.	
31.	At 2CEC*PNL601, starts 2RHS*P1A	P (N2-SOP-31, Att. 1, step 8.0)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for 2RHS*P1A, PMP 1A on 2CEC*PNL601 in the clockwise direction to the START position and verifies the RED light lit and the GREEN light not lit.  <b>Failure =</b> 2RHS*P1A RED light ON and GREEN light OFF not achieved.
<b>Procedure Note:</b>		Injection to the RPV should be performed slowly due to the significant	



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
	amount of time it takes to fill the RPV and Main Steam lines up to the point where water is discharging through open SRVs. After SRV discharge flow is achieved, SRV Tailpiece temperature indications on 2CEC*P614 can be used to monitor temperature.		
32.	Establishes injection to the RPV by throttling open 2RHS*MOV24A, LPCI A INJECTION VLV	P (N2-SOP-31, Att. 1, step 9.0)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for 2RHS*MOV24A, LPCI A INJECTION VLV on 2CEC*PNL601 in the clockwise direction to the OPEN position and verifies the GREEN and RED light lit and throttles to achieve desired flow >0 gpm and <7,450 gpm.  <b>Failure =</b> RHR Flow through 2RHS*MOV24A not achieved.
<b>Evaluator Note:</b>	After the candidate achieves flow through 2RHS*MOV24A, provide the following cue:  <b>Cue:</b> Your task is complete, another operator will complete any remaining actions.		
<b>TASK STANDARD</b>	After tripping RHS*P1B, Alternate shutdown cooling has been placed in service.		
<b>STOP TIME</b>			





## JPM Handout

### INITIAL CONDITIONS

Given:

- The plant is in Mode 4.
- SDC has been secured in accordance with N2-OP-31 Section H.3.0.
- 2RHS\*MOV40A is out of service for maintenance.
- RDS Backfill is in service to all RPV level reference legs.

**Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

### INITIATING CUE

**(Candidate Name),** *Restart RHR Loop "B" in Shutdown Cooling per N2-OP-31, Section H.4.0.*

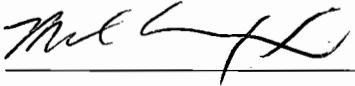



Training ID: **2019 NMP2 NRC Simulator JPM S-5**

Revision: **0.0**

Title: **Suppression Pool Fill Utilizing CSH Pump**

## Approvals:

	Signature	/	Printed Name	Date
Developed by:		/	Mike Alexander	4/22/19
Validated by:		/	Jim Lai	7/30/19
Facility Reviewer:		/	Paul Fenn	9/16/19

Approximate Duration: 15 minutes

## Documentation of Performance:

Performer: \_\_\_\_\_

Evaluator: \_\_\_\_\_

Start Time: \_\_\_\_\_ Stop Time: \_\_\_\_\_ Completion Time: \_\_\_\_\_

Grade: **Pass / Fail**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluators Signature: \_\_\_\_\_ Date: \_\_\_\_\_



## References

1. N2-OP-33, Rev. 01700, High Pressure Core Spray System
2. NUREG 1123 K/A 295030 EA1.03 (3.4/3.4)

## Instructor Information

### A. JPM Information

#### 1. Description

- a. This JPM tests the candidate's ability to manipulate controls associated with the High Pressure Core Spray System (HPCS). The operator will lineup and fill the suppression pool with HPCS in accordance with N2-OP-33.
- b. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

#### 2. Task Information:

- a. N2-209002-01029, Fill The Suppression Pool From The High Pressure Core Spray System

#### 3. Evaluation / Task Criteria

License Level: (Target Audience)	<input checked="" type="checkbox"/> SRO	<input checked="" type="checkbox"/> RO	<input type="checkbox"/> EO	<input type="checkbox"/> N/A
Evaluation Method:	<input checked="" type="checkbox"/> Perform <input type="checkbox"/> Simulate			
Evaluation Location:	<input type="checkbox"/> Plant <input checked="" type="checkbox"/> Simulator <input type="checkbox"/> Classroom			
Time Critical Task:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Alternate Path:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Safety Function:	5		Containment Integrity	



LOD Value: (Must be >1.0) (Ref. NRC 71111.11 Inspection Manual, APP. C)		3			
K/A Statement: (Add justification statement below for K/A's < 3.0)		295030 EA1.03 Ability to operate and/or monitor the following as they apply to LOW SUPPRESSION POOL WATER LEVEL: HPCS			
K/A Importance Rating:		RO	3.4	SRO	3.4

4. K/A Justification:

a. N/A

5. Recommended Start Location

a. NLC Classroom

6. Simulator Setup

a. IC Number

1) IC-021

b. Presets / With Triggers

1) Malfunctions

a) None

2) Remotes

a) None

3) Overrides

a) None

4) Annunciators

a) None



## 5) Event Triggers

Event #	Event Action	Command
N/A	None	N/A

## 6) Equipment Out of Service

- a) None

## 7) Support Documentation

- a) Prepare a copy of N2-OP-33, section F.1.0 and H.3.0 with section F.1.0 and steps H.3.1 and H.3.2 placekept as complete. Next step to be performed is H.3.3.

## 8) Miscellaneous

- a) IC-200 (For ILT 16-1, paired with S-6)

**-OR-**

- b) IC setup:

- (1) Reset to IC-021
- (2) Reduce suppression pool water level to 199.3 feet
- (3) Adjust variable scmwtr=8.97 e6

## 7. Strategy Code

- a. None

## 8. Tools and Equipment

- a. None

## 9. Commitments

- a. None



10. Prerequisites

a. None

11. Applicable Operator Fundamental Knowledge Check Question(s)

a. None



## **B. Read Before Every JPM Performance**

1. For the performance of this JPM, I will act as all those you need to talk to. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary. (Note, read the next only if conducting a plant JPM). With the exception of accessing panels, no plant equipment will be physically manipulated. Repositioning of devices will be simulated by discussion and acknowledged by my cues.

## **C. Read Before Each Evaluated JPM**

1. This evaluated JPM is a measure of your ability to perform this task independently. The Unit Supervisor has determined that a verifier is not available and that additional verification will not be provided.





<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"><li>• EOP-PC has been entered on Low Suppression Pool water level.</li><li>• Suppression Pool water level is currently 199.3 feet.</li><li>• HPCS prestart checks per N2-OP-33, Section F.1.0 have been completed.</li></ul> <p><b>Evaluator:</b> Ask trainee if he/she has any questions after presenting initial conditions</p>
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<b>INITIATING CUE</b>	<b>(Candidate Name)</b> , raise suppression pool water level to 199.9 feet using the High Pressure Core Spray System, IAW N2-OP-33, Section H.3.0.
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<b>START TIME</b>	
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	<b>PERFORMANCE</b>	<b>ACT. CODE</b> P / S / NA	<b>EVALUATOR</b>
1.	Provide repeat back of initiating cue  <b>Cue:</b> Acknowledge repeat back providing correction if necessary	P	SAT / UNSAT  <b>STD:</b> Proper communications used.
<b>Procedure Note:</b>	Starting 2CSH*P1 with suction from the CST can result in Gross Failure alarms on trip units E22-N652-HPCS PMP SUCT LO and E22-N653-HPCS PMP SUCT HI.		
<b>Procedure Note:</b>	<ul style="list-style-type: none"><li>• Allowing CSH pump to operate in runout flow condition of greater than 7175 gpm may cause pump damage.</li><li>• Pump damage may occur if the amount of time CSH is operating on minimum flow is not minimized.</li></ul>		



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
2.	STARTS 2CSH*P1, HPCS PUMP 1.	P (H.3.3)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for 2CSH*P1, HPCS PUMP 1 on 2CEC*PNL601 clockwise to the Normal-After-Start position and observes the RED light lit and GREEN light not lit.  <b>Failure =</b> 2CSH*P1 RED light ON and GREEN light OFF not achieved.
3.	VERIFIES CSH*MOV105, MINIMUM FLOW BYPASS VLV open.	P (H.3.4)	SAT / UNSAT  <b>STD:</b> Observes 2CSH*MOV105, MINIMUM FLOW BYPASS VLV RED light lit and GREEN light not lit on 2CEC*PNL601.
4.	MONITORS CST AND Suppression Pool Levels	P (H.3.5)	SAT / UNSAT  <b>STD:</b> Evaluates CST and Suppression Pool level using available indications. (e.g. RTime, SPDS, etc.)
5.	RAISES rate of transferring water from CST to Suppression Pool as follows:	P (H.3.6)	SAT / UNSAT  <b>STD:</b> Reads/reviews and placekeeps step.



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
6.	<ul style="list-style-type: none"><li>THROTTLES OPEN CSH*MOV111, TEST RETURN TO SUPPRESSION POOL</li></ul>	P (H.3.6.a)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for 2CSH*MOV111, TEST RETURN TO SUPPRESSION POOL on 2CEC*PNL601 clockwise to the OPEN position and observes the RED and GREEN light lit.  <b>Failure =</b> Flow indicated on E22-R603, HPCS SYSTEM FLOW meter not achieved.
7.	<ul style="list-style-type: none"><li>WHEN CSH System Flow is greater than 634 gpm, THEN VERIFIES CSH*MOV105, MINIMUM FLOW BYPASS VLV closed</li></ul>	P (H.3.6.b)	SAT / UNSAT  <b>STD:</b> Observes 2CSH*MOV105, MINIMUM FLOW BYPASS VLV GREEN light lit and RED light not lit on 2CEC*PNL601.
8.	WHEN desired Suppression Pool Level is reached, THEN CLOSE CSH*MOV111, TEST RETURN TO SUPPRESSION POOL	P (H.3.7)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for 2CSH*MOV111, TEST RETURN TO SUPPRESSION POOL on 2CEC*PNL601 counter clockwise to the CLOSE position and observes the GREEN light lit and RED light not lit.  <b>Failure =</b> 2CSH*MOV111 GREEN light ON and RED light OFF not achieved.
9.	WHEN HPCS SYSTEM FLOW is less than 634 GPM, THEN VERIFIES CSH*MOV105, MINIMUM FLOW BYPASS VLV open	P (H.3.8)	SAT / UNSAT  <b>STD:</b> Observes 2CSH*MOV105, MINIMUM FLOW BYPASS VLV RED light lit and GREEN light not lit on 2CEC*PNL601.

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
10.	STOPS CSH*P1, HPCS PUMP 1.	P (H.3.9)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for 2CSH*P1, HPCS PUMP 1 on 2CEC*PNL601 counter clockwise to the Normal-After-Stop position and observes the GREEN light lit and RED light not lit.  <b>Failure</b> = 2CSH*P1 RED light OFF and GREEN light ON not achieved.
11.	VERIFIES CSH*MOV105, MINIMUM FLOW BYPASS VLV closed	P (H.3.10)	SAT / UNSAT  <b>STD:</b> Observes 2CSH*MOV105, MINIMUM FLOW BYPASS VLV GREEN light lit and RED light not lit on 2CEC*PNL601.
<b>Evaluator Note:</b>		After the candidate verifies CSH*MOV105, MINIMUM FLOW BYPASS VLV is closed, provide the following cue:  <b>Cue:</b> Your task is complete, another operator will complete any remaining actions.	
<b>TASK STANDARD</b>		<i>Suppression pool water level has been raised to 199.9 feet using the High Pressure Core Spray System.</i>	
<b>STOP TIME</b>			



## JPM Handout

### INITIAL CONDITIONS

Given:

- Given:
- EOP-PC has been entered on Low Suppression Pool water level.
- Suppression Pool water level is currently 199.3 feet.
- HPCS prestart checks per N2-OP-33, Section F.1.0 have been completed.

**Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

### INITIATING CUE

**(Candidate Name)**, *raise suppression pool water level to 199.9 feet using the High Pressure Core Spray System, IAW N2-OP-33, Section H.3.0.*

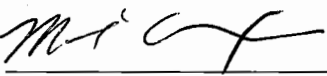



Training ID: **2019 NMP2 NRC Simulator JPM S-6**

Revision: **0.0**

Title: **Unload and Secure 2EGS\*EG1**

## Approvals:

	Signature	/	Printed Name	Date
Developed by:		/	Mike Alexander	4/22/19
Validated by:		/	Jim Lai	7/30/19
Facility Reviewer:		/	Paul Fenn	9/16/19

Approximate Duration: 15 minutes

## Documentation of Performance:

Performer: \_\_\_\_\_

Evaluator: \_\_\_\_\_

Start Time: \_\_\_\_\_ Stop Time: \_\_\_\_\_ Completion Time: \_\_\_\_\_

Grade: **Pass / Fail**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluators Signature: \_\_\_\_\_ Date: \_\_\_\_\_



## References

1. N2-OSP-EGS-M@001, Rev. 01800, Diesel Generator and Diesel Air Start Valve Operability Test -- Division I and II
2. NUREG 1123 K/A 264000 A4.04 (3.7/3.7)
3. NUREG 1123 K/A 264000 A4.02 (3.4/3.4)

## Instructor Information

### A. JPM Information

#### 1. Description

- a. This JPM tests the candidate's ability to manipulate controls associated with the Division I Diesel Generator (2EGS\*EG1). The operator will unload and secure 2EGS\*EG1 in accordance with N2-OSP-EGS-M@001.
- b. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

#### 2. Task Information:

- a. N2-264001-01008, Shutdown Division 1(2) 2EGS\*EG1(EG3), Diesel Generator While Running Unloaded

#### 3. Evaluation / Task Criteria

License Level: (Target Audience)		<input checked="" type="checkbox"/> SRO		<input checked="" type="checkbox"/> RO		<input type="checkbox"/> EO		<input type="checkbox"/> N/A	
Evaluation Method:			<input checked="" type="checkbox"/> Perform <input type="checkbox"/> Simulate						
Evaluation Location:			<input type="checkbox"/> Plant <input checked="" type="checkbox"/> Simulator <input type="checkbox"/> Classroom						
Time Critical Task:			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No						
Alternate Path:			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No						
Safety Function:		6		Electrical					
LOD Value: (Must be >1.0) (Ref. NRC 71111.11 Inspection Manual, APP. C)				3					





<b>K/A Statement:</b> (Add justification statement below for K/A's < 3.0)	264000 A4.04 Ability to manually operate and/or monitor in the control room: Manual start, loading, and stopping of emergency generator			
	264000 A4.02 Ability to manually operate and/or monitor in the control room: Synchroscope			
<b>K/A Importance Rating:</b>	<b>RO</b>	3.7	<b>SRO</b>	3.7
		3.4		3.4

4. K/A Justification:

a. N/A

5. Recommended Start Location

a. NLC Classroom

6. Simulator Setup

a. IC Number

1) IC-006

b. Presets / With Triggers

1) Malfunctions

a) None

2) Remotes

a) **DG05**, EDG#1 Local Remote Mode,  
FINAL = Remote

**Inserted**

b) **DG06**, EDG#1 Local Start/Stop,  
FINAL = Start

**Inserted**



3) Overrides

a) None

4) Annunciators

a) None

5) Event Triggers

Event #	Event Action	Command
N/A	None	N/A

6) Equipment Out of Service

a) None

7) Support Documentation

a) Prepare a copy of N2-OSP-EGS-M@001 with sections 6.0, 7.0 and 8.1 placekept as complete. Next step to be performed is 8.2.26.

8) Miscellaneous

a) IC-200 (For ILT 18-1, paired with S-5)

**-OR-**

b) IC setup:

(1) Reset to IC-021

(2) Start EG1 using N2-OSP-EGS-M@001 complete through step 8.2.25.

(3) Any IC with 2ENS\* SWG101 powered from off site

(4) Take remote function DG05 back to local before JPM start



☐ 7. Strategy Code

a. None

8. Tools and Equipment

a. None

9. Commitments

a. None

10. Prerequisites

a. None

11. Applicable Operator Fundamental Knowledge Check Question(s)

a. None

☐

☐



## **B. Read Before Every JPM Performance**

1. For the performance of this JPM, I will act as all those you need to talk to. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary. (Note, read the next only if conducting a plant JPM). With the exception of accessing panels, no plant equipment will be physically manipulated. Repositioning of devices will be simulated by discussion and acknowledged by my cues.

## **C. Read Before Each Evaluated JPM**

1. This evaluated JPM is a measure of your ability to perform this task independently. The Unit Supervisor has determined that a verifier is not available and that additional verification will not be provided.

<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"> <li>• The surveillance, N2-OSP-EGS-M@001, has been started and completed up through step 8.2.22</li> <li>• EG1 is running with voltages matched to the switchgear.</li> <li>• The Control Room Supervisor has determined that the grid operating state is "Normal" and that there are no unusual external conditions present or imminent.</li> <li>• A Plant Operator is at the diesel and has been briefed on the emergency shutdown procedure.</li> <li>• All required data has been recorded in the appropriate attachments.</li> </ul> <p><b>Evaluator:</b> Ask trainee if he/she has any questions after presenting initial conditions</p>
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<b>INITIATING CUE</b>	<p><b>(Candidate Name)</b>, the operator performing surveillance N2-OSP-EGS-M@001 on Division 1 Diesel Generator has been temporarily called away. Continue the surveillance starting at 8.2.26 and continue until relieved.</p>
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<b>START TIME</b>	
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	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
1.	Provide repeat back of initiating cue  <b>Cue:</b> Acknowledge repeat back providing correction if necessary	P	SAT / UNSAT  <b>STD:</b> Proper communications used.



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
2.	Adjusts GOVERNOR to establish slow clockwise rotation on SYNCHROSCOPE (slow in fast direction).	P (8.2.26)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the GOVERNOR control switch for 2EGS*EG1 on 2CEC*PNL852 in the clockwise and/or counter clockwise direction to obtain a Synchroscope rotation of slow in the fast direction (clockwise rotation).  <b>Failure =</b> Synchroscope rotation slow in the clockwise direction not achieved.
3.	IF 2ENS*SWG101-1, OUTPUT BREAKER 101-1, is in PULL-TO-LOCK, THEN WHEN SYNCHROSCOPE indicates 5 minutes before 12 o'clock, (11 o'clock position) places Breaker Control Switch in Normal-After-TRIP	P (8.2.27)	SAT / UNSAT  <b>STD:</b> Determines that 2ENS*SWG101-1, OUTPUT BREAKER 101-1, is not in PULL-TO-LOCK and placekeeps the "N/A, Control switch for 2ENS*SWG101-1 is NOT in Pull-TO-LOCK" portion of the step.
<b>Procedure Caution:</b>		Paralleling with unstable grid conditions or while another Diesel Generator is inoperable could result in a complete loss of offsite and onsite power.	
4.	WHEN SYNCHROSCOPE reaches 5 minutes before 12 o'clock (11 o'clock position), THEN performs the following:	P (8.2.28)	SAT / UNSAT  <b>STD:</b> Reads/reviews and placekeeps step.

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
5.	<ul style="list-style-type: none"> <li>Closes 2ENS*SWG101-1, OUTPUT BREAKER 101-1.</li> </ul>	P (8.2.28.a)	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> Rotates the control switch for 2ENS*SWG101-1, OUTPUT BREAKER 101-1 on 2CEC*PNL852 in the clockwise direction to the CLOSE position and verifies the RED light lit and the GREEN light not lit.</p> <p><b>Failure =</b> 2ENS*SWG101-1 GREEN light OFF and RED light ON not achieved.</p>
6.	<ul style="list-style-type: none"> <li>Verifies Generator picks up load as indicated on WM-2EGPA20, WATTS.</li> </ul>	P (8.2.28.b)	<p>SAT / UNSAT</p> <p><b>STD:</b> Observes 2EGS*EG1 wattmeter WM-2EGPA20, WATTS on 2CEC*PNL852 and verifies AC Kilowatts reads &gt;0.</p>
7.	Places SYNCHRONIZE TO BUS 101 switch to OFF	P (8.2.29)	<p>SAT / UNSAT</p> <p><b>STD:</b> Rotates the SYNCHRONIZE TO BUS 101 control switch on 2CEC*PNL852 in the counter clockwise direction to the OFF position.</p>
<b>Evaluator Note:</b>		At the examiner's discretion Time Compression cues maybe used for the next steps. Cue's are provided for time compression, but do not have to be used.	
8.	Using GOVERNOR switch, raises Generator Load at a rate of about 500 KW per minute as follows:	P (8.2.30)	<p>SAT / UNSAT</p> <p><b>STD:</b> Reads/reviews and placekeeps step.</p>



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
9.	Raises Generator Load to 1100 KW. Remains at 1100 KW for 5 minutes.  <b>Cue:</b> Five minutes has elapsed.	P (8.2.30.a)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the GOVERNOR control switch for 2EGS*EG1 on 2CEC*PNL852 in the clockwise direction to obtain a reading of 1100 KW (+/- 100 KW) on 2EGS*EG1 wattmeter WM-2EGPA20, WATTS on 2CEC*PNL852.  <b>Failure =</b> 2EGS*EG1 wattmeter WM-2EGPA20, WATTS on 2CEC*PNL852 reading of between 1000 and 1200 watts not achieved.
10.	AFTER 5 minutes:	P (8.2.30.b)	SAT / UNSAT  <b>STD:</b> Reads/reviews and placekeeps step.
11.	THEN raises Generator Load to 2200 KW. Remains at 2200 KW for 10 minutes.  <b>Cue:</b> Ten minutes has elapsed.	P (8.2.30.b first bullet)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the GOVERNOR control switch for 2EGS*EG1 on 2CEC*PNL852 in the clockwise direction to obtain a reading of 2200 KW (+/- 100 KW) on 2EGS*EG1 wattmeter WM-2EGPA20, WATTS on 2CEC*PNL852.  <b>Failure =</b> 2EGS*EG1 wattmeter WM-2EGPA20, WATTS on 2CEC*PNL852 reading of between 2100 and 2300 watts not achieved.



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
12.	WHEN Generator Load is at 2200 KW AND using VOLTAGE REGULATOR switch, THEN adjusts VARS to 900 A-C KILOVARS TO BUS as indicated on VARM-2EGPA20 (VARM-2EGPB20), VARS	P (8.2.30.b second bullet)	SAT / UNSAT  <b>STD:</b> Rotates the VOLTAGE REGULATOR control switch for 2EGS*EG1 on 2CEC*PNL852 in the clockwise and/or counter clockwise direction (Raise/Lower) to obtain a reading of 900 (+/- 100) A-C KILOVARS TO BUS as indicated on VARM-2EGPA20, VARS on 2CEC*PNL852.
13.	AFTER 10 minutes:	P (8.2.30.c)	SAT / UNSAT  <b>STD:</b> Reads/reviews and placekeeps step.
14.	THEN raises Generator Load to 3300 KW. Remain at 3300 KW for 10 minutes.  <b>Cue:</b> Ten minutes has elapsed.	P (8.2.30.c first bullet)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the GOVERNOR control switch for 2EGS*EG1 on 2CEC*PNL852 in the clockwise direction to obtain a reading of 3300 KW (+/- 100 KW) on 2EGS*EG1 wattmeter WM-2EGPA20, WATTS on 2CEC*PNL852.  <b>Failure =</b> 2EGS*EG1 wattmeter WM-2EGPA20, WATTS on 2CEC*PNL852 reading of between 3200 and 3400 watts not achieved.

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
15.	WHEN Generator Load is at 3300 KW, THEN adjusts VARS to 900 A-C KILOVARS TO BUS	P (8.2.30.c second bullet)	SAT / UNSAT  <b>STD:</b> Rotates the VOLTAGE REGULATOR control switch for 2EGS*EG1 on 2CEC*PNL852 in the clockwise and/or counter clockwise direction (Raise/Lower) to obtain a reading of 900 (+/- 100) A- C KILOVARS TO BUS as indicated on VARM- 2EGPA20, VARS on 2CEC*PNL852.
16.	AFTER 10 minutes:	P (8.2.30.d)	SAT / UNSAT  <b>STD:</b> Reads/reviews and placekeeps step.
17.	THEN raise Generator Load to 4000 KW.	P (8.2.30.d first bullet)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the GOVERNOR control switch for 2EGS*EG1 on 2CEC*PNL852 in the clockwise direction to obtain a reading of 4000 KW (+/- 100 KW) on 2EGS*EG1 wattmeter WM-2EGPA20, WATTS on 2CEC*PNL852.  <b>Failure</b> = 2EGS*EG1 wattmeter WM-2EGPA20, WATTS on 2CEC*PNL852 reading of between 3900 and 4100 watts not achieved.



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
18.	WHEN Generator Load is at 4000 KW, THEN adjusts VARS to 900 A-C KILOVARS TO BUS. Maintain VARS at about 900 A-C KILOVARS TO BUS during Diesel loaded run.	P (8.2.30.d second bullet)	SAT / UNSAT  <b>STD:</b> Rotates the VOLTAGE REGULATOR control switch for 2EGS*EG1 on 2CEC*PNL852 in the clockwise and/or counter clockwise direction (Raise/Lower) to obtain a reading of 900 (+/- 100) A-C KILOVARS TO BUS as indicated on VARM-2EGPA20, VARS on 2CEC*PNL852.
<b>Evaluator Note:</b>		After KVARs are adjusted provide the following:  <b>Cue:</b> Inform applicant that the Plant Manager has directed that the surveillance must be secured and to back out of the procedure. The SM directs you to go to surveillance step 8.2.38 and shut down the DG.	
19.	Using EMERGENCY DSL GEN 1 GOVERNOR switch, reduces Diesel Generator Load to about 1100 KW	P (8.2.38)	SAT / UNSAT  <b>STD:</b> Rotates the GOVERNOR control switch for 2EGS*EG1 on 2CEC*PNL852 in the counter clockwise direction to obtain a reading of 1100 KW (+/- 100 KW) on 2EGS*EG1 wattmeter WM-2EGPA20, WATTS on 2CEC*PNL852.
20.	Runs Diesel Generator at this load for 15 minutes  <b>Cue:</b> Fifteen minutes has elapsed.	P (8.2.39)	SAT / UNSAT  <b>STD:</b> Reads/reviews and placekeeps step.

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
21.	Using EMERGENCY DSL GEN 1 GOVERNOR switch, reduces Diesel Generator Load to about 100 KW.	P (8.2.40)	SAT / UNSAT  <b>STD:</b> Rotates the GOVERNOR control switch for 2EGS*EG1 on 2CEC*PNL852 in the counter clockwise direction to obtain a reading of 100 KW (+/- 100 KW) on 2EGS*EG1 wattmeter WM-2EGPA20, WATTS on 2CEC*PNL852.
22.	Using EMERGENCY DSL GEN 1 VOLTAGE REGULATOR switch, adjusts VARS to greater than 0 but less than 100 A-C KILOVARS TO BUS.	P (8.2.41)	SAT / UNSAT  <b>STD:</b> Rotates the VOLTAGE REGULATOR control switch for 2EGS*EG1 on 2CEC*PNL852 in the clockwise and/or counter clockwise direction (Raise/Lower) to obtain a reading between 0 and 100 A-C KILOVARS TO BUS as indicated on VARM-2EGPA20, VARS on 2CEC*PNL852.
23.	Opens 2ENS*SWG101-1, OUTPUT BREAKER 101-1.	P (8.2.42)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for 2ENS*SWG101-1, OUTPUT BREAKER 101-1 on 2CEC*PNL852 in the counter clockwise direction to the OPEN position and verifies the GREEN light lit and the RED light not lit.  <b>Failure =</b> 2ENS*SWG101-1 RED light OFF and GREEN light ON not achieved.



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
24.	Places EMERGENCY DSL GEN 1 PARALLEL switch to OFF.	P (8.2.43)	SAT / UNSAT  <b>STD:</b> Rotates the PARALLEL control switch for 2EGS*EG1 on 2CEC*PNL852 in the counter clockwise direction to the OFF position.
25.	Runs diesel unloaded for five (5) minutes  <b>Cue:</b> Five minutes has elapsed.	P (8.2.44)	SAT / UNSAT  <b>STD:</b> Reads/reviews and placekeeps step.
26.	Places DIVISION 1 2EGS*EG1 START switch to STOP.	P (8.2.45)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates the control switch for DIVISION 1 2EGS*EG1 START on 2CEC*PNL852 in the counter clockwise direction to the STOP position and verifies the GREEN light lit and the RED light not lit.  <b>Failure =</b> DIVISION 1 2EGS*EG1 START RED light OFF and GREEN light ON not achieved.
<b>Evaluator Note:</b>		After the candidate places the DIVISION 1 2EGS*EG1 START switch to STOP, provide the following cue:  <b>Cue:</b> Your task is complete, another operator will complete any remaining actions.	
<b>TASK STANDARD</b>		2EGS*EG1 has been unloaded and secured.	
<b>STOP TIME</b>			



## JPM Handout

### INITIAL CONDITIONS

**Given:**

- The surveillance, N2-OSP-EGS-M@001, has been started and completed up through step 8.2.22
- EG1 is running with voltages matched to the switchgear.
- The Control Room Supervisor has determined that the grid operating state is "Normal" and that there are no unusual external conditions present or imminent.
- A Plant Operator is at the diesel and has been briefed on the emergency shutdown procedure.
- All required data has been recorded in the appropriate attachments.

**Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

### INITIATING CUE

**(Candidate Name)**, the operator performing surveillance N2-OSP-EGS-M@001 on Division 1 Diesel Generator has been temporarily called away. Continue the surveillance starting at 8.2.26 and continue until relieved.

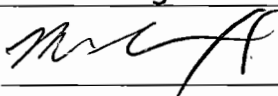



Training ID: **2019 NMP2 NRC Simulator JPM S-7**

Revision: **0.0**

Title: **Enter a Substitute Rod Position in the RWM**

## Approvals:

	Signature	/	Printed Name	Date
Developed by:		/	Mike Alexander	4/22/19
Validated by:		/	Jim Lai	7/30/19
Facility Reviewer:		/	Paul Fenn	9/16/19

Approximate Duration: 15 minutes

## Documentation of Performance:

Performer: \_\_\_\_\_

Evaluator: \_\_\_\_\_

Start Time: \_\_\_\_\_ Stop Time: \_\_\_\_\_ Completion Time: \_\_\_\_\_

Grade: **Pass / Fail**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluators Signature: \_\_\_\_\_ Date: \_\_\_\_\_



## References

1. N2-OP-95A, Rev. 00604, Rod Worth Minimizer System
2. NUREG 1123 K/A 201006 A4.06 (3.2/3.2)



## Instructor Information

### A. JPM Information

#### 1. Description

- a. This JPM tests the operator's ability to manipulate controls associated with RWM computer. The operator will manipulate the RWM display to display a substitute rod position.
- b. This JPM is NOT considered alternate path.
- c. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

#### 2. Task Information:

- a. N2-201006-01004, Insert Substitute Rod Position Information In The RWM

#### 3. Evaluation / Task Criteria

License Level: (Target Audience)	<input checked="" type="checkbox"/> SRO	<input checked="" type="checkbox"/> RO	<input type="checkbox"/> EO	<input type="checkbox"/> N/A
Evaluation Method:	<input checked="" type="checkbox"/> Perform <input type="checkbox"/> Simulate			
Evaluation Location:	<input type="checkbox"/> Plant <input checked="" type="checkbox"/> Simulator <input type="checkbox"/> Classroom			
Time Critical Task:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Alternate Path:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Safety Function:	7		Instrumentation	



LOD Value: (Must be >1.0) (Ref. NRC 71111.11 Inspection Manual, APP. C)		3			
K/A Statement: (Add justification statement below for K/A's < 3.0)		201006 A4.06 Ability to manually operate and/or monitor in the control room: Selected rod position indication			
K/A Importance Rating:	RO	3.2	SRO	3.2	

4. K/A Justification:

a. N/A

5. Recommended Start Location

a. NLC Classroom

6. Simulator Setup

a. IC Number

1) IC-Any

b. Presets / With Triggers

1) Malfunctions

a) **RD11-30-39**, Control Rod Failure –  
RPIS (Any), FINAL = TRUE

**TRG1**

2) Remotes

a) None

3) Overrides

a) None

4) Annunciators

a) None



## 5) Event Triggers

Event #	Event Action	Command
N/A	None	N/A

## 6) Equipment Out of Service

- a) None

## 7) Support Documentation

- a) Prepare a copy of N2-OP-95A, section F.2.0 with no steps placekept as complete.

## 8) Miscellaneous

- a) IC-205 (For ILT 18-1, not paired)

**-OR-**

- b) IC setup:

- (1) If control rod 30-39 is not desired, LOCATE a control rod that is NOT Full in or Full Out and determine its current position YY (e.g. 58-31 at position 08)
- (2) ENTER malfunction RD11-30-39 for the control rod you just located.
- (3) PROVIDE the control rod 30-39 and the position 08 to the trainee as part of their Initial Conditions and Initiating Cue
- (4) Verify there are no control rods that have substitute rod positions currently inserted in the RWM.
- (5) Insert TRG1.
- (6) Verify: 30-39 has failed reed switch at position 08
- (7) Verify the following:



- (a) Annunciator 603443, Control Rod Drift, alarms
- (b) "XX" displayed on 4-Rod Display for selected Rod.
- (c) RWM rod position for selected rod indicates "FF".

(8) Select a different control rod

7. Strategy Code

- a. None

8. Tools and Equipment

- a. None

9. Commitments

- a. None

10. Prerequisites

- a. None

11. Applicable Operator Fundamental Knowledge Check Question(s)

- a. None

## **B. Read Before Every JPM Performance**

1. For the performance of this JPM, I will act as all those you need to talk to. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary. (Note, read the next only if conducting a plant JPM). With the exception of accessing panels, no plant equipment will be physically manipulated. Repositioning of devices will be simulated by discussion and acknowledged by my cues.

## **C. Read Before Each Evaluated JPM**

1. This evaluated JPM is a measure of your ability to perform this task independently. The Unit Supervisor has determined that a verifier is not available and that additional verification will not be provided.

<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"> <li>The reed switch for control rod 30-39 has failed open.</li> <li>The control rod was known to have been at position "08" prior to the reed switch failure.</li> </ul> <p><b>Evaluator:</b> Ask trainee if he/she has any questions after presenting initial conditions</p>
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<b>INITIATING CUE</b>	<b>(Candidate Name)</b> , Insert a substitute rod position of "08" for control rod 30-39 in accordance with N2-OP-95A, section F.2.0.
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<b>START TIME</b>	
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	<b>PERFORMANCE</b>	<b>ACT. CODE</b> P / S / NA	<b>EVALUATOR</b>
1.	Provide repeat back of initiating cue  <b>Cue:</b> Acknowledge repeat back providing correction if necessary	P	SAT / UNSAT  <b>STD:</b> Proper communications used.
	<b>Procedure Note:</b> <ul style="list-style-type: none"> <li>Substitute Position function is available at the Operator Display in all modes except INOP.</li> <li>Inferred Position is displayed as the recommended POS TO SUB based on the previous position, travel time and direction of motion.</li> <li>A total of eight control rods may have substitute positions installed when their position indication is invalid.</li> </ul>		
2.	Performs the following:	P (F.2.1)	SAT / UNSAT  <b>STD:</b> Reads/reviews and placekeeps step.



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
3.	Presses ETC softkey.	P (F.2.1.1)	<b>*PASS / FAIL</b>  <b>STD:</b> At 2CEC*PNL603, on the ROD WORTH MINIMIZER ASSY. RWM OPERATOR DISPLAY, presses the white triangle soft key directly under ETC until MESSAGES, ROD BYPASS OPTIONS, SUBSTITUTE OPTIONS, ETC appears at the bottom of the screen.  <b>Failure =</b> MESSAGES, ROD BYPASS OPTIONS, SUBSTITUTE OPTIONS, ETC screen display not achieved.
4.	Selects rod to have its position substituted on rod select matrix.	P (F.2.1.2)	<b>*PASS / FAIL</b>  <b>STD:</b> At 2CEC*PNL603, on the ROD SELECT MATRIX, presses the control rod 30-39 select pushbutton and releases. Verifies Full Core Display, 4-Rod Display and RWM indication of correct rod selected.  <b>Failure =</b> Control Rod 30-39 selection not achieved.
5.	IF rod was moved to an invalid position, THEN observes Inferred Position (POS TO SUB) display.	P (F.2.2)	SAT / UNSAT  <b>STD:</b> Determines that the control rod was not moved to an invalid position and placekeeps the "N/A, Rod was NOT moved to an invalid position" portion of the step.

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
6.	Presses SUBSTITUTE OPTIONS softkey.	P (F.2.3)	<b>*PASS / FAIL</b>  <b>STD:</b> At 2CEC*PNL603, on the ROD WORTH MINIMIZER ASSY. RWM OPERATOR DISPLAY, presses the white triangle soft key directly under the SUBSTITUTE OPTIONS.  <b>Failure =</b> SUBSTITUTE OPTIONS screen display not achieved.
7.	Observe the following information display:	P (F.2.4)	SAT / UNSAT  <b>STD:</b> Reads/reviews and placekeeps step.
8.	<ul style="list-style-type: none"> <li>SUBSTITUTE RODS - POSITIONS SUBSTITUTED</li> </ul>	P (F.2.4 first bullet)	SAT / UNSAT  <b>STD:</b> At 2CEC*PNL603, on the ROD WORTH MINIMIZER ASSY. RWM OPERATOR DISPLAY, verifies that SUBSTITUTE RODS - POSITIONS SUBSTITUTED is displayed.
9.	<ul style="list-style-type: none"> <li>SR XX-YY :FF</li> </ul>	P (F.2.4 second bullet)	SAT / UNSAT  <b>STD:</b> At 2CEC*PNL603, on the ROD WORTH MINIMIZER ASSY. RWM OPERATOR DISPLAY, verifies that SR 30-39 :FF is displayed.



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
10.	<ul style="list-style-type: none"> <li>A message display indicating if substitution will be allowed at this time</li> </ul>	<p>P (F.2.4 third bullet)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> At 2CEC*PNL603, on the ROD WORTH MINIMIZER ASSY. RWM OPERATOR DISPLAY, verifies that the SUBSTITUTION WILL BE ALLOWED AT THIS TIME message is displayed.</p>
11.	<ul style="list-style-type: none"> <li>EXIT softkey function available</li> </ul>	<p>P (F.2.4 fourth bullet)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> At 2CEC*PNL603, on the ROD WORTH MINIMIZER ASSY. RWM OPERATOR DISPLAY, verifies that the EXIT option is available and is displayed.</p>
12.	Observes the following function indications	<p>P (F.2.5)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> Reads/reviews and placekeeps step.</p>
13.	<ul style="list-style-type: none"> <li>NEW POSITION TO SUBSTITUTE</li> </ul>	<p>P (F.2.5 first bullet)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> At 2CEC*PNL603, on the ROD WORTH MINIMIZER ASSY. RWM OPERATOR DISPLAY, verifies that the NEW POSITION TO SUBSTITUTE option is available and is displayed.</p>
14.	<ul style="list-style-type: none"> <li>INCREMENT POSITION</li> </ul>	<p>P (F.2.5 second bullet)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> At 2CEC*PNL603, on the ROD WORTH MINIMIZER ASSY. RWM OPERATOR DISPLAY, verifies that the INCREMENT POSITION option is available and is displayed.</p>

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
15.	<ul style="list-style-type: none"> <li>DECREMENT POSITION</li> </ul>	<p>P (F.2.5 third bullet)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> At 2CEC*PNL603, on the ROD WORTH MINIMIZER ASSY. RWM OPERATOR DISPLAY, verifies that the DECREMENT POSITION option is available and is displayed.</p>
16.	<ul style="list-style-type: none"> <li>ENTER SUBSTITUTE</li> </ul>	<p>P (F.2.5 fourth bullet)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> At 2CEC*PNL603, on the ROD WORTH MINIMIZER ASSY. RWM OPERATOR DISPLAY, verifies that the ENTER SUBSTITUTE option is available and is displayed.</p>
17.	<ul style="list-style-type: none"> <li>EXIT</li> </ul>	<p>P (F.2.5 fifth bullet)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> At 2CEC*PNL603, on the ROD WORTH MINIMIZER ASSY. RWM OPERATOR DISPLAY, verifies that the EXIT option is available and is displayed.</p>
18.	Selects substitute position by using Increment AND Decrement softkeys UNTIL desired position is indicated at NEW POSITION TO SUBSTITUTE	<p>P (F.2.6)</p>	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> At 2CEC*PNL603, on the ROD WORTH MINIMIZER ASSY. RWM OPERATOR DISPLAY, presses the INCREMENT/DECREMENT softkeys until position 08 is indicated at NEW POSITION TO SUBSTITUTE.</p> <p><b>Failure =</b> NEW POSITION TO SUBSTITUTE value of 08 not achieved.</p>

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
19.	Presses ENTER SUBSTITUTE softkey	P (F.2.7)	<b>*PASS / FAIL</b>  <b>STD:</b> At 2CEC*PNL603, on the ROD WORTH MINIMIZER ASSY. RWM OPERATOR DISPLAY, presses the ENTER SUBSTITUTE softkey.  <b>Failure =</b> ENTER SUBSTITUTE softkey not depressed.
20.	Observes the following indications:	P (F.2.8)	SAT / UNSAT  <b>STD:</b> Reads/reviews and placekeeps step.
21.	<ul style="list-style-type: none"> <li>Selected rod listed in SUBSTITUTE RODS</li> </ul>	P (F.2.8 first bullet)	SAT / UNSAT  <b>STD:</b> At 2CEC*PNL603, on the ROD WORTH MINIMIZER ASSY. RWM OPERATOR DISPLAY, verifies that the RWM display on 2CEC*PNL603 has Control Rod 30-39 listed as a SUBSTITUTE ROD.
22.	<ul style="list-style-type: none"> <li>Selected position listed in POSITIONS SUBSTITUTED</li> </ul>	P (F.2.8 second bullet)	SAT / UNSAT  <b>STD:</b> At 2CEC*PNL603, on the ROD WORTH MINIMIZER ASSY. RWM OPERATOR DISPLAY, verifies that the RWM display on 2CEC*PNL603 has position 08 listed for Control Rod 30-39.
<b>Evaluator Note:</b>		After the candidate verified that the RWM display on 2CEC*PNL603 has position 08 listed for Control Rod 30-39, provide the following cue:  <b>Cue:</b> Your task is complete, another operator will complete any remaining actions.	



<b>TASK STANDARD</b>	<i>Substitute rod position of 08 for control rod 30-39 has been inserted.</i>
<b>STOP TIME</b>	



## JPM Handout

### INITIAL CONDITIONS

Given:

- The reed switch for control rod 30-39 has failed open.
- The control rod was known to have been at position "08" prior to the reed switch failure.

**Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

### INITIATING CUE

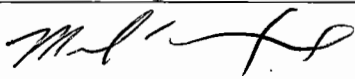

**(Candidate Name),** *Insert a substitute rod position of "08" for control rod 30-39 in accordance with N2-OP-95A, section F.2.0.*



Training ID: 2019 NMP2 NRC Simulator JPM S-8 Revision: 0.0

Title: Temper SW Using Circ Water N2-OP-11 (Alternate Path)

## Approvals:

	Signature	/	Printed Name	Date
Developed by:		/	Mike Alexander	4/22/19
Validated by:		/	Jim Lai	7/30/19
Facility Reviewer:		/	Paul Fenn	9/16/19

Approximate Duration: 15 minutes

## Documentation of Performance:

Performer: \_\_\_\_\_

Evaluator: \_\_\_\_\_

Start Time: \_\_\_\_\_ Stop Time: \_\_\_\_\_ Completion Time: \_\_\_\_\_

Grade: **Pass / Fail**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluators Signature: \_\_\_\_\_ Date: \_\_\_\_\_



## References

1. N2-OP-11, Rev. 01400, Service Water System
2. N2-ARP-601100, Rev. 00600, 2CEC\*PNL601 Series 100 Alarm Response Procedures
3. NUREG 1123 K/A 400000 A4.01 (3.1/3.0)

## Instructor Information

### A. JPM Information

#### 1. Description

- a. This JPM tests the operators ability to temper Service Water with Circulating Water.
- b. This JPM is considered alternate path because the operator will be required to respond to Annunciator 601137, SERVICE WATER INTAKE TUNNEL DIV 1/DIV 2 WATER TEMP LOW. The operator will determine that the Division 1 Bar Rack Heaters failed to energize as required and will manually energize the heaters.
- c. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

#### 2. Task Information:

- a. N2-276000-01030, Respond To Annunciator 601137, Service Water Intake Tunnel DIV 1/DIV 2 Water Temp Low

#### 3. Evaluation / Task Criteria

License Level: (Target Audience)	<input checked="" type="checkbox"/> SRO <input checked="" type="checkbox"/> RO <input type="checkbox"/> EO <input type="checkbox"/> N/A
Evaluation Method:	<input checked="" type="checkbox"/> Perform <input type="checkbox"/> Simulate
Evaluation Location:	<input type="checkbox"/> Plant <input checked="" type="checkbox"/> Simulator <input type="checkbox"/> Classroom
Time Critical Task:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No





Alternate Path:		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Safety Function:	8	Plant Service Systems			
LOD Value: (Must be >1.0) (Ref. NRC 71111.11 Inspection Manual, APP. C)		3			
K/A Statement: (Add justification statement below for K/A's < 3.0)		400000 A4.01 Ability to manually operate and/or monitor in the control room: CCW indications and control			
K/A Importance Rating:		RO	3.1	SRO	3.0

4. K/A Justification:

a. N/A

5. Recommended Start Location

a. NLC Classroom

6. Simulator Setup

a. IC Number

1) IC-021

b. Presets / With Triggers

1) Malfunctions

a) None

2) Remotes

a) **MT03**, Lake Ontario Temperature,  
FINAL = 40

**Inserted**



## 3) Overrides

- a) **OVR-01A2S004DI0392**, OFF RACK

**Inserted**

HTR TL 1D, FINAL = ON

## 4) Annunciators

- a) None

## 5) Event Triggers

Event #	Event Action	Command
1	hzacswpfi511>0.075 (Tempering flow is >3000 gpm)	irf mt03 (1 0) 37 1:00
2	zdcw2swpssr1a(2)==1 (Division 1 Bar Heater Control Switch placed in ON)	DOR OVR-01A2S004DI0392

## 6) Equipment Out of Service

- a) None

## 7) Support Documentation

- a) Prepare a copy of N2-OP-11, Section F.9.0. Placekeep F.9.1 through F.9.3 as complete. Next step to be performed is F.9.5.

