

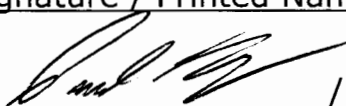
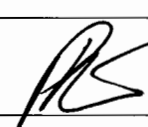


Training Id: **NMP1 2018 NRC RO Admin COO1**

Revision: **0.0**

Title: **Verification of Active License Status**

## Approvals:

	<u>Signature / Printed Name</u>	<u>Date</u>
Developed By	 / Paul Isham	2/27/18
Validated By	 Justin Farella	8/22/18
Facility Reviewer	 / Phil Nichols	9.7.18

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-105-101 – Administrative Process for NRC License and Medical Requirements
2. OP-AA-105-102 – NRC Active License Maintenance
3. NUREG 1123, 2.1.4 (3.3)

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## Instructor Information

### A. JPM Information

1. Description
  - a. This JPM tests the candidate's ability to evaluate operator requirements for maintenance of an active license.
2. Task Information:
  - a. NS-OM202-00001, Conduct Shift (Position) Turnover (Relief) (PRA) (Branching Task).
  - b. K/A 2.1.4 (3.3), 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 copies of OP-AA-105-101 and 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 the procedures.

## **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 operating at 100% power.</li> <li>• Today is January 1, 2019.</li> <li>• You are the on-shift CRO.</li> <li>• You must leave shift.</li> <li>• Three replacement operators are available.</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>(Operator Name)</b>, using the given information, determine which of the three operators, if any, are qualified to relieve you, in accordance with OP-AA-105-102, NRC Active License Maintenance and OP-AA-105-101, Administrative Process For NRC License And Medical Requirements.</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>
2.	<p>Obtain a copy of the reference procedure and review / utilize the correct section of the procedure.</p>	P	<p>SAT / UNSAT</p> <p><b>STD:</b> OP-AA-105-101 and OP-AA-105-102 Obtained</p>

	<b>PERFORMANCE</b>	<b>ACT. CODE</b> P / S / NA	<b>EVALUATOR</b>
3.	Reviews RO #1 data and determines eligibility	P	<b>PASS / FAIL</b>  <b>STD:</b> Determines RO #1 is not qualified to relieve the CRO due to not having an NRC Form 396 on file from the last 2 years. (OP-AA-105-101, Att 5 requires a biennial medical exam every 730 days or during the anniversary month of the second year)
4.	Reviews RO #2 data and determines eligibility	P	<b>PASS / FAIL</b>  <b>STD:</b> Determines RO#2 is not qualified to relieve the CRO due to not having a respirator mask fit test on file for the past year. The last respiratory exam was performed on the same day as the last license physical (626 days ago), but is required annually, per OP-AA-105-101, section 4.4.
5.	Reviews RO #3 data and determines eligibility	P	<b>PASS / FAIL</b>  <b>STD:</b> Determines RO#3 is qualified to relieve the CRO.

<b>TASK STANDARD</b>	Candidate determines that only RO #3 is qualified to stand the watch using the criteria contained in OP-AA-105-102
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<b>STOP TIME</b>	
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## JPM Handout

<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"> <li>• The plant is operating at 100% power.</li> <li>• Today is January 1, 2019.</li> <li>• You are the on-shift CRO.</li> <li>• You must leave shift.</li> <li>• Three replacement operators are available.</li> </ul>
<b>INITIATING CUE</b>	<p><b>(Operator Name)</b>, using the given information, determine which of the three operators, if any, are qualified to relieve you, in accordance with OP-AA-105-102, NRC Active License Maintenance and OP-AA-105-101, Administrative Process For NRC License And Medical Requirements.</p>

	RO #1	RO #2	RO #3
Hours Performing Licensed Operator Duties in Last Quarter	11/2/18: 0630 - 1830 11/3/18: 0630 - 1830 11/4/18: 0630 - 1830 11/5/18: 0630 - 1830 12/24/18: 0630 - 1830 12/25/18: 0630 - 1830	10/21/18: 0800 - 1600 10/22/18: 0800 - 1600 10/23/18: 0800 - 1600 11/12/18: 0800 - 1600 11/13/18: 0800 - 1600 11/14/18: 0800 - 1600 11/15/18: 0800 - 1600	10/28/18: 0630 - 1830 10/29/18: 0630 - 1830 10/30/18: 0630 - 1830 11/22/18: 0630 - 1830 11/23/18: 0630 - 1830
Status of Requalification Training	All requirements of TQ-AA-150 met	All requirements of TQ-AA-150 met	All requirements of TQ-AA-150 met
Date of Last Respirator Training	10/1/2018	2/8/2018	2/8/2018
Date of Last SCBA Mask Fit Test	10/1/2018	4/15/2017	2/8/2018
Date of Most Recent NRC Form 396 on File	12/10/2016	4/15/2017	4/15/2017
Date of Most Recent Respiratory Examination with OHS on File	9/30/2018	3/31/2018	4/27/2018



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**Attachment A – Answer Sheet**

	<b>Qualified for Relief? (Yes/No)</b>	<b>If No, what requirement is not being met, in accordance with OP-AA-105-101/102?</b>
<b>RO #1</b>		
<b>RO #2</b>		
<b>RO #3</b>		


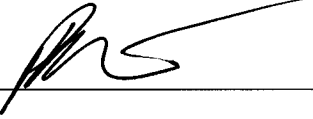


Training Id: **NMP1 NRC RO Admin COO2**

Revision: **0.0**

Title: **DWFDT / DWEDT Leak Rate Determination and Evaluation**

## Approvals:

	<u>Signature / Printed Name</u>	<u>Date</u>
Developed By	 / Paul Isham	3/1/18
Validated By	Will Vannostrand	8/22/18
Facility Reviewer	 / Phil Nichols	9.7.18
Approximate Duration: 15 minutes		

## Documentation of Performance:

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

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

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

Grade: **Pass / Fail**

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

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

Date: \_\_\_\_\_

## References

1. N1-OP-8 – Primary Containment Area Cooling System
2. Unit 1 Technical Specifications, Section 3.2.5
3. NUREG 1123, 2.1.18 (3.6)

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## Instructor Information

### A. JPM Information

1. Description
  - a. This JPM tests the operator's ability to evaluate control room indications to calculate Drywell leak rates and determine their proximity to leak rate limits.
  - b. Critical steps are annotated in the Evaluator standard column with a bolded **\*PASS/FAIL**.
2. Task Information:
  - a. S-ODP-OPS0110-00001, Evaluate Containment Leakage
  - b. K/A 2.1.18 (3.6), Ability to make accurate, clear, and concise logs, records, status boards, and reports.

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 N1-OP-8.
- b. Provide calculators.
- c. If multiple operators are going to perform the JPM at the same time, ensure each operator has a copy of N1-OP-8.

## **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 operating at 100% power.</li> <li>• The Drywell Leak Detection System is out of service.</li> <li>• The following information is available for the Drywell Floor Drain Tank (DWFDT): <ul style="list-style-type: none"> <li>◦ Leak rate has been constant at 0.92 gpm for the past week.</li> <li>◦ Previous pump down at 21:00 today.</li> <li>◦ Most recent pump down at 21:25 today.</li> <li>◦ Pump down volume = 140 gallons.</li> </ul> </li> <li>• The following information is available for the Drywell Equipment Drain Tank (DWEDT): <ul style="list-style-type: none"> <li>◦ Leak rate has been constant at 0.50 gpm for the past week.</li> <li>◦ Previous pump down at 12:00 today.</li> <li>◦ Most recent pump down at 22:00 today.</li> <li>◦ Pump down volume = 430 gallons.</li> </ul> </li> <li>• Technical Specification (TS) limits are: <ul style="list-style-type: none"> <li>◦ 5 gpm unidentified leakage.</li> <li>◦ 2 gpm increase in unidentified leakage within any period of 24 hours or less.</li> <li>◦ 25 gpm total leakage averaged over any 24-hour period.</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>(Operator Name)</b>, determine DWFDT, DWEDT, and total leak rates and determine if they are within the Technical Specification limits or not, in accordance with N1-OP-8. Record your findings on the attached worksheet.</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> N1-OP-8 Obtained, as necessary, Attachment 6 referenced.
3.	Determines DWFDt leak rate.	P	<b>*PASS / FAIL</b>  <b>STD:</b> Determines the following:  <b>(140gal / 25 min) = 5.6 gpm</b>
4.	Evaluates DWFDt leak rate.	P	<b>*PASS / FAIL</b>  <b>STD:</b> Identifies DWFDt (unidentified leakage) rate is ABOVE the limit (5 gpm)
		P	<b>*PASS / FAIL</b>  <b>STD:</b> Identifies DWFDt (unidentified leakage) rate is ABOVE the limit for increase in a 24-hour period (2gpm)  <b>(5.6 gpm – 0.92 gpm) = 4.68 gpm increase (plus or minus 0.02 gpm)</b>
5.	Determines DWEDT leak rate.	P	<b>*PASS / FAIL</b>  <b>STD:</b> Determines the following:  <b>(430gal / 600 min) = .72 gpm (+/- .02 gpm)</b>



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
6.	Evaluates TOTAL leak rate.  <b>Note:</b> This may be evidenced by lack of a report to the contrary.	P	<b>*PASS / FAIL</b>  <b>STD:</b> Determines total leak rate in 6.32 gpm (+/- .04 gpm)  <b>(.72 + 5.6)gpm = 6.32 gpm</b>
		P	<b>*PASS / FAIL</b>  <b>STD:</b> Determines total leak rate is within the limit (25 gpm)

<b>TASK STANDARD</b>	Determine DWFDt, DWEDt, and total leak rates and recognize Technical Specification limits are being exceeded.
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<b>STOP TIME</b>	
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## JPM Handout

<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"><li>• The plant is operating at 100% power.</li><li>• The Drywell Leak Detection System is out of service.</li><li>• The following information is available for the Drywell Floor Drain Tank (DWFDT):<ul style="list-style-type: none"><li>◦ Leak rate has been constant at 0.92 gpm for the past week.</li><li>◦ Previous pump down at 21:00 today.</li><li>◦ Most recent pump down at 21:25 today.</li><li>◦ Pump down volume = 140 gallons.</li></ul></li><li>• The following information is available for the Drywell Equipment Drain Tank (DWEDT):<ul style="list-style-type: none"><li>◦ Leak rate has been constant at 0.50 gpm for the past week.</li><li>◦ Previous pump down at 12:00 today.</li><li>◦ Most recent pump down at 22:00 today.</li><li>◦ Pump down volume = 430 gallons.</li></ul></li><li>• Technical Specification (TS) limits are:<ul style="list-style-type: none"><li>◦ 5 gpm unidentified leakage.</li><li>◦ 2 gpm increase in unidentified leakage within any period of 24 hours or less.</li><li>◦ 25 gpm total leakage averaged over any 24-hour period.</li></ul></li></ul>
<b>INITIATING CUE</b>	<p><b>(Operator Name)</b>, determine DWFDT, DWEDT, and total leak rates and determine if they are within the Technical Specification limits or not, in accordance with N1-OP-8. Record your findings on the attached worksheet.</p>

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**Attachment A – Answer Sheet**

	<b>Calculated Leak Rate Value (gpm)</b>	<b>Within Technical Specification Limit?</b>
<b>DWFDT Leak Rate</b>		
<b>DWEDT Leak Rate</b>		
<b>Total Leak Rate</b>		






Training Id: NMP1 NRC RO Admin EC

Revision: 0.0

Title: Develop a clearance boundary for the Liquid Poison Test Tank

**Approvals:**

	<u>Signature / Printed Name</u>	<u>Date</u>
Developed By	 / Paul Isham	<u>3/1/18</u>
Validated By	 Will Vannostrand	<u>8/22/18</u>
Facility Reviewer	 / Phil Nichols	<u>9.7.18</u>

Approximate Duration: 30 minutes

**Documentation of Performance:**

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

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

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

Grade: **Pass / Fail**

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

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

Date: \_\_\_\_\_



## References

1. N1-OP-12, Liquid Poison System
2. OP-CE-109-101, Clearance and Tagging
3. NUREG 1123, 2.2.13 (4.1)
4. P&ID C-18019-C



## Instructor Information

### A. JPM Information

1. Description
  - a. This JPM tests the operator's ability to use and comply with the facility's Clearance and Tagging procedures. The applicant will identify the isolations required to tagout the Liquid Poison Test Tank for maintenance.
  - b. Critical steps are annotated in the Evaluator standard column with a bolded **\*PASS/FAIL**.
2. Task Information:
  - a. XX-FIO-SAFTAG-010-E4, Create tagouts to support scheduled work.
  - b. K/A 2.2.13 (4.1) Knowledge of tagging and clearance procedures.
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 OP-CE-109-101 are available, including extra attachment 19 forms.
  - b. Ensure adequate copies N1-OP-12 are available
  - c. Ensure adequate copies of **P&ID C-18019-C** 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 operating at 100% power.</li> <li>A work order is being planned to inspect the inside of the Liquid Poison Test Tank.</li> <li>The clearance request asks for the ability to intermittently operate valve 41-15 to drain water from the tank while the tagout is hanging, without the need to temporarily remove any tag(s).</li> <li>eSOMs is unavailable. The clearance will need to be processed manually in accordance with OP-CE-109-101, Clearance and Tagging.</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>(Operator Name)</b> , identify the components required to be tagged to isolate the Liquid Poison Test Tank for cleaning. Record the required components, tag type, and component positions on OP-CE-109-101, Attachment 19, Tagout Form Template.
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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.
2.	Obtain a copy of the reference procedure and review / utilize the correct section of the procedure.	P	SAT / UNSAT <b>STD:</b> OP-CE-109-101 obtained
3.	Obtain copies of the appropriate references to determine isolations.	P	SAT / UNSAT <b>STD:</b> obtains and references as required: <ul style="list-style-type: none"> <li>P&amp;ID C-18019-C</li> <li>N2-OP-12</li> </ul>
4.	Identifies and records the following component isolations and required positions.  <b>Note:</b> Due to unavailability of eSOMs and other electronic databases, exact component IDs, names, and tagging positions may vary.		





	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
4a	42-01, BV - LP PUMP 11 DISCHARGE TEST  <b>Note:</b> Many of these valves are already maintained "Locked Closed". Applicant may list placement configuration as "Locked Closed" -vs- "Closed". Either is acceptable for full credit.	P	<b>*PASS / FAIL</b>  <b>STD:</b> Danger tag CLOSED the pump 11 discharge test valve, 42-01
4b	42-02, BV - LP PUMP 12 DISCHARGE TEST	P	<b>*PASS / FAIL</b>  <b>STD:</b> Danger tag CLOSED the pump 12 discharge test valve, 42-02
4c	42-06, BV - LP PUMPS DISCHARGE TO TEST TANK	P	<b>*PASS / FAIL</b>  <b>STD:</b> Danger tag CLOSED the pump discharge to test tank valve, 42-06
4d	41-03, BV - DEMIN WATER TO LP TEST TANK	P	<b>*PASS / FAIL</b>  <b>STD:</b> Danger tag CLOSED the Demin water to LP test tank blocking valve, 41-03
4e	41-15, DRAIN-LP TEST TANK TO 55 GAL DRUM	P	SAT / UNSAT <b>STD:</b> Information tag OPEN or CLOSED, the LP test tank drain valve, 41-15. (May use "No tag")
4f	41-06, BV - LP PUMP 11 SUCTION FROM TEST TANK	P	<b>*PASS / FAIL</b>  <b>STD:</b> Danger tag CLOSED the pump 11 suction valve, 41-06
4g	41-18, BV-LP PUMP 12 SUCTION FROM TEST TANK	P	<b>*PASS / FAIL</b>  <b>STD:</b> Danger tag CLOSED the pump 12 suction valve, 41-18
<b>TASK STANDARD</b>		Identify the components required to be tagged to isolate the Liquid Poison Test Tank for internal inspection.	
<b>STOP TIME</b>			



## Evaluator's Answer Key


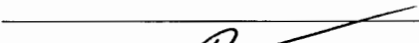

Do Not Provide to Candidate

Tag Type	Equipment	Ver Req	Pla Seq	Placement Configuration	Place. 1 <sup>st</sup> Ver Date/Time	Place. 2 <sup>nd</sup> Ver Date/Time	Ver Req	Rest Seq	Rest. Config. *As-left (If Diff)	Rest. 1 <sup>st</sup> Ver Date/Time	Rest. 2 <sup>nd</sup> Ver Date/Time
Serial No	*Equipment Description *Equipment Location			*Notes					*Notes		
<b>Danger</b>	<b>42-01</b>			<b>Closed</b>							
	BV - LP PUMP 11 DISCHARGE TEST										
<b>Danger</b>	<b>42-02</b>			<b>Closed</b>							
	BV - LP PUMP 12 DISCHARGE TEST										
<b>Danger</b>	<b>42-06</b>			<b>Closed</b>							
	BV - LP PUMPS DISCHARGE TO TEST TANK										
<b>Danger</b>	<b>41-03</b>			<b>Closed</b>							
	BV - DEMIN WATER TO LP TEST TANK										
Info	41-15			Open or Closed							
	DRAIN-LP TEST TANK TO 55 GAL DRUM										
<b>Danger</b>	<b>41-06</b>			<b>Closed</b>							
	BV - LP PUMP 11 SUCTION FROM TEST TANK										
<b>Danger</b>	<b>41-18</b>			<b>Closed</b>							
	BV-LP PUMP 12 SUCTION FROM TEST TANK										

## JPM Handout

<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"><li>• The plant is operating at 100% power.</li><li>• A work order is being planned to inspect the inside of the Liquid Poison Test Tank.</li><li>• The clearance request asks for the ability to intermittently operate valve 41-15 to drain water from the tank while the tagout is hanging, without the need to temporarily remove any tag(s).</li><li>• eSOMs is unavailable. The clearance will need to be processed manually in accordance with OP-CE-109-101, Clearance and Tagging.</li></ul>
<b>INITIATING CUE</b>	<p><b>(Operator Name)</b>, identify the components required to be tagged to isolate the Liquid Poison Test Tank for cleaning. Record the required components, tag type, and component positions on OP-CE-109-101, Attachment 19, Tagout Form Template.</p>

Training Id: **NMP1 NRC RO Admin JPM RC**Revision: **0.0**Title: **Application of Radiation Exposure Limits IAW RP-AA-203 – SDC Room****Approvals:**

	<u>Signature / Printed Name</u>	<u>Date</u>
Developed By	 / Paul Isham	1/8/18
Validated By	 Justin Farella	8/22/18
Facility Reviewer	 / Phil Nichols	9.7.18

Approximate Duration: 15 minutes**Documentation of Performance:**

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

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

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

Grade: **Pass / Fail**Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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

## References

1. RP-AA-203, Exposure Control and Authorization
2. RP-AA-300, Radiological Survey Program
3. NUREG 1123, 2.3.4 (3.2)

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## Instructor Information

### A. JPM Information

1. Description
  - a. This JPM tests the operator's ability to evaluate radiological survey data against exposure limits in order to determine availability to perform operator tasks.
  - 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 2.3.4 (3.2), Knowledge of radiation exposure limits under normal or emergency 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. Provide copy of the SDC room survey map for each operator performing the JPM.
  - b. Ensure sufficient copies of RP-AA-203 and RP-AA-300 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 coasting down at the end of the cycle</li> <li>Preparations are being made to use of the Shutdown Cooling System during the shutdown/cooldown</li> <li>Each Shutdown Cooling Pump needs to have its oil changed</li> <li>Assume NO radiation exposure is received in transit to and from the job location.</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>(Operators Name)</b>, given supporting information, determine which jobs you can complete without exceeding your administrative dose limit. The jobs are to be <u>performed in the order stated</u>. Your current dose is 1915 mrem.</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.
2.	Using the provided survey map and job descriptions, calculate the respective dose for each job as follows:		
2a.	Dose for Job 1: (1/2 hour x 50 mrem/hr) = 25 mrem	P	<b>*PASS / FAIL</b> <b>STD:</b> Determines dose for Job 1 is 25 mrem
2b.	Dose for Job 2: (1/2 hour x 60 mrem/hr) = 30 mrem	P	<b>*PASS / FAIL</b> <b>STD:</b> Determines dose for Job 2 is 30 mrem



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
2c.	Dose for Job 3: (1/2 hour x 80 mrem/hr) = 40 mrem	P	<b>*PASS / FAIL</b>  <b>STD:</b> Determines dose for Job 3 is 40 mrem
3.	Determines remaining dose the operator is allowed to receive. 2000 mrem – 1915 mrem = 85 mrem	P	SAT / UNSAT  <b>STD:</b> Determines the operator can receive 85 mrem prior to exceeding administrative dose limits
4.	Determines which jobs can be completed without exceeding administrative dose limits.	P	<b>*PASS / FAIL</b>  <b>STD:</b> Determine that jobs 1 and 2 can be performed without exceeding the administrative dose limit.  85 mrem remaining is < the 95 mrem required for jobs 1, 2, and 3.  (or 1915 mrem + 95 mrem = 2010 > 2000 mrem administrative limit)

<b>TASK STANDARD</b>	Calculates the dose for each job and determines that only jobs 1 & 2 can be performed without exceeding the administrative dose limit of 2000 mrem/yr.
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<b>STOP TIME</b>	
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## JPM Handout

<b>INITIAL CONDITIONS</b>	Given: <ul style="list-style-type: none"><li>• The plant is at coasting down at the end of the cycle</li><li>• Preparations are being made to use of the Shutdown Cooling System during the shutdown/cooldown</li><li>• Each Shutdown Cooling Pump needs to have its oil changed</li><li>• Assume NO radiation exposure is received in transit to and from the job location.</li></ul>
<b>INITIATING CUE</b>	<b>(Operators Name)</b> , given supporting information, determine which jobs you can complete without exceeding your administrative dose limit. The jobs are to be <u>performed in the order stated</u> . Your current dose is 1915 mrem.

### JOB DESCRIPTION

#### 1. **JOB 1**

- a. Drain SDC Pump 11 oil
- b. Refill SDC Pump 11 with oil
  - i. Total time (for oil drain and refill): 30 minutes at the pump/motor

#### 2. **JOB 2**

- a. Drain SDC Pump 12 oil
- b. Refill SDC Pump 12 with oil
  - i. Total time (for oil drain and refill): 30 minutes at the pump/motor

#### 3. **JOB 3**

- a. Drain SDC Pump 13 oil
- b. Refill SDC Pump 13 with oil
  - i. Total time (for oil drain and refill): 30 minutes at the pump/motor

<b>Nine Mile Point Unit One</b>	<b>RB 261' Shut-Down Cooling Room</b>	Map No. <b>25b</b>
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**Radiation and Contamination Survey to allow  
Operations to change oil in SDC pumps.**

Survey No. **1RB- 25533**  
 Page            of  
 Date/Time 10/7/2018 2000  
 RWP No. NM-1-18-00103  
 Rx Power    ~ 90 %  
 H<sub>2</sub> Inj. Rate    ~ 6    scfm

#	Item	$\beta\gamma$ dpm/100cm <sup>2</sup>	$\alpha$ dpm/100cm <sup>2</sup>
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			

**No Beta detected unless noted**

1. — = Rope/Area Boundary	2. (#) = Smear levels, dpm/100cm <sup>2</sup>	3. # = General Area Unless Noted	4. $\frac{*\#}{\#} = \frac{\gamma}{\beta} \frac{\text{Contact}}{30 \text{ cm}}$
5. #N = Neutron (mRem/hr)	6. (Δ) = Air Sample	7. L# = Large Area Wipe	
8. [A] = Area Rad Monitor	9. [V] # = VAMP Number	$\gamma$ = Readings in mRem/hr. $\beta$ = Readings in mRad/hr.	

Remarks: 5 smears taken on General room floor. All smears found to be <1k dpm/100 cm<sup>2</sup>

**Survey Instruments/Cal Due Dates:**  
 RO2 2431 10/05/2019  
 Frisker A745X 03/01/2019

Surveyor: Kelly P. Buckingham    Dose: 0.9 mRem    Reviewed By:

Date:

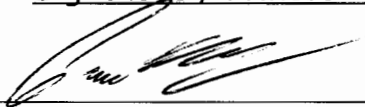



Training Id: **NMP1 2018 NRC SRO Admin COO1**

Revision: **0.0**

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

**Approvals:**

	<u>Signature / Printed Name</u>	<u>Date</u>
Developed By	 / Paul Isham	2/27/18
Validated By	Katie Higgins-Asmus	8/21/18
Facility Reviewer	 / Phil Nichols	9-7-18

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>
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<b>INITIATING CUE</b>	<p><b>(Operator Name),</b></p> <p>Perform the Shift Manager review of OP-AA-105-102, Attachment 2, Reactivation of License Log, and return it to me.</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.
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.



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
5.	Reviews shift hours for SRO #2	P	SAT / UNSAT  <b>STD:</b> Reviews attachment 2
6.	Determines SRO #2 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 a shift position required by technical specifications.

<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**

<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>
<b>INITIATING CUE</b>	<p><b>(Operator Name),</b></p> <p>Perform the Shift Manager review of OP-AA-105-102, Attachment 2, Reactivation of License Log, and return it to me.</p>

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

Employee Number: E12345

License Holder's Name: SRO #1

Date 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: Greg Atkins 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 Steve Nicholas 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 Shift Turnover responsibilities / procedure (ALL)

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

SRO #1 Today  
License Holder Date

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

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 / SRO Limited 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
9/15/18	US	Day	12	<input checked="" type="radio"/> Yes / No	<i>Gretchen Carter</i>
10/15/18	US	Day	12	<input checked="" type="radio"/> Yes / No	<i>Gary Spears</i>
10/20/18	US	Night	12	<input checked="" type="radio"/> Yes / No	<i>Gary Spears</i>
10/21/18	US	Night	12	<input checked="" type="radio"/> Yes / No	<i>Gary Spears</i>
				Yes / No	
10/22/18	Required Action: Perform a complete plant tour under the sole direct supervision of an active license holder as required in Step 4.b above shall not be performed during the performance of the required hours on shift listed above. Obtain signature verifying completion.				<i>Ryan Bracht</i>

**Reviewed by:** \_\_\_\_\_

Shift Manager

Date

**Final Review and Approval:**

\_\_\_\_\_  
Shift Operations Superintendent      Date

\_\_\_\_\_  
Operations Training Manager      Date

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

Employee Number: E54321

License Holder's Name: SRO #2

Date 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: Gary Ethins 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

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

Verified by: SRO #2 Today Steve Nicholas Today  
 License Holder Date Operations Support Manager Date

6. 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.

- b. Made a tour of the MCR, reviewing status of applicable systems/panels (ALL)
- g. Made a complete tour of the plant as specified in Step 4.2.1 (RO / SRO only)
- h. Made a tour of refuel floor / fuel handling areas (SRO for fuel handling only)
- i. Attended an Operations shift turnover meeting (SRO for fuel handling only)
- j. Reviewed applicable unit log and Limiting Condition for Operation (LCO) log (SRO for fuel handling only)
- k. Reviewed Shift Turnover responsibilities / procedure (ALL)

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

SRO #2 Today  
 License Holder Date

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

## 5. Hours on Shift

- c. 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.
- d. 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 / SRO Limited 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
10/1/18	US	Night	12	<input checked="" type="checkbox"/> Yes / No	Pat O'Brien
10/16/18	US	Night	12	<input checked="" type="checkbox"/> Yes / No	Luke Revelle
10/25/18	STA	Day	12	<input checked="" type="checkbox"/> Yes / No	Pat O'Brien
10/27/18	US	Day	12	<input checked="" type="checkbox"/> Yes / No	Luke Revelle
				Yes / No	
10/28/18	Required Action: Perform a complete plant tour under the sole direct supervision of an active license holder as required in Step 4.b above shall not be performed during the performance of the required hours on shift listed above. Obtain signature verifying completion.				Ryan Bracht

**Reviewed by:** \_\_\_\_\_

Shift Manager

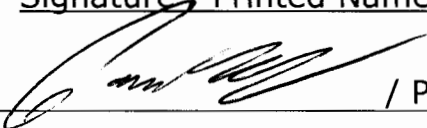
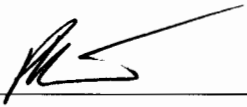
Date

**Final Review and Approval:**

\_\_\_\_\_  
 Shift Operations Superintendent      Date

\_\_\_\_\_  
 Operations Training Manager      Date

Training Id: NMP1 NRC SRO Admin JPM COO2Revision: 0.0Title: Perform Time to Boil Calculation for Reactor Coolant System**Approvals:**

	<u>Signature / Printed Name</u>	<u>Date</u>
Developed By	 / Paul Isham	<u>2/28/18</u>
Validated By	Katie Higgins-Asmus	<u>8/21/18</u>
Facility Reviewer	 / Phil Nichols	<u>9.7.18</u>

Approximate Duration: 25 minutes**Documentation of Performance:**

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

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

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

Grade: **Pass / Fail**Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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

## References

1. OP-NM-108-117-1002, Shutdown Operations Protection
2. NUREG 1123, 2.1.40 (3.9)



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## Instructor Information

### A. JPM Information

1. Description
  - a. This JPM tests the operator's ability to use and comply with facility administrative procedures. Given a copy of OP-NM-108-117-1002, Shutdown Operations Protection, the candidate will perform a time to boil calculation for the reactor cavity.
  - b. Critical steps are annotated in the Evaluator standard column with a bolded **\*Pass/Fail**.
2. Task Information:
  - a. N1-OPS-PS-03003, Perform Time-To-Boil Estimation
  - b. K/A 2.1.40 (3.9) Knowledge of refueling administrative requirements.

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 OP-NM-108-117-1002, Shutdown Operations Protection, are available.