## 8) Miscellaneous

- a) IC-201 (For ILT 18-1, paired with S-2)

**-OR-**

- b) IC setup:

(1) Reset to IC-021

## 7. Strategy Code

- a. None



8. Tools and Equipment

a. None

9. Commitments

a. None

10. Prerequisites

a. None

11. Applicable Operator Fundamental Knowledge Check Question(s)

a. None



## **B. Read Before Every JPM Performance**

1. For the performance of this JPM, I will act as all those you need to talk to. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary. (Note, read the next only if conducting a plant JPM). With the exception of accessing panels, no plant equipment will be physically manipulated. Repositioning of devices will be simulated by discussion and acknowledged by my cues.

## **C. Read Before Each Evaluated JPM**

1. This evaluated JPM is a measure of your ability to perform this task independently. The Unit Supervisor has determined that a verifier is not available and that additional verification will not be provided.



## INITIAL CONDITIONS

Given:

- The plant is at 100% power
- Intake Bay Temperature is ~40°F and continuing to slowly lower
- CWS blowdown is in service
- The crew is preparing to temper Service Water with Circulating Water
- Initial in-plant actions for placing SWP tempering in service are complete
- An operator is available in the field to support any additional actions for SWP tempering.
- SWP and CWS Radiation Monitors are in service with normal readings
- Chemistry has been informed that SWP tempering will be performed.

**Evaluator:** Ask trainee if he/she has any questions after presenting initial conditions

## INITIATING CUE

**(Candidate Name)**, place SWP tempering in service (~3500 gpm) using CWS with 2SWP-TIK512 in MANUAL; in accordance with N2-OP-11, Section F.9.0.

## START TIME

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
1.	Provide repeat back of initiating cue  <b>Cue:</b> Acknowledge repeat back providing correction if necessary	P	SAT / UNSAT  <b>STD:</b> Proper communications used.
<b>Procedure Note:</b>		Manual Control of Tempering is the normal method of Tempering Flow control, however Automatic Control may also be used.	
2.	For Manual Control of Tempering, performs the following:	P (F.9.5)	SAT / UNSAT  <b>STD:</b> Reads/Reviews and placekeeps step.



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
3.	Places 2SWP-TIK512, SCREENWELL INTAKE TEMPERING FLOW, in M (Manual).	P (F.9.5.1)	SAT / UNSAT  <b>STD:</b> Observes that 2SWP-TIK512, SCREENWELL INTAKE TEMPERING FLOW controller is already in M on 2CEC*PNL601 by observing "M" indicating light lit on the controller.
<b>Procedure Note:</b>		This Controller works in reverse of most controllers in that the manual slider must be taken to the right to close the valve. 100% Controller Output is maximum Close Demand.	
4.	Using 2SWP-TIK512 manual slider, closes 2SWP-TV512	P (F.9.5.2)	SAT / UNSAT  <b>STD:</b> Observes that 2SWP-TIK512, SCREENWELL INTAKE TEMPERING FLOW controller is already closed on 2CEC*PNL601 by observing the HORIZONTAL OUTPUT indication of 100% on the controller.
5.	Opens 2SWP-V902, CIRC WATER TO TEMPERING CUT OUT.  <b>Cue:</b> As the field operator contacted to open V902, acknowledge the direction and inform the operator that 2SWP-V902 is open.	P (F.9.5.3)	<b>*PASS / FAIL</b>  <b>STD:</b> Directs field operator to open 2SWP-V902, CIRC WATER TO TEMPERING CUT OUT. Acknowledges field operator report and placekeeps step.  <b>Failure =</b> Direction to and acknowledgement from field operator to open 2SWP-V902, CIRC WATER TO TEMPERING CUT OUT not performed.
<b>Procedure Note:</b>		This Controller works in reverse of most controllers in that the manual slider must be taken to the left to open the valve. 0% Controller Output is maximum Open Demand.	

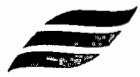


	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
6.	Using 2SWP-TIK512 manual slider, opens 2SWP-TV512 to establish desired Tempering Flow less than or equal to 5000 gpm as indicated on 2SWP-FI511, INTAKE TEMPERING FLOW, OR NOT to exceed limit provided by Environmental Protection Department	P (F.9.5.4)	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> At 2CEC*PNL601, OPENS 2SWP-TV512 by placing the MANUAL SLIDER on 2SWP-TIK512 to the LEFT until flow indicates ~3500 gpm on 2SWP-FI511. Credit can be taken to establish &gt;3000 gpm if Annunciator 601137 alarms before establishing ~3500 gpm.</p> <p><b>Failure</b> = Flow &gt;3000 gpm as indicated on 2SWP-FI511 not achieved.</p>
<p><b>Alternate Path:</b></p>		<p>Once Intake Tempering Flow has exceeded 3000 gpm, intake bay temperature will begin to lower to 37°F over the course of 1 minute. When temperature drops below 39.6°F, Annunciator 601137 will alarm. The operator will reference the ARP and determine the Division 1 Bar Rack Heaters did not energize as expected. The operator will take manual action to energize the heaters.</p>	
7.	Responds to Annunciator 601137 by referring to the ARP.	P (N2-ARP-601100)	<p>SAT / UNSAT</p> <p><b>STD:</b> Reads/Reviews the Automatic Response and required actions sections.</p>
8.	Performs the actions of N2-ARP-601137, Operator Action 1 (first bullet) and verifies Div I bar rack heaters tunnel 1 are on.	P (N2-ARP-601100 Operator Action 1 first bullet)	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> At 2CEC*PNL601, OPENS DIV I BAR RACK HEATERS TUNNEL 1 by rotating the control switch clockwise to the ON position and verifies the RED light lit and the GREEN light not lit.</p> <p><b>Failure</b> = DIV I BAR RACK HEATERS TUNNEL 1 RED light ON and GREEN light OFF not achieved.</p>



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
<b>Evaluator Note:</b>	After the candidate has placed the DIV I BAR RACK HEATERS TUNNEL 1 control switch to on, provide the following cue:  <b>Cue:</b> Your task is complete, another operator will complete any remaining actions.		
<b>TASK STANDARD</b>	<i>SWP tempering has been placed in service (~3500 gpm) using CWS with 2SWP-TIK512 in MANUAL; in accordance with N2-OP-11, Section F.9.0 with appropriate Bar Rack heaters on.</i>		
<b>STOP TIME</b>			





## JPM Handout

### INITIAL CONDITIONS

Given:

- The plant is at 100% power
- Intake Bay Temperature is ~40°F and continuing to slowly lower
- CWS blowdown is in service
- The crew is preparing to temper Service Water with Circulating Water
- Initial in-plant actions for placing SWP tempering in service are complete
- An operator is available in the field to support any additional actions for SWP tempering.
- SWP and CWS Radiation Monitors are in service with normal readings
- Chemistry has been informed that SWP tempering will be performed.

**Evaluator:** Ask trainee if he/she has any questions after presenting initial conditions

### INITIATING CUE

**(Candidate Name)**, place SWP tempering in service (~3500 gpm) using CWS with 2SWP-TIK512 in MANUAL; in accordance with N2-OP-11, Section F.9.0.





Training ID: **2019 NMP2 NRC Plant JPM P-1**

Revision: **0.0**

Title: **Vent Control Rod Overpiston**

## Approvals:

	Signature	/	Printed Name	Date
Developed by:		/	Mike Alexander	2/15/19
Validated by:		/	Jim Lai	8/2/19
Facility Reviewer:		/	Paul Fenn	9/16/19

Approximate Duration: 20 minutes

## Documentation of Performance:

Performer: \_\_\_\_\_

Evaluator: \_\_\_\_\_

Start Time: \_\_\_\_\_ Stop Time: \_\_\_\_\_ Completion Time: \_\_\_\_\_

Grade: **Pass / Fail**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluators Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## References

1. N2-EOP-6.14, Rev. 00200, Alternate Control Rod Insertions
2. NUREG 1123 K/A 295015 AA1.01, (3.8/3.9)



## Instructor Information

### A. JPM Information

#### 1. Description

- a. This JPM tests the candidate's ability to manipulate plant controls associated with Control Rod Hydraulic Control Units. The operator will perform actions to insert control rod 30-43 to notch 00 by locally venting its overpiston area in accordance with N2-EOP-6.14.
- b. This JPM is not considered alternate path.
- c. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

#### 2. Task Information:

- a. N2-201001-04023, Vent Control Rod Over-Piston Volume During Anticipated Transient Without Scram Conditions

#### 3. Evaluation / Task Criteria

License Level: (Target Audience)	<input checked="" type="checkbox"/> SRO	<input checked="" type="checkbox"/> RO	<input type="checkbox"/> EO	<input type="checkbox"/> N/A
Evaluation Method:	<input type="checkbox"/> Perform <input checked="" type="checkbox"/> Simulate			
Evaluation Location:	<input checked="" type="checkbox"/> Plant <input type="checkbox"/> Simulator <input type="checkbox"/> Classroom			
Time Critical Task:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Alternate Path:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Safety Function:	1		Reactivity Control	



<b>LOD Value:</b> (Must be >1.0) (Ref. NRC 71111.11 Inspection Manual, APP. C)		<b>3</b>	
<b>K/A Statement:</b> (Add justification statement below for K/A's < 3.0)	295015 AA1.01 Ability to operate and/or monitor the following as they apply to INCOMPLETE SCRAM: CRD hydraulics		
<b>K/A Importance Rating:</b>	<b>RO</b>	<b>3.8</b>	<b>SRO 3.9</b>

4. K/A Justification:

a. N/A

5. Recommended Start Location

a. Unit #2 R.P. Access Building

6. Simulator Setup

a. IC Number

a. N/A

b. Presets / With Triggers

a. Malfunctions

a) None

b. Remotes

a) None

c. Overrides

a) None

d. Annunciators

a) None



e. Event Triggers

Event #	Event Action	Command
None	N/A	N/A

f. Equipment Out of Service

a) None

g. Support Documentation

a) Prepare a complete copy of N2-EOP-6.14 with no steps  
placekept as completed.

h. Miscellaneous

a) None

7. Strategy Code

a. None

8. Tools and Equipment

a. None

9. Commitments

a. None

10. Prerequisites

a. None

11. Applicable Operator Fundamental Knowledge Check Question(s)

a. None

## B. Read Before Every JPM Performance

1. For Plant JPM's:



- a. For the performance of this JPM, I will act as all those you need to talk to. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary.
- b. With the exception of accessing panels, no plant equipment will be physically manipulated. Repositioning of devices will be simulated by discussion and acknowledged by my cues.


2. For Simulator JPM's:

- a. For the performance of this JPM, I will act as all those you need to talk to. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will provide cues as necessary.

## **C. Read Before Each Evaluated JPM**

- 1. This evaluated JPM is a measure of your ability to perform this task independently. The Unit Supervisor has determined that a verifier is not available and that additional verification will not be provided.

<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"> <li>• A scram has occurred.</li> <li>• Several rods have not fully inserted.</li> <li>• Communications are established with Control Room.</li> <li>• An OD-7, Print out of Rod Positions is <b>NOT</b> available.</li> <li>• You have been given a F2-57 key.</li> </ul> <p><b>Evaluator:</b> Ask trainee if he/she has any questions after presenting initial conditions</p>
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<b>INITIATING CUE</b>	<p><b>(Candidate Name)</b>, insert control rod 30-43 to notch 00 by locally venting its overpiston area in accordance with N2-EOP-6.14, Flowchart </p>
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<b>START TIME</b>	
-------------------	--

	<b>PERFORMANCE</b>	<b>ACT. CODE</b> P / S / NA	<b>EVALUATOR</b>
1.	<p>Provides repeat back of initiating cue</p> <p><b>Cue:</b> Acknowledge repeat back providing correction if necessary</p>	P.	<p>SAT / UNSAT</p> <p><b>STD:</b> Proper communications used.</p>
	<p><b>Procedure Caution:</b></p> <ul style="list-style-type: none"> <li>• This activity will result in draining of Rx coolant and poses the risk of creating a high level of radioactivity airborne as well as creating high radiation conditions and contamination in local and general areas of Rx Bldg El. 261.</li> <li>• ALL appropriate protective measures must be taken for this activity as deemed necessary by Radiation Protection.</li> </ul>		
	<p><b>Evaluator Note:</b></p> <ul style="list-style-type: none"> <li>• Where possible when providing cue's for component configuration the use of the words "As indicated" is desired if the actual plant configuration matches the JPM condition. In cases where the configuration of actual plant components does not match the intended JPM condition, provide the scripted JPM cue.</li> <li>• In JPM steps 2 through 5, the cue provides the component position because the cues are describing the initial condition of each component prior to manipulation by the candidate.</li> </ul>		





	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
2.	IF possible, obtains an OD-7 printout of rod positions from the R*Time Computer	S (1.1.1)	SAT / UNSAT  <i>STD: Recalls from the initial conditions that an OD-7, Print out of Rod Positions is not available and placekeeps step.</i>
3.	Establishes communications between the Control Room AND the HCU Areas. (RB 261')	S (1.1.2)	SAT / UNSAT  <i>STD: Recalls from the initial conditions that a communications are established with the Control Room and placekeeps step.</i>
4.	Selects a control rod at OR near the center of the core.	S (1.1.3)	SAT / UNSAT  <i>STD: Determines from initiating cue that control rod 30-43 is to be inserted and placekeeps step.</i>
5.	Locates the HCU for the selected control rod	S (1.1.4)	SAT / UNSAT  <i>STD: Determines that Control Rod 30-43 is to be inserted and locates Control Rod HCU 30-43 on the South Side of Reactor Building El 261'. Uses Figure 1, "RDS HCU Locations" as a guide, if necessary.</i>
<b>Procedure Note:</b>		<ul style="list-style-type: none"><li>• The Withdraw and Insert lines and are located on the mezzanine above the HCUs.</li><li>• The Withdraw line connects to the Over-piston Volume and is the smaller of the two lines.</li><li>• Figure 13 shows the general arrangement and equipment connections listed in this sub-section.</li></ul>	



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
6.	<p>On the mezzanine above selected HCU, removes the drain plug from 2RDS*V1, Withdraw Line Vent Valve.</p> <p><b>Cue:</b> <i>The component you have identified is in the position you described.</i></p>	S (1.1.5)	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> At Control Rod HCU 30-43, on RB Elev 261 south side, using the wrench discussed in section 4.1, slowly rotates the drain plug on 2RDS*V1, Withdraw Line Vent Valve in the counter clockwise direction until the drain plug is removed.</p> <p><b>Failure =</b> Drain plug on 2RDS*V1 removal not achieved as determined by candidate verbalization.</p>
7.	<p>Installs the quick disconnect adapter into 2RDS*V1.</p> <p><b>Cue:</b> <i>The component you have identified is in the condition you have described.</i></p>	S (1.1.6)	<p>SAT / UNSAT</p> <p><b>STD:</b> At Control Rod HCU 30-43, on RB Elev 261 south side, using the quick disconnect adapter discussed in section 4.1, slowly threads the quick disconnect adapter into 2RDS*V1 by rotating the adapter in the clockwise direction until tight.</p>
8.	<p>Connects the high-pressure hose to 2RDS*V1.</p> <p><b>Cue:</b> <i>The component you have identified is in the condition you have described.</i></p>	S (1.1.7)	<p>SAT / UNSAT</p> <p><b>STD:</b> At Control Rod HCU 30-43, on RB Elev 261 south side, using the high pressure hose discussed in section 4.1, pushes and twists hose to the quick disconnect adapter on 2RDS*V1 until latched.</p>



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
<b>Evaluator Note:</b>	In the JPM step below if the candidate starts to go down the ladder to secure the hose at the drain, tell them another operator has secured the bottom of the hose.		
9.	<p>Routes the hose to the nearest Rx Bldg Drain.</p> <p><b>Cue:</b> <i>The component you have identified is in the condition you have described.</i></p>	S (1.1.8)	<p>SAT / UNSAT</p> <p><b>STD:</b> At Control Rod HCU 30-43, on RB Elev 261 south side, routes the high pressure hose connected to 2RDS*V1 to a Rx Building floor drain.</p>
<b>Procedure Warning:</b>	The high pressure hose end should be secured at the drain to prevent flow induced hose whip.		
10.	<p>Secures the hose at the drain to prevent flow induced hose whip.</p> <p><b>Cue:</b> <i>The component you have identified is in the condition you have described.</i></p>	S (1.1.9)	<p>SAT / UNSAT</p> <p><b>STD:</b> At RB Elev 261 south side, secures the high pressure hose connected to 2RDS*V1 to the Rx Building floor drain.</p>
11.	<p>Removes the cap from 2RDS*V1 operator.</p> <p><b>Cue:</b> <i>The component you have identified is in the position you described.</i></p>	S (1.1.10)	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> At Control Rod HCU 30-43, on RB Elev 261 south side, using the wrench discussed in section 4.1, slowly rotates the cap on 2RDS*V1, Withdraw Line Vent Valve in the counter clockwise direction until the cap is removed.</p> <p><b>Failure</b> = Cap on 2RDS*V1 removal not achieved as determined by candidate verbalization.</p>

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
12.	<p>Monitors the motion of the selected control rod by selecting that control rod on the RMCS Rod Select Matrix (2CES*PNL603).</p> <p><b>Cue:</b> <i>As the Control Room acknowledge the request and confirm that you will monitor control rod 30-43.</i></p>	S (1.1.11)	<p>SAT / UNSAT</p> <p><b>STD:</b> <i>At Control Rod HCU 30-43, repeats back cue using proper communications and placekeeps step.</i></p>
<p><b>Procedure Caution:</b></p>		<p>Venting the over-piston area will result in Rx coolant being drained through the high-pressure hose connected to 2RDS*V1. This may create a high level of radioactive airborne as well as create high radiation conditions and contamination in local and general areas of RB 261'.</p>	
13.	<p>Using T handled HCU Vent Tool, slowly opens 2RDS*V1</p> <p><b>Cue:</b> <i>The component you have identified is in the position you described.</i></p> <p><b>Cue:</b> <i>If contacted as the control room, inform the operator that control rod 26-59 has fully inserted.</i></p>	S (1.1.12)	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> <i>At Control Rod HCU 30-43, on RB Elev 261 south side, using the T-handled HCU Vent Tool discussed in section 4.1, slowly rotates the T Handled Vent Tool attached to 2RDS*V1 in the counter clockwise direction until the valve is full open by local position indication and/or stem position.</i></p> <p><b>Failure =</b> <i>2RDS*V1 opening not achieved as determined by candidate verbalization.</i></p>



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
14.	<p>WHEN control rod motion stops OR NO control rod movement is observed, THEN using T handled HCU Vent Tool, closes 2RDS*V1.</p> <p><b>Cue:</b> <i>The component you have identified is in the position you described.</i></p>	S (1.1.13)	<p>SAT / UNSAT</p> <p><b>STD:</b> <i>At Control Rod HCU 30-43, on RB Elev 261 south side, using the T-handled HCU Vent Tool discussed in section 4.1, slowly rotates the T Handled Vent Tool attached to 2RDS*V1 in the clockwise direction until the valve is full closed by local position indication and/or stem position.</i></p>
<b>Evaluator Note:</b>	<p>When 2RDS*V1 has been closed, provide the following cue:</p> <p><b>Cue:</b> Your task is complete, another operator will complete any remaining actions.</p>		
<b>TASK STANDARD</b>	Control Rod 30-43 at notch 00 and 2RDS*V1 shut.		
<b>STOP TIME</b>			



## JPM Handout

### INITIAL CONDITIONS

Given:

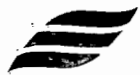
- A scram has occurred.
- Several rods have not fully inserted.
- Communications are established with Control Room.
- An OD-7, Print out of Rod Positions is **NOT** available.
- You have been given a F2-57 key.

**Evaluator:** Ask trainee if he/she has any questions after presenting initial conditions

### INITIATING CUE

**(Candidate Name)**, insert control rod 30-43 to notch 00 by locally venting its overpiston area in accordance with N2-EOP-6.14, Flowchart







Training ID: 2019 NMP2 NRC Plant JPM P-2 Revision: 0.0

Title: Place Battery Charger 2BYS-CHGR1C1 in service (Alternate Path)

## Approvals:

	Signature	/	Printed Name	Date
Developed by:		/	Mike Alexander	2/15/19
Validated by:		/	Jim Lai	8/2/19
Facility Reviewer:		/	Paul Fenn	9/16/19

Approximate Duration: 20 minutes

## Documentation of Performance:

Performer: \_\_\_\_\_

Evaluator: \_\_\_\_\_

Start Time: \_\_\_\_\_ Stop Time: \_\_\_\_\_ Completion Time: \_\_\_\_\_

Grade: **Pass** / **Fail**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluators Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## References

1. N2-OP-73A, Rev. 01500, Normal DC Distribution
2. NUREG 1123 K/A 263000 A1.01, (2.5/2.8)



## Instructor Information

### A. JPM Information

#### 1. Description

- a. This JPM tests the candidate's ability to manipulate plant controls associated with Battery Charger 2BYS-CHGR1C1. The operator will perform actions to place battery charger 2BYS-CHGR1C1 into service in accordance with N2-OP-73A, section E.6.0.
- b. This JPM is considered alternate path. When the battery charger is placed in service it will go into the current limiting mode and will be capped at 600 amps. This requires the candidate to perform section H.14.0 of N2-OP-73A.
- c. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

#### 2. Task Information:

- a. N2-263000-04008, Adjust 125V Battery Charger Output Manually

#### 3. Evaluation / Task Criteria

License Level: (Target Audience)	<input checked="" type="checkbox"/> SRO	<input checked="" type="checkbox"/> RO	<input type="checkbox"/> EO	<input type="checkbox"/> N/A
Evaluation Method:	<input type="checkbox"/> Perform <input checked="" type="checkbox"/> Simulate			
Evaluation Location:	<input checked="" type="checkbox"/> Plant <input type="checkbox"/> Simulator <input type="checkbox"/> Classroom			
Time Critical Task:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Alternate Path:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Safety Function:	6		Electrical	



<b>LOD Value:</b> (Must be >1.0) (Ref. NRC 71111.11 Inspection Manual, APP. C)		<b>3</b>			
<b>K/A Statement:</b> (Add justification statement below for K/A's < 3.0)		263000 A1.01 Ability to predict and/or monitor changes in parameters associated with operating the D.C. Electrical Distribution controls including: Battery charging/discharging rate			
<b>K/A Importance Rating:</b>	<b>RO</b>	<b>2.5</b>	<b>SRO</b>	<b>2.8</b>	

4. K/A Justification:

a. N/A

5. Recommended Start Location

a. Unit #2 R.P. Access Building

6. Simulator Setup

a. IC Number

a. N/A

b. Presets / With Triggers

a. Malfunctions

a) None

b. Remotes

a) None

c. Overrides

a) None

d. Annunciators

a) None



e. Event Triggers

Event #	Event Action	Command
None	N/A	N/A

f. Equipment Out of Service

a) None

g. Support Documentation

- a) Prepare a copy of N2-OP-73A with no steps placekept as completed.
- b) Have available upon request a complete copy of N2-OP-73A so the candidate can reference the Manual Current Limiting section.

h. Miscellaneous

a) None

7. Strategy Code

a. None

8. Tools and Equipment

a. None

9. Commitments

a. None

10. Prerequisites

a. None

11. Applicable Operator Fundamental Knowledge Check Question(s)

a. None

## **B. Read Before Every JPM Performance**

1. For Plant JPM's:
  - a. For the performance of this JPM, I will act as all those you need to talk to. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary.
  - b. With the exception of accessing panels, no plant equipment will be physically manipulated. Repositioning of devices will be simulated by discussion and acknowledged by my cues.
2. For Simulator JPM's:
  - a. For the performance of this JPM, I will act as all those you need to talk to. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will provide cues as necessary.

## **C. Read Before Each Evaluated JPM**

1. This evaluated JPM is a measure of your ability to perform this task independently. The Unit Supervisor has determined that a verifier is not available and that additional verification will not be provided.



<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"><li>• Electrical Maintenance has just completed corrective maintenance on 2BYS-CHGR1C1.</li><li>• Battery Charger 2BYS-CHGR1C1 is ready to be placed into service.</li><li>• Normal Station Battery 1C has been supplying it's associated loads for 3.5 hours</li><li>• An Equipment Operator is standing by in the Normal Switchgear Building 261' to operate any required breakers.</li></ul> <p><b>Evaluator:</b> Ask trainee if he/she has any questions after presenting initial conditions</p>
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<b>INITIATING CUE</b>	<b>(Candidate Name)</b> , place battery charger 2BYS-CHGR1C1 into service in accordance with N2-OP-73A, section E.6.0.
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<b>START TIME</b>	
-------------------	--

	<b>PERFORMANCE</b>	<b>ACT. CODE</b> P / S / NA	<b>EVALUATOR</b>
1.	Provides repeat back of initiating cue  <b>Cue:</b> Acknowledge repeat back providing correction if necessary	P	SAT / UNSAT  <b>STD:</b> Proper communications used.
<b>Procedure Note:</b>	The following steps are performed at 2BYS-CHGR1C1, unless otherwise specified.		
<b>Evaluator Note:</b>	<ul style="list-style-type: none"><li>• Where possible when providing cue's for component configuration the use of the words "As indicated" is desired if the actual plant configuration matches the JPM condition. In cases where the configuration of actual plant components does not match the intended JPM condition, provide the scripted JPM cue.</li><li>• In JPM steps 2 through 5, the cue provides the component position because the cues are describing the initial condition of each component prior to manipulation by the candidate.</li></ul>		



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
2.	Verifies the following breakers in OFF:	S (6.1)	SAT / UNSAT <i>STD: Reads, reviews and placekeeps step.</i>
3.	<ul style="list-style-type: none"><li>AC INPUT Breaker</li></ul> <b>Cue:</b> 2BYS-CHGR1C1 AC INPUT breaker is in the OFF position.	S (6.1 first bullet)	SAT / UNSAT <i>STD: At 2BYS-CHGR1C1, repeats back cue or verifies indicated position and placekeeps step.</i>
4.	<ul style="list-style-type: none"><li>DC OUTPUT Breaker</li></ul> <b>Cue:</b> 2BYS-CHGR1C1 DC OUTPUT breaker is in the OFF position.	S (6.1 second bullet)	SAT / UNSAT <i>STD: At 2BYS-CHGR1C1, repeats back cue or verifies indicated position and placekeeps step.</i>
5.	Verifies FLOAT/EQUALIZE TIMER is set to 10. <b>Cue:</b> 2BYS-CHGR1C1 FLOAT/EQUALIZE TIMER is set to 10.	S (6.2)	SAT / UNSAT <i>STD: At 2BYS-CHGR1C1, repeats back cue or verifies indicated position and placekeeps step.</i>
6.	Depresses AND releases FLOAT push button <b>Cue:</b> The component you have identified is in the position you described.	S (6.3)	SAT / UNSAT <i>STD: At 2BYS-CHGR1C1 depresses AND releases the FLOAT push button, repeats back cue and placekeeps step.</i>



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
7.	<p>At 2BYS-SWG001C, closes 2BYS-SWG001C-2B, 125V DC BAT CHARGER 2BYS-CHGR1C1</p> <p><b>Cue:</b> If asked, initial breaker position is open.</p> <p><b>Cue:</b> The component you have identified is in the position you described.</p> <p><b>Cue:</b> An equipment operator is standing by to close 2NJS-US6-3D, 125V DC NORM BAT CHGR 2BYS-CHGR1C1.</p>	S (6.4)	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> At 2BYS-SWG001C on control building elevation 214, locates and places breaker 2BYS-SWG001C-2B, 125V DC Bat Charger 2BYS-CHGR1C1 in CLOSE position.</p> <p><b>Failure =</b> Breaker 2BYS-SWG001C-2B not positioned to the CLOSE position as determined by candidate verbalization.</p>
<b>Evaluator Note:</b>	In the following step the operator may have the equipment operator that is stationed in the normal switchgear close 2NJS-US6-3D, 125V DC NORM BAT CHGR 2BYS-CHGR1C1.		
<b>Evaluator Note:</b>	<ul style="list-style-type: none"><li>In the following step if the candidate contacts the equipment operator, provide role plays as necessary.</li><li>If the candidate chooses to close breaker 2NJS-US6-3D, then use Cue(a) below. If the candidate chooses to dispatch and equipment operator to close breaker 2NJS-US6-3D, then use Cue(b) below.</li></ul>		



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
8.	<p>At 2NJS-US6, closes 2NJS-US6-3D, 125V DC NORM BAT CHGR 2BYS-CHGR1C1</p> <p><b>Cue:</b> If asked, initial breaker position is open.</p> <p><b>Cue(a):</b> The component you have identified is in the position you described.</p> <p><b>Cue(b):</b> As the equipment operator dispatched to close 2NJS-US6-3D, report to the candidate that 2NJS-US6-3D has been closed.</p>	S (6.5)	<p><b>*PASS / FAIL</b></p> <p><b>STD(a):</b> At 2NJS-US6 on normal switchgear building elevation 261 east side, locates and places breaker 2NJS-US6-3D, 125V DC NORM BAT CHGR 2BYS-CHGR1C1 in CLOSE position.</p> <p><b>Failure(a) =</b> Breaker 2NJS-US6-3D not positioned to the CLOSE position as determined by candidate verbalization.</p> <p><b>STD(b):</b> Repeats back Cue(b) using proper communications and placekeeps step.</p> <p><b>Failure(b) =</b> Breaker 2NJS-US6-3D closed communication not performed as determined by candidate verbalization.</p>
9.	<p>Places in ON, AC INPUT Breaker</p> <p><b>Cue:</b> The component you have identified is in the position you described.</p>	S (6.6)	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> At 2BYS-CHGR1C1 places AC INPUT breaker in the ON position.</p> <p><b>Failure =</b> AC INPUT breaker not positioned to the ON position as determined by candidate verbalization.</p>





	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
10.	Observes battery voltage is between 105 AND 140 volts on DC OUTPUT volt meter.  <b>Cue:</b> Battery voltage indicates 110 VDC.	S (6.7)	SAT / UNSAT  <b>STD:</b> At 2BYS-CHGR1C1 Battery voltage is observed to be between 105 and 140VDC on DC OUTPUT volt meter.
<b>Procedure Note:</b>		The battery charger may go to the current limit of 625 amps if the battery is not fully charged.	
11.	Places in ON, DC OUTPUT Breaker  <b>Cue:</b> The component you have identified is in the position you described.	S (6.8)	<b>*PASS / FAIL</b>  <b>STD:</b> At 2BYS-CHGR1C1 places DC OUTPUT breaker in the ON position:  <b>Failure</b> = DC OUTPUT breaker not positioned to the ON position as determined by candidate verbalization.
<b>Alternate Path:</b>		In the following step when the battery charger is placed in service, charging current will rise to 680 amps requiring the candidate to recognize the high amperage and perform section H.14.0 of N2-OP-73A.	
12.	Verifies amperage  <b>Cue:</b> Charging current indicates 680 amps.	S	SAT / UNSAT  <b>STD:</b> At 2BYS-CHGR1C1, repeats back cue using proper communications.
13.	IF 2BYS-CHGR1C1 DC OUTPUT current is greater than 625 amps OR AC POWER breaker trips, THEN performs the following:	S (6.9)	SAT / UNSAT  <b>STD:</b> Reads, reviews and placekeeps step.

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
14.	<p>Notifies Electrical Maintenance</p> <p><b>Cue:</b> <i>If contacted as electrical maintenance, direct the operator to correct the condition.</i></p>	<p>S</p> <p>(6.9.1)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> <i>Reads/reviews step. Acknowledges Evaluator cue and placekeeps step.</i></p>
15.	<p>Exits this Section AND performs Section H.14.0 of this procedure</p>	<p>S</p> <p>(6.9.2)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> <i>Reads, reviews and placekeeps step.</i></p>
16.	<p>Verifies battery charger AC INPUT breaker in OFF</p> <p><b>Cue:</b> <i>If asked, initial breaker position is ON.</i></p> <p><b>Cue:</b> <i>The component you have identified is in the position you described.</i></p>	<p>S</p> <p>(H.14.1)</p>	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> <i>At 2BYS-CHGR1C1 places AC INPUT breaker in the OFF position.</i></p> <p><b>Failure =</b> <i>AC INPUT breaker not positioned to the OFF position as determined by candidate verbalization.</i></p>
17.	<p>Verify battery charger DC OUTPUT breaker in OFF</p> <p><b>Cue:</b> <i>If asked, initial breaker position is ON.</i></p> <p><b>Cue:</b> <i>The component you have identified is in the position you described.</i></p>	<p>S</p> <p>(H.14.2)</p>	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> <i>At 2BYS-CHGR1C1 places DC OUTPUT breaker in the OFF position.</i></p> <p><b>Failure =</b> <i>DC OUTPUT breaker not positioned to the OFF position as determined by candidate verbalization.</i></p>

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
18.	<p>Loosens FLOAT ADJUSTMENT potentiometer lock nut</p> <p><b>Cue:</b> <i>The component you have identified is in the position you described.</i></p>	<p>S (H.14.3)</p>	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> At 2BYS-CHGR1C1 locates FLOAT ADJUSTMENT potentiometer lock nut and loosens lock nut by turning counterclockwise.</p> <p><b>Failure =</b> FLOAT ADJUSTMENT potentiometer lock nut not loosened as determined by candidate verbalization.</p>
19.	<p>Rotates fully counter clockwise the FLOAT ADJUSTMENT potentiometer</p> <p><b>Cue:</b> <i>The component you have identified is in the position you described.</i></p>	<p>S (H.14.4)</p>	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> At 2BYS-CHGR1C1 locates FLOAT ADJUSTMENT potentiometer and rotates potentiometer fully counterclockwise.</p> <p><b>Failure =</b> FLOAT ADJUSTMENT potentiometer not rotated fully counterclockwise as determined by candidate verbalization.</p>
20.	<p>Places in ON the AC INPUT breaker</p> <p><b>Cue:</b> <i>The component you have identified is in the position you described.</i></p> <p><b>Cue:</b> <i>If asked, voltage is 110 VDC and current is 200A.</i></p>	<p>S (H.14.5)</p>	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> At 2BYS-CHGR1C1 places AC INPUT breaker in the ON position.</p> <p><b>Failure =</b> AC INPUT breaker not positioned to the ON position as determined by candidate verbalization.</p>

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
21.	Places in ON the DC OUTPUT breaker  <b>Cue:</b> <i>The component you have identified is in the position you described.</i> <b>Cue:</b> <i>If asked, voltage is 110 VDC and current is 200A.</i>	S (H.14.6)	<b>*PASS / FAIL</b>  <b>STD:</b> <i>At 2BYS-CHGR1C1 places DC OUTPUT breaker in the ON position.</i>  <b>Failure</b> = <i>DC OUTPUT breaker not positioned to the ON position as determined by candidate verbalization.</i>
22.	WHILE performing the following steps, maintain battery charger DC OUTPUT current less than 500 amps	S (H.14.7)	SAT / UNSAT  <b>STD:</b> <i>Reads, reviews and placekeeps step.</i>
<b>Procedure Note:</b>		<ul style="list-style-type: none"> <li>As the battery is charged, DC output current will drop.</li> <li>The charger responds slowly to voltage adjustments.</li> </ul>	
<b>Evaluator Note:</b>		In the following step a cue is given to the operator that electrical maintenance will perform float and equalize voltage adjustments inside the battery charger.	

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
23.	<p>While maintaining charger DC OUTPUT current less than 500 amps, incrementally raises charger DC OUTPUT voltage by rotating clockwise the FLOAT ADJUSTMENT potentiometer UNTIL battery charger DC OUTPUT voltage is 135 volts as indicated on DC OUTPUT volt meter AND charger DC OUTPUT current is less than 500 amps.</p> <p><b>Cue:</b> Initial adjustment leaves Output voltage at 135 VDC and DC OUTPUT current at 480 amps.</p>	<p>S (H.14.8)</p>	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> At 2BYS-CHGR1C1 incrementally raises charger DC OUTPUT voltage by rotating clockwise the FLOAT ADJUSTMENT potentiometer while maintaining charger DC OUTPUT current less than 500 amps. Acknowledges cue using proper communications.</p> <p><b>Failure =</b> FLOAT ADJUSTMENT potentiometer not rotated in the clockwise direction while taking into account cue information as determined by candidate verbalization.</p>
<p><b>Evaluator Note:</b></p>		<p>When the FLOAT ADJUSTMENT potentiometer has been adjusted at least once and the Evaluator cue has been given and 3 way communicated by the candidate, provide the following cue:</p> <p><b>Cue:</b> Your task is complete. Electrical maintenance will complete section H.14.9 and adjust battery float and equalize voltages.</p>	
<p><b>TASK STANDARD</b></p>		<p>2BYS-CHGR-1C1 has been placed in service in accordance with N2-OP-73A.</p>	
<p><b>STOP TIME</b></p>			

## JPM Handout

**INITIAL  
CONDITIONS**

Given:

- Electrical Maintenance has just completed corrective maintenance on 2BYS-CHGR1C1.
- Battery Charger 2BYS-CHGR1C1 is ready to be placed into service.
- Normal Station Battery 1C has been supplying it's associated loads for 3.5 hours
- An Equipment Operator is standing by in the Normal Switchgear Building 261' to operate any required breakers.

**Evaluator:** *Ask trainee if he/she has any questions after presenting initial conditions*

**INITIATING  
CUE**

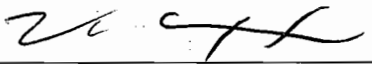
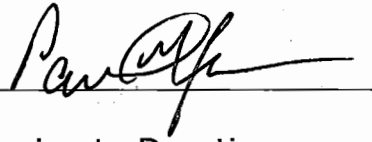
**(Candidate Name)**, *place battery charger 2BYS-CHGR1C1 into service IAW N2-OP-73A, Section E.6.0.*



Training ID: 2019 NMP2 NRC Plant JPM P-3 Revision: 0.0

Title: Reset a Reactor Protection System Electrical Protection Assembly (EPA) (Alternate Path)

## Approvals:

	Signature	/	Printed Name	Date
Developed by:		/	Mike Alexander	2/15/19
Validated by:		/	Jim Lai	8/2/19
Facility Reviewer:		/	Paul Fenn	9/16/19

Approximate Duration: 20 minutes

## Documentation of Performance:

Performer: \_\_\_\_\_

Evaluator: \_\_\_\_\_

Start Time: \_\_\_\_\_ Stop Time: \_\_\_\_\_ Completion Time: \_\_\_\_\_

Grade: **Pass / Fail**

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Evaluators Signature: \_\_\_\_\_ Date: \_\_\_\_\_



## References

1. N2-SOP-97, Rev. 00800, Reactor Protection System Failures
2. NUREG 1123 K/A 212000 A4.14, (3.8/3.8)





## Instructor Information

### A. JPM Information

#### 1. Description

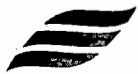
- a. This JPM tests the candidate's ability to reset an RPS EPA.
- b. This JPM is considered alternate path because while attempting to reset the undervoltage trip on ACB2A, it will fail to reset requiring the candidate to bypass the trip prior to resetting the breaker.
- c. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

#### 2. Task Information:

- a. N2-SOP-97-01001, Respond to SOP-97 Reactor Protection System Failures

#### 3. Evaluation / Task Criteria

License Level: (Target Audience)	<input checked="" type="checkbox"/> SRO <input checked="" type="checkbox"/> RO <input type="checkbox"/> EO <input type="checkbox"/> N/A		
Evaluation Method:	<input type="checkbox"/> Perform <input checked="" type="checkbox"/> Simulate		
Evaluation Location:	<input checked="" type="checkbox"/> Plant <input type="checkbox"/> Simulator <input type="checkbox"/> Classroom		
Time Critical Task:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Alternate Path:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Safety Function:	7		Instrumentation
LOD Value: (Must be >1.0) (Ref. NRC 71111.11 Inspection Manual, APP. C)		3	



<b>K/A Statement:</b> (Add justification statement below for K/A's < 2.5)	212000 A4.14 Ability to manually operate and/or monitor in the control room: Reset system following system activation			
<b>K/A Importance Rating:</b>	<b>RO</b>	<b>3.8</b>	<b>SRO</b>	<b>3.8</b>

4. K/A Justification:

a. N/A

5. Recommended Start Location

a. Unit #2 R.P. Access Building

6. Simulator Setup

a. IC Number

a. N/A

b. Presets / With Triggers

a. Malfunctions

a) None

b. Remotes

a) None

c. Overrides

a) None

d. Annunciators

a) None

e. Event Triggers

<b>Event #</b>	<b>Event Action</b>	<b>Command</b>
None	N/A	N/A



- f. Equipment Out of Service
  - a) None
- g. Support Documentation
  - a) Prepare a copy of N2-SOP-97, Flowchart A with no steps placekept as complete. Include a copy of the Discussion section.
- h. Miscellaneous
  - a) None

7. Strategy Code

- a. None

8. Tools and Equipment

- a. None

9. Commitments

- a. None

10. Prerequisites

- a. None

11. Applicable Operator Fundamental Knowledge Check Question(s)

- a. None

## **B. Read Before Every JPM Performance**

1. For Plant JPM's:

- a. For the performance of this JPM, I will act as all those you need to talk to. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task



performance, I will identify the steps to be simulated, or discuss and provide cues as necessary.

- b. With the exception of accessing panels, no plant equipment will be physically manipulated. Repositioning of devices will be simulated by discussion and acknowledged by my cues.

2. For Simulator JPM's:

- a. For the performance of this JPM, I will act as all those you need to talk to. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will provide cues as necessary.

## **C. Read Before Each Evaluated JPM**

- 1. This evaluated JPM is a measure of your ability to perform this task independently. The Unit Supervisor has determined that a verifier is not available and that additional verification will not be provided.



<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"><li>• A loss of Division I scram solenoid power has occurred</li><li>• All lights in the trip system are out</li><li>• The power source selector switch is in the "NORM" position</li><li>• 2RPM-MG1A is running</li><li>• MG set supply breaker NHS-MCC008-7 is closed</li></ul> <p><b>Evaluator:</b> Ask trainee if he/she has any questions after presenting initial conditions</p>
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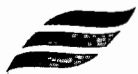
<b>INITIATING CUE</b>	<p><b>(Candidate Name)</b>, Reset the Div I RPM EPA(s) in accordance with N2-SOP-97, Flowchart <b>A</b>.</p>
-----------------------	--




<b>START TIME</b>	
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	<b>PERFORMANCE</b>	<b>ACT. CODE</b> P / S / NA	<b>EVALUATOR</b>
1.	<p>Provide repeat back of initiating cue</p> <p><b>Cue:</b> Acknowledge repeat back providing correction if necessary</p>	P	<p>SAT / UNSAT</p> <p><b>STD:</b> Proper communications used.</p>
<b>Instructor Note:</b>	<p>Where possible when providing cue's for component configuration the use of the words "As indicated" is desired if the actual plant configuration matches the JPM condition. In cases where the configuration of actual plant components does not match the intended JPM condition, provide the scripted JPM cue.</p>		





	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
2.	<p>Evaluates decision block that states "Are BOTH EPAs tripped?"</p> <p><b>Cue:</b> 2RPM*ACB1A has the following indications:</p> <ul style="list-style-type: none"><li>• Amber 48V POWER SUPPLY light is lit</li><li>• RED INPUT POWER light is lit</li><li>• RED OUTPUT POWER light is lit</li><li>• Silver Breaker handle is in the ON position</li></ul> <p>2RPM*ACB2A has the following indications:</p> <ul style="list-style-type: none"><li>• Amber 48V POWER SUPPLY light is lit</li><li>• RED INPUT POWER light is lit</li><li>• RED OUTPUT POWER light is not lit</li><li>• Silver Breaker handle is midway between ON and OFF</li></ul>	<p>S (N2-SOP-97, flow chart section <b>A</b>)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> Evaluates ELECTRICAL PROTECTION ASSEMBLY 2RPM*ACB1A Panel and ELECTRICAL PROTECTION ASSEMBLY 2RPM*ACB2A Panel indications on Control Building 237' and determines that only one EPA is tripped (2RPM*ACB2A).</p>
<b>Alternate Path:</b>	In the following step, the operator will be unable to reset the OVERVOLTAGE flag on the EPA. The operator will need to open the 2RPM*ACB2A OVERVOLTAGE knife switch in order to reset the EPA.		

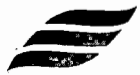


	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
3.	<p>At 2RPM*ACB2A attempts to reset any tripped relay flags</p> <p><b>Cue:</b> <i>ELECTRICAL PROTECTION ASSEMBLY 2RPM*ACB2A Panel has the following Relay indications:</i></p> <ul style="list-style-type: none"><li>• <i>UNDERVOLTAGE RELAY TRIP/TEST RED light is not lit</i></li><li>• <i>OVERVOLTAGE RELAY TRIP/TEST RED light is lit</i></li><li>• <i>UNDERFREQUENCY RELAY TRIP/TEST RED light is not lit</i></li></ul> <p><b>Cue:</b> <i>If asked, ELECTRICAL PROTECTION ASSEMBLY 2RPM*ACB1A Panel has the following Relay indications:</i></p> <ul style="list-style-type: none"><li>• <i>UNDERVOLTAGE RELAY TRIP/TEST RED light is not lit</i></li><li>• <i>OVERVOLTAGE RELAY TRIP/TEST RED light is not lit</i></li><li>• <i>UNDERFREQUENCY RELAY TRIP/TEST RED light is not lit</i></li></ul> <p><b>Cue:</b> <i>After the candidate has depressed the TARGET RESET pushbutton on the OVERVOLTAGE RELAY, when asked, inform the candidate that the RED TRIP/TEST light is lit.</i></p>	<p>S (N2-SOP-97, flow chart section )</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> <i>Evaluates ELECTRICAL PROTECTION ASSEMBLY 2RPM*ACB2A Panel indications on Control Building 237' and determines that the OVERVOLTAGE RELAY has TRIPPED by observing RED TRIP/TEST light lit. Depresses the TARGET RESET pushbutton on the OVERVOLTAGE RELAY and releases. Evaluates TRIP TEST light and determines that the light is still lit.</i></p>
4.	<p>Evaluates decision block that states "Can ALL relay trip flags be reset?"</p>	<p>S (N2-SOP-97, flow chart section )</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> <i>Recalls results from previous step and determines that ALL relay trip flags cannot be reset.</i></p>
5.	<p>Notes the relays that have tripped</p>	<p>S (N2-SOP-97, flow chart section )</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> <i>Notes that 2RPM*ACB2A OVERVOLTAGE RELAY has TRIPPED.</i></p>

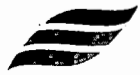


	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
6.	<p>Removes the black plastic cover for the relay that cannot be reset</p> <p><b>Cue:</b> <i>The component you have identified is in the position you described.</i></p>	<p>S (N2-SOP-97, flow chart section )</p>	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> At ELECTRICAL PROTECTION ASSEMBLY 2RPM*ACB2A Panel on Control Building 237' removes the OVERVOLTAGE TEST SW black cover by turning both fastening nuts counterclockwise and removing and then pulling cover off.</p> <p><b>Failure =</b> OVERVOLTAGE TEST SW black cover removal not achieved as determined by candidate verbalization.</p>
7.	<p>Opens the red knife switch 90 degrees</p> <p><b>Cue:</b> <i>The component you have identified is in the position you described.</i></p>	<p>S (N2-SOP-97, flow chart section )</p>	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> At ELECTRICAL PROTECTION ASSEMBLY 2RPM*ACB2A Panel on Control Building 237', OVERVOLTAGE TEST SW, observes proper electrical safety precautions and locates and lifts the RED tab knife switch in the upward direction 90 degrees.</p> <p><b>Failure =</b> RED tab knife switch lifted in the upward direction 90 degrees not achieved as determined by candidate verbalization.</p>





	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
8.	<p>Resets 2RPM*ACB2A by taking the switch from TRIP to RESET to ON</p> <p><b>Cue:</b> <i>The component you have identified is in the position you described.</i></p> <p><b>Cue:</b> <i>If the action is performed correctly provide the following, if is not performed correctly then do not provide any final status information except for the above cue:</i></p> <p><i>2RPM*ACB2A has the following indications:</i></p> <ul style="list-style-type: none"><li>• <i>Amber 48V POWER SUPPLY light is lit</i></li><li>• <i>RED INPUT POWER light is lit</i></li><li>• <i>RED OUTPUT POWER light is not lit</i></li><li>• <i>Silver Breaker handle is midway between ON and OFF</i></li></ul>	<p>S (N2-SOP-97, flow chart section <b>A</b>)</p>	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> <i>At ELECTRICAL PROTECTION ASSEMBLY 2RPM*ACB2A Panel on Control Building 237', using proper electrical safety precautions, rotates silver breaker handle from the midway between the ON and OFF position clockwise to the OFF position and then counterclockwise to the ON position. Observes the following:</i></p> <ul style="list-style-type: none"><li>• <i>Amber 48V POWER SUPPLY light is lit</i></li><li>• <i>RED INPUT POWER light is lit</i></li><li>• <i>RED OUTPUT POWER light is lit</i></li><li>• <i>Silver Breaker handle is in the ON position.</i></li></ul> <p><b>Failure =</b> <i>2RPM*ACB2A silver breaker handle in the ON position not achieved as determined by candidate verbalization.</i></p>
9.	<p>Notifies the control room of EPA status</p> <p><b>Cue:</b> <i>As the control room, acknowledge the candidate report.</i></p>	<p>S</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> <i>Proper communications used.</i></p>
<p><b>Evaluator Note:</b></p>		<p>Once the candidate has placed 2RPM*ACB2A silver breaker handle in the ON position, provide the following cue:</p> <p><b>Cue:</b> <i>Your task is complete, another operator will complete any remaining actions.</i></p>	



<b>TASK STANDARD</b>	<i>2RPM*ACB2A has been reset.</i>
<b>STOP TIME</b>	



## JPM Handout

### INITIAL CONDITIONS

Given:

- A loss of Division I scram solenoid power has occurred
- All lights in the trip system are out
- The power source selector switch is in the "NORM" position
- 2RPM-MG1A is running
- MG set supply breaker NHS-MCC008-7 is closed

**Evaluator:** Ask trainee if he/she has any questions after presenting initial conditions

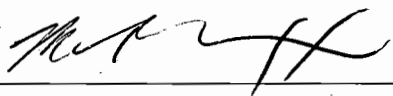
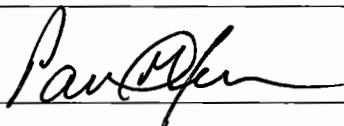
### INITIATING CUE

**(Candidate Name)**, Reset the Div I RPM EPA(s) in accordance with N2-SOP-97, Flowchart **A**.

Copy \_\_\_\_\_ of \_\_\_\_\_

Training Id: **NMP2 NRC 2019 Scenario 1**Revision: **0.0**

**RL4, Loss of all RPV level indication (Non-ATWS), RPV Blowdown,**  
Title: **RPV Flooding.**

	Signature / Printed Name	Date
Developed By	 Mike Alexander	2/19/19
Validated By	Brian Scaglione	8/1/19
	Mark Cappello	8/1/19
	Jim Lai	8/1/19
Facility Reviewer	 Paul Fenn	9/17/19

## References

1. N2-OP-30, Control Rod Drive
2. N2-OP-101D, Power Changes
3. N2-ARP-602300, 2CEC\*PNL602 Series 300 Alarm Response Procedures
4. N2-OP-37, Reactor Water Cleanup System
5. N2-SOP-08, Unplanned Power Changes
6. N2-SOP-101D, Rapid Power Reduction
7. N2-ARP-851400, 2CEC\*PNL851 Series 400 Alarm Response Procedures
8. N2-ARP-601200, 2CEC\*PNL601 Series 200 Alarm Response Procedures
9. N2-SOP-60, Loss of Drywell Cooling
10. N2-ARP-873200, 2CEC\*PNL873 Series 200 Alarm Response Procedures
11. N2-ARP-603100, 2CEC\*PNL603 Series 100 Alarm Response Procedures
12. N2-SOP-06, Feedwater Failures
13. N2-ARP-851200, 2CEC\*PNL851 Series 200 Alarm Response Procedures
14. N2-ARP-603400, 2CEC\*PNL603 Series 400 Alarm Response Procedures
15. N2-EOP-PC, Primary Containment Control
16. N2-EOP-RPV, RPV Control - Flowchart
17. N2-SOP-101C, Reactor Scram
18. N2-OP-36A, Standby Liquid Control System
19. N2-EOP-HC, NMP2 EOP Hard Cards Procedure
20. N2-ARP-601500, 2CEC\*PNL601 Series 500 Alarm Response Procedures
21. N2-EOP-C4, RPV Flooding
22. N2-EOP-6 (Series), NMP2 EOP Support Procedures (N2-EOP-6.1 thru 6.31)



- 23. EP-CE-113, Personnel Protective Actions
- 24. EP-CE-114-100, Emergency Notifications
- 25. EPIP-EPP-02-EAL, EMERGENCY ACTION LEVEL MATRIX UNIT 2
- 26. N2-TSPEC, NMPNS UNIT 2 IMPROVED TECHNICAL SPECIFICATIONS (Volume 1, 2, 3)
- 27. OP-AA-112-101, Shift Turnover and Relief

## Instructor Information

### **A. Scenario Description**

1. Sequence of Events / Expected Crew Response
  - a. The scenario begins at 95% reactor power above the 100% rodline with 2SWP\*P1E out of service for pump bearing replacement.
  - b. Event 1 is the normal evolution performed by the BOP operator to perform N2-OSP-CSL-Q@002, LPCS Pump and Valve Operability and System Integrity Test (section 6.2 only). During the test 2CSL\*MOV112 (CSL Suction Valve) will fail to re-open. The crew will investigate and determine that 2CSL\*MOV112 cannot be opened and declare CSL inoperable and evaluate T.S.
  - c. Event 2 is a reactivity evolution. The ATC operator will continue to lower reactor power to 90% using reactor recirculation flow in preparation for a rod line adjustment.
  - d. Event 3 occurs after power has been lowered, when a heat exchanger tube leak in Reactor Water Cleanup will result in a high differential flow. The expected automatic isolation will fail. The BOP is expected to recognize the failure and manually isolate the system IAW associated ARP's. The SRO is expected to



refer to Tech Specs for the instrument/isolation failure.

- e. Event 4 occurs when the outboard CCP cooling water isolation valves to the drywell unit coolers, receive a spurious isolation signal and close. The crew will enter N2-SOP-60 to evaluate and respond to the event. The crew will observe and assess drywell conditions for impact of loss of cooling. The actions of N2-SOP-60 will require the crew to place only the division I water LOCA override switches to override to allow re-opening of the CCP isolation valves. Once the crew has restored cooling they will evaluate containment conditions and enter applicable tech spec action statements.
- f. Event 5 occurs when the Master Feedwater level controller fails causing reactor water level to slowly rise. The crew will evaluate feedwater indications, enter N2-SOP-06, determine that FWLC is not responding correctly and take manual control of the master controller. The crew will then stabilize and restore feedwater level to the normal band.
- g. Event 6 occurs when the main turbine experiences rising turbine vibrations. The crew will monitor turbine vibrations and when the procedurally required trip conditions are met





scram the reactor per N2-SOP-21 and N2-SOP-101C.

- h. Events 7, 8, 9 & 10 occur when a large LOCA (Steam line break inside the Primary containment) occurs coincident with a loss of the Condensate and Feedwater system. The crew will enter N2-EOP-RPV and N2-EOP-PC. The following will now occur:
- 1) Four (4) minutes after the LOCA occurs, ALL RPV level instrumentation fails upscale. The crew will enter and execute N2-EOP-C4.
  - 2) HPCS injection valve CSH\*MOV107 will fail to open; the crew will dispatch an Equipment Operator to attempt local manual opening; this action will be unsuccessful.
  - 3) RHR 'A' injection valve (RHS\*MOV24A) will lose power when the high drywell pressure trip setpoint is reached. This will remove the ability to inject with LPCI 'A'.
  - 4) When RHR 'C' is started by the high Drywell pressure signal, the pump will trip on motor electrical fault.
  - 5) When RHR 'B' injection is attempted, the injection valve 2RHS\*MOV24B will fail to open.



6) This will leave only a flow from RHR 'A' and RHR 'B' through shutdown cooling.

- i. The crew will perform the actions on N2-EOP-C4 and conduct and RPV blowdown (CRITICAL TASK) and manually lineup injection sources to flood the RPV to the main steam lines (CRITICAL TASK).

## 2. Termination Criteria

- a. RPV has been flooded to the Main Steam Lines

## 3. Critical Tasks

### CT-1.0 Justification:

Safety Significance:	Critical Task 1.0 is identified as critical because with Reactor water level unknown, the status of core cooling is unknown. An RPV depressurization is required to allow low pressure injection systems to establish conditions to cool the core. This protects the fuel cladding integrity.
Cueing:	Multiple Reactor water level indications will indicate either downscale or invalid. N2-EOP-RPV provides direction to implement N2-EOP-C4, RPV Flooding.
Measurable Performance Indicators:	Manipulation of SRV and MSIV controls provide observable actions for the evaluation team.
Performance Feedback:	Reactor pressure will provide performance feedback regarding success of RPV blowdown actions.

- a. CT-1.0, Given the plant with RPV water level unknown, open 7 SRVs to blowdown the reactor in accordance with N2-EOP-C4.

### CT-2.0 Justification:

Safety Significance:	Critical Task 2.0 is identified as critical because with Reactor water level unknown, the status of core cooling is unknown. RPV flooding is required to establish conditions to cool the core. This protects the fuel cladding integrity.
Cueing:	Multiple Reactor water level indications will indicate either downscale or invalid. N2-EOP-RPV provides direction to implement N2-EOP-C4, RPV Flooding.
Measurable Performance Indicators:	Manipulation of injection system controls will provide observable actions for the evaluation team.
Performance Feedback:	Reactor pressure and SRV acoustic indications will provide performance feedback regarding success of RPV flooding actions.



- b. CT-2.0, Given the plant with RPV water level unknown, establish injection and flood the RPV in accordance with N2-EOP-C4.

4. Length

- a. 60 minutes

5. Mitigation Strategy Code

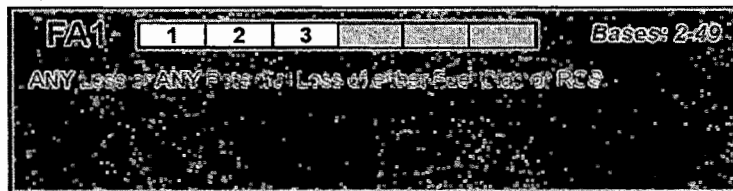
- a. RL4, Loss of all RPV level indication (Non-ATWS), RPV Blowdown, RPV Flooding.

6. Technical Specifications (Applicable actions for initial conditions only)

- a. None

7. EAL Classification

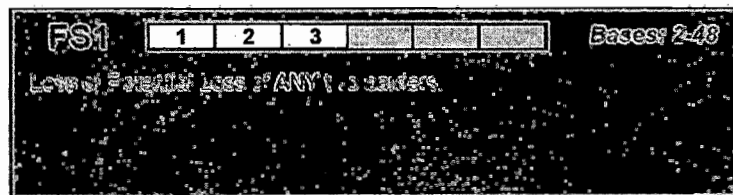
- a. Alert, EAL FA1:



1)

- a) Reactor Coolant System Barrier - Loss  
(3.1.a & b)

- b. SAE, EAL FS1:



1)

- a) Fuel Clad Barrier - Potential Loss  
(2.3)



- b) Reactor Coolant System Barrier - Loss  
(2.2)

## B. Initial Conditions

### 1. IC Number

- a. IC-021 or equivalent (IC-210 for ILT 18-1)

### 2. Presets / With Triggers

#### a. Malfunctions

- |   |                 |
|---|-----------------|
| 1) <b>CU08</b> , Reactor Water Cleanup Isolation Failure, FINAL=True                    | <b>Inserted</b> |
| 2) <b>MS13</b> , MSIV Isolation Failure, FINAL=True                                     | <b>Inserted</b> |
| 3) <b>RH02B</b> , RHR Low Pressure Injection Valve-Fails To Open (MOV24B), FINAL=True   | <b>Inserted</b> |
| 4) <b>CS04</b> , CSH*MOV107 Fails To Open, FINAL=True                                   | <b>Inserted</b> |
| 5) <b>CU06</b> , Reactor Water Cleanup Non-Regenerative Hx Tube Leak, FINAL=50, RT=2:00 | <b>TRG2</b>     |
| 6) <b>PC28A</b> , DW Unit Cooler CCP Outboard Isolation, FINAL=True                     | <b>TRG3</b>     |
| 7) <b>FW13</b> , Feedwater Master Controller Failure - High, RT=4 minutes, FINAL=100%   | <b>TRG4</b>     |
| 8) <b>TU02</b> , Turbine Vibration, RT=10 minutes, FV=15%                               | <b>TRG5</b>     |



- |   |              |
|---|--------------|
| 9) <b>MS04</b> , Steam Line Rupture Inside Primary Containment, RT=7:00, FINAL=25 | <b>TRG6</b>  |
| 10) <b>RR27</b> , RPV Level Instruments All Fail Upscale, DT=4:00, FINAL=True     | <b>TRG6</b>  |
| 11) <b>FW01A</b> , Condensate Pump Trip (P1A), FINAL=True                         | <b>TRG6</b>  |
| 12) <b>FW01B</b> , Condensate Pump Trip (P1B), FINAL=True                         | <b>TRG6</b>  |
| 13) <b>FW01C</b> , Condensate Pump Trip (P1C), FINAL=True                         | <b>TRG6</b>  |
| 14) <b>RH01C</b> , RHR Pump Trip (P1C), FINAL=True                                | <b>TRG7</b>  |
| 15) <b>RH08</b> , Group 5 Isolation Failure - (RHS*MOV122/113), FINAL=True        | <b>TRG12</b> |
| b. Remotes  |              |
| 1) <b>RH33</b> , RHS*MOV24A 600 V Bkr Status, FINAL=Open                          | <b>TRG8</b>  |
| 2) <b>CS12</b> , CSH*MOV107 600 Volt Bkr Status, FINAL=Open                       | <b>TRG9</b>  |
| 3) <b>CS14</b> , OPS-CSH01 PNL625 Tst. Sw CSH*MOV107, FINAL=Test                  | <b>TRG10</b> |
| 4) <b>RH34</b> , RHS*MOV24B 600 V Bkr Status, FINAL=Open                          | <b>TRG11</b> |



## c. Overrides

- 1) **OVR-01A1S123DI01014**, Open LPCS  
Pump1 Suction MOV112 Valve, FV=Off

**TRG1**

## d. Annunciators

- 1) None

## e. Event Triggers

Event #	Event Action	Command
1	hzlcslps1(1)==1 . AND. hzlcslps1(2)==0	Left Blank
7	hzarhsc51>0.477	Left Blank
8	hzlcsls08==1	Left Blank

## f. Equipment Out of Service

- 5) 2SWP\*P1E for pump bearing replacement

## g. Support Documentation

- 1) Markup the following sections of N2-OSP-  
CSL-Q@002:
  - a) 5.3 Documentation and Support
  - b) 5.4 Initial Conditions
  - c) 6.1 Preliminary Actions
  - d) 6.2 as next step to be performed

## h. Miscellaneous

- 1) Place clearance reference tag on the  
2SWP\*P1E control switch in P-T-L.
- 2) Place Protected pathway signs on the  
following for SWP\*P1E:
  - a) 2SWP\*P1A control switch



- b) 2SWP\*P1C control switch
- c) 2SWP\*P1B control switch
- d) 2SWP\*P1D control switch
- e) 2SWP\*P1F control switch
- 3) Clear APRM #2 trip memory
- 4) Verify the following S-REI-07 pages, which apply to IC-021, are displayed:
  - a) Unit #2 CRAM Rod Listing (S-REI-07 page 16 of 29) in both the CRC book and at panel 602 (attached to N2-SOP-101D).
  - b) Rapid Power Reduction Instructions (S-REI-07 page 15 of 29) in the CRC book only.
  - c) Current Control Rod Positions & Face Adjacent Rods (S-REI-07 page 17 of 29) in the CRC book only.

### C. Shift Turnover Information

- 1. Reactor Power: 95%
- 2. Rodline: Above 100%
- 3. Technical Specification LCOs in effect:
  - a. None
- 4. Significant Problems / Abnormalities / Equipment Out of Service:
  - a. 2SWP\*P1E for pump bearing replacement.



5. Evolutions / Maintenance Scheduled for this Shift:

- a. Perform N2-OSP-CSL-Q@002, LPCS Pump and Valve Operability and System Integrity Test (section 6.2 only).





**SHIFT TURNOVER INFORMATION**

ON COMING SHIFT: ☐ N ☒ D

DATE: Today

**PART I: To be performed by the oncoming Operator before assuming the shift.**

- Control Panel Walkdown (all panels) (SRO, ROs)

**PART II: To be reviewed by the oncoming Operator before assuming the shift.**

- LCO Status (SRO)
- Shift Turnover Information Sheet

**Evolutions/General Information/Equipment Status:**

- Reactor power is at 95% due to Reactor Engineering hold to update control rod move sheets.
- Reactor Engineering hold to update control rod move sheets is complete, ready to continue power reduction.
- 2SWP\*P1E is out of service for pump bearing replacement.

**PART III: Remarks/Planned Evolutions:**

- Perform N2-OSP-CSL-Q@002, LPCS Pump and Valve Operability and System Integrity Test (section 6.2 only).
- Once N2-OSP-CSL-Q@002 section 6.2 has been completed, lower reactor power using reactor recirculation flow per the provided ReMA to 90%.



## Shift Turnover

Instructor Actions / Plant Response	Operator Actions
Take the simulator out of freeze before the crew enters for the pre-shift walkdown.  Verify annunciator sound turned on If recording scenario, start the recording device during the pre-shift walkdown	
Allow the crew approximately 10 minutes to walk down control room panels and perform shift turnover brief.	<b><u>Crew</u></b> Walkdown control room panels Conduct shift turnover brief Assume the shift



Event #1: N2-OSP-CSL-Q@002, section 6.2 only with CSL suction valve failure to re-open

<b>Event Information</b>	Enter important information about the event here such as: <ul style="list-style-type: none"> <li>• Presumed or required initial plant operating conditions <ul style="list-style-type: none"> <li>- Reactor at power</li> </ul> </li> <li>• Critical activities or tasks <ul style="list-style-type: none"> <li>- N2-OSP-CSL-Q@002, LPCS Pump and Valve Operability and System Integrity Test (section 6.2 only)</li> </ul> </li> <li>• Final (expected) operating result <ul style="list-style-type: none"> <li>- Operating with CSL inoperable</li> </ul> </li> <li>• Mitigation Strategy code (if applicable) <ul style="list-style-type: none"> <li>- N/A</li> </ul> </li> </ul>
<b>Critical Tasks</b> <i>(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)</i>	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: <ol style="list-style-type: none"> <li>1. None</li> </ol>

Instructor Actions / Plant Response	Operator Actions
<b>Role Play:</b> If contacted as the SM concerning operability of 2CSL*P1, report that it has been declared inoperable and unavailable.	<b>SRO</b> <ul style="list-style-type: none"> <li>• Directs RO to perform N2-OSP-CSL-Q@002, LPCS Pump and Valve Operability and System Integrity Test (section 6.2 only)</li> </ul>
<p><i>The following annunciators alarm:</i></p> <ul style="list-style-type: none"> <li>• 601401, DIVISION 1 LPCS SYSTEM INOPERABLE</li> <li>• 601421, LPCS PUMP 1 DISCH PRESS HIGH/LOW</li> <li>• 601428, LPCS HIGH PT VENT LEVEL LOW</li> </ul>	<b>RO</b> <ul style="list-style-type: none"> <li>• Acknowledges direction to perform N2-OSP-CSL-Q@002, LPCS Pump and Valve Operability and System Integrity Test (section 6.2 only): <ul style="list-style-type: none"> <li>◦ Places control switch for 2CSL*P1, PMP 1, in PULL-TO-LOCK</li> <li>◦ Opens 2CSL*FV114, TEST RETURN TO SUPPR POOL THROTTLE.</li> </ul> </li> </ul>



Instructor Actions / Plant Response	Operator Actions												
<p>The following annunciator clears when 2CSL*FV114 is closed:</p> <ul style="list-style-type: none"><li>601421, LPCS PUMP 1 DISCH PRESS HIGH/LOW</li></ul> <p>When the green light is ON and the red light is OFF for 2CSL*MOV112 (hzlcs1ps1(1)==1 . AND. hzlcs1ps1(2)==0) the following <b>override</b> becomes <b>active</b>:</p> <p><b>TRG1      OVR-01A1S123DI01014</b>, Open LPCS Pump1 Suction MOV112 Valve, FV=Off</p> <p>The following annunciator alarms:</p> <ul style="list-style-type: none"><li>601418, LPCS PUMP SUCTION PRESS ABNORMAL</li></ul>	<ul style="list-style-type: none"><li>Closes 2CSL*FV114<ul style="list-style-type: none"><li>Marks 2CSL*FV114 Exercise test SAT</li></ul></li><li>Closes 2CSL*MOV112, PMP 1 SUCT VLV</li><li>Attempts to re-open 2CSL*MOV112</li><li>Recognizes/reports the failure of 2CSL*MOV112 to re-open.</li></ul>												
	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"><li>Acknowledges RO report that 2CSL*MOV112 has failed to re-open</li></ul>												
<p><b><u>Role Play:</u></b></p> <p>As field operator dispatched to investigate indications locally at the breaker, wait 2 minutes and then report that 2EHS*MCC102 breaker 15D is closed with no apparent abnormalities indicated.</p>	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"><li>Dispatches field operator to investigate indications both at 2EHS*MCC102-15D</li><li>Acknowledges field operator report</li><li>Informs SRO of field operator</li></ul>												
<p><b><u>Note:</u></b></p> <table><tr><th>Spec</th><th>Condition</th><th>Applicable Actions</th></tr><tr><td>3.5.1</td><td>A</td><td>A.1</td></tr><tr><th>Action</th><th>Description</th><td></td></tr><tr><td>A.1</td><td>Restore low pressure ECCS injection/spray subsystem to OPERABLE status. (7 Days)</td><td></td></tr></table>	Spec	Condition	Applicable Actions	3.5.1	A	A.1	Action	Description		A.1	Restore low pressure ECCS injection/spray subsystem to OPERABLE status. (7 Days)		<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"><li>Acknowledges RO report from the field operator</li><li>Evaluates T.S. 3.5.1 condition A and declares CSL Inoperable</li></ul>
Spec	Condition	Applicable Actions											
3.5.1	A	A.1											
Action	Description												
A.1	Restore low pressure ECCS injection/spray subsystem to OPERABLE status. (7 Days)												



**Event  
Termination  
Criteria**

- N2-OSP-CSL-Q@002, LPCS Pump and Valve Operability and System Integrity Test (section 6.2 only) has been completed with 2CSL\*P1 control switch in PTL.

## Event 2: Lower Reactor Power to 90% using Recirculation Flow

<b>Event Information</b>	Enter important information about the event here such as: <ul style="list-style-type: none"> <li>• Presumed or required initial plant operating conditions <ul style="list-style-type: none"> <li>- Plant in Mode 1 at ~95% reactor power</li> </ul> </li> <li>• Critical activities or tasks <ul style="list-style-type: none"> <li>- Lower reactor recirculation flow to achieve 90% reactor power.</li> </ul> </li> <li>• Final (expected) operating result <ul style="list-style-type: none"> <li>- Reactor power stable at 90% or as directed by the lead evaluator</li> </ul> </li> <li>• Mitigation Strategy code (if applicable) <ul style="list-style-type: none"> <li>- N/A</li> </ul> </li> </ul>
<b>Critical Tasks</b> <i>(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)</i>	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: <ol style="list-style-type: none"> <li>1. None</li> </ol>

Instructor Actions / Plant Response	Operator Actions
<u>Note:</u> SRO may direct power be lowered to 90% in accordance with the ReMA.	<u><b>SRO</b></u> <ul style="list-style-type: none"> <li>• Directs RO to lower power to 90% using Recirc flow per ReMA and N2-OP-101D.</li> </ul>
	<u><b>RO</b></u> <ul style="list-style-type: none"> <li>• Acknowledges direction to lower reactor power to 90% using Recirc flow.</li> <li>• Lowers power to 90% by lowering core flow as follows: <ul style="list-style-type: none"> <li>◦ Moves 2RCS*HYV17A&amp;B individually in the close direction, maintaining loop flow differential at a minimal value by alternating between the two valves.</li> </ul> </li> <li>• Monitors APRMs and rate of power change.</li> </ul>

Instructor Actions / Plant Response	Operator Actions
	<b><u>BOP</u></b> <ul style="list-style-type: none"><li>• Monitors plant parameters to verify proper operations.</li><li>• Provides peer checks as needed</li></ul>

Event Termination Criteria	<ul style="list-style-type: none"><li>• Reactor power has been lowered sufficiently as determined by the Lead Evaluator</li></ul>
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## Event 3: RWCU Heat Exchanger Tube Leak with WCS failing to automatically isolate

<b>Event Information</b>	<p>Enter important information about the event here such as:</p> <ul style="list-style-type: none"> <li>Presumed or required initial plant operating conditions <ul style="list-style-type: none"> <li>Plant at power</li> <li>Verify the following <b>malfunction</b> is <b>inserted</b> before the event is initiated: <ul style="list-style-type: none"> <li><b>CU08</b>, Reactor Water Cleanup Isolation Failure, FINAL=True</li> </ul> </li> </ul> </li> <li>Critical activities or tasks <ul style="list-style-type: none"> <li>Manually isolate WCS system</li> </ul> </li> <li>Final (expected) operating result <ul style="list-style-type: none"> <li>Operating with WCS system isolated</li> </ul> </li> <li>Mitigation Strategy code (if applicable) <ul style="list-style-type: none"> <li>N/A</li> </ul> </li> </ul>
<b>Critical Tasks</b> <i>(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)</i>	<p>If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below:</p> <ol style="list-style-type: none"> <li>None</li> </ol>

Instructor Actions / Plant Response	Operator Actions
<p>When directed by the Lead Evaluator, <b>insert</b> the following <b>malfunction</b>:</p> <p><b>TRG2</b>     <b>CU06</b>, Reactor Water Cleanup Non-Regenerative Hx Tube Leak, FINAL=50, RT=2:00</p> <p><i>The following annunciator will alarm approximately 80 seconds after TRG 1 is inserted:</i></p> <ul style="list-style-type: none"> <li>602320, RWCU DIFF FLOW TIMER BYPASS</li> <li>602313, RWCU DIFFERENTIAL FLOW HIGH will alarm 45 seconds after 602320 alarms</li> </ul>	





Instructor Actions / Plant Response	Operator Actions						
	<b><u>CREW</u></b> <ul style="list-style-type: none"><li>• Acknowledges alarm and informs the SRO</li><li>• Refers to ARPs</li></ul>						
	<b><u>SRO</u></b> <ul style="list-style-type: none"><li>• Acknowledges report of alarm</li><li>• Directs actions IAW ARPs.</li></ul>						
When annunciator 602313 alarms, the following <b>malfunction</b> becomes <b>apparent</b> : <ul style="list-style-type: none"><li>• <b>CU08</b>, Reactor Water Cleanup Isolation Failure, FINAL=True</li></ul>	<b><u>BOP</u></b> <ul style="list-style-type: none"><li>• When AN602313 alarms, determines RWCU did not isolate as expected.</li><li>• Informs the SRO that RWCU did not isolate.</li></ul>						
	<b><u>SRO</u></b> <ul style="list-style-type: none"><li>• Acknowledges report that RWCU failed to isolate</li><li>• Directs BOP to isolate RWCU</li></ul>						
<b><u>Note:</u></b> Based on the timeliness of crew actions, the crew may isolate RWCU prior to getting annunciator 602313. If this occurs the crew may not recognize that an isolation failure occurred and that TS 3.3.6.1 would be applicable.	<b><u>BOP</u></b> <ul style="list-style-type: none"><li>• Acknowledges the order to isolate RWCU.</li><li>• Manually isolates RWCU as follows:<ul style="list-style-type: none"><li>◦ Closes RWCU Suction Inboard Isolation valve 2WCS*MOV102</li><li>◦ Closes RWCU Suction Outboard Isolation Valve, 2WCS*MOV112</li><li>◦ Verifies RWCU pump P1A trips</li><li>◦ Throttles open 2WCS-MOV110, CLEANUP DEMIN BYPASS VLV</li><li>◦ May reference N2-OP-37 to verify actions.</li></ul></li></ul>						
<b><u>Role Play:</u></b> As WWM/SRO acknowledge the report	<b><u>SRO</u></b> <ul style="list-style-type: none"><li>• May contact SRO/WWM and inform them that WCS failed to isolate</li></ul>						
<table><tr><th>Spec</th><th>Condition</th><th>Applicable Actions</th></tr><tr><td>3.3.6.1</td><td>A &amp; B</td><td>A.1 &amp; B.1</td></tr></table>	Spec	Condition	Applicable Actions	3.3.6.1	A & B	A.1 & B.1	<ul style="list-style-type: none"><li>• Refers to Tech Specs 3.3.6.1 for auto isolation failure<ul style="list-style-type: none"><li>◦ Determines that Action A.1 and B.1 are</li></ul></li></ul>
Spec	Condition	Applicable Actions					
3.3.6.1	A & B	A.1 & B.1					



Instructor Actions / Plant Response		Operator Actions						
<table><tr><th>Action</th><th>Description</th></tr><tr><td>A.1</td><td>Place channel in trip. (24 hours)</td></tr><tr><td>B.1</td><td>Restore isolation capability. (1 hour)</td></tr></table>	Action	Description	A.1	Place channel in trip. (24 hours)	B.1	Restore isolation capability. (1 hour)	<div>applicable</div> <ul style="list-style-type: none"><li>Determines the isolation flow path is already isolated.</li></ul>	
Action	Description							
A.1	Place channel in trip. (24 hours)							
B.1	Restore isolation capability. (1 hour)							

<b>Event Termination Criteria</b>	<ul style="list-style-type: none"><li>WCS is isolated.</li><li>SRO has evaluated tech specs.</li></ul>
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## Event 4: Loss of Drywell Cooling

<b>Event Information</b>	Enter important information about the event here such as: <ul style="list-style-type: none"> <li>• Presumed or required initial plant operating conditions <ul style="list-style-type: none"> <li>- Plant on-line with Drywell cooling in service</li> </ul> </li> <li>• Critical activities or tasks <ul style="list-style-type: none"> <li>- Place Drywell Unit Cooler WTR Div I LOCA override switches to override</li> <li>- Open 2CCP*MOV124 &amp; 265</li> <li>- Open CCP inlet isolation valves for all Drywell unit coolers</li> <li>- Start previously running Drywell unit coolers</li> </ul> </li> <li>• Final (expected) operating result <ul style="list-style-type: none"> <li>- Operating with Drywell Cooling back in service</li> </ul> </li> <li>• Mitigation Strategy code (if applicable) <ul style="list-style-type: none"> <li>- N/A</li> </ul> </li> </ul>
<b>Critical Tasks</b> <i>(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)</i>	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: <ol style="list-style-type: none"> <li>1. None</li> </ol>

Instructor Actions / Plant Response	Operator Actions
When directed by lead evaluator <b>insert</b> the following <b>malfunction</b> :  <b>TRG3      PC28A</b> , DW Unit Cooler CCP Outboard Isolation, FINAL=True	
<i>The following plant response occurs after event initiation:</i> <ul style="list-style-type: none"> <li>• 2CCP*MOV265 and 2CCP*MOV124 shut</li> <li>• All Drywell unit coolers trip</li> <li>• Drywell pressure and temperature begin to rise</li> </ul> <i>The following annunciators alarm immediately after event initiation:</i> <ul style="list-style-type: none"> <li>• 601259, RBCLC from drywell unit coolers temp high</li> </ul>	<b>RO</b> <ul style="list-style-type: none"> <li>• Recognizes and reports the trip of the Drywell Unit coolers due to closure of the CCP outboard inlet and outlet containment isolation valves.</li> <li>• Makes crew update for the loss of drywell cooling.</li> </ul>



Instructor Actions / Plant Response	Operator Actions
<ul style="list-style-type: none"> <li>873201, Drywell unit cooling group 1 sys trouble</li> <li>873202, Drywell unit cooling group 2 sys trouble</li> <li>873304, Division I drywell temperature high</li> <li>875104, Division II drywell temperature high</li> </ul>	
<p>The following annunciator alarms about 30 seconds after event initiation:</p> <ul style="list-style-type: none"> <li>601259, RBCLC from drywell unit coolers temp high</li> </ul>	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"> <li>Acknowledges report of the loss of Drywell unit coolers.</li> <li>Provides crew update for entry into N2-SOP-60.</li> <li>Directs RO to enter and execute N2-SOP-60</li> </ul>
	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"> <li>Monitors Drywell pressure and all containment parameters.</li> <li>Maintains crew oversight and looks ahead for potential issues/thresholds.</li> <li>Evaluates E-plan related parameters.</li> <li>Evaluates risk</li> <li>Evaluates PRA (CDF &amp; LERF)</li> </ul>
<p>The following annunciator alarms immediately after LOCA Override Switch is placed in override:</p> <ul style="list-style-type: none"> <li>873211, DRYWELL UNIT CLR WTR DIV I CNMT IV LOCA OVERRIDE</li> </ul> <p>Drywell pressure and temperature begin to lower</p>	<p><b><u>RO</u></b> (N2-SOP-60)</p> <ul style="list-style-type: none"> <li>Acknowledges SRO direction to enter and execute N2-SOP-60</li> <li>Enters and executes N2-SOP-60 to restore drywell cooling               <ul style="list-style-type: none"> <li>Determines that the Division I Drywell Cooling Isolation Valves are closed</li> <li>Places Drywell Unit Cooler Wtr Div I LOCA override switch to Override</li> <li>Verifies closed all CCP inlet isolation valves for all Drywell unit coolers</li> <li>Opens 2CCP*MOV124 &amp; 265</li> <li>Opens CCP inlet isolation valves for all Drywell unit coolers</li> <li>Starts previously running Drywell unit coolers</li> </ul> </li> <li>Provides crew update to inform crew that</li> </ul>

Instructor Actions / Plant Response	Operator Actions												
	Drywell cooling is restored.												
<p><b><u>Role Play:</u></b></p> <p>If asked to report the status of trip units, report that no trip units are in alarm and that no gross failures are present.</p>	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"><li>• Acknowledges report of drywell cooling restored.</li><li>• Provides crew transient brief / reverse brief.</li></ul>												
<p><b><u>Note:</u></b></p> <p>Tech. Spec 3.6.1.3 Containment Isolation Valves (Penetrations) spec may be considered met if a Safety Function Determination is completed per Tech Spec 3.0.6 because the safety function is preserved/met by the inboard isolation valves</p> <table><tr><th>Spec</th><th>Condition</th><th>Applicable Actions</th></tr><tr><td>3.3.6.1</td><td>A</td><td>A.1</td></tr><tr><th>Action</th><th colspan="2">Description</th></tr><tr><td>A.1</td><td colspan="2">Place channel in trip. (12 hours)</td></tr></table> <p><b><u>Note:</u></b></p> <p>Shift Manager shall provide crew oversight and not make notification phone calls until plant conditions are stable.</p>	Spec	Condition	Applicable Actions	3.3.6.1	A	A.1	Action	Description		A.1	Place channel in trip. (12 hours)		<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"><li>• Maintains crew oversight and provides coaching when necessary.</li><li>• Evaluates Tech. Spec. 3.6.1.3 and 3.3.6.1 and enters 3.3.6.1 Condition A, action A.1, due to the LOCA override switch being placed in override.</li><li>• Evaluates risk</li><li>• Contacts Work Week Manager for investigation / support.</li><li>• Contacts Plant Management.</li></ul>
Spec	Condition	Applicable Actions											
3.3.6.1	A	A.1											
Action	Description												
A.1	Place channel in trip. (12 hours)												
<p><b>Event Termination Criteria</b></p>	<ul style="list-style-type: none"><li>• Drywell Cooling Restored</li><li>• Tech Specs evaluated</li></ul>												



## Event 5: Feedwater Master Controller Failure - High

<b>Event Information</b>	Enter important information about the event here such as: <ul style="list-style-type: none"> <li>• Presumed or required initial plant operating conditions <ul style="list-style-type: none"> <li>- Plant on-line with FWLC in master auto</li> </ul> </li> <li>• Critical activities or tasks <ul style="list-style-type: none"> <li>- Take manual control of feedwater master controller and stabilize/restore feedwater level back in normal band</li> </ul> </li> <li>• Final (expected) operating result <ul style="list-style-type: none"> <li>- Operating with Feedwater Master controller in manual</li> </ul> </li> <li>• Mitigation Strategy code (if applicable) <ul style="list-style-type: none"> <li>- N/A</li> </ul> </li> </ul>
<b>Critical Tasks</b> <i>(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)</i>	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: <ol style="list-style-type: none"> <li>1. None</li> </ol>

Instructor Actions / Plant Response	Operator Actions
When directed by lead evaluator <b>insert</b> the following <b>malfunction</b> :  <b>TRG4 FW13</b> , Feedwater Master Controller Failure - High, RT=4 minutes, FINAL=100%	
<i>The following annunciator alarms ~30 seconds after event initiation:</i> <ul style="list-style-type: none"> <li>• 603139, REACTOR WATER LEVEL HIGH/LOW</li> </ul> <i>The following computer points are generated after event initiation:</i> <ul style="list-style-type: none"> <li>• FWSLC01, REACTOR WTR LEVEL HI/LO</li> </ul>	<u><b>Crew</b></u> <ul style="list-style-type: none"> <li>• Recognizes / reports the following: <ul style="list-style-type: none"> <li>◦ Annunciator 603139 in alarm</li> <li>◦ RPV water level slowly rises</li> <li>◦ Steam flow / feed flow mismatch</li> </ul> </li> </ul>
<u><b>Note:</b></u> Crew may enter N2-SOP-08 and N2-SOP-101D for unplanned power changes based on the	<u><b>RO</b></u> <ul style="list-style-type: none"> <li>• OATC monitors the following: <ul style="list-style-type: none"> <li>◦ Reactor power</li> </ul> </li> </ul>



Instructor Actions / Plant Response	Operator Actions
timeliness of initial event diagnosis.	<ul style="list-style-type: none"><li>◦ Reactor water level</li><li>◦ Reactor pressure</li><li>• Executes ARP 603139<ul style="list-style-type: none"><li>◦ Determines RPV pressure <math>\geq 900</math> psig</li><li>◦ Recognizes N2-SOP-06 entry is warranted</li></ul></li></ul>
	<b><u>SRO</u></b> <ul style="list-style-type: none"><li>• Provides crew update for entry into N2-SOP-06</li><li>• Directs RO to enter and execute N2-SOP-06</li></ul>
<b><u>Role Play:</u></b> If asked to provide trip unit indication, report that there are no trip units in alarm and there are no gross failures present and all trip units indicate normal D/P.	<b><u>RO</u></b> (N2-SOP-06 Flowchart) <ul style="list-style-type: none"><li>• Acknowledges SRO direction to enter and execute N2-SOP-06</li><li>• Performs N2-SOP-06 actions and determines the following:<ul style="list-style-type: none"><li>◦ FWLC is NOT responding correctly</li></ul></li><li>• Takes manual control of FWLC master controller</li><li>• Adjusts feedwater master controller in manual to restore feedwater level to directed level band</li></ul>
<b><u>Note:</u></b> Shift Manager shall provide crew oversight and not make notification phone calls until plant conditions are stable.  <b><u>Role Play:</u></b> When contacted, respond as appropriate.	<b><u>SRO</u></b> <ul style="list-style-type: none"><li>• Directs RPV level band</li><li>• Maintains crew oversight and provides coaching when necessary</li><li>• Contacts the following (when time permits):<ul style="list-style-type: none"><li>◦ Work Week Manager for investigation / support</li><li>◦ Plant Management</li></ul></li></ul>



Instructor Actions / Plant Response	Operator Actions
	<b><u>SRO</u></b> <ul style="list-style-type: none"><li>Evaluates plant conditions against Technical Specifications and determines the following apply:<ul style="list-style-type: none"><li>None</li></ul></li></ul>

<b>Event Termination Criteria</b>	<ul style="list-style-type: none"><li>FWLC in master manual</li><li>Reactor water level in normal band</li></ul>
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## Event #6: Rising Main Turbine Vibrations

<b>Event Information</b>	Enter important information about the event here such as: <ul style="list-style-type: none"> <li>• Presumed or required initial plant operating conditions <ul style="list-style-type: none"> <li>- Plant on-line at or near rated power (<math>\geq 85\%</math>)</li> <li>- 2CSL*P1 out of service</li> </ul> </li> <li>• Critical activities or tasks <ul style="list-style-type: none"> <li>- Place the mode switch to shutdown</li> </ul> </li> <li>• Final (expected) operating result <ul style="list-style-type: none"> <li>- Reactor Scrammed</li> </ul> </li> <li>• Mitigation Strategy code (if applicable) <ul style="list-style-type: none"> <li>- N/A</li> </ul> </li> </ul>
<b>Critical Tasks</b> <i>(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)</i>	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: <ol style="list-style-type: none"> <li>1. None</li> </ol>

Instructor Actions / Plant Response	Operator Actions
When directed by the lead evaluator, <b>insert</b> the following <b>malfunction</b> :  <b>TRG5 TU02</b> , Turbine Vibration, RT=10 minutes, FV = 15%	
<p><i>The following plant response occurs after event initiation:</i></p> <ul style="list-style-type: none"> <li>• Turbine bearings 3, 5, 6, 7 &amp; 8 will experience an increasing vibrational magnitude greater than the normal reading for a given rpm</li> <li>• The further removed a bearing is from the center of the disturbance, the less pronounced will be the vibrational increase of that bearing</li> <li>• The increasing vibration will be indicated on 2TMI-NBR134 located on P842</li> </ul> <p><i>The following annunciators alarm approximately 2.5</i></p>	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>• Recognizes/ Reports Turbine Vibration Hi Annunciator 851140</li> </ul>