- 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 has been in a forced shutdown for 24 hours.</li> <li>• A loss of Shutdown Cooling has occurred.</li> <li>• Reactor Coolant Temperature = 150°F.</li> <li>• Reactor Water Level = 72 inches.</li> <li>• RBCLC Temperature on TI-70-23C = 80°F.</li> <li>• One (1) Spent Fuel Pool Cooling Loop is in Service.</li> <li>• The Spent Fuel Pool gates are still installed.</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>(Operators Name)</b>, perform a Time to Boil calculation for the Reactor Coolant System in accordance with OP-NM-108-117-1002, Shutdown Operations Protection.</p> <p><b>EXAMINER NOTE:</b> Provide applicant a blank copy of OP-NM-108-117-1002 Attachments 1 &amp; 2 and Table 1.</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>
2.	<p>Obtain a copy of the reference procedure and review / utilize the correct section of the procedure.</p> <p><b>Note:</b> Evaluator is to provide copy of OP-NM-108-117-1002 to the candidate.</p>	P	<p>SAT / UNSAT</p> <p><b>STD:</b> OP-NM-108-117-1002 Obtained.</p>



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
3.	Determines DHPcore	P	SAT / UNSAT  <b>STD:</b> DHPcore = 42.8658 MBTU/HR  <b>Note:</b> The acceptable range for this value is 42.8-42.9 MBTU/HR.  <b>Note:</b> This value can be obtained directly from the "Totals" section of Table 1.
4.	Determines DHP  (Line 9 of Att 1)  DHP = DHPcore + DHPsfp. With gates installed, DHPsfp is considered 0 for this calculation.	P	<b>*PASS / FAIL</b>  <b>STD:</b> DHP = 42.8658 MBTU/HR  <b>Note:</b> The acceptable range for this value is 42.8-42.9 MBTU/HR.
5.	Calculates DHRsdc  (Line 58 of Att 1)	P	SAT / UNSAT  <b>STD:</b> DHRsdc = 0 MBTU/HR
6.	Calculates DHR  (Line 64 of Att 1)	P	<b>*PASS / FAIL</b>  <b>STD:</b> DHR = 0 MBTU/HR
7.	Selects Thermal Capacity (K) for specific condition applicable  (Line 74 of Att.1)	P	<b>*PASS / FAIL</b>  <b>STD:</b> K = 0.557 MBTU/F

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
8.	Calculates Time to Boil = $[212^{\circ}\text{F} - \text{SFP/Cavity Temp}] / (\text{DHP} - \text{DHR}) / \text{K}$  (Line 82 of Att.1)	P	<b>*PASS / FAIL</b>  <b>STD:</b> Time to Boil = $\frac{(212 - 150)}{(42.8658 - 0) / 0.557}$ = 0.8056 hours (or 48.34 minutes)  <b>Note:</b> To account for differences in rounding, the acceptable range for this value is 0.804 – 0.807 hours (or 48.2 – 48.42 minutes)

<b>TASK STANDARD</b>	Time to Boil calculation has been performed for the Reactor Coolant System in accordance with OP-NM-108-117-1002.
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<b>STOP TIME</b>	
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## JPM Handout

<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"><li>• The plant has been in a forced shutdown for 24 hours.</li><li>• A loss of Shutdown Cooling has occurred.</li><li>• Reactor Coolant Temperature = 150°F.</li><li>• Reactor Water Level = 72 inches.</li><li>• RBCLC Temperature on TI-70-23C = 80°F.</li><li>• One (1) Spent Fuel Pool Cooling Loop is in Service.</li><li>• The Spent Fuel Pool gates are still installed.</li></ul>
<b>INITIATING CUE</b>	<p><b>(Operators Name)</b>, perform a Time to Boil calculation for the Reactor Coolant System in accordance with OP-NM-108-117-1002, Shutdown Operations Protection.</p>

Training Id: NMP1 NRC SRO Admin JPM ECRevision: 0.0

**Review and Approval of Completed Surveillance Test, N1-ST-Q13,**  
Title: **Emergency Service Water Pump and Check Valve Operability Test**

**Approvals:**

	<u>Signature / Printed Name</u>	<u>Date</u>
Developed By	 / Paul Isham	<u>2/28/18</u>
Validated By	<u>Katie Higgins-Asmus</u>	<u>8/22/18</u>
Facility Reviewer	 / Phil Nichols	<u>9.7.18</u>

Approximate Duration: 20 minutes**Documentation of Performance:**

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

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

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

Grade: **Pass / Fail**Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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

Date: \_\_\_\_\_

## References

1. N1-ST-Q13, Emergency Service Water Pump and Check Valve Operability Test
2. Unit 1 Technical Specifications
3. NUREG 1123, 2.2.12 (4.1)



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## Instructor Information

### A. JPM Information

1. Description
  - a. This JPM tests the operator's ability to analyze and interpret procedure requirements. Given a copy of N1-ST-Q13, Emergency Service Water Pump and Valve Operability Test, the candidate will review the results and identify any discrepancies.
  - b. Critical steps are annotated in the Evaluator standard column with a bolded **\*Pass/Fail**.
2. Task Information:
  - a. N1-276000-01014, Perform Emergency Service Water Pump Operability Test
  - b. K/A 2.2.12 (4.1) Knowledge of surveillance procedures.

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 marked up copies of N1-ST-Q13 are available.
- b. Ensure N1-OP-18 is available
- c. Ensure Tech Specs 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 operating at 100% power.</li><li>• N1-ST-Q13, Emergency Service Water Pump and Check Valve Operability Test, has just been completed as Post-Maintenance Testing following the full replacement of ESW 11 Pump and Motor.</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>(Operators Name)</b>, this is a copy of N1-ST-Q13, Emergency Service Water Pump and Check Valve Operability Test. Review the test results and complete Section 10.2, Shift Manager Review.</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.	<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>
2.	<p>Obtain a copy of the reference procedure and review / utilize the correct section of the procedure.</p> <p><b>Note:</b> Evaluator is to provide to the candidate, the marked up copy of N1-ST-Q13, Emergency Service Water Pump and Check Valve Operability Test, with section 8.1 completed.</p>	P	<p>SAT / UNSAT</p> <p><b>STD:</b> N1-ST-Q13 Obtained. General Test Methods, References / Commitments and the Precaution and Limitation reviewed.</p>



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
3.	Determines status of the completed surveillance.  Reviews N1-ST-Q13, Emergency Service Water Pump and Check Valve Operability Test and identifies the following in the remarks section:		
<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	<b>Note:</b> Section 8.1 is allowed to be used for post-maintenance testing, except as noted in General Test Method 4.7.1.  <b>Evaluator Cue:</b> If the applicant recognizes this issue first, they may opt to not proceed with the review. Direct them to complete the SM review in order to obtain credit for the quarterly surveillance requirement.	P	<b>PASS / FAIL</b>  <b>STD:</b> Identifies, that the wrong section was performed for post-maintenance testing following pump and motor replacement. Per General Test Method 4.7.1, Following any maintenance to the pumps affecting hydraulic performance (e.q. – Replacement or re-build of the rotating element), the Post Maintenance testing shall include the applicable Comprehensive Pump Test per Section 8.3 or 8.4.
3b		P	<b>PASS / FAIL</b>  <b>STD:</b> Identifies error in step 8.1.16. Based on D/P Cell reading in step 8.1.15, flow rate is 2968 gpm, with is outside the acceptable range. The flowrate was documented as 2986 gpm, which is within the acceptable range. Therefore, Pump Flowrate was marked SAT in the Acceptance Criteria, step 10.1.2, where it should have been marked UNSAT.

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
4.	Notify appropriate Plant Management.  <b>Cue:</b> Acknowledge the information presented		SAT / UNSAT  <b>STD:</b> Notifies <b>EXAMINER / Ops Director</b> or designee of issues identified.

<b>TASK STANDARD</b>	Determination of the status of this surveillance has been made.
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<b>STOP TIME</b>	
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## JPM Handout

<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"><li>• The Plant is operating at 100% power.</li><li>• N1-ST-Q13, Emergency Service Water Pump and Check Valve Operability Test, has just been completed as Post-Maintenance Testing following the full replacement of ESW 11 Pump and Motor.</li></ul>
<b>INITIATING CUE</b>	<p><b>(Operators Name)</b>, this is a copy of N1-ST-Q13, Emergency Service Water Pump and Check Valve Operability Test. Review the test results and complete Section 10.2, Shift Manager Review.</p> <p>When completed, report completion and findings, if any, to the Examiner.</p>

Training Id: **NMP1 NRC SRO Admin JPM RC**Revision: **0.0**Title: **Determine Actions for Inoperable Service Water Radiation Monitor****Approvals:**

	<u>Signature / Printed Name</u>	<u>Date</u>
Developed By	 / Paul Isham	1/8/18
Validated By	Katie Higgins-Asmus	8/22/18
Facility Reviewer	 / Phil Nichols	9.7.18

Approximate Duration: 15 minutes**Documentation of Performance:**

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

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

Start	Stop	Completion
Time: _____	Time: _____	Time _____

Grade: **Pass / Fail**Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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



## References

1. NUREG 1123 K/A 2.3.15, (3.1)
2. ARP H1-4-5
3. ODCM 3.6.14.a and TBL 3.6.14-1 Inst. 1B
4. DER NM-2003-5168, ODCM Entry Due to SW RM Low Flow
5. DER NM-2004-976, Unplanned LCO – SW RM Low Flow

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## Instructor Information

### A. JPM Information

1. Description
  - a. This JPM tests the SRO's knowledge of the Service Water Radiation monitor and the SRO's ability to use the ODCM to determine appropriate actions when the radiation monitor is inoperable.
  - b. Critical steps are annotated in the Evaluator standard column with a bolded **\*Pass/Fail**.
2. Task Information:
  - a. NS-OM207-03002-02, Perform an administrative review to determine operability of a system, structure, or component.
  - b. NUREG 1123 K/A 2.3.15 (3.1), Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, 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
  - a. Provide a copy of ARP H1-4-5 and a copy of the ODCM

## **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 operating at 100% power.</li><li>• High wind conditions (20-25 mph with higher gusts) are present and are expected to continue for the next twelve (12) hours.</li><li>• H1-4-5, LQ PROCESS RAD MON, has alarmed.</li><li>• Computer Point F172, SERVICE WATER SKID FAILURE, is in alarm.</li><li>• Operator reports an EQUIP FAIL Light is shown for the Service Water Discharge Monitor at the J Panel.</li><li>• Chemistry reports alarm is caused by low sample flow. Flows are reading 0.98 gpm on the east side (TB) and 0.99 gpm on the west side (RB).</li><li>• Sample flow cannot be adjusted.</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>(Operators Name)</b> , determine the appropriate actions and compensatory measures in response to ARP H1-4-5. Record your findings on the provided attachment.
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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
2.	Obtain a copy of the reference procedure and review/utilize the correct section.	P	SAT / UNSAT  <b>STD:</b> ARP H1-4-5 obtained. Operator Actions referenced. ODCM obtained. DLCO 3.6.14 referenced. Table D 3.6.14-1 referenced.

	<b>PERFORMANCE</b>	<b>ACT. CODE</b> P / S / NA	<b>EVALUATOR</b>
3.	Per ARP H1-4-5, if service water monitor alarm, and monitor EQUIP FAIL light is lit, then:		
3a	Notify SM to evaluate EALs  <b>Role Play:</b> As SM, acknowledge report.	P	SAT / UNSAT  <b>STD:</b> Notifies SM to evaluate EALs.
3b	Notify Radiation Protection Instrument Support for repair.  <b>Role Play:</b> As RP, acknowledge report.	P	SAT / UNSAT  <b>STD:</b> Notifies Radiation Protection Instrument Support to initiate repairs.
3c	Initiate LCO sampling (Chemistry).  <b>Role Play:</b> As Chemistry, acknowledge direction to perform samples.	P	<b>*PASS / FAIL</b>  <b>STD:</b> Directs Chemistry to perform DLCO sampling per Table D 3.6.14-1 Instrument 1B action (d); twelve (12) hour grab samples to be collected/analyzed for SW effluent.
4	Reference ODCM and takes appropriate actions.		
4a		P	SAT / UNSAT  <b>STD:</b> Determines SW Radiation Monitor is inoperable.

	<b>PERFORMANCE</b>	<b>ACT. CODE</b> P / S / NA	<b>EVALUATOR</b>
4b		P	SAT / UNSAT  <b>STD:</b> References ODCM DLCO 3.6.14.a and Table D 3.6.14-1 Instrument 1B and note (d) applies.
4c		P	<b>*PASS / FAIL</b>  <b>STD:</b> Determines less than the minimum number of radioactive liquid effluent monitoring channels for service water effluent and takes action shown in Table D 3.6.14-1.
4d		P	<b>*PASS / FAIL</b>  <b>STD:</b> Determines action (d) applies. Effluent releases via this pathway can continue provided that at least once per twelve (12) hours grab samples are collected and analyzed SW effluent.

<b>TASK STANDARD</b>	Applicable actions per ARP H1-4-5 and ODCM in response to service water radiation monitor low flow condition have been identified and recorded.
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<b>STOP TIME</b>	
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**Attachment 1**

**\*\*\*\*\*Answer Key\*\*\*\*\***  
**Do Not Provide to Applicant**

Determine the appropriate actions in response to these conditions.	
Action	Required By (Document)
Notify Radiation Protection Instrument Support for repair.	ARP H1-4-5
Direct Chemistry to initiate required LCO sampling	
Determines SW Radiation Monitor is inoperable.	ODCM DLCO 3.6.14 TABLE D 3.6.14-1.
Determines less than the minimum number of radioactive liquid effluent monitoring channels for service water effluent and takes action shown in Table D 3.6.14-1.	
Determines action identified in note (d) applies. Effluent releases via this pathway can continue provided that at least once per twelve (12) hours grab samples are collected and analyzed.	ODCM DLCO 3.6.14 TABLE NOTE (d)

**\*\*\*\*\*Answer Key\*\*\*\*\***  
**Do Not Provide to Applicant**

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**Attachment 2****JPM Scorecard For Applicant Use**

Determine the appropriate actions in response to these conditions.

Action	Required By (Document)



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## JPM Handout

<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"><li>• The plant is operating at 100% power.</li><li>• High wind conditions (20-25 mph with higher gusts) are present and are expected to continue for the next twelve (12) hours.</li><li>• H1-4-5, LQ PROCESS RAD MON, has alarmed.</li><li>• Computer Point F172, SERVICE WATER SKID FAILURE, is in alarm.</li><li>• Operator reports an EQUIP FAIL Light is shown for the Service Water Discharge Monitor at the J Panel.</li><li>• Chemistry reports alarm is caused by low sample flow. Flows are reading 0.98 gpm on the east side (TB) and 0.99 gpm on the west side (RB).</li><li>• Sample flow cannot be adjusted.</li></ul>
<b>INITIATING CUE</b>	<p><b>(Operators Name)</b>, determine the appropriate actions and compensatory measures in response to ARP H1-4-5. Record your findings on the provided attachment.</p>



Training Id: **NMP1 NRC SRO Admin JPM EP**

Revision: **0.0**

Title: **Emergency Event Re-Classification Notification**

## Approvals:

	<u>Signature / Printed Name</u>	<u>Date</u>
Developed By	 / Paul Isham	3/1/18
Validated By	Katie Higgins-Asmus	8/22/18
Facility Reviewer	 / Phil Nichols	9.7.18

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. EPIP-EPP-01, Unit 1 EAL Flowchart

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## 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 declare an emergency within 15 minutes of indications being made available that an EAL has been exceeded. PARs will be made after the declaration.
  - 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 flowcharts 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.

<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"> <li>You are the Unit 1 Shift Manager.</li> <li>Unit 1 is operating at 100% power.</li> <li>Unit 2 is operating at 100% power.</li> <li>The following conditions have occurred: <ul style="list-style-type: none"> <li>An Earthquake has just hit the site</li> <li>Unit 2 reports seismic instrumentation reads &gt;0.075g</li> <li>An Equipment Operator reports structural steel has fallen and damaged Power Board 16B, resulting in PB 16B being de-energized.</li> </ul> </li> </ul> <p style="text-align: center;"><b>Attachment 1: Meteorological Data</b></p> <table border="1" data-bbox="591 768 1405 1098"> <tr> <td>Wind Speed (30 ft)</td><td>5 mph</td></tr> <tr> <td>Wind Speed (200 ft)</td><td>10 mph</td></tr> <tr> <td>Wind Direction (30 ft)</td><td>60°</td></tr> <tr> <td>Wind Direction (200 ft)</td><td>60°</td></tr> <tr> <td>Stability Class</td><td>D</td></tr> </table> <p><b>Evaluator:</b> Ask trainee if he/she has any questions after presenting initial conditions</p>	Wind Speed (30 ft)	5 mph	Wind Speed (200 ft)	10 mph	Wind Direction (30 ft)	60°	Wind Direction (200 ft)	60°	Stability Class	D
Wind Speed (30 ft)	5 mph										
Wind Speed (200 ft)	10 mph										
Wind Direction (30 ft)	60°										
Wind Direction (200 ft)	60°										
Stability Class	D										

<b>INITIATING CUE</b>	<p><b>(Operators Name)</b>, based on the above conditions, take the required actions as the Shift Manager / Shift Emergency Director. This is a time critical task.</p> <p><b>Examiner Note:</b> After this event is classified, declared, and the notifications initiated the plant conditions will change and a reclassification will be required.</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> <i>Acknowledge repeat back providing correction if necessary.</i>	P	SAT / UNSAT  <b>STD:</b> Proper communications used
2.	Obtain a copy of the reference procedure and review/utilize the correct section.	P	SAT / UNSAT  <b>STD:</b> Obtains EAL Flowchart and Shift Emergency Director binder.
3.	Determine that an Alert exists based on seismic activity.  <b>Note:</b> This determination may not be made until JPM step 5.	P	<b>*PASS / FAIL</b>  <b>STD:</b> Determines Alert, HA1.1, due to NMP2 seismic instrumentation reading >0.075g AND damage to safety related PB-16B.
4	Completes Shift Emergency Director Checklist section 1.1, Entry Into the Emergency Plan.  <b>Role Play:</b> If requested as Shift Communicator and/or Shift Dose Assessor to report to the control room, acknowledge request.	P	SAT / UNSAT  <b>STD:</b> Name and date entered in step 1.1.1
			SAT / UNSAT  <b>STD:</b> Communicator and/or Shift Dose Assessor requested to report to the control room.

	<b>PERFORMANCE</b>	<b>ACT. CODE</b> P / S / NA	<b>EVALUATOR</b>
5	<p>Completes Shift Emergency Director Checklist section 1.2, Emergency Classification and PAR.</p> <p><b>Role Play:</b> If requested as STA to perform peer check, concur with the applicant regardless of accuracy of EAL determination.</p>	<p>P (Step 1.2.2)</p>	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> Declares the event by announcing the following, "I am declaring an Alert at (time) due to NMP2 seismic instrumentation reading &gt;0.075g AND damage to safety related PB-16B and assuming the role as Shift Emergency Director. (Or similar announcement)</p> <p><b>The time difference below must be 15 minutes or less:</b></p> <p>JPM Start time: _____</p> <p>Declaration time: _____</p>
6.	<p>Refers to EP-AA-113-F-53, Onsite Protective Measures Flowchart to determine evacuation necessity.</p> <p><b>Note:</b> Evacuation determination is subjective and may or may not be performed.</p>	<p>P (Step 1.2.3)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> Refers to EP-AA-113-F-53, Onsite Protective Measures Flowchart to determine evacuation necessity.</p>
7.	<p>Refers to EP-AA-112-F-57, Emergency PA Announcement</p> <p><b>Role Play:</b> If the applicant attempts to make the PA announcement or directs the Emergency PA announcement be made, inform them another operator will perform the announcement they determine appropriate.</p>	<p>P (Step 1.2.4)</p>	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> Completes EP-AA-112-F-57 as shown in the KEY. Only block 4 of the KEY should be considered critical.</p>



	<b>PERFORMANCE</b>	<b>ACT. CODE</b> P / S / NA	<b>EVALUATOR</b>
8.	<p>Refers to EP-AA-112-100--F-57, ERONS Notification Details.</p> <p><b>Role Play:</b> If the applicant attempts to complete the ERONS notifications, inform them another operator will perform all of step 1.3.3.</p>	<p>P (Step 1.3.3)</p>	<p>SAT / UNSAT</p> <p><b>STD:</b> Acknowledges another operator completing this step.</p>
9.	<p>Completes EP-CE-114-100-F-05, NMP Notification Fact Sheet – Part 1</p> <p><b>Cue:</b> If asked about the status of Unit 2, cue that Unit 2 is still operating at 100% power and meets EAL HU1.1 (UE) due to the earthquake.</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> If requested to perform peer check of Part 1, concur with candidate regardless of Part 1 accuracy.</p> <p><b>Pole Play:</b> If directed as Shift Communicator to notify State and Local, acknowledge direction.</p>	<p>P (Step 1.3.4)</p>	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> Completes EP- CE- 114-100-F-05 as shown in the KEY. Only blocks 3, 4, 5, 6, and 7 of the KEY should be considered critical.</p> <p><b>The time difference below must be 15 minutes or less:</b></p> <p>Declaration time: _____</p> <p>Part 1 Complete: _____</p>
<p><b>EXAMINER NOTE:</b></p>		<p>Once the Part 1 Notification Form is complete, provide the candidate with JPM Handout #2 Initial conditions and direction.</p>	

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
10.	<p>Reviews the given conditions and determines that an SAE declaration is required per EAL HS4.1</p> <p><b>Note:</b> This is also Time Critical</p>	P	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> Determines Site Area Emergency, HS4.1, due to Hostile Action within the Protected Area.</p> <p><b>The time difference below must be 15 minutes or less:</b></p> <p>Conditions received time: _____</p> <p>Declaration time: _____</p>

<b>Termination Cue</b>	When the SAE has been determined, inform the applicant their task is complete.
<b>TASK STANDARD</b>	The event has been classified and re-classified and all appropriate notifications initiated.
<b>STOP TIME</b>	

## JPM Handout #1

<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"> <li>You are the Unit 1 Shift Manager.</li> <li>Unit 1 is operating at 100% power.</li> <li>Unit 2 is operating at 100% power.</li> <li>The following conditions have occurred:             <ul style="list-style-type: none"> <li>An Earthquake has just hit the site</li> <li>Unit 2 reports seismic instrumentation reads &gt;0.075g</li> <li>An Equipment Operator reports structural steel has fallen and damaged Power Board 16B</li> </ul> </li> </ul> <p style="text-align: center;"><b>Attachment 1: Meteorological Data</b></p> <table border="1" style="margin: auto; border-collapse: collapse; text-align: center;"> <tr> <td style="padding: 5px;">Wind Speed (30 ft)</td> <td style="padding: 5px;">5 mph</td> </tr> <tr> <td style="padding: 5px;">Wind Speed (200 ft)</td> <td style="padding: 5px;">10 mph</td> </tr> <tr> <td style="padding: 5px;">Wind Direction (30 ft)</td> <td style="padding: 5px;">60°</td> </tr> <tr> <td style="padding: 5px;">Wind Direction (200 ft)</td> <td style="padding: 5px;">60°</td> </tr> <tr> <td style="padding: 5px;">Stability Class</td> <td style="padding: 5px;">D</td> </tr> </table> <p><b>Evaluator:</b> Ask trainee if he/she has any questions after presenting initial conditions</p>	Wind Speed (30 ft)	5 mph	Wind Speed (200 ft)	10 mph	Wind Direction (30 ft)	60°	Wind Direction (200 ft)	60°	Stability Class	D
Wind Speed (30 ft)	5 mph										
Wind Speed (200 ft)	10 mph										
Wind Direction (30 ft)	60°										
Wind Direction (200 ft)	60°										
Stability Class	D										
<b>INITIATING CUE</b>	<p><b>(Operators Name)</b>, based on the above conditions, take the required actions as the Shift Manager / Shift Emergency Director. This is a time critical task.</p>										

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## JPM Handout #2

<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"><li>• The reactor has been scrammed due to rising drywell pressure.</li><li>• Drywell pressure is 4.0 psig and slowly rising.</li><li>• A Loss of Offsite Power has occurred and both EDGs are supplying their emergency buses.</li><li>• The Security Supervisor notified the Control Room that an unknown individual has entered the Reactor Building and has committed sabotage on the RBCLC system. The damage appears to be limited to RBCLC pump 11.</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>(Operators Name)</b>, based upon the above changes in plant conditions, determine any change in the emergency declaration level. This is a time critical task.</p>






Training Id: **2018 NRC NMP1 Simulator JPM S-1**

Revision: **0.0**

Title: **Swap CRD Pumps (Alternate Path)**

## Approvals:

	<u>Signature / Printed Name</u>	<u>Date</u>
Developed By	 / Paul Isham	2/1/18
Validated By	 Will Vannostrand	8/21/18
Facility Reviewer	 / Phil Nichols	9.7.18

Approximate Duration: 15 minutes

## Documentation of Performance:

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

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

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

Grade: **Pass / Fail**

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

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

## References

1. N1-OP-5, Control Rod Drive System
2. N1-ARP-F3
3. NUREG 1123 K/A 201001 A4.01, (3.1/3.1)

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## Instructor Information

### A. JPM Information

1. Description
  - a. This JPM tests the operator's ability to locate and operate components in the Control Rod Drive System.
  - b. This JPM is considered alternate path because once the standby CRD pump is placed in service, the operator will be required to diagnose abnormal operating conditions with the running pump and take action to prevent a loss of CRD.
  - c. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.
2. Task Information:
  - a. N1-201001-01002, Shift Operating CRD Pumps
  - b. K/A 201001 A4.01, (3.1/3.1)
3. Evaluation / Task Criteria

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

4. Recommended Start Location
  - a. Unit 1 Simulator

## 5. Simulator Setup (if required)

- a. The reactor is in a power operating condition.
- b. Initialize simulator to IC 161
- c. Verify CRD pump 12 is running and CRD pump 11 is in standby
- d. Verify the following assigned on **TRG1**
  - Override AO-315, FV=375
  - Annunciator F3-1-2
- e. Verify the following event triggers:

Event	Initiating Event	Command
1	hzlrdpb(1)==1 (CRD Pump 12 green light)	
3	hzlrdpa(1)==1 && hzlrdpb(2)==1 && anxstat2(154)==1	dor 315
4	hzlrdpa(1)==1 && hzlrdpb(2)==1 && anxstat2(154)==1	dmf f3-1-2
5	hzlrdpa(1)==1 && hzlrdpb(2)==1 && anxstat2(154)==2	dor 315
6	hzlrdpa(1)==1 && hzlrdpb(2)==1 && anxstat2(154)==2	dmf f3-1-2

Note: Events 3-6 are used to delete the vibration alarm and high temperature indication, depending on operator action.

## 6. JPM Setup (if required)

- a. Ensure sufficient copies of N1-OP-5 P&Ls and section F.3 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 reactor is approximately 100% power</li> <li>• CRD pumps are to be swapped for normal equipment rotation.</li> <li>• CRD pump 11 is in standby.</li> <li>• Pre-start checks for CRD pump 11 are SAT.</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>(Operators Name)</b> , start CRD pump 11 and secure CRD pump 12 per N1-OP-5 section F.3.1.
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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
2.	Obtain a copy of the reference procedure and review / utilize the correct section of the procedure	P	SAT / UNSAT  <b>STD:</b> N1-OP-5 obtained.
3.	Adjust VLV-28-34, RATE SET – CRD PUMPS TO CRD SYSTEM, as necessary to set Charging Water Pressure between 1390 AND 1510 psig (nominally 1450 psig)	P (F.3.1.1)	SAT / UNSAT  <b>STD:</b> Determines Charging Water pressure is approximately 1450 psig and no adjustment to valve is needed
4.	IF CRD supply is from CST (Primary Backup), THEN verify CST level is greater than 25 feet  <b>Cue:</b> If asked, report that the CRD supply is from Condensate.	P (F.3.1.2)	SAT / UNSAT  <b>STD:</b> Determines CRD supply is NOT from CSTs

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
5.	Place CONTROL ROD DRIVE PUMP 11 control switch to START  <b>Role Play:</b> If asked about CRD pump 11 in field, report good start of CRD pump 11.	P (F.3.1.3)	<b>*PASS / FAIL</b>  <b>STD:</b> Starts CRD pump 11 by rotating control switch CW to START
6.	Place CONTROL ROD DRIVE PUMP 12 control switch to STOP	P (F.3.1.4)	<b>*PASS / FAIL</b>  <b>STD:</b> Stops CRD pump 12 by rotating control switch CCW to STOP
<b>Alternate Path</b>		After CRD pump 12 is stopped, abnormal operating indications become evident for CRD Pump 11. The operator will enter the ARP and diagnose a high current condition on CRD pump 11.	
7.	Acknowledge and report annunciator F3-1-2, CRD Pump 11 Trip - Vib	P	SAT / UNSAT  <b>STD:</b> Recognize annunciator F3-1-2 and enter the ARP.
8.	If pump has tripped, then enter N1-SOP-5.1, Loss of Control Rod Drive.	P (ARP step 1)	SAT / UNSAT  <b>STD:</b> Determine pump did not trip
9.	Confirm proper pump operation by checking Pump Ammeter less than or equal to 235 Amps	P (ARP step 2)	SAT / UNSAT  <b>STD:</b> Determines pump amps are greater than 235 amps (~375)
10.	IF vibration continues, THEN Notify IMD to perform vibration analysis.  <b>Role Play:</b> If contacted as IMD to perform vibration analysis, acknowledge direction and report you have indication of elevated vibration readings on CRD pump 11.	P	SAT / UNSAT  <b>STD:</b> Proper communications used

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
11.	IF vibration continues, THEN At SM direction, shift CRD pumps per N1-OP-5.	P	<b>*PASS / FAIL</b>  <b>STD:</b>
<b>Evaluator Cue:</b>	If contacted as the Shift Manager requesting direction, direct the operator to make a recommendation and carry out the recommendation.		
12.	Starts CRD pump 12  <b>Note:</b> The Candidate may enter N1-SOP-5.1, Loss of CRD, for direction to start CRD pump 12. The Candidate may use N1-OP-5 section F.3.1 to "back-out" of the problem. The Candidate may use N1-OP-5 section F.3.2 to swap back to CRD pump 12.	P	<b>*PASS / FAIL</b>  <b>STD:</b> Starts CRD pump 12 by rotating control switch CW to START
13.	Stops CRD pump 11  <b>Note:</b> Depending on what procedure the Candidate uses to swap back to CRD pump 12, there may be additional actions.  <b>Cue:</b> Inform Candidate that another operator will complete follow-up actions.	P	<b>*PASS / FAIL</b>  <b>STD:</b> Stops CRD pump 11 by rotating control switch CCW to STOP
<b>Evaluator Note:</b>	<b>Cue:</b> <i>Your task is complete.</i>		

<b>TASK STANDARD</b>	CRD pumps swapped in accordance with N1-OP-5. Abnormal operation of CRD Pump 11 identified. CRD Pump 12 placed back in service.
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<b>STOP TIME</b>	
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## JPM Handout

<b>INITIAL CONDITIONS</b>	Given: <ul style="list-style-type: none"><li>• The reactor is approximately 100% power</li><li>• CRD pumps are to be swapped for normal equipment rotation.</li><li>• CRD pump 11 is in standby.</li><li>• Pre-start checks for CRD pump 11 are SAT.</li></ul>
<b>INITIATING CUE</b>	<b>(Operators Name)</b> , start CRD pump 11 and secure CRD pump 12 per N1-OP-5 section F.3.1.