Instructor Actions / Plant Response	Operator Actions
<p><i>minutes after event initiation:</i></p> <ul style="list-style-type: none"> <li>• 851140, Turbine Generator Vibration High</li> </ul> <p><i>The following computer points are generated approximately 3.5 minutes after event initiation:</i></p> <ul style="list-style-type: none"> <li>• TMINC05, TURB GEN BRG 5 VIB</li> <li>• TMINC06, TURB GEN BRG 6 VIB</li> </ul>	
	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges crew report</li> <li>• Reviews action levels in 851140 <ul style="list-style-type: none"> <li>◦ Any Bearing Vibration <math>\geq 10</math> mils for 15 Minutes, trip Main Turbine</li> <li>◦ Any Bearing Vibration is <math>\geq 12</math> mils, trip Main Turbine</li> <li>◦ Any Bearing Vibration is <math>&gt;9</math> mils with <math>&gt;3</math> mils/minute rate of change, trip Main Turbine</li> <li>◦ IF Bearing Vibration is projected to exceed 30 mils following a Turbine Trip THEN break condenser vacuum IAW N2-OP-21, Subsection E.5.4</li> </ul> </li> </ul>
<p><b><u>Role Play:</u></b></p> <p>As EO if directed to check out main turbine bearings and Lube Oil, respond that you will obtain RP support and brief for High Rad Area entry and check out the turbine bearings.</p>	<p><b><u>RO</u></b> (ARP 851140)</p> <ul style="list-style-type: none"> <li>• Monitors turbine vibration</li> <li>• Makes station announcement</li> <li>• When it becomes apparent that vibration will or has exceeded 12 mils, recognizes that a main turbine trip is required IAW with N2-SOP-21</li> </ul>
	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"> <li>• Provides crew update for the entry into N2-SOP-21</li> <li>• Directs RO to enter and execute N2-SOP-21</li> <li>• Directs/concurs with requirement to trip the main turbine</li> <li>• Directs RO to place the mode switch in</li> </ul>



Instructor Actions / Plant Response	Operator Actions
	shutdown <ul style="list-style-type: none"><li>• May order a precautionary evacuation of the Turbine Building</li></ul>
	<b>RO</b> (N2-SOP-21) <ul style="list-style-type: none"><li>• Places the Mode Switch in SHUTDOWN</li><li>• Provides scram report, by reporting:<ul style="list-style-type: none"><li>◦ Reactor mode switch in shutdown</li><li>◦ APRMs downscale</li><li>◦ Reactor pressure and trend</li><li>◦ Reactor level and trend</li><li>◦ MSIVs open</li><li>◦ Feedwater pumps running</li></ul></li><li>• All control rods fully inserted</li></ul>

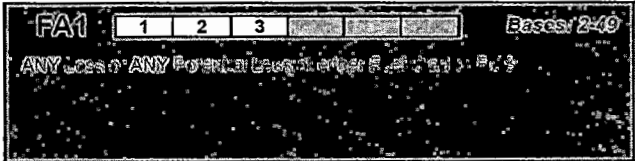
<b>Event Termination Criteria</b>	<ul style="list-style-type: none"><li>• Reactor Mode switch placed in shutdown</li></ul>
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## Event #7, 8, 9 & 10: RPV Flooding

<b>Event Information</b>	<p>Enter important information about the event here such as:</p> <ul style="list-style-type: none"> <li>Presumed or required initial plant operating conditions <ul style="list-style-type: none"> <li>Plant scrammed</li> <li>2CSL*P1 out of service</li> <li>Verify the following <b>malfunctions</b> are <b>inserted</b> before TRG 6 is initiated: <ul style="list-style-type: none"> <li><b>RH02B</b>, RHR Low Pressure Injection Valve-Fails To Open (MOV24B), FINAL=True</li> <li><b>MS13</b>, MSIV Isolation Failure, FINAL=True</li> </ul> </li> </ul> </li> <li>Critical activities or tasks <ul style="list-style-type: none"> <li>Flood the RPV to the main steam lines</li> </ul> </li> <li>Final (expected) operating result <ul style="list-style-type: none"> <li>RPV water level determined to be at the level of the main steam lines</li> </ul> </li> <li>Mitigation Strategy code (if applicable) <ul style="list-style-type: none"> <li>DMS-RL4</li> </ul> </li> </ul>
<b>Critical Tasks</b> <i>(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)</i>	<p>If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below:</p> <ol style="list-style-type: none"> <li>Given the plant with RPV water level unknown, open 7 SRVs to blowdown the reactor in accordance with N2-EOP-C4.</li> <li>Given the plant with RPV water level unknown, establish injection and flood the RPV in accordance with N2-EOP-C4.</li> </ol>

Instructor Actions / Plant Response	Operator Actions
<p><b><u>Booth Operator:</u></b></p> <p>After RPV level has been stabilized below level 8 after the scram and/or when directed by the lead evaluator, <b>insert</b> the following <b>malfunctions</b>:</p> <p><b>TRG6</b>      <b>FW01A</b>, Condensate Pump Trip (P1A), FINAL=True  <b>FW01B</b>, Condensate Pump Trip (P1B), FINAL=True  <b>FW01C</b>, Condensate Pump Trip (P1C), FINAL=True</p>	



Instructor Actions / Plant Response	Operator Actions
<p><b>MS04</b>, Steam Line Rupture Inside Primary Containment, RT=7:00, FINAL=25</p> <p><b>RR27</b>, RPV Level Instruments All Fail Upscale, DT=4:00, FINAL=True</p>	
<p><i>The following plant response occurs after event initiation:</i></p> <ul style="list-style-type: none"><li>• All condensate pumps trip, resulting in a loss of condensate and feedwater injection</li></ul> <p><i>The following plant response occurs after event initiation:</i></p> <ul style="list-style-type: none"><li>• CMS10's go into alarm</li><li>• RPV press drops rapidly</li><li>• Containment press and temp rise rapidly</li><li>• HPCS initiates</li></ul>	
<p><i>The following annunciators alarm after event initiation:</i></p> <ul style="list-style-type: none"><li>• 603101, RPS A Drywell Pressure High Trip</li><li>• 603401, RPS B Drywell Pressure High Trip</li><li>• 603109, RPS A Disch Volume High Level Trip</li><li>• 603409, RPS A Disch Volume High Level Trip</li><li>• 603110, RPS A Auto Trip</li><li>• 603410, RPS B Auto Trip</li></ul>	<p><b>RO</b></p> <ul style="list-style-type: none"><li>• Reports EOP entry condition on high drywell pressure and low RPV water level</li><li>• Reports trip of all running condensate pumps</li></ul>
<p><b>EAL Criteria Met</b></p> <p>Indications available for Alert, EAL FA1 (RCS Loss 3.1.a &amp; b):</p> 	



Instructor Actions / Plant Response	Operator Actions
<ul style="list-style-type: none"><li>• <i>RPV level continues to lower slowly</i></li><li>• <i>RPV pressure continues to lower</i></li></ul>	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"><li>• Acknowledges report of EOP entry condition on high drywell pressure</li><li>• Provides crew update and enters EOP-RPV on low RPV water level and high drywell pressure</li><li>• Provides crew update and enters EOP-PC on high drywell pressure</li><li>• Performs N2-EOP-RPV control actions:<ul style="list-style-type: none"><li>◦ Directs scram procedure entered (N2-SOP-101C</li><li>◦ Performs level control actions<ul style="list-style-type: none"><li>- Verifies needed auto isolations, ECCS starts and diesel generator response occurred per EOP-6.1</li><li>- Determines that RPV water level is known</li></ul></li><li>◦ Performs Pressure control actions:<ul style="list-style-type: none"><li>- Determines that no SRVs are cycling</li><li>- Determines that RPV pressure can be stabilized below 1052 psig using the main turbine bypass valves</li></ul></li><li>◦ Directs a pressure band and may direct the Outboard MSIVs closed at 500 psig to control cooldown rate</li></ul></li></ul>
	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"><li>• Performs N2-SOP-101C actions:<ul style="list-style-type: none"><li>◦ Verifies:<ul style="list-style-type: none"><li>- All rods full in</li><li>- Reactor power lowering</li><li>- Turbine tripped/TSVs &amp; TCVs shut</li><li>- Generator tripped and house loads transferred</li><li>- SDV V &amp; D Valves closed</li><li>- RCS pumps downshift</li><li>- RPV pressure on TBVs or SRVs</li><li>- Determines that FWLC is not controlling level &gt; 159.3"</li></ul></li></ul></li></ul>

Instructor Actions / Plant Response	Operator Actions
	<ul style="list-style-type: none"> <li>◦ Determines that the scram cannot be promptly reset due to degraded high pressure injection sources</li> <li>◦ Notifies Shift manager to review EP-CE-111 for classification of an emergency</li> <li>◦ Fully inserts IRMs and SRMs</li> <li>◦ Energizes 2WCS-MOV107</li> <li>◦ If required, secures makeup to the cooling tower</li> <li>◦ Shuts down HWC</li> <li>◦ Performs Level control leg: <ul style="list-style-type: none"> <li>- Recognizes that level is lowering due to degraded injection systems</li> </ul> </li> </ul>
<p>When RHR 'C' starts on the high drywell pressure signal and current reaches ~90 amps (hzarhsc51&gt;0.477), the following <b>malfunction</b> becomes <b>active</b>:</p> <p><b>TRG7</b>     <b>RH01C</b>, RHR Pump Trip (P1C), FINAL=True</p>	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>• Recognizes / reports the trip of RHR C when drywell pressure reaches 1.68 psig</li> </ul>
<p>When the high drywell pressure signal occurs and the Div I LPCI/LPCS initiation white light illuminates (hzlcls08==1), the following <b>malfunction</b> becomes <b>active</b>:</p> <p><b>TRG8</b>     <b>RH33</b>, RHS*MOV24A 600V BKR Status, FV=Open</p>	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>• Recognizes / reports the loss of power to 2RHS*MOV24A when drywell pressure reaches 1.68 psig</li> </ul>
<p>When drywell pressure reaches 1.68 psig, the following <b>malfunction</b> becomes <b>apparent</b>:</p> <ul style="list-style-type: none"> <li>• <b>CS04</b>, CSH*MOV107 Fails To Open, FINAL=True</li> </ul>	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>• Acknowledges report that RHR 'C' has tripped on motor electrical fault</li> <li>• Recognizes / reports that the HPCS injection valve (2CSH*MOV107) failed to open</li> </ul>

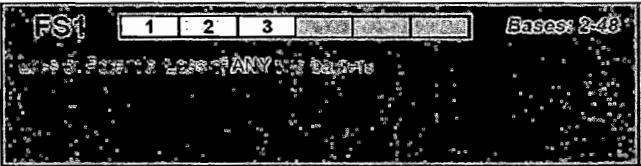
Instructor Actions / Plant Response	Operator Actions
<p><b><u>Role Play:</u></b> If directed, as field operator dispatched to attempt local manual opening of 2CSH*MOV107 wait 3 minutes then <b>insert</b> the following <b>remote</b>:</p> <p><b>TRG9      CS12</b>, CSH*MOV107 600 Volt Bkr Status, FINAL=Open</p> <p>Then report that you are unable to move the valve due to binding</p>	<ul style="list-style-type: none"> <li>• May direct field operator to attempt local opening of 2CSH*MOV107</li> <li>• Acknowledges report of inability to open 2CSH*MOV107</li> </ul>
<p><b><u>Role Play:</u></b> If requested to defeat the HPCS level 8 logic, wait 1 minute and then <b>insert</b> the following <b>remote</b>:</p> <p><b>TRG10      CS14</b>, OPS-CSH01 PNL625 Tst. Sw CSH*MOV107, FINAL=Test</p>	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges report that 2CSH*MOV107 failed to open and that local manual attempt has also failed</li> <li>• Acknowledges RO report of the trip of RHR C</li> <li>• Acknowledges RO report of the loss of power to 2RHS*MOV24A</li> <li>• Continues with N2-EOP-RPV control actions: <ul style="list-style-type: none"> <li>◦ Determines that RPV water level cannot be restored and maintained between 159.3 and 202.3 with available injection systems</li> <li>◦ May direct manual initiation of RCIC</li> </ul> </li> </ul>
	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• If directed, starts the RCIC system in accordance with N2-EOP-HC attachment 5: <ul style="list-style-type: none"> <li>◦ Arms and depresses the RCIC Manual Initiation pushbutton</li> <li>◦ Verifies the following: <ul style="list-style-type: none"> <li>- Gland Seal System Air Compressor Starts</li> <li>- 2ICS*MOV116 opens</li> <li>- 2ICS*MOV120 opens</li> </ul> </li> </ul> </li> </ul>





Instructor Actions / Plant Response	Operator Actions
	<ul style="list-style-type: none"><li>- 2ICS*MOV126 opens</li><li>- When RCIC flow &gt;220 gpm, 2ICS*MOV143 closes</li><li>- When RCIC discharge pressure &gt; reactor pressure, 2ICS*V156 and 2ICS*V157 open</li><li>• Reports that RCIC has been manually started</li><li>• Restores pneumatics to the drywell</li></ul>
	<b><u>SRO</u></b> <ul style="list-style-type: none"><li>• Continues with N2-EOP-RPV control actions:<ul style="list-style-type: none"><li>◦ Determines that RPV water level cannot be maintained above -14 inches with available injection systems</li><li>◦ Transitions to the center leg of N2-EOP-RPV control</li><li>◦ Directs ADS inhibited</li><li>◦ Evaluates EOP Subsystem availability</li></ul></li></ul>
	<b><u>RO</u></b> <ul style="list-style-type: none"><li>• If directed, inhibits ADS using N2-EOP-HC, attachment 5, section 2.0:<ul style="list-style-type: none"><li>◦ Places the DIV I ADS AUTOMATIC INITIATION DISABLE switch to ON AND verifies the associated white light is lit</li><li>◦ Places the DIV II ADS AUTOMATIC INITIATION DISABLE switch to ON AND verifies the associated white light is lit</li><li>◦ Verifies 601521 Division I ADS Automatic Initiation Disabled annunciator is lit</li><li>◦ Verifies 601522 Division II ADS Automatic Initiation Disabled annunciator is lit</li></ul></li></ul>
	<b><u>SRO</u></b> <ul style="list-style-type: none"><li>• Maintains crew oversight and looks ahead</li></ul>



Instructor Actions / Plant Response	Operator Actions
	<p>for potential issues/thresholds.</p> <ul style="list-style-type: none"> <li>Evaluates plant indications for adequate core cooling</li> <li>Looks ahead for potential issues/thresholds</li> <li>Provides EOP implementation oversight</li> </ul>
<p><i>At ~ 4 minutes after event initiation, all RPV level instruments fail upscale</i></p>	<p><b>Crew</b></p> <ul style="list-style-type: none"> <li>Recognizes and reports that reactor water level has gone off scale high on all RPV level instruments</li> </ul>
<p><b>EAL Criteria Met</b>  <i>Indications that Site Area Emergency, EAL FS1:</i></p>  <p><i>Fuel Clad Barrier - Potential Loss (2.3)</i>  <i>Reactor Coolant System Barrier – Loss (2.2)</i></p> <p><b>TIME:</b> _____</p>	
	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>Acknowledges report that reactor water level has gone off scale high on all RPV level instruments</li> <li>Recognizes that entry into N2-EOP-C4 is required</li> <li>Provides crew update for entry into N2-EOP-C4 and exit from N2-EOP-RPV</li> <li>Performs N2-EOP-C4 actions: <ul style="list-style-type: none"> <li>Determines that the reactor will stay shutdown without boron</li> <li>Determines suppression pool level above 192'</li> <li><b><i>Directs all 7 ADS valve opened</i></b></li> </ul> </li> </ul>
	<p><b>RO</b></p>



Instructor Actions / Plant Response	Operator Actions
	<ul style="list-style-type: none"><li>• Acknowledges direction to open all 7 ADS valves.</li><li>• Opens all 7 ADS valves using N2-EOP-HC attachment 5:<ul style="list-style-type: none"><li>◦ Determines that no SRVs are stuck open and that an ECCS pump is operating</li><li>◦ <b>Arms and depresses both ADS logic pushbuttons for both divisions:</b><ul style="list-style-type: none"><li>- <b>Division I:</b><ul style="list-style-type: none"><li>▪ <b>ADS LOGIC "A" manual pushbutton</b></li><li>▪ <b>ADS LOGIC "E" manual pushbutton</b></li></ul></li><li>- <b>Division II:</b><ul style="list-style-type: none"><li>▪ <b>ADS LOGIC "B" manual pushbutton</b></li><li>▪ <b>ADS LOGIC "F" manual pushbutton</b></li></ul></li></ul></li></ul></li><li>• Reports to the SRO that all 7 ADS SRVs are opened based on 7 solenoids being energized and all ADS N2 Tanks having acceptable pressure, even though RPV pressure is too low for acoustic red light indications.</li></ul>
	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"><li>• Acknowledges report that 7 ADS valves are open</li><li>• Continues with N2-EOP-C4 actions:<ul style="list-style-type: none"><li>◦ Directs the following valves closed:<ul style="list-style-type: none"><li>- MSIVs</li><li>- Main Steam Line Drain Isolations</li><li>- RCIC/RHS steam isolations</li></ul></li></ul></li></ul>
<p>Note: MF MS13 MSIV Isolation Failure will keep the MSIVs open, requiring manually operator action to close them for RPV Flooding.</p>	<p><b><u>Crew</u></b></p> <ul style="list-style-type: none"><li>• Acknowledges direction to verify MSIVs, Main Steam Line Drain Isolations and RCIC/RHS steam isolations all closed</li></ul>

Instructor Actions / Plant Response	Operator Actions
	<ul style="list-style-type: none"> <li>• Closes the MSIVs</li> <li>• Closes the Main Steam Line Drain Isolations</li> <li>• Verifies closed the RCIC/RHS steam isolations</li> </ul>
	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• Reports to the SRO that the MSIVs, Main Steam Line Drain Isolations and RCIC/RHS steam isolations are closed</li> </ul>
<p><b><u>Role Play:</u></b></p> <p>If directed as a field operator to attempt to determine breaker power supply issue with 2RHS*MOV24A wait 3 minutes and report that 2EHS*MCC103-17C is in the trip free position and cannot be reset or placed in ON.</p> <p>If directed as a field operator to attempt to locally manually open 2RHS*MOV24A, then wait 5 minutes and report that you are unable to move the valve due to binding.</p>	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• May direct field operator to attempt local opening of 2RHS*MOV24A</li> <li>• Acknowledges report of inability to open 2RHS*MOV24A</li> <li>• Reports to the SRO that 2RHS*MOV24A cannot be opened.</li> </ul>
<p>If directed to defeat the RCIC level 8 trips, <b>manually insert</b> the following <b>remote</b>:</p> <ul style="list-style-type: none"> <li>• <b>RC02A</b>, RCIC Level 8 Trip Defeat:Withdraw Trip Units N693A,E</li> </ul>	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges RO report that 2RHS*MOV24A cannot be opened.</li> <li>• Acknowledges report that the MSIVs, Main Steam Line Drain Isolations and RCIC/RHS steam isolations are closed <ul style="list-style-type: none"> <li>◦ Reviews Detail Q (RPV Flooding Systems) of N2-EOP-C4 and determines that: <ul style="list-style-type: none"> <li>– RHS 'A' injection through shutdown cooling is available</li> </ul> </li> <li>◦ <b><i>Directs RO to inject with RHS 'A' through shutdown cooling</i></b></li> </ul> </li> </ul>

Instructor Actions / Plant Response	Operator Actions
	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>• Acknowledges direction to inject with RHS 'A' an 'B' through shutdown cooling</li> <li>• Waits for reactor pressure to lower to the RHR open permissive pressure setpoint</li> </ul>
<p>When attempt is made to manually open 2RHS*MOV24B from panel 603, the following <b>malfunction</b> becomes <b>apparent</b>:</p> <ul style="list-style-type: none"> <li>• <b>RH02B</b>, RHR Low Pressure Injection Valve - Fails To Open (MOV24B), FINAL=True</li> </ul> <p><b>Role Play:</b> When and if directed as field operator to locally manually open 2RHS*MOV24B, wait 4 minutes then <b>insert</b> the following <b>remote</b>:</p> <p><b>TRG11 RH34</b>, RHS*MOV24B 600 V Bkr Status, FINAL=Open</p> <p>Then report that you are unable to open the injection valve</p>	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>• Recognizes/reports that 2RHS*MOV24B failed to open automatically as designed</li> <li>• Attempts manual opening of 2RHS*MOV24B from panel 601</li> <li>• Recognizes/reports that 2RHS*MOV24B failed to open from the control room</li> <li>• Dispatches a field operator locally to attempt local manual opening of 2RHS*MOV24B</li> <li>• Acknowledges field operator report that 2RHS*MOV24B cannot be opened locally from the field</li> <li>• Inform the SRO that 2RHS*MOV24B cannot be opened locally from the field</li> </ul>
<p><b>Role Play:</b> If requested to defeat the HPCS level 8 logic, wait 1 minute and then <b>manually insert</b> the following <b>remote</b>:</p> <ul style="list-style-type: none"> <li>• <b>CS14</b>, OPS-CSH01 PNL625 Tst. Sw CSH*MOV107, FINAL=TEST</li> </ul>	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>• Acknowledges report of inability to open 2RHS*MOV24B from the control room</li> <li>• Verifies that a field operator has been dispatched to attempt local manual opening of 2RHS*MOV24B</li> <li>• Acknowledges RO report that 2RHS*MOV24B cannot be opened locally from the field</li> </ul>



Instructor Actions / Plant Response	Operator Actions
	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"> <li>• Re-reviews Detail Q (RPV Flooding Systems) of N2-EOP-C4 and determines that RHS 'B' injection through shutdown cooling is available</li> <li>• <b><i>Directs RO to inject with RHR 'B' Through shutdown cooling per N2-EOP-6.30</i></b></li> <li>• Directs CRD injection maximized per N2-OP-30, section H.3.0</li> </ul>
<p><b><u>Role Play:</u></b></p> <p>When directed to lift and tape leads and install jumper #9 to defeat the group 5 isolation interlocks, <b>insert</b> the following <b>malfunction</b>:</p> <p><b>TRG12 RH08</b>, Group 5 Isolation Failure - (RHS*MOV122/113), FINAL=True</p> <p>Wait 2 minutes, and then report that the lead has been lifted and taped and jumper #9 has been installed.</p>	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges direction to line up RHR 'A' &amp; 'B' for shutdown cooling injection per N2-EOP-6.30</li> <li>• Lines up RHR 'A' &amp; 'B' for shutdown cooling injection per N2-EOP-6.30 <ul style="list-style-type: none"> <li>◦ Verifies closed the following valves: <ul style="list-style-type: none"> <li>– 2RHS*MOV15A &amp; B, OUTLET TO DRYWELL SPRAY</li> <li>– 2RHS*MOV8A &amp; B, HEAT EXCHANGER 1A &amp; B INLET BYPASS VLV (WHEN possible)</li> <li>– 2RHS*MOV33A &amp; B, OUTLET TO SUPPR POOL SPRAY</li> <li>– 2RHS*FV38A &amp; B, RETURN TO SUPPR POOL COOLING</li> <li>– 2RHS*MOV24A &amp; B, LPCI A &amp; B INJECTION VLV</li> <li>– 2RHS*MOV40A &amp; B, SDC A &amp; B RETURN</li> </ul> </li> <li>◦ Defeats group 5 isolation interlocks for 2RHS*MOV40A &amp; B as follows: <ul style="list-style-type: none"> <li>– Lifts AND tapes the lead on terminal point BB-58 &amp; 62</li> <li>– Installs EOP Jumper #24 &amp; #9 on terminal points BB-49 &amp; 41 AND AA-72 &amp; BB-60</li> </ul> </li> </ul> </li> <li>• Verifies 2RHS*P1A &amp; B, PMP 1A &amp; B are</li> </ul>



Instructor Actions / Plant Response	Operator Actions
	<p>running</p> <ul style="list-style-type: none"> <li>Verifies open 2SWP*MOV90A &amp; B, HEAT EXCHANGER 1A &amp; B SVCE WTR INLET VLV</li> <li><b>Throttles open 2RHS*MOV40A &amp; B, SDC A(B) RETURN (2CEC*PNL601) to a maximum of 7450 gpm on E12-R603A &amp; B, RHR A &amp; B TOTAL FLOW meter</b></li> <li>Reports to the SRO that RHR 'A' &amp; 'B' are injecting through shutdown cooling</li> </ul>
<p><u>Note:</u> The following role play is to be acknowledged only. It is not the intent to perform the actions.</p> <p><b>Role Play:</b> If directed to lineup fire water and/or CNS to LPCS acknowledge the direction.</p>	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>Acknowledges direction to maximize CRD injection</li> <li>Reviews N2-OP-30, section H.3.0</li> <li>Performs N2-OP-30, section H.3.0 actions: <ul style="list-style-type: none"> <li>Verifies RPS tripped</li> <li>Verifies 2RDS-P1A and RDS-P1B running</li> <li>Places 2RDS-FC107, CRD Flow Control, in manual</li> <li>Opens 2RDS-FC107 until RDS pump motor current approaches 40 amps or controller output meter is 100%</li> <li>Opens 2RDS-PV101 until RDS pump motor current approaches 40 amps or fully open</li> <li>Monitors RDS pump motor current</li> </ul> </li> <li>Reports to the SRO that CRD injection is maximized</li> </ul>
	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>Acknowledges report that CRD injection is maximized</li> <li>Acknowledges report that RHR 'A' &amp; 'B' is injecting through shutdown cooling</li> <li>May direct SLS injection from the boron tank per N2-OP-36A, section H.1.0</li> <li>Directs RO to monitor for RPV level at or</li> </ul>



Instructor Actions / Plant Response	Operator Actions
	<p>above the main steam lines</p> <ul style="list-style-type: none"><li>• Evaluates N2-EOP-PC actions:<ul style="list-style-type: none"><li>◦ Determines that suppression chamber pressure is greater than 10 psig</li><li>◦ Determines suppression pool level below elevation 217'</li><li>◦ Determines that the plant is inside the drywell spray initiation limit</li><li>◦ Determines that drywell sprays cannot be operated due to remaining ECCS pumps being required for adequate core cooling</li><li>◦ Determines the need to keep trying to lower primary containment pressure below 1.68 psig</li><li>◦ Determines that cannot stay inside the Pressure suppression pressure figure</li><li>◦ Determines the need to perform an RPV blowdown</li><li>◦ Recognizes that a blowdown has already been performed</li><li>◦ Monitors proximity to exceeding the primary containment pressure limit</li><li>◦ Determines that the primary containment pressure limit will is not being exceeded and continues to monitor</li></ul></li></ul>
	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"><li>• If directed injects with SLS in accordance with N2-OP-36A, Section H.1.0</li><li>• Performs N2-OP-36A, Section H.1.0 actions:<ul style="list-style-type: none"><li>◦ Places 2SLS*P1A, PMP 1A, keylock control switch momentarily to PUMP A RUN</li><li>◦ Places 2SLS*P1B, PMP 1B, keylock control switch momentarily to PUMP B RUN</li></ul></li></ul>





Instructor Actions / Plant Response	Operator Actions
	<ul style="list-style-type: none"><li>◦ Verifies the following:<ul style="list-style-type: none"><li>– 2SLS*MOV1A, SLC STORAGE TK OUTLET VLV, open</li><li>– 2SLS*MOV1B, SLC STORAGE TK OUTLET VLV, open</li><li>– 2SLS*P1A running</li><li>– 2SLS*P1B running</li><li>– 2SLS*VEX3A, SQUIB VLV READY white light out</li><li>– 2SLS*VEX3B, SQUIB VLV READY white light out</li><li>– 2SLS*P1A Discharge Pressure greater than Reactor Pressure</li><li>– 2SLS*P1B Discharge Pressure greater than Reactor Pressure</li><li>– SLS Storage Tank Level lowering</li><li>– SLS Total Flow approximately 86 gpm (two pumps running)</li></ul></li><li>◦ Verifies 2WCS*MOV112, CLEANUP SUCT OUTBD ISOL VLV, closed</li><li>◦ Verifies 2WCS*MOV102, CLEANUP SUCT INBD ISOL VLV, closed</li><li>◦ Throttles open 2WCS-MOV110, CLEANUP DEMIN BYPASS VLV, to avoid over pressurizing WCS Pump suction piping</li><li>• Reports to the SRO that SLS injection has been performed</li></ul>
<p><u>Note:</u> Indications that can be used to determine RPV level at or above the main steam lines are as follows:</p> <ul style="list-style-type: none"><li>• Red light indication (acoustic monitors) for all 7 ADS valves</li><li>• Recorder B22-R614, "Auto Depress / safety Valve Temperature" indicates ADS SRV tailpipe temperatures at ~200°F</li></ul>	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"><li>• Acknowledges direction to monitor for RPV level at or above the elevation of the main steam lines</li><li>• Reports to the SRO that RPV water level is at the elevation of the main steam lines</li></ul>

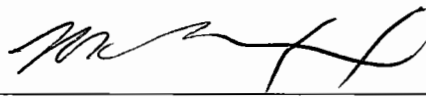



Instructor Actions / Plant Response	Operator Actions
<p>The above listed items should all be evaluated before the determination is made that RPV level is at the elevation of the main steam lines. The crew should not rely on one single indication to make the determination.</p> <ul style="list-style-type: none"><li>• All seven ADS open indication red lights illuminate approximately 10 minutes after CSL and RHR'B' flow has been established</li><li>• ADS SRV tailpipe temperatures lower to ~200°F indicating subcooled ECCS water passing through the open SRVs.</li></ul>	
<p><u>Note:</u> The crew may choose not to make the final determination that RPV level is at the elevation of the main steam lines without tech support guidance. The crew may choose to maintain all available injection to the RPV.</p>	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"><li>• Acknowledges report that SLS is injecting</li><li>• Acknowledges report that RPV water level is at the elevation of the main steam lines</li></ul>
<p><b>Event Termination Criteria</b></p>	<ul style="list-style-type: none"><li>• RPV has been flooded to the main steam lines</li></ul>

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Training Id: **NMP2 NRC 2019 Scenario 2**Revision: **0.0**

**PC2, Loss of inventory in suppression pool, RPV Blowdown or**  
Title: **anticipate Blowdown and depressurize to the main condenser.**

	<u>Signature / Printed Name</u>	<u>Date</u>
Developed By	 Mike Alexander	<u>2/19/19</u>
Validated By	<u>Brian Scaglione</u>	<u>8/1/19</u>
	<u>Mark Cappello</u>	<u>8/1/19</u>
	<u>Jim Lai</u>	<u>8/1/19</u>
Facility Reviewer	 Paul Fenn	<u>9/17/19</u>



## References

1. N2-OP-71B, 4.16KV AC Power Distribution
2. N2-OSP-RMC-W@001, Control Room Movement and Position Verification Test
3. N2-OP-96, Reactor Manual Control And Rod Position Indication System
4. N2-SOP-30, Control Rod Drive Failures
5. N2-OP-30, Control Rod Drive
6. N2-OP-100B, HPCS Diesel Generator
7. N2-OP-52, Reactor Building Ventilation
8. N2-OP-53E, Standby Switchgear/Battery Room Ventilation System
9. N2-SOP-29, Sudden Reduction In Core Flow
10. N2-SOP-08, Unplanned Power Changes
11. N2-SOP-101D, Rapid Power Reduction
12. N2-SOP-06, Feedwater Failures
13. N2-SOP-90, Natural Events
14. N2-OP-11, Service Water System
15. N2-OP-86, Loose Part Monitoring
16. N2-IMP-ERS-001, Post Event Data Retrieval
17. N2-MSP-GEN-V001, Revetment Ditch Structure Inspection
18. N2-SOP-101C, Reactor Scram
19. N2-OP-31, Residual Heat Removal System
20. N2-OP-33, High Pressure Core Spray System
21. N2-EOP-PC, Primary Containment Control
22. N2-EOP-RPV, RPV Control

- 23. N2-EOP-C2, RPV Blowdown
- 24. N2-EOP-SC, Secondary Containment Control
- 25. N2-EOP-HC, EOP Hard Cards Procedure
- 26. N2-ARP-601700, 2CEC\*PNL601 Series 700 Alarm Response Procedures
- 27. N2-ARP-602200, 2CEC\*PNL602 Series 200 Alarm Response Procedures
- 28. N2-ARP-603100, 2CEC\*PNL603 Series 100 Alarm Response Procedures
- 29. N2-ARP-603200, 2CEC\*PNL603 Series 200 Alarm Response Procedures
- 30. N2-ARP-603300, 2CEC\*PNL603 Series 300 Alarm Response Procedures
- 31. N2-ARP-603400, 2CEC\*PNL603 Series 400 Alarm Response Procedures
- 32. N2-ARP-842100, 2CEC\*PNL842 Series 100 Alarm Response Procedures
- 33. N2-ARP-851400, 2CEC\*PNL851 Series 400 Alarm Response Procedures
- 34. N2-ARP-851500, 2CEC\*PNL851 Series 500 Alarm Response Procedures
- 35. N2-ARP-852300, 2CEC\*PNL852 Series 300 Alarm Response Procedures
- 36. N2-ARP-871400, 2CEC\*PNL871 Series 400 Alarm Response Procedures
- 37. EP-CE-113, Personnel Protective Actions
- 38. EP-CE-114-100, Emergency Notifications
- 39. EP-AA-1013 Addendum 4 Appx 1 NMP-Exproc, NMP Unit 2 EAL Wallboard
- 40. N2-TSPEC, NMPNS UNIT 2 IMPROVED TECHNICAL SPECIFICATIONS (Volume 1, 2, 3)
- 41. OP-AA-112-101, Shift Turnover and Relief

## Instructor Information

### **A. Scenario Description**

1. Sequence of Events / Expected Crew Response
  - a. The scenario begins at rated power above the 100% rodline with 2IAS-C3C out of service for unloader valve replacement.
  - b. Event 1 is the BOP evolution to perform a Live Bus Transfer of 2NNS-SWG013 to 2NNS-SWG012. The BOP will check closed the following breakers AND verify that 2NNS-SWG011 AND 2NNS-SWG012 are energized:
    - BREAKER 11-3, (Auxiliary Transformer to 2NNS-SWG011 Feeder)
    - BREAKER 11-1, (2NNS-SWG011 to 2NNS-SWG012 Feeder)

The BOP will then verify that voltages on 2NNS-SWG011 AND 2NNS-SWG013 are approximately equal and then close BREAKER 13-10, (2NNS-SWG013 to 2NNS-SWG012 Feeder) and open BREAKER 13-6.
  - c. Event 2 is the normal evolution performed by the ATC operator to perform N2-OSP-RMC-W@001 Control Room Movement and Position Verification Test. During the performance of N2-OSP-RMC-W@001 a rod position indication failure occurs. The ATC will be required to insert control rod 46-55 one additional notch



to position 44 in accordance with N2-OSP-RMC-W@001 and N2-OP-96. The SRO will also be required to address Technical Specifications.

- d. Event 3 occurs after the T.S. determination, when the online CRD suction filter clogs. This will require the crew to enter N2-SOP-30 to restore system parameters. During the event control rod temperatures will rise, requiring investigation. The crew will perform the actions of N2-SOP-30 and send a field operator to swap suction filters. The event concludes when the standby CRD suction filter has been placed in service, a CRD pump has been restarted and CRD temperatures have been evaluated.
- e. Event 4 occurs when 2ENS\*SWG102 is lost due to an electrical fault that prevents the diesel generator output breaker from closing. The crew will perform an emergency shutdown of the diesel generator and Evaluate Technical Specifications.
- f. Event 5 occurs when the 'B' Feedwater Heater string first point low pressure feedwater heater develops a small tube leak. The crew will recognize the heater string isolation valves closing and enter N2-SOP-8. The ATC will then perform a rapid power reduction using N2-SOP-101D to lower reactor power to 85%;



however, the 'B' feedwater pump will trip on low suction pressure causing a RCS-FCV runback to occur. Reactor operation will end up in the "exit region" of the power to flow map. The crew will enter N2-SOP-29 and insert the first four CRAM rods (*CRITICAL TASK 1*). The BOP will perform the actions of N2-SOP-29 to reset the RCS FCV runback.

- g. Event 6, 7, 8 & 9 occurs when an earthquake greater than the OBE (0.075 g) occurs. The earthquake will cause a crack in the suppression pool wall and an unisolable service water header break in RHR Heat Exchanger Room A. The crew will enter N2-EOP-PC and N2-EOP-SC and take actions to refill the suppression pool and attempt to isolate the leaks. The crew will be unable to recover suppression pool water level and it will continue to lower. Once the crew determines that significant plant damage has occurred, a reactor scram will be directed per N2-SOP-90 and N2-SOP-101C. When the reactor mode switch is taken to shutdown RPS will fail to trip requiring the crew to follow the guidance in N2-SOP-101C and manually initiate RRCS. This will allow control rods to fully insert. The TBVs will fail closed requiring the crew to use SRVs to control RPV pressure. The crew will perform an RPV blowdown (*CRITICAL TASK 2*)





once they determine that suppression pool water level cannot be maintained above the 192' elevation.

## 2. Termination Criteria

- a. Reactor is shutdown
- b. RPV blowdown has been performed

## 3. Critical Tasks

### CT-1.0 Justification:

<b>Safety Significance:</b>	<i>Critical Task 1.0 is identified as critical because without operator action the reactor would be operating in a high power (rodline) low core flow condition which is a condition that could cause core power oscillations which is a precursor to fuel damage.</i>
<b>Cueing:</b>	<i>Annunciators will provide indications of the RCS-FCV runback. N2-SOP-29 provides direction to insert the first four CRAM rods.</i>
<b>Measurable Performance Indicators:</b>	<i>Manual insertion of control rods will provide observable actions for the evaluation team.</i>
<b>Performance Feedback:</b>	<i>Control rod position and Reactor power will provide performance feedback regarding success of crew actions to insert control rods.</i>

- a. CT-1.0, Given the plant operating in the "Exit Region" of the power to flow map due to a RCS-FCV runback, the crew will insert the first four CRAM rods in accordance with N2-SOP-29.

### CT-2.0 Justification:

<b>Safety Significance:</b>	<i>Critical Task 2.0 is identified as critical because the reactor a reactor scram is required "before" the blowdown is initiated to shut down the reactor and reduce the steam generation rate. With the failure of RPS to function, manual action is required to shutdown the reactor.</i>
<b>Cueing:</b>	<i>All eight Pilot Scram Valve Solenoid lights will remain lit and annunciator 603306, CRD Scram Valve Pilot Air Hdr Press High/Low will not be in alarm. N2-SOP-101C provides direction to manually initiate RRCS.</i>
<b>Measurable Performance Indicators:</b>	<i>The crew will arm and depress the Division I &amp; II Channel A and B RRCS initiation pushbuttons.</i>
<b>Performance Feedback:</b>	<i>Annunciator 603306, CRD Scram Valve Pilot Air Hdr Press High/Low will be in alarm. All Control rod full in Blue Lights will be lit and multiple reactor power indications will lower.</i>



- b. CT-2.0, Given the failure of RPS to initiate a successful reactor scram, the crew will manually initiate RRCS in accordance with N2-SOP-101C.

**CT-3.0 Justification:****Safety Significance:**

*Critical Task 3.0 is identified as critical because 192' is the minimum indicated suppression pool level. An on-scale indication is required to ensure that the actual suppression pool level is above the top of the SRV discharge devices. If the SRVs were opened with the discharge devices exposed, steam would pass directly into the suppression chamber airspace, bypassing the suppression pool. The resulting pressure increase could exceed the maximum pressure capability of the primary containment.*

**Cueing:**

*Multiple suppression pool water level indications will indicate water level approaching 192'. N2-EOP-PC provides direction to implement N2-EOP-C2, RPV Blowdown.*

**Measurable Performance Indicators:**

*The crew will manually open SRVs*

**Performance Feedback:**

*SRV instrumentation will provide indication that these valves are functioning properly once placed in service. Multiple Reactor pressure indicators and annunciators will provide performance feedback regarding the success of the blowdown.*

- c. CT-3.0, Given the plant with suppression pool water level that cannot be maintained above the 192' elevation, the crew will commence a RPV blowdown before suppression pool level reaches the 192' elevation in accordance with N2-EOP-PC and N2-EOP-C2.

## 4. Length

- a. 50 minutes

## 5. Mitigation Strategy Code

- a. PC2, Loss of inventory in suppression pool, RPV Blowdown or anticipate Blowdown and depressurize to the main condenser.



6. Technical Specifications (Applicable actions for initial conditions only)

a. None

7. EAL Classification

a. Unusual Event, EAL HU4:

HU4	1	2	3	4	5	D	Basics: 2-144
Seismic event greater than OBE levels.							
See Notes: L, M							
Seismic event as indicated by:							
1. Seismic event > Operating Basis Earthquake (OBE) as indicated by:							
• Computer Point ERSNC02, OBE Detected							
OR							
• ANY amber LED light lit at the Seismic Monitor Panel, Response Spectrum Annunciator.							
OR							
2. When Seismic Monitoring Equipment is <u>not</u> available:							
a. Control Room personnel feel an actual or potential seismic event.							
AND							
b. ANY one of the following confirmed in $\leq 15$ minutes of the event:							
• The earthquake resulted in Modified Mercalli Intensity (MMI) $\geq VI$ and occurred $\leq 3.5$ miles of the plant.							
• The earthquake was magnitude $\geq 6.0$							
• The earthquake was magnitude $\geq 5.0$ and occurred $\leq 125$ miles from the plant.							
• If the above bullets are not able to be confirmed, then the occurrence of a seismic event is confirmed in manner deemed appropriate by the Shift Manager or Emergency Director.							

1)

b. Unusual Event, EAL MU3:

**MU3****Bases: 2-85**

Automatic or manual scram fails to shutdown the reactor.

**See Note: G**

1. a. Automatic scram did not shutdown the reactor as indicated by Reactor Power > 4%.  
**AND**
  - b. Subsequent manual / ARI action taken at the Reactor Control Console is successful in shutting down the reactor as indicated by Reactor Power ≤ 4%.
- OR**
2. a. Manual scram did not shutdown the reactor as indicated by Reactor Power > 4%.  
**AND**
  - b. **EITHER** of the following:
    1. Subsequent manual / ARI action taken at the Reactor Control Console is successful in shutting down the reactor as indicated by Reactor Power ≤ 4%.
    - OR**
    2. Subsequent automatic scram / ARI is successful in shutting down the reactor as indicated by Reactor Power ≤ 4%.

1)

## B. Initial Conditions

### 1. IC Number

- a. IC-021 or equivalent (IC-211 for ILT 18-1)

### 2. Presets / With Triggers

#### a. Malfunctions

- 1) **RP03**, Reactor Protection System Failure To Scram, FINAL = True
- 2) **RD11-46-55**, Control Rod Failure – RPIS (Any), FINAL = True, DT = 2 Sec
- 3) **RD18**, Online CRD Suction Filter Clogged, FINAL = True
- 4) **ED05B**, 4.16KV Emergency Bus Fault (102) Div 3, FINAL = True
- 5) **FW22B1**, FW Heater Tube Leak (B1), FINAL=20

**Inserted**
**TRG1**
**TRG2**
**TRG3**
**TRG4**



- |   |              |
|---|--------------|
| 6) <b>MT01</b> , Seismic Acceleration, FINAL = 1  | <b>TRG6</b>  |
| 7) <b>PC12</b> , Suppression Pool To Reactor Building Leak, FINAL = 10                      | <b>TRG6</b>  |
| 8) <b>TC15A</b> , EHC PMP A Trip, FINAL = TRUE  | <b>TRG7</b>  |
| 9) <b>TC15B</b> , EHC PMP B Trip, FINAL = TRUE  | <b>TRG7</b>  |
| b. Remotes  |              |
| 1) <b>FW03B</b> , FW Aux Lube Oil Pump B, FINAL=START                                       | <b>TRG5</b>  |
| 2) <b>RC02A</b> , RCIC Level 8 Trip Defeat: Withdraw Trip Units N693A,E, FINAL = Defeated   | <b>TRG8</b>  |
| 3) <b>RM02-040</b> , SWP23A SWP From RHR 'A' Ht Exch Rad Monit Online, FINAL = On           | <b>TRG9</b>  |
| 4) <b>RM03-040</b> , SWP23A SWP From RHR 'A' Ht Exch Rad Monit Sample Pmp Power, FINAL = On | <b>TRG9</b>  |
| 5) <b>RM02-041</b> , SWP23B Current Radiation Level Online, FINAL = On                      | <b>TRG10</b> |
| 6) <b>RM03-041</b> , SWP23B Current Radiation Level Sample Pmp Power, FINAL = On            | <b>TRG10</b> |
| 7) <b>RH05</b> , V71 - CNS - RHS A SDC Disch. Line, FINAL = Open                            | <b>TRG11</b> |
| 8) <b>RH03</b> , V22 - CNS - RHS D Disch. Line, FINAL = Open                                | <b>TRG12</b> |



## c. Overrides

1) None

## d. Annunciators

1) None

## e. Event Triggers

Event #	Event Action	Command
1	rdvposb(178)==736 (Activates when control rod 46-55 reaches position 46)	Left Blank
7	zdrps1d==1	Left Blank
13	anntbl(1039)>1	imf pc12 100

## f. Equipment Out of Service

1) 2IAS-C3C out of service for unloader valve replacement

## g. Support Documentation

1) Markup applicable sections of N2-OSP-RMC-W@001 with section 5.0 and 6.1 marked as complete. Markup page 1 of Attachment 1 as complete. Next step to be performed is 6.2 for control rod 34-55.