Training Id: **2018 NRC NMP1 Simulator JPM S-2**Revision: **0.0****Perform N1-ST-M8, Reactor Building Emergency Ventilation System**  
Title: **Operability Test****Approvals:**

	<u>Signature / Printed Name</u>	<u>Date</u>
Developed By	 / Paul Isham	1/30/18
Validated By	Justin Farella	8/21/18
Facility Reviewer	 / Phil Nichols	9.7.18

Approximate Duration: 15 minutes**Documentation of Performance:**

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

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

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

Grade: **Pass / Fail**Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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

## A. References

1. N1-ST-M8, Reactor Building Emergency Ventilation System Operability Test
2. N1-OP-10, Reactor Building Heating, Cooling, and Ventilation System
3. NUREG 1123 K/A 288000 A4.01, (3.1/2.9)

## Instructor Information

### A. JPM Information

1. Description
  - a. This JPM tests the operator's ability to locate and operate components associated with the Reactor Building Emergency Ventilation System.
  - a. This JPM is NOT considered alternate path.
  - b. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.
2. Task Information:
  - a. N1-261000-01015
  - b. K/A 288000 A4.01, (3.1/2.9)

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. Unit 1 Simulator



5. Simulator Setup (if required)

- a. The reactor is in a power operating condition
- b. Initialize simulator to IC 161
- c. Verify the following override is assigned to **TRG11**
  - AO-1307, DT=2, RT=5, FV=135
- d. Verify the following event triggers:
  - Event 11: zdhvf53s==1
  - Event 12: zdhvf53t==1, command: dor 1307

6. JPM Setup (if required)

- a. Mark up N1-ST-M8 section 7.0, Prerequisites, complete.
- b. Allow operators time to review the procedure, including precautions and limitations.
- c. Mark step 8.1.7 complete by the SM
- d. RB Ventilation established in slow speed

## **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 operating at rated conditions</li> <li>N1-ST-M8, Reactor Building Emergency Ventilation System Operability Test, is in progress with the prerequisites complete.</li> <li>Normal Reactor Building Ventilation System flow has been adjusted per N1-OP-10, as necessary to accommodate Emergency Ventilation System Operation.</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>(Operators Name)</b> , Perform the operation of RBEVS Loop 11 in accordance with N1-ST-M8 section 8.1.
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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
2.	Obtain a copy of the reference procedure and review / utilize the correct section of the procedure	P	SAT / UNSAT  <b>STD:</b> N1-ST-M8 obtained. Precautions and limitations reviewed. Section 8.1 referenced.
3.	Verify 202-36, EM VENTILATION FROM REACTOR BLDG BV open	P (step 8.1.1)	SAT / UNSAT  <b>STD:</b> Observes 202-36 red light on and green light off
4.	Verify 202-47, EM VENTILATION TIE BV closed	P (step 8.1.2)	SAT / UNSAT  <b>STD:</b> Observes 202-47 green light on and red light off

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
5.	Open 202-37, EM VENTILATION LOOP 11 INLET BV	P (step 8.1.3)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates 202-37 switch CW to open. Observes 202-37 red light on and green light off.
6.	Start 202-53, EVS FAN 11  <b>Note:</b> When EVS Fan 11 is started, <b>TRG11</b> automatically inserts to indicate reduced flow, outside of the acceptance criteria. This should be recognized after the flow is documented as part of the surveillance.	P (step 8.1.4)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotate switch CW to start
7.	Verify EM VENT EXHAUST FAN 11 OUTLET BV open	P (step 8.1.5)	SAT / UNSAT  <b>STD:</b> Observes 202-34 red light on and green light off
8.	Confirm proper operation of EM VENT EXHAUST FAN 11 INLET FCV, by observing indicating lights and flow indication	P (step 8.1.6)	SAT / UNSAT  <b>STD:</b> Observes 202-50 red and green lights both on as valves goes to intermediate position. Observes flow meter 202-49B
9.	SM direct adjusting Normal Reactor Building Ventilation System flow per N1-OP-10 as necessary to accommodate Emergency Ventilation System Loop 11 operation.	P (step 8.1.7)	SAT / UNSAT  <b>STD:</b> Recognize step is complete per the initial conditions.
10.	Record 202-53, EVS FAN 11 start time	P (step 8.1.8)	SAT / UNSAT  <b>STD:</b> Documents EVS Fan 11 start time



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
11.	At Control Room Panel L, record 202-49B, EMER VENT FLOW 11 CFM X 10  <b>Note:</b> The operator may not immediately recognize the low flow condition. Credit will be given as long as the abnormal condition is recognized prior to task completion.	P (step 8.1.9.a)	SAT / UNSAT  <b>STD:</b> Documents 1350 cfm  <b>*PASS / FAIL</b>  <b>STD:</b> Recognize/report EVS Fan 11 flow is outside the acceptance criteria.
<b>Evaluator Role Play</b>		As Shift Manager, when informed of the low flow condition, acknowledge the report and direct completion of the surveillance	
12.	At Control Room Panel L, record 202-17D, REACT BLD/ATM DIFF PR IN H <sub>2</sub> O	P (step 8.1.9.a)	SAT / UNSAT  <b>STD:</b> Documents -.26 in H <sub>2</sub> O
13.	Record the Train 11 filter D/P's.  <b>Role Play:</b> When contacted as in-plant operator requesting train 11 filter D/P's, immediately report the following: <ul style="list-style-type: none"> <li>Filter 111 (DPI-202-44) = 1 inch H<sub>2</sub>O</li> <li>Charcoal Filter 11 (DPI-202-46) = 0.5 inch H<sub>2</sub>O</li> <li>Filter 112 (DPI-202-57) = 1 inch H<sub>2</sub>O</li> </ul>	P (step 8.1.9.b)	SAT / UNSAT  <b>STD:</b> Documents filter D/P's as reported by plant operator.
14.	Calculate sum of the 3 filter D/P's  <b>Cue:</b> Simulate IV complete	P (step 8.1.9.c)	SAT / UNSAT  <b>STD:</b> Determines 2.5 inch H <sub>2</sub> O
<b>Evaluator Cue</b>		Time compression; 15 minutes has elapsed.	
15.	WHEN at least 15 minutes has elapsed, At Control Room Panel L, record 202-49B, EMER VENT FLOW 11 CFM X 10	P (step 8.1.10)	SAT / UNSAT  <b>STD:</b> Documents 1350 cfm



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
16.	WHEN at least 15 minutes has elapsed, At Control Room Panel L, record 202-17D, REACT BLD/ATM DIFF PR IN H <sub>2</sub> O	P (step 8.1.10)	SAT / UNSAT  <b>STD:</b> Documents -.26 in H <sub>2</sub> O
17.	Verify RB Normal Ventilation is in service	P (step 8.1.11)	SAT / UNSAT  <b>STD:</b> Marks step complete either based on initial conditions or by observing normal Reactor Building Vent fans are in service.
18.	Place 202-53, EVS FAN 11, control switch in STOP	P (step 8.1.12)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotate switch CCW to stop
19.	Record 202-53, EVS FAN 11 stop time  <b>Note:</b> Since time compression was used, methodologies for determining the time may vary among operators. Operators should not be penalized if the documented run time indicates <15 minutes.	P (step 8.1.13)	SAT / UNSAT  <b>STD:</b> Records stop time
20.	Place 202-37, EM VENTILATION LOOP 11 INLET BV, control switch in AUTO position and verify 202-37 closed	P (step 8.1.14)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates 202-37 switch CCW to AUTO. Observes 202-37 red light off and green light on.
21.	Verify 202-34, EM VENT EXHAUST FAN 11 OUTLET BV closed	P (step 8.1.15)	SAT / UNSAT  <b>STD:</b> Observes 202-34 red light off and green light on



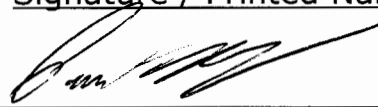

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
22.	<p>Record 202-53, EVS FAN 11, total run</p> <p><b>Note:</b> Since time compression was used, methodologies for determining the time may vary among operators. Operators should not be penalized if the documented run time indicates &lt;15 minutes.</p> <p><b>Cue:</b> Simulate IV complete</p>	P (step 8.1.16)	<p>SAT / UNSAT</p> <p><b>STD:</b> Records run time</p>
<b>Evaluator Cue:</b>		Your task is complete.	
<b>TASK STANDARD</b>		Reactor Building Emergency Ventilation system started for testing and returned to standby condition.	
<b>STOP TIME</b>			

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## JPM Handout

<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"><li>• The plant is operating at rated conditions</li><li>• N1-ST-M8, Reactor Building Emergency Ventilation System Operability Test, is in progress with the prerequisites complete.</li><li>• Normal Reactor Building Ventilation System flow has been adjusted per N1-OP-10, as necessary to accommodate Emergency Ventilation System Operation.</li></ul>
<b>INITIATING CUE</b>	<p><b>(Operators Name)</b>, Perform the operation of RBEVS Loop 11 in accordance with N1-ST-M8 section 8.1.</p>

Training Id: **2018 NRC NMP1 Simulator JPM S-3**Revision: **0.0****Vent the Drywell Prior to Personnel Entry >212F Per N1-OP-9**Title: **(Alternate Path)****Approvals:**

	<u>Signature / Printed Name</u>	<u>Date</u>
Developed By	 / Paul Isham	1/25/18
Validated By	Justin Farella	8/21/18
Facility Reviewer	 / Phil Nichols	9.7.18

Approximate Duration: 15 minutes**Documentation of Performance:**

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

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

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

Grade: **Pass / Fail**Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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



## References

1. N1-OP-9, N2 Inerting and H2-O2 Monitoring Systems
2. NUREG 1123 K/A 223001, A4.03, (3.4/3.4)

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## Instructor Information

### A. JPM Information

#### 1. Description

- a. This JPM tests the operator's ability to locate and operate containment air dilution valves for inerting and de-inerting the containment. The operator will vent the drywell with the reactor >212F.
- b. This JPM is considered alternate path because after drywell venting commences, the stack radiation monitor will alarm, indicating a high radiation condition. The containment vent and purge valves will fail to isolate as designed for this condition. Manual action will be required to isolate the release from the stack.
- c. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

#### 2. Task Information:

- a. N1-223003-01004
- b. K/A 223001, A4.03, (3.4/3.4)

#### 3. Evaluation / Task Criteria

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

#### 4. Recommended Start Location

- a. Unit 1 Simulator

5. Simulator Setup (if required)

- a. The reactor is in a shutdown condition >212F.
- b. Initialize simulator to IC-162.
- c. Verify remote PC05 is inserted with valves open.
- d. Verify some positive pressure in the drywell.
- e. Insert the following malfunctions on **TRG1**:
  - RM63A, FV=48, DT=7
  - RM64A, FV=48, DT=7
  - RM65A, FV=61, DT=7
  - RM66A, FV=61, DT=7
- f. Set up Event Trigger for TRG1 to activate when 201-31 is opened – HZLPCMOVR(4)=1.
- g. Fail 201-31 and 201-32 to shut automatically, by overriding EOP jumpers 3 and 10 installed.

6. JPM Setup (if required)

- a. N1-OP-9 marked up through G.1.13.c. Operator starts at step G.1.14.

## **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 reactor has been shutdown due to increased drywell leakage.</li> <li>The Director Site Operations has determined a complete de-inert to 19.5% Oxygen is necessary to investigate the cause of the drywell leakage.</li> <li>The Torus has already been vented.</li> <li>N1-OP-9 is complete through step G.1.13.c</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>(Operators Name)</b> , Vent the Drywell and secure the lineup when Drywell pressure is below 0 psig in accordance with N1-OP-9, starting at step G.1.14.
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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
2.	Obtain a copy of the reference procedure and review / utilize the correct section of the procedure	P	SAT / UNSAT  <b>STD:</b> N1-OP-9 obtained, precautions and limitation reviewed, section G.1.0 referenced
3.	Open 201-32, DW N2 VENT & PURGE ISOLATION VALVE 11	P (step G.1.14)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates 201-32 control switch CW
4.	Start 201-35, DRYWELL & TORUS VENT & PURGE	P (step G.1.15)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates 201-35 control switch CW

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
5.	Verify open the following valves:		
5a	201-21, DRYWELL & TOR VENT & PURGE FAN INLET BV	P (step G.1.16)	SAT / UNSAT  <b>STD:</b> Observes 201-21 red light on, green light off
5b	201-22, DRYWELL & TOR VENT & PURGE FAN OUTLET BV	P (step G.1.16)	SAT / UNSAT  <b>STD:</b> Observes 201-22 red light on, green light off
6.	Throttle open 201-31, DW N2 VENT & PURGE ISOLATION VALVE 12	P	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates 201-31 control switch CW
			SAT / UNSAT  <b>STD:</b> Throttles 201-31 by using pull-to-stop feature of control switch
<b>Alternate Path</b>		After the operators opens 201-32 and commences venting the drywell through the stack, the stack radiation monitors indicate Hi-Hi radiation causing an annunciator to alarm.	
7.	Recognize/report annunciator H1-1-8	P	SAT / UNSAT  <b>STD:</b> Recognize/report annunciator H1-1-8, Stack Gas Monitors High Radiation
8.	Confirm alarm on computer printout	P	SAT / UNSAT  <b>STD:</b> Confirms C062 is in alarm on PPC

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
9.	Confirm which monitor is in alarm on Panel J	P	SAT / UNSAT  <b>STD:</b> Identifies Stack Gas Monitors RN10A/B and 112-07A/08A are elevated and alarming.
10.	Notify Chemistry to execute N1-CSP-V309, Stack Monitor Alarm Response.  <b>Role Play:</b> As Chemistry, acknowledge order and report the alarm is confirmed.	P	SAT / UNSAT  <b>STD:</b> Proper communications used
11.	Classify the event per EP-CE-111 and implement the Site Emergency Plan.	P	SAT / UNSAT  <b>STD:</b> Notify Shift Manager to evaluate the Emergency Plan
12.	Attempt to restore the release rate to within the limit of ODCM D3.6.15.b by:		
12a	Isolating the source of the release	P	SAT / UNSAT  <b>STD:</b> Rotates 201-35, DRYWELL & TORUS VENT & PURGE fan control switch CCW to secure the fan.
12b	Verifying isolation of Primary Containment Vent and Purge Valves at Hi-Hi Alarm	P	<b>*PASS / FAIL</b>  <b>STD:</b> Recognize 201-31 and 201-32 failed to isolate on the Hi-Hi radiation signal. Manually isolate 201-31 and/or 201-32 by rotating control switch(es) CCW.
<b>Evaluator Note:</b>		<b>Cue:</b> <i>Your task is complete.</i>	

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<b>TASK STANDARD</b>	
<b>STOP TIME</b>	

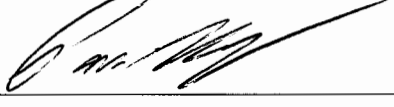

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## JPM Handout

<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"><li>• The reactor has been shutdown due to increased drywell leakage.</li><li>• The Director Site Operations has determined a complete de-inert to 19.5% Oxygen is necessary to investigate the cause of the drywell leakage.</li><li>• The Torus has already been vented.</li><li>• N1-OP-9 is complete through step G.1.13.c</li></ul>
<b>INITIATING CUE</b>	<p><b>(Operators Name)</b>, Vent the Drywell and secure the lineup when Drywell pressure is below 0 psig in accordance with N1-OP-9, starting at step G.1.14.</p>



Training Id: **2018 NMP1 NRC Simulator JPM S-4**Revision: **0.0**Title: **Rapid RWCU System Restoration for Level Control****Approvals:**

	<u>Signature / Printed Name</u>	<u>Date</u>
Developed By	 / Paul Isham	2/1/18
Validated By	Will Vannostrand	8/21/18
Facility Reviewer	 / Phil Nichols	9.7.18

Approximate Duration: 15 minutes**Documentation of Performance:**

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

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

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

Grade: **Pass / Fail**Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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

## References

1. N1-EOP-HC, NMP1 EOP Hard Cards Procedure
2. NUREG 1123 K/A 204000 A4.06 (3.0/2.9)

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## Instructor Information

### A. JPM Information

1. Description
  - a. This JPM tests the operator's ability to respond to an isolation of the Reactor Water Cleanup system when it is needed for level control. The operator will perform a rapid restoration of RWCU in accordance with N1-EOP-HC.
  - 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. N1-204000-01035
  - b. K/A 204000 A4.06 (3.0/2.9)
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. Unit 1 Simulator

5. Simulator Setup (if required)
  - a. The reactor is in a shutdown condition (Post-scam)
  - b. Initialize simulator to IC 163
  - c. Verify RPV water level is >95"
  - d. Verify RWCU System is isolated with the isolation signal cleared.
6. JPM Setup (if required)
  - a. No steps need to be marked up.

## **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>• RWCU isolated following a low-low RPV water level transient.</li> <li>• RPV water level has been recovered and is now high.</li> <li>• RWCU system is needed to control RPV water level.</li> <li>• Another Operator will be controlling RPV pressure using the ERVs and/or ECs.</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>(Operators Name)</b> , perform a rapid RWCU system restoration for RPV water level control and establish reject flow to the condenser, per N1-EOP-HC Attachment 12.
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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
2.	Obtain a copy of the reference procedure and review / utilize the correct section of the procedure	P	SAT / UNSAT  <b>STD:</b> N1-EOP-HC obtained. Attachment 12 referenced.
3.	Verify the following:		
3a	All Reactor Water Cleanup isolation signals clear	P (1.0)	SAT / UNSAT  <b>STD:</b> Observes K3-4-4 clear
3b	The cause of the isolation is known AND corrected	P (1.0)	SAT / UNSAT  <b>STD:</b> Determines cause is known and corrected per initial conditions

	<b>PERFORMANCE</b>	<b>ACT. CODE</b> P / S / NA	<b>EVALUATOR</b>
4.	Verify closed the following valves:		
4a	33.1-01B, CLEANUP PCV 11 (LP)	P (2.0)	SAT / UNSAT  <b>STD:</b> Observes 33.1-01B in MAN and output signal at 0
4b	33-39B, CLEANUP PCV 12 (HP)	P (2.0)	SAT / UNSAT  <b>STD:</b> Places controller PC-33-39 in MAN and dials to 0
5.	Using RMC-33-151, CLEANUP SYS SELECTOR, close 33-40  <b>Note:</b> Manipulation of FC-33-169 is inconsequential, but does not satisfy this step.	P (3.0)	SAT / UNSAT  <b>STD:</b> Verifies controller RMC-33-151 CLEANUP SYS SELECTOR in MAN and dialed to 0
6.	Using RMC-33-165, CLEANUP TO COND & WASTE FLOW, close 33-165	P (4.0)	SAT / UNSAT  <b>STD:</b> Verify controller RMC-33-165C dialed to 0
7.	Verify open one of the following using the CLEANUP SELECTOR CONDENSER WASTE control switch:		
7a	WASTE (valve 33-10, CLEANUP TO WASTE DISPOSAL BV)	P (5.0)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates CLEANUP SELECTOR CONDENSER WASTE control switch clockwise to COND position
7b	COND (valve 33-11, CLEANUP TO CONDENSER BV)  <b>Note:</b> Initiating cue directs the candidate to reject to the condenser	P (5.0)	SAT / UNSAT  <b>STD:</b> Observes right-hand set of lights red light ON and green light OFF, for 33-11



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
8.	Open 33-01R, CU RETURN ISOLATION VALVE 1 (INSIDE)	P (6.0)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates 33-01R control switch CW to open
		P (6.0)	SAT / UNSAT  <b>STD:</b> Observes red light ON, green light OFF
9.	Open 33-04R, CU SUPPLY ISOLATION VALVE 12 (OUTSIDE), for approximately 3 seconds THEN PULL-TO-STOP	P (7.0)	SAT / UNSAT  <b>STD:</b> Rotates 33-04R control switch CW to open and uses pull-to-stop function after 3 seconds
		P (7.0)	SAT / UNSAT  <b>STD:</b> Observes red light ON, green light ON
10.	Jog open 33-02R, CU SUPPLY ISOLATION VALVE 11 (INSIDE), using ½ second open signals followed by PULL-TO-STOP UNTIL Cleanup System Inlet Pressure has stabilized at Reactor Pressure	P (8.0)	SAT / UNSAT  <b>STD:</b> Rotates 33-02R control switch CW to open and uses pull-to-stop in ½ second intervals UNTIL Cleanup system inlet pressure rises and stabilizes at ~ RPV pressure
		P (8.0)	SAT / UNSAT  <b>STD:</b> Observes red light ON, green light ON
		P (8.0)	SAT / UNSAT  <b>STD:</b> Observes RWCU pressure and RPV pressure approximately equal

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
11.	Fully open 33-02R	P (9.0)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates 33-02R control switch clockwise to open
		P (9.0)	SAT / UNSAT  <b>STD:</b> Observes red light ON, green light OFF
12.	Fully open the following valves:		
12a	33-04	P (10.0)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates 33-04R control switch clockwise to open
		P (10.0)	SAT / UNSAT  <b>STD:</b> Observes red light ON, green light OFF
12b	33-41, AO BLOCKING VALVE	P (10.0)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates 33-41 control switch clockwise to open
		P (10.0)	SAT / UNSAT  <b>STD:</b> Observes red light ON, green light OFF
13.	Simultaneously perform the following:		
13a	Adjust the in-service PCV to maintain Reactor Water Cleanup System pressure <100 psig  <b>Note:</b> Operator may place the PCV in AUTO after pressure is established	P (11.0)	SAT / UNSAT  <b>STD:</b> Using controller PC-33-39, dials output signal to open valve and establish inlet pressure below 100 psig





	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
13b	Adjust RMC-33-165C, CLEANUP TO COND & WASTE FLOW to control Reactor Water Level AND maintain Non-Regenerative Heat Exchanger outlet temperature < 120°F on computer point F359  <b>Cue:</b> Another operator will monitor computer point F359.	P (11.0)	<b>*PASS / FAIL</b>  <b>STD:</b> Using controller RMC-33-165C, dials output signals to open valve and establish system reject flow
		P (11.0)	<b>*PASS / FAIL</b>  <b>STD:</b> Maintains parameters to prevent a subsequent RWCU system isolation
14.	As time permits, continue with N1-OP-3, H.10.0.  <b>Cue:</b> Another operator will continue with N1-OP-3 H.10.0.	P (12.0)	SAT / UNSAT  <b>STD:</b> Proper communications used
15.	Reports to US that RWCU is restored and rejecting to condenser for level control	P	SAT / UNSAT  <b>STD:</b> Proper communications used
<b>Evaluator Note:</b>		<b>Cue:</b> <i>Your task is complete.</i>	

<b>TASK STANDARD</b>	RWCU has been restored per the EOP Hard Card and is rejecting to the condenser for level control.
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<b>STOP TIME</b>	
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## JPM Handout

<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"><li>• RWCU isolated following a low-low RPV water level transient.</li><li>• RPV water level has been recovered and is now high.</li><li>• RWCU system is needed to control RPV water level.</li><li>• Another Operator will be controlling RPV pressure using the ERVs and/or ECs.</li></ul>
<b>INITIATING CUE</b>	<p><b>(Operators Name)</b>, perform a rapid RWCU system restoration for RPV water level control and establish reject flow to the condenser, per N1-EOP-HC Attachment 12.</p>

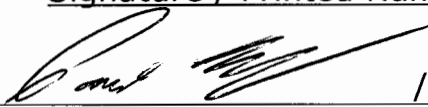
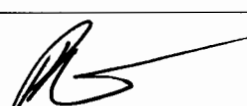


Training Id: **2018 NRC NMP1 Simulator JPM S-5**

Revision: **0.0**

Title: **Restore EC 11 To Service (Alternate Path)**

## Approvals:

	<u>Signature / Printed Name</u>	<u>Date</u>
Developed By	 / Paul Isham	2/13/18
Validated By	Justin Farella	8/21/18
Facility Reviewer	 / Phil Nichols	9.7.18

Approximate Duration: 20 minutes

## Documentation of Performance:

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

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

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

Grade: **Pass / Fail**

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

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

## References

1. N1-OP-13, Emergency Cooling System
2. NUREG 1123 K/A 207000 A4.05, (3.5/3.7)

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## Instructor Information

### A. JPM Information

#### 1. Description

- a. This JPM tests the operator's ability to locate and operate controls associated with Emergency Condensers. The operator will restore an Emergency Condenser to service.
- b. This JPM is considered alternate path because once the EC Steam isolation valve is being throttled open, and EC tube leak occurs. The operator will need to diagnose the tube leak and isolate the EC.
- c. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

#### 2. Task Information:

- a. N1-207000-01015
- b. K/A 207000 A4.05, (3.5/3.7)

#### 3. Evaluation / Task Criteria

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

#### 4. Recommended Start Location

- a. Unit 1 Simulator

5. Simulator Setup (if required)

- a. The reactor is in a power operating condition
- b. Initialize simulator to IC 164
- c. Verify EC 11 is removed from service per N1-OP-13, Section H.8.0
- d. Verify EC 11 steam pressure has been vented to near 0 psig.
- e. Verify the following malfunction is set on TRG1
  - EC06A, Emergency Condenser 111 Tube Leak, FV=25, DT=15 sec
- f. Verify event trigger, TRG1 set to initiate when valve 39-09R red light goes on.  
(hzlecmovr(1)==1)

6. JPM Setup (if required)

- a. Provides copies of N1-OP-13

## **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>Emergency Condenser (EC) 11 is out of service per N1-OP-13 section H.8.1 following corrective maintenance.</li> <li>Work is complete and EC 11 is ready to be returned to service.</li> <li>Non-Destructive Evaluation (NDE) has determined EC steam leg level to be 6 ft 11 inches.</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>(Operators Name)</b> , return EC 11 to standby per N1-OP-13 section H.8.0.
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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
2.	Obtain a copy of the reference procedure and review / utilize the correct section of the procedure	P	SAT / UNSAT  <b>STD:</b> N1-OP-13 is obtained, precautions & limitations reviewed, section H.8.3 utilized.
3.	Verify proper keepfull level as follows:		
3a	Contact Engineering Programs – NDE to perform UT of EC steam leg for level determination	P	SAT / UNSAT  <b>STD:</b> Determines level is 6' 11" per initial conditions
3b	IF EC steam leg level is greater than 6' 10" THEN proceed to step 8.3.2	P	SAT / UNSAT  <b>STD:</b> Proceeds to step 8.3.2

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
4.	Verify open the following valves:	(Step 8.3.2)	
4a	05-11, EMERG COND VENT ISOLATION VALVE 112	P	<b>*PASS / FAIL</b> <b>STD:</b> Opens 05-11 by rotating control switch CW to OPEN
4b	05-01R, EMERG COND VENT ISOLATION VALVE 111	P	<b>*PASS / FAIL</b> <b>STD:</b> Opens 05-01R by rotating control switch CW to OPEN
5.	WHEN system pressure has returned to normal, open the following valves:	(Step 8.3.3)	
5a	39-11R, EMERG CONDSR STM SUPPLY DRAIN IV 111	P	<b>*PASS / FAIL</b> <b>STD:</b> Opens 39-11R by rotating control switch CW to OPEN
5b	39-12R, EMERG CONDSR STM SUPPLY DRAIN IV 112	P	<b>*PASS / FAIL</b> <b>STD:</b> Opens 39-12R by rotating control switch CW to OPEN
6.	Open 39-07R, EC STM ISOLATION VALVE 112	P (Step 8.3.4)	<b>*PASS / FAIL</b> <b>STD:</b> Opens 39-07R by rotating control switch CW to OPEN
<b>Evaluator Note:</b>		For JPM Step 6, per a procedure caution, the operator may throttle open 39-07R using the pull-to-stop feature, rather than open it in one continuous motion. However, it must be fully opened by the end of the manipulation. If the applicant indicates they are waiting 15 minutes between throttling maneuvers, inform them the 15 minute wait is complete.	



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
7.	Throttle open 39-09R, EC STM ISOLATION VALVE 111 and monitor system parameters during heatup AND repressurization	P (Step 8.3.5)	<b>*PASS / FAIL</b>  <b>STD:</b> Opens 39-09R by rotating control switch CW to OPEN
			SAT / UNSAT  <b>STD:</b> Stops 39-09R by pulling control switch out to STOP
			SAT / UNSAT  <b>STD:</b> Monitors system temperature and pressures
			SAT / UNSAT  <b>STD:</b> Fully opens 39-09R by rotating control switch CW to OPEN
<b>Alternate Path</b>		The alternate path begins when 39-09R red light comes on. This causes an EC tube leak to be initiated.	
8.	Responds to alarm K1-1-2	P	SAT / UNSAT  <b>STD:</b> Acknowledges and reports alarm
9.	Confirm alarm on computer printout	P	SAT / UNSAT  <b>STD:</b> Observes computer points E478 and E480 in alarm

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
10.	<p>Confirm radiation levels on J Panel and contact RP to check dose rates above elevation 340</p> <p><b>Role Play:</b> Acknowledge direction as RP.</p>	P	<p>SAT / UNSAT</p> <p><b>STD:</b> Observes E CONDSR VENT RAD MON 111 (RE-RN04A-3) and E CONDSR VENT RAD MON 112 (RE-RN04A-4) reading on J Panel and determines readings indicate alarm condition.</p>
<p><b>Evaluator Note:</b> Depending on JPM run time, JPM steps 11 and 12 will be N/A if shell temperature &lt;100F.</p>			
11.	<p>IF High Rad Alarm is confirmed, (BOTH RE-RN04A-3 AND RE-RN04A-4 in alarm OR one in alarm with the other inoperable), AND shell side temperature <math>\geq 100F</math>:</p> <p><b>Role Play:</b> Acknowledge direction as RP/Chemistry.</p>		
11a	Direct Shift Chemistry Technician to assess the possible unmonitored radiological release using EP-AA-110-204.	P	<p>SAT / UNSAT / NA</p> <p><b>STD:</b> Directs Chemistry Tech to assess for possible unmonitored release per</p>
11b	Direct Shift Radiation Protection Technician to perform a downwind site boundary radiological survey	P	<p>SAT / UNSAT / NA</p> <p><b>STD:</b> Directs RP Tech to perform downwind survey at site boundary</p>



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
12.	IF High Rad Alarm is confirmed, (BOTH RE-RN04A-3 AND RE-RN04A-4 in alarm OR one in alarm with the other inoperable), AND shell side temperature is <100F, direct the Shift Chemistry Technician to obtain AND evaluate an EC shell side sample  <b>Role Play:</b> Acknowledge direction as Chemistry.	P	SAT / UNSAT / NA  <b>STD:</b> Directs Chemistry Tech to obtain and evaluate EC 11 shell side sample
13.	IF alarm is valid THEN with SM concurrence, close the following valves:  <b>Role Play:</b> As SM, inform the candidate that the alarm is valid and provide concurrence for isolating EC 11.		
13a	39-07R, EC STM ISOLATION VALVE 112	P	<b>*PASS / FAIL</b>  <b>STD:</b> Closes 39-07R by rotating control switch CCW to CLOSE
13b	39-09R, EC STM ISOLATION VALVE 111	P	<b>*PASS / FAIL</b>  <b>STD:</b> Closes 39-09R by rotating control switch CCW to CLOSE
13c	39-05, EMERG CNDSR COND RET ISOLATION VALVE 11	P	SAT / UNSAT  <b>STD:</b> Observes 39-05 green light on, red light off
13d	39-11R, EMERG CNDSR STM SUPPLY DRAIN IV 111	P	<b>*PASS / FAIL</b>  <b>STD:</b> Closes 39-11R by rotating control switch CCW to CLOSE

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
13e	39-12R, EMERG CNDSR STM SUPPLY DRAIN IV 112	P	<b>*PASS / FAIL</b>  <b>STD:</b> Closes 39-12R by rotating control switch CCW to CLOSE
13f	05-01R, EMERG COND VENT ISOLATION VALVE 111	P	<b>*PASS / FAIL</b>  <b>STD:</b> Closes 05-01R by rotating control switch CCW to CLOSE
13g	05-11, EMERG COND VENT ISOLATION VALVE 112	P	<b>*PASS / FAIL</b>  <b>STD:</b> Closes 05-11 by rotating control switch CCW to CLOSE
<b>Evaluator Note:</b>		<b>Cue:</b> <i>Your task is complete.</i>	

<b>TASK STANDARD</b>	EC 11 is isolated due to tube leak.
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<b>STOP TIME</b>	
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## JPM Handout

<b>INITIAL CONDITIONS</b>	Given: <ul style="list-style-type: none"><li>• Emergency Condenser (EC) 11 is out of service per N1-OP-13 section H.8.1 following corrective maintenance.</li><li>• Work is complete and EC 11 is ready to be returned to service.</li><li>• Non-Destructive Evaluation (NDE) has determined EC steam leg level to be 6 ft 11 inches.</li></ul>
<b>INITIATING CUE</b>	<b>(Operators Name)</b> , return EC 11 to standby per N1-OP-13 section H.8.0.

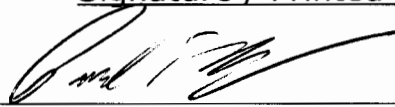
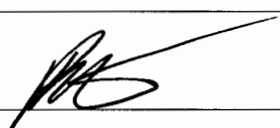


Training Id: **2018 NMP1 NRC Simulator JPM S-6**

Revision: **0.0**

Title: **Swap PB 101 from R1014 to R1011**

## Approvals:

	<u>Signature / Printed Name</u>	<u>Date</u>
Developed By	 / Paul Isham	2/13/18
Validated By	Will Vannostrand	8/21/18
Facility Reviewer	 / Phil Nichols	9.7.18

Approximate Duration: 10 minutes

## Documentation of Performance:

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

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

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

Grade: **Pass / Fail**

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

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

## References

1. N1-OP-30, 4.16KV, 600V and 480V House Service
2. NUREG 1123 K/A 262001 A4.01, (3.4/3.7)

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## Instructor Information

### A. JPM Information

1. Description
  - a. This JPM tests the operator's ability to manipulate and control station electrical breakers from the control room.
  - 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. N1-262001-01001
  - b. K/A 262001 A4.01, (3.4/3.7)

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. Unit 1 Simulator



5. Simulator Setup (if required)
  - a. The reactor is in a power operating condition
  - b. Initialize simulator to IC 164
  - c. Verify Powerboard 101 is supplied from breaker R1014
6. JPM Setup (if required)
  - a. Ensure sufficient copies of N1-OP-30 P&Ls and section H.8 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>Powerboard 101 is being swapped from breaker R1014 to R1011 to allow Electrical Maintenance to perform an inspection on breaker R1014.</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>(Operators Name)</b> , shift the source of power for Powerboard 101 from R1014 to R1011 per N1-OP-30 section H.8.0.
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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
2.	Obtain a copy of the reference procedure and review / utilize the correct section of the procedure	P	SAT / UNSAT <b>STD:</b> N1-OP-30 obtained.
3.	Place PB101 SUPPLY BREAKER INTERLOCK BY-PASS SWITCH in BYPASS	P (8.1)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates PB101 SUPPLY BREAKER INTERLOCK BY-PASS SWITCH CW to BYPASS
4.	Insert Sync Key in Breaker R1011	P (8.2)	<b>*PASS / FAIL</b>  <b>STD:</b> Inserts Sync Key in Breaker R1011

	<b>PERFORMANCE</b>	<b>ACT. CODE</b> P / S / NA	<b>EVALUATOR</b>
5.	Turn Sync Key ON	P (8.2.1)	<b>*PASS / FAIL</b>  <b>STD:</b> Turns Sync Key ON by rotating CW
6.	Confirm incoming AND running voltage NORMAL	P (8.2.2)	SAT / UNSAT  <b>STD:</b> Observes incoming and running voltages and determines they are normal (~4160V)
7.	Close Breaker R1011	P (8.3)	<b>*PASS / FAIL</b>  <b>STD:</b> Closes Breaker R1011 by rotating control switch CW to CLOSE
8.	Turn Sync Key OFF	P (8.4)	SAT / UNSAT  <b>STD:</b> Turns Sync Key OFF by rotating CCW
9.	Remove Sync Key	P (8.5)	SAT / UNSAT  <b>STD:</b> Removes Sync Key from Breaker R1011
10.	Open Breaker R1014	P (8.6)	<b>*PASS / FAIL</b>  <b>STD:</b> Opens Breaker R1014 by rotating control switch CCW to TRIP

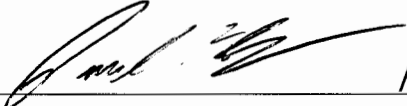
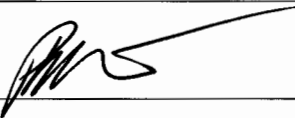
	<b>PERFORMANCE</b>	<b>ACT. CODE</b> P / S / NA	<b>EVALUATOR</b>
11.	Place PB101 SUPPLY BREAKER INTERLOCK BY-PASS SWITCH in NORMAL	P (8.7)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates PB101 SUPPLY BREAKER INTERLOCK BY-PASS SWITCH CCW to NORMAL
<b>Evaluator Note:</b>		<b>Cue:</b> <i>Your task is complete.</i>	
<b>TASK STANDARD</b>	Powerboard 101 supplied by breaker R1011 in accordance with N1-OP-30.		
<b>STOP TIME</b>			

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## JPM Handout

<b>INITIAL CONDITIONS</b>	Given: <ul style="list-style-type: none"><li>• Powerboard 101 is being swapped from breaker R1014 to R1011 to allow Electrical Maintenance to perform an inspection on breaker R1014.</li></ul>
<b>INITIATING CUE</b>	<b>(Operators Name)</b> , shift the source of power for Powerboard 101 from R1014 to R1011 per N1-OP-30 section H.8.0.

Training Id: **2018 NRC NMP1 Simulator JPM S-7**Revision: **0.0**Title: **Control Rod Exercising Operability Test N1-ST-W1 (Alternate Path)****Approvals:**

	<u>Signature / Printed Name</u>	<u>Date</u>
Developed By	 / Paul Isham	2/13/18
Validated By	Will Vannostrand	8/21/18
Facility Reviewer	 / Phil Nichols	9.7.18

Approximate Duration: 25 minutes**Documentation of Performance:**

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

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

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

Grade: **Pass / Fail**Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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

## References

1. N1-ST-W1, Control Rod Exercising Operability Test
2. N1-OP-5, Control Rod Drive System

## Instructor Information

### A. JPM Information

#### 1. Description

- a. This JPM tests the operator's ability to perform the weekly control rod exercise surveillance, N1-ST-W1.
- b. This JPM is considered alternate path because rod position indication will be lost while exercising rods, requiring the operator to take actions prescribed in the Control Rod Drive Operating Procedure.
- c. Critical steps are annotated in the Evaluator standard column with a bolded **Pass/Fail**.

#### 2. Task Information:

- a. N1-214000-01001
- b. K/A 214000, A4.02 (3.8/3.8)

#### 3. Evaluation / Task Criteria

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

#### 4. Recommended Start Location

- a. Unit 1 Simulator



5. Simulator Setup (if required)

- a. Initialize simulator to IC-165
- b. Verify RD08R0231 is assigned to trigger 1
- c. Verify Event Trigger #1 `hzlrdin==1&hzlrdself(72)==1`
- d. Ensure process computer is not available

6. JPM Setup (if required)

- a. Prepare a copy of N1-ST-W1, marked with step 6.1 – 6.2.4 complete.
- b. Ensure Operators have sufficient time to review procedure ahead of time.

## **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 online.</li><li>• Weekly Control Rod exercising is in progress.</li><li>• The process computer is unavailable.</li><li>• N1-ST-W1 is complete through step 6.2.4.</li><li>• No rods are expected to double notch.</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>(Operators Name)</b>, Complete N1-ST-W1, starting at step 6.2.5. Begin with rod 02-35 and continue with the sequence outlined in attachment 1. Document applicable rod movement information on attachment 1.</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.
2.	Obtain a copy of N1-ST-W1 and review / utilize the correct section of the procedure	P	SAT / UNSAT <b>STD:</b> Obtains copy of N1-ST-W1. Section 6.2 is referenced
3.	Depress the rod select pushbutton for Control Rod to be tested on Rod Map Display at E panel. (Step 6.2.5)	P	SAT / UNSAT <b>STD:</b> Depresses pushbutton for control rod 02-35. Observes white light lit.

	<b>PERFORMANCE</b>	<b>ACT. CODE</b> P / S / NA	<b>EVALUATOR</b>
4.	<p>RECORD selected control rod's initial position on Attachment 1, Control Rod Exercising Data Sheet. (Step 6.2.6)</p> <p><b>Cue:</b> If the applicant requests status of V138 (step 6.2.7), report V138 has a normal response.</p>	P	<p>SAT / UNSAT</p> <p><b>STD:</b> Records position 48 for control rod 02-35</p>
5.	<p>Confirm the following: (Step 6.2.8)</p> <ul style="list-style-type: none"> <li>Rod select pushbutton back lighted on Rod Map Display</li> <li>Select light illuminated for appropriate Control Rod at F Panel</li> </ul>	P	<p>SAT / UNSAT</p> <p><b>STD:</b> Observes both white lights lit.</p>
6.	Step 6.2.9 – "IF Control Rod is expected to double notch..."	P	<p>SAT / UNSAT</p> <p><b>STD:</b> Determine step is NA per initial conditions.</p>
7.	PLACE 4S1, CONTROL ROD MOVEMENT switch to ROD IN position UNTIL ROD IN light illuminates. (Step 6.2.10)	P	<p><b>PASS / FAIL</b></p> <p><b>STD:</b> Places control rod movement switch to the Rod In position. Observes rod settle at position 46.</p>
8.	Determines steps 6.2.11, 6.2.12, 6.2.14, and 6.2.15 are NA	P	SAT / UNSAT
9.	<p>Record the following on Attachment 1:</p> <ul style="list-style-type: none"> <li>New control rod position</li> <li>Drive-To-Reactor d/p (step 6.2.13)</li> </ul>	P	<p>SAT / UNSAT</p> <p><b>STD:</b> Records position 46 for control rod 02-35. And approximately 250 psi differential pressure.</p>
10	Withdraw control rod to initial position as follows: (step 6.2.16)		

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
10.a	Confirm the following: <ul style="list-style-type: none"> <li>Rod select pushbutton back lighted on Rod Map Display</li> <li>Select light illuminated for appropriate Control Rod at F Panel</li> </ul>	P	SAT / UNSAT <b>STD:</b> Observes both white lights lit.
10.b	PLACE CONTROL ROD MOVEMENT switch in ROD OUT NOTCH, UNTIL ROD IN light illuminates.	P	<b>PASS / FAIL</b> <b>STD:</b> Places control rod movement switch to the Rod Out Notch position. Observes rod settle at position 48.
10.c	CONFIRM next higher even position illuminates at F Panel.	P	SAT / UNSAT <b>STD:</b> Observes rod settle at position 48.
10.d	Verify final position equals initial position and record final position on attachment 1.  <b>Examiner note:</b> Withdraw to position 48 may be performed concurrently with the coupling check.	P	SAT / UNSAT <b>STD:</b> Records final position on attachment 1 and confirms initial and final positions are the same.
11.	Perform coupling check (step 6.2.17):		
11.a	SIMULTANEOUSLY PLACE 4S1 to ROD OUT NOTCH AND 4S3, CONTROL ROD N OVERRIDE switch to NOTCH OVERRIDE.	P	<b>PASS / FAIL</b> <b>STD:</b> Simultaneously places Control Rod Movement Switch to Rod Out Notch and the Control Rod N Override Switch to Notch Override.
11.b	CONFIRM the following: <ul style="list-style-type: none"> <li>Position 48 illuminates with red backlighting remains illuminated for Control Rod selected at F Panel</li> <li>CONTROL ROD OVERTRAVEL annunciator, F3-1-6, does NOT alarm</li> </ul>	P	SAT / UNSAT <b>STD:</b> Observes position 48 and red backlighting while holding switches.

	<b>PERFORMANCE</b>	<b>ACT. CODE</b> P / S / NA	<b>EVALUATOR</b>
11.c	RECORD Withdrawal Stall Flow on Attachment 1.	P	SAT / UNSAT <b>STD:</b> Observes stall flow on F Panel. Records on att 1.
11.d	Record Satisfactory coupling check	P	SAT / UNSAT <b>STD:</b> Checks appropriate block in attachment 1.
12.	Select next rod to be exercised		
12.a	Depress the rod select pushbutton for Control Rod to be tested on Rod Map Display at E panel. (Step 6.2.5)	P	SAT / UNSAT <b>STD:</b> Depresses pushbutton for control rod 02-31. Observes white light lit.
12.b	RECORD selected control rod's initial position on Attachment 1, Control Rod Exercising Data Sheet. (Step 6.2.6)  <b>Cue:</b> If the applicant requests status of V138 (step 6.2.7), report V138 has a normal response.	P	SAT / UNSAT <b>STD:</b> Records position 48 for control rod 02-31 on attachment 1.
13.	Confirm the following: (Step 6.2.8) <ul style="list-style-type: none"> <li>Rod select pushbutton back lighted on Rod Map Display</li> <li>Select light illuminated for appropriate Control Rod at F Panel</li> </ul>	P	SAT / UNSAT <b>STD:</b> Observes both white lights lit.
14.	Step 6.2.9 – "IF Control Rod is expected to double notch..."	P	SAT / UNSAT <b>STD:</b> Determine step is NA per initial conditions.
15.	PLACE 4S1, CONTROL ROD MOVEMENT switch to ROD IN position UNTIL ROD IN light illuminates. (Step 6.2.10)	P	<b>PASS / FAIL</b> <b>STD:</b> Places control rod movement switch to the Rod In position. Observes rod start to move.

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
<b>Alternate Path:</b>	When the rod is moved in, RPIS will fail initiating the alternate path. The applicant should determine rod position is unknown and references N1-OP-5, Off Normal section to respond to the loss of rod position indication.		
16.	Verify indicating light NOT burnt out at F Panel. (N1-OP-5 Step H.10.1)  <u><b>Cue:</b></u> Another operator verified the light was not burnt out. <u><b>Note:</b></u> The applicant may make the determination that a light is not burnt out since all position indication for the rod was lost.	P	SAT / UNSAT  <b>STD:</b> Determines lights not burnt out.
17.	Notify Reactor Engineering. (N1-OP-5 Step H.10.2)  <u><b>Cue:</b></u> When contacted as Reactor Engineering, acknowledge report.	P	SAT / UNSAT  <b>STD:</b> Reports loss of rod position indication to Reactor Engineering
18.	IF control rod lacks position indication, THEN perform the following: (N1-OP-5 Step H.10.3)		
18.a	Insert control rod one notch.	P	<b>PASS / FAIL</b> <b>STD:</b> Momentarily places control rod movement switch to Rod In.

	<b>PERFORMANCE</b>	<b>ACT. CODE</b> P / S / NA	<b>EVALUATOR</b>
18.b	Confirm the following: <ul style="list-style-type: none"> <li>• ROD IN light illuminates for approximately three seconds.</li> <li>• ROD OUT SETTLE light illuminates for approximately four seconds AFTER ROD IN light extinguishes.</li> <li>• Next lower even position illuminates.</li> </ul>	P	<b>SAT / UNSAT</b> <b>STD:</b> Observes proper response from RMCS timer lights. Observes next lower rod position does not display.
19.	IF control rod lacks position indication at more than one position AND position CANNOT be determined by other means, THEN perform following: (N1-OP-5 Step H.10.4)		
20.	Fully insert control rod.	P	<b>PASS / FAIL</b> <b>STD:</b> Places and holds control rod movement sw. to Rod In.
<b>Evaluator Note:</b>		Once control rod 02-31 is being fully inserted, provide the following Cue: <b>Cue:</b> Time compression. The rod is fully inserted. Your task is complete, another operator will complete the remainder of the OP actions.	
<b>Task Standard</b>		RPIS is recognized as lost and Control Rod 02-31 is being fully inserted.	
<b>STOP TIME</b>			



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## JPM Handout

<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"><li>• The plant is online.</li><li>• Weekly Control Rod exercising is in progress.</li><li>• The process computer is unavailable.</li><li>• N1-ST-W1 is complete through step 6.2.4.</li><li>• No rods are expected to double notch.</li></ul>
<b>INITIATING CUE</b>	<p><b>(Operators Name)</b>, Complete N1-ST-W1, starting at step 6.2.5. Begin with rod 02-35 and continue with the sequence outlined in attachment 1. Document applicable rod movement information on attachment 1.</p>

Training Id: **2018 NRC NMP1 Simulator JPM S-8**Revision: **0.0**Title: **MSIV Stroke Test and Limit Switch Test (N1-ST-Q26)****Approvals:**

	<u>Signature / Printed Name</u>	<u>Date</u>
Developed By	 / Paul Isham	2/13/18
Validated By	Justin Farella	8/22/18
Facility Reviewer	 / Phil Nichols	9.7.18

Approximate Duration: 15 minutes**Documentation of Performance:**

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

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

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

Grade: **Pass / Fail**Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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

## References

1. N1-ST-Q26, FW and MSL Power Operated Isolation Valve Partial Exercise Test and Associated Functional Testing of RPS Trip Logic
2. NUREG 1123 K/A 239001 A4.01, (4.2/4.0)

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## Instructor Information

### A. JPM Information

1. Description
  - a. This JPM tests the operator's ability to operate MSIV controls for a surveillance test and verify proper indications.
  - b. This JPM is NOT considered alternate path.
2. Task Information:
  - a. N1-239001-01026
  - b. K/A 239001 A4.01, (4.2/4.0)
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. Unit 1 Simulator

5. Simulator Setup (if required)
  - a. The reactor is in an operating condition
  - b. Initialize simulator to IC 166
  
6. JPM Setup (if required)
  - a. Section 7, prerequisites, and section 8.1 through 8.2.1.b marked complete.

## **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 operating approximately 50% power.</li><li>• All prerequisites for N1-ST-Q26 are complete.</li><li>• Section 8.1 has 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>(Operators Name)</b> , test Main Steam Line Isolation Valve 112 in accordance with N1-ST-Q26, Section 8.2.
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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
2.	Obtain a copy of the reference procedure and review / utilize the correct section of the procedure	P	SAT / UNSAT  <b>STD:</b> N1-ST-Q26 obtained, precautions & limitations reviewed
3.	Prepare to initiate a Half-Scram on CHANNEL 11: (Step 8.2.1)		
3a.	Verify NO RPS Half-Scram signals exist	P	SAT / UNSAT  <b>STD:</b> Observes all scram solenoid lights energized
3b.	Notify CRO that the following steps will initiate a Half-Scram	P	SAT / UNSAT  <b>STD:</b> Proper communications used

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
3c.	Verify all four MSIV SOV continuity ammeters indicate greater than 100mA  <b>Role Play:</b> If dispatched to the Aux Control Room, acknowledge the request and report all four MSIV SOV continuity ammeters indicate greater than 100mA	P	SAT / UNSAT  <b>STD:</b> Dispatch another operator to the Aux Control Room to perform the verification
4.	Enter Tech Spec 3.2.7 for Reactor Coolant Isolation Valves  <b>Role Play:</b> If directed as SRO to enter Tech Spec 3.2.7, Acknowledge the report.	P (Step 8.2.2)	SAT / UNSAT  <b>STD:</b> Inform SRO Tech Spec 3.2.7 entry is required.
5.	Place Main Steam Isolation Valve 7% Test Switch to the 112 position	P (Step 8.2.3)	<b>PASS / FAIL</b>  <b>STD:</b> Test switch is rotated to the 112 position
6.	Confirm 01-03 MSIV 112 white test light ON	P (Step 8.2.4)	SAT / UNSAT  <b>STD:</b> White test light for MSIV 112 is verified
7.	Confirm 01-03 MSIV 112 yellow light OFF  <b>Note:</b> Step 8.2.6 will be N/A.	P (Step 8.2.5)	SAT / UNSAT  <b>STD:</b> Yellow light for MSIV 112 is verified de-energized
	<b>Note:</b> JPM steps 8 to 12 will occur in rapid sequence; expect annunciators F1-1-7 and F1-2-1, along with half scram indications.  <b>Cue:</b> Notify the candidate that you will be monitoring the valve mimic board for MSIV 112.		
8.	Momentarily place 01-03 MSIV-112 control switch to CLOSE position	P (Step 8.2.7)	<b>PASS / FAIL</b>  <b>STD:</b> Rotates control switch for MSIV 112 momentarily CCW to CLOSE, then releases

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
9.	<p>Confirm RPS Channel 11 Half-Scram indications</p> <p><b>Cue:</b> If F1-1-7 is cleared before candidate completes verification, report that F1-1-7 alarmed and cleared as expected.</p> <p><b>Note:</b> This confirmation step is scripted a few steps later in the procedure. Actual performance occurs prior to resetting the half scram.</p>	P (Step 8.2.11)	<p>SAT / UNSAT</p> <p><b>STD:</b> Observes:</p> <ul style="list-style-type: none"> <li>• CHANNEL 11 SCRAM SOLENOID GROUPS 1, 2, 3, 4, white light off</li> <li>• CHANNEL 11 B.U. SCRAM S.D.V. VENT &amp; DRAIN VALVE red light off</li> <li>• Annunciator F1-1-7, RPS CH 11 MN STM LINE 11 ISOL VALVE CLOSED, alarms</li> <li>• Annunciator F1-2-1, RPS CH 11 AUTO REACTOR TRIP, alarms</li> </ul>
10.	<p>Confirm 01-03, MSIV-112 automatic partial closure indications</p> <p><b>Cue:</b> The MSIV 112 mimic light came on and went off as expected.</p> <p><b>Note:</b> This confirmation step is scripted a few steps later in the procedure. Actual performance occurs prior to resetting the half scram.</p>	P (Step 8.2.12)	<p>SAT / UNSAT</p> <p><b>STD:</b> Observes:</p> <ul style="list-style-type: none"> <li>• 01-03 MSIV-112 Green Light ON momentarily</li> <li>• 01-03 MSIV-112 Red Light ON</li> <li>• 01-03 MSIV-112 Mimic Light ON momentarily</li> </ul>
11.	<p>Confirm 01-03 MSIV-112 yellow light illuminated BRIGHT</p>	P (Step 8.2.8)	<p>SAT / UNSAT</p> <p><b>STD:</b> Observes 01-03 MSIV 112 yellow test light ON brightly</p>



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
12.	Confirm 01-03 MSIV-112 automatic opening indications	P (Step 8.2.13)	SAT / UNSAT  <b>STD:</b> Observes: <ul style="list-style-type: none"> <li>• 01-03 MSIV-112 Green Light OFF</li> <li>• 01-03 MSIV-112 Red Light ON</li> <li>• 01-03 MSIV-112 Mimic Light OFF</li> </ul>
13.	Approximately 15 seconds after the half-scam initiates, depress REACTOR TRIP RESET at Panel E  <b>Note:</b> F1-2-1 clears	P (Step 8.2.9)	<b>PASS / FAIL</b>  <b>STD:</b> Depresses Rx Trip RESET Button on E-Console
14.	Confirm RPS Channel 11 Half-Scram indications clear	P (Step 8.2.10)	SAT / UNSAT  <b>STD:</b> Observes: <ul style="list-style-type: none"> <li>• CHANNEL 11 SCRAM SOLENOID Groups 1,2,3,4 White Light ON</li> <li>• CHANNEL 11 BACKUP SCRAM VALVE S.D.V. VENT ND DRAIN VALVE Red Light ON</li> <li>• Annunciator F1-1-7, RPS CH 11 MN STM LINE 11 ISOL VALVE CLOSED, clear</li> <li>• Annunciator F1-2-1, RPS CH 11 AUTO REACTOR TRIP, clear</li> </ul>

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
15.	Place MSIV 7% Test Switch to the OFF position  <b>Cue:</b> Inform candidate that another operator has completed the Independent Verification.	P (Step 8.2.14)	<b>PASS / FAIL</b>  <b>STD:</b> Rotates Test Switch to OFF
16.	Confirm 01-03 MSIV 112 White Test Light OFF	P (Step 8.2.15)	SAT / UNSAT  <b>STD:</b> Observes White Test Light for MSIV-112 is OFF
17.	Confirm 01-03 MSIV 112 Yellow Light OFF	P (Step 8.2.16)	SAT / UNSAT  <b>STD:</b> Observes Yellow Light for MSIV-112 is OFF
<b>Evaluator Note:</b>		<b>Cue:</b> <i>Your task is complete.</i>	

<b>TERMINATING CUE</b>	N1-ST-Q26 completed for MSIV 01-03.
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<b>STOP TIME</b>	
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## JPM Handout

<b>INITIAL CONDITIONS</b>	Given: <ul style="list-style-type: none"><li>• The plant is operating at 100% power.</li><li>• All prerequisites for N1-ST-Q26 are complete.</li><li>• Section 8.1 has been completed.</li></ul>
<b>INITIATING CUE</b>	<b>(Operators Name)</b> , test Main Steam Line Isolation Valve 112 in accordance with N1-ST-Q26, Section 8.2.


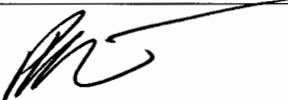


Training Id: **2018 NRC NMP1 Plant JPM P-1**

Revision: **0.0**

Title: **Swap CRD Stabilizing Valves**

## Approvals:

	<u>Signature / Printed Name</u>	<u>Date</u>
Developed By	 / Paul Isham	2/2/18
Validated By	Justin Farella	8/23/18
Facility Reviewer	 / Phil Nichols	9.7.18

Approximate Duration: 15 minutes

## Documentation of Performance:

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

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

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

Grade: **Pass / Fail**

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

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

## References

1. N1-OP-5, Control Rod Drive
2. NUREG 1123 K/A 201001 A2.08 (2.8/2.8)

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## Instructor Information

### A. JPM Information

#### 1. Description

- a. This JPM tests the operator's ability to locally operate controls associated with Control Rod Drive. The operator will swap CRD Stabilizing Valves from A and B to E and F in accordance with the Operating Procedure.
- 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. N1-201001-01003
- b. K/A 201001 A2.08 (2.8/2.8)

#### 3. Evaluation / Task Criteria

Evaluation Method	Simulate
Evaluation Location	Plant
Time Critical Task	No
Alternate Path	No
LOD > 1.0	Yes

#### 4. Recommended Start Location

- a. Unit 1 Reactor Building

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

- a. Prepare a copy of N1-OP-5 P&Ls and section F.4.0

## **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 CRS 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 approximately 100% power.</li> <li>CRD Stabilizing valves A and B are in service.</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>(Operators Name)</b> , switch CRD Stabilizing valves from A and B to E and F per N1-OP-5 section F.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.	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> N1-OP-5 obtained
3.	Open 44-175, BV - STABILIZING VALVES 44-181 & 182 INLET  <b>Cue:</b> The indicated handwheel is rotated CCW.	S (4.1.1)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates handwheel CCW for valve 44-175
4.	Open 44-184, BV - STABILIZING VALVES 44-181 & 182 OUTLET  <b>Cue:</b> The indicated handwheel is rotated CCW.	S (4.1.1)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates handwheel CCW for valve 44-184



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
5.	Place STABILIZING SOLENOID VALVES TRANSFER switch to E&F position  <b>Note:</b> This switch is in the Control Room on F panel.  <b>Role Play:</b> Acknowledge direction as Control Room, then report STABILIZING SOLENOID VALVES TRANSFER switch has been placed in the E&F position.	S (4.1.2)	<b>*PASS / FAIL</b>  <b>STD:</b> Requests Control Room place STABILIZING SOLENOID VALVES TRANSFER switch to E&F position
6.	Close 44-176, BV - STABILIZING VALVES 44-178 & 179 INLET  <b>Cue:</b> The indicated handwheel is rotated fully CW.	S (4.1.3)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates handwheel fully CW for valve 44-176
7.	Close 44-183, BV - STABILIZING VALVES 44-178 & 179 OUTLET  <b>Cue:</b> The indicated handwheel is rotated fully CW.	S (4.1.3)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates handwheel fully CW for valve 44-183
8.	Confirm Stabilizing Valve Exhaust Line flow between 5.8 AND 6.5 gpm (nominally 6.1 gpm), as indicated on FI-44-07, Local Flow Indicator  <b>Cue:</b> Indicated flow is 6.1 gpm	S (4.1.4)	SAT / UNSAT  <b>STD:</b> Observes stabilizing flow indicator FI-44-07
<b>Evaluators Note:</b>		<b>Cue:</b> Your task is complete.	
<b>TASK STANDARD</b>		CRD Stabilizing valves E and F placed in service and valves A and B isolated in accordance with N1-OP-5.	
<b>STOP TIME</b>			

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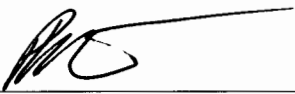
## JPM Handout

<b>INITIAL CONDITIONS</b>	Given: <ul style="list-style-type: none"><li>• The plant is operating at approximately 100% power.</li><li>• CRD Stabilizing valves A and B are in service.</li></ul>
<b>INITIATING CUE</b>	<b>(Operators Name)</b> , switch CRD Stabilizing valves from A and B to E and F per N1-OP-5 section F.4.0.