## h. Miscellaneous

- 1) Place clearance reference tags on the following for 2IAS-C3C:
  - a) 2IAS-C3C with control switch in P-T-L
- 2) Place Protected pathway signs on the following for 2IAS-C3C:



- a) 2IAS-C3A control switch
- b) 2IAS-C3B control switch
- 3) Update EOOS for 2IAS-C3C (For 2 Days)
- 4) Clear APRM #2 trip memory
- 5) Verify the following S-REI-07 pages, which apply to IC-021, are displayed:
  - a) Unit #2 CRAM Rod Listing (S-REI-07 page 16 of 29) in both the CRC book and at panel 602 (attached to N2-SOP-101D).
  - b) Rapid Power Reduction Instructions (S-REI-07 page 15 of 29) in the CRC book only.
  - c) Current Control Rod Positions & Face Adjacent Rods (S-REI-07 page 17 of 29) in the CRC book only.

### C. Shift Turnover Information

1. Reactor Power: 95%
2. Rodline: Above 100%
3. Technical Specification LCOs in effect:
  - a. None
4. Significant Problems / Abnormalities / Equipment Out of Service:
  - a. 2IAS-C3C is out of service for unloader valve replacement.



5. Evolutions / Maintenance Scheduled for this Shift:
- a. Perform a Live Bus Transfer of 2NNS-SWG013 to 2NNS-SWG012 per N2-OP-71B, H.6.0.
  - b. Continue with N2-OSP-RMC-W@001 Control Room Movement and Position Verification Test.



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**SHIFT TURNOVER INFORMATION**ON COMING SHIFT: ☐ N ☒ DDATE: Today

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**PART I: To be performed by the oncoming Operator before assuming the shift.**

- Control Panel Walkdown (all panels) (SRO, ROs)
- 

**PART II: To be reviewed by the oncoming Operator before assuming the shift.**

- LCO Status (SRO)
- Shift Turnover Information Sheet

**Evolutions/General Information/Equipment Status:**

- Reactor power is at 95% due to Reactor Engineering hold to update control rod move sheets.
  - Reactor Engineering hold to update control rod move sheets is complete, ready to continue power reduction.
  - 2IAS-C3C is out of service for unloader valve replacement.
- 
- 
- 
- 

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**PART III: Remarks/Planned Evolutions:**

- Perform a Live Bus Transfer of 2NNS-SWG013 to 2NNS-SWG012 per N2-OP-71B, H.6.0.
  - Continue performance of N2-OSP-RMC-W@001 Control Room Movement and Position Verification Test.
    - Stroke timing is NOT required
    - There is NO failed fuel
    - Continue on page 2 of Attachment 1 for Control Rod 34-55
- 
-



## Shift Turnover

Instructor Actions / Plant Response	Operator Actions
Take the simulator out of freeze before the crew enters for the pre-shift walkdown.  Verify annunciator sound turned on If recording scenario, start the recording device during the pre-shift walkdown	
Allow the crew approximately 10 minutes to walk down control room panels and perform shift turnover brief.	<b><u>Crew</u></b> Walkdown control room panels Conduct shift turnover brief Assume the shift



## Event 1: Perform a live Bus Transfer of 2NNS-SWG013 to 2NNS-SWG012

<b>Event Information</b>	<p>Enter important information about the event here such as:</p> <ul style="list-style-type: none"><li>• Presumed or required initial plant operating conditions<ul style="list-style-type: none"><li>- Reactor Power ~ 95%</li></ul></li><li>• Critical activities or tasks<ul style="list-style-type: none"><li>- Perform a live Bus Transfer of 2NNS-SWG013 to 2NNS-SWG012</li></ul></li><li>• Final (expected) operating result<ul style="list-style-type: none"><li>- Operating at ~95% with 2NNS-SWG013 being powered from 2NNS-SWG012</li></ul></li><li>• Mitigation Strategy code (if applicable)<ul style="list-style-type: none"><li>- N/A</li></ul></li></ul>
<b>Critical Tasks</b> <i>(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)</i>	<p>If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below:</p> <ol style="list-style-type: none"><li>1. None</li></ol>

Instructor Actions / Plant Response	Operator Actions
	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"><li>• Directs the BOP to Perform a live Bus Transfer of 2NNS-SWG013 to 2NNS-SWG012 per OP-71B, Sect H.6.0</li></ul>

Instructor Actions / Plant Response	Operator Actions
	<p><b><u>BOP</u></b></p> <ul style="list-style-type: none"> <li>• Verifies that 2NPS-SWG001 AND 2NPS-SWG003 are being supplied from the same transformer (2STX-XNS1 OR 2RTX-XSR1A OR 1B).</li> <li>• Checks closed BREAKER 13-6, (Auxiliary Transformer to 2NNS-SWG013 Feeder) AND verifies 2NNS-SWG013 is energized.</li> <li>• Checks closed the following breakers AND verifies 2NNS-SWG011 AND 2NNS-SWG012 is energized: <ul style="list-style-type: none"> <li>◦ BREAKER 11-3, (Auxiliary Transformer to 2NNS-SWG011 Feeder)</li> <li>◦ BREAKER 11-1, (2NNS-SWG011 to 2NNS-SWG012 Feeder)</li> </ul> </li> <li>• Verifies voltages on 2NNS-SWG011 AND 2NNS-SWG013 are approximately equal.</li> </ul>
<p><b><u>Note:</u></b> A time delay interlock exists which will allow the Normal Supply and Tie Breaker to be closed for up to 15 seconds when all supplies are from a common source. Paralleling of supplies in the following two steps should be performed in less than 15 seconds or the Tie Breaker (13-10) will trip open.</p>	<ul style="list-style-type: none"> <li>• Closes BREAKER 13-10, (2NNS-SWG013 to 2NNS-SWG012 Feeder).</li> <li>• Opens BREAKER 13-6.</li> <li>• Verifies voltage on the following buses at approximately 4160 volts: <ul style="list-style-type: none"> <li>◦ 2NNS-SWG011</li> <li>◦ 2NNS-SWG012</li> </ul> </li> </ul>
<p><b><u>Role Play:</u></b> If contacted as a EO to ensure proper breaker operation in the field, wait two minutes and inform them that proper breaker operation was observed.</p>	<p><b><u>BOP, (cont.)</u></b></p> <ul style="list-style-type: none"> <li>◦ 2NNS-SWG013</li> <li>• Informs SRO that the live Bus Transfer of 2NNS-SWG013 to 2NNS-SWG012 has been completed</li> </ul>



<b>Event Termination Criteria</b>	Bus Transfer of 2NNS-SWG013 to 2NNS-SWG012 has been completed
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## Event #2 – Control Rod Functional Test and Loss of Rod Position Indication

<b>Event Information</b>	Enter important information about the event here such as: <ul style="list-style-type: none"> <li>• Presumed or required initial plant operating conditions <ul style="list-style-type: none"> <li>- Reactor at power</li> </ul> </li> <li>• Critical activities or tasks <ul style="list-style-type: none"> <li>- Insert control rod 46-55 to position 44</li> </ul> </li> <li>• Final (expected) operating result <ul style="list-style-type: none"> <li>- Operating with control rod 46-55 at position 44</li> </ul> </li> <li>• Mitigation Strategy code (if applicable) <ul style="list-style-type: none"> <li>- N/A</li> </ul> </li> </ul>
<b>Critical Tasks</b> <i>(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)</i>	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: <ol style="list-style-type: none"> <li>2. None</li> </ol>

Instructor Actions / Plant Response	Operator Actions
	<u><b>SRO</b></u> <ul style="list-style-type: none"> <li>• Directs ATC to continue performance of functional test N2-OSP-RMC-W@001</li> </ul>
	<u><b>ATC</b></u> <ul style="list-style-type: none"> <li>• Acknowledges SRO direction to continue performance of N2-OSP-RMC-W@001</li> <li>• Verifies control rod 34-55 is the next control rod to be tested from Attachment 1:</li> <li>• Selects control rod 34-55</li> <li>• Verifies that there are NO Rod Insert Blocks present</li> <li>• Performs the following to insert control rod: <ul style="list-style-type: none"> <li>◦ Using normal Drive Water differential</li> </ul> </li> </ul>



Instructor Actions / Plant Response	Operator Actions
	<p>pressure of 250 to 265 psid, inserts control rod 34-55 one notch</p> <ul style="list-style-type: none"><li>• Records new control rod position on Control Rod Movement and Position Indication Verification Data Sheet.</li><li>• Monitors nuclear instrumentation response</li><li>• Confirms 4-Rod Display indicates proper rod position, AND IF so, checks-off this step on Control Rod Movement and Position Indication Verification Data Sheet.</li><li>• Performs one of the following to withdraw control rod:<ul style="list-style-type: none"><li>◦ Using normal Drive Water differential pressure of 250 to 265 psid, withdraws control rod to its pre-test position</li></ul></li><li>• IF Control Rod's final position is 48, THEN Performs the following:<ul style="list-style-type: none"><li>◦ Attempts to withdraw past position 48, by depressing and holding both withdraw and continuous withdraw pushbuttons.</li><li>◦ Confirms and records red Full Out position light for control rod is lit.</li><li>◦ Confirms and records four rod display shows position 48.</li><li>◦ Confirms and records 603444 control rod overtravel does not alarm.</li><li>◦ IF Control Rod Drive withdraw stall flow on C12-R604 (2RDS-FIY112) is less than or equal to 3.5 gpm, THEN RECORD on Attachment 1</li><li>◦ Releases withdraw and continuous withdraw pushbuttons</li></ul></li><li>• Records final control rod position for 34-55 on Attachment 1. Recording rod position verifies position indication operability for prescribed rod.</li><li>• Confirms final position is same as initial position, then indicates results on</li></ul>



Instructor Actions / Plant Response	Operator Actions
	<p>Attachment 1.</p> <ul style="list-style-type: none"><li>• Performs the following for control rod 34-55:<ul style="list-style-type: none"><li>◦ Additional qualified individual initials that all data is accurate AND complete</li><li>◦ Performer initials that all data is accurate AND complete</li></ul></li></ul>
	<p><b><u>ATC</u></b></p> <ul style="list-style-type: none"><li>• Continues on with N2-OSP-RMC-W@001</li><li>• Verifies control rod 38-55 is the next control rod to be tested from Attachment 1:</li><li>• Selects control rod 38-55</li><li>• Verifies that there are NO Rod Insert Blocks present</li><li>• Performs the following to insert control rod:<ul style="list-style-type: none"><li>◦ Using normal Drive Water differential pressure of 250 to 265 psid, inserts control rod 38-55 one notch</li></ul></li><li>• Records new control rod position on Control Rod Movement and Position Indication Verification Data Sheet.</li><li>• Monitors nuclear instrumentation response</li><li>• Confirms 4-Rod Display indicates proper rod position, AND IF so, checks-off this step on Control Rod Movement and Position Indication Verification Data Sheet.</li><li>• Performs one of the following to withdraw control rod:<ul style="list-style-type: none"><li>◦ Using normal Drive Water differential pressure of 250 to 265 psid, withdraws control rod to its pre-test position</li></ul></li><li>• IF Control Rod's final position is 48, THEN Performs the following:<ul style="list-style-type: none"><li>◦ Attempts to withdraw past position 48, by depressing and holding both withdraw and continuous withdraw</li></ul></li></ul>



Instructor Actions / Plant Response	Operator Actions
	<p>pushbuttons.</p> <ul style="list-style-type: none"> <li>◦ Confirms and records red Full Out position light for control rod is lit.</li> <li>◦ Confirms and records four rod display shows position 48.</li> <li>◦ Confirms and records 603444 control rod overtravel does not alarm.</li> <li>◦ IF Control Rod Drive withdraw stall flow on C12-R604 (2RDS-FIY112) is less than or equal to 3.5 gpm, THEN RECORD on Attachment 1</li> <li>◦ Releases withdraw and continuous withdraw pushbuttons</li> <li>• Records final control rod position for 38-55 on Attachment 1. Recording rod position verifies position indication operability for prescribed rod.</li> <li>• Confirms final position is same as initial position, then indicates results on Attachment 1.</li> <li>• Performs the following for control rod 38-55: <ul style="list-style-type: none"> <li>◦ Additional qualified individual initials that all data is accurate AND complete</li> <li>◦ Performer initials that all data is accurate AND complete</li> </ul> </li> </ul>
	<p><b>ATC</b></p> <ul style="list-style-type: none"> <li>• Continues on with N2-OSP-RMC-W@001</li> <li>• Verifies control rod 42-55 is the next control rod to be tested from Attachment 1:</li> <li>• Selects control rod 42-55</li> <li>• Verifies that there are NO Rod Insert Blocks present</li> <li>• Performs the following to insert control rod: <ul style="list-style-type: none"> <li>◦ Using normal Drive Water differential pressure of 250 to 265 psid, inserts</li> </ul> </li> </ul>



Instructor Actions / Plant Response	Operator Actions
	<p>control rod 42-55 one notch</p> <ul style="list-style-type: none"><li>• Records new control rod position on Control Rod Movement and Position Indication Verification Data Sheet.</li><li>• Monitors nuclear instrumentation response</li><li>• Confirms 4-Rod Display indicates proper rod position, AND IF so, checks-off this step on Control Rod Movement and Position Indication Verification Data Sheet.</li><li>• Performs one of the following to withdraw control rod:<ul style="list-style-type: none"><li>◦ Using normal Drive Water differential pressure of 250 to 265 psid, withdraws control rod to its pre-test position</li></ul></li><li>• IF Control Rod's final position is 48, THEN Performs the following:<ul style="list-style-type: none"><li>◦ Attempts to withdraw past position 48, by depressing and holding both withdraw and continuous withdraw pushbuttons.</li><li>◦ Confirms and records red Full Out position light for control rod is lit.</li><li>◦ Confirms and records four rod display shows position 48.</li><li>◦ Confirms and records 603444 control rod overtravel does not alarm.</li><li>◦ IF Control Rod Drive withdraw stall flow on C12-R604 (2RDS-FIY112) is less than or equal to 3.5 gpm, THEN RECORD on Attachment 1</li><li>◦ Releases withdraw and continuous withdraw pushbuttons</li></ul></li><li>• Records final control rod position for 42-55 on Attachment 1. Recording rod position verifies position indication operability for prescribed rod.</li><li>• Confirms final position is same as initial position, then indicates results on Attachment 1.</li></ul>

Instructor Actions / Plant Response	Operator Actions
	<ul style="list-style-type: none"> <li>Performs the following for control rod 42-55: <ul style="list-style-type: none"> <li>Additional qualified individual initials that all data is accurate AND complete</li> <li>Performer initials that all data is accurate AND complete</li> </ul> </li> </ul>
<p>When control rod 46-55 reaches position 46 after a 2 second time delay (rdvposb(178)==736), <b>insert</b> the following <b>malfunction</b>:</p> <p><b>TRG1 RD11-46-55</b>, Control Rod Failure – RPIS (Any), FINAL=True, DT=2 Sec</p>	<p><b>ATC</b></p> <ul style="list-style-type: none"> <li>Continues on with N2-OSP-RMC-W@001</li> <li>Verifies control rod 46-55 is the next control rod to be tested from Attachment 1:</li> <li>Selects control rod 46-55</li> <li>Verifies that there are NO Rod Insert Blocks present</li> <li>Performs the following to insert control rod: <ul style="list-style-type: none"> <li>Using normal Drive Water differential pressure of 250 to 265 psid, inserts control rod 46-55 one notch</li> </ul> </li> <li>Recognizes and reports to the SRO that control rod 46-55 has lost position indication</li> <li>Immediately notifies SRO, AND consults Reactor Engineer for instructions as to inserting rod one additional notch until position indication is obtained.</li> </ul>
<p><b>Role Play:</b></p> <p>If asked as Reactor Engineering about inserting control rod 46-55 one additional notch, inform the Crew/SRO to insert control rod 46-55 one additional notch to position 44.</p>	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>Acknowledges RO report that control rod 46-55 has lost position indication</li> <li>Acknowledges N2-OSP-RMC-W@001 requirement to consult Reactor Engineer for instructions as to inserting rod one additional notch until position indication is</li> </ul>

Instructor Actions / Plant Response	Operator Actions
	<p>obtained.</p> <ul style="list-style-type: none"> <li>• Acknowledges Reactor Engineering direction for control rod 46-55</li> <li>• Directs RO to insert control rod 46-55 one additional notch to position 44 in accordance with N2-OSP-RMC-W@001 and N2-OP-96.</li> </ul>
	<p><b><u>ATC</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges SRO direction to insert control rod 46-55 one additional notch to position 44 in accordance with N2-OSP-RMC-W@001 and N2-OP-96.</li> <li>• Performs the following to insert control rod: <ul style="list-style-type: none"> <li>◦ Using normal Drive Water differential pressure of 250 to 265 psid, inserts control rod 46-55 one notch</li> </ul> </li> <li>• Informs SRO that control rod 46-55 has been inserted to position 44.</li> </ul>
	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges report that control rod 46-55 has been inserted to position 44</li> </ul>
<p><b><u>Lead Examiner:</u></b> When operator goes to Panel 615 for RPIS data inform him that step H.2.1 is complete.</p>	<p><b><u>ATC</u></b></p> <ul style="list-style-type: none"> <li>• Performs the actions of N2-OP-96 section H.2.0, "Loss of Rod Position Indication or Control Rod Display": <ul style="list-style-type: none"> <li>◦ Using a copy of Figure 3, RPIS Display Card Indications, records lit LEDs in 2CEC-PNL615</li> <li>◦ Suspends ALL control rod motion, IF only one rod is affected, moves rod in one notch to attempt to restore position indication</li> <li>◦ Attempts to determine the position of the control rod(s) by checking: <ul style="list-style-type: none"> <li>- Demands an OD-7 printout from</li> </ul> </li> </ul> </li> </ul>



Instructor Actions / Plant Response	Operator Actions
	process computer <ul style="list-style-type: none"><li>◦ Informs SRO to refer to Technical Specification 3.1.3 (Modes 1 and 2)</li></ul>
	<b><u>SRO</u></b> <ul style="list-style-type: none"><li>• Evaluates TS 3.1.3</li><li>• May contact RE</li></ul>

<b>Event Termination Criteria</b>	<ul style="list-style-type: none"><li>• T.S. 3.1.3 Evaluated</li></ul>
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## Event 3 – CRD Pump Trip On Low Suction Pressure

<b>Event Information</b>	Enter important information about the event here such as: <ul style="list-style-type: none"> <li>• Presumed or required initial plant operating conditions <ul style="list-style-type: none"> <li>- Plant on-line with 2RDS-P1A in service</li> </ul> </li> <li>• Critical activities or tasks <ul style="list-style-type: none"> <li>- Swap RDS suction filters</li> <li>- Re-start a CRD pump and restore CRD parameters</li> </ul> </li> <li>• Final (expected) operating result <ul style="list-style-type: none"> <li>- Operating with CRD system restored</li> </ul> </li> <li>• Mitigation Strategy code (if applicable) <ul style="list-style-type: none"> <li>- N/A</li> </ul> </li> </ul>
<b>Critical Tasks</b> <i>(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)</i>	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: <ol style="list-style-type: none"> <li>1. None</li> </ol>

Instructor Actions / Plant Response	Operator Actions
<p>When directed by the lead evaluator, <b>insert</b> the following <b>malfunction</b>:</p> <p><b>TRG2      RD18</b>, Online CRD Suction Filter Clogged, FINAL=True</p> <p><i>The following annunciator alarms immediately:</i></p> <ul style="list-style-type: none"> <li>• 603318, CRD Pumps Suction Fltr Diff Pressure High</li> </ul> <p><i>The following annunciators alarm ~ 30 seconds after event initiation:</i></p> <ul style="list-style-type: none"> <li>• 603308, CRD Pump 1A / 1B Auto Trip</li> <li>• 603309, CRD Pump 1A Suction Press Low</li> <li>• 603311, CRD Charging Wtr Pressure Low</li> <li>• 603315, CRD Pump 1B Suction Press Low</li> <li>• 603446, CRD Pump Disch Header Pressure Low</li> </ul>	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>• Silences, acknowledges and reports annunciator 603318</li> <li>• Reviews ARP 603318</li> <li>• Silences, acknowledges and reports annunciator 603308, 603309 and reports that 2RDS-P1A pump has tripped on low suction pressure.</li> <li>• Provides control room update of 2RDS-P1A trip on low suction pressure</li> </ul>

<b>Instructor Actions / Plant Response</b>	<b>Operator Actions</b>
<p><i>The running CRD pump trips (2RDS-P1A)</i></p> <p><i>The following computer points are generated:</i></p> <ul style="list-style-type: none"> <li>• <i>RDSPC12, CRD Pmp Disch Hdr Pr (Low)</i></li> <li>• <i>RDSUC01, CRD Pmp 1A Auto Trip</i></li> <li>• <i>RDSPC01, CRD Charging Wtr Press (Low)</i></li> <li>• <i>RDSPC06, CRD Pmps Suct Fltr D/P (High)</i></li> </ul> <p><i>Approximately 2 minutes later the following annunciator alarms:</i></p> <ul style="list-style-type: none"> <li>• <i>603316, Control rod Temperature High</i></li> </ul>	
	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges RO report of 2RDS-P1A trip on low suction pressure</li> <li>• Provides crew update of 2RDS-P1A trip on low suction pressure and entry into N2-SOP-30</li> <li>• Directs RO to enter and execute N2-SOP-30</li> </ul>
<p><b><u>Role Play:</u></b></p> <p>If dispatched, as field operator, to isolate RDS backfill by closing either 2RDS-V20 or RDS-V2058, wait 3 minutes then report back that 2RDS-V20 (RDS-V2058) has been closed.</p> <p><b><u>Role Play:</u></b></p> <p>When dispatched as operator in the field to swap RDS suction filters per N2-OP-30, section F.1.0 wait 3 minutes and the <b>delete malfunction:</b></p> <ul style="list-style-type: none"> <li>• <b>RD18</b>, Online CRD Suction Filter Clogged</li> </ul>	<p><b><u>RO</u></b> (N2-SOP-30)</p> <ul style="list-style-type: none"> <li>• Performs N2-SOP-30 actions for CRD pump trip: <ul style="list-style-type: none"> <li>◦ Determines that an RDS pump is not running</li> <li>◦ May direct field operator to isolate RDS backfill by closing either: <ul style="list-style-type: none"> <li>- 2RDS-V20</li> <li>OR</li> <li>- 2RDS-V2058</li> </ul> </li> <li>◦ Shifts RDS-FC107 to manual</li> <li>◦ Closes RDS-FC107 to minimum position</li> <li>◦ Determines that the trip was caused by low suction pressure</li> <li>◦ Directs field operator to swap RDS suction filters per N2-OP-30, section F.1.0</li> </ul> </li> <li>• Dispatches field operator to report control</li> </ul>



Instructor Actions / Plant Response	Operator Actions
<p>Then report to the control room that N2-OP-30, section F.1.0 has been performed and that the standby suction filter has been placed in service.</p> <p><i>The following annunciators clear when RDS pump is started:</i></p> <ul style="list-style-type: none"> <li>• 603311, CRD Charging Wtr Pressure Low</li> <li>• 603446, CRD Pump Disch Header Pressure Low</li> </ul> <p><i>The following annunciator clears approximately 1 minute after an RDS pump is started:</i></p> <ul style="list-style-type: none"> <li>• 603316, Control rod Temperature High</li> </ul> <p><b><u>Role Play:</u></b></p> <p>When dispatched as field operator to report control rod temperatures report the following:</p> <ul style="list-style-type: none"> <li>• If request and report is made prior to the CRD pump re-start then report the following control rods and temperatures: <ul style="list-style-type: none"> <li>◦ Control rod is 26-47 at 265°F and rising slowly</li> <li>◦ Control rod is 34-15 at 255°F and rising slowly</li> <li>◦ Control rod is 42-23 at 253°F and rising slowly</li> </ul> </li> <li>• If request and report is made post CRD pump re-start and control rod temp. high annunciator is clear then report the following: <ul style="list-style-type: none"> <li>◦ Control rod is 26-47 at 247°F and lowering slowly</li> <li>◦ Control rod is 34-15 at 243°F and lowering slowly</li> <li>◦ Control rod is 42-23 at 240°F and lowering slowly</li> </ul> </li> </ul>	<p>rod temperature values and trends</p> <ul style="list-style-type: none"> <li>• Acknowledges report that the standby RDS suction filter has been placed in service</li> <li>• Continues on with N2-SOP-30 actions: <ul style="list-style-type: none"> <li>◦ Starts 2RDS-P1A(B)</li> <li>◦ Adjusts RDS flow using RDS-FC107 to approximately 63 gpm</li> <li>◦ Places RDS-FC107 in auto</li> <li>◦ Directs field operator to verify WCS/RCS seal flows and backfill flows per N2-OP-30, sections F.2.5 through F.2.9.</li> </ul> </li> </ul>
<p><b><u>Role Play:</u></b></p> <p>When dispatched as field operator to restore WCS/RCS seal flow or RPV backfill wait 3</p>	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"> <li>• When time permits, conducts a crew transient brief / reverse brief</li> </ul>





Instructor Actions / Plant Response	Operator Actions
minutes and report that it is complete.	
	<b><u>SRO</u></b> <ul style="list-style-type: none"><li>• Maintains crew oversight and looks ahead for potential issues/thresholds.</li><li>• Evaluates E-plan related parameters.</li><li>• Evaluates Risk</li><li>• Evaluates PRA (CDF &amp; LERF)</li></ul>
<b>Event Termination Criteria</b>	<ul style="list-style-type: none"><li>• Standby RDS suction filter placed in service</li><li>• RDS Pump restarted</li></ul>

## Event 4: Loss of 2ENS\*SWG102 (Electrical Fault)

<b>Event Information</b>	Enter important information about the event here such as: <ul style="list-style-type: none"> <li>• Presumed or required initial plant operating conditions <ul style="list-style-type: none"> <li>- Plant at power with Division III available and operable</li> </ul> </li> <li>• Critical activities or tasks <ul style="list-style-type: none"> <li>- Emergency stop HPCS diesel</li> </ul> </li> <li>• Final (expected) operating result <ul style="list-style-type: none"> <li>- Operating with HPCS out of service and unavailable</li> </ul> </li> <li>• Mitigation Strategy code (if applicable) <ul style="list-style-type: none"> <li>- N/A</li> </ul> </li> </ul>
<b>Critical Tasks</b> <i>(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)</i>	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: <ol style="list-style-type: none"> <li>1. None</li> </ol>

Instructor Actions / Plant Response	Operator Actions
<p>When directed by the Lead Evaluator, <b>insert</b> the following <b>malfunction</b>:</p> <p><b>TRG3      ED05B</b>, 4.16KV Emergency Bus Fault (102) Div 3, FINAL = True</p> <p><i>The following annunciator will immediately alarm after TRG 3 is inserted:</i></p> <ul style="list-style-type: none"> <li>• 852308, <i>DIVISION III BUS BYS 002C 125 VDC SYSTEM TROUBLE</i></li> <li>• 852311, <i>EDG 2 TROUBLE</i></li> <li>• 852314, <i>NORMAL SUPPLY BRKR 102-4 AUTO TRIP/ FAIL TO CLOSE</i></li> <li>• 852317, <i>EDG 2 RUNNING</i></li> <li>• 852322, <i>NORMAL SUPPLY TO BUS 102 DIRECTIONAL OVERCURRENT</i></li> <li>• 852330, <i>DIVISION III MCC 201 600V SYSTEM UNDERVOLTAGE</i></li> <li>• 852332, <i>4KV BUS 102 UNDER FREQUENCY</i></li> </ul>	<p><b><u>CREW</u></b></p> <ul style="list-style-type: none"> <li>• Recognizes / reports multiple annunciators on ARP windows 852300 and 601700</li> </ul>



Instructor Actions / Plant Response	Operator Actions
<p><i>NOTE: 852311 clears when the EDG starts; 852322 clears when the fault bus clears and is acknowledged/reset by the RO.</i></p> <p><i>The following computer point is in alarm:</i></p> <ul style="list-style-type: none"><li>• CSHBC09 EDG2 STATUS</li></ul> <p><i>The following annunciators are in alarm:</i></p> <ul style="list-style-type: none"><li>• 601706 HPCS SYSTEM INOPERABLE</li><li>• 601719 HPCS SYS PRESS PMP DISCH PRESS LOW</li><li>• 601727 HPCS ASSOCIATED TRIP UNIT TROUBLE</li><li>• 601729 HPCS PRESS PUMP 2 VALVES MOT OVERLOAD</li><li>• 601738 HPCS ISOLATOR INPUT CD OUT/24V PWR FAIL</li></ul> <p><i>The following HPCS status lights are ON:</i></p> <ul style="list-style-type: none"><li>• PMP SUCT FROM CNDS TK CSH*MOV101</li><li>• PMP 1 INJECT VLV CSH*MOV107</li><li>• TEST BYPASS TO CNDS TK CSH*MOV110</li><li>• PMP SUCT FROM SUPPR POOL CSH*MOV118</li></ul> <p><i>EDG 2 is running without service water cooling; Service Water outlet valves MOV94A and B are closed with no power/indication. 2SWP*FI535 indicates zero flow.</i></p>	
	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"><li>• Performs ARP 852323 actions:<ul style="list-style-type: none"><li>◦ Verifies the automatic responses:<ul style="list-style-type: none"><li>- Trip of breaker 102-4</li><li>- Div III Diesel Generator starts</li><li>- Diesel Output breaker closes (unless locked out)</li></ul></li><li>◦ Performs operator actions:<ul style="list-style-type: none"><li>- Informs US that N2-SOP-03 entry is required and enters N2-SOP-03</li><li>- Reports to US/SM to refer to Technical Specifications Sections 3.5 and 3.8</li></ul></li></ul></li></ul>

Instructor Actions / Plant Response	Operator Actions
	<p><b><u>US</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges RO report that N2-SOP-03 entry is required</li> <li>• Provides crew update for entry into N2-SOP-03</li> <li>• Directs RO to enter N2-SOP-03</li> </ul>
	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• Makes station announcement for entry into N2-SOP-03.</li> </ul>
<p><i>The following annunciators alarm when 2EGS*EG2 is tripped:</i></p> <ul style="list-style-type: none"> <li>• 852303, EDG 2 TRIP</li> <li>• 852343, EDG 2 AUTO START NOT READY</li> </ul> <p><i>The following annunciator clears:</i></p> <ul style="list-style-type: none"> <li>• 852317, EDG 2 RUNNING</li> </ul> <p><i>The following computer points alarm:</i></p> <ul style="list-style-type: none"> <li>• CSHUC04, EDG2 Trip "Tripped"</li> <li>• CSHBC08, EDG2 A/Start Not Ready "Alarm"</li> </ul>	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges US direction to enter N2-SOP-03</li> <li>• Reviews N2-SOP-03, "Loss of 2ENS*SWG102 (DIV III)" section <ul style="list-style-type: none"> <li>◦ Evaluates If/Then statement: <ul style="list-style-type: none"> <li>- Determines that 2ENS*SWG102 is de-energized due to a faulted bus AND HPCS Diesel is running without cooling water.</li> <li>- Using HPCS DIESEL ENGINE EMERGENCY STOP pushbutton on 2CEC*PNL852, immediately trips the HPCS Diesel.</li> </ul> </li> </ul> </li> <li>• Immediately notifies the US that HPCS diesel has been tripped using the EMERGENCY STOP pushbutton per N2-SOP-03</li> </ul>
	<p><b><u>US</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges RO report that HPCS diesel has been tripped using the EMERGENCY STOP pushbutton per N2-SOP-03.</li> </ul>
	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• Performs ARP 852323 actions: <ul style="list-style-type: none"> <li>◦ Verifies the automatic responses: <ul style="list-style-type: none"> <li>- None</li> </ul> </li> </ul> </li> </ul>



Instructor Actions / Plant Response	Operator Actions
<p><b>Role Play:</b> If directed as field operator to investigate 2ENS*SWG102 (DIV III) indications, wait 3 minutes and then report that 2ENS*SWG102-4 phase "A" shows a directional overcurrent.</p>	<ul style="list-style-type: none"> <li>◦ Performs operator actions: <ul style="list-style-type: none"> <li>- Confirms that 2EGS*EG2 is required to be running (LOOP undervoltage start)</li> <li>- Operate the diesel generator in accordance with N2-OP-100B, HPCS DIESEL GENERATOR</li> </ul> </li> <li>• Performs ARP 852330 actions: <ul style="list-style-type: none"> <li>◦ Verifies the automatic responses: <ul style="list-style-type: none"> <li>- None</li> </ul> </li> <li>◦ Performs operator actions: <ul style="list-style-type: none"> <li>- Dispatches an operator to 2EHS*MCC201 to CHECK voltmeter.</li> <li>- Checks voltage on 4KV EMER BUS 102 FEEDS TO 600V EMER MCC 201 at 2CEC*PNL852.</li> <li>- Notifies Electrical Maintenance.</li> <li>- Refers to Technical Specifications Sections 3.5 AND 3.8.</li> <li>- Refers to N2-OP-52 due to loss of 2HVR*UC403A AND 2HVR*UC403B.</li> </ul> </li> </ul> </li> </ul>
<p><i>The following annunciator is in alarm:</i></p> <ul style="list-style-type: none"> <li>• 601738 HPCS ISOLATOR INPUT CD OUT/24V PWR FAIL</li> </ul>	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>• Performs ARP 601738 actions: <ul style="list-style-type: none"> <li>◦ Verifies the automatic responses: <ul style="list-style-type: none"> <li>- None</li> </ul> </li> <li>◦ Performs operator actions: <ul style="list-style-type: none"> <li>- Directs the US/SM to refer to Technical Specifications 3.5.1 and 3.5.2</li> </ul> </li> </ul> </li> </ul>
<p><i>The following annunciators alarm approximately 25 minutes after event initiation:</i></p> <ul style="list-style-type: none"> <li>• 601740 HPCS HIGH PT VENT LEVEL LOW</li> <li>• CSHLC09 HPCS HIGH POINT VENT LVL</li> </ul> <p><i>The following annunciator refrashes when HPCS is placed in PTL:</i></p> <ul style="list-style-type: none"> <li>• 601706, HPCS SYSTEM INOPERABLE</li> </ul>	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>• Performs ARP 601740 actions: <ul style="list-style-type: none"> <li>◦ Verifies the automatic responses: <ul style="list-style-type: none"> <li>- None</li> </ul> </li> <li>◦ Performs operator actions: <ul style="list-style-type: none"> <li>- Places CSH*P1, HPCS PUMP 1 control switch in Pull-To-Lock</li> <li>- Directs the US/SM to refer to</li> </ul> </li> </ul> </li> </ul>



Instructor Actions / Plant Response	Operator Actions
<p><i>The following annunciator alarms when HPCS is placed in PTL:</i></p> <ul style="list-style-type: none"> <li>• 852319, EDG 2 DC CONT POWER FAILURE</li> </ul>	<p>Technical Specifications 3.5.1 and 3.5.2</p>
<p><i>The following annunciators are in alarm:</i></p> <ul style="list-style-type: none"> <li>• 871401 DIVISION III STBY SWGR RM VENT SYSTEM INOPERABLE</li> <li>• 871405 DIVISION III EDG 2 ROOM VENT SYSTEM INOPERABLE</li> <li>• 871419 DIVISION III UNIT COOLERS MOTOR OVERLOAD</li> </ul> <p><i>All HPCS ventilation amber status lights are ON except the two Out of Service status lights</i></p> <p><i>All indication for HPCS ventilation on Panel 871 is de-energized</i></p>	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>• Performs ARP 871401 actions: <ul style="list-style-type: none"> <li>◦ Verifies the automatic responses: <ul style="list-style-type: none"> <li>- UC102 fan trips if running</li> </ul> </li> <li>◦ Performs operator actions: <ul style="list-style-type: none"> <li>- Places *UC102 control switch to PULL TO LOCK on P871.</li> <li>- Checks power supply 2EHS*MCC201A breaker 4E. REPLACE control power fuse as required AND VERIFY that the breaker is ON.</li> <li>- During the time that *UC102 is out of service, Monitors HPCS Switchgear Room temperature on indicator 2HVC*TI111, P871.</li> <li>- Restarts *UC102 WHEN control power is restored by momentarily placing its control switch to "START".</li> <li>- Reviews N2-OP-53E, Attachment 1 (Action 3), Control Bldg. Unit Coolers, for Technical Specification Applicability.</li> </ul> </li> </ul> </li> <li>• Performs ARP 871419 actions: <ul style="list-style-type: none"> <li>◦ Verifies the automatic responses: <ul style="list-style-type: none"> <li>- None</li> </ul> </li> <li>◦ Performs operator actions: <ul style="list-style-type: none"> <li>- Using the Process Computer printout OR screen, DETERMINES which HVR unit cooler brought in the alarm.</li> <li>- Using 2HVR*TIS24A OR 2HVR*TIS24B, CHECKS temperature locally in CSH pump room.</li> <li>- IF possible, manually stops the affected running unit cooler by</li> </ul> </li> </ul> </li> </ul>



Instructor Actions / Plant Response	Operator Actions
	<p>placing its control switch to PULL-TO-LOCK position.</p> <ul style="list-style-type: none"><li>- Reviews N2-OP-52, Attachment 3, Secondary Containment Unit Coolers, for impact on GTS AND component operability.</li><li>- Determines that N2-OP-52, Attachment 3, Action 7.b is applicable, " With BOTH unit coolers in the HPCS pump room inoperable, declare a train of GTS inoperable (GTS 'B') AND in addition declare HPCS inoperable</li><li>- Verifies compliance with N2-OP-52, G.4.0.</li></ul>
	<p><b><u>US</u></b></p> <ul style="list-style-type: none"><li>• Reviews N2-OP-53E, Attachment 1, Control Bldg. Unit Coolers, for Technical Specification Applicability (Action 3)</li><li>• Reviews N2-OP-52, Attachment 3, Action 7b, Secondary Containment Unit Coolers, for impact on GTS AND component operability.</li><li>• Verifies compliance with N2-OP-52, G.4.0.</li></ul>
	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"><li>• Enters SOP-03 Attachment 1, Section 1.6 Fault Identification and Isolation</li><li>• Per Section 1.6.11, if 2ENS*SWG102 is de-energized, verifies the following at Panel 852:<ul style="list-style-type: none"><li>◦ Places 102-1 to PULL-TO-LOCK</li><li>◦ Places 102-4 to PULL-TO-LOCK</li><li>◦ Places 102-5 to PULL-TO-LOCK</li></ul></li><li>• At Panel 601:<ul style="list-style-type: none"><li>◦ Places 2CSH*P1 to PULL-TO-LOCK</li></ul></li></ul>
	<p><b><u>SM</u></b></p>



Instructor Actions / Plant Response		Operator Actions																																																																		
		<ul style="list-style-type: none"> <li>Contacts the following (when time permits):                             <ul style="list-style-type: none"> <li>Shift Manager</li> <li>Work Week Manager for investigation / support</li> <li>Plant Management</li> </ul> </li> </ul>																																																																		
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Instructor Actions / Plant Response	Operator Actions
	<p><b><u>STA/IA</u></b></p> <ul style="list-style-type: none"> <li>• Monitors plant conditions and makes recommendations to the US/SM</li> <li>• Provides independent Technical Specification backup call</li> <li>• Reviews 10CFR50.72 Reportability Requirements per CNG-NL-1.01-1004 <ul style="list-style-type: none"> <li>◦ Determines the event is 8 hour reportable event to the NRC</li> </ul> </li> <li>• Determines Integrated Risk Management using EOOS and determines the CDF/LERF</li> </ul>
<p><b>Event Termination Criteria</b></p>	<ul style="list-style-type: none"> <li>• EDG2 has been shutdown</li> <li>• Or as determined by the Lead evaluator</li> </ul>

## Event 5: First Point Feed Water Heater (1B) Tube Leak

<b>Event Information</b>	Enter important information about the event here such as: <ul style="list-style-type: none"> <li>• Presumed or required initial plant operating conditions <ul style="list-style-type: none"> <li>- Plant in Mode 1</li> </ul> </li> <li>• Critical activities or tasks <ul style="list-style-type: none"> <li>- Inserts the first 4 cram rods</li> <li>- Reset RCS-FCV</li> </ul> </li> <li>• Final (expected) operating result <ul style="list-style-type: none"> <li>- Operating at a reduced power level with one feedwater heating string isolated, FWS-P1B tripped and reactor operation in the heightened awareness region of the power to flow map</li> </ul> </li> <li>• Mitigation Strategy code (if applicable) <ul style="list-style-type: none"> <li>- N/A</li> </ul> </li> </ul>
<b>Critical Tasks</b> <i>(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)</i>	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: <ol style="list-style-type: none"> <li>1. Given the plant operating in the "Exit Region" of the power to flow map due to a RCS-FCV runback, the crew will insert the first four CRAM rods in accordance with N2-SOP-29.</li> </ol>

Instructor Actions / Plant Response	Operator Actions
When directed by lead evaluator <b>insert</b> the following <b>malfunction</b> :  <b>TRG4      FW22B1</b> , FW Heater Tube Leak (B1), FINAL=20	
<i>The plant responds as follows:</i> <ul style="list-style-type: none"> <li>• Shell side water level begins to rise in the 'B' feedwater heater</li> <li>• MWe output lowers</li> <li>• MWth output rises</li> <li>• APRM power begins to rise due to the loss of FWS heating</li> </ul> <i>The following annunciators alarm immediately after event</i>	<u><b>RO</b></u> <ul style="list-style-type: none"> <li>• Recognizes and reports that low pressure feedwater heater string 'B' is isolating.</li> <li>• Makes crew update for low pressure feedwater heater string 'B' isolating.</li> </ul>

Instructor Actions / Plant Response	Operator Actions
<p><i>initiation:</i></p> <ul style="list-style-type: none"> <li>851415, "1st Pt Heater 1A/1B/1C Water Level High"</li> </ul> <p><i>The following computer point is generated:</i></p> <ul style="list-style-type: none"> <li>HDLCC35, "1 Pt Htr E1B Wtr Level (High)"</li> </ul>	
<p><u>Note:</u></p> <p>Crew may perform an initial power reduction to attempt to restore and maintain reactor power less than rated.</p>	<p><u>US</u></p> <ul style="list-style-type: none"> <li>Acknowledges RO report that low pressure feedwater heater string 'B' is isolating</li> <li>Provides crew update for the entry into N2-SOP-8 and N2-SOP-101D</li> <li>Directs RO to enter and execute N2-SOP-8 and N2-SOP-101D</li> </ul>
	<p><u>RO</u></p> <ul style="list-style-type: none"> <li>Begins reactor power reduction to restore and maintain reactor power less than rated</li> </ul>
<p>If the crew reduces reactor power in a timely manner and FWS-P1B does not trip on low suction pressure and when directed by the lead evaluator <b>manually insert</b> the following <b>malfunction</b>:</p> <ul style="list-style-type: none"> <li><b>FW03B</b>, Feedwater Pump Trip (P1B), DT=20 sec, FINAL=True</li> </ul>	<p><u>RO</u></p> <ul style="list-style-type: none"> <li>Performs the actions of N2-SOP-08: <ul style="list-style-type: none"> <li>Determines that a L.P. Feedwater Heater String Isolation is in progress and informs the US that a Power Reduction to approximately 85% is required per N2-SOP-101D</li> </ul> </li> </ul>
	<p><u>US</u></p> <ul style="list-style-type: none"> <li>Acknowledges RO report that a power reduction to ~85% is required</li> <li>Directs RO to reduce Reactor Power to ~85% using recirc flow</li> </ul>
<p><i>Approximately 30 seconds after event initiation, the following annunciators alarm:</i></p> <ul style="list-style-type: none"> <li>851403, 4th Pt Heater Drain Pump 1A/1B/1C Auto Trip</li> <li>851405, 1st Pt Heater 1A/1B/1C Water Level Hi-Hi</li> </ul>	<p><u>RO</u></p> <ul style="list-style-type: none"> <li>Acknowledges direction from US to Reactor Power to ~85% using recirc flow</li> <li>Reduces reactor power using recirc flow</li> <li>Recognizes/reports trip of FWS-P1B</li> <li>Recognizes/reports RCS-FCV runback</li> </ul>

Instructor Actions / Plant Response	Operator Actions
<p>4th point heater drain pump 'B' trips CNM-MOV32B and CNM-MOV33B go full closed</p> <p>FWS-P1B Trips on motor electrical fault</p> <p>When FWS-P1B trips, the following annunciators and computer points alarm:</p> <p>Annunciators:</p> <ul style="list-style-type: none"> <li>• 851509, Reactor Feed Pump 1A/1B/1C Auto Trip</li> <li>• 851519, React Feed Pump 1A/1B/1C Motor Elec Fault</li> <li>• 851523, Cnst Bstr Pmp 2A/2B/2C Suction Flow Low</li> <li>• 851546, Cnst Pump Disch Header Flow Low</li> <li>• 603139, Reactor Water Level High/Low</li> <li>• 603218, OPRM Trip Enabled</li> <li>• 602210, FCV A Part Closure RFP Trip</li> <li>• 602222, FCV B Part Closure RFP Trip</li> </ul> <p>Computer Points:</p> <ul style="list-style-type: none"> <li>• FWSUC06, Rx Feed Pmp P1B Mot Elec (Fault)</li> <li>• CNMFC08, CNST Pump Disch Hdr Flow (Low)</li> <li>• CNMFA06, Rx FW Pmp 2FWS-P1B Flow (Low)</li> </ul>	
<p><b><u>Role Play:</u></b></p> <p>If requested as Equipment Operator to place the control switch for Aux Lube Oil Pump 'B' to start, wait 2 minutes then <b>insert</b> the following <b>remote function</b>:</p> <p><b>TRG5      FW03B, FW Aux Lube Oil Pump B, FINAL=START</b></p> <p>Inform control room that FWL-P2B control switch has been placed in start.</p> <p>After the FWS pump trip and subsequent RCS FCV runback, reactor operation may be in the "Exit Region"</p>	<p><b><u>US</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges RO report that FWS-P1B has tripped</li> <li>• Acknowledges RO report of RCS-FCV runback</li> <li>• Directs entry into N2-SOP-29</li> <li>• Directs entry into N2-SOP-06</li> </ul>
	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• Enters N2-SOP-06</li> <li>• Directs Equipment Operator to place FWL-P2B in start</li> </ul>

Instructor Actions / Plant Response	Operator Actions
	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>Plots position on the 2 loop power to flow map and identifies reactor operation in the "Exit Region"</li> </ul>
<p><b><u>Role Play:</u></b> If directed as field operator to investigate indications on NPS-SWG003, wait 2 minutes and then report that the 86 device is rolled for FWS-P1B.</p>	<p><b><u>STA/IA</u></b></p> <ul style="list-style-type: none"> <li>Provides independent review of position on the power to flow map and concurs with RO that the reactor is operating in the 'Exit Region' of the 2 loop power to flow map</li> </ul>
<p><b><u>Role Play:</u></b> If directed as field operator to investigate indications locally at FWS-P1B, wait 3 minutes and then report that FWS-P1B looks ok. No indications of why it would have tripped.</p>	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>Acknowledges US direction to enter and execute N2-SOP-29</li> <li>Performs N2-SOP-29 actions for the RCS-FCV runback <ul style="list-style-type: none"> <li>Determines at least 1 recirc pump in service</li> <li>Determines that core flow AND power is not within the Scram Region</li> <li>Determines that core flow and power are not within the OPRM dependent stability region</li> </ul> </li> <li>Makes crew update for the need to insert the first four CRAM rods <ul style="list-style-type: none"> <li><b><i>Inserts the first four CRAM rods per N2-SOP-101D</i></b></li> </ul> </li> <li>Informs US that reactor operation remains in the "Exit Region"</li> </ul>
<p><b><u>Role Play:</u></b> If contacted as reactor engineering to verify thermal limits, wait 5 minutes then report that thermal limits are satisfactory.</p>	<p><b><u>US</u></b></p> <ul style="list-style-type: none"> <li>Acknowledges RO report that reactor operation remains in the "Exit Region"</li> <li>Provides crew oversight and reactivity oversight during CRAM rod insertion</li> <li>Provides direction on recirc. flow value target or control rod insertion to exit the 'exit region'</li> </ul>



Instructor Actions / Plant Response	Operator Actions
<i>Reactor operation exits the "Exit Region" and enters the "Heightened Awareness region" of the Power to Flow Map</i>	<b><u>RO</u></b> <ul style="list-style-type: none"><li>• Inserts CRAM rods as directed by the US or adjusts recirc flow as directed to exit the "Exit Region" of the power to flow map.</li><li>• Informs the US that reactor operation is now in the "Heightened Awareness Region" of the power to flow map</li></ul>
	<b><u>US</u></b> <ul style="list-style-type: none"><li>• Acknowledges RO report that reactor operation is now in the "Heightened Awareness Region" of the power to flow map</li></ul>
	<b><u>RO</u></b> <ul style="list-style-type: none"><li>• Recovers from reduction in core flow using N2-SOP-29, Attachment 1 section 1, 2, 3 and 4:<ul style="list-style-type: none"><li>◦ Zeroes the limiter error using the Recirc loop A(B) flow control increase/decrease positioner</li><li>◦ Confirms % servo error is nulled and recirc loop A(B) flow control output is at approximately 35%</li><li>◦ Verifies % M/A error meter is nulled, using the recirc flux control M/A station</li><li>◦ Resets the runback by pushing the FW/CBP PMP TRIP INTK A(B) RESET button at 2CEC*PNL602.</li><li>◦ Raises recirc. flow or inserts control rods, as directed, to exit the 'exit region'</li></ul></li></ul>
	<b><u>STA/IA</u></b> <ul style="list-style-type: none"><li>• Posts/verifies posted the "Heightened</li></ul>

Instructor Actions / Plant Response	Operator Actions
	Awareness Region" sign
	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>Continues with the actions of N2-SOP-08: <ul style="list-style-type: none"> <li>Determines that a L.P. Feedwater Heater String Isolation occurred</li> <li>Determines that the power change was not due to a drifting control rod</li> <li>Determines power change is not due to Recirc FCV motion</li> <li>Monitors Offgas and Main Steam Line Rad Monitors for evidence of fuel failure</li> <li>Determines a loss of feedwater heating has occurred</li> <li>Determines that a reactor power adjustment is not required to maintain <ul style="list-style-type: none"> <li>Reactor Power &lt;3988 MWth</li> <li>FW temperature in the good area of Figure 1</li> <li>HDL-P1A (B,C) flows &lt; 4600 gpm AND current &lt;230 amps</li> <li>Feedpump suction Pressure &gt;300 psig</li> <li>Operating point in the Power/Flow map in an acceptable region</li> </ul> </li> <li>Verifies CNM-AOV101, Low Press Htr String Bypass Vlv, is closed</li> <li>Verifies FWS-MOV102, 6th Point Heaters Bypass Vlv, is closed</li> <li>Determines that the loss of FW heating is not caused by CNM-AOV101 OR FWS-MOV102 being open AND is now closed</li> <li>Performs attachment 1</li> </ul> </li> </ul>
<p><b><u>Role Play:</u></b></p> <p>As reactor engineering, 5 minutes after initial request to evaluate thermal limits, report back that thermal limits have been evaluated as</p>	<p><b><u>STA/IA</u></b></p> <ul style="list-style-type: none"> <li>Provides additional plant parameter monitoring due to plant transient affecting reactor core parameters.</li> </ul>



Instructor Actions / Plant Response	Operator Actions
satisfactory	<ul style="list-style-type: none"><li>• Notifies reactor engineer and requests thermal limit evaluation</li><li>• Maintains crew oversight and looks ahead for potential issues/thresholds.</li><li>• Evaluates E-plan related parameters.</li><li>• Evaluates PRA (CDF &amp; LERF)</li></ul>
<p><u>Note:</u> Shift Manager shall provide crew oversight and not make notification phone calls until plant conditions are stable.</p>	<p><b><u>SM</u></b></p> <ul style="list-style-type: none"><li>• Maintains crew oversight and provides coaching when necessary.</li><li>• Evaluates E-plan to assess potential classification.</li><li>• Consults license bases for minimum allowed feedwater temperature</li><li>• Contacts Work Week Manager for investigation / support. (When time permits)</li><li>• Contacts Plant Management. (When time permits)</li><li>• Contacts Power Control. (When time permits)</li></ul>
<b>Event Termination Criteria</b>	<ul style="list-style-type: none"><li>• The first four cram rods are inserted in accordance with N2-SOP-29 and N2-SOP-101D.</li></ul>

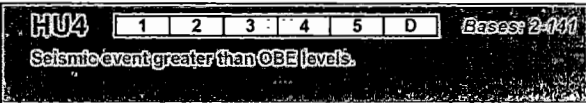


## Event #6, 7, 8 & 9: Seismic Event, Supp Pool Leak, RB SWP Leak

<b>Event Information</b>	Enter important information about the event here such as: <ul style="list-style-type: none"> <li>Presumed or required initial plant operating conditions <ul style="list-style-type: none"> <li>Plant at power with HPCS out of service</li> <li>Ensure the following malfunction has been inserted: <ul style="list-style-type: none"> <li><b>RP03</b>, Reactor Protection System Failure To Scram, FINAL = True</li> </ul> </li> </ul> </li> <li>Critical activities or tasks <ul style="list-style-type: none"> <li>Manual reactor scram</li> <li>RPV Blowdown</li> </ul> </li> <li>Final (expected) operating result <ul style="list-style-type: none"> <li>Reactor scrammed and RPV depressurized</li> </ul> </li> <li>Mitigation Strategy code (if applicable) <ul style="list-style-type: none"> <li>DMS-PC2</li> </ul> </li> </ul>
<b>Critical Tasks</b> <i>(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)</i>	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: <ol style="list-style-type: none"> <li>Given the plant with suppression pool water level that cannot be maintained above the 192' elevation, the crew will commence a RPV blowdown before suppression pool level reaches the 192' elevation in accordance with N2-EOP-PC and N2-EOP-C2.</li> </ol>

Instructor Actions / Plant Response	Operator Actions
When directed by the lead evaluator, <b>insert</b> the following <b>malfunctions</b> :  <b>TRG6</b> <b>MT01</b> , Seismic Acceleration, FINAL = 1  <b>PC12</b> , Suppression Pool To Reactor Building Leak, FINAL = 10	
EAL Criteria Met <ul style="list-style-type: none"> <li>Indications available for Unusual Event, EAL HU4:</li> </ul>	<u><b>Crew</b></u> <ul style="list-style-type: none"> <li>Recognizes / reports the following: <ul style="list-style-type: none"> <li>Annunciators in alarm: <ul style="list-style-type: none"> <li>842121</li> </ul> </li> <li>Possible earthquake</li> </ul> </li> </ul>



Instructor Actions / Plant Response	Operator Actions
 <p><b>See Notes: L, M</b></p> <p>Seismic event as indicated by:</p> <ol style="list-style-type: none"> <li>Seismic event &gt; <b>Operating Basis Earthquake (OBE)</b> as indicated by: <ul style="list-style-type: none"> <li>Computer Point ERSNC02, OBE Detected</li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li><b>ANY</b> amber LED light lit at the Seismic Monitor Panel, Response Spectrum Annunciator.</li> </ul> <p><b>OR</b></p> <li>When Seismic Monitoring Equipment is <b>not</b> available: <ol style="list-style-type: none"> <li>Control Room personnel feel an actual or potential seismic event.</li> </ol> <p><b>AND</b></p> <ol style="list-style-type: none"> <li><b>ANY</b> one of the following confirmed in <math>\leq 15</math> minutes of the event: <ul style="list-style-type: none"> <li>The earthquake resulted in Modified Mercalli Intensity (MMI) <math>\geq VI</math> and occurred <math>\leq 3.5</math> miles of the plant.</li> <li>The earthquake was magnitude <math>\geq 6.0</math></li> <li>The earthquake was magnitude <math>\geq 5.0</math> and occurred <math>\leq 125</math> miles from the plant.</li> <li>If the above bullets are not able to be confirmed, then the occurrence of a seismic event is confirmed in manner deemed appropriate by the Shift Manager or Emergency Director.</li> </ul> </li> </ol> </li> </li></ol>	
<p><i>The following annunciators alarm after event initiation:</i></p> <ul style="list-style-type: none"> <li>851443, REACTOR BLDG GENERAL AREA TANK 2A FLOODING</li> <li>851444, REACTOR BLDG GENERAL AREA TANK 2E FLOODING</li> <li>851453, REACTOR BLDG FLOOR DRAIN SYSTEM TROUBLE</li> </ul>	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>OATC monitors the following: <ul style="list-style-type: none"> <li>Reactor power</li> <li>Reactor water level</li> <li>Reactor pressure</li> </ul> </li> <li>Executes ARP 842121 <ul style="list-style-type: none"> <li>Informs US of requirement to enter N2-SOP-90</li> </ul> </li> </ul>
<p><i>The following computer point Alarms:</i></p> <ul style="list-style-type: none"> <li>ERSNC02, OBE Detected</li> </ul>	<p><b>US/SM</b></p> <ul style="list-style-type: none"> <li>Provides crew update for entry into N2-SOP-90</li> <li>Directs RO to enter and execute N2-SOP-90</li> <li>Verifies plant announcement made for N2-SOP-90 entry</li> </ul>
	<p><b>RO</b> (N2-SOP-90 - Seismic Event)</p> <ul style="list-style-type: none"> <li>Performs N2-SOP-90 actions: <ul style="list-style-type: none"> <li>Determines that significant plant damage has not occurred</li> </ul> </li> </ul>

Instructor Actions / Plant Response	Operator Actions
<p><b><u>Role Play:</u></b> When dispatched to walkdown ECCS Pump Rooms or to inspect reactor building for indications of flooding, wait 5 minutes and when directed by the lead evaluator report the following:</p> <ul style="list-style-type: none"> <li>• Crack in the suppression pool wall on RB 175' elevation ~3 feet long and 5 feet above floor level.</li> <li>• Service water leak in RHR Heat Exchanger Room 'A', unable to isolate leak.</li> </ul> <p><b><u>Role Play:</u></b> If contacted as Unit 1 control room, report that you felt the earthquake and are evaluating for damage. Also, report that Unit 1 is still operating and will not be taking the lead for the event. If contacted as JAF, report that you also felt the earthquake and are currently evaluating your seismic instrumentation.</p> <p><b><u>Role Play:</u></b> If dispatched to place ALL Service water Pump Discharge strainers in continuous backwash in accordance with N2-OP-11, H.3.0, wait 5 minutes and report that ALL Service water Pump Discharge strainers in continuous Backwash</p> <p><b><u>Role Play:</u></b> If directed to perform N2-OP-86, Section H.1.0 to verify operability of lose parts monitor, report that you will coordinate with I &amp; C to verify operability.</p>	<ul style="list-style-type: none"> <li>◦ Determines OBE has been exceeded and recognizes that a plant shutdown is required per N2-SOP-101C</li> <li>◦ Assigns field operators to perform plant equipment walkdowns of: <ul style="list-style-type: none"> <li>- ECCS pump rooms</li> <li>- ECCS Piping</li> <li>- Refuel floor / spent fuel pool</li> <li>- Emergency switchgear / Diesel generators</li> <li>- Pipe tunnels</li> </ul> </li> <li>◦ Contacts Unit 1 AND JAF Control Rooms to communicate receipt of Seismic Event Indications</li> <li>◦ Directs Field operator to place ALL</li> <li>• Service water Pump Discharge strainers in continuous backwash in accordance with N2-OP-11, H.3.0</li> <li>◦ Notifies I &amp; C to perform N2-IMP-ERS-</li> </ul>

Instructor Actions / Plant Response	Operator Actions															
<p><b><u>Role Play:</u></b></p> <p>When dispatched, as field operator, to the relay room to report seismic panel indications wait 4 minutes then report the following:</p> <ul style="list-style-type: none"><li>◦ Event Indicator has turned from black to white</li><li>◦ Tapes are not running</li><li>◦ Event (amber) alarm is off</li><li>◦ 6 amber LED's are lit on the response spectrum annunciator</li></ul>	<p>001, Post Event Data Retrieval</p> <ul style="list-style-type: none"><li>◦ Refers to N2-OP-86, Section H.1.0 to verify operability of lose parts monitor</li><li>◦ Informs SM/STA to evaluate TRM 3.3.7.2, Seismic Monitoring Instrumentation</li><li>◦ Informs SM/STA to evaluate TRM 3.7.6, Revetment Ditch Structure</li><li>◦ Notifies maintenance to perform N2-MSP-GEN-V001, Revetment Ditch Structure Inspection</li><li>◦ May Dispatch an operator to the relay room to report seismic panel indications</li><li>◦ If dispatched, acknowledges report from field concerning relay room seismic panel indications</li><li>◦ Informs US / SM of seismic indications</li><li>• Acknowledges field operator report of crack in suppression pool wall and the service water leak in RHR Heat Exchanger Room 'A'.</li><li>• Provides crew update for field report information</li></ul>															
	<p><b><u>US</u></b></p> <ul style="list-style-type: none"><li>• Oversees / directs crew actions</li><li>• Verifies execution of N2-SOP-90<ul style="list-style-type: none"><li>◦ Determines significant plant damage has occurred due to event</li><li>◦ Directs plant scram per N2-SOP-101C</li></ul></li></ul>															
<p>Note:</p> <table><tr><th>TRM Spec</th><th>Condition</th><th>Applicable Actions</th></tr><tr><td>3.3.7.2</td><td>C</td><td>C.1 &amp; C.2 &amp; C.3 &amp; C.4</td></tr><tr><th>Action</th><th>Description</th><td></td></tr><tr><td>C.1</td><td>Restore seismic monitoring instrument to OPERABLE status. (24 hours)</td><td></td></tr><tr><td>C.2</td><td>Perform TRSR 3.3.7.2.3 (5 days)</td><td></td></tr></table>	TRM Spec	Condition	Applicable Actions	3.3.7.2	C	C.1 & C.2 & C.3 & C.4	Action	Description		C.1	Restore seismic monitoring instrument to OPERABLE status. (24 hours)		C.2	Perform TRSR 3.3.7.2.3 (5 days)		<p><b><u>SM</u></b></p> <ul style="list-style-type: none"><li>• Evaluates plant conditions against Tech Specs/TRM and determines the following apply:<ul style="list-style-type: none"><li>◦ TRM 3.3.7.2 Condition C, Action C.1, C.2, C.3, C.4</li><li>◦ TRM 3.7.6 Condition A, Action A.1</li></ul></li></ul>
TRM Spec	Condition	Applicable Actions														
3.3.7.2	C	C.1 & C.2 & C.3 & C.4														
Action	Description															
C.1	Restore seismic monitoring instrument to OPERABLE status. (24 hours)															
C.2	Perform TRSR 3.3.7.2.3 (5 days)															



Instructor Actions / Plant Response		Operator Actions
C.3	Retrieve data from actuated instruments and analyze to determine the magnitude of the vibratory ground motion. (10 days)	
C.4	Prepare and submit a Special Report to the Commission pursuant to 10 CFR 50.4 describing the magnitude, frequency spectrum, and resultant effect upon unit features important to safety. (10 days)	
TRM Spec	Condition	Applicable Actions
3.3.7.2	A	A.1
Action	Description	
A.1	Pursuant to 10 CFR 50.4, prepare and submit a Special Report to the Commission which includes. (24 hours) a. An explanation of how the elevation change occurred and if the Revetment-Ditch Structure is continuing to change, b. A planned course of repair (if required) and a schedule for accomplishing the repair, c. An evaluation of and justification for continued plant operation, and d. The current elevation of each survey point shown in Table T3.7.6-1	
		<b>STA</b> <ul style="list-style-type: none"><li>Maintains crew oversight and looks ahead for potential issues / thresholds</li></ul>
When annunciator 851443, "Reactor Building General Area Tank 2A Flooding" is received (anntbl(1039) > 1), the following malfunction modifies: <ul style="list-style-type: none"><li>PC12, Suppression Pool To Reactor Building Leak, FINAL = 100</li></ul>		<b>Crew</b> <ul style="list-style-type: none"><li>Recognizes / reports the following:<ul style="list-style-type: none"><li>Annunciators in alarm:<ul style="list-style-type: none"><li>851453, 851443, 851444</li></ul></li><li>N2-EOP-SC entry condition</li></ul></li></ul>



Instructor Actions / Plant Response	Operator Actions
<i>Suppression Pool level begins to lower</i>	
<p><b><u>Role Play:</u></b> When Radwaste contacted for sump pump status, report that pumps are running.</p> <p><i>The following annunciators alarm after event initiation:</i></p> <ul style="list-style-type: none"> <li>• <b>RHR HT EXCH A/B CUBICLE FLOODED</b></li> </ul>	<p><b><u>US</u></b></p> <ul style="list-style-type: none"> <li>• Enters &amp; executes N2-EOP-SC</li> <li>• Determines no HVR isolation setpoint has been exceeded</li> <li>• Directs operating sump pumps to restore and maintain drain sump level below high-high setpoint</li> <li>• Determines cannot remove water from area and transitions to 28</li> <li>• Attempts to isolate all discharges into affected areas</li> <li>• Determines leak is not from primary system</li> <li>• Waits until 2 areas above Maximum Safe Values and then commences plant shutdown</li> </ul>
	<p><b><u>Crew</u></b></p> <ul style="list-style-type: none"> <li>• Recognizes / reports the following: <ul style="list-style-type: none"> <li>◦ Suppression pool water level is lowering</li> </ul> </li> </ul>
	<p><b><u>US</u></b></p> <ul style="list-style-type: none"> <li>• When informed of SWP leak and suppression pool crack <ul style="list-style-type: none"> <li>◦ Determines significant plant damage occurred due to event per N2-SOP-90</li> <li>◦ Directs plant scram per N2-SOP-101C</li> </ul> </li> </ul>
<p>When a manual reactor scram is attempted and the mode switch is placed in shutdown, the following malfunction becomes apparent:</p> <ul style="list-style-type: none"> <li>• <b>RP03</b>, Reactor Protection System Failure To Scram, FINAL = True</li> </ul> <p>When the Mode Switch is placed in shutdown</p>	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges direction to place the mode switch in shutdown</li> <li>• Places mode switch in S/D.</li> <li>• Recognizes and reports the failure of RPS to trip</li> </ul>



Instructor Actions / Plant Response	Operator Actions
<p>(zdrps1d == 1), the following <b>malfunctions</b> become active:</p> <p><b>TRG7</b>      <b>TC15A</b>, EHC PMP A Trip, FINAL = TRUE</p> <p>                 <b>TC15B</b>, EHC PMP B Trip, FINAL = TRUE</p> <p><i>All TBVs fail closed after Mode Switch placed in SHUTDOWN</i></p>	
	<p><b>US</b></p> <ul style="list-style-type: none"><li>• Acknowledges RO report of the failure of RPS to trip</li></ul>
<p><i>Scram Air Header remains pressurized (Ann 603306 NOT lit)</i></p> <p>EAL Criteria Met</p> <ul style="list-style-type: none"><li>• Indications available for Unusual Event, EAL MU3:</li></ul>	<p><b>RO</b></p> <ul style="list-style-type: none"><li>• Continues with N2-SOP-101C scram actions:<ul style="list-style-type: none"><li>◦ Arms AND depresses BOTH Manual Scram pushbuttons on either side of 2CEC*PNL603</li></ul></li><li>• Recognizes that the Scram Air Header is still pressurized (Annunciator 603306 does not alarm)</li><li>• Continues with N2-SOP-101C scram actions:<ul style="list-style-type: none"><li>◦ Manually initiates RRCS</li></ul></li><li>• Recognizes and reports that the reactor has scrammed on the RRCS initiation</li></ul>



Instructor Actions / Plant Response	Operator Actions
<div data-bbox="155 323 786 436"> </div> <p><b>See Note: G</b></p> <ol style="list-style-type: none"> <li>1. a. Automatic scram did <b>not</b> shutdown the reactor as indicated by Reactor Power &gt; 4%. <b>AND</b></li> <li>b. Subsequent manual / ARI action taken at the Reactor Control Console is successful in shutting down the reactor as indicated by Reactor Power ≤ 4%.</li> </ol> <p><b>OR</b></p> <ol style="list-style-type: none"> <li>2. a. Manual scram did <b>not</b> shutdown the reactor as indicated by Reactor Power &gt; 4%. <b>AND</b></li> <li>b. <b>EITHER</b> of the following: <ol style="list-style-type: none"> <li>1. Subsequent manual / ARI action taken at the Reactor Control Console is successful in shutting down the reactor as indicated by Reactor Power ≤ 4%.</li> </ol> <p><b>OR</b></p> <ol style="list-style-type: none"> <li>2. Subsequent automatic scram / ARI is successful in shutting down the reactor as indicated by Reactor Power ≤ 4%.</li> </ol> </li> </ol> <p><i>The following annunciators alarm:</i></p> <ul style="list-style-type: none"> <li>• 603102, RPS A NMS Trip</li> <li>• 603402, RPS B NMS Trip</li> <li>• 603105, RPS A Reactor Wtr Level Low Trip</li> <li>• 603405, RPS B Reactor Wtr Level Low Trip</li> <li>• 603109, RPS A Disch Volume High Level Trip</li> <li>• 603409, RPS B Disch Volume High Level Trip</li> <li>• 603110, RPS A Auto Trip</li> <li>• 603410, RPS B Auto Trip</li> <li>• 603111, RPS A Manual Trip</li> <li>• 603411, RPS B Manual Trip</li> </ul>	<ul style="list-style-type: none"> <li>• Provides scram report, by reporting: <ul style="list-style-type: none"> <li>◦ Reactor mode switch in shutdown</li> <li>◦ APRMs are downscale</li> <li>◦ Reactor pressure value</li> <li>◦ Reactor level and trend</li> <li>◦ MSIVs open</li> <li>◦ Feedwater are running</li> <li>◦ All control rods are fully inserted</li> </ul> </li> <li>• Reports EOP entry condition on low RPV water level</li> </ul>
	<p><b>Crew</b></p> <ul style="list-style-type: none"> <li>• Recognizes /reports that the main turbine bypass valves are failed closed due to loss of EHC pumps</li> </ul>
<p><b>Role Play:</b></p> <p>If requested to attempt to isolate the SWP leak by closing 2SWP*MOV255A, wait 3 minutes and report that you are unable to close the valve.</p>	<p><b>US</b></p> <ul style="list-style-type: none"> <li>• Acknowledges RO report that the main turbine bypass valves have failed closed</li> <li>• Performs EOP-RPV actions: <ul style="list-style-type: none"> <li>◦ Directs scram procedure entered (N2-SOP-101C)</li> </ul> </li> </ul>





Instructor Actions / Plant Response	Operator Actions
	<ul style="list-style-type: none"><li>◦ Performs level control actions<ul style="list-style-type: none"><li>- Verifies needed auto isolations, ECCS starts and diesel generator response occurred per EOP-6.1</li><li>- Determines that RPV water level is known</li><li>- Determines that RPV water level can be restored and maintained between 159.3 and 202.3 inches</li><li>- Directs an RPV level band of 160 - 200 inches</li></ul></li><li>◦ Performs Pressure control actions:<ul style="list-style-type: none"><li>- Determines that SRVs are not cycling</li><li>- Determines that RPV pressure can not be stabilized below 1052 psig using EHC</li><li>- Directs pressure band of 800-1000 psig using SRV's</li></ul></li><li>◦ If drywell pneumatics isolated, directs pneumatics restored</li></ul>
	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"><li>• Acknowledges direction to perform N2-SOP-101C actions</li><li>• Performs N2-SOP-101C actions:<ul style="list-style-type: none"><li>◦ Verifies:<ul style="list-style-type: none"><li>- All rods full in</li><li>- Reactor power lowering</li><li>- Turbine tripped/TSVs &amp; TCVs shut</li><li>- Determines that generator tripped and house loads have no place to transfer</li><li>- SDV V &amp; D Valves closed</li><li>- RCS pumps downshift</li><li>- RPV pressure on TBVs or SRVs FWLC controlling level &gt; 159.3</li></ul></li><li>◦ Determines that the scram can be promptly reset</li></ul></li></ul>

Instructor Actions / Plant Response	Operator Actions
<p><b><u>Role Play:</u></b> If directed to defeat the RCIC level 8 logic, wait 1 minute then manually insert the following remote:</p> <p><b>TRG8</b>     <b>RC02A</b>, RCIC Level 8 Trip Defeat: Withdraw Trip Units N693A,E, FINAL = Defeated</p>	<ul style="list-style-type: none"> <li>◦ Notifies Shift manager to review EP-CE-111 for classification of an emergency</li> <li>◦ Fully inserts IRMs and SRMs</li> <li>◦ Energizes 2WCS-MOV107</li> <li>◦ If required, secures makeup to the cooling tower</li> <li>◦ Shuts down HWC</li> <li>• Acknowledges pressure band of 800-1000 psig using SRV's</li> <li>• May start RCIC</li> </ul>
	<p><b><u>US</u></b></p> <ul style="list-style-type: none"> <li>• May direct RHRA(B) placed in suppression pool cooling</li> </ul>
<p><b><u>Role Play:</u></b> If requested to place radiation monitor 2SWP*RE23A in service, wait 2 minutes and insert the following remote:</p> <p><b>TRG9</b>     <b>RM02-040</b>, SWP23A SWP From RHR 'A' Ht Exch Rad Monit Online, FINAL = On  <b>RM03-040</b>, SWP23A SWP From RHR 'A' Ht Exch Rad Monit Sample Pmp Power, FINAL = On</p> <p>Then report that 2SWP*RE23A is in service.</p> <p><b><u>Role Play:</u></b> If requested to place radiation monitor 2SWP*RE23B in service, wait 2 minutes insert the following remote:</p> <p><b>TRG10</b>     <b>RM02-041</b>, SWP23B Current Radiation Level Online, FINAL = On  <b>RM03-041</b>, SWP23B Current Radiation Level Sample Pmp Power,</p>	<p><b><u>RO</u></b> (N2-OP-31 Section F.4.0)</p> <ul style="list-style-type: none"> <li>• If directed, places RHR A(B) in supp pool cooling <ul style="list-style-type: none"> <li>◦ Notifies Shift Manager to declare RHS A(B) LPCI mode inoperable</li> <li>◦ Directs Radiation Protection Dept. to start radiation monitor 2SWP*RE23A(B)</li> <li>◦ Opens 2SWP*MOV90A(B)</li> <li>◦ Throttles open SWP*MOV33A(B) to establish <math>\leq 7400</math> gpm as indicated on E12-R602A(B)</li> <li>◦ Verifies 2RHS*MOV24A(B) closed</li> <li>◦ Makes plant announcement for the start of 2RHS*P1A(B)</li> <li>◦ Starts 2RHS*P1A(B)</li> <li>◦ Verifies 2RHS*MOV4A(B) open</li> <li>◦ Throttles open 2RHS*FV38A(B) to establish <math>\sim 7450</math> gpm RHR A(B) total flow</li> <li>◦ Verifies 2RHS*MOV4A(B) closed</li> <li>◦ Closes 2RHS*MOV8A(B) to maximize suppression pool cooling</li> </ul> </li> <li>• Informs US that RHR A(B) are in</li> </ul>

Instructor Actions / Plant Response	Operator Actions
<p>FINAL = On</p> <p>Then report that 2SWP*RE23B is in service.</p>	<p>suppression pool cooling</p>
	<p><b>US</b></p> <ul style="list-style-type: none"> <li>Acknowledges RO report that RHRA(B) is in suppression pool cooling</li> </ul>
<p><i>Suppression pool level drops below 199.5 ft</i></p>	<p><b>Crew</b></p> <ul style="list-style-type: none"> <li>Recognizes/reports that suppression pool level has dropped below 199.5 ft</li> </ul>
	<p><b>US</b></p> <ul style="list-style-type: none"> <li>Acknowledges report that suppression pool water level has dropped below 199.5 ft</li> <li>Enters &amp; executes N2-EOP-PC: <ul style="list-style-type: none"> <li>Evaluates all legs concurrently</li> <li>Determines that Suppression Pool Water Level legs directly applies</li> <li>Directs filling suppression pool (N2-OP-31, section H.6.0 or N2-OP-33, section H.3.0)</li> </ul> </li> </ul>
<p><b>Role Play:</b></p> <p>When contacted as field operator to open Condensate Flush Supply valves, insert the applicable remote function:</p> <p><b>TRG11 RH05</b>, V71 - CNS - RHS A SDC Disch. Line, FINAL = Open</p> <p><b>TRG12 RH03</b>, V22 - CNS - RHS D Disch. Line, FINAL = Open</p> <p>2RHS*V21: do nothing (valve stuck)</p> <p>Wait 3 minutes, then make the report for the</p>	<p><b>RO</b> (N2-OP-31 Section H.6.0)</p> <ul style="list-style-type: none"> <li>Verifies LPCI operability requirements</li> <li>Performs the following: <ul style="list-style-type: none"> <li>Depress RHR A (B, C) MANUALLY OUT OF SVCE pushbutton</li> <li>Verifies amber light is lit</li> </ul> </li> <li>Verifies annunciator 601431 (601, 631) RHR A (B,C) SYSTEM INOPERABLE is in alarm</li> <li>Places RHS*P1A (B, C) control switch in PULL-TO-LOCK</li> <li>For the applicable RHR system, unlock AND open the following valve: <ul style="list-style-type: none"> <li>For RHR A, 2RHS*V71</li> </ul> </li> </ul>

Instructor Actions / Plant Response	Operator Actions
<p>applicable valve:</p> <ul style="list-style-type: none"> <li>• 2RHS*V71 is open</li> <li>• 2RHS*V22 is open</li> <li>• 2RHS*V21 is stuck, unable to open valve</li> </ul>	<ul style="list-style-type: none"> <li>◦ For RHR B, 2RHS*V22</li> <li>◦ For RHR C, 2RHS*V21</li> <li>• WHILE maintaining &gt; 70 psig on 2RHS*PI7A (B, C), DISCH PRESS, throttle open RHS*FV38A (B, C)</li> </ul>
<p><u>Note:</u> HPCS switchgear was lost in an earlier event so operations to gravity drain to the suppression pool using HPCS will require local manual valve operation which will take some time. The scenario is written to give the crack location information prior to allowing the use of HPCS to fill the suppression pool.</p> <p><b><u>Role Play:</u></b> If directed as an EO to locally manually close 2SWP*V255A, acknowledge the report only.</p>	<p><b><u>RO</u></b> (N2-OP-33 Section H.2.0)</p> <ul style="list-style-type: none"> <li>• Verify SM has declared CSH System inoperable</li> <li>• Verifies open CSH*MOV101, PUMP SUCT FROM CNDS TK</li> <li>• Monitors AND maintains 2CSH*PI117, HPCS SYSTEM PRESS PMP, to greater than or equal to 65 psig</li> <li>• Throttles open CSH*MOV111, TEST RETURN TO SUPPRESSION POOL to begin transferring water from CST to Suppression Pool</li> <li>• Monitors CST AND Suppression Pool Levels</li> </ul>
<p><i>Suppression pool water level continues to lower with fill sources running</i></p>	<p><b><u>US</u></b> (N2-EOP-PC)</p> <ul style="list-style-type: none"> <li>• Determines unable to maintain suppression pool above 192' elevation</li> <li>• Recognizes that RPV blowdown is required</li> <li>• Provides crew update for entry into N2-EOP-C2 (RPV Blowdown)</li> <li>• Performs actions of N2-EOP-C2 (RPV Blowdown): <ul style="list-style-type: none"> <li>◦ Determines that the reactor will remain shutdown without boron</li> <li>◦ Determines drywell pressure &gt;1.68 psig</li> </ul> </li> <li>• Directs 7 ADS valves opened</li> </ul>
	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges direction to open all 7 ADS valves.</li> <li>• If an ECCS pump is operating performs</li> </ul>


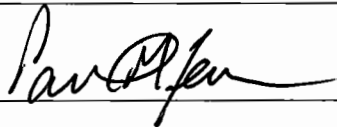
Instructor Actions / Plant Response	Operator Actions
	<p>the following to open all 7 ADS valves using N2-EOP-HC attachment 5:</p> <ul style="list-style-type: none"> <li>◦ Determines that no SRVs are stuck open and that an ECCS pump is operating</li> <li>◦ Arms and depresses both ADS logic pushbuttons for Division I: <ul style="list-style-type: none"> <li>- ADS LOGIC "A" manual pushbutton</li> <li>- ADS LOGIC "E" manual pushbutton</li> </ul> </li> <li>◦ Arms and depresses both ADS logic pushbuttons for Division II: <ul style="list-style-type: none"> <li>- ADS LOGIC "B" manual pushbutton</li> <li>- ADS LOGIC "F" manual pushbutton</li> </ul> </li> <li>• If an ECCS pump is not operating performs the following to open all 7 ADS valves using N2-EOP-HC attachment 5: <ul style="list-style-type: none"> <li>◦ Takes control switches to OPEN at EITHER of the following panels UNTIL a total of 7 SRVs are open: <ul style="list-style-type: none"> <li>- 2CEC*PNL628 <ul style="list-style-type: none"> <li>◦ MSS*PSV137</li> <li>◦ MSS*PSV127</li> <li>◦ MSS*PSV126</li> <li>◦ MSS*PSV121</li> <li>◦ MSS*PSV134</li> <li>◦ MSS*PSV130</li> <li>◦ MSS*PSV129</li> </ul> </li> <li>- 2CEC*PNL631 <ul style="list-style-type: none"> <li>◦ MSS*PSV137</li> <li>◦ MSS*PSV127</li> <li>◦ MSS*PSV126</li> <li>◦ MSS*PSV121</li> <li>◦ MSS*PSV134</li> <li>◦ MSS*PSV130</li> <li>◦ MSS*PSV129</li> </ul> </li> </ul> </li> <li>• Informs US that 7 ADS valves are open</li> </ul> </li> </ul>
<p><u>Note:</u> Shift Manager shall provide crew oversight and not make notification phone calls until plant</p>	<p><b><u>SM</u></b></p> <ul style="list-style-type: none"> <li>• Maintains crew oversight and provides coaching when necessary</li> </ul>

Instructor Actions / Plant Response	Operator Actions
<p>conditions are stable.</p> <p><b><u>Role Play:</u></b> When contacted, respond as appropriate.</p>	<ul style="list-style-type: none"> <li>• Contacts the following (when time permits): <ul style="list-style-type: none"> <li>◦ Work Week Manager for investigation / support</li> <li>◦ Plant Management</li> </ul> </li> </ul>
	<p><b><u>US/SM/STA</u></b></p> <ul style="list-style-type: none"> <li>• Evaluates plant conditions against Tech Specs and determines the following apply: <ul style="list-style-type: none"> <li>◦ None</li> </ul> </li> </ul>
	<p><b><u>SM/STA</u></b></p> <ul style="list-style-type: none"> <li>• Evaluates plant conditions against EALs and determines the following apply: <ul style="list-style-type: none"> <li>◦ Unusual Event EAL HU4/MU3</li> </ul> </li> </ul>
<p><b>Event Termination Criteria</b></p>	<ul style="list-style-type: none"> <li>• Reactor is shutdown</li> <li>• RPV blowdown has been performed</li> </ul>

Copy \_\_\_\_\_ of \_\_\_\_\_

Training Id: **NMP2 NRC 2019 Scenario 4**Revision: **0.0**

**AT2, High power ATWS, inability to maintain level above minimum**  
Title: **steam cooling water level, RPV Blowdown required.**

	Signature / Printed Name	Date
Developed By	 Mike Alexander	2/19/19
Validated By	Brian Scaglione	8/2/19
	Mark Cappello	8/2/19
	Justin Wilcox	8/2/19
Facility Reviewer	 Paul Fenn	7/18/19

## References

1. N2-OSP-RHS-Q@006, RHR System Loop C Pump and Valve Operability Test and System Integrity Test
2. N2-OP-92, Neutron Monitoring
3. N2-ARP-603200, 2CEC\*PNL603 Series 200 Alarm Response Procedures
4. N2-ARP-603400, 2CEC\*PNL603 Series 400 Alarm Response Procedures
5. N2-SOP-08, Unplanned Power Changes
6. N2-SOP-101D, Rapid Power Reduction
7. N2-SOP-14, Loss or Degraded CCS System
8. N2-ARP-852300, 2CEC\*PNL852 Series 300 Alarm Response Procedures
9. N2-ARP-601700, 2CEC\*PNL601 Series 700 Alarm Response Procedures
10. N2-ARP-603100, 2CEC\*PNL603 Series 100 Alarm Response Procedures
11. N2-ARP-601200, 2CEC\*PNL601 Series 200 Alarm Response Procedures
12. N2-ARP-851100, 2CEC\*PNL851 Series 100 Alarm Response Procedures
13. N2-ARP-601200, 2CEC\*PNL601 Series 200 Alarm Response Procedures
14. N2-ARP-852500, 2CEC\*PNL852 Series 500 Alarm Response Procedures
15. N2-ARP-601500, 2CEC\*PNL601 Series 500 Alarm Response Procedures
16. N2-EOP-6.2, Defeating RCIC/Main Turbine Trip Interlock, Steam Line Isolations and High Exhaust Pressure Trip
17. N2-EOP-RPV, RPV Control - Flowchart





- 18. N2-SOP-101C, Reactor Scram
- 19. N2-EOP-6.30, RPV Injection Via Shutdown Cooling Return
- 20. N2-EOP-C5, Failure to Scram
- 21. N2-EOP-6.13, RRCS Manual Initiation
- 22. N2-EOP-6.14, Alternate Control Rod Insertions
- 23. N2-EOP-HC, NMP2 EOP Hard Cards Procedure
- 24. N2-EOP-6.10, Maintaining/Restoring the Main Condenser for RPV Pressure Control
- 25. N2-OP-42, Offgas System
- 26. N2-OP-30, Control Rod Drive
- 27. N2-EOP-C2, RPV Blowdown
- 28. N2-EOP-PC, Primary Containment Control
- 29. N2-EOP-6.3, Throttling ECCS Injection
- 30. EP-CE-113, Personnel Protective Actions
- 31. EP-CE-114-100, Emergency Notifications
- 32. EPIP-EPP-02-EAL, Emergency Action Level Matrix Unit 2
- 33. N2-TSPEC, NMPNS Unit 2 Improved Technical Specifications (Volume 1, 2, 3)
- 34. OP-AA-112-101, Shift Turnover and Relief

## Instructor Information

### A. Scenario Description

1. Sequence of Events / Expected Crew Response
  - a. The scenario begins at rated power with 'C' Narrow Range Level Transmitter failed upscale.
  - b. Event 1 is the normal evolution performed by the BOP operator to perform N2-OSP-RHS-Q@006, RHR System Loop C Pump and Valve Operability Test and System Integrity Test section 8.2 only.
  - c. Event 2 occurs when the "A" RBM fails inop requiring it to be bypassed. T.S. 3.3.2.1 will be evaluated and entered.
  - d. Event 3 occurs when an inadvertent initiation of CSH occurs. The injection valve (CSH\*MOV107) will begin to open and will commence RPV injection. The crew will use redundant diverse indications and verify that the initiation was mis-operation in automatic and place CSH in P-T-L. The crew will evaluate Technical Specifications for the inoperability of CSH.
  - e. Event 4 occurs when control rod 14-39 drifts out; the crew will enter N2-SOP-8 and N2-SOP-101D and insert the control rod and reduce Reactor power to 85% (*CRITICAL TASK 1.0*).



- f. Event 5 occurs when the CCS temperature controller, 2CCS-TIK104, automatic setpoint fails high. This results in a temperature rise in all CCS cooled components. The crew will perform the associated ARP actions for the failure. The crew will take manual control of 2CCS-TIK104 and control CCS outlet temperature between 80-95°F (ARP) or 80-85°F (SOP). The crew will continually evaluate the CCS System and all of its cooled components to ensure further degradation does not occur.
- g. Event 6 occurs when APRM 2 fails downscale. The crew will take action per the ARP's and N2-OP-92 to bypass APRM 2. The SRO will evaluate TS 3.3.1.1 for the inoperable APRM.
- h. Event 7, 8 & 9 starts when a loss of 2NNS-SWG011 occurs. The loss of 2NNS-SWG011 will cause a trip of two of the three condensate pumps. A motor electrical fault trip of the remaining condensate pump will occur resulting in a total loss of the feedwater and condensate system. The crew will recognize the loss of feed and manually scram the reactor. During the scram, all control rods will fail to insert and reactor power will be at ~20%. The crew will enter N2-EOP-C5 and perform required actions. The crew will inhibit ADS (*CRITICAL TASK 2.0*), verify HPCS



injection terminated (already in P-T-L from earlier event) and initiate SLS. When SLS injection is attempted, 2SLS\*MOV1A will fail to open resulting in only one SLS pump (2SLS\*P1B) running. The crew will implement the actions of N2-OP-36A, Attachment 1 and start 2SLS\*P1A by placing "PMP 1A Test 2SLS\*P1A" switch to TEST. RCIC will trip during the transient. The crew will recognize loss of all high pressure injection and determine that RPV water level cannot be restored and maintained above the minimum steam cooling water level (-39 inches) with preferred ATWS injection systems. The crew will determine that a RPV blowdown is required to allow for RHR injection through preferred injection source shutdown cooling (2RHS\*MOV40A/B). The crew will perform the following:

- Terminate and prevent RPV injection prior to the blowdown (*CRITICAL TASK 3.0*)
- Open 7ADS valves (*CRITICAL TASK 4.0*)

When the RPV blowdown has been completed and RPV pressure has dropped below the minimum steam cooling pressure (178 psig), the crew will commence injection with RHR through shutdown cooling (RHS\*MOV40A/B).



When RPV water level is restored  $> -130$  inches, the injecting RHS loop pump will trip, requiring the crew to transition to the opposite RHS loop for injection through its Shutdown Cooling injection valve. The scenario concludes when the crew has restored RPV level above the minimum steam cooling reactor water level (*CRITICAL TASK 5.0*) and has reactor power under control with the power leg actions of N2-EOP-C5. The Shift Manager will classify the event as a Site Area Emergency and make required notifications.