Training Id: **2018 NRC NMP1 Plant JPM P-2**Revision: **0.0**

**Lineup Lake Water to Supply the EC Makeup Tanks Using the**  
Title: **Electric Fire Pump (Alternate Path)**

**Approvals:**

	<u>Signature / Printed Name</u>	<u>Date</u>
Developed By	 / Paul Isham	2/2/18
Validated By	Justin Farella	8/23/18
Facility Reviewer	 / Phil Nichols	9.7.18

Approximate Duration: 15 minutes**Documentation of Performance:**

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

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

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

Grade: **Pass / Fail**

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

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

## References

1. N1-SOP-21.2, Control Room Evacuation
2. NUREG 1123 K/A 207000 A1.01 (3.7/3.8)

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## Instructor Information

### A. JPM Information

1. Description
  - a. This JPM simulates a control room evacuation where Emergency Condenser are required for RPV pressure control. This JPM tests the operator's ability to locally operate components associated with maintaining the Emergency Condensers available.
  - b. This JPM is considered alternate path because the Diesel Fire Pump will fail upon start, requiring use of the Electric Fire Pump.
  - c. Critical steps are annotated in the Evaluator standard column with a bolded **\*PASS/FAIL**.
2. Task Information:
  - a. N1-SOP-21.2-01001-05
  - b. K/A 207000 A1.01 (3.7/3.8)
3. Evaluation / Task Criteria

Evaluation Method	Simulate
Evaluation Location	Plant
Time Critical Task	No
Alternate Path	Yes
LOD >1.0	Yes

4. Recommended Start Location
  - a. Unit 1 Screenhouse

5. JPM Setup (if required)
  - a. Prepare a copy of N1-SOP-21.2, Attachment 3
  - b. Have available, copies of N1-OP-21A, sections H.1.0 and H.2.0.

## **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 was operating at 100% power.</li> <li>• A control room evacuation has occurred.</li> <li>• Emergency Condenser Makeup Tank levels are low at 6 feet.</li> <li>• Emergency Condenser Makeup cross-connect valve, 60-13, has failed 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>(Operators Name)</b>, raise Emergency Condenser Makeup Tank levels to 10 feet using the Diesel Fire Pump, in accordance with N1-SOP-21.2, Attachment 3.</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>
2.	<p>Obtain a copy of the reference procedure and review / utilize the correct section of the procedure</p>	P	<p>SAT / UNSAT</p> <p><b>STD:</b> Obtains copy of N1-SOP-21.2</p>



	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
3.	<p>Start at least one of the following Fire Pumps (Screenhouse):</p> <ul style="list-style-type: none"> <li>Diesel Fire Pump (Preferred)</li> <li>Electric Fire Pump</li> </ul> <p><b>Note:</b> If the candidate requests an additional procedure to perform the a Fire Pump start, give them N1-OP-21A sections H.1.0 and H.2.0. The candidate will then perform additional pre- and post-start actions beyond those listed in the standard, but listed below:</p> <ul style="list-style-type: none"> <li>Verify Diesel Fire Pump lubricant level is at Full mark.</li> <li>Verify Diesel Fire Pump gearcase lubricant level full.</li> <li>Verify the following: <ul style="list-style-type: none"> <li>Engine coolant full</li> <li>Day tank level 150 gallons or greater</li> <li>Air tank pressures 11 and 12 &gt; 80 psig</li> <li>Engine water temperature &gt; 100°F</li> </ul> </li> <li><b>-OR-</b></li> <li>Verify lubricant levels of Electric Fire Pump is at STANDSTILL LEVEL in top and bottom Bull's Eyes</li> <li>Verify Electric Fire Pump oil reservoir full</li> </ul>	S (1.0)	<p>SAT / UNSAT</p> <p><b>STD:</b> Attempts to starts the Diesel Fire Pump by one of the following means:</p> <ul style="list-style-type: none"> <li>Rotates control switch counterclockwise to TEST position</li> <li>Rotates control switch clockwise to the MAN 1 position and depresses the start pushbutton</li> <li>Rotates control switch clockwise to the MAN 2 position and depresses the start pushbutton</li> </ul>
<b>Evaluator Cue:</b>	Report that the Diesel Fire Pump failed to start and is now damaged.		
<b>Alternate Path:</b>	The alternate path begins when the operator attempts to start the Diesel Fire Pump. The pump will fail, requiring use of the Electric Fire Pump.		
<b>Role Play:</b>	If candidate asks for direction how to proceed, direct them to take appropriate action to raise Emergency Condenser Makeup Tank levels to 10 feet.		

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
4.	<p>Starts the Electric Fire Pump</p> <p><b>Cue:</b> When Electric Fire Pump control switch is taken to START, inform the candidate that the Electric Fire Pump started.</p> <p><b>Cue:</b> If requested, Electric Fire Pump indications are:</p> <ul style="list-style-type: none"> <li>• Motor current = 40 amps</li> <li>• Discharge pressure = 140 psig</li> <li>• Strainer D/P = 1.5 psid</li> <li>• Annunciator 2-2 – 2-2 Electric Fire Pump #1 started is alarming on Main Fire Panel 2</li> </ul>	S (1.0)	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> Starts the Electric Fire Pump by rotating control switch clockwise to START</p>
<b>Evaluator Note:</b>		The candidate will proceed to TB 369' for the remaining steps.	
5.	Unlock and throttle open the following valves to maintain level in EC Makeup Tanks:		
5a	<p>100-68, BV – FIRE WATER TO EMERG COND M/U TANK 12</p> <p><b>Cue:</b> Once candidate has opened 100-68, report that EC M/U Tank 12 level is 10 feet</p>	S (2.0)	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> Unlocks 100-68 and removes chain from valve handwheel</p>
		S (2.0)	<p><b>*PASS / FAIL</b></p> <p><b>STD:</b> Rotates 100-68 handwheel CCW to open valve</p>
		S	<p>SAT / UNSAT</p> <p><b>STD:</b> Observes Makeup tank level</p>
		S	<p>SAT / UNSAT</p> <p><b>STD:</b> Rotates 100-68 handwheel CW to close the valve</p>

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
5b	100-69, BV – FIRE WATER TO EMERG COND M/U TANK 11	S (2.0)	<b>*PASS / FAIL</b>  <b>STD:</b> Unlocks 100-69 and removes chain from valve handwheel
		S (2.0)	<b>*PASS / FAIL</b>  <b>STD:</b> Rotates 100-69 handwheel CCW to open valve
		S	SAT / UNSAT  <b>STD:</b> Observes Makeup tank level
		S	SAT / UNSAT  <b>STD:</b> Rotates 100-69 handwheel CW to close the valve
<b>Evaluators Note:</b>		<b>Cue:</b> Your task is complete.	

<b>TASK STANDARD</b>	Emergency Condenser Makeup Tanks filled to 10 feet using the Electric Fire Pump in accordance with N1-SOP-21.2.
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<b>STOP TIME</b>	
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## JPM Handout

<b>INITIAL CONDITIONS</b>	<p>Given:</p> <ul style="list-style-type: none"><li>• The plant was operating at 100% power.</li><li>• A control room evacuation has occurred.</li><li>• Emergency Condenser Makeup Tank levels are low at 6 feet.</li><li>• Emergency Condenser Makeup cross-connect valve, 60-13, has failed closed.</li></ul> <p><b>Evaluator:</b> <i>Ask trainee if he/she has any questions after presenting initial conditions</i></p>
<b>INITIATING CUE</b>	<p><b>(Operators Name)</b>, raise Emergency Condenser Makeup Tank levels to 10 feet using the Diesel Fire Pump, in accordance with N1-SOP-21.2, Attachment 3.</p>

Training Id: **2018 NRC NMP1 Plant JPM P-3**Revision: **0.0**Title: **Supply Emergency Cooling Water to EDG from the Diesel Fire Pump****Approvals:**

	<u>Signature / Printed Name</u>	<u>Date</u>
Developed By	 / Paul Isham	2/14/18
Validated By	Justin Farella	8/23/18
Facility Reviewer	 / Phil Nichols	9.7.18

Approximate Duration: 15 minutes**Documentation of Performance:**

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

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

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

Grade: **Pass / Fail**Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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

## References

1. N1-OP-45, Emergency Diesel Generators
2. NUREG 1123 K/A 400000 K1.02 (3.2/3.4)

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## Instructor Information

### A. JPM Information

1. Description
  - a. This JPM tests the operator's ability to locally lineup cooling water to an Emergency Diesel Generator using the Fire Water Systems.
  - 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. N1-264001-01009
  - b. K/A 400000 K1.02 (3.2/3.4)
3. Evaluation / Task Criteria

Evaluation Method	Simulate
Evaluation Location	Plant
Time Critical Task	No
Alternate Path	No
LOD >1.0	Yes

4. Recommended Start Location
  - a. Unit 1 Screenhouse
5. JPM Setup (if required)
  - a. Prepare a copy of N1-OP-45 including P&Ls and Section H.2

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## **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 Cooling Water Pumps for both EDG's have been declared inoperable.</li> <li>The EDG's are required to be in service.</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>(Operators Name)</b> , supply Emergency Cooling Water to the Emergency Diesel Generators from the Diesel Fire Pump, IAW, N1-OP-45, Section H.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
2.	Obtain a copy of the reference procedure and review / utilize the correct section of the procedure	P	SAT / UNSAT  <b>STD:</b> N1-OP-45 obtained
<b>Procedure Notes:</b> <ul style="list-style-type: none"> <li>Steps H.2.3 and H.2.4 are written to supply raw water to one EDG when the other EDG has raw water available from its associated raw water pump.</li> <li>Step H.2.5 is written to supply raw water to either EDG in the event that no raw water pump is available to both EDGs.</li> </ul>			
3.	SM designate which EDG to cool with Diesel Fire Pump water  <b>Role Play:</b> If asked which EDG to line cooling water up to, respond that it is desired to be able to supply water to either EDG.	P (2.1)	SAT / UNSAT  <b>STD:</b> Proper communications used

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
4.	Verify closed the following valves: (Screenhouse e1. 256)		
4a	100-508, B.V – Firewater crosstie to Emer. SW. Pumps (Screenhouse - above electric FP panel)	S (2.2)	SAT / UNSAT <b>STD:</b> Valve Handwheel rotated fully CW to close.
4b	100-41, Test-Diesel Fire Pump to Intake (Screenhouse – above scaffolding)	S (2.2)	SAT / UNSAT <b>STD:</b> Valve Handwheel rotated fully CW to close.
4c	100-506, B.V – Diesel Fire Pump test line D/S of Flow Element (Screenhouse - above Diesel FP strainer)	S (2.2)	SAT / UNSAT <b>STD:</b> Valve Handwheel rotated fully CW to close.
4d	100-507, B.V – Firewater Supply to Diesel Cooling Water (Screenhouse - above electric FP strainer)	S (2.2)	SAT / UNSAT <b>STD:</b> Valve Handwheel rotated fully CW to close.
<b>Evaluator Note:</b>		Operator should proceed to step H.2.5 based on the initial conditions.	
5.	Open the following breakers: (Reactor Building 261')		
5a	At PB 161B, DIESEL 102 COOL RAW WATER PUMP	S (2.5.1)	SAT / UNSAT <b>STD:</b> Breaker for 102 DG RW CLG Pump rotated to OFF
5b	At PB 171B, DIESEL 103 COOL RAW WATER PUMP	S (2.5.1)	SAT / UNSAT <b>STD:</b> Breaker for 102 DG RW CLG Pump rotated to OFF

	<b>PERFORMANCE</b>	<b>ACT. CODE</b> P / S / NA	<b>EVALUATOR</b>
6.	Close the following valves: (Turbine Building EDG rooms)		
6a	79-63, BV - DG 102 CLG WTR RETURN (EDG 102 room)	S (2.5.2)	SAT / UNSAT  <b>STD:</b> Valve Operator positioned perpendicular to pipe
6b	79-64, BV - DG 103 CLG WTR RETURN (EDG 103 room)	S (2.5.2)	SAT / UNSAT  <b>STD:</b> Valve Operator positioned perpendicular to pipe
7.	Remove the following blank flanges: <ul style="list-style-type: none"> <li>• EDG 102 Raw Water Cooling Pump discharge</li> <li>• EDG 103 Raw Water Cooling Pump discharge</li> <li>• Diesel Fire Pump discharge header</li> </ul> <p><b>Cue:</b> We will simulate opening Dam. Cont. Tool Box and staging job for Mech. Maint.</p>	S (2.5.3)	SAT / UNSAT  <b>STD:</b> Proper communications used
<b>Evaluator Cue:</b>		30 minutes has elapsed and Mechanical Maintenance has removed the blank flanges and installed the spool piece tee to connect the Diesel Fire Pump header to EDG 102 and EDG 103 headers. (step 2.5.4)	
<b>Evaluator Cue:</b>		As SM, inform the operator EDG 102 will be operated.	
8.	IF EDG 102 will be operated, THEN open 79-63 BV - DG 102 CLG WTR RETURN	S (2.6.1)	<b>*PASS / FAIL</b>  <b>STD:</b> Valve Operator positioned parallel to pipe.

	PERFORMANCE	ACT. CODE P / S / NA	EVALUATOR
9.	Open 100-41 TEST-DIESEL FIRE PUMP TO INTAKE	S (2.7)	<b>*PASS / FAIL</b>  <b>STD:</b> Valve Handwheel rotated CCW to open
10.	Verify Diesel Fire Pump starts  <b>Cue:</b> Diesel Fire Pump is running	S (2.8)	SAT / UNSAT  <b>STD:</b> Proper communications used
11.	Open 100-507, BV - FIRE WATER SUPPLY DIESEL COOLING WATER	S (2.9)	<b>*PASS / FAIL</b>  <b>STD:</b> Valve Handwheel rotated CCW to open
<b>Evaluators Note:</b>		<b>Cue:</b> Your task is complete.	

<b>TASK STANDARD</b>	The Diesel Fire Pump is supplying cooling Water to Emergency Diesel Generator 102 in accordance with N1-OP-45.
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<b>STOP TIME</b>	
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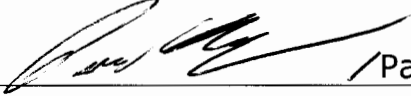



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## JPM Handout

<b>INITIAL CONDITIONS</b>	Given: <ul style="list-style-type: none"><li>• The Cooling Water Pumps for both EDG's have been declared inoperable.</li><li>• The EDG's are required to be in service.</li></ul>
<b>INITIATING CUE</b>	<b>(Operators Name)</b> , supply Emergency Cooling Water to the Emergency Diesel Generators from the Diesel Fire Pump, IAW, N1-OP-45, Section H.2.0.

**Copy \_\_\_\_ of \_\_\_\_**Training Id: **NMP1 NRC 2018 Scenario**Revision: **0.0**Title: **Simulator Scenario 2**

	<u>Signature / Printed Name</u>	<u>Date</u>
Developed By	 / Paul Isham	2/15/18
Validated By	Katie Higgins-Asmus	8/21/18
	Justin Farella	
	Will Vannostrand	
Facility Reviewer	 / Phil Nichols	9.7.18

## References

1. N1-OP-30, 4.16 KV, 600V, and 48V House Service
2. N1-SOP-5.1, Control Rod Drift
3. N1-SOP-16.1, Feedwater Failures
4. N1-SOP-40.1, Loss of RPS
5. N1-SOP-1, Reactor Scram
6. N1-EOP-2, RPV Control
7. N1-EOP-5, Secondary Containment Control
8. N1-EOP-1, NMP1 EOP Support Procedure
9. N1-EOP-8, RPV Blowdown
10. Unit 1 Technical Specifications

## Instructor Information

### A. Scenario Description

#### Sequence of Events / Expected Crew Response:

The scenario begins at approximately 90% power. Containment Spray Pump 112 is out of service for maintenance. Steam Packing Exhauster 12 is out of service due to high vibrations. The crew will start by cross-tying PB 16A to PB 16B. Then, the crew will raise Reactor power to approximately 95% with Recirculation flow.

During the power ascension, a control rod will begin to drift out. The crew will select the drifting control rod and drive it full in. The crew will dispatch an operator to valve out the affected Hydraulic Control Unit to prevent the control rod from continuing to drift.

Then, Feedwater Booster pump 11 will trip. The standby Feedwater Booster pump will fail to auto-start. The crew will manually start the standby Feedwater Booster pump to restore normal system pressures. The SRO will determine the Tech Spec impact for loss of a redundant HPCI component.

RPS UPS 172 will develop an internal fault and drop out the #12 RPS system and RPS Bus 12. The crew will respond to the trip of UPS per N1-SOP-40.1. The SRO will direct the bus be repowered from I&C Bus 130A and will determine the most limiting Tech Spec condition. The BOP and the RO will reset ½ scram and ½ isolations and perform recovery actions after the bus is repowered. The SRO will determine Tech Spec 3.1.2, 3.6.11 and 3.4.4 are the limiting 7 day LCO's applicable with the RPS 12 Bus tripped.

A Reactor Water Cleanup system line break will occur in the Secondary Containment downstream of the Supply Isolation Valves. Reactor Water Cleanup will fail to isolate on high area temperature. The crew will attempt to isolate the system, but the valves will fail to fully close. This break will require a scram (**Critical Task**) and RPV blowdown (**Critical Task**) due to exceeding the Maximum Safe Value for general area temperatures. The Mode Switch will fail to scram the Reactor, however either RPS pushbuttons or manual ARI actuation will result in successful control rod insertion.

#### 1. Termination Criteria

- a. RPV water level controlled in assigned band, RPV Blowdown in progress



## 2. Critical Tasks

**CT-1, Given an un-isolable RWCU leak outside primary containment and one general area temperature above the maximum safe limit, the crew will insert a manual reactor scram, in accordance with N1-EOP-5.**

*Justification:*

**Safety Significance:** *With an un-isolable primary system discharging outside of Primary Containment resulting in general area temperature above the maximum safe limit, the Reactor must be scrammed. This reduces the rate of energy production and thus the heat input, radioactivity release, and break flow into the Secondary Containment. This also ensures the Reactor is shutdown prior to need for a blowdown.*

**Cueing:** *Multiple annunciators will provide indications of a primary system discharging into Secondary Containment. RWCU valve position indicators will provide indication that the system is un-isolable. Field reports will provide indication that a general area is above the maximum safe temperature limit. N1-EOP-5 provides direction to scram the Reactor.*

**Measurable Performance Indicators:** *Rotation of the Mode Switch to SHUTDOWN or depressing the manual scram pushbuttons will provide observable actions for the evaluation team.*

**Performance Feedback:** *Control rod position and Reactor power indications will provide performance feedback regarding the success of the scram.*

**CT-2, Given an un-isolable RWCU leak outside primary containment and two general area temperatures above the maximum safe limit, the crew will execute N1-EOP-8, RPV Blowdown, in accordance with N1-EOP-5.**

*Justification:*

**Safety Significance:** *An un-isolable primary system discharging outside of Primary Containment resulting in two general area temperatures above the maximum safe limit indicates a wide-spread problem posing a direct and immediate threat to Secondary Containment. A blowdown minimizes flow through the break, rejects heat to the suppression pool in preference to outside the containment, and places the primary system in the lowest possible energy state.*

**Cueing:** *Multiple annunciators will provide indications of a primary system discharging into Secondary Containment. RWCU valve position indicators will provide indication that the system is un-isolable. Field reports will provide indication that two general areas is above the maximum safe temperature limit. N1-EOP-5 provides direction to blowdown the Reactor.*

**Measurable Performance Indicators:** *The crew will manually open ERVs.*

**Performance Feedback:** *ERV 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.*

3. Length
  - a. ~60 minutes
4. Mitigation Strategy Code
  - a. SC1, Primary System Leak in Secondary Containment, Blowdown Required
5. Technical Specifications
  - a. TS 3.2.5
  - b. 3.1.7.e
  - c. 3.6.3
  - d. 3.1.8.b (FWBP)
6. EAL Classification
  - a. Site Area Emergency per EAL FS1.1 – Loss or potential loss of any two fission product barriers. (RWCU Isolation Failure and Release Outside Primary Containment)
  - b. Unusual Event per EAL SU8.1 also occurs during scenario.
7. Special Orders
  - a. None

## **B. Initial Conditions**

### **1. IC Number**

a. IC-152

### **2. Presets / With Triggers**

a. Malfunctions

- |   |                 |
|---|-----------------|
| <b>1) CT01B, CT PUMP 112- TRIP</b>                                    | <b>Inserted</b> |
| <b>2) RD02R2627, 26-27 Control Rod Failure – Drift Out, Driveable</b> | <b>TRG 1</b>    |
| <b>3) RD03R2627, 26-27 Control Rod Failure – Accumulator Trouble</b>  | <b>TRG 25</b>   |
| <b>4) FW02A, FEEDWATER BOOSTER PUMP TRIP 11</b>                       | <b>TRG 2</b>    |
| <b>5) RP25, Loss of Both UPS 172A and 172B</b>                        | <b>TRG 3</b>    |
| <b>6) CU11, CU Coolant Leak Outside of Drywell, FV=45</b>             | <b>TRG 5</b>    |
| <b>7) CU14, CU Isolation Valves Stuck Open</b>                        | <b>Inserted</b> |

b. Remotes

- |  |               |
|--|---------------|
| <b>1) RD07, Reset of Rod Drift Alarm, FV=reset</b>         | <b>TRG 26</b> |
| <b>2) RP04, RPS Bus 12 Power Source, FV=maint</b>          | <b>TRG 4</b>  |
| <b>3) FW24. Removal of HPCI Fuses FU8/FU9, FV = pulled</b> | <b>TRG 7</b>  |

c. Overrides

- |   |                 |
|---|-----------------|
| <b>1) DI-3415, 4H17/51-02A C FRM B, FV=off (FWBP 12 auto-start failure)</b> | <b>Inserted</b> |
| <b>2) DI-4309, 1E67 REAC. SW.-RUN, FV=on</b>                                | <b>Inserted</b> |
| <b>3) DI-4310, 1E67 REAC. SW.-SHUTDOWN, FV=off</b>                          | <b>Inserted</b> |
| <b>4) DO-8845, 1150 STATUS MOVS ARRAY 33-01 GR CLO, FV = On</b>             | <b>TRG 21</b>   |
| <b>5) DO-8847, 1150 STATUS MOVS ARRAY 33-02 GR CLO, FV = On</b>             | <b>TRG 22</b>   |
| <b>6) DO-8849, 1150 STATUS MOVS ARRAY 33-04 GR CLO, FV = On</b>             | <b>TRG 23</b>   |

d. Annunciators

- 1) None

e. Event Triggers

Event #	Event Action	Command
<b>TRG 21</b> , Energizes RWCU IV 33-01 green light when control switch is taken to close	zdcu301c==1	
<b>TRG 22</b> , Energizes RWCU IV 33-02 green light when control switch is taken to close	zdcu302c==1	
<b>TRG 23</b> , Energizes RWCU IV 33-04 green light when control switch is taken to close	zdcu304c==1	
<b>TRG 25</b> , Deletes rod drift when accumulator trouble is inserted.	blank	dmf rd02r2627
<b>TRG 29</b> , After scram, allows Mode Switch logic to reposition to prevent MSIV closure on low pressure	rd:rpscm(1)==1	dor DI-4309
<b>TRG 30</b> , After scram, allows Mode Switch logic to reposition to prevent MSIV closure on low pressure	rd:rpscm(1)==1	dor DI-4310

f. Equipment Out of Service

- 1) Containment Spray 112 in PTL with info tag
- 2) Steam Packing Exhauster 12 secured with info tag and off normal

g. Support Documentation

- 1) N1-OP-30 marked up through step H.20.1.2 showing PB-11 is aligned to reserve power.
- 2) ReMA for power ascension

h. Miscellaneous

- 1) Protect the following equipment: EDG 103, PB 103
- 2) Ensure PB-11 aligned to reserve power
- 3) FWBP 12 is green flagged
- 4) DW Cooling Fan 11 secured

### **SHIFT TURNOVER INFORMATION**

ON COMING SHIFT: ☐ N ☒ D

DATE: 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 approximately 100%.

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  - Containment Spray Pump 112 is out of service for maintenance

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  - Steam Packing Exhauster 12 is out of service for maintenance

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  - N1-OP-30 is completed up through H.20.1.2 in preparation for transformer maintenance. Power Board 11 is aligned to reserve power.

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

- Cross-tie Powerboard 16A to Powerboard 16B in accordance with N1-OP-30, starting at step H.20.1.3. PB 11 is to remain aligned to reserve power.

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  - Raise Reactor power to approximately 95% (1757MWth) per ReMA

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## Shift Turnover

Instructor Actions / Plant Response	Operator Actions
<p>Take the Simulator out of freeze before the crew enters for the pre-shift walkdown.</p> <ul style="list-style-type: none"><li>• Verify annunciator sound turned on</li><li>• If recording scenario, start the recording device during the pre-shift walkdown</li></ul>	
<p>Allow no more than 5 minutes to walkdown the panels.</p>	<p><b><u>Crew</u></b></p> <ul style="list-style-type: none"><li>• Walkdown panels</li><li>• Conduct shift turnover brief</li><li>• Assume the shift</li></ul>

## Event #1: Cross-tie PB16A to PB16B

<b>Event Information</b>	<ul style="list-style-type: none"> <li>• PB 11 is aligned to reserve power</li> <li>• Crew cross-ties PB16A to PB16B per N1-OP-30</li> </ul>
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	<b>SRO</b> <ul style="list-style-type: none"> <li>• Direct the crew to cross tie PB16A to PB16B, with PB16B supplying per N1-OP-30</li> </ul>
<p><b>Note:</b> The crew will be informed that loads have been minimized during the pre-job brief.</p> <p><b>Note:</b> Crew will be informed during turnover JAF notification and S-ODP-OPS-0112, Attachment 4 have been completed</p>	<b>BOP</b> <ul style="list-style-type: none"> <li>• Acknowledges direction from SRO</li> <li>• References N1-OP-30, Section H.20</li> </ul>
<p><i>-A4-4-4, POWER BD. 16 BKR BY-PASS SW alarms</i></p>	<b>BOP</b> <u>Starts at step H.20.1.3</u> <ul style="list-style-type: none"> <li>• Update crew that annunciator A4-4-4 will alarm</li> <li>• Place PB16 SUPPLY-BUS TIE BREAKER INTERLOCK BYPASS SWITCH in BYPASS at panel B5</li> </ul>
<p><i>-A4-4-4, POWER BD. 16 BKR BY-PASS SW clears</i></p> <p><b>Note:</b> As soon as A4-4-4 clears proceed to the next event</p> <p><b>Role Play:</b> If contacted to mark amps on PB-16 supply transformer, report amps as indicated by the simulator.</p>	<b>BOP</b> <ul style="list-style-type: none"> <li>• Close R1042, 16 PB Bus Tie Sect A To Sect B</li> <li>• Open R1041, Supply Bkr To 17 PB (A Section)</li> <li>• Update crew that annunciator A4-4-4 will clear</li> <li>• Place PB16 SUPPLY-BUS TIE BREAKER INTERLOCK BYPASS SWITCH in NORMAL at panel B5 (step 20.1.6)</li> <li>• Determines PB-11 will remain aligned to reserve per the turnover sheet.</li> <li>• Verifies &lt;962 amps on PB-16 supply transformer.</li> </ul>

## Event #2: Raise Reactor Power with Recirc Flow

<b>Event Information</b>	<ul style="list-style-type: none"> <li>The crew raises power with recirc flow with the provided REMA .</li> <li>No complications</li> </ul>
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	<b>SRO</b> <ul style="list-style-type: none"> <li>Directs power ascension with Recirculation flow in accordance with N1-OP-43B and the Reactivity Maneuver Instruction (REMA)</li> <li>Provides oversight of reactivity maneuver</li> </ul>
	<b>ATC</b> <ul style="list-style-type: none"> <li>Acknowledges direction from SRO</li> <li>Raises Recirculation flow with master Recirculation flow controller</li> <li>Monitors APRMs</li> <li>Monitors Recirculation flow</li> <li>Monitors Feedwater flow and RPV water level</li> <li>Observes power-to-flow map restrictions</li> </ul>
<b>Note:</b> Examiner may move on to next event when sufficient reactivity manipulation has been observed.	<b>BOP</b> <ul style="list-style-type: none"> <li>Monitors individual RRP's for response             <ul style="list-style-type: none"> <li>Individual M/A-Speed Control stations trending uniformly</li> <li>Individual RRP indications trending normally for speed increase</li> </ul> </li> <li>Monitors Feedwater controls for proper response             <ul style="list-style-type: none"> <li>FWP 13 FCV responding to power change</li> <li>RPV water level remains within program band (65" - 83")</li> </ul> </li> </ul>



### Event #3: Control Rod Drift

<b>Event Information</b>	<ul style="list-style-type: none"> <li>Reactor power is near rated conditions.</li> <li>Control Rod drift</li> <li>Rod will remain inserted when valved out of service</li> </ul>
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<p>When directed by examiner, <b>insert malfunction:</b></p> <p><b>RD02R2627</b>, 26-27 Control Rod Failure – Drift Out, Driveable</p> <p style="text-align: right;"><b>TRG 1</b></p> <p><i>Reactor power rises</i></p> <p><i>Rod 26-27 position indication rises</i></p> <p><i>Expected Annunciators:</i></p> <p><i>F3-2-6, CONTROL ROD DRIFT</i></p>	<p><b>CREW</b></p> <ul style="list-style-type: none"> <li>Acknowledges/reports annunciator F3-2-6</li> <li>Observes control rod 26-27 drifting outward</li> </ul>
	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>Acknowledges report from crew</li> <li>Directs execution of N1-SOP-5.2 and SOP-1.1</li> <li>May direct execution of N1-SOP-1.5</li> <li>Reviews Tech Spec 3.1.1</li> </ul>

<p><b>Note:</b> The first four steps listed for SOP-5.2 are Immediate Actions (IA). These will likely be performed prior to the RO referencing the procedure. The procedure should then be referenced to verify correct execution and complete remaining steps.</p> <p><b>Role Play:</b> If contacted as station management, acknowledge report.</p>	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>• Executes N1-SOP-5.2</li> <li>• Identifies drifting rod (IA)</li> <li>• Turns on Control Rod Power (IA)</li> <li>• Selects rod 26-27 (IA)</li> <li>• Inserts rod 26-27 to position 00 using Emergency Rod In (IA)</li> <li>• Determines rod can be fully inserted</li> <li>• Releases emergency rod in switch</li> <li>• Determines rod is drifting out again</li> <li>• Inserts control rod with Emergency Rod In and holds switch</li> <li>• Acknowledges that HCU is valved out</li> <li>• Releases emergency rod in switch</li> <li>• Determines control rod does not drift</li> </ul>
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<p><b>Role Play:</b> When directed as operator to valve out HCU, acknowledge order and wait 2 minutes, then <b>insert malfunction:</b></p> <p><b>RD03R2627</b>, 26-27 Control Rod Failure – Accumulator Trouble</p> <p style="text-align: right;"><b>TRG 25</b></p> <p>Verify the following <b>malfunction</b> is <b>automatically deleted:</b></p> <p><b>RD02R2627</b>, 26-27 Control Rod Failure – Drift Out</p> <p>Report HCU for control rod 26-27 is valved out.</p> <p><b>Role Play:</b> When directed as operator to reset the control rod drift alarm, wait 1 minute, then <b>insert remote:</b></p> <p><b>RD07</b>, Reset of Rod Drift Alarm, FV=reset</p> <p style="text-align: right;"><b>TRG 26</b></p> <p>Then report task completion.</p> <p><b>Role Play:</b> If dispatched as operator to disarm the HCU, acknowledge the report and wait one minute, then report the control rod has been disarmed.</p>	<p><b>BOP</b></p> <ul style="list-style-type: none"> <li>• Monitors reactor pressure and level</li> <li>• Peer checks RO</li> <li>• Reduces reactor recirc flow to lower power 85-90%.</li> <li>• Dispatches operator to valve out HCU</li> <li>• Dispatches operator to reset control rod drift alarm</li> <li>• If required, dispatches operator to disarm the control rod</li> </ul>
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## Event #4: Feedwater Booster Pump Trip

<b>Event Information</b>	<ul style="list-style-type: none"> <li>FWBP 11 will trip and FWBP 12 will fail to auto start</li> <li>The crew will respond by starting the standby FWBP</li> <li>SRO will evaluate tech specs</li> </ul>
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<p>When directed by lead examiner, <b>insert malfunction:</b></p> <p><b>FW02A, FEEDWATER BOOSTER PUMP TRIP 11</b> <b>TRG 2</b></p> <p>The following <b>override</b> prevents Feedwater Booster Pump 12 from Auto Starting on low header discharge pressure:</p> <p><b>DI-3415 4H17/51-02A C FRM B, FV=off</b> <b>Inserted</b></p> <p><i>RPV water level lowers</i> <i>Feedwater Booster Pump header pressure lowers</i> <i>Expected Annunciators:</i> <i>H3-1-6, REACTOR FW BOOSTER P11 TRIP</i> <i>H2-3-5, HWC Trouble</i></p>	<p><b>CREW</b></p> <ul style="list-style-type: none"> <li>Acknowledge/report annunciator H3-1-6 REACTOR FW BOOSTER P11 TRIP</li> <li>Diagnose trip of Feedwater Booster Pump 11</li> </ul>
	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>Acknowledges report</li> <li>If BOP does not manually start FWBP 12, directs starting FWBP 12</li> <li>Enters Tech Spec 3.1.8.b</li> <li>Determines redundant component inoperable in HPCI train 11, thus 15 day LCO applies</li> <li>Initiates surveillance requirement 4.1.8.c for redundant component operability verification</li> <li>Notifies WEC/WWM</li> <li>Notifies Ops Management</li> </ul>

<p><b><u>Event 4 continued</u></b></p>	<p><b>ATC</b></p> <ul style="list-style-type: none"> <li>• Monitors plant parameters</li> <li>• May perform Emergency Power Reduction per N1-SOP-1.1 as required to maintain RPV water level</li> </ul>
<p><b><u>Role Play:</u></b> When dispatched as Operator to investigate, wait 2 minutes, then report:</p> <ul style="list-style-type: none"> <li>• FWBP 11 breaker tripped on overcurrent</li> <li>• No abnormal indications at FWBP 12 breaker</li> <li>• No abnormal indications at FWBP 11 or 12.</li> </ul> <p><b><u>Role Play:</u></b> When dispatched as Operator to swap HWC, wait 5 minutes and report that HWC injection has been transferred from FWBP 11 to FWBP 12.</p>	<p><b>BOP</b></p> <ul style="list-style-type: none"> <li>• Report alarm and respond per H3-1-6</li> <li>• Confirms alarm on computer (E049 RX FW BOOST PMP 11 TRIP)</li> <li>• Recognizes/diagnoses failure of the standby pump to automatically start</li> <li>• Manually starts FWBP 12</li> <li>• Notifies crew of failure of FWBP 12 to auto start</li> <li>• Dispatches operators to shift Hydrogen Water Chemistry injection from FWBP 11 to FWBP 12</li> <li>• May green flag FWBP 11</li> </ul>

## Events #5: Trip of RPS UPS 172

<b>Event Information</b>	<ul style="list-style-type: none"> <li>The crew will respond to a trip of RPS UPS 172 and swap to the maintenance supply</li> <li>SRO will evaluate Tech Specs</li> </ul>
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<p>When directed by lead examiner, <b>insert malfunction:</b></p> <p><b>RP25, Loss of Both UPS 172A and 172B</b></p> <p style="text-align: right;"><b>TRG 3</b></p> <p><i>RPS Channel 12 half scram</i>  <i>RBEVS initiates</i>  <i>CREVS initiates</i>  <i>RRP MG Set Scoop Tubes Lock up</i>  <i>Multitude of control room annunciators are expected.</i></p>	
	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>Recognize/report loss of RPS Bus 12</li> <li>Recognize/report half scram.</li> <li>Recognize/report lock up RRP MG Set Scoop Tubes.</li> <li>Recognize/report loss of normal R.B. vent and start of RBEVS.</li> </ul>
<p><b><u>Role Play</u></b></p> <p>As Elec. Maint., wait five minutes report that a fault on the supply breaker to the UPS will prevent restoration of the UPSs for a day or two.</p>	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>Acknowledge report from the crew.</li> <li>Direct respond to loss of RPS Bus 12 per N1-SOP-40.1</li> <li>Direct EM to investigate UPS 172A.</li> </ul>

<p><b>Role Play:</b> As in-plant operator, if directed to transfer RPS Bus 12 to the maintenance bus, wait approximately 2 minutes and insert the following remote:</p> <p><b>RP04, RPS BUS 12 POWER SOURCE, MAINT</b></p> <p style="text-align: right;"><b>TRG4</b></p>	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>• Acknowledge direction from the SRO.</li> <li>• Enter N1-SOP-40.1 and update crew</li> <li>• Confirms Computer Point G187</li> </ul> <p><u>Restores per N1-OP-40</u></p> <ul style="list-style-type: none"> <li>• Dispatch in-plant operator to transfer RPS Bus 12 to maintenance bus.</li> <li>• Acknowledge report from plant operator and update crew</li> <li>• Discuss priorities with SRO</li> <li>• Reset RPS Channel 12 Containment High Pressure signals (Back panel)</li> <li>• Reset half scram</li> </ul>
<p><b>Note:</b> Per N1-OP-40, the following Tech Specs may apply throughout this transient: 3.6.3, 3.1.2, 3.1.6, 3.1.8, 3.4.4, and 3.4.5. The applicable EDG will be declared inoperable.</p> <p>The plant is in a 14 day LCO per 3.6.3</p> <p><b>Note:</b> The SRO may also opt to enter N1-SOP-16.1 due to the loss of FW Heating.</p>	<p><b><u>SRO</u></b></p> <ul style="list-style-type: none"> <li>• Acknowledge report that RPS Bus 12 is re-energized</li> <li>• Direct restoration priorities using N1-SOP-40.1</li> </ul>

**Note:** The subsequent actions will be prioritized and may not happen before next event. Lead examiner may move on to next event once sufficient operation has been observed and the half scram is reset.

After RPS Bus 12 is re-energized, the BOP would normally perform the following:

- Reset ATWS LOV
- Reset ATWS Ch. 12 Trouble per ARP F3-4-3
- Restore RPS Bus 12 Loads
  - Close 77.3-16 (15), Off Gas Vacuum Pump 12 (11) FCV
  - Restore Feedwater Control System 12 to the normal power source
  - Give 77-03 an open signal
  - Give close signals to Emergency Cooling CRVs 39-05 and 39-06
  - Closes N2 Supply 12 PCV
  - Reset EC Vent Rad Monitors
  - Reset Containment Spray Raw Water Rad Monitors
  - Give SJAE Interstage Blocking Valves on H-Panel an OPEN signal
  - Resets APRM flow units
  - Resets LPRM alarms on auxiliary drawers
- Restore Reactor Building Ventilation
- Reset Reactor Building Vent Radiation Monitors
- Restore Normal Control Room Ventilation



## Events #6 and #7: RWCU Leak in the Secondary Containment, Failure of the RWCU Isolation Valves, Failure of Mode Switch to Scram

<b>Event Information</b>	<ul style="list-style-type: none"> <li>• Unisolable RWCU leak into Reactor Building</li> <li>• RPV Blowdown will be required</li> <li>• Crew may anticipate blowdown</li> <li>• Mode switch fails to scram</li> </ul>
<p>When directed by lead examiner, <b>insert malfunction:</b></p> <p><b>CU11</b>, CU Coolant Leak Outside of Drywell, FV=45 <b>TRG 5</b></p> <p><i>Rising temperatures, pressures and radiation levels in the Secondary Containment</i>  <i>RBEVS auto-starts (if secured from previous event)</i>  <i>RBVS isolates (if restored from previous event)</i>  <i>RWCU IVs fail to close on isolation signal and manually</i>  <i>Expected Annunciators:</i>  <i>H1-4-8, AREA RADIATION MONITORS</i>  <i>L1-4-3, REACT BLDG VENT RAD MONITOR OFF</i>  <i>NORMAL</i>  <i>L1-3(4)-6, EMER VENT SYS CHANNEL 11(12) RELAY OPERATE (~1 min)</i>  <i>K3-3-4, CLEAN-UP SYS LEAK AREA T HI (~5 min)</i>  <i>L1-3-3, CONTINUOUS AIR RAD MONITOR (~1 min)</i>  <i>K3-1-6, CU Pump 12 Trip</i>  <i>Later Reactor Building D/P goes to Zero</i></p> <p>Verify the following <b>malfunctions</b> are <b>preset:</b></p> <p><b>CU14</b>, CU Isolation Valves Stuck Open</p> <p>Verify the following <b>overrides</b> are <b>preset:</b></p> <p><b>DI-4309</b> 1E67 REAC. SW.-RUN, FV=on  <b>DI-4310</b> 1E67 REAC. SW.-SHUTDOWN, FV=off</p>	<p><b>CREW</b></p> <ul style="list-style-type: none"> <li>• Diagnoses/reports leak from RWCU into secondary containment</li> <li>• Diagnoses/reports RWCU failed to isolate</li> <li>• Recognize/report failure of Mode Switch</li> </ul>

**Note:** RBEVS initiation will only be necessary if normal RB ventilation was restored following the loss of RPS 12.

- Acknowledges reports
- Enters N1-EOP-5, Secondary Containment Control, on high Reactor Building Vent rad levels, high Reactor Building area temperatures loss of D/P and rad levels
- Directs RWCU system isolation
- Directs Reactor Building evacuation
- Acknowledges report that RWCU failed to isolate both automatically and manually
- Directs dispatching of an operator and RP tech to obtain general area temperatures and radiation levels in the Reactor Building
- When Reactor Building Ventilation exhaust radiation exceeds 5 mR/hr, directs verification of RB Vent isolation and RBEVS initiation
- Determines area temperatures and radiation levels are above setpoints in Tables T and R, and transitions to N1-EOP-5 circle 27
- Determines a primary system is discharging into the Reactor Building and the discharge cannot be isolated, and transitions to N1-EOP-5 circle 28
- Before any area temperature or radiation level reaches 135°F or 8 R/hr, respectively:
- **Directs manual scram (CT-1.0)**
- Acknowledges scram report

### Event 6 and 7 continued

**Note:** Anticipatory blowdown is likely to be directed from N1-EOP-2 once one Reactor Building General Area temperature is above 135°F with a second temperature trending towards 135°F.

**SRO continued**

- Enters N1-EOP-2, RPV Control on low RPV water level
- Answers "Are all control rods inserted to at least position 04?" YES
- Directs entry into N1-SOP-1, Reactor Scram
- Directs RPV water level control 53-95" using Feedwater/Condensate and CRD
- Directs RPV pressure maintained <1080 psig using Emergency Condensers & TBVs
- May direct anticipatory blowdown with Emergency Condensers with cooldown in excess of 100°F/hr
- Acknowledges reports of Reactor Building temperatures and radiation levels
- When report is received that 2 General Areas temperatures are above 135°F, enters N1-EOP-8, RPV Blowdown
- Answers "Are all control rods inserted to at least position 04?" YES
- Answers "Drywell pressure?" <3.5 psig
- Directs initiation of Emergency Condensers
- Answers "Torus water level?" >8 ft
- **Directs open 4 ERVs (CT-2.0)**

**Event 6 and 7 continued**

When control rods insert, verify **triggers 29 and 30 automatically initiate** and **delete** the following overrides:

**DI-4309**, 1E67 REAC. SW.-RUN

**DI-4310**, 1E67 REAC. SW.-SHUTDOWN

**RO**

- Makes evacuation announcements due to steam leak
- Places Reactor Mode Switch to SHUTDOWN
- Recognizes/reports failure of Mode Switch to scram
- Depresses RPS manual scram pushbuttons and/or manually initiates ARI
- Provides scram report
- Performs scram verification actions of N1-SOP-1, Reactor Scram:
  - Confirms all rods inserted
  - Observes Reactor power lowering
  - Places IRMs on range 9
  - Inserts IRM and SRM detectors
  - Down-ranges IRMs as necessary
- Reduces Recirc Master flow to  $25-43 \times 10^6$  lbm/hr
- Verifies main turbine and generator tripped
- Controls RPV pressure as directed using Emergency Condensers or TBVs

### **Event 6 and 7 continued**

**Role Play:** If dispatched to attempt RWCU valve closures, acknowledge direction and delay action.

**Note:** No General Area temperature information is available until an operator has been dispatched to the Reactor Building to monitor area temperatures. The timeline of field reports may be adjusted by examiner as necessary for evaluation purposes.

**Role Play:** When directed as operator and RP tech to obtain General Area temperatures and radiation levels in the Reactor Building:

Wait 4 minutes and report RB 261' east side temperature is 125°F and rising, radiation level is 100 mr/hr and rising. Also report that you see steam coming from the area of the RWCU rooms.

Wait 2 more minutes and report RB 261' east side temperature is 137°F and rising, radiation level is 150 mr/hr and rising. Report RB 261' west side temperature is 123°F and rising, radiation level is 35 mr/hr and rising.

Wait 3 more minutes and report RB 261' east side temperature is 145°F and rising, radiation level is 175 mr/hr and rising. Report RB 261' west side temperature is 136°F and rising, radiation level is 45 mr/hr and rising.

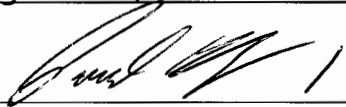
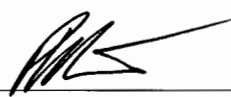
### **BOP**

- Attempts to isolate RWCU by closing 33-01R, 33-02R and 33-04R
- Recognizes/reports failure of RWCU IVs (33-01R, 33-02R and 33-04R) to close
- Dispatches operator and RP tech to obtain Reactor Building General Area temperatures and radiation levels
- Notifies crew of reports on General Area temperatures and radiation levels
- Performs RPV water level control actions of N1-SOP-1:
- Restores RPV water level to 53-95" by controlling injection. (unable to reject through RWCU)
- Determines #13 FWP was running
- Determines RPV water level is recovering
- Verifies at least one Electric FW Pump running
- Terminates 13 FWP injection as follows:
  - Places FWP 13 FCV in manual and closes
  - Disengages 13 FWP
  - Gives 29-10, FEEDWATER PUMP 13 BLOCKING VALVE a CLOSE signal
- Verifies RPV water level above 53"
- Verifies 11/12 FWP controllers in MANUAL and set to zero output
- Resets HPCI signal
- Places 11 or 12 FWP BYPASS Valve in AUTO, sets to 65-70"
- If RPV level reaches 85 inches and rising, then:
  - Verifies off all Feedwater Pumps
  - Secures CRD Pumps not required
  - Closes FWIVs if required
  - Closes MSIVs if required

<b><u>Event 6 and 7 continued</u></b>	<b>BOP continued</b> <ul style="list-style-type: none"><li>• Maintains RPV water level in assigned band</li><li>• Notifies crew of reports on General Area temperatures and radiation levels</li><li>• When EOP-8, RPV Blowdown, is entered:<ul style="list-style-type: none"><li>• Verifies Emergency Condensers in service<ul style="list-style-type: none"><li>• Verifies open 39-05</li><li>• Verifies open 39-06</li></ul></li><li>• <b>Opens 4 ERVs (CT-2.0)</b></li></ul></li></ul>
<b>Event Termination Criteria</b>	<ul style="list-style-type: none"><li>• RPV Blowdown in progress</li></ul>

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

Training Id: **NMP1 NRC 2018 Scenario**Revision: **0.0**Title: **Simulator Scenario 3**

	<u>Signature / Printed Name</u>	<u>Date</u>
Developed By	 / Paul Isham	2/16/18
Validated By	Katie Higgins-Asmus	8/21/18
	Justin Farella	
	Will Vannostrand	
Facility Reviewer	 / Phil Nichols	9.7.18

## References

1. N1-OP-1, Nuclear Steam Supply System
2. N1-OP-24, TBCLC System
3. N1-SOP-1.3, Recirc Pump Trip at Power
4. N1-SOP-11.1, RBCLC Failure
5. N1-SOP-1, Reactor Scram
6. N1-EOP-2, RPV Control
7. N1-EOP-4, Primary Containment Control
8. N1-EOP-1, NMP1 EOP Support Procedure
9. N1-EOP-7, RPV Flooding
10. Unit 1 Technical Specifications



## Instructor Information

### A. Scenario Description

#### Sequence of Events / Expected Crew Response:

The scenario begins at approximately 100% power. Containment Spray Pump 112 is out of service for maintenance. Steam Packing Exhauster 12 is out of service due to high vibrations. The crew is directed to lower power to 98% with recirc flow, and then swap TBCLC pump 11 per N1-OP-24 section F.1.

After shifting the TBCLC pumps, a fault will occur causing a loss of Powerboard 101. The crew will respond to a loss of RRP 13 per N1-SOP-1.3. Additional lost loads include Condensate Pump 12, Feedwater Booster Pump 12 and the Electric Fire Pump.

After the loss of PB 101, Reactor pressure instrument 36-07C fails low. The SRO will review Technical Specifications for the loss of automatic scram instrumentation.

Next, EPR oscillations begin. The crew will implement N1-SOP-31.2 place the MPR in service and secure the EPR. SRO will address Technical Specifications.

Next, the running RBCLC pumps will trip. The standby RBCLC pump will trip upon being started. The crew will enter N1-SOP-11.1, RBCLC Failure. The crew will scram the Reactor, trip Recirculation pumps, initiate Emergency Condensers, and shut the MSIVs. The high pressure Feedwater pumps will fail to operate on the scram, complicating Reactor water level control.

Once the crew stabilizes the plant after the scram, a coolant leak will develop inside the Primary Containment. The crew will re-enter N1-EOP-2, RPV Control, and N1-EOP-4, Primary Containment Control. Containment parameters will degrade and the crew will initiate Containment Sprays (**Critical Task**). The elevated Containment temperature will cause the Fuel Zone level indications to become erratic. With all other Reactor water level indicators downscale, the crew will execute N1-EOP-7, RPV Flooding, to lower Reactor pressure and flood the Reactor to the Main Steam lines (**Critical Task**).

#### 1. Termination Criteria

- a. RPV Flooding in progress
- b. Reactor water level on scale or upscale
- c. Containment pressure and temperature controlled in accordance with N1-EOP-4

## 2. Critical Tasks

**CT-1, Given a LOCA in the Drywell with the inability to maintain containment parameters within the Pressure Suppression Pressure limit, initiate Containment Sprays, in accordance with N1-EOP-4.**

*Justification:*

**Safety Significance:** *Initiating Containment Sprays reduces Primary Containment pressure. This reduces stresses on the Drywell and Torus, assists in avoiding “chugging” that may cause fatigue failure of the LOCA downcomers, and avoids the need for a blowdown. These benefits reduce challenges to the fuel cladding, the RPV, and the Primary Containment.*

**Cueing:** *Multiple Primary Containment pressure and temperature indications and annunciators will indicate degrading conditions. N1-EOP-4 provides direction to initiate Containment Sprays.*

**Measurable Performance Indicators:** *Manipulation of Containment Spray pump control switches will provide observable actions for the evaluation team.*

**Performance Feedback:** *Containment Spray flow and lowering Primary Containment pressure and temperature indications will provide performance feedback regarding success of crew actions to initiate Containment Sprays.*

**CT-2, Given the plant with RPV water level unknown, execute N1-EOP-7, RPV Flooding, in accordance with N1-EOP-2.**

*Justification:*

**Safety Significance:** *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. N1-EOP-2 provides direction to implement N1-EOP-7, RPV Flooding.*

**Measurable Performance Indicators:** *Manipulation of ERVs, MSIVs, ECIVs, and injection system controls provide observable actions for the evaluation team.*

**Performance Feedback:** *ERV, MSIV, and ECIV position indications, Reactor pressure, ERV tailpipe temperatures, and ERV acoustic monitors provide performance feedback regarding success of RPV flooding actions.*

## 3. Length

- a. ~60 minutes

4. Mitigation Strategy Code
  - a. RL4, loss of all RPV level indication (non-ATWS), RPV Blowdown, RPV Flooding.
5. Technical Specifications
  - a. TS 3.1.7
  - b. TS 3.6.2.a
6. EAL Classification
  - a. Site Area Emergency per FS1.1 – Loss or potential loss of ANY two fission product barriers.
7. Special Orders
  - a. None

## B. Initial Conditions

1. IC Number
  - a. IC-153
2. Presets / With Triggers
  - a. Malfunctions
    - 1) **CT01B**, CT Pump 112 Trip **Inserted**
    - 2) **TC03D\_P**, EPR-Oscillation Failure-Period, SV=60 **Inserted**
    - 3) **TC03D\_A**, EPR-Oscillation Failure-Amplitude, SV=10 **Inserted**
    - 4) **ED06**, PB 101 Electrical Fault **TRG 1**
    - 5) **VIPT3607C\_FL**, PT-36-07C Fail Low **TRG 3**
    - 6) **TC03D**, EPR Oscillation Failure **TRG 5**
    - 7) **CW04A**, RBCLC Pump 11 Trip **TRG 7**
    - 8) **CW04B**, RBCLC Pump 12 Trip **TRG 7**
    - 9) **CW04C**, RBCLC Pump 13 Trip **TRG 7**
    - 10) **FW03A**, FEEDWATER PUMP TRIP 11 **TRG 9**
    - 11) **FW03B**, FEEDWATER PUMP TRIP 12 **TRG 9**
    - 12) **FW06**, SHAFT DRIVEN FEEDWATER PUMP CLUTCH FAILS –  
DISENGAGES **TRG 9**
    - 13) **CU01**, CU COOLANT LEAK INSIDE OF DRYWELL, FV=70, RT=5:00 **TRG 11**
    - 14) **EC01**, Steam Supply Line Break in PC, FV=5, RT=5:00 **TRG 11**
    - 15) **VICP20168\_FE CP-201-68**, Fuel Zone Erratic Failure **TRG 13**
    - 16) **VICP20169\_FE CP-201-69**, Fuel Zone Erratic Failure **TRG 13**
  - b. Remotes
    - 1) **FW01A**, Condensate Pump 11 Discharge Valve 50-10, FV=close **TRG 25**
    - 2) **FW24**. Removal of HPCI Fuses FU8/FU9, FV = pulled **TRG 9**

c. Overrides

- |    |   |               |
|----|---|---------------|
| 1) | <b>DO-4785 ON</b> , ANALOG TRIP LIGHT CH 11                   | <b>TRG 3</b>  |
| 2) | <b>AO-519 1F1/36-20 FV=</b> -33.84 (LLL downscale indication) | <b>TRG 13</b> |
| 3) | <b>AO-518 1F1/36-19 FV=</b> -33.84 (LLL downscale indication) | <b>TRG 13</b> |

d. Annunciators

- 1) None

e. Event Triggers

Event #	Event Action	Command
<b>TRG 9</b> - Activates on Reactor scram to insert loss of Feedwater.	zdrpstdn==1	<b>Blank</b>
<b>TRG 13</b> – Activates on DW temp >200°F, LLL level below -20", and Containment Spray flow to Drywell >100 gpm to insert Fuel Zone erratic indication.	hzarrl19<0.075&&hzarrl20<0.075&&pctdw8>200&&ctfdw>100	<b>Blank</b>

f. Equipment Out of Service

- 1) Containment Spray Pump 112 in PTL with info tag
- 2) Containment Spray suction isolation valve 112 closed with info tag
- 3) Steam Packing Exhauster 12 secured with info tag

g. Support Documentation

- 1) ReMA for lowering power to 98% with recirc

h. Miscellaneous

- 1) Protect the following equipment: EDG 103, PB 103

**SHIFT TURNOVER INFORMATION**ON COMING SHIFT: ☐ N ☒ DDATE: 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 approximately 100%
- Containment Spray pump 112 is out of service for maintenance (Day 1 of planned 2 day window; 15 day LCO per TS 3.3.7.b).
- Steam Packing Exhauster 12 is out of service due to high vibrations.

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

- Lower power to 98% with recirc flow to allow Reactor Engineering to perform a Leading Edge Flow Monitor (LEFM) correction factor adjustment.
- Start TBCLC pump 12 and secure TBCLC pump 11, per N1-OP-24 section F.1. An operator is standing by at the pump. Three Heat Exchangers are in service. Pump venting is not required.