## 2. Termination Criteria

- a. RPV blowdown has been performed
- b. Control Rod insertion is in progress
- c. Reactor level being controlled in assigned band

## 3. Critical Tasks

### CT-1.0 Justification:

#### Safety Significance:

*Critical Task 1.0 is identified as critical because without a power reduction, APRM power will rise above the licensed limit and present a challenge to thermal limits and be a precursor to fuel damage. N2-SOP-08 requires a power reduction to approximately 85%, however the safety significance is to only reduce power below the licensed limit of 3988 MWth.*

#### Cueing:

*Annunciator 603443, "Control Rod Drift" in alarm, rising reactor power, indication of control rod drift on the full core display and control rod position on the Rod Worth Minimizer will provide indication of the control rod drifting out.*

#### Measurable Performance Indicators:

*Operators reducing reactor power using CRAM rods/Reduction in recirc flow will provide observable actions for the evaluation team.*

#### Performance Feedback:

*The insertion of CRAM rods/Reduction in recirc flow and the lowering of reactor power as indicated on 2CEC\*PNL603 will provide performance feedback regarding the success of crew actions.*

- a. CT-1.0, Given the plant at rated power with a control rod drifting out, the crew will reduce



reactor power to approximately 85% in accordance with N2-SOP-8 and N2-SOP-101D.

**CT-2.0 Justification:**

<b>Safety Significance:</b>	<i>Critical Task 2.0 is identified as critical because without operator action the ADS system would automatically open all 7 ADS valves without the low pressure ECCS pumps Terminated and prevented. With a high power ATWS in progress, the pressure transient and resultant uncontrolled injection of relatively cold water would result in fuel damage.</i>
<b>Cueing:</b>	<i>Multiple annunciators and panel meter readings will provide indication of an ATWS with lowering RPV water level and degradation of high pressure injection systems.</i>
<b>Measurable Performance Indicators:</b>	<i>Operators rotating the Div I and Div II ADS Automatic Initiation Disabled keylock switches to the ON position will provide observable actions for the evaluation team.</i>
<b>Performance Feedback:</b>	<i>Annunciator 601521, "Division I ADS Automatic Initiation Disabled", Annunciator 601522, "Division II ADS Automatic Initiation Disabled" along with the Div I and Div II ADS Automatic Initiation Disabled white lights lit will provide performance feedback regarding the success of crew actions.</i>

- b. CT-2.0, Given the plant with a high power ATWS and degraded high pressure preferred injection sources, the crew will inhibit ADS in accordance with N2-EOP-C5.

**CT-3.0 Justification:**

<b>Safety Significance:</b>	<i>Critical Task 3.0 is identified as critical because without operator action, the manual RPV blowdown combined with a high power ATWS in progress would cause the uncontrolled injection of relatively cold water which would result in fuel damage.</i>
<b>Cueing:</b>	<i>Multiple annunciators and panel meter readings will provide indication of an ATWS with lowering RPV water level and degradation of high pressure injection systems.</i>
<b>Measurable Performance Indicators:</b>	<i>Operation of the CSL pump control switch, CSL injection valve control switch, RHS 'A' injection valve control switch, RHS 'B' injection valve control switch, RHS 'C' injection valve control switch, RHS 'C' pump control switch and Feedwater valve controller switches will provide observable actions for the evaluation team.</i>
<b>Performance Feedback:</b>	<i>CSL and RHS 'C' pump indication lights, RHS 'A' and 'B' injection valve light indications, feedwater valve indication and feedwater flow indication on control room pane 603 will provide performance feedback regarding the success of crew actions.</i>

- c. CT-3.0, Given a failure of the reactor to SCRAM and RPV Blowdown required, the crew will terminate and prevent all injection sources



except boron, CRD, and RCIC in accordance with N2-EOP-C2.

**CT-4.0 Justification:**

<b>Safety Significance:</b>	<i>Critical Task 4.0 is identified as critical because without operator action, reactor pressure would remain too high to facilitate the only remaining preferred injection source to inject into the vessel. This would prevent RPV water level from being restored and therefore prevent adequate core cooling from being assured.</i>
<b>Cueing:</b>	<i>Multiple annunciators and panel meter readings will provide indication of an ATWS with lowering RPV water level and degradation of high pressure injection systems.</i>
<b>Measurable Performance Indicators:</b>	<i>Operation of ADS LOGIC Manual Initiation arm and depress control switches with applicable white initiation light response, operation of an additional 'C' solenoid keylock switch and lowering reactor pressure indication will provide observable actions for the evaluation team.</i>
<b>Performance Feedback:</b>	<i>Lowering reactor pressure indication on multiple pressure indicators will provide performance feedback regarding the success of crew actions.</i>

- d. CT-4.0, Given a failure of the reactor to SCRAM with an RPV blowdown required, the crew will open all 7 ADS valves in accordance with N2-EOP-C2.

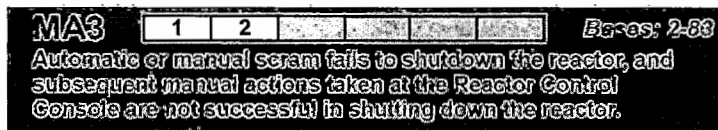
**CT-5.0 Justification:**

<b>Safety Significance:</b>	<i>Critical Task 5.0 is identified as critical because without operator action, no injection will occur. The sources that are available for injection must be manually lined up and therefore failure to perform this step would cause RPV water level to continue to lower below the level at which adequate core cooling is assured.</i>
<b>Cueing:</b>	<i>Multiple reactor pressure indicators will provide will provide indication that reactor pressure is below the MSCP.</i>
<b>Measurable Performance Indicators:</b>	<i>Operators manipulating controls associated with lining up and injecting with RHR A &amp; B through shutdown cooling injection will provide observable actions for the evaluation team.</i>
<b>Performance Feedback:</b>	<i>Multiple reactor level indicators will provide performance feedback regarding the success of crew actions.</i>

- e. CT-5.0, Given a failure of the reactor to SCRAM and the RPV has been blown down per N2-EOP-C2, the crew will resume injection when RPV pressure lowers below the MSCP to restore and maintain RPV water level above the MSCWL in accordance with N2-EOP-C5.



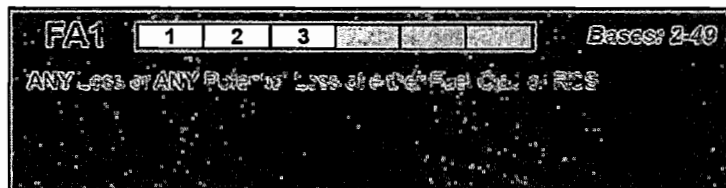
4. Length
  - a. 60 minutes
5. Mitigation Strategy Code
  - a. AT2, High power ATWS, inability to maintain level above minimum steam cooling water level, RPV Blowdown required.
6. Technical Specifications (Applicable actions for initial conditions only)
  - a. None
7. EAL Classification
  - a. Alert, EAL MA3:



**See Note: G**

1. Automatic or manual scram did not shutdown the reactor as indicated by Reactor Power > 4%.  
**AND**
  2. Manual / ARI actions taken at the Reactor Control Console are not successful in shutting down the reactor as indicated by Reactor Power > 4%.
- 1)

- b. Alert, EAL FA1:



1)

- a) RC - Loss 4.2



**B. Initial Conditions**

## 1. IC Number

- a. IC-021 or equivalent

## 2. Presets / With Triggers

- a. Malfunctions

- 1) **FW28C**, Reactor NR Level Transmitter Failure - Upscale (C33-N004C), FINAL = TRUE
- 2) **SL03A**, SLC Pump Suction Valve Fails to Open (2SLS-MOV1A), FINAL = TRUE
- 3) **RD17Z**, RD17 for All Banks, FINAL = 12
- 4) **NM19A**, Rod Block Monitor Failure - Inop (A), FINAL = True
- 5) **CS01B**, HPCS Inadvertent Initiation K11 (Reactor Level 2), FINAL = TRUE
- 6) **RD05-14-39**, Control Rod Failure - Drift Out, FINAL = True
- 7) **NM12B**, APRM Channel Failure - Downscale (2), FINAL = True
- 8) **ED04A**, 4.16KV Normal Bus Fault (SWG11), DELAY=3, FINAL = TRUE
- 9) **FW01B**, Condensate Pump Trip (P1B), DELAY=5, FINAL=TRUE
- 10) **RH08**, Group 5 Isolation Failure - (RHS\*MOV122/113), FINAL = TRUE

**Inserted****Inserted****Inserted****TRG1****TRG2****TRG3****TRG6****TRG7****TRG7****TRG9**



- |   |              |
|---|--------------|
| 11) <b>RP14A</b> , RRCS ARI Failure/Defeated,<br>FINAL = TRUE                           | <b>TRG11</b> |
| 12) <b>RP14B</b> , RRCS ARI Failure/Defeated,<br>FINAL = TRUE                           | <b>TRG11</b> |
| 13) <b>RP02</b> , Reactor Protection System Failure<br>To Scram-Automatic, FINAL = TRUE | <b>TRG12</b> |
| 14) <b>RH01A</b> , RHR Pump Trip (P1A), FINAL =<br>TRUE                                 | <b>TRG14</b> |
| 15) <b>RH01B</b> , RHR Pump Trip (P1B), FINAL =<br>TRUE                                 | <b>TRG15</b> |

## b. Remotes

- |  |              |
|--|--------------|
| 1) <b>RD08-14-39</b> , HCU Drive/Exhaust Water<br>Isolation, FINAL = Close                   | <b>TRG4</b>  |
| 2) <b>CW27</b> , 2CCS-TIK104 Auto Setpoint,<br>FINAL = 110, RT = 2 minutes                   | <b>TRG5</b>  |
| 3) <b>RC10</b> , Defeat RCIC/MT Trip Intlk<br>(EOP-6 ATT 2), FINAL = Defeated                | <b>TRG8</b>  |
| 4) <b>MS06A</b> , Defeat Level One Isolation of<br>MSIVs (Jumper K148A), FINAL =<br>DEFEATED | <b>TRG10</b> |
| 5) <b>MS06B</b> , Defeat Level One Isolation of<br>MSIVs (Jumper K148B), FINAL =<br>DEFEATED | <b>TRG10</b> |
| 6) <b>MS06C</b> , Defeat Level One Isolation of<br>MSIVs (Jumper K148C), FINAL =<br>DEFEATED | <b>TRG10</b> |



- |  |              |
|--|--------------|
| 7) <b>MS06D</b> , Defeat Level One Isolation of MSIVs (Jumper K148D), FINAL = DEFEATED | <b>TRG10</b> |
| 8) <b>RP20A</b> , RPSA1 Scram Logic Bypass C72-S10A, FINAL = BYPASS                    | <b>TRG13</b> |
| 9) <b>RP20C</b> , RPSA2 Scram Logic Bypass C72-S10A, FINAL = BYPASS                    | <b>TRG13</b> |
| 10) <b>RP20B</b> , RPSB1 Scram Logic Bypass C72-S10A, DELAY=10, FINAL = BYPASS         | <b>TRG13</b> |
| 11) <b>RP20D</b> , RPSB2 Scram Logic Bypass C72-S10A, DELAY=10, FINAL = BYPASS         | <b>TRG13</b> |
| 12) <b>RM02-040</b> , SWP23A SWP From RHR 'A' Ht Exch Rad Monit Online, FINAL = On     | <b>TRG16</b> |
| 13) <b>RM03-040</b> , SWP23A SWP From RHR 'A' Ht Exch Rad Monit Power, FINAL = On      | <b>TRG16</b> |
| 14) <b>RM02-041</b> , SWP23B Current Radiation Level Online, FINAL = On                | <b>TRG17</b> |
| 15) <b>RM03-041</b> , SWP23B Current Radiation Level Power, FINAL = On                 | <b>TRG17</b> |

## c. Overrides

- 1) None

## d. Annunciators

- 1) None



## e. Event Triggers

Event #	Event Action	Command
None	N/A	N/A

## f. Equipment Out of Service

- 1) 'C' Narrow Range Level Transmitter

## g. Support Documentation

- 1) None

## h. Miscellaneous

- 1) EOS updated for 'C' Narrow Range Level Transmitter out of service for a 3 day duration
- 2) Hang Pink Off Normal sign on 'C' Narrow Range Level Transmitter
- 3) Mark up N2-OSP-RHS-Q@006, section 4.0, 5.0, 6.0, 7.0 & 8.1 initialed off, section 8.2 initialed off up to and including step 8.2.1 and open circle step 8.2.2.
- 4) Clear APRM #2 trip memory
- 5) Verify the following S-REI-07 pages, which apply to IC-021, are displayed:
  - a) Unit #2 CRAM Rod Listing (Remove this from simulator for this scenario).
  - b) Rapid Power Reduction Instructions (S-REI-07 page 15 of 29) in the CRC book only.



- c) Current Control Rod Positions & Face Adjacent Rods (S-REI-07 page 17 of 29) in the CRC book only.

### **C. Shift Turnover Information**

1. Reactor Power: Rated
2. Rodline: Above 100%
3. Technical Specification LCOs in effect:
  - a. None
4. Significant Problems / Abnormalities / Equipment Out of Service:
  - a. 'C' Narrow Range Level Transmitter
5. Evolutions / Maintenance Scheduled for this Shift:
  - a. Support IMD with maintenance activities.



**SHIFT TURNOVER INFORMATION**

ON COMING SHIFT: ☐ N ☒ D

DATE: Today

**PART I: To be performed by the oncoming Operator before assuming the shift.**

- Control Panel Walkdown (all panels) (SRO, ROs)

**PART II: To be reviewed by the oncoming Operator before assuming the shift.**

- LCO Status (SRO)
- Shift Turnover Information Sheet

**Evolutions/General Information/Equipment Status:**

- Reactor power is at rated
- 'C' Narrow Range Level Transmitter is failed upscale.
- All LCOs are met

**PART III: Remarks/Planned Evolutions:**

- Perform N2-OSP-RHS-Q@006, RHR System Loop C Pump and Valve Operability Test and System Integrity Test section 8.2 only.

## Shift Turnover

Instructor Actions / Plant Response	Operator Actions
Take the simulator out of freeze before the crew enters for the pre-shift walkdown.  Verify annunciator sound turned on If recording scenario, start the recording device during the pre-shift walkdown	
Allow the crew approximately 10 minutes to walk down control room panels and perform shift turnover brief.	<b><u>Crew</u></b> Walkdown control room panels Conduct shift turnover brief Assume the shift

## Event #1 – Perform N2-OSP-RHS-Q@006 Surveillance Test section 8.2

<b>Event Information</b>	<p>Enter important information about the event here such as:</p> <ul style="list-style-type: none"> <li>• Presumed or required initial plant operating conditions <ul style="list-style-type: none"> <li>- Reactor at power</li> </ul> </li> <li>• Critical activities or tasks <ul style="list-style-type: none"> <li>- Place 2RHS*P1C in PTL</li> <li>- Close then open 2RHS*MOV1C &amp; 2RHS*MOV4C</li> <li>- Place 2RHS*P1C back in Normal-After-Stop</li> </ul> </li> <li>• Final (expected) operating result <ul style="list-style-type: none"> <li>- Operating with 2RHS*P1C operable</li> </ul> </li> <li>• Mitigation Strategy code (if applicable) <ul style="list-style-type: none"> <li>- N/A</li> </ul> </li> </ul>
<b>Critical Tasks</b> <i>(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)</i>	<p>If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below:</p> <ol style="list-style-type: none"> <li>1. None</li> </ol>

Instructor Actions / Plant Response	Operator Actions
	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"> <li>• Directs BOP to perform N2-OSP-RHS-Q@006, Section 8.2 only</li> </ul>
	<p><b><u>BOP</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges direction to perform N2-OSP-RHS-Q@006, Section 8.2 only</li> <li>• Verifies that RHS Loop "C" has been declared inoperable</li> <li>• Places RHS PMP 1C control switch in PULL-TO-LOCK.</li> <li>• Closes 2RHS*MOV1C, PMP 1C SUCT FROM SUPPR POOL</li> <li>• Opens 2RHS*MOV1C.</li> <li>• Checks off SAT step for Exercise test of 2RHS*MOV1C</li> </ul>





Instructor Actions / Plant Response	Operator Actions
	<ul style="list-style-type: none"><li>• Closes 2RHS*MOV4C, PMP 1C MINIMUM FLOW VLV</li><li>• Opens 2RHS*MOV4C</li><li>• Checks off SAT step for Exercise test of 2RHS*MOV4C</li><li>• Places 2RHS*P1C control switch in Normal-After-STOP</li><li>• Independently verifies the following:<ul style="list-style-type: none"><li>◦ 2RHS*MOV1C, PMP 1C SUCT FROM SUPPR POOL.</li><li>◦ 2RHS*MOV1C, PMP 1C SUCT FROM SUPPR POOL.</li><li>◦ 2RHS*MOV1C, PMP 1C SUCT FROM SUPPR POOL.</li></ul></li><li>• Notifies SRO that RHS Loop C is NO longer inoperable for testing in this subsection</li></ul>
	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"><li>• Acknowledges report that RHS Loop C is NO longer inoperable for testing in this subsection</li></ul>

<b>Event Termination Criteria</b>	<ul style="list-style-type: none"><li>• N2-OSP-RHS-Q@006, Section 8.2 has been completed</li></ul>
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## Event #2 - RBM "A" Inop requires bypassing

<b>Event Information</b>	Enter important information about the event here such as: <ul style="list-style-type: none"> <li>• Presumed or required initial plant operating conditions <ul style="list-style-type: none"> <li>- Plant on-line</li> </ul> </li> <li>• Critical activities or tasks <ul style="list-style-type: none"> <li>- Bypass RBM 'A'</li> </ul> </li> <li>• Final (expected) operating result <ul style="list-style-type: none"> <li>- Operating with RBM 'A' bypassed</li> </ul> </li> <li>• Mitigation Strategy code (if applicable) <ul style="list-style-type: none"> <li>- N/A</li> </ul> </li> </ul>
<b>Critical Tasks</b> <i>(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)</i>	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: <ol style="list-style-type: none"> <li>1. None</li> </ol>

Instructor Actions / Plant Response	Operator Actions
When directed by Lead Evaluator, <b>insert</b> the following <b>malfunction</b> :  <b>TRG1      NM19A</b> , Rod Block Monitor Failure - Inop (A), FINAL=True  <i>The following annunciators alarm immediately after event initiation:</i> <ul style="list-style-type: none"> <li>• 603204 RBM UPSCALE/ INOPERABLE</li> <li>• 603442 CONTROL ROD OUT BLOCK</li> </ul>	
	<u><b>Crew</b></u> <ul style="list-style-type: none"> <li>• Acknowledge/Report Annunciators</li> <li>• Diagnose failure of RBM A (INOP)</li> </ul>
	<u><b>SRO</b></u> <ul style="list-style-type: none"> <li>• Acknowledges report of failed RBM A</li> <li>• Direct response IAW ARPs as necessary</li> </ul>

Instructor Actions / Plant Response	Operator Actions
	<b><u>BOP</u></b> <ul style="list-style-type: none"> <li>Acknowledges SRO and enters ARP 603204</li> <li>Determines RBM A is INOP</li> </ul>
<b><u>Role Play:</u></b> As booth when contacted for indications on RBM A Interface Module Top, provide the following information:  LED indications on A3 are as follows: <ul style="list-style-type: none"> <li>PWR 1-Lit</li> <li>PWR 2-Not Lit</li> <li>PWR A-Not Lit</li> <li>PWR B-Not Lit</li> </ul> LED indications on the cards: <ul style="list-style-type: none"> <li>A4-Not Lit</li> <li>A5- Not Lit</li> <li>A6- Not Lit</li> <li>A7-Lit</li> <li>A8- Not Lit</li> <li>A9- Not Lit</li> <li>A10- Not Lit</li> </ul>	<b><u>BOP Cont...</u></b> <ul style="list-style-type: none"> <li>Completes N2-OP-92, Attachment 4</li> <li>Informs SRO of the results of Attachment 4</li> <li>Informs SRO that the RBM may be bypassed per N2-OP-92</li> </ul>
	<b><u>SRO</u></b> <ul style="list-style-type: none"> <li>Acknowledges report from BOP</li> </ul>
<b><u>Role Play:</u></b> If contacted as the SM, acknowledge report.  <b><u>Note:</u></b> If the SRO decides to not bypass RBM A, at the Lead Evaluators discretion, call up the SRO as the SRO and direct bypassing RBM A.	<ul style="list-style-type: none"> <li>May contact the SRO for direction</li> <li>Directs bypassing RBM A per N2-OP-92.</li> </ul>
<b><u>Role Play:</u></b> If contacted as WWM and/or I&C, acknowledge the report	<ul style="list-style-type: none"> <li>Contacts WWM and/or I&amp;C</li> </ul>

Instructor Actions / Plant Response	Operator Actions
	<p><b><u>BOP</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges direction to bypass RBM A</li> <li>• References N2-OP-92, Section H.2.0</li> <li>• Determines no other RBMs are bypassed</li> <li>• Places the RBM bypass joystick to the 'A' position</li> <li>• Verifies RBM A BYPASS light is lit at P603</li> </ul>
<p><b><u>Role Play:</u></b></p> <p>When contacted as booth to provide indications at P608, inform the operator that BYPASS MANUAL is displayed in inverse video header for RBM A</p>	<ul style="list-style-type: none"> <li>• Verifies BYPASS MANUAL is displayed in inverse video header at P608</li> <li>• Informs SRO that RBM A is bypassed</li> </ul>
<p><b><u>Note:</u></b></p> <p>Although RBM A is inoperable, it is only required to be operable when no peripheral, (edge) rod is selected. If an edge rod is not already selected, the SRO may direct the RO to select an edge rod to exit the applicability requirements of TS 3.3.2.1</p>	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges report from BOP</li> <li>• References TS 3.3.2.1. Condition A and determines a 24 hour LCO applies</li> <li>• May direct selecting an edge rod to change the applicability (If not already selected)</li> </ul>
<p><b>Event Termination Criteria</b></p>	<ul style="list-style-type: none"> <li>• RBM channel is bypassed</li> <li>• SRO has addressed Tech Specs</li> </ul>

## Event #3 – Inadvertent HPCS Initiation

<b>Event Information</b>	Enter important information about the event here such as: <ul style="list-style-type: none"> <li>• Presumed or required initial plant operating conditions <ul style="list-style-type: none"> <li>- Plant is at power</li> </ul> </li> <li>• Critical activities or tasks <ul style="list-style-type: none"> <li>- Place 2CSH*P1 in PTL</li> </ul> </li> <li>• Final (expected) operating result <ul style="list-style-type: none"> <li>- Operating at power with 2CSH*P1 in PTL and inoperable</li> </ul> </li> <li>• Mitigation Strategy code (if applicable) <ul style="list-style-type: none"> <li>- N/A</li> </ul> </li> </ul>
<b>Critical Tasks</b> <i>(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)</i>	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: <ol style="list-style-type: none"> <li>1. None</li> </ol>

Instructor Actions / Plant Response	Operator Actions
<p><b><u>Booth Operator</u></b></p> <p>When directed by the lead instructor / evaluator, <b>insert</b> the following <b>malfunction</b> and <b>remote</b>:</p> <p><b>TRG2      CS01B</b>, CSH Inadvertent Initiation  K11 (Reactor Level 2), FINAL = TRUE</p>	
<p><i>The plant responds as follows:</i></p> <ul style="list-style-type: none"> <li>• CSH starts and injects to the RPV</li> <li>• CSH*MOV107 opens</li> <li>• Division III emergency diesel generator starts</li> <li>• Division III emergency diesel service water supply valves SWP*MOV94A &amp; B auto open</li> </ul> <p><i>The following annunciators alarm:</i></p> <ul style="list-style-type: none"> <li>• 852311, EDG2 TROUBLE</li> <li>• 852317, EDG2 RUNNING</li> </ul>	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• Silences, acknowledges and reports 852311 and 852317</li> <li>• Provides crew update that CSH has auto started and is injecting into the RPV.</li> <li>• Evaluates and reports the status of the following: <ul style="list-style-type: none"> <li>◦ Reactor power</li> <li>◦ Reactor level</li> </ul> </li> </ul>



Instructor Actions / Plant Response	Operator Actions
<ul style="list-style-type: none"> <li>603139, REACTOR WATER LEVEL HIGH/LOW</li> <li>842304, HWC SHUTDOWN</li> </ul> <p>The following computer points are generated:</p> <ul style="list-style-type: none"> <li>CSHBC09, EDG2 STATUS (RUN)</li> <li>CSHBC14, CSH PMP BKR 102-2 (CLOSED)</li> <li>FWSLC01, REACTOR WATER LEVEL HI/LO (HI/LO)</li> </ul> <p>Additional plant indications:</p> <ul style="list-style-type: none"> <li>MWth indication lowers on panel 603</li> <li>Feedflow lowers as indicated on panel 603</li> </ul>	<ul style="list-style-type: none"> <li>Reactor pressure</li> <li>Containment</li> </ul>
<p><b>Role Play:</b></p> <p>If contacted to provide CSH trip unit status, report that there are no trip units in alarm and no gross failures present.</p>	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>Directs crew to confirm using at least two independent indications that the CSH initiation was inadvertent</li> </ul>
	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>Evaluates multiple plant indications including Drywell pressure and RPV level using redundant diverse indications</li> <li>Reports to the CRS that the initiation appears to be mis-operation in automatic</li> </ul>
	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>Acknowledges report that the initiation appears to be the result of mis-operation in automatic based on plant indications</li> <li>Directs CSH placed in P-T-L</li> </ul>
<p>When CSH control switch is placed in P-T-L the following annunciator alarms:</p> <ul style="list-style-type: none"> <li>601706, CSH SYSTEM INOPERABLE</li> </ul> <p>The following system status light illuminates:</p> <ul style="list-style-type: none"> <li>PMP MOTOR BKR NO 2</li> </ul> <p>CSH System flow drops to zero CSH*MOV105 auto closes</p>	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>Places CSH in P-T-L</li> </ul>

Instructor Actions / Plant Response		Operator Actions															
<p>The following computer point is generated:</p> <ul style="list-style-type: none"><li>CSHBC15, CSH PMP DISCH PRESS (LOW)</li></ul> <p>The following annunciator clears:</p> <ul style="list-style-type: none"><li>603139, REACTOR WATER LEVEL HIGH/LOW</li></ul> <p>Feedflow returns to pre-event levels</p>																	
<p><u>Note:</u></p> <p>Crew will be in T.S. 3.6.1.3 until 2CSH*MOV107 is closed.</p>		<p><u>RO</u></p> <ul style="list-style-type: none"><li>If directed, protects CSL and/or RCIC</li></ul>															
<p><u>Note:</u></p> <table border="1"><thead><tr><th>Spec</th><th>Condition</th><th>Applicable Actions</th></tr></thead><tbody><tr><td>3.5.1</td><td>B</td><td>B.1 and B.2</td></tr><tr><th>Action</th><th colspan="2">Description</th></tr><tr><td>B.1</td><td colspan="2">Verify by administrative means RCIC System is OPERABLE when RCIC is required to be OPERABLE. (Immediately)</td></tr><tr><td>B.2</td><td colspan="2">Restore HPCS System to OPERABLE status (14 days)</td></tr></tbody></table>		Spec	Condition	Applicable Actions	3.5.1	B	B.1 and B.2	Action	Description		B.1	Verify by administrative means RCIC System is OPERABLE when RCIC is required to be OPERABLE. (Immediately)		B.2	Restore HPCS System to OPERABLE status (14 days)		<p><u>SM</u></p> <ul style="list-style-type: none"><li>Maintains crew oversight and provides coaching when necessary.</li><li>Evaluates reportability requirements per 10CFR50.72(b)(3)(v) &amp; 10CFR50.73(a)(2)(v)</li><li>Declares CSH inoperable, but available and reviews Technical Specification 3.5.1, condition B.</li><li>Contacts Work Week Manager for investigation / support. (When time permits)</li><li>Contacts Plant Management. (When time permits)</li></ul>
Spec	Condition	Applicable Actions															
3.5.1	B	B.1 and B.2															
Action	Description																
B.1	Verify by administrative means RCIC System is OPERABLE when RCIC is required to be OPERABLE. (Immediately)																
B.2	Restore HPCS System to OPERABLE status (14 days)																
Event Termination Criteria	<ul style="list-style-type: none"><li>CSH Pump is in P-T-L (Pull to Lock)</li></ul>																

## Event #4 - Control Rod Drift Out.

<b>Event Information</b>	Enter important information about the event here such as: <ul style="list-style-type: none"> <li>• Presumed or required initial plant operating conditions <ul style="list-style-type: none"> <li>- Plant on-line near rated power with control rod 14-39 not full out</li> </ul> </li> <li>• Critical activities or tasks <ul style="list-style-type: none"> <li>- Drive control rod 14-39 full in</li> <li>- Reactor power reduced to ~85%</li> <li>- Control rod 14-39 hydraulics isolated</li> </ul> </li> <li>• Final (expected) operating result <ul style="list-style-type: none"> <li>- Operating at reduced power with control rod 14-39 fully inserted and hydraulics isolated</li> </ul> </li> <li>• Mitigation Strategy code (if applicable) <ul style="list-style-type: none"> <li>- N/A</li> </ul> </li> </ul>
<b>Critical Tasks</b> <i>(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)</i>	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: <ol style="list-style-type: none"> <li>1. Given the plant at rated power with a control rod drifting out, the crew will reduce reactor power to approximately 85% in accordance with N2-SOP-8 and N2-SOP-101D.</li> </ol>

Instructor Actions / Plant Response	Operator Actions
<b>Booth Operator:</b> When directed by the lead instructor / evaluator, <b>insert</b> the following <b>malfunction</b> :  <b>TRG3 RD05-14-39</b> , Control Rod Failure - Drift Out, FINAL=True	
<i>Control Rod 14-39 slowly drifts out of the core</i>  <i>The following annunciator alarms:</i> <ul style="list-style-type: none"> <li>• 603443, CONTROL ROD DRIFT</li> </ul> <i>The following computer points are generated:</i> <ul style="list-style-type: none"> <li>• RDSBC09, CONTROL ROD DRIFT (ALARM)</li> <li>• RDSBC134, ROD DRIFT ALARM (DRIFT)</li> </ul>	<b>RO</b> <ul style="list-style-type: none"> <li>• Silences, acknowledges and reports annunciator 603443</li> <li>• Selects control 14-39 on the rod select matrix to allow indication on the 4 rod display</li> <li>• Provides crew update that control 14-39 is drifting</li> </ul>





Instructor Actions / Plant Response	Operator Actions
<i>Rod worth minimizer displays control rod 14-39 drifting</i> <i>Full core display indicates drift for control rod 14-39</i>	
	<b><u>SRO</u></b> <ul style="list-style-type: none"><li>• Provides Crew update for N2-SOP-08 entry</li><li>• Directs RO to enter and execute N2-SOP-08</li><li>• Directs RO to maintain reactor power <math>\leq</math> 3988 MWth</li></ul>
	<b><u>RO</u></b> (N2-SOP-08) <ul style="list-style-type: none"><li>• Determines power change is due to drifting control rod</li><li>• Using insert pushbutton, inserts control rod 14-39</li><li>• Determines that control rod 14-39 will insert and maintains insert pushbutton depressed</li><li>• Determines that power on the APRMs is rising</li><li>• Provides update to crew that N2-SOP-08 requires a power reduction per N2-SOP-101D using recirc flow and/or CRAM rods to 85%</li></ul>
	<b><u>SRO</u></b> <ul style="list-style-type: none"><li>• Acknowledges RO report that N2-SOP-08 requires a power reduction to ~85%</li><li>• Provides crew update for entry into N2-SOP-101D</li><li>• Directs RO to enter and execute N2-SOP-101D and reduce reactor power to ~85% using recirc flow and/or CRAM rods</li></ul>
	<b><u>RO</u></b> <ul style="list-style-type: none"><li>• Acknowledges SRO direction to enter and</li></ul>

Instructor Actions / Plant Response	Operator Actions
	<p>execute N2-SOP-101D and reduce reactor power to ~85% using recirc flow and/or CRAM rods</p> <ul style="list-style-type: none"> <li>• <b>Reduces recirc flow and or CRAM rods to achieve ~85% reactor power.</b></li> <li>• Monitors Offgas and Main Steam Line Rad Monitors for evidence of fuel failure</li> </ul>
	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"> <li>• Oversees crew actions.</li> <li>• Provides reactivity oversight during power reduction</li> <li>• Provides crew transient brief / reverse brief</li> <li>• Directs reactor power band</li> </ul>
<p><i>The following annunciator clears when insert pushbutton is depressed:</i></p> <ul style="list-style-type: none"> <li>• 603443, CONTROL ROD DRIFT</li> </ul> <p><i>When control rod is fully inserted, the full core display indicates the blue Full In status light</i></p> <p><i>When the insert pushbutton is released, control rod 14-39 will to drift out</i></p> <p><i>The full core Full In light clears</i></p> <p><i>The following annunciator re-alarms:</i></p> <ul style="list-style-type: none"> <li>• 603443, CONTROL ROD DRIFT</li> </ul>	<p><b><u>RO</u></b> (N2-SOP-08, Section 'A')</p> <ul style="list-style-type: none"> <li>• Identifies and records which control rod is drifting and in what direction</li> <li>• Determines that the initial entry flow chart has been performed</li> <li>• Verifies that the drifting control rod remains inserted using the 'insert' pushbutton</li> <li>• Determines that the control rod can be fully inserted</li> <li>• Verifies reactor power at 85%</li> <li>• Provides crew update that control rod 14-39 is fully inserted and that the next step is to release the insert pushbutton and see if the control rod continues to drift out.</li> <li>• Releases the insert pushbutton and recognizes that control rod 14-39 again begins to slowly drift out</li> <li>• Depresses and holds the insert pushbutton to maintain the control rod fully inserted</li> </ul>
<b><u>Role Play:</u></b>	<b><u>RO</u></b>

Instructor Actions / Plant Response	Operator Actions
<p>When directed as the Equipment Operator to close RDS*V103 and RDS*V105 for control rod 14-39, wait 3 minutes and the <b>insert</b> the following <b>remote</b>:</p> <p><b>TRG4 RD08-14-39</b>, HCU Drive/Exhaust Water Isolation, FINAL=Close</p> <p>Then report to the control room that RDS*V103 and RDS*V105 for control rod 14-39 have been successfully closed</p>	<ul style="list-style-type: none"> <li>• Dispatches a Equipment Operator to close RDS*V103 and RDS*V105 for control rod 14-39</li> <li>• Provides crew update that RDS*V103 and RDS*V105 for control rod 14-39 have been closed</li> </ul>
<p><i>Control rod remains full in and the full core Full in light illuminates</i></p> <p><i>Control rod settles at 00 as indicated on the 4 rod display</i></p>	<p><b>RO</b> (N2-SOP-08, section 'A')</p> <ul style="list-style-type: none"> <li>• Continues with N2-SOP-08 actions: <ul style="list-style-type: none"> <li>◦ Releases the insert pushbutton</li> <li>◦ Determines that the control rod is no longer drifting out</li> <li>◦ Provides update to crew that control 14-39 remains full in</li> </ul> </li> </ul>
	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>• Oversees crew actions.</li> <li>• Provides crew transient brief / reverse brief</li> <li>• Directs power band using APRM indications</li> </ul>
<p><b>Role Play:</b></p> <p>When Reactor Engineering notified, report that fuel thermal limits are being evaluated. If requested, recommend no rod withdraw operations until evaluation is complete.</p> <p><b>Role Play:</b></p> <p>As reactor engineering, 5 minutes after initial request to evaluate thermal limits, report back that thermal limits have been evaluated as satisfactory</p>	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>• Verifies control rod positions and core parameters due to transient</li> <li>• Maintains crew oversight and looks ahead for potential issues/thresholds.</li> <li>• Notifies reactor engineer and requests thermal limit evaluation</li> <li>• Evaluates PRA (CDF &amp; LERF)</li> <li>• Independently evaluates Tech. Specs.</li> <li>• Requests that Reactor Engineering perform the evaluation of control rod 14-39 still being considered a drifting control</li> </ul>

Instructor Actions / Plant Response		Operator Actions																
		rod																
<p><b>Role Play:</b></p> <p>If requested, as reactor engineering, report that the rod is still considered drifting until an evaluation is conducted. Evaluation will take approximately 30 minutes.</p>																		
<p><u>Note:</u></p> <p>Shift Manager shall provide crew oversight and not make notification phone calls until plant conditions are stable.</p> <table><tr><th>Spec</th><th>Condition</th><th>Applicable Actions</th></tr><tr><td>3.1.3</td><td>C</td><td>C.1 &amp; C.2</td></tr><tr><th>Action</th><th>Description</th><td></td></tr><tr><td>C.1</td><td>Fully insert inoperable control rod. (3 hours)</td><td></td></tr><tr><td>C.2</td><td>Disarm the associated CRD. (4 hours)</td><td></td></tr></table>		Spec	Condition	Applicable Actions	3.1.3	C	C.1 & C.2	Action	Description		C.1	Fully insert inoperable control rod. (3 hours)		C.2	Disarm the associated CRD. (4 hours)		<p><b>SRO</b></p> <ul style="list-style-type: none"><li>• Maintains crew oversight and provides coaching when necessary.</li><li>• Evaluates E-plan to assess potential classification</li><li>• Evaluates plant conditions against Tech Specs and determines the following apply:<ul style="list-style-type: none"><li>◦ ITS 3.1.3 Condition C, Action C.1 and C.2</li></ul></li><li>• Contacts Work Week Manager for investigation / support. (When time permits)</li><li>• Contacts Plant Management. (When time permits)</li></ul>	
Spec	Condition	Applicable Actions																
3.1.3	C	C.1 & C.2																
Action	Description																	
C.1	Fully insert inoperable control rod. (3 hours)																	
C.2	Disarm the associated CRD. (4 hours)																	
<p><b>Event Termination Criteria</b></p>		<ul style="list-style-type: none"><li>• Reactor power has been reduced to ~ 85%</li><li>• Control Rod 14-39 has been hydraulically disarmed</li></ul>																

## Event #5 – CCS-TIK104 Auto Setpoint Failure

<b>Event Information</b>	Enter important information about the event here such as: <ul style="list-style-type: none"> <li>• Presumed or required initial plant operating conditions <ul style="list-style-type: none"> <li>- Plant operating at power</li> </ul> </li> <li>• Critical activities or tasks <ul style="list-style-type: none"> <li>- Taking manual control of CCS-TIK104 and lower temperature setting</li> </ul> </li> <li>• Final (expected) operating result <ul style="list-style-type: none"> <li>- Operating</li> </ul> </li> <li>• Mitigation Strategy code (if applicable) <ul style="list-style-type: none"> <li>- N/A</li> </ul> </li> </ul>
<b>Critical Tasks</b> <i>(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)</i>	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: <ol style="list-style-type: none"> <li>1. None</li> </ol>

Instructor Actions / Plant Response	Operator Actions
<p><b><u>Booth Operator:</u></b> When directed by the lead evaluator, <b>insert</b> the following <b>remote</b>:</p> <p><b>TRG5      CW27</b>, 2CCS-TIK104 Auto Setpoint, Final=110, RT=2 minutes</p>	
<p><b><u>Note:</u></b> Crew may opt to use ARP 601244 actions vs. using N2-SOP-14 guidance. The actions are the same with the exception of the allowed temperature band. In N2-SOP-14 the allowable temperature band is 80-85°F where as the ARP guidance for computer point CCSTC04 allows 80-95°F.</p>	
<p><i>The following plant response occurs after event initiation:</i></p> <ul style="list-style-type: none"> <li>• 2CCS-TIK104 setpoint slowly drifts toward minimum</li> </ul>	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• Silences, acknowledges and reports</li> </ul>

Instructor Actions / Plant Response	Operator Actions
<p><i>cooling</i></p> <p><i>After approximately 30 seconds the following computer point is generated:</i></p> <ul style="list-style-type: none"> <li>• <i>GMLTA01, GN LEADS CLR RTN AIR TEMP (HI)</i></li> </ul> <p><i>The following annunciators alarm ~1:30 after event initiation:</i></p> <ul style="list-style-type: none"> <li>• <i>601244, TURBINE BLDG CLOSED LOOP COOLING SYS TROUBLE</i></li> <li>• <i>851156, MAIN GEN TEMP TROUBLE</i></li> </ul> <p><i>The following computer points are generated ~1:30 after event initiation:</i></p> <ul style="list-style-type: none"> <li>• <i>CCSTC04, TBCLCW HX DISCH TEMP (HIGH)</i></li> <li>• <i>GMCTC05, GEN CLG WTR TO WDG TEMP (TROUBLE)</i></li> <li>• <i>CCSTA01, TBCLCW SYS HX DISCH TEMP (HIGH)</i></li> </ul> <p><b>Role Play:</b></p> <p>If directed as field operator to investigate stator water coolant flow and temperature at the stator water cooling/hydrogen monitor panel, wait 5 minutes and report the following:</p> <ul style="list-style-type: none"> <li>• If the CCS-TIK104 setpoint has been dialed down in manual and annunciator 851156 has cleared, then report that stator water inlet temperature is ~38°C, stator water outlet temperature is ~56°C and stator water flow is ~760 gpm</li> <li>• If the CCS-TIK104 setpoint has not yet been dialed down in manual and annunciator 851156 is still in alarm, then report that stator water inlet temperature is ~40°C, stator water outlet temperature is ~59°C and stator water flow is ~760 gpm</li> </ul>	<p>annunciator 601244</p> <ul style="list-style-type: none"> <li>• May notice process computer point GMLTA01 and investigate cause</li> <li>• Recognizes 2CCS-TIK104 setpoint rising</li> <li>• Provides crew update of failure of 2CCS-TIK104.</li> <li>• Recognizes that entry into N2-SOP-14 is warranted</li> <li>• Performs N2-SOP-14 actions: <ul style="list-style-type: none"> <li>◦ Determines that all CCS Pumps have not tripped</li> <li>◦ Determines that SWP supply to the turbine building is not isolated</li> <li>◦ Determines CCS system conditions have not degraded to the point that system loads will NOT have adequate cooling</li> <li>◦ Determines that main turbine high vibration alarm is not in</li> <li>◦ Determines that a failure of the standby pump to auto start has not occurred</li> <li>◦ Determines that the CCS expansion tank is not the problem</li> <li>◦ Determines at least one CCS pump is operating</li> <li>◦ Determines that cooling capacity is degraded: <ul style="list-style-type: none"> <li>- Monitors system loads (Detail A, Major System Loads)</li> <li>- Secures loads as necessary</li> </ul> </li> <li>◦ Performs the following to stabilize the CCS system: <ul style="list-style-type: none"> <li>- Places CCS-TIK104 in manual</li> <li>- Manually controls temperature using CCS-TIK104 between 80-85°F</li> </ul> </li> </ul> </li> <li>• Provides update to the control room that manual control has been established and that CCS temperature is lowering</li> </ul>



Instructor Actions / Plant Response	Operator Actions
<p><i>The following annunciators may alarm based on the timeliness of crew actions ~2:00 after event initiation:</i></p> <ul style="list-style-type: none"><li>• 851112, GENERATOR AUXILIARIES TROUBLE</li></ul> <p><i>The following computer points are generated ~2:00 after event initiation:</i></p> <ul style="list-style-type: none"><li>• GMCTA17, ALTNTR CLR AIR OUTL TEMP (HIGH)</li><li>• GMCTC01, STTR CLG WTR INLET TEMP (HIGH)</li></ul> <p><i>The following annunciator alarms:</i></p> <ul style="list-style-type: none"><li>• 601244, TURBINE BLDG CLOSED LOOP COOLING SYS TROUBLE</li></ul> <p><i>The following computer point is generated:</i></p> <ul style="list-style-type: none"><li>• CCSBC06, TBCLCW PMP 1C AUTO START (ALARM)</li></ul>	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"><li>• Performs ARP 851112 actions:<ul style="list-style-type: none"><li>◦ Determines the cause of the event to be rising CCS inlet temperature due to the failed CCS temperature controller</li><li>◦ Determines that stator water cooling is lowering</li></ul></li><li>• Provides crew update for the requirement of ARP 851112 to enter N2-SOP-68 and the N2-SOP-68 entry</li><li>• Performs N2-SOP-68 actions:<ul style="list-style-type: none"><li>◦ Reviews N2-SOP-68 and determines that no action is required unless a generator runback has occurred</li><li>◦ Notifies the CRS of N2-SOP-68 requirements</li></ul></li><li>• Silences , acknowledges and reports annunciator 601244</li><li>• Reports that CCS-P1C has auto started</li></ul>
	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"><li>• Acknowledges report of need to enter N2-SOP-14 from RO</li><li>• Provides crew update for entry into N2-SOP-14</li><li>• Oversees crew actions</li><li>• Acknowledges report from RO that N2-SOP-68 is written to address generator runbacks.</li><li>• Directs RO to remain in N2-SOP-68 to monitor in the event a generator runback occurs.</li><li>• Provides crew transient brief / reverse brief</li></ul>
<b>Event Termination Criteria</b>	<ul style="list-style-type: none"><li>• CCS-TIK104 in manual with temperature setting in required band</li></ul>

## Event #6 – APRM #2 Failure Downscale

<b>Event Information</b>	Enter important information about the event here such as: <ul style="list-style-type: none"> <li>• Presumed or required initial plant operating conditions <ul style="list-style-type: none"> <li>- Plant operating at power</li> </ul> </li> <li>• Critical activities or tasks <ul style="list-style-type: none"> <li>- Bypass APRM #2</li> </ul> </li> <li>• Final (expected) operating result <ul style="list-style-type: none"> <li>- Operating with APRM #2 bypassed</li> </ul> </li> <li>• Mitigation Strategy code (if applicable) <ul style="list-style-type: none"> <li>- N/A</li> </ul> </li> </ul>
<b>Critical Tasks</b> <i>(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)</i>	If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below: <ol style="list-style-type: none"> <li>1. None</li> </ol>

Instructor Actions / Plant Response	Operator Actions
<p><b><u>Booth Operator:</u></b>  When directed by the lead evaluator, <b>insert</b> the following <b>remote</b>:</p> <p><b>TRG6      NM12B</b>, APRM Channel Failure – Downscale (2), FINAL = True</p> <p><i>APRM 2 indication will fail upscale</i></p> <p><i>The following annunciators alarms:</i></p> <ul style="list-style-type: none"> <li>• 603214, APRM Trip System Downscale</li> <li>• 603442, Control Rod Out Block</li> </ul>	
	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• Recognizes and reports APRM 2 failure GMLTA01 and investigate cause</li> </ul>
	<p><b><u>SRO</u></b></p>





Instructor Actions / Plant Response	Operator Actions
	<ul style="list-style-type: none"> <li>• Acknowledges report of the APRM 2 failure</li> <li>• Directs RO to respond per the ARP's</li> </ul>
	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges direction to respond per the ARPs.</li> <li>• Refers to ARP 603214</li> <li>• Informs the SRO that APRM 2 may be bypassed per N2-OP-92</li> </ul>
	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges report that APRM 2 may be bypassed.</li> <li>• Directs RO to bypass APRM 2</li> </ul>
<p><i>The following annunciators clear:</i></p> <ul style="list-style-type: none"> <li>• 603214, APRM Trip System Downscale</li> <li>• 603442, Control Rod Out Block</li> </ul>	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges report to bypass APRM 2</li> <li>• References N2-OP-92 and bypasses APRM 2 as follows: <ul style="list-style-type: none"> <li>◦ Determines no other APRM is bypassed.</li> <li>◦ Performs a channel check by verifying APRM 1, 3, and 4 are all reading within 2% of each other</li> <li>◦ Places the APRM BYPASS joystick to the "2" position</li> <li>◦ Verifies APRM 2 BYPASS light on 2CEC*PNL603 is lit.</li> <li>◦ Asks the BOP to go to the back panel and verify APRM 2 bypass indications</li> </ul> </li> </ul>
<p><b><u>Role Play:</u></b></p> <p>As the booth operator, inform the BOP that</p>	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• Verifies APRM 2 is bypassed in the back panels as follows: <ul style="list-style-type: none"> <li>◦ Determines that "BYP" is displayed in inverse video in the header for APRM 2</li> <li>◦ Determines the blue BYPASSED LED is lit for APRM 2 on the 2/4 MDL</li> <li>◦ Contacts the booth and asks for the BYPASSED LED 2/4 MDL indications on</li> </ul> </li> </ul>



Instructor Actions / Plant Response	Operator Actions
APRM 2 indicates bypassed on all 2/4 MDL modules.	APRMs 1, 3, and 4. <ul style="list-style-type: none"><li>• Informs the RO that APRM 2 indicates bypassed on the back panels.</li></ul>
	<b>RO</b> <ul style="list-style-type: none"><li>• Acknowledges report from BOP that APRM 2 indicates bypassed on the back panels.</li><li>• Informs the SRO that APRM 2 has been bypassed per N2-OP-92.</li><li>• May continue on with ARP 603200 actions and ask the BOP to reset the memories on the 2/4 MDL Modules per N2-OP-92, Section F.4.0.</li></ul>
<b>Role Play:</b> As the booth operator, inform the BOP that all memories have been cleared on the 2/4 MDL Modules for APRMs 1, 3, and 4.	<b>RO</b> <ul style="list-style-type: none"><li>• May reset the 2/4 MDL Modules per N2-OP-92, Section F.4.0 as follows:<ul style="list-style-type: none"><li>◦ Depresses the TRIP MEMORY RESET pushbutton for APRM 2 on the 2/4 MDL Module.</li><li>◦ Observes that all Red and Yellow LEDs are extinguished on the 2/4 Module</li><li>◦ Contacts the booth and directs them to Depresses the TRIP MEMORY RESET pushbutton for APRM 1, 3, and 4.</li></ul></li><li>• Informs the RO that the 2/4 MDL Module memories have been cleared.</li></ul>
	<b>SRO</b> <ul style="list-style-type: none"><li>• Acknowledges report from RO that APRM 2 is bypassed.</li><li>• References TS 3.3.1.1, Table 3.3.1.1-1 and no additional actions are required due to APRMs 1, 3, and 4 being still operable</li></ul>
<b>Event Termination Criteria</b>	<ul style="list-style-type: none"><li>• APRM 2 bypassed and the SRO has referenced TS 3.3.1.1.</li></ul>

## Event #7, 8 & 9 – Loss of 2NNS-SWG011 & Remaining Condensate Pumps, Scram, ATWS, RPV Blowdown, Re-inject with Preferred ATWS Injection Systems.