## Shift Turnover

Instructor Actions / Plant Response	Operator Actions
<p>Take the Simulator out of freeze before the crew enters for the pre-shift walkdown.</p> <ul style="list-style-type: none"><li>• Verify annunciator sound turned on</li><li>• If recording scenario, start the recording device during the pre-shift walkdown</li></ul>	
<p>Allow no more than 5 minutes to walkdown the panels.</p>	<p><b><u>Crew</u></b></p> <ul style="list-style-type: none"><li>• Walkdown panels</li><li>• Conduct shift turnover brief</li><li>• Assume the shift</li></ul>

## Event #1: Lower Power to 98% with recirc flow

<b>Event Information</b>	<ul style="list-style-type: none"> <li>Plant is operating approximately 100%.</li> <li>The crew will reduce power with recirc.</li> </ul>
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	<b>SRO</b> <ul style="list-style-type: none"> <li>Directs power reduction with recirculation flow in accordance with N1-OP-43B and the Reactivity Maneuver Instruction (ReMA)</li> <li>Provides oversight of reactivity maneuver</li> </ul>
	<b>RO</b> <ul style="list-style-type: none"> <li>Acknowledges direction from SRO</li> <li>Lowers recirculation flow with master recirculation flow controller</li> <li>Monitors APRMs</li> <li>Monitors recirculation flow</li> <li>Monitors Feedwater flow and RPV water level</li> </ul>
	<b>BOP</b> <ul style="list-style-type: none"> <li>Monitors individual RRPs for response <ul style="list-style-type: none"> <li>Individual M/A-Speed Control stations trending uniformly</li> <li>Individual RRP indications trending normally for speed decrease</li> </ul> </li> <li>Monitors Feedwater controls for proper response <ul style="list-style-type: none"> <li>FWP 13 FCV responding</li> <li>RPV water level remains within program band (65" - 83")</li> </ul> </li> </ul>



## Event #2: Swap TBCLC Pumps

<b>Event Information</b>	<ul style="list-style-type: none"> <li>Crew will start TBCLC Pump 12 and secure TBCLC pump 11</li> </ul>
<p><b>NOTE:</b> The crew may hesitate to perform the pump swap based on the notes outlining TBCLC and SW parameters in the beginning of the procedure. If asked, report that the parameters are within acceptable range.</p>	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>Directs starting TBCLC pump 12 and securing TBCLC pump 11 per N1-OP-24, Sect F.1.0</li> <li>Provides oversight for evolution</li> </ul>
	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>Monitors plant parameters</li> </ul>
<p><b>Role Plays:</b> If directed to vent TBCLC pump 12, wait 30 seconds and report that the pump has been vented.</p> <p>If asked about TBCLC pump starts/stops, immediately report SAT pump starts/stops.</p>	<p><b>BOP</b></p> <ul style="list-style-type: none"> <li>Reviews N1-OP-24, Sect F.1.0</li> <li>Starts TBCLC pump 12</li> <li>May direct operator to vent TBCLC pump 12 and close the vent when venting is complete</li> <li>Monitors system pressure and pump amps</li> <li>Stops TBCLC Pump 11 and place its control switch in Auto-Start</li> <li>Notifies the SRO/Crew that TBCLC pump 12 is in service and TBCLC pump 11 in standby</li> </ul>

### Event #3: Powerboard 101 Fault

<b>Event Information</b>	<ul style="list-style-type: none"> <li>• The crew will respond to a fault on PB 101</li> <li>• N1-SOP-1.3 will need to be executed due to the loss of a Recirc Pump.</li> </ul>
<p>When directed by examiner, <b>insert malfunction:</b></p> <p><b>ED06, PB 101 Electrical Fault</b></p> <p style="text-align: right;"><b>TRG 1</b></p> <p><i>Loss of voltage on PB 101</i>  <i>Lowering Reactor power</i>  <i>Lowering Recirc flow</i>  <i>Expected Annunciators:</i>  <i>A5-1-1, POWER BOARD 101 R1014 TRIP</i>  <i>A4-2-7, POWER BOARD 101 LOCKOUT 86BT</i>  <i>F2-2-3, React Recirc M-G Set 13</i>  <i>F2-3-5, React Recirc Pump M-G Set Lockout Rel 86 Blocked</i></p>	<p><b>CREW</b></p> <ul style="list-style-type: none"> <li>• Diagnose/report loss of PB 101</li> <li>• Diagnose/report the trip of RRP 13</li> </ul>
	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>• Acknowledges reports</li> <li>• Directs entry into N1-SOP-1.3 for RRP trip</li> <li>• May direct entry into N1-SOP-1.5 for unplanned power change</li> <li>• Acknowledges APRMs are inoperable for scram and rod block functions of TS 3.6.2</li> <li>• Provides oversight of reactivity change during closure of RRP 13 discharge valve</li> <li>• Reviews Powerboard 101 loads</li> <li>• Reviews TS 3.1.7.e and determines Reactor power may be raised to 100%</li> <li>• Determines thermal limits penalty</li> </ul>

<p><b><u>Event 3 continued</u></b></p>	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>• Monitors plant parameters</li> <li>• Monitors Reactor power and recirculation flow during closure of RRP suction valve</li> <li>• Verifies position on four loop P/F map</li> <li>• May take a critical parameter of number of operating recirc pumps</li> </ul>
<p><b><u>Role Play:</u></b> If dispatched to PB 101, wait 2 minutes to report R1014 tripped on overcurrent and that Electrical Maintenance is at the PB investigating.</p>	<p><b>BOP</b></p> <ul style="list-style-type: none"> <li>• May execute N1-SOP-1.5 for unplanned power change</li> <li>• Monitors RPV water level response to transient</li> <li>• Enters N1-SOP-1.3 for RRP trip</li> <li>• Verifies proximity to restricted zone on four loop Power to Flow Map</li> <li>• Notifies SRO that APRMs are inoperable</li> <li>• Closes RRP 13 discharge valve</li> <li>• Opens RRP 13 discharge valve for 2-3 seconds</li> <li>• Notifies SRO that APRMs are operable</li> <li>• Green flags RRP 13 control switch</li> <li>• Places RRP 13 M/A station to MAN</li> </ul>

## Event #4: Reactor Pressure Instrument 36-07C Fails Low

<b>Event Information</b>	<ul style="list-style-type: none"> <li>SRO will make Tech Spec determination for reactor pressure instrument failing low.</li> </ul>
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<p>When directed by examiner, <b>insert malfunction:</b></p> <p><b>VIPT3607C_FL</b>, PT-36-07C Fail Low</p> <p style="text-align: right;"><b>TRG 3</b></p> <p><b>DO-4785</b>, ANALOG TRIP LIGHT CH 11</p> <p style="text-align: right;"><b>TRG 3</b></p>	<p><b>CREW</b></p> <ul style="list-style-type: none"> <li>Recognize/report annunciators</li> </ul>
<p><i>ATS red trouble light on</i>  <i>Expected annunciators:</i>  <i>F1-4-2, RPS Ch 11 Main Steam Isolation Auto Operate</i>  <i>F1-4-7, RPS Ch 11 Reactor Press Low</i></p>	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>Acknowledges reports</li> <li>Directs execution of N1-ARP-F1</li> <li>Determines pressure instrument 36-07C is inop for the high reactor pressure scram function</li> <li>Determines Tech Spec table 3.6.2.a note O applies, requiring a half scram to be inserted on RPS channel 11 within 12 hours</li> </ul>
	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>Monitors plant parameters</li> </ul>
<p><b>Role Play:</b> When dispatched as operator to check local pressure instrument indication, wait 2 minutes and report that pressure transmitter 36-07C indicates downscale at the ATS cabinet with the gross failure light on.</p>	<p><b>BOP</b></p> <ul style="list-style-type: none"> <li>Executes N1-ARP-F1-4-7</li> <li>Confirms alternate RPV pressure indications are normal</li> <li>Verifies computer points W039 &amp; C015 in alarm</li> <li>Notifies SRO to verify Tech Specs</li> <li>Dispatches operator to check local pressure instrument indication</li> <li>Acknowledges/reports failure of pressure transmitter 36-07C</li> </ul>

## Event #5: EPR Oscillations

<b>Event Information</b>	<ul style="list-style-type: none"> <li>EPR Oscillations occur</li> <li>Crew places MPR in service and restores reactor pressure</li> </ul>
<p>When directed by the lead evaluator, <b>insert</b> the following <b>malfunction</b>:</p> <p><b>TRG5 TC03D</b>, EPR Oscillation Failure Trigger, FV=True</p> <p><i>The following plant response is observed:</i></p> <ul style="list-style-type: none"> <li>RPV pressure begins oscillating approximately <math>\pm 10</math> psi</li> <li>RPV Level, Steam Flow, and Feedwater Flow oscillate following control valve changes</li> <li>Reactor Power begins oscillating</li> <li>EPR or MPR intermittently in control</li> <li>Annunciator A2-4-4, Turbine Mechanical Press Reg in Control alarms and clears intermittently while the MPR is in control with pressure is stable</li> </ul>	<p><b>CREW</b></p> <ul style="list-style-type: none"> <li>Recognizes/reports annunciator A2-4-4</li> <li>Recognizes changes in RPV pressure and updates crew</li> <li>Diagnoses EPR oscillations</li> </ul>
	<p><b>ATC (N1-ARP-A2-4-4)</b></p> <ul style="list-style-type: none"> <li>Recognizes EPR malfunction and implements ARP</li> <li>Enters N1-SOP-31.2 and updates crew</li> <li>Makes a station announcement for SOP entry</li> </ul>

<p><b><u>Role Play:</u></b></p> <p>If contacted as Reactor Engineering, acknowledge request to analyze thermal limits for operation without a backup pressure regulator.</p> <p><b><u>Note</u></b></p> <p>A power reduction using recirculation flow and/or control rods may not be necessary if the crew takes timely action to place the Mechanical Pressure Regulator in service.</p> <p><b><u>Role Play</u></b></p> <p>Acknowledge report as Ops Management and WWM. As WEC, acknowledge request to engage the organization to troubleshoot and repair the EPR.</p>	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>• Acknowledges report from crew</li> <li>• May direct execution of ARP A2-4-4</li> <li>• May direct entry into N1-SOP-1.5, Unplanned Power Changes</li> <li>• Directs execution of N1-SOP-31.2, Pressure Regulator Malfunctions</li> <li>• References COLR restrictions for operation without a backup pressure regulator</li> <li>• Determines thermal limit penalty must be applied to MCPR and LHGR limits with power between 45% and 90% (If reactor power &gt; 90%, no thermal limit penalties apply)</li> <li>• Provide direction on pressure restoration</li> <li>• May direct entry into N1-SOP-1.1, Emergency Power Reduction</li> <li>• Notifies Operations/Plant Management</li> </ul>
	<p><b>BOP</b></p> <ul style="list-style-type: none"> <li>• Observes changes in reactor power and updates crew</li> <li>• Enter N1-SOP-1.5 and updates crew</li> <li>• Observes the following for changes <ul style="list-style-type: none"> <li>◦ RRP flow</li> <li>◦ Control rod positions</li> <li>◦ Feedwater flow</li> <li>◦ Steam flow</li> <li>◦ Turbine load</li> <li>◦ RPV pressure</li> </ul> </li> <li>• Verifies only the pressure oscillations are impacting power</li> <li>• Obtains baseline data from Off Gas and MSL Radiation Monitors</li> </ul>
	<p><b>ATC (N1-SOP-31.2)</b></p> <ul style="list-style-type: none"> <li>• Which regulator is in control with pressure stable? Determines MPR (indicating EPR is oscillating)</li> <li>• Pressure oscillating, lowering or rising? Determines pressure is oscillating</li> </ul>

	<ul style="list-style-type: none"> <li>• Lower MPR setpoint until MPR is in control</li> <li>• Turn off EPR</li> <li>• Verify MPR in control (A2-4-4 alarmed)</li> <li>• Confirm reactor pressure steady on MPR</li> <li>• Determine that EPR servo stroke goes to 0</li> <li>• Pressure under control? Yes</li> <li>• Return pressure to pre-transient value.</li> <li>• Refer to N1-OP-31 Section H, Operations With One Regulator Inop</li> </ul>
	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>• Determines all applicable actions in N1-SOP-1.5 are complete</li> <li>• Exits N1-SOP-1.5 and updates crew</li> <li>• Observes the suppressed range RPV pressure recorder</li> <li>• Coordinates with the RO to restore RPV pressure to normal</li> </ul>

## Events #6 and #7: All RBCLC Pumps Trip, Feedwater Pumps Fail to Operate

<b>Event Information</b>	<ul style="list-style-type: none"> <li>• A trip of the running RBCLC pumps occurs with no standby pump available.</li> <li>• The crew will execute the override actions of N1-SOP-11.1.</li> <li>• A loss of all HP feed water occurs on the scram.</li> </ul>
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<p>When directed by lead examiner, <b>insert malfunction:</b></p> <p><b>CW04A</b>, RBCLC Pump 11 Trip</p> <p><b>CW04B</b>, RBCLC Pump 12 Trip</p> <p><b>CW04C</b>, RBCLC Pump 13 Trip</p> <p style="text-align: right;"><b>TRG 7</b></p> <p><i>RBCLC pumps trip</i>  <i>RBCLC pressure lowers</i>  <i>RBCLC temperature</i>  <i>Expected Annunciators:</i>  <i>H1-1-1, REACTOR BLDG COOL PUMP 11 TRIP-V-SUCT</i>  <i>H1-2-1, REACTOR BLDG COOL PUMP 12 TRIP-V-SUCT</i>  <i>H1-3-1, REACTOR BLDG COOL PUMP 13 TRIP-V-SUCT</i>  <i>H1-4-1, R BUILDING COOLING WATER PRESS TEMP</i>  <i>MAKEUP FLOW</i>  <i>K2-4-3, DRYWELL PRESSURE HIGH-LOW</i>  <i>K3-4-4, CLEAN-UP SYSTEM ISOLATION</i></p>	<p><b>CREW</b></p> <ul style="list-style-type: none"> <li>• Recognize/report trip of all RBCLC pumps</li> <li>• Later: <ul style="list-style-type: none"> <li>○ Recognize/report Feedwater pump 11 and 12 trips</li> <li>○ Recognize/report Feedwater pump 13 disengages</li> <li>○ Recognize/report low Reactor water level</li> </ul> </li> </ul>
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## Events 6 and 7 continued

Verify the following **malfunctions** are **automatically inserted** when the Reactor scrams:

**FW03A, FEEDWATER PUMP TRIP 11**

**FW03B, FEEDWATER PUMP TRIP 12**

**FW06, FW06, SHAFT DRIVEN FEEDWATER PUMP  
CLUTCH FAILS – DISENGAGES**

### **TRG 9**

*Feedwater pumps 11 and 12 trip immediately after starting,  
Feedwater pump 13 disengages*

*Reactor water level remains lower than normal*

*Expected Annunciators:*

*H3-1-7, REACTOR FW PUMP 11 TRIP OVERLOAD  
SUCTION HI-LEVEL*

*H3-2-7, REACTOR FW PUMP 12 TRIP OVERLOAD  
SUCTION HI-LEVEL*

*H3-4-8, REACTOR FW SHAFT P13 CLUTCH TROUBLE*

*F2-3-3, REACT VESSEL LEVEL HIGH-LOW*

**Note:** Expected initial RPV water level control band is narrower (ex. 0" to 95").

## **SRO**

- Acknowledges reports
- Directs entry into N1-SOP-11.1
- Direct start of standby RBCLC pump
- Acknowledges trip of all RBCLC pumps
- Directs execution of override, including:
  - Manual Reactor scram
  - Trip Recirculation pumps
  - Initiate Emergency Condensers
  - Close MSIVs
  - Trip RWCU pump
- Acknowledges scram report
- Enters N1-EOP-2, RPV Control, on low RPV water level
- Answers "Are all control rods inserted to at least position 04?" YES
- Directs entry into N1-SOP-1, Reactor Scram
- Acknowledges trip of Feedwater pumps
- Directs RPV water level controlled between -84" and 95" using CRD and/or Liquid Poison
- Directs RPV cooldown <100°F/hr using Emergency Condensers
- Enters N1-EOP-4, Primary Containment Control, on high Drywell temperature
  - Directs lockout of Containment Spray pumps

<p><b><u>Events 6 and 7 continued</u></b></p>	<p><b>ATC</b></p> <ul style="list-style-type: none"> <li>• Places Reactor Mode Switch to SHUTDOWN</li> <li>• Provides scram report</li> <li>• Performs scram verification actions of N1-SOP-1, Reactor Scram:</li> <li>• Confirms all rods inserted</li> <li>• Observes Reactor power lowering</li> <li>• Places IRMs on range 9</li> <li>• Inserts IRM and SRM detectors</li> <li>• Down-ranges IRMs as necessary</li> <li>• Verifies main turbine and generator tripped</li> <li>• Controls RPV pressure as directed using Emergency Condensers</li> </ul>
<p><b><u>Note:</u></b> Depending on timing, Lo-Lo Reactor water level may trip Recirculation pumps, initiate Emergency Condensers, and close MSIVs before operator action.</p> <p><b><u>Note:</u></b> RWCU will likely trip on high temperature before operator action.</p> <p><b><u>Note:</u></b> Recommend initiating next event shortly after the reactor is scrammed.</p>	<p><b>BOP</b></p> <ul style="list-style-type: none"> <li>• Executes N1-SOP-11.1</li> <li>• Attempts to start standby RBCLC pump</li> <li>• Informs crew of need to execute override</li> <li>• Enters N1-SOP-1</li> <li>• Informs crew of Feedwater pump trips and low Reactor water level</li> <li>• Trips Recirculation pumps</li> <li>• Initiates Emergency Condensers</li> <li>• Closes MSIVs</li> <li>• Verifies RWCU pump tripped</li> <li>• May maximize CRD flow by starting second CRD pump and/or taking FCV to manual and opening further</li> <li>• May start Liquid Poison</li> <li>• Places Containment Spray pumps in PTL</li> </ul>

## Events #8 and #9: Coolant Leak Inside Primary Containment and Fuel Zone Level Instrument Erratic Indication

<b>Event Information</b>	<ul style="list-style-type: none"> <li>• A reactor coolant leak develops in the drywell</li> <li>• When containment parameters degrade sufficiently, fuel zone level instrumentation will begin to give erratic indication and drive the crew into RPV Flooding.</li> </ul>
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<p>When directed by examiner, <b>insert malfunctions:</b></p> <p><b>CU01</b>, CU Coolant Leak Inside of Drywell, RT=5:00, FV=70</p> <p><b>EC01</b>, Steam Supply Line Break in PC, RT=5:00, FV=5</p> <p style="text-align: right;"><b>TRG 11</b></p> <p><i>Containment parameters degrade</i>  <i>RPV water level lowers</i>  <i>Expected annunciators:</i>  H2-4-7, DRYWELL WATER LEAK DETECTION SYS  K2-4-3, DRYWELL PRESSURE HIGH-LOW  L1-4-4, DRYWELL – TORUS TEMP HIGH  F1-1-5, RPS CH 11 DRYWELL PRESS HIGH  F4-1-4, RPS CH 12 DRYWELL PRESS HIGH  F1-2-3, RPS CH 11 REACTOR LEVEL LOW-LOW  F4-2-6, RPS CH 12 REACTOR LEVEL LOW-LOW  F1-3-3, RPS CH 11 REACTOR LEVEL LOW-LOW-LOW  F4-3-6, RPS CH 12 REACTOR LEVEL LOW-LOW-LOW</p>	<p><b>CREW</b></p> <ul style="list-style-type: none"> <li>• Recognize/report degrading Containment parameters</li> </ul>
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**Events 8 and 9 continued**

Verify the following **malfunction** is **automatically inserted** when DW temp is above 200°F, LLL level indicates below -20", and Containment Spray has been initiated:

**VICP20168\_FE CP-201-68**, Fuel Zone Erratic Failure

**VICP20169\_FE CP-201-69**, Fuel Zone Erratic Failure

**TRG 13**

*Fuel Zone indications give sporadic numbers  
All other RPV water level instruments are either downscale  
or below minimum usable levels*

**SRO**

- Acknowledges reports from the crew
- Re-enters N1-EOP-4 on high Drywell pressure
- Re-enters N1-EOP-2 on high Drywell pressure
- Transitions to Alternate Level Control leg of N1-EOP-2
- Direct ADS bypassed
- Verifies EC initiation
- If either Drywell temperature approaches 300°F or Torus pressure exceeds 13 psig:
  - Answers "Below the Containment Spray Initiation Limit?" Yes
  - Verifies all Recirc pumps tripped
  - Directs trip of all Drywell cooling fans
  - **Direct Containment Sprays per N1-EOP-1 attachment 17**

**CT-1**

- Monitors location on Pressure Suppression Pressure curve
- Acknowledges sporadic readings of Fuel Zones
- Acknowledges RPV water level is unknown
- **Exits N1-EOP-2, enters N1-EOP-7, RPV Flooding**

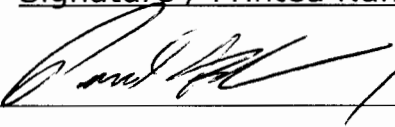

**CT-2**

<u><b>Events 8 and 9 continued</b></u>	<p><b>SRO continued</b></p> <ul style="list-style-type: none"> <li>• Answers "Are all control rods inserted to at least position 04?" Yes</li> <li>• Answers "Torus water level?" Above 8.0 ft</li> <li>• Directs open 4 ERVs</li> <li>• Directs injection to flood the RPV to the main steam lines using low pressure Feedwater, CRD, Core Spray or Alternate Injection Systems</li> <li>• Answers "Can any ERV be opened?" Yes</li> <li>• Directs MSIVs and EC steam IVs verified closed</li> <li>• Acknowledges RPV water level rising</li> </ul>
	<p><b>ATC/BOP</b></p> <ul style="list-style-type: none"> <li>• Places Containment Spray pumps in PTL, or verifies proper operation per N1-EOP-1 attachment 17</li> <li>• Bypasses ADS</li> <li>• Verifies EC initiation</li> <li>• Monitors Containment parameters</li> <li>• Reports if either Drywell temperature approaches 300°F or Torus pressure exceeds 13 psig</li> </ul>

<p><b><u>Events 8 and 9 continued</u></b></p>	<p><b>ATC/BOP Continued</b></p> <ul style="list-style-type: none"> <li>• If Containment Spray did not auto-start earlier:             <ul style="list-style-type: none"> <li>• Verifies all Recirc pumps tripped</li> <li>• Trips all Drywell cooling fans</li> <li>• <b>Initiates Containment Sprays per N1-EOP-1 attachment 17:</b></li> </ul> </li> </ul> <p style="text-align: right;"><b>CT-1</b></p> <ul style="list-style-type: none"> <li>• Verifies started, two Containment Spray pumps</li> <li>• IF required to lower Containment pressure, start additional Containment Spray Pumps</li> <li>• Reports Containment pressure and temperature lowering</li> <li>• Recognizes/reports sporadic Fuel Zone values</li> <li>• Recognizes/reports RPV water level is unknown</li> <li>• <b>Opens 4 ERVs</b></li> <li>• <b>Injects to flood the RPV to the main steam lines using low pressure Feedwater, CRD, Core Spray or Alternate Injection Systems</b></li> </ul> <p style="text-align: right;"><b>CT-2</b></p> <ul style="list-style-type: none"> <li>• Verifies MSIVs and EC steam IVs closed</li> <li>• Monitors for indications of successful flooding</li> <li>• Reports RPV water level rising</li> </ul>
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<p><b>Event Termination Criteria</b></p>	<ul style="list-style-type: none"> <li>• RPV Flooding in progress</li> <li>• Containment pressure and temperature controlled in accordance with N1-EOP-4.</li> </ul>
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Training Id: **NMP1 NRC 2018 Scenario**Revision: **0.0**Title: **Simulator Scenario 4**

	<u>Signature / Printed Name</u>	<u>Date</u>
Developed By	 / Paul Isham	2/15/18
Validated By	Katie Higgins-Asmus	8/21/18
	Justin Farella	
	Will Vannostrand	
Facility Reviewer	 / Phil Nichols	9.7.18

## References

1. N1-OP-43A, Plant Startup
2. N1-OP-38A, Source Range Monitor
3. N1-OP-5, Control Rod Drive
4. N1-SOP-5.1, Loss of Control Rod Drive
5. N1-SOP-1, Reactor Scram
6. N1-SOP-1.2, Recirc Pump Seal Failure
7. N1-EOP-2, RPV Control
8. N1-EOP-3, Failure to Scram
9. N1-EOP-4, Primary Containment Control
10. N1-EOP-5, Secondary Containment Control
11. N1-EOP-1, NMP1 EOP Support Procedure
12. Unit 1 Technical Specifications



## Instructor Information

### A. Scenario Description

#### Sequence of Events / Expected Crew Response:

The scenario begins with the plant in a startup at approximately 2-3% power and raising power by control rod withdrawal. While withdrawing control rods, one control rod will double notch to one position past its intended position. The crew will respond per N1-OP-5 section H.9.0 and re-insert the control rod to the intended position.

Next, IRM 11 will fail downscale. The SRO will determine the impact of the failure on Tech Specs and the crew will bypass the IRM.

Next, Powerboard 16A will develop an electrical fault. This will cause a loss of power to three Drywell cooling fans. The crew will start an additional Drywell cooling fan to stabilize Drywell temperature and pressure. The electrical loss will also affect EDG 103 auxiliary equipment. The US will evaluate for Tech Spec impacts.

Then, the inner seal will fail on Reactor Recirculation Pump 11. A few minutes later, the outer seal will fail, affecting drywell leakage. The crew will remove the pump from service and isolate it. The SRO will review Technical Specifications for drywell leakage and partial loop operation.

Then, a seismic event occurs and results in an isolable leak on Containment Spray pump 121 suction line. The crew will execute N1-SOP-28, Seismic Event, and N1-EOP-5, Secondary Containment Control. The crew will close Containment Spray suction valve 121 to isolate the leak.

Next, a second seismic event occurs and results in an un-isolable Torus break. The crew will re-enter N1-EOP-5 and enter N1-EOP-4, Primary Containment Control. The crew will attempt to add water to the Torus, however makeup efforts will be complicated by trip of Containment Spray Raw Water pumps. The crew will be unable to raise Torus water level. The crew will insert a manual Reactor scram (**Critical Task**). Multiple control rods will fail to fully insert. The crew will enter N1-EOP-2, RPV Control, and transition to N1-EOP-3, Failure to Scram. The crew will be unable to drive control rods in with RMCS. As Torus water level lower further, the crew will perform an RPV Blowdown per N1-EOP-8 (**Critical Task**). During the RPV Blowdown, the crew will terminate and prevent all injection except boron and CRD and later re-inject to restore/maintain Reactor water level above the top of active fuel.

#### 1. Termination Criteria

- a. RPV water level controlled in assigned band, RPV Blowdown in progress

## 2. Critical Tasks

### **CT-1, Given an un-isolable Torus leak exceeding makeup capacity, scram the Reactor, in accordance with N1-EOP-4.**

*Justification:*

**Safety Significance:** Lowering Torus water level challenges the pressure suppression function of the Primary Containment. Continued Reactor operation is not allowed with an inoperable Primary Containment. A Reactor scram also allows subsequent mitigating actions, such as Reactor cooldown and/or blowdown.

**Cueing:** Multiple indicators and annunciators will provide indications of low Torus water level. N1-EOP-4 provides direction to scram the Reactor.

**Measurable Performance Indicators:** Rotation of the Mode Switch to SHUTDOWN or depressing the manual scram pushbuttons will provide observable actions for the evaluation team.

**Performance Feedback:** Control rod position and Reactor power indications will provide performance feedback regarding the success of the scram.

### **CT-2, Given an un-isolable Torus leak exceeding makeup capacity, perform an RPV Blowdown, in accordance with N1-EOP-4.**

*Justification:*

**Safety Significance:** If torus water level lowers below the elevation of the ERV discharge holes, opening ERVs would discharge steam directly into the torus airspace. The resulting pressure increase could exceed the maximum pressure capability of the Primary Containment. Since the RPV may not be kept at pressure under these conditions, a blowdown is required.

**Cueing:** Multiple indicators and annunciators will provide indications of low Torus water level. N1-EOP-4 provides direction to blowdown the Reactor.

**Measurable Performance Indicators:** Manipulation of Emergency Condenser valve and ERV control switches will provide observable actions for the evaluation team.

**Performance Feedback:** Emergency Condenser and ERV instrumentation will provide indication that these systems are functioning properly once placed in service. Multiple Reactor pressure indicators and annunciators will provide performance feedback regarding the success of the blowdown.

3. Length
  - a. ~60 minutes
4. Mitigation Strategy Code
  - a. PC2, Loss of inventory in Torus, RPV Blowdown
5. Technical Specifications
  - a. TS 3.1.7
  - b. TS 3.2.5
  - c. TS 3.3.7
6. EAL Classification
  - a. HA1.1
7. Special Orders
  - a. None

## B. Initial Conditions

### 1. IC Number

#### a. IC-154

### 2. Presets / With Triggers

#### a. Malfunctions

- |  |                 |
|--|-----------------|
| 1) <b>CT01B</b> , CT Pump 112 Trip   | <b>Inserted</b> |
| 2) <b>RD04R1823</b> , 18-23 CONTROL ROD FAILURE - STUCK                          | <b>Inserted</b> |
| 3) <b>RD04R1831</b> , 18-31 CONTROL ROD FAILURE - STUCK                          | <b>Inserted</b> |
| 4) <b>RD04R2227</b> , 22-27 CONTROL ROD FAILURE - STUCK                          | <b>Inserted</b> |
| 5) <b>RD04R2623</b> , 26-23 CONTROL ROD FAILURE - STUCK                          | <b>Inserted</b> |
| 6) <b>RD04R2631</b> , 26-31 CONTROL ROD FAILURE - STUCK                          | <b>Inserted</b> |
| 7) <b>RD42</b> , DOUBLE NOTCH CONTROL RODS                                       | <b>TRG1</b>     |
| 8) <b>NM11A</b> , IRM CHANNEL 11 FAILURE - DOWNSCALE                             | <b>TRG3</b>     |
| 9) <b>ED12A</b> , PB 16A Electrical Fault  | <b>TRG4</b>     |
| 10) <b>RR06A</b> , RR Pump 11 Lower (Inner) Seal Failure, RT=3:00, FV=75         | <b>TRG5</b>     |
| 11) <b>RR07A</b> , RR Pump 11 Upper (Outer) Seal Failure, DT=4:00, RT=5:00, FV=6 | <b>TRG5</b>     |
| 12) <b>PC05</b> , Seismic Event Triggered  | <b>TRG6</b>     |
| 13) <b>CT04A</b> , CT Suction Line Break 121, DT=1:00                            | <b>TRG6</b>     |
| 14) <b>PC04</b> , Torus Water Leak, FV=25%, DT=10                                | <b>TRG7</b>     |
| 15) <b>CT02B</b> , CT Raw Water Pump 112 Trip, DT=45                             | <b>TRG23</b>    |
| 16) <b>CT02C</b> , CT Raw Water Pump 121 Trip, DT=45                             | <b>TRG24</b>    |

#### b. Remotes

- |   |              |
|---|--------------|
| 1) <b>FW24</b> , REMOVAL OF HPCI FUSES FU8/FU9, FV=pulled | <b>TRG9</b>  |
| 2) <b>PC16</b> , Seismic Mon Pnl Event Light, Reset       | <b>TRG12</b> |

c. Overrides

- 1) None

d. Annunciators

- 1) None

e. Event Triggers

Event #	Event Action	Command
<b>TRG 1</b> – Inserts control rod double notching malfunction when control rod 38-15 is at position 02.	rdnotch(30)==10	<b>Blank</b>
<b>TRG 10</b> – Deletes control rod double notching malfunction when control rod 38-15 is at position 06.	rdnotch(30)==14	dmf rd42
<b>TRG 22</b> – Adjusts Torus leak rate once Torus water level lowers below 10.4 feet	trlevel<10.4	imf pc04 (0 0) 10
<b>TRG 23</b> – Trips Containment Spray Raw Water pump 112 45 seconds after start.	hzlctpmp(12)==1	<b>Blank</b>
<b>TRG 24</b> – Trips Containment Spray Raw Water pump 121 45 seconds after start.	hzlctpmp(14)==1	<b>Blank</b>

f. Equipment Out of Service

- 1) Containment Spray Pump 112 in PTL with info tag
- 2) Containment Spray suction isolation valve 112 closed with info tag
- 3) Steam Packing Exhauster 12 secured with info tag

g. Support Documentation

- 1) N1-OP-43A marked up to step E.4.1 (E.3.23 is open)
- 2) REMA for control rod withdrawal
- 3) Rod movement sheet page 14 marked complete

h. Miscellaneous

### 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:

- Plant startup is in progress. Reactor power is approximately 2-3%.
- APRM gains have been adjusted for the startup IAW N1-OP-38C
- Reactor pressure is approximately 920 psig with one Turbine Bypass Valve open and the EPR in control
- N1-OP-43A is in progress
- Drywell inspection is complete
- FIN team is working on inerting the containment per N1-OP-43A, step E.3.22
- Containment Spray Pump 112 is out of service for maintenance
- Steam Packing Exhauster 12 is out of service due to high vibrations.