<b>Event Information</b>	<p>Enter important information about the event here such as:</p> <ul style="list-style-type: none"> <li>• Presumed or required initial plant operating conditions <ul style="list-style-type: none"> <li>- Plant at power</li> <li>- Verify the following <b>overrides</b> and <b>malfunctions</b> are <b>inserted</b> before the major transient is initiated: <ul style="list-style-type: none"> <li>• <b>SL03A</b>, SLC Pump Suction Valve Fails to Open (2SLS-MOV1A), FINAL = TRUE</li> <li>• <b>RD17Z</b>, RD17 For All Banks, FINAL = 12</li> </ul> </li> </ul> </li> <li>• Critical activities or tasks <ul style="list-style-type: none"> <li>- Perform RPV Blowdown during ATWS conditions</li> <li>- Inject with low pressure injection sources to maintain adequate core cooling</li> </ul> </li> <li>• Final (expected) operating result <ul style="list-style-type: none"> <li>- RPV depressurized with RPV level maintained with RHR through Shutdown Cooling injection (EOP-6.30)</li> </ul> </li> <li>• Mitigation Strategy code (if applicable) <ul style="list-style-type: none"> <li>- DMS-AT2</li> </ul> </li> </ul>
<b>Critical Tasks</b> <i>(Ensure the task action is bolded and italicized in the "Operator Actions" column where the critical task is performed)</i>	<p>If this performance objective is used in an evaluated scenario and there are critical tasks performed in this objective, list the critical task(s) below:</p> <ol style="list-style-type: none"> <li>1. Given the plant with a high power ATWS and degraded high pressure preferred injection sources, the crew will inhibit ADS in accordance with N2-EOP-C5.</li> <li>2. Given a failure of the reactor to SCRAM and RPV Blowdown required, the crew will terminate and prevent all injection sources except boron, CRD, and RCIC in accordance with N2-EOP-C2.</li> <li>3. Given a failure of the reactor to SCRAM with an RPV blowdown required, the crew will open all 7 ADS valves in accordance with N2-EOP-C2.</li> <li>4. Given a failure of the reactor to SCRAM and the RPV has been blown down per N2-EOP-C2, the crew will resume injection when RPV pressure lowers below the MSCP to restore and maintain RPV water level above the MSCWL in accordance with N2-EOP-C5</li> </ol>



Instructor Actions / Plant Response	Operator Actions
<p><b>Booth Operator:</b> When directed by the lead evaluator, <b>insert</b> the following <b>malfunctions</b>:</p> <p><b>TRG7</b>      <b>ED04A</b>, 4.16KV Normal Bus Fault (SWG11), DELAY = 3, FINAL = TRUE <b>FW01B</b>, Condensate Pump Trip (P1B), Delay=5, FINAL = TRUE</p>	

Instructor Actions / Plant Response	Operator Actions
<p><i>The plant responds as follows:</i></p> <ul style="list-style-type: none"> <li>• Condensate pumps CNM-PIA &amp; C trip on loss of power</li> <li>• Condensate pump CNM-P1B trips on motor electrical fault</li> <li>• Condensate Booster pumps and Feedwater pumps trip on low suction pressure</li> <li>• Reactor scrams on low RPV water level</li> <li>• All control rods fail to insert</li> </ul> <p>When the scram is initiated the following <b>malfunction</b> becomes <b>apparent</b>:</p> <ul style="list-style-type: none"> <li>• <b>RD17Z</b>, RD17 For All Banks, FINAL = 12</li> </ul> <p><i>The following annunciators alarm:</i></p> <ul style="list-style-type: none"> <li>• 852508, 4KV Bus NNS 11/12/13 Electrical Fault</li> <li>• 852525, 4KV Bus NNS 11/12/13 Supply SCB Auto Trip / FTC</li> <li>• 851511, Condensate Pump 1A/1B/1C Auto Trip Fail To Start</li> <li>• 851512, Cnst Bstr Pmp 2A/2B/2C Auto Trip / Fail to Start</li> <li>• 851513, Cnst Bstr Pmp 2A/2B/2C Suction Press Lo-Lo</li> <li>• 851539, Reac Feed Pmp 1A/1B/1C Suction Press Low/Lo-Lo</li> <li>• 851549, Reactor Feed Pumps Suction Flow Low</li> <li>• 603105, RPS A Reactor Wtr Level Low Trip</li> <li>• 603405, RPS B Reactor Wtr Level Low Trip</li> <li>• 603109, RPS A Disch Volume High Level Trip</li> <li>• 603409, RPS B Disch Volume High Level Trip</li> <li>• 603110, RPS A Auto Trip</li> <li>• 603410, RPS B Auto Trip</li> <li>• 603139, Reactor Water Level High/Low</li> </ul>	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>• Recognizes and reports the loss of condensate and feedwater system</li> <li>• Provides crew update for the loss of condensate and feedwater system and for intention to place the mode switch in shutdown</li> <li>• Places mode switch in Shutdown</li> <li>• Provides scram report, by reporting: <ul style="list-style-type: none"> <li>◦ Reactor mode switch in shutdown</li> <li>◦ APRMs not downscale</li> <li>◦ Reactor power ~15%</li> <li>◦ Reactor pressure and trend</li> <li>◦ Reactor level and trend</li> <li>◦ MSIVs open</li> <li>◦ Feedwater pumps have tripped</li> <li>◦ All control rods are not fully inserted</li> </ul> </li> <li>• Reports EOP entry condition on low RPV water level</li> <li>• Performs the immediate actions of N2-SOP-101C</li> </ul>

Instructor Actions / Plant Response	Operator Actions
<p><b>EAL Criteria Met</b></p> <p><b>MA3</b> <span style="border: 1px solid black; padding: 2px;">1</span> <span style="border: 1px solid black; padding: 2px;">2</span> <span style="border: 1px solid black; padding: 2px;">3</span> <span style="border: 1px solid black; padding: 2px;">4</span> <span style="border: 1px solid black; padding: 2px;">5</span> <span style="border: 1px solid black; padding: 2px;">6</span> <span style="border: 1px solid black; padding: 2px;">7</span> <span style="border: 1px solid black; padding: 2px;">8</span> <span style="border: 1px solid black; padding: 2px;">9</span> <span style="border: 1px solid black; padding: 2px;">10</span> <span style="border: 1px solid black; padding: 2px;">11</span> <span style="border: 1px solid black; padding: 2px;">12</span> <span style="border: 1px solid black; padding: 2px;">13</span> <span style="border: 1px solid black; padding: 2px;">14</span> <span style="border: 1px solid black; padding: 2px;">15</span> <span style="border: 1px solid black; 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padding: 2px;">512</span> </p>	

Instructor Actions / Plant Response	Operator Actions
<p>If directed to lift and tape leads and install jumper #9 to defeat the group 5 isolation interlocks, <b>insert</b> the following <b>malfunction</b>:</p> <p><b>TRG8      RH08</b>, Group 5 Isolation Failure - (RHS*MOV122/113), FINAL=TRUE</p> <p>Wait 2 minutes, then report that the lead has been lifted and taped and jumper #9 has been Installed</p>	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• If directed, defeats the Group 5 isolation interlocks in accordance with N2-EOP-6.30</li> </ul>
<p><i>RPV water level continues to lower; HPCS starts and injects at 108.8"</i></p> <p><b>Note:</b> Based on the timeliness of crew actions, the crew may Terminate &amp; Prevent due to &gt;4% power and greater than 100 inches. The scenario is written as if RPV level drops below 100 inches at the time the crew evaluates the N2-EOP-C5 override and therefore does not contain the T &amp; P actions.</p>	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges and repeats back scram report</li> <li>• Acknowledges report of EOP entry condition on low RPV water level</li> <li>• Provides crew update and enters EOP-RPV on low RPV water level</li> <li>• Provides crew update for exit from N2-EOP-RPV and entry into N2-EOP-C5</li> <li>• Performs EOP-C5 actions: <ul style="list-style-type: none"> <li>◦ Directs ADS Inhibited</li> <li>◦ Directs HPCS injection terminated</li> <li>◦ Evaluates the need to prevent the main turbine trip from RCIC and determines that reactor power is within the capacity of the turbine bypass valves</li> <li>◦ Performs power leg actions <ul style="list-style-type: none"> <li>- Verifies the mode switch in shutdown</li> <li>- Directs RRCS initiated per N2-EOP-6.13</li> <li>- Verifies that the Recirc pumps have tripped on RPV level 2</li> <li>- Determines that reactor power is above 4%</li> <li>- Determines that the Recirc Pumps have tripped</li> </ul> </li> <li>◦ Performs pressure control leg actions: <ul style="list-style-type: none"> <li>- Determines that no SRVs are cycling</li> </ul> </li> </ul> </li> </ul>

Instructor Actions / Plant Response	Operator Actions
	<ul style="list-style-type: none"> <li>- Directs pressure band of 800-1000 psig using EHC in automatic</li> <li>- Directs pneumatics restored to the drywell</li> <li>◦ Performs level control leg actions: <ul style="list-style-type: none"> <li>- Verifies needed auto isolations, ECCS starts and diesel generator response occurred per EOP-6.1</li> <li>- Directs the MSIV low RPV water level isolation bypassed per N2-EOP-6.10</li> <li>- Determines that Reactor power is greater than 4%, but water level is less than 100" and suppression pool temperature is below 110°F</li> <li>- Continues with non-containment concern actions of N2-EOP-C5</li> <li>- Determines that level was not previously lowered</li> <li>- Determines that RPV water level cannot be maintained between -39.3 and 202.3 inches using preferred ATWS systems</li> </ul> </li> </ul>
	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• Recognizes that RCIC is not available</li> <li>• Inhibits ADS in accordance with N2-EOP-HC attachment 5 section 3.0: <ul style="list-style-type: none"> <li>◦ <b><i>Places the Div I ADS Automatic Initiation Disable switch to On and verifies the associated white light is lit</i></b></li> <li>◦ <b><i>Places the Div II ADS Automatic Initiation Disable switch to On and verifies the associated white light is lit</i></b></li> <li>◦ Verifies 601521 Division I ADS Automatic Initiation Disabled is lit</li> <li>◦ Verifies 601522 Division II ADS Automatic Initiation Disabled is lit</li> </ul> </li> <li>• Reports ADS is inhibited</li> </ul>



Instructor Actions / Plant Response	Operator Actions
	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"> <li>Acknowledges report that ADS is inhibited</li> </ul>
	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>Terminates HPCS injection by placing CSH*P1 control switch to P-T-L</li> <li>Reports HPCS is in P-T-L</li> </ul>
	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"> <li>Acknowledges report that HPCS is in P-T-L (HPCS injection terminated)</li> </ul>
<p><i>The following annunciators alarm when the mode switch is placed in SHUTDOWN:</i></p> <ul style="list-style-type: none"> <li>603139, Reactor Water Level High / Low</li> <li>603102, RPS A NMS Trip</li> <li>603402, RPS B NMS Trip</li> <li>603105, RPS A Reactor Wtr Level Low Trip</li> <li>603405, RPS B Reactor Wtr Level Low Trip</li> <li>603109, RPS A Disch Volume High Level Trip</li> <li>603409, RPS B Disch Volume High Level Trip</li> <li>603110, RPS A Auto Trip</li> <li>603410, RPS B Auto Trip</li> <li>603111, RPS A Manual Trip</li> <li>603411, RPS B Manual Trip</li> </ul> <p>When SLS injection is initiated/attempted the</p>	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>Acknowledges the order to initiate RRCS per N2-EOP-6.13</li> <li>Performs N2-EOP-6.13 actions:             <ul style="list-style-type: none"> <li>Arms AND depresses the following pushbuttons (2CEC*PNL603):                 <ul style="list-style-type: none"> <li>Division I Channel A Manual Initiation</li> <li>Division I Channel B Manual Initiation</li> <li>Division II Channel A Manual Initiation</li> <li>Division II Channel B Manual Initiation</li> </ul> </li> <li>Ensures the following (2CEC*PNL603):                 <ul style="list-style-type: none"> <li>Division I ARI INIT amber light on</li> <li>Division II ARI INIT amber light on</li> <li>Annunciator 603422, DIV I/II RRCS POTENTIAL ATWS, alarms</li> <li>Annunciator 603306, CRD SCRAM VALVE PILOT AIR HEADER PRESS HIGH/LOW, alarms</li> </ul> </li> <li>AFTER a 98 second time delay, IF APRMs are NOT downscale OR are inoperable, verify the following:                 <ul style="list-style-type: none"> <li>Reactor Water Cleanup System (WCS) has isolated (2CEC*PNL602)</li> </ul> </li> </ul> </li> </ul>

Instructor Actions / Plant Response	Operator Actions
<p>following <b>malfunction</b> becomes <b>apparent</b>:</p> <ul style="list-style-type: none"> <li>• <b>SL03A</b>, SLC Pump Suction Valve Fails to Open (2SLS-MOV1A), FINAL = TRUE</li> </ul> <p><i>2SLS*P1A starts and injects</i></p>	<ul style="list-style-type: none"> <li>- Standby Liquid Control System (SLS) has initiated (2CEC*PNL601)</li> <li>• Reports to the US that RRCS has been initiated and that no control rod motion has occurred</li> <li>• Reports that WCS has isolated</li> <li>• Recognizes/Reports that SLS Pump Suction Valve 2SLS*MOV1A has failed to open and that only one SLS pump is injecting (2SLS*P1B)</li> <li>• Implements the actions of N2-OP-36A, Attachment 1, section 4.0: <ul style="list-style-type: none"> <li>◦ Verifies that 2SLS*MOV1B is open</li> <li>◦ Starts 2SLS*P1A by placing "PMP 1A TEST 2SLS*P1A" switch to TEST</li> </ul> </li> <li>• Reports that 2SLS*P1A started and that both SLS pumps are running and injecting</li> </ul>
	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges report that RRCS has been initiated and that no control rod motion has occurred</li> <li>• Acknowledges report of 2SLS*MOV1A failure to open</li> <li>• Acknowledges report that 2SLS*P1A has been started using N2-OP-36A, Attachment 1, section 4.0</li> </ul>
<p><b><u>Note:</u></b> SA-NM-129, Electrical Safety Attachment 4, "Nine Mile Point Task Matrices/PPE Requirements" states:</p> <p>Remove/Install 120VAC &amp; 125VDC EOP Jumpers in U-2 Control Room Panels, including Simulator at NLC requires:</p> <ul style="list-style-type: none"> <li>• No Minimum Arc Rating Required for FR Clothing</li> <li>• 100% Cotton Long Sleeve Shirt and Pants, OR 100% cotton short sleeve shirt and</li> </ul>	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges the order to bypass the level 1 Isolation of the MSIVs in accordance with N2-EOP-6.10</li> <li>• Dons appropriate electrical PPE</li> <li>• Performs N2-EOP-6.10 section 6.1 actions: <ul style="list-style-type: none"> <li>◦ Installs EOP Jumper #20 from relay B22H-K148A terminal T1 to jumper block EOP B terminal 1 in 2CEC*PNL609, Bay B</li> </ul> </li> </ul>

Instructor Actions / Plant Response	Operator Actions
<p>pants under FR Lab Coat</p> <ul style="list-style-type: none"> <li>• Safety Glasses</li> <li>• V-Rated Gloves (If voltage rated gloves are required, the leather protectors worn external to the rubber gloves satisfy the leather glove requirement).</li> </ul> <p>When requested to defeat the Level 1 isolation of the MSIVs <b>insert</b> the following <b>remotes</b>:</p> <p><b>TRG10 MS06A</b>, Defeat Level One Isolation of MSIVs (Jumper K148A), FINAL=DEFEATED</p> <p><b>MS06B</b>, Defeat Level One Isolation of MSIVs (Jumper K148B), FINAL=DEFEATED</p> <p><b>MS06C</b>, Defeat Level One Isolation of MSIVs (Jumper K148C), FINAL=DEFEATED</p> <p><b>MS06D</b>, Defeat Level One Isolation of MSIVs (Jumper K148D), FINAL=DEFEATED</p> <p><b>Role Play:</b></p> <p>If requested to defeat the Offgas high Radiation trips, <b>manually insert</b> the following <b>remote function</b>:</p> <ul style="list-style-type: none"> <li>• <b>OG03</b>, Off Gas High Radiation Isolation Defeated, FINAL=Defeated</li> </ul>	<ul style="list-style-type: none"> <li>◦ Installs EOP Jumper #18 from relay B22H-K148C terminal T1 to jumper block EOP C terminal 1 in 2CEC*PNL609, Bay C</li> <li>◦ Installs EOP Jumper #13 from relay B22H-K148B terminal T1 to jumper block EOP B terminal 1 in 2CEC*PNL611, Bay B</li> <li>◦ Installs EOP Jumper #12 from relay B22H-K148D terminal T1 to jumper block EOP C terminal 1 in 2CEC*PNL611, Bay C</li> <li>◦ Verifies IAS*SOV166, LOCA OVERRIDE VLV switch in OVERRIDE</li> <li>◦ Verify IAS*SOV184, LOCA OVERRIDE VLV switch in OVERRIDE</li> <li>◦ Verifies 2IAS*SOV166 and 184 open</li> <li>• Reports Level 1 isolation of the MSIVs has been defeated</li> </ul> <ul style="list-style-type: none"> <li>• IF directed, defeats OFG system high radiation isolation AND restore OFG system per N2-OP-42, Attachment 6: <ul style="list-style-type: none"> <li>◦ Lifts AND tapes lead marked 3001 from terminal point #16 on terminal strip TB-6K at 2OFG-IPNL122</li> </ul> </li> </ul>
	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>• Acknowledges report that the level 1 isolation of the MSIVs has been defeated</li> <li>• Directs CRD injection maximized per N2-OP-30 section H.3.0.</li> </ul>

Instructor Actions / Plant Response	Operator Actions
	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• Attains a copy of N2-OP-30</li> <li>• Reviews N2-OP-30 section H.3.0</li> <li>• Performs N2-OP-30 section H.3.0 actions: <ul style="list-style-type: none"> <li>◦ Determines that CRD-P1A can't be started due to the loss of NNS-SWG014 earlier</li> <li>◦ Places 2RDS-FC107, CRD Flow Control, in manual</li> <li>◦ Opens 2RDS-FC107 until RDS pump motor currents approach 40 amps OR controller output meter is 100%</li> <li>◦ Determines that control rods are being driven and that RDS-PV101 cannot be opened any further</li> <li>◦ Monitors RDS pump motor current</li> </ul> </li> <li>• Reports to the US that CRD injection is maximized with only CRD-P1B</li> </ul>
	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges pressure control band of 800-1000 psig using EHC in automatic</li> <li>• Restores pneumatics to the drywell using N2-EOP-HC attachment 5 panel 601 section 1.0: <ul style="list-style-type: none"> <li>◦ Verifies IAS*SOV166 and 184 opened (Performed during N2-EOP-6.10 actions earlier)</li> <li>◦ Places LOCA Override valve IAS*SOV164 to override</li> <li>◦ Opens IAS*SOV164</li> <li>◦ Places LOCA Override valve IAS*SOV178 to override</li> <li>◦ Opens IAS*SOV178</li> </ul> </li> </ul>



Instructor Actions / Plant Response	Operator Actions
<p><u>Note:</u> EOP-6.14, Sections 6.3, Additional Manual Scram initiation and 6.5, Manual control rod Insertion, will be the most effective at getting the rods inserted.</p>	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"><li>• Acknowledges report that CRD injection is maximized</li><li>• Directs Control Rods inserted per EOP-6.14</li></ul>
	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"><li>• Inserts Control Rods per EOP-6.14 as follows:<ul style="list-style-type: none"><li>◦ Uses Figure 14-4, ALTERNATE CONTROL ROD INSERTION FLOWCHART to assist in determining most effective method of rod insertion for present plant conditions</li></ul></li></ul>
<p><b><u>Role Play:</u></b> If dispatched as an equipment operator to the Relay room to de-energize ARI solenoids, <b>insert</b> the following <b>malfunctions</b>:</p> <p><b>TRG11    RP14A</b> RRCS ARI Failure/Defeated (Div 1), FINAL=TRUE <b>RP14B</b> RRCS ARI Failure/Defeated (Div 2), FINAL=TRUE</p> <p><b><u>Role Play:</u></b> Report that the ARI fuses have been removed.</p> <p>If directed to reset the RPS EPA's, that the EPA are <i>not tripped</i> and are closed (reset).</p>	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"><li>• De-energize ARI solenoids,(performed by directing a Equipment Operator to remove fuses in the RRCS panels in the Relay Room)</li><li>• IF the Reactor Protection System (RPS) Electrical Protection Assemblies (EPAs) are tripped, reset the RPS EPAs</li></ul>

Instructor Actions / Plant Response	Operator Actions
<p><b><u>Role Play:</u></b> When requested to defeat the RPS interlocks, insert the following malfunction:</p> <p><b>TRG12    RP02</b> Reactor Protection System Failure to Scram - Automatic, FINAL=TRUE</p>	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• Defeat RPS interlocks, by installing Jumpers inside panels P609 &amp; P611, or by placing the RPS SCRAM LOGIC BYPASS switches to BYPASS</li> <li>• Reset RPS by momentarily placing the following switches to RESET: <ul style="list-style-type: none"> <li>◦ REACTOR SCRAM RESET LOGIC A</li> <li>◦ REACTOR SCRAM RESET LOGIC C</li> <li>◦ REACTOR SCRAM RESET LOGIC B</li> <li>◦ REACTOR SCRAM RESET LOGIC D</li> <li>◦ Insure the eight white PILOT SCRAM VALVE SOLENOIDS lights are lit.</li> </ul> </li> </ul>
<p><b><u>Role Play:</u></b> If requested to place RPS Scram Logic Bypass Switches to Bypass on P609/P611, <b>insert</b> the following <b>remote functions</b>:</p> <p><b>TRG13    RP20A</b>, RPSA1 Scram Logic Bypass C72-S10A, FINAL=BYPASS <b>RP20C</b>, RPSA2 Scram Logic Bypass C72-S10C, FINAL=BYPASS <b>RP20B</b>, RPSB1 Scram Logic Bypass C72-S10B, DELAY=10, FINAL=BYPASS <b>RP20D</b>, RPSB2 Scram Logic Bypass C72-S10D, DELAY=10, FINAL=BYPASS</p> <p>Report that the BYPASS Switches are in Bypass.</p>	

Instructor Actions / Plant Response	Operator Actions
	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• Verify the following pumps are running</li> <li>• RDS-P1A, CRD PUMP 1A</li> <li>• RDS-P1B, CRD PUMP 1B</li> <li>• Place controller 2RDS-FC107, CRD FLOW CONTROL, in MANUAL Depress the OPEN pushbutton on 2RDS-FC107 UNTIL the controller output meter shows 100% OR RDS pump motor current approaches 40 amps</li> <li>• Close 2RDS-PV101, DRIVE WTR PRESS CONTROL MOV, to maximize Drive Water <math>\Delta P</math>.</li> <li>• IF needed to raise system flow OR Drive Water <math>\Delta P</math>, close 2RDS-V28, CHARGING WATER HEADER ISOL.</li> <li>• Using an SHH 5366 key, bypass the RWM by taking the RWM Operator Console BYPASS/OPERATE/TEST switch to the BYPASS position</li> <li>• Starting with a control rod at OR near the center, select a control rod to be driven in on the Rod Select Matrix. Using Figure 2, ROD INSERTION (First Sequence), as a guide, work outward in a spiral pattern rapidly inserting control rods by depressing AND holding the Reactor Manual Control System (RMCS) CONTINUOUS INSERT pushbutton UNTIL control rod motion stops (Position 00/full in)</li> <li>• WHEN Figure 2, ROD INSERTION (First Sequence), has been completed, using Figure 3, ROD INSERTION (Second Sequence), as a guide, continue rapidly inserting control rods by starting with a control rod at OR near the center AND working outward in a spiral pattern UNTIL control rod motion stops</li> </ul>



Instructor Actions / Plant Response	Operator Actions
	<b>RO</b> <ul style="list-style-type: none"><li>• Reports that control rods are being manually inserted</li><li>• Periodically reports Reactor power</li></ul>
	<b>RO</b> <ul style="list-style-type: none"><li>• WHEN the SDV is drained as indicated by annunciators 603109 RPS A DISCH VOLUME HIGH LEVEL TRIP and 603409 RPS B DISCH VOLUME HIGH LEVEL TRIP, clearing,<ul style="list-style-type: none"><li>◦ Initiates a manual scram<ul style="list-style-type: none"><li>- Arms and depresses Push Buttons for RPS Channels A, C, B, and D</li></ul></li></ul></li><li>• Reports all control rods are still NOT FULLY Inserted</li><li>• Continues with manual control rod insertion</li></ul>
When directed by the lead evaluator <b>manually insert</b> the following <b>malfunction</b> : <ul style="list-style-type: none"><li>• <b>RC06</b>, RCIC Turbine Trip, FINAL=TRUE</li></ul>	<b>RO</b> <ul style="list-style-type: none"><li>• Recognizes/reports to the SRO that RCIC has tripped</li></ul>



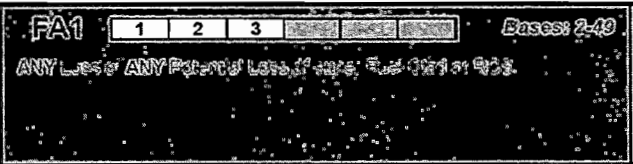


Instructor Actions / Plant Response	Operator Actions
<i>Reactor water level continues to lower</i>	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"><li>• Acknowledges RO report that RCIC has tripped</li><li>• Continues with the actions of N2-EOP-C5:</li><li>• Determines that RPV blowdown is required based on RPV level trend and available injection systems</li><li>• Provides crew update that due to lowering level that exceeds current preferred injection system capacity, will be transitioning to RPV Blowdown</li><li>• Provides crew update for N2-EOP-C2 entry and exit from N2-EOP-C5 level and pressure leg only (stay in power leg of C5)</li><li>• Performs the actions of N2-EOP-C2:<ul style="list-style-type: none"><li>◦ Determines that the reactor will not remain shutdown without boron</li><li>◦ Determines suppression pool level above 192'</li><li>◦ Directs Low pressure ECCS injection terminated and prevented at panel 601</li><li>◦ Directs feedwater injection verified terminated and prevented at panel 603</li></ul></li></ul>



Instructor Actions / Plant Response	Operator Actions
	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"><li>• Acknowledges direction to terminate and prevent low pressure ECCS injection on panel 601</li><li>• Terminates and prevents low pressure ECCS injection using Terminate &amp; Prevent hard card:<ul style="list-style-type: none"><li>◦ <b><i>Verifies an initiation signal is present on both divisions</i></b></li><li>◦ <b><i>Places CSL*P1 in P-T-L</i></b></li><li>◦ <b><i>Overrides closed CSL*MOV104 injection valve</i></b></li><li>◦ <b><i>Overrides closed RHS*MOV24A injection valve</i></b></li><li>◦ <b><i>Places RHS*P1C in P-T-L</i></b></li><li>◦ <b><i>Overrides closed RHS*MOV24C injection valve</i></b></li><li>◦ <b><i>Overrides closed RHS*MOV24B injection valve</i></b></li></ul></li><li>• Reports Panel 601 has been terminated and prevented</li></ul>
	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"><li>• Acknowledges report that panel 601 has been terminated and prevented</li></ul>



Instructor Actions / Plant Response	Operator Actions
	<p><b>RO</b></p> <ul style="list-style-type: none"><li>• Acknowledges direction verify feedwater injection terminated and prevented at panel 603</li><li>• Verifies feedwater injection terminated and prevented at panel 603 using T &amp; P hard card:</li><li>• Verifies FWS-LV10A, B, C level controllers in manual and closed</li><li>• Verifies no feedwater flow indicated on panel 603</li><li>• Reports feedwater injection has been verified terminated and prevented at panel 603</li></ul>
	<p><b>SRO</b></p> <ul style="list-style-type: none"><li>• Acknowledges report that feedwater injection has been verified terminated and prevented at panel 603</li><li>• Directs 7 ADS valves Opened</li><li>• Directs RHRA(B) through shutdown cooling injection lined up per N2-EOP-6.30</li></ul>
<p><b>EAL Criteria Met</b></p>  <p>RC - Loss 4.2</p>	<p><b>RO</b></p> <ul style="list-style-type: none"><li>• Acknowledges direction to open all 7 ADS valves.</li><li>• Opens all 7 ADS valves using N2-EOP-HC attachment 5:<ul style="list-style-type: none"><li>◦ Determines that no SRVs are stuck open and that an ECCS pump is operating</li><li>◦ <b>Arms and depresses both ADS logic pushbuttons for Division I:</b><ul style="list-style-type: none"><li>- <b>ADS LOGIC "A" manual pushbutton</b></li><li>- <b>ADS LOGIC "E" manual pushbutton</b></li></ul></li><li>◦ <b>Arms and depresses both ADS logic pushbuttons for Division II:</b></li></ul></li></ul>



Instructor Actions / Plant Response	Operator Actions
	<ul style="list-style-type: none"><li>- <b>ADS LOGIC "B" manual pushbutton</b></li><li>- <b>ADS LOGIC "F" manual pushbutton</b></li><li>• Reports all 7 ADS valves are open using only the 'A' solenoids</li></ul>
	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"><li>• Acknowledges report that all 7 ADS valves are open</li><li>• Returns to ATWS level (enters EOP-C5 center leg for level control, remains in N2-EOP-C2 for pressure control)</li><li>• N2-EOP-C5 center leg actions:<ul style="list-style-type: none"><li>◦ Determines 7 SRVs open</li><li>◦ Waits until reactor pressure lowers below 178 psig</li><li>◦ Directs injection through shutdown cooling using RHRA(B)</li><li>◦ Directs RO to report if injection established</li></ul></li></ul>



Instructor Actions / Plant Response	Operator Actions
<p><b><u>Booth Operator Note</u></b></p> <ul style="list-style-type: none"><li>When injection is established with first RHR loop through Shutdown Cooling, allow RPV water level to rise to approximately -130 inches FZ or lead evaluator discretion before tripping the RHR pump.</li></ul> <p>If the crew decides to place RHR 'A' in shutdown cooling injection first, the <b>insert</b> the following <b>malfunction</b> when 2RHS*MOV40A is taken to open:</p> <p><b>TRG14 RH01A</b>, RHR Pump Trip (P1A), FINAL=TRUE</p> <p>If the crew decides to place RHR 'B' in shutdown cooling injection first, the <b>insert</b> the following <b>malfunction</b> when 2RHS*MOV40B is taken to open:</p> <p><b>TRG15 RH01B</b>, RHR Pump Trip (P1B), FINAL=TRUE</p>	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"><li>Acknowledges direction to inject through shutdown cooling</li><li>Continues with N2-EOP-6.30 section 6.1.6(6.2.6) actions:<ul style="list-style-type: none"><li>Throttles open RHS*MOV40A(B), SDC A(B) RETURN (2CEC*PNL601) to a maximum of 7450 gpm on E12-R603A(B), RHR A TOTAL FLOW meter to control RPV water level</li><li>Recognizes/reports the trip of RHS*P1A(B)</li></ul></li></ul>
	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"><li>Acknowledges report of the trip of RHS*P1A(B)</li><li>Directs opposite loop of RHR place in shutdown cooling injection</li></ul>

Instructor Actions / Plant Response	Operator Actions
<p><b>Role Play:</b> When directed to lift and tape leads and install jumper #24 to defeat the Group 5 isolation interlocks, <b>insert</b> the following <b>malfunction</b>:</p> <p><b>TRG9      RH08</b>, Group 5 Isolation Failure - (RHS*MOV122/113), FINAL=TRUE</p> <p>Wait 2 minutes, then report that the lead has been lifted and taped and jumper #24 (9) has been installed.</p>	<p><b>BOP</b></p> <ul style="list-style-type: none"> <li>• Defeats group 5 isolation interlocks for 2RHS*MOV40A(B) as follows: <ul style="list-style-type: none"> <li>◦ Lifts AND tapes the lead on terminal point BB-58(62)</li> <li>◦ Installs EOP Jumper #24(9) on terminal points BB-49(41) AND AA-72(60)</li> </ul> </li> <li>• Verify RHS*P1A(B), PMP 1A(B) is running</li> <li>• Verify open SWP*MOV90A(B), HEAT EXCHANGER 1A(B) SVCE WTR INLET VLV</li> <li>• Verifies reactor pressure has been reduced to less than 178 psig</li> <li>• <b>Throttles open RHS*MOV40A(B), SDC A(B) RETURN (2CEC*PNL601) to a maximum of 7450 gpm on E12-R603A(B), RHR A TOTAL FLOW meter to control RPV water level</b></li> <li>• Reports to the US injection to the vessel is established</li> <li>• Throttles open SWP*MOV33A(B), HEAT EXCHANGER 1A(B) SVCE WTR OUTLET VLV THROTTLE to establish flow NOT to exceed 7400 gpm on E12-R602A(B), SVCE WTR TO RHR A(B) HX FLOW meter</li> </ul>

Instructor Actions / Plant Response	Operator Actions
<p>If requested to place SWP radiation monitor RE23A in service, <b>insert</b> the following <b>remote function</b>:</p> <p><b>TRG16 RM02-040</b>, SWP23A SWP From RHR 'A' Ht Exch Rad Monit Online, FINAL=ON  <b>RM03-040</b>, SWP23A SWP From RHR 'A' HT EXCH Rad Monit Sample Pmp Power, FINAL=ON</p> <p>Wait 2 minutes, then report that 2SWP*RE23A is in service</p> <p>If requested to place SWP radiation monitor RE23B in service, <b>insert</b> the following <b>remote function</b>:</p> <p><b>TRG17 RM02-041</b>, SWP23B Current Radiation Level Online, FINAL=ON  <b>RM03-041</b>, SWP23B Current Radiation Level Sample Pmp Power, FINAL=ON</p> <p>Wait 2 minutes, then report that 2SWP*RE23B is in service</p>	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>Notifies Radiation Protection to start Radiation Monitor 2SWP*RE23A(B)</li> </ul>
	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>Requests to start a 5th SWP pump</li> </ul>
	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>Acknowledges request to start a 5<sup>th</sup> SWP pump and directs the RO to start a 5<sup>th</sup> SWP pump</li> </ul>
	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>Acknowledges direction to start a 5th SWP pump</li> <li>Starts 2SWP*P1E / 2SWP*P1F</li> </ul>

Instructor Actions / Plant Response	Operator Actions
	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>Acknowledges direction to start a 5th SWP pump</li> <li>Starts 2SWP*P1E / 2SWP*P1F</li> </ul>
	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>May direct RO to inject with CSL and LPCI 'C' per N2-EOP-6.3</li> </ul>
<p><b>Role Play</b></p> <p>When directed, as field operator to place the CSL injection valve (CSL*MOV104) breaker to off and Lift and tape lead 'A5' and lead 'A7' off relay 49X-2CSLNO4 at EHS*MCC102, wait 3 minutes and then <b>manually insert</b> the following <b>remotes</b>:</p> <ul style="list-style-type: none"> <li><b>CS17</b>, CSL*MOV104 600V Bkr Status, FINAL = Open</li> <li><b>CS03</b>, OP31.H.1.1 2CSL*MOV104 injection, FINAL = Throttle</li> </ul> <p>Then report that breaker EHS*MCC102-15B, 2CSL*MOV104, LPCS Injection MOV is off and leads 'A5' and lead 'A7' off relay 49X-2CSLNO4 at EHS*MCC102 have been lifted and taped.</p> <p>When directed to place EHS*MCC102-15B, 2CSL*MOV104, LPCS Injection MOV back to On, wait 1 minute and then <b>manually change</b> the following <b>remote</b>:</p> <ul style="list-style-type: none"> <li><b>CS17</b>, CSL*MOV104 600V Bkr Status, FINAL = Close</li> </ul>	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>If directed, acknowledges report to inject with LPCS per N2-EOP-6.3</li> <li>Reviews N2-EOP-6.3, step 6.2 for LPCS Injection Throttling</li> <li>Performs N2-EOP-6.3, step 6.2 actions: <ul style="list-style-type: none"> <li>Dispatches a field operator to: <ul style="list-style-type: none"> <li>Place EHS*MCC102-15B, 2CSL*MOV104, LPCS Injection MOV to Off</li> <li>Lift and tape lead 'A5' and lead 'A7' off relay 49X-2CSLNO4 at EHS*MCC102</li> </ul> </li> </ul> </li> <li>Acknowledges report that EHS*MCC102-15B, 2CSL*MOV104, LPCS Injection MOV is off and leads 'A5' and lead 'A7' off relay 49X-2CSLNO4 at EHS*MCC102 have been lifted and taped.</li> <li>Directs field operator to place EHS*MCC102-15B, 2CSL*MOV104, LPCS Injection MOV back to On</li> <li>Notifies US that CSL*MOV104 seal-in has been defeated</li> <li>Informs US that CSL injection is lined up and ready</li> <li>Prompts for direction from US for level band</li> </ul>



Instructor Actions / Plant Response	Operator Actions
<p><b><u>Role Play</u></b></p> <p>When directed, as field operator to place the LPCI 'C' injection valve (RHS*MOV24C) breaker to off and Lift and tape lead 'A5' and lead 'A7' off relay 49X-2RHSC04 at 2EHS*MCC303, wait 3 minutes and then <b>manually insert</b> the following <b>remotes</b>:</p> <ul style="list-style-type: none"> <li>• <b>RH35</b>, RHS*MOV24C 600V Bkr Status, FINAL = Open</li> <li>• <b>RH12</b>, OP32.H.9 2RHS*MOV24C Injection Throttle, FINAL = Throttle</li> </ul> <p>Then report that breaker 2EHS*MCC303-19A, 2RHS*MOV24C, RHR INJECTION MOV is OFF and leads 'A5' and lead 'A7' off relay 49X-2RHSC04 at 2EHS*MCC303 have been lifted and taped.</p> <p>When directed to place 2EHS*MCC303-19A, 2RHS*MOV24C, RHR INJECTION MOV back to On, wait 1 minute and then <b>manually change</b> the following <b>remote</b>:</p> <ul style="list-style-type: none"> <li>• <b>RH35</b>, RHS*MOV24C 600V Bkr Status, FINAL = Close</li> </ul>	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• If directed, acknowledges report to inject with LPCI 'C' per N2-EOP-6.3</li> <li>• Reviews N2-EOP-6.3, step 6.5 for LPCI 'C' Injection Throttling</li> <li>• Performs N2-EOP-6.3, step 6.5 actions: <ul style="list-style-type: none"> <li>◦ Dispatches a field operator to: <ul style="list-style-type: none"> <li>- Place 2EHS*MCC303-19A, 2RHS*MOV24C, RHR INJECTION MOV to OFF.</li> <li>- Lift and tape lead 'A5' and lead 'A7' off relay 49X-2RHSC04, 2EHS*MCC303 Rear of Cubicle 19A</li> </ul> </li> <li>◦ Acknowledges report that 2EHS*MCC303-19A, 2RHS*MOV24C, RHR INJECTION MOV is OFF and leads 'A5' and lead 'A7' off relay 49X-2RHSC04 at 2EHS*MCC303 have been lifted and taped.</li> <li>◦ Directs field operator to place breaker 2EHS*MCC303-19A, 2RHS*MOV24C, RHR INJECTION MOV back to On</li> <li>◦ Notifies US that RHS*MOV24C seal-in has been defeated</li> <li>◦ Informs US that LPCI 'C' injection is lined up and ready</li> <li>◦ Prompts for direction from US for level band</li> </ul> </li> </ul>

Instructor Actions / Plant Response	Operator Actions
	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges report that injection to the vessel is established</li> <li>• Determines from N2-EOP-C5, step L-15 that level can be restored and maintained above -39"</li> <li>• Determines that level was not previously lowered before N2-EOP-C2 was entered</li> <li>• Returns to step L-8 and directs a reactor water level band using RHS through shutdown cooling injection</li> <li>• Provides warning to RO that injecting to fast may damage the core</li> </ul>
	<p><b><u>RO</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledges report of level band using shutdown cooling injection and warning to RO that injecting to fast may damage the core</li> </ul>
	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"> <li>• Enters N2-EOP-PC due to high Suppression Pool temperature</li> </ul>
<p><b><u>Note:</u></b> When one RHS loop is placed into service (shutdown cooling injection) the LPCI mode will be declared INOP and SM should review TS 3.5.1 ECCS and recognizes that condition 'A' applies because one ECCS injection subsystem is inoperable. The Required Action is to restore one ECCS injection / spray subsystem to OPERABLE status within 7 days.</p>	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"> <li>• Maintains crew oversight and provides coaching when necessary.</li> <li>• Declares RHS A(B) LPCI mode inoperable</li> <li>• Reviews Tech Spec 3.5.1 &amp; 3.6.2.1 (When time Permits)</li> </ul>



**Event  
Termination  
Criteria**

- RPV blowdown has been performed
- Control Rod insertion is in progress
- Reactor level being controlled in assigned band