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

- Continue power ascension by withdrawing control rods – A2 Startup page 15, control rod 14-39 is the next rod from position 08 to 12.

## Shift Turnover

Instructor Actions / Plant Response	Operator Actions
<p>Take the Simulator out of freeze before the crew enters for the pre-shift walkdown.</p> <ul style="list-style-type: none"><li>• Verify annunciator sound turned on</li><li>• If recording scenario, start the recording device during the pre-shift walkdown</li></ul>	
<p>Allow no more than 5 minutes to walkdown the panels.</p>	<p><b><u>Crew</u></b></p> <ul style="list-style-type: none"><li>• Walkdown panels</li><li>• Conduct shift turnover brief</li><li>• Assume the shift</li></ul>

## Events #1 & #2: Raise Power with Control Rods, Control Rod Double Notch

<b>Event Information</b>	<ul style="list-style-type: none"> <li>Reactor Power is approximately 2-3%</li> <li>The crew will continue withdrawing rods</li> <li>One rod will double notch.</li> </ul>
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<p><b>Note:</b> Lead examiner may move to the next event once sufficient action is observed on the reactivity manipulation.</p>	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>Directs withdrawal of control rods in accordance with, ReMA, N1-OP-5 and Startup Control Rod Sequence</li> <li>Provides oversight for reactivity manipulation</li> <li>Acknowledges control rod double notching</li> <li>Directs execution of N1-OP-5 section H.9.0</li> </ul>
<p><i>Expected Annunciators:</i></p> <p><i>A1-4-6 alarms and clears until power is raised sufficiently to maintain one TBV open.</i></p> <p><i>F1-4-8 alarms (expected) based on changing steam flow</i></p>	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>Verifies Control Rod Power is On</li> <li>Depresses Rod Select pushbutton for control rod to be withdrawn on Rod Map Display at Panel E</li> <li>Withdraw control rods in single notch withdrawal by placing the 4S1 Control Rod Movement switch to the rod out notch position</li> <li>Withdraw rods according to specified sequence as required to establish and maintain desired rate of power rise</li> <li>Observe IRM response and range IRM switches as follows: <ul style="list-style-type: none"> <li>0-125 scale between 25 and 75 nominal</li> <li>0-40 scale between 8 and 24 nominal</li> </ul> </li> </ul>
	<p><b>BOP</b></p> <p>Monitor plant parameters</p>



<p><b>Note:</b></p> <p>Verify <b>TRG 1 goes active</b> when control rod 38-15 is at position 02 and inserts malfunction:</p> <p><b>RD42, DOUBLE NOTCH CONTROL RODS</b></p> <p><i>Expected annunciator:</i></p> <p><i>F3-4-4, ROD BLOCK</i></p> <p>Verify <b>TRG 10 goes active</b> when control rod 38-15 is at position 06 and <b>deletes malfunction RD42</b>.</p>	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>• Selects next control rod</li> <li>• Recognizes/reports control rod 38-15 double notched from position 12 to 14</li> <li>• Recognizes/reports control rod 38-15 is withdrawn beyond the control rod group limit</li> <li>• Executes N1-OP-5 section H.9.0</li> <li>• Inserts control rod 38-15 from position 14 to 12</li> </ul>
<p><b>Note:</b></p> <p>Continue control rod withdraws until LPRM downscale alarms clear. Crew will need to pull 2<sup>nd</sup> page of rods to accomplish that.</p>	

## Event #3: IRM Downscale Failure

<b>Event Information</b>	<ul style="list-style-type: none"> <li>• A Plant startup is in progress</li> <li>• IRM 11 fails downscale</li> <li>• Crew will bypass the IRM</li> <li>• SRO will address Tech Specs</li> </ul>
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<p>When directed by lead examiner, <b>insert malfunction:</b></p> <p><b>NM11A, IRM Channel 11 Failure - Downscale</b></p> <p style="text-align: right;"><b>TRG 3</b></p> <p><i>IRM 11 downscale/INOP light lit</i>  <i>IRM 11 indicates downscale</i>  <i>Expected annunciators:</i>  <i>F2-3-6, IRM 11-14</i>  <i>F3-4-4, Rod Block</i></p>	<p><b>CREW</b></p> <ul style="list-style-type: none"> <li>• Acknowledges/reports annunciators</li> <li>• Diagnoses IRM 11 failed downscale</li> </ul>
	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>• Acknowledges reports</li> <li>• Reviews Tech Specs</li> <li>• Determines Tech Spec 3.6.2 tables (a) and (g) are satisfied with only one failed IRM</li> <li>• Directs bypassing IRM 11</li> </ul>
	<p><b>ATC</b></p> <ul style="list-style-type: none"> <li>• Monitors plant parameters</li> <li>• Verifies range switch proper setting</li> <li>• Monitors IRM recorder for flux levels</li> <li>• Verifies correct position of detector in core</li> <li>• Enters OP-38B to bypass IRM 11</li> <li>• Places IRM BYPASS switch in IRM 11 position</li> <li>• Confirms IRM BYPASS light is lit on panel E</li> </ul>

**Event 3 continued****BOP**

- Executes ARP F2-3-6
- Confirms alarm on the computer printout
- Observes E panel to determine IRM 11  
DOWNSCALE OR INOP light lit
- Monitors IRM for malfunction on G Panel
- Confirms IRM BYPASS light is lit on the IRM  
auxiliaries drawer
- Confirms computer printout "IRM BYPASS YES"

## Event #4: Powerboard 16A Electrical Fault

<b>Event Information</b>	<ul style="list-style-type: none"> <li>The plant experiences an electrical fault on PB 16A</li> <li>The crew will take action to mitigate further degradation to the plant.</li> </ul>
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<p>When directed by examiner, <b>insert malfunction:</b></p> <p><b>ED12A</b>, PB 16A Electrical Fault</p> <p style="text-align: right;"><b>TRG 4</b></p> <p><i>Three Drywell cooling fans de-energize Drywell pressure and temperature rise Spent Fuel Pool Cooling pump 11 trips RBCLC pump 11 trips Expected Annunciators: L4-3-6, DRYWELL COOLING FAN TRIP-VIB A4-3-1, POWER BD. 16 R1041 TRIP A4-4-2, POWER BD. 16 LOW BUS VOLTAGE L1-4-5, FUEL POOL ANNUNCIATOR</i></p>	<p><b>CREW</b></p> <ul style="list-style-type: none"> <li>Recognize/report loss of Powerboard 16A</li> <li>Recognize/report trip of three Drywell cooling fans</li> <li>Recognize/report trip of RBCLC pump 11</li> <li>Recognize/report Spent Fuel Pool trouble alarm</li> </ul>
	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>Directs execution of ARPs</li> <li>Directs start of Drywell cooling fan 11</li> <li>May direct lowering RBCLC temperature</li> <li>May direct Reactor power reduction per N1-SOP-1.1</li> <li>If Drywell average temperature exceeds 150°F, enters N1-EOP-4 <ul style="list-style-type: none"> <li>Directs placing Containment Spray pumps in PTL</li> </ul> </li> <li>Directs entry into N1-SOP-6.1, Loss of SFP/Rx Cavity Level/Decay Heat Removal</li> <li>May direct start of RBCLC pump 12</li> </ul>

<p><b><u>Event 4 continued</u></b></p>	<p><b>ATC</b></p> <ul style="list-style-type: none"> <li>• Monitors plant parameters</li> <li>• If directed, lowers Reactor power per N1-SOP-1.1</li> </ul>
<p><b><u>Role Play:</u></b></p> <p>If requested to investigate Powerboard 16A, wait 2 minutes, then report the feeder breaker is tripped and there is an acrid odor in the area. Electrical Maintenance does NOT recommend re-energizing Powerboard 16A.</p> <p><b><u>Role Play:</u></b></p> <p>If requested to investigate SFPC trouble, wait 2 minutes, then report SFPC pump 11 tripped. If directed to restore SFPC, acknowledge order, but delay any action for rest of scenario.</p>	<p><b>BOP</b></p> <ul style="list-style-type: none"> <li>• Executes ARPs</li> <li>• Dispatches operator/maintenance to investigate Powerboard 16A</li> <li>• Dispatches operator to investigate Spent Fuel Pool alarm</li> <li>• Acknowledges/reports Powerboard 16A is faulted</li> <li>• Starts Drywell cooling fan 11</li> <li>• May green flags Drywell cooling fans 14, 15, and 16</li> <li>• May start RBCLC pump 12</li> <li>• May green flag RBCLC pump 11</li> <li>• If directed, lowers RBCLC temperature per N1-OP-11:             <ul style="list-style-type: none"> <li>○ Places RBCLC TCV in manual:                 <ul style="list-style-type: none"> <li>○ Depresses the A/M Button UNTIL red LED is illuminated next to "M"</li> <li>○ Verifies 70-23B.V is displayed in the LED readout</li> <li>○ IF 70-23B.V is NOT displayed, THEN depresses the "D" button UNTIL the display shows 70-23B.V</li> <li>○ Adjusts RBCLC temperature as desired</li> </ul> </li> <li>○ May lower RBCLC TCV automatic setpoint per N1-OP-11 Section H.24.0</li> </ul> </li> </ul>

<b><u>Event 4 continued</u></b>	<b>BOP continued</b> <ul style="list-style-type: none"><li>○ May place RBCLC TCV back in automatic:<ul style="list-style-type: none"><li>○ Depresses the A/M Button UNTIL green LED is illuminated next to "A"</li><li>○ Verifies 70-23B.P is displayed in the LED readout</li><li>○ IF 70-23B.P is NOT displayed, THEN depresses the "D" button UNTIL the display shows 70-23B.P</li><li>○ Verifies TCV-70-137 is responding properly to automatic control</li></ul></li><li>• If directed, places Containment Spray pumps in PTL</li></ul>
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## Event #5: Recirc Pump 11 Seal Failure

<b>Event Information</b>	<ul style="list-style-type: none"> <li>Both the inner and outer seals will fail for recirc pump 11, requiring isolation of the pump</li> <li>SRO will evaluate Tech Specs 3.2.5 and 3.1.7</li> </ul>
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<p>When directed by lead examiner, <b>insert malfunction:</b></p> <p><b>RR06A</b>, RR Pump 11 Lower (Inner) Seal Failure, RT=3:00, FV=75</p> <p><b>RR07A</b>, RR Pump 11 Upper (Outer) Seal Failure, DT=4:00, RT=5:00, FV=60</p> <p style="text-align: right;"><b>TRG 5</b></p> <p><i>Initial response:</i> RRP 11 LP seal pressure rises</p> <p><i>Delayed response:</i> RRP 11 HP seal pressure lowers RRP 11 LP seal pressure lowers DW temp, pres and humidity slowly rise DW leakage rises</p>	<p><b>CREW</b></p> <ul style="list-style-type: none"> <li>Diagnoses/reports RRP 11 inner seal failure</li> <li>Diagnoses/reports RRP 11 outer seal failure (later)</li> <li>Recognizes/reports degrading Primary Containment parameters (later)</li> </ul>
<p><i>Expected annunciators:</i> H2-4-7, Drywell Water Leak Detection Sys (HP Seal ~35%) Potentially K2-4-3, DW Pressure High</p> <p><b>Note:</b> Manually re-insert malfunctions <b>RR06A</b> and <b>RR07A</b> at 10% when RRP 11 suction and discharge valve green lights energize.</p>	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>Acknowledges reports</li> <li>Directs entry into N1-SOP-1.2, RRP Seal Failure</li> <li>Reviews Technical Specifications</li> <li>Determines Drywell leakage rates are affected in Tech Spec 3.2.5, be in cold shutdown w/in 24 hours.</li> <li>Determines Tech Spec 3.1.7.e requires power be maintained &lt; 90.5% until the pump isolation is complete</li> <li>Verifies power &lt; 90.5%</li> <li>Provide oversight of reactivity change during evolution</li> </ul>

<p><b><u>Event 5 continued</u></b></p>	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>• Monitors plant parameters</li> <li>• Monitor total recirculation flow and APRM power levels while RRP 11 is being shutdown and isolated</li> <li>• Verifies position on four loop Power to Flow Map</li> </ul>
<p><b><u>Note:</u></b> Depending on when in the transient N1-SOP-1.2 is executed, the crew may opt to secure the RRP per N1-OP-1.</p> <p><b><u>Note:</u></b> Crew may discuss venting per OP-9. Scenario will progress prior to any vent actions.</p> <p><b><u>Note:</u></b> N1-SOP-1.2 defines a seal failure as catastrophic if it results in a noticeable rise in DW pressure or floor drain leakage.</p> <p><b><u>Note:</u></b> Closing RRP suction and discharges valves during this event is an approved two-handed manipulation.</p> <p><b><u>Note:</u></b> Allow Reactor water level to begin trending towards recovery prior to moving on.</p>	<p><b>BOP</b></p> <ul style="list-style-type: none"> <li>• Enters N1-SOP-1.2, RRP Seal Failure</li> <li>• Initially answers "Is there indication of LP seal failure?" YES</li> <li>• Monitors DW floor drain tank level and DW pressure</li> <li>• Contacts Engineering for evaluation</li> <li>• Monitors RRP 11 seal indications for signs of degradation</li> <li>• Determines 2<sup>nd</sup> seal is failing</li> <li>• Re-enters N1-SOP-1.2</li> <li>• Answers "Is failure catastrophic?" YES</li> <li>• Places RRP 11 control switch to STOP</li> <li>• Closes RRP 11 bypass valve</li> <li>• Simultaneously closes RRP suction and discharge valves</li> <li>• Verifies proximity to restricted zone using four loop Power to Flow Map</li> <li>• Monitors containment parameters</li> </ul>



## Event #6: Seismic Event and Isolable Leak on Containment Spray Suction Line

<b>Event Information</b>	<ul style="list-style-type: none"> <li>• Seismic event occurs concurrent with an isolable leak from Containment Spray</li> <li>• The crew will isolate the leak</li> <li>• SRO will address Tech Specs</li> </ul>
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<p>When directed by the lead examiner, <b>insert malfunction:</b></p> <p><b>PC05, Seismic Event Triggered</b></p> <p><b>CT04A, CT Suction Line Break 121, DT=1:00</b></p> <p style="text-align: right;"><b>TRG 6</b></p> <p><i>Reactor Building sump levels rise</i></p> <p><i>Torus water level lowers</i></p> <p><i>Expected Annunciators:</i></p> <p><i>H2-1-6, Seismic Detection Equipment Event</i></p> <p><i>H2-2-1, R Bldg FI Dr Sumps 11-16 Area Wtr Lvl Level High</i></p> <p><i>K3-3-1, Torus Water Level High - Low</i></p>	<p><b>CREW</b></p> <ul style="list-style-type: none"> <li>• Recognize/report seismic event</li> <li>• Recognize/report Reactor Building sump alarms</li> </ul> <p>Recognize/report lowering Torus water level</p>
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<p><b><u>Note:</u></b></p> <p>When Containment Spray suction valve 121 is closed, perform the following:</p> <ol style="list-style-type: none"> <li>1. <b>Insert Remote</b> PC16, Seismic Mon Pnl Event Light Reset, FV=reset <b>TRG12</b></li> <li>2. <b>Delete Malfunction</b> PC05, Seismic Event Triggered.</li> <li>3. <b>Delete Remote</b> PC16, Seismic Mon Pnl Event Light Reset</li> <li>4. Re-establish malfunction PC05 on <b>TRG 7</b></li> </ol>	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>• Acknowledges reports</li> <li>• Directs execution of N1-SOP-28, Seismic Event</li> <li>• Acknowledges report of isolable leak on Containment Spray 121 suction</li> <li>• Enters N1-EOP-5, Secondary Containment Control, on Reactor Building sump high levels and/or high area water levels</li> <li>• Enters N1-EOP-4, Primary Containment Control, if Torus water level lowers to 10.5 feet</li> <li>• Directs placing Containment Spray pump 121 in PTL</li> <li>• Directs closure of Containment Spray suction valve 121</li> <li>• Determines Tech Spec 3.3.7.b requires 15 day LCO</li> </ul>
<p><b><u>Role Play:</u></b></p> <p>If requested as IMD to analyze seismic monitors in the control room, acknowledge request.</p>	<p><b>RO</b></p> <ul style="list-style-type: none"> <li>• Monitors plant parameters</li> </ul>
<p><b><u>Role Play:</u></b></p> <p>If contacted as Unit 2 or JAF, report that you have also experienced a seismic event and that you have confirmed the seismic event with JAF or Unit 2 (as appropriate). Report that Unit 2 seismic recorders indicated &gt;0.075g.</p> <p><b><u>Role Play:</u></b></p> <p>When dispatched to inspect plant equipment / investigate leakage, wait 3 minutes, then report that there is a leak on Containment Spray 121 between the pump and the suction valve.</p>	<p><b>BOP</b></p> <ul style="list-style-type: none"> <li>• Executes N1-SOP-28, Seismic Event</li> <li>• Confirms seismic event indicator on J panel</li> <li>• Contacts Unit 2 and JAF to confirm seismic event</li> <li>• Notifies I&amp;C to interpret seismic data</li> <li>• Notifies SRO to review EALs HU1.1 and HA1.1</li> <li>• Answers "Did event cause any auto system(s) response?" No</li> <li>• Notifies SRO to suspend ALL activities AND transient initiations NOT essential for safe operation UNTIL inspections are completed</li> <li>• Dispatches operators to inspect plant equipment for damage</li> </ul>

**Role Play:**

When Containment Spray 121 suction valve is close, report the leak has stopped and sump pumps are lowering area water level.

- Monitors Drywell instrumentation
- Dispatches operator to investigate Reactor Building sump alarm
- Informs crew of isolable leak on Containment Spray 121 suction line
- Places Containment Spray pump 121 in PTL
- Closes Containment Spray 121 suction valve

## Events #7 and #8: Seismic Event, Torus Break, Containment Spray Raw Water Pump Trips, Multiple Control Rods Fail to Insert

<b>Event Information</b>	<ul style="list-style-type: none"> <li>• A second seismic event occurs resulting in a Torus Water leak</li> <li>• The crew will scram the reactor on lowering Torus Water Level</li> <li>• Five rods will fail to insert</li> <li>• The crew will perform an RPV Blowdown</li> </ul>
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<p>When directed by the lead examiner, <b>insert malfunctions:</b></p> <p><b>PC05, Seismic Event Triggered</b></p> <p><b>PC04, Torus Water Leak, FV=25%, DT=10</b></p> <p style="text-align: right;"><b>TRG 7</b></p> <p><i>Reactor Building sump levels rise</i></p> <p><i>Torus water level lowers</i></p> <p><i>Expected Annunciators:</i></p> <p><i>H2-1-6, Seismic Detection Equipment Event</i></p> <p><i>H2-2-1, R Bldg FI Dr Sumps 11-16 Area Wtr Lvl Level High</i></p> <p><i>K3-3-1, Torus Water Level High – Low</i></p> <p><b><u>Role Play:</u></b></p> <p>If directed, acknowledge direction to walk down plant systems and ISFSI to check for damage.</p> <p><b><u>Examiner Note:</u></b> Post-scenario event classification should not be performed for this scenario in order to avoid introducing overlap to administrative JPMs.</p>	<p><b>CREW</b></p> <ul style="list-style-type: none"> <li>• Recognize/report seismic event</li> <li>• Recognize/report Reactor Building sump alarms</li> <li>• Recognize/report lowering Torus water level</li> </ul>
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<p><b>Note:</b></p> <p>When Torus water level lowers below 10.4 feet, verify <b>TRG 22 goes active</b> and modifies <b>malfunction PC04 to 10%</b>.</p> <p>Verify the following <b>malfunctions</b> are <b>PRESET</b>:</p> <p><b>RD04RXXXX, XX-XX CONTROL ROD FAILURE – STUCK (for control rods 18-23, 18-31, 22-27, 26-23, and 26-31)</b></p> <p>Verify <b>TRG 23 or 24 activates</b> when the respective Containment Spray Raw Water pump is started, and the appropriate <b>malfunction goes active</b>:</p> <p><b>CT02B, CT Raw Water Pump 112 Trip, DT=45</b></p> <p style="text-align: right;"><b>TRG 23</b></p> <p><b>CT02C, CT Raw Water Pump 121 Trip, DT=45</b></p> <p style="text-align: right;"><b>TRG 24</b></p>	<p><b>SRO</b></p> <ul style="list-style-type: none"> <li>• Acknowledges reports</li> <li>• Directs re-entry into N1-SOP-28, Seismic Event</li> <li>• Re-enters N1-EOP-5, Secondary Containment Control, on Reactor Building sump high levels</li> <li>• Enters / re-enters N1-EOP-4, Primary Containment Control, when Torus water level lowers to 10.5 feet</li> <li>• Directs lockout of Containment Spray pumps</li> <li>• Directs Torus makeup per either N1-EOP-1 attachment 6 or 18</li> <li>• <b>Before Torus water level drops to 8.0 feet, directs Reactor scram</b></li> </ul> <p style="text-align: right;"><b>CT-1</b></p>
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**Note:**

**Note:**

- Acknowledges failure of some control rods to insert
- Enters N1-EOP-2, RPV Control
- Answers "Are all control rods inserted to at least position 04?" No
- Answers "Will the Reactor stay shutdown without boron?" No / Unknown
- Exits N1-EOP-2, enters N1-EOP-3, Failure to Scram
- Directs ADS bypassed
- Directs prevention of Core Spray injection per N1-EOP-1 Att 4
- Directs bypass of the low-low RPV water level MSIV isolation per N1-EOP-1 Att 2
- Determines Reactor power is below 6%
- Directs Reactor water level controlled -109 to 95" with Condensate/Feedwater and CRD
- Directs Reactor pressure controlled 800-1000 psig with Turbine Bypass Valves
- Directs execution of N1-EOP-3.1, Alternate Control Rod Insertion
- Acknowledges trip of Containment Spray Raw Water pump
- Acknowledges/determines Torus makeup cannot stop lowering Torus water level trend



- May depress RPS 11 and 12 scram pushbuttons
- Recognizes/reports failure of some control rods to insert
- Provides scram report
- Bypasses Core Spray IV interlocks per N1-EOP-1 Att 4 by installing six jumpers inside Panel N (17, 18, 19, 24, 25, 26)
- Bypass low-low MSIV isolation per N1-EOP-1 Att 2 by installing four jumpers inside Panel N (1, 2, 8, 9)
- When directed, performs N1-EOP-3.1 (see actions below)
- Controls Reactor pressure 800-1000 psig with Turbine Bypass Valves



### Events 7 & 8 Continued...

#### Note:

Once the crew has attempted rod insertion per N1-EOP-3.1 and determined rods will not move with RMCS, or as directed by lead examiner, ramp malfunction PC04 from 10% to 25% over 1 minute.

### **RO continued**

#### Possible N1-EOP-3.1 Section 3 Actions:

- Verifies a CRD Pump running
- Places Reactor Mode Switch in REFUEL
- Places ARI OVERRIDE switch in OVERRIDE
- Installs RPS jumpers (5, 6, 12, 13)
- Resets the scram
- Attempts to insert rods to 00 using EMER ROD IN
- If more drive pressure is required, then perform one or more of the following:
  - Fully open CRD Flow Control Valve (F panel)
  - Close 44-04, Control Rod Drive Water Cont V (F Panel)
  - Close 44-167, Charging Water Header Blocking Valve (RB 237')
- Determines/reports control rods will not insert with RMCS

#### Possible N1-EOP-3.1 Section 4 Actions:

- Places ARI OVERRIDE switch in OVERRIDE
- Installs RPS jumpers (5, 6, 12, 13)
- Resets the scram
- Verify open 44-167, Charging Water Header Blocking Valve (RB 237')
- When the SDV is drained, then initiate a manual scram

### Events 7 & 8 Continued...

#### Note:

N1-EOP-1 attachment 18 is the likely procedure to be used for Torus makeup because it is a much higher capacity makeup source than N1-EOP-1 Attachment 6. However, no containment spray water pumps will be available to use EOP-1 attachment 18.

#### Role Play:

If dispatched to look for leakage in Reactor Building, wait 2 minutes, then report that you don't see any leakage in the corner rooms, but you can hear water running behind the watertight doors to the Torus room.

#### Note:

Both Containment Spray Raw Water pumps will trip.

### **BOP**

- Attempts Torus makeup (see actions below)
- Determines/reports Torus makeup is unable to stop lowering Torus water level

#### Possible actions per N1-EOP-1 attachment 18 using system 112:

- Closes 80-35, CONT SPRAY DISCH IV 122
- Closes 80-40, CONT SPRAY BYPASS BV 111
- Verifies closed the following valves:
  - 80-41, CONT SPRAY BYPASS BV 121
  - 80-44, CONT SPRAY BYPASS BV 112
  - 80-118, CONT SPRAY TEST TO TORUS FCV
- 80-114, CONT SPRAY TO RAD WASTE IV 11
- 80-115, CONT SPRAY TO RAD WASTE IV 12
- Places CONT SPRAY RAW WTR 112 INTERTIE control switch to CNT SPR 122 position
- Confirms open 93-72, CNT SPR 122
- Confirms closed 93-28, DIS VLV 112
- Confirms open 80-45, CONT SPRAY BYPASS BV 122
- Starts makeup to Torus as follows:
- Starts CONTAINMENT SPRAY RAW WATER PUMP 112
- Immediately opens 80-118

**Events 7 & 8 Continued...****Note:**

N1-EOP-1 attachment 18 is the likely procedure to be used for Torus makeup because it is a much higher capacity makeup source than N1-EOP-1 Attachment 6. However, no containment spray water pumps will be available to use EOP-1 attachment 18.

**BOP continued****Possible actions per N1-EOP-1 attachment 18 using system 121:**

- Closes 80-16, CONT SPRAY DISCH IV 111
- Closes 80-45, CONT SPRAY BYPASS BV 122
- Verifies closed the following valves:
  - 80-41, CONT SPRAY BYPASS BV 121
  - 80-44, CONT SPRAY BYPASS BV 112
  - 80-118, CONT SPRAY TEST TO TORUS FCV
  - 80-114, CONT SPRAY TO RAD WASTE IV 11
  - 80-115, CONT SPRAY TO RAD WASTE IV 12
- Places CONT SPRAY RAW WTR 121 INTERTIE control switch to CNT SPR 111 position
- Confirms open 93-73, CNT SPR 121
- Confirm closed 93-26, DIS VLV 111
- Verifies open 80-40, CONT SPRAY BYPASS BV 111
- Starts makeup to Torus as follows:
- Starts CONTAINMENT SPRAY RAW WATER PUMP 121
- Immediately opens 80-118

<p><b><u>Events 7 &amp; 8 Continued...</u></b></p>	<p><b>BOP continued</b></p> <ul style="list-style-type: none"> <li>• Locks out Containment Spray pumps</li> <li>• May initiate ARI</li> <li>• Bypasses ADS</li> <li>• Controls Reactor water level in directed band using Condensate/Feedwater and CRD</li> <li>• If directed, terminates and prevents all RPV injection except boron and CRD per N1-EOP-1 attachment 24:</li> <li>• Answers "Are HPCI fuses FU-8 AND FU-9 removed?" No</li> <li>• Performs one of the following:</li> <li>• Closes BOTH FEEDWATER ISOLATION valves 11 AND 12</li> <li>• Places FEEDWATER pumps 11 AND 12 in PULL-TO-LOCK</li> <li>• Initiates a close signal for FEEDWATER PUMP 13 BLOCKING VALVE</li> <li>• Selects MANUAL on 11, 12, AND 13 FWP Valve Control selector switches</li> <li>• Verifies 11 Feedwater FCV closed (Knurled knob full counter-clockwise)</li> <li>• Verifies 12 Feedwater FCV closed (Knurled knob full counter-clockwise)</li> <li>• Verifies 13 Feedwater FCV closed (Knurled knob full counter-clockwise)</li> <li>• Verifies FW LVL SETPOINT SETDOWN switch to OVERRIDE</li> <li>• Verifies FWP 11 BYPASS VALVE in MAN AND set to zero output</li> <li>• Verifies FWP 12 BYPASS VALVE in MAN AND set to zero output</li> </ul>
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<u><b>Events 7 &amp; 8 Continued...</b></u>	<p><b>BOP continued</b></p> <ul style="list-style-type: none"> <li>• Directs operator to pull HPCI fuses FU-8 and FU-9</li> <li>• Verifies closed FEEDWATER PUMP 13 BLOCKING VALVE</li> <li>• Answers "Is there still Feedwater flow to the Reactor?" No</li> <li>• <b>If directed, opens 4 ERVs</b></li> <li>• <b>If directed, rapidly depressurizes the Reactor using one or more Blowdown Systems (Detail O)</b></li> </ul> <p style="text-align: right;"><b>CT-2</b></p> <ul style="list-style-type: none"> <li>• Verifies open at least one Feedwater Isolation valve</li> <li>• Verifies Feedwater pump 11 or 12 operating</li> <li>• When directed, re-injects with Condensate/Feedwater and CRD to restore / maintain Reactor water level</li> </ul>
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<b>Event Termination Criteria</b>	<ul style="list-style-type: none"> <li>• RPV water level controlled in assigned band</li> <li>• RPV Blowdown in progress</li> </ul>
